

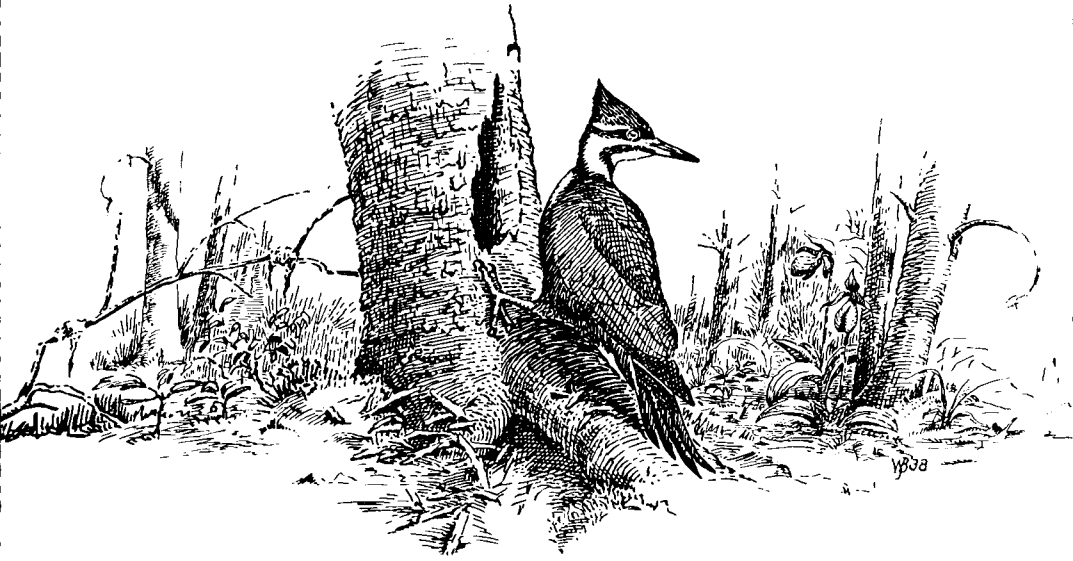
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LAKE ITASCA BIOLOGY SESSION



Summer Session • 1966

First Term • June 13 - July 16

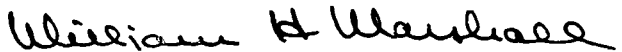
Second Term • July 18 - August 20

UNIVERSITY OF MINNESOTA BULLETIN

**FOREWORD**

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 1966, a full array of 12 courses for each term of the Summer Session is available. The 10 weeks may be supplemented with an additional 5 weeks for research if desired. This extensive program, coupled with the completion of the new Aquatic Laboratory and Library Building funded by the National Science Foundation further increases the opportunities for the student of field biology. I invite your close inspection of this bulletin and careful evaluation of the exciting possibilities offered.



William H. Marshall  
Director of Field Biology

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Volume LXIX

Number 1

January 1, 1966

UNIVERSITY OF MINNESOTA BULLETIN

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The contents of this bulletin and of other University bulletins, publications, or announcements are subject to change.

**GENERAL  
INFORMATION**

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 Biological Sciences 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.

**Location** 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.

**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.

**Mail** Mail for students should be addressed to: Itasca Biology Session, Lake Itasca P.O., Minnesota 56460.

**Inquiries** Requests for bulletins for the Biology Session should be addressed to:

Dean of the Summer Session  
6660 Johnston Hall  
University of Minnesota  
Minneapolis, Minnesota 55455

Specific inquiries as to courses, accommodations, equipment, etc., should be sent to the:

Director of Field Biology  
300 Coffey Hall  
University of Minnesota  
St. Paul, Minnesota 55101

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.

INDEPENDENT  
INVESTIGATORS

Qualified investigators may arrange with the director for research in various fields of terrestrial and fresh-water biology at any season of the year.



*Itasca birds afford  
many opportunities  
for study*



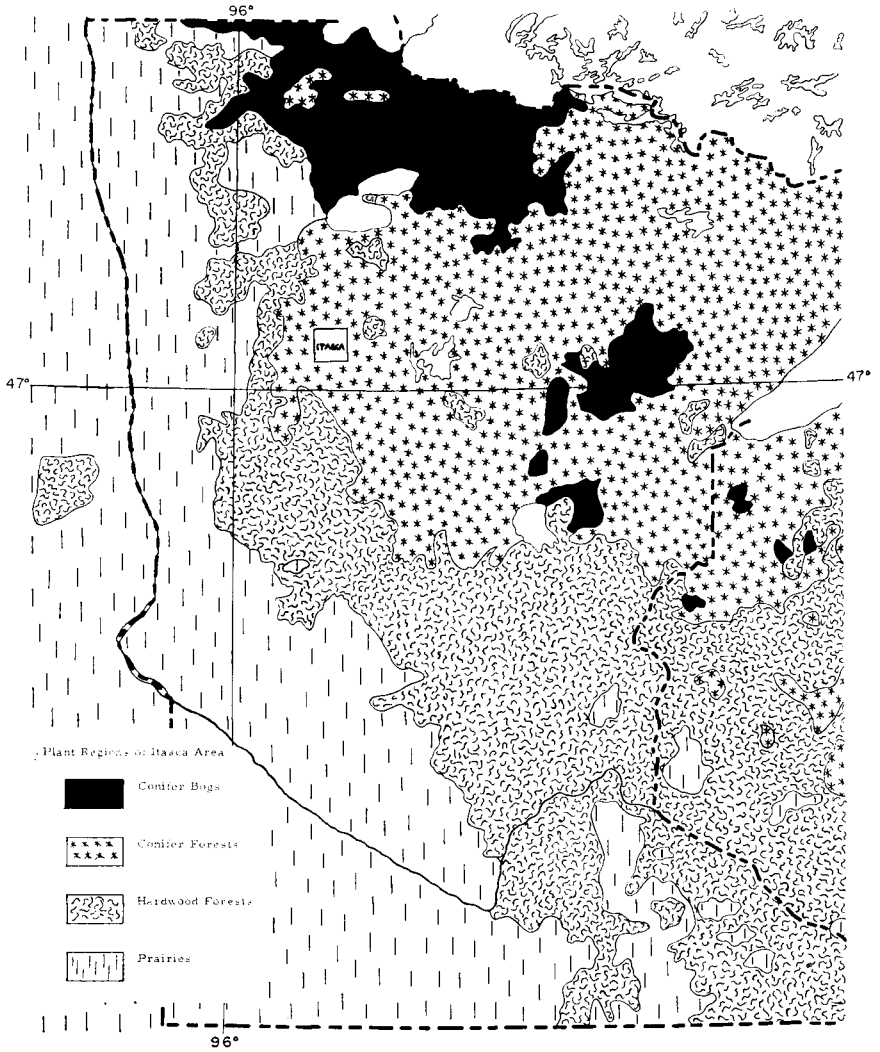
**COURSE WORK  
AND RESEARCH**

Both graduate and undergraduate students of biology will find an excellent field laboratory for research and course work. Graduate students may devote themselves exclusively to research problem work under staff supervision and guidance. Students in forestry, plant pathology, soils, fisheries, and wildlife management will find course work closely related to their field as well as a broad spectrum of essential background courses in botany, entomology, or zoology.

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 year should make prior arrangements with the director and the instructor involved.

# Natural Vegetation of Minnesota



**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.

During this summer, a large laboratory-library building will become available for research workers in aquatic biology.

*Ecology and algae  
laboratory*



REGISTRATION  
INFORMATION

Admission

Courses are open to all qualified graduate and undergraduate students who have had the usual preliminary courses in biological subjects. General rules for admission to the Summer Session apply to the 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*.

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.

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, Field Biology, 300 Coffey Hall, University of Minnesota, St. Paul, Minnesota 55101. They should be completed by March 15, 1966.

**Reservations**

Since both the housing facilities and the size of each class are limited, early application for reservations is recommended. Please complete the Request for Reservation form found on page 23 of this bulletin. *This form must be accompanied by a recent transcript of academic record and a deposit of \$25.* The deposit will apply toward tuition fees at the time of registration or will be returned to the student if space is not available.

Assignments to classes and housing will be made as soon as possible after March 15 and will be considered on the basis of prerequisites for the courses desired, scholarship, and date of application.

**Tallied  
Courses**

All students must tally for courses given at the station. IBM class reservation cards will be held for students who have been notified of acceptance after submission of the Request for Reservation. The Request for Reservation may be brought or mailed to 300 Coffey Hall, St. Paul Campus, or 135 Johnston Hall, Minneapolis Campus.

**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. The IBM class reservation cards may be picked up at 220 Coffey Hall, St. Paul Campus, after May 16.

Registration by out-of-town students can be completed at the station where the necessary IBM cards will be held with the reservation.

**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.

**Academic fees**

The following fees, per term, are payable by each regular registrant on or before June 13 or July 18:

Tuition fee .....	\$59.50
Incidental fee .....	11.00
Laboratory fee .....	8.50
	<hr/>
	\$79.00

A \$25 deposit is required of all persons making reservations for course work during the Biology Session. This fee will be returned if notice of cancellation is received before May 16 for the first term, or July 1 for the second term. When registration is completed, the \$25 will apply to the tuition fee.

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 \$31 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 14 or July 19. After June 14 or July 19, late fees will be charged as follows:

June 15-17 or July 20-22 .....	\$ 3.00
June 20-24 or July 25-29 .....	5.00
Thereafter .....	10.00

No registration will be accepted after June 15 or July 20 without the approval of the director of the Biology Session and the payment of the late fee.

**Room and board costs**

There is a \$15 service charge for dormitory facilities. An initial payment of \$75 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.

**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.

**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) must be purchased at Park Headquarters.

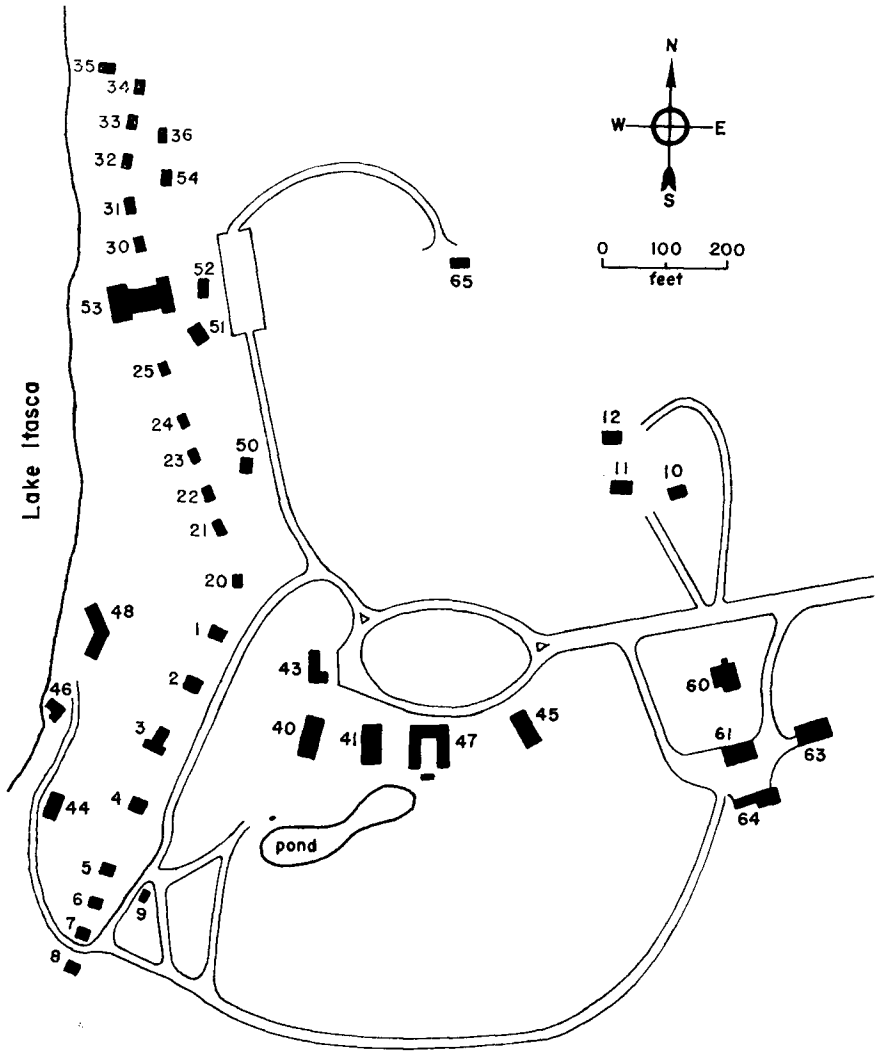
**RECREATION** Swimming, fishing, boating, and hiking are relaxing counterbalances for a busy educational program. Social events in the large assembly hall are planned by the students, with some guidance. Weekly popular lectures by staff or visitors are scheduled for the entire campus population.

**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.

*Boating facilities are  
always available*



## Plan of Itasca Forestry and Biology Station



- |                             |                                 |
|-----------------------------|---------------------------------|
| 1-12 Faculty cabins         | 53 Assembly and Dining Hall     |
| 20-36 Student cabins        | 50-54 Service Buildings         |
| 43 Office                   | 60-64 Resident Manager Facility |
| 40-45 Laboratory-Classrooms | 65 Campground                   |
| 46-48 Research Laboratories |                                 |

STAFF  
MEMBERS

**Ernest O. Beal**, professor, North Carolina State University, has major research interests in experimental approaches to the ecology, taxonomy, and evolution of aquatic vascular plants.

**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*.

**Murray F. Buell**, professor, Rutgers University, has been concerned with the study of vegetation, having worked primarily with forest communities of northern Minnesota, eastern North Carolina, and New Jersey.

**Gerald A. Cole**, 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."

**Edwin F. Cook**, professor, University of Minnesota, specializes in the taxonomy of Diptera and of immature aquatic insects.

**Rouse S. Farnham**, associate professor, University of Minnesota, conducts research and teaches soil classification and organic soils. He specializes in both basic and applied peat research.

**David W. French**, professor and associate director of the Biology Session, University of Minnesota, has been working in field problems of forest pathology and has published on tree diseases and deterioration of wood.

**Mason E. Hale**, curator, Division of Cryptogams, Smithsonian Institution, has published numerous papers, on taxonomy, growth, chemistry, phytosociology, and succession of North American lichens and is the author of the *Lichen Handbook*.

**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 Field Biology, University of Minnesota, has published articles on ecology of game animals and is currently doing research on ground squirrels and ruffed grouse.

**Richard L. Meyer**, assistant professor, Chico State College, is engaged in research on the Chrysophytes of the Itasca region and was a member of an expedition investigating the phytoplankton of the Indian Ocean.

**Thomas Morley**, professor, University of Minnesota, is carrying out research on the taxonomy of pondweeds and woody plants related to the myrtle family. He is compiling a spring flora of Minnesota.

**Hugo Sjörs**, professor and head of Institute of Plant Biology, Uppsala, Sweden, has carried out research on the vegetation of peat lands in Fenno-Scandia, the British Isles, and Hudson Bay region, Canada.

**Edward I. Sucoff**, assistant professor, University of Minnesota, teaches forest tree physiology and has published on mineral nutrition and water relations.



**Gustav A. Swanson**, head, Department of Conservation, Cornell University, has maintained an active interest in ornithology following his early training and work at the Itasca Station.

**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.

**James C. Underhill**, professor, University of Minnesota, has specialized in distribution problems and the limnological factors influencing the variation of fishes.

**COURSES OF INSTRUCTION**

An asterisk (\*) indicates courses in which papers may be prepared by graduate students for independent work under Plan B.

**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. Text: Fassett, *Manual of Aquatic Plants*. (5 cr; limited to 20 students; prereq 52 or equiv or #; MTh; II term) Beal

**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; limited to 20 students; prereq 52 or equiv or #; TF, I term; WS, II term) Morley, 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; limited to 20 students; prereq 50 or 130 or #; MTh; I term) Buell

**138. Freshwater and Wetland Ecology.** Nature, origin, and development of bog ecosystems with reference to environmental control and productivity. (5 cr; limited to 20 students; prereq 50 or #; WS; I term) Sjörs

**152. Ecology of Freshwater Algae.** Aspects of algal ecology in lakes and ponds with special reference to phytoplankton, benthos, and periphyton; also in streams, bogs, soils, and other terrestrial habitats. Field and laboratory instruction in relevant research techniques. Text: Fogg, *Algal Culture and Phytoplankton Ecology*. (5 cr; limited to 20 students; prereq 150 or 155 or #; MTh; II term) Brook

**155. Freshwater Algae.** The morphology and taxonomy of freshwater algae with particular attention to the collection and identification of local algae. Text: Smith, *Freshwater Algae of the United States*. (5 cr; limited to 20 students; prereq 10 cr in botany, biology, or zoology, or #; MTh, I term; TF, II term) Brook, Meyer

**158. See Forestry 158**

**159. Lichens.** Taxonomy, ecology, and floristics of the lichens of northern Minnesota; identification, sampling methods, microchemistry as a taxonomic tool. Text: Hale, *Lichen Handbook* (available Division of Publications, Smithsonian Institution, Washington, D.C.). (5 cr; limited to 20 students; prereq 10 cr in botany or zoology or #; TF; II term) Hale

**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 #) Morley, Thieret

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

**236.\* Research Problems in Cryptogams.** (Cr ar; prereq #) Brook, Hale, Meyer, Sjors

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; limited to 15 students; 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; limited to 15 students; prereq 59 or 74 or equiv or #; WS; I term) Cook

**129. Aquatic Entomology.** Identification and biology of aquatic and littoral insects in all states. (5 cr; limited to 15 students; prereq 59 or 74 or equiv or #; MTh; II term) Cook

**162.\* Vertebrate Ecology.** Field work on populations and their relationships to local environments; habitat analysis and ecological research methods. Text: Odum, *Fundamentals of Ecology*. Individual and team research projects, field trips, and lectures. (5 cr; limited to 20 students; prereq Bot 50 and Zool 94, or equiv; MTh; I 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. Theory and Practice in Environmental Measurement.** Studies of the physical factors of the forest environment emphasizing energy budget, water budget, and microclimate variations. Modern field instrumentation will be stressed. Texts: Platt and Griffiths, *Environmental Measurement*, and Geiger, *The Climate Near the Ground* (Rev. ed). (5 cr; limited to 20 students; prereq college physics, ecology, or physiology; MTh; II term) Sucoff

**215.\* Research Problems in Forest-Tree Physiology.** Individual research work in physiology of forest vegetation. (Cr ar; prereq #; II term) Sucoff

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; limited to 7 students; prereq 9 cr in botany, or #; WS; II 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; limited to 8 students; prereq 9 cr in botany, or #; WS; II term) French

**210.\* Special Problems in Mycology.** Individual research work in taxonomy and biology of special groups of fungi. (Cr ar; prereq grad, Myc 107; II term) French

SOIL SCIENCE

**130.\* Special Problems in Soils.** Research, reading, instruction. (Cr ar; prereq #; I term) Farnham

**137. Soils and the Ecosystem.** The formation and distribution of soils in relationship to vegetation, climate, and other soil-forming factors. The interrelationships of soils in the ecosystem. (5 cr; limited to 20 students; prereq Bot 50 or equiv or #; TF; I term) Farnham

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*; Penak, *Freshwater Invertebrates of the United States*. (5 cr; limited to 10 students; prereq Biol 2 or #; MTh, I term; TF, II 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, *Freshwater Invertebrates of the United States*. (5 cr; limited to 10 students; prereq 15 cr in zoology or #; MTh, I term; TF, II term) Cole

**119. Limnology.** The conditions for life in the water and

distribution of aquatic animals. Text: Ruttner, *Fundamentals of Limnology*. (5 cr; limited to 20 students; prereq 15 cr in biology or #; WS, I and II term) 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; limited to 15 students; prereq 15 cr in zoology or #; WS, I term) Swanson

**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, Swanson, Underhill



*Collecting plankton in one of the park's many pools*

## 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.
- DANGER, DENNIS L. An examination of the summer science institutes at Itasca State Park (1954-63). M.S. Thesis. 1965.
- CHRISTIANSON, LEE. A comparison of the Calcanea of two species of *Peromyscus* from northern Minnesota. M.S. Thesis. 1965.
- CLINE, DAVID R. Woodland pond habitat selection in ducks. M.S. Thesis. 1965.

## RECENT RESEARCH PUBLICATIONS

- 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.
- BRAY, J. R. and L. A. DUDKIEWICZ. The composition, biomass and productivity of two *Populus* forests. *Bulletin of the Torrey Botanical Club*, 90:298-308. 1963.
- CORNWELL, GEORGE. Observations on the breeding biology and behavior of a nesting population of Belted Kingfishers. *Condor*, 65:426-431. 1963.
- 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.

- EYER, LESTER E. Observations on golden-winged warblers at Itasca State Park, Minnesota. Jack-Pine Warbler, 41:96-109. 1963.
- FRANZEN, D. S. Variations in the anatomy of the Succineid Gastropod *Oxyloma retusa*. Nautilus, 76:82-95. 1963.
- HARRIS, S. W. and W. H. MARSHALL. Ecology of water-level manipulations on a northern marsh. Ecology, 33:331-343. 1963.
- JOHNSON, A. A. *Octomyomeris Itascensis* Gen. Et Sp. Nov. (Nematoda: Merithidae), A Parasite of *Chironomus Plumosus* (L.). Trans. Amer. Micro. Soc., 83:237-241. 1963.
- KIM, K. C., B. W. BROWN, and E. F. COOK. A quantitative taxonomic study of the *Enderleinellus suturalis* complex. (Anoplura: Hoplopleuridae). Systematic Zool., 12:134-148. 1963.
- SHAY, CREIGHTON. A preliminary report on the Itasca Bison Site. Proc. Minn. Acad. Sci., 31:24-27. 1963.
- STEIN, JANET R. Morphological variation of a Tolypothrix in culture. British Phycological Bulletin, 2:206. 1963.
- UNDERHILL, J. C. Distribution in Minnesota of the subspecies of the Percid fish *Etheostoma nigrum*, and of their intergrades. Amer. Midl. Nat., 70:470-478. 1963.
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**CONDENSED  
COURSE  
SCHEDULE**

**I TERM**

<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
Bot 135	Bot 116	Bot 138	Bot 135	Bot 116	Bot 138
Bot 155	Ent 59	Ent 124	Bot 155	Ent 59	Ent 124
Ent 162	Soil 137	Zool 119	Ent 162	Soil 137	Zool 119
Zool 72		Zool 135	Zool 72		Zool 135
Zool 115			Zool 115		

**II TERM**

<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>	<i>Saturday</i>
Bot 112	Bot 155	Bot 116	Bot 112	Bot 155	Bot 116
Bot 152	Bot 159	PIPa 56	Bot 152	Bot 159	PIPa 56
Ent 129	Zool 72	PIPa 156	Ent 129	Zool 72	PIPa 156
For 158	Zool 115	Zool 119	For 158	Zool 115	Zool 119

**Request for Reservation—ITASCA BIOLOGY SESSION**

Name \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

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 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, and a recent transcript of my academic record.

**Please mail this form to Director, Field Biology, 300 Coffey Hall,  
University of Minnesota, St. Paul, Minnesota 55101**





10-2



*Summer Session*

1968

University of Minnesota

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# UNIVERSITY OF MINNESOTA

## Board of Regents

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# UNIVERSITY OF MINNESOTA

*Founded in the faith that men are ennobled by understanding  
Dedicated to the advancement of learning and the search for truth  
Devoted to the instruction of youth and the welfare of the state*

## *Summer Session*

### 1966



FIRST TERM

June 13 - July 16

SECOND TERM

July 18 - August 20

# Calendar

## First Term

June	13	Monday	Orientation and Registration
June	14	Tuesday	First Term classes begin; fees due
July	4	Monday	Independence Day; holiday
July	15	Friday	Classes end at close of VI hour

## Second Term

July	18	Monday	Orientation and Registration
July	19	Tuesday	Second Term classes begin; fees due
August	19	Friday	Classes end at close of VI hour Commencement, 4 p.m.
August	20	Saturday	Second Term closes

Convocation, 8 p.m., Thursday

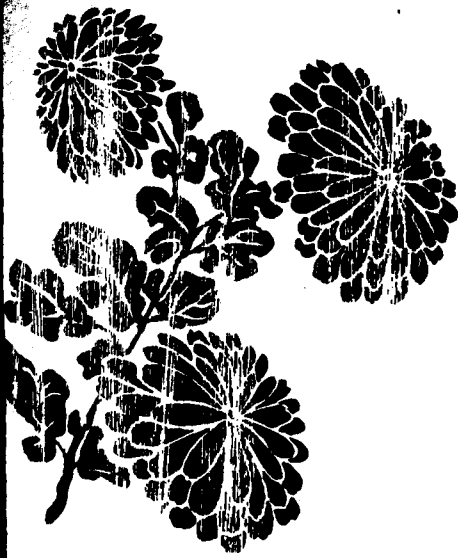
(See Official Daily Bulletin for announcement)

No application form need be filed by students with previous college work who plan to attend during the 1966 Summer Session only. See section on Admission and Registration for further details.

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## How to Use This Bulletin

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

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

- Courses through which it is possible for graduate students to prepare required Plan B papers.
- † All quarters of the course preceding the dagger must be completed before credit will be granted for any quarter of the course.
- ‡ Course may be taken out of sequence.
- § Credit will not be given if the equivalent course listed after the section mark has been taken for credit.
- ¶ Means "concurrent registration" in the course which it precedes.
- ‡ Consent of *instructor* must be obtained.
- △ 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, location of the class, and class instructor.

**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 and west) .....	8:00	9:05	10:10	11:15	12:20	1:25	2:30	3:35
St. Paul .....	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30

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

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

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

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

Acct, Accounting  
 Aero, Aeronautical Engineering  
 AgEc, Agricultural Economics  
 AgEd, Agricultural Education  
 AgEn, Agricultural Engineering  
 Agro, Agronomy and Plant Genetics  
 AmSt, American Studies  
 Anat, Anatomy  
 AnCh, Analytical Chemistry  
 Anes, Anesthesiology  
 AnHu, Animal Husbandry  
 Anth, Anthropology  
 Arch, Architecture  
 ArEd, Art Education  
 Art, Art  
 Ast, Astronomy  
  
 BFin, Business Finance  
 BioC, Biochemistry (Agriculture)  
 Biol, Biology

BLaw, Business Law  
 Bot, Botany  
  
 CPsy, Child Psychology  
 CE, Civil Engineering  
 ChEn, Chemical Engineering  
 Clas, Classics  
 Comm, Communication  
 Comp, Composition  
  
 DInd, Dairy Industries  
 DyHu, Dairy Husbandry  
  
 Econ, Economics  
 Ed, Education  
 EdAd, Educational Administration  
 EdCI, Curriculum and Instruction  
 EdT, Methods and Student Teaching  
 EE, Electrical Engineering  
 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  
PlPa, 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  
 CD, Child Development  
 CH, Cooke Hall  
 ChE, Chemical Engineering  
 CMU, Coffman Memorial Union  
 CoffH (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 Building (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  
 NCCE, Nolte Center for Continuing 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)  
 PeikC, 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  
 SciCB, 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, Westbrook Hall  
 WmsA, Williams Arena  
 WuH, Wulling Hall

Z, Zoology



## Admission and Registration

### Admissions

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 studies in the Summer Session. Orientation programs for many of 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 see the *Bulletin of General Information* or write to Office of Admissions and Records, University of Minnesota, Minneapolis, Minnesota 55455.

**Summer Students**—Students with previous college work who wish to attend the Summer-Session-only may do so without filing credentials if they are not in a “dropped” status in their previous college and do not plan to obtain a degree from the University of Minnesota. Such students will be considered for admission as “summer students.”

Persons about 24 years of age or older who have not had previous college work and who do not plan to obtain a degree from the University of Minnesota but wish to complete certain specific college subjects will be considered for admission as “summer students.”

High school graduates under 24 years of age without previous college work will also be considered for admission as “summer students” but must have specific approval of the Office of Admissions.

Attendance during the summer terms in no way guarantees “summer students” admission to the regular academic year. “Summer students” who wish to be considered for admission to a subsequent term during the regular academic year must file regular admission applications (see *Bulletin of General Information*).

**Graduate Students**—The procedure for admission of graduate students is discussed in the section on the Graduate School in this bulletin.

**Degree Candidates**—Those who expect to become *candidates for a degree* at the University during the summer terms 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.

**High School Students**—Outstanding high school students who have special interests which can be satisfied by attending college before high school graduation may apply for admission to the Summer Session to take work between their junior and senior high school years. Credits earned will be counted toward graduation if the student later enrolls at the University.

**Intent to Register**—Students who are defined as “summer students” in the preceding section on “Summer Students” may speed their registration process by submitting an Intent to Register found inside the back cover of this bulletin. This does not obligate the student in any way. A confirmation of Intent to Register and registration forms will be sent to qualified students.

Students in attendance Spring Quarter 1966, Graduate School students, new regularly admitted students, or those who have applied for regular admission should *not* submit the Intent to Register.

## Registration Dates

In order that the short Summer Session terms may prove of maximum value, and that late entrants will not disrupt courses in progress, students are expected to complete their registration during the following periods:

### FIRST TERM

**Advance Registration**—Students registered for Spring Quarter on the Minneapolis–St. Paul Campuses should register during the advance registration period announced by their colleges.

Other students planning to attend Summer Session on the Minneapolis–St. Paul Campuses may register during the week of May 31 (Tuesday, May 31 through Friday, June 3) except those newly admitted regular students who have been scheduled for a specific registration period by the University and those Graduate School applicants whose admission is still pending.

**Mass Registration**—Monday, June 13, 8 a.m. to 4 p.m.

Students registering in Coffman Memorial Union will find congestion in the lines during the early part of the day and may find it more convenient to register during the afternoon.

Fee payment, last day without penalty—Tuesday, June 14.

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

June 15-17 .....	\$ 3.00
June 20-24 .....	5.00
Thereafter .....	10.00

## SECOND TERM

**Advance Registration**—Students who register for the First Term and who plan to attend Second Term should register for both terms at the same time. Students registered for the First Term who have not registered for Second Term should register during the advance registration period for Second Term, July 11-15. Students who are not registered for the First Term may register during the advance registration period for Second Term or on July 18.

**Registration**—Monday, July 18, 8 a.m. to 4 p.m.

Fee payment, last day without penalty—Tuesday, July 19.

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

July 20-22 .....	\$ 3.00
July 25-29 .....	5.00
Thereafter .....	10.00

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

## Place of Registration

### ADVANCE REGISTRATION

Currently enrolled students and former students seeking a degree from the University of Minnesota should register through the college in which they were last registered unless they have been approved for change of college. New “summer students,” former “summer students,” and former regular students no longer planning on obtaining a degree from the University of Minnesota should begin registration through the college in which they are taking all or most of their summer courses.

**Exceptions**—Students in the “summer student” categories and former regular students no longer planning on obtaining a degree from the University who plan to register for professional education courses should register through the College of Education. Students whose last college attendance was General College should register through General College. Students admitted to Graduate School must register through Graduate School.

## MASS REGISTRATION

### First Term—June 13

#### A. Registration at Coffman Union Ballroom

Education

Graduate School (registration material may be obtained at 220 Coffey Hall, St. Paul Campus)

Medical School

Public Health

College of Liberal Arts (Summer Students)

#### B. Registration at College Offices

Agriculture, Forestry, Home Economics, and Veterinary Medicine, 225 Coffey Hall (St. Paul Campus)

Business Administration, 225 Business Administration Building (West Bank)

Dental Hygiene, 360A Millard Hall

Dentistry, 136 Owre Hall

General College, 20 Nicholson Hall

Institute of Technology

Architecture, Engineering and Mathematics, 133 Main Engineering Building

Chemistry, 139 Chemistry Building

Geology and Geophysics, 108 Pillsbury Hall

Physics, 148 Physics Building

Law, 125 Fraser Hall

Medical Technology, C-205 Mayo Memorial Building

Mortuary Science, 114 Vincent Hall

Nursing, 125 Owre Hall

Pharmacy, 115 Appleby Hall

Physical and Occupational Therapy, 860 Mayo Memorial Building

College of Liberal Arts

(regularly admitted students)

Lower Division, 216B Johnston Hall

Upper Division:

Humanities, 206 Folwell Hall

Science and Math (and Central), 223 Johnston Hall

Social Sciences, 214 Social Science Building (West Bank)

Adult Special Students, 214 or 225 Johnston Hall

Honors, 115 Johnston Hall

University College, 106 Nicholson Hall

Veterinary Medicine, 225 Coffey Hall (St. Paul Campus)

### Second Term—July 18

A. There is no special registration at Coffman Memorial Union for Second Term.

#### B. Registration at College Offices

Agriculture, Forestry, Home Economics, 225 Coffey Hall (St. Paul Campus)

Business Administration, 225 Business Administration Building (West Bank)

Dental Hygiene, 360A Millard Hall

Dentistry, 136 Owre Hall

Education, 206 Burton Hall

General College, 20 Nicholson Hall

Graduate School, 316 Johnston Hall

Institute of Technology, 133 Main Engineering Building

Law, 125 Fraser Hall

Medical Technology, C-205 Mayo Memorial Building

Medicine, 1360 Mayo Memorial Building

Mortuary Science, 114 Vincent Hall

Nursing, 125 Owre Hall

Occupational Therapy, 860 Mayo Memorial Building

Pharmacy, 115 Appleby Hall

Physical Therapy, 860 Mayo Memorial Building

Public Health, 1325 Mayo Memorial Building

Liberal Arts

Lower Division, 216B Johnston Hall

Upper Division:

Humanities, 206 Folwell Hall

Science and Math (and Central), 223 Johnston Hall

Social Sciences, 214 Social Science Building (West Bank)

Honors, 115 Johnston Hall

Special Students, 216B or 225 Johnston Hall

University College, 106 Nicholson Hall

Veterinary Medicine, 225 Coffey Hall (St. Paul Campus)



# Registration Procedure

## REGISTRATION PROCEDURE AT COFFMAN UNION—FIRST TERM

(Education; Graduate School; Medical School; Public Health; and Summer Students in College of Liberal Arts)

- Step 1.** Obtain registration material in the balcony (off the first floor—not shown on floor plan) of Coffman Union Ballroom. If you have a Summer Session bulletin, please bring it with you. Bulletins will be available only to students who do not already have a copy. Secure *Two* registration blanks if you will be attending both first and second summer terms. Fill out a separate blank for each term.
- Step 2.** Go downstairs to Main Ballroom on the ground floor. Use the tables located under the balconies for filling out registration blanks. (Green line)
- Step 3.** Obtain adviser's approval of registration at the department table representing your principal interest. (Not required of Summer-Only-Students registering through the College of Liberal Arts unless desired.)
- Step 4.** Obtain college approval of your study program at the appropriate college table. Registration blanks *must* be stamped at your college table. (College tables: Graduate School—Main Ballroom; Education, Liberal Arts, Medical School and Public Health—North Star Room. Follow the blue line.)
- Step 5.** Class reservations—Ski-U-Mah room. If any of your courses are listed on pages 21-23 of the bulletin, you must obtain a class reservation IBM card for each course to be reserved. Follow the red line. If none of your courses is reserved, skip to step 6.
- Step 6.** Obtain a fee statement at the appropriate fee statement table for the college through which you are registering. Education and graduate students—Game Room, 1st floor, East Wing. All other colleges—Men's Lounge, 2nd floor, East Wing. Turn in your registration blanks and any needed class reservation cards. You will walk away with your fee statement for the First Term. Note that it is due June 14. Your fee statement for the Second Term will be mailed to you on June 27, and it will be payable on or before July 19.

If you are a new student who has been admitted for the summer *and* the ensuing regular session, this is the place and the time to turn in your Registration Permit—and also your Medical Appointment Card, which you should obtain at the University Health Service (a nearby building).

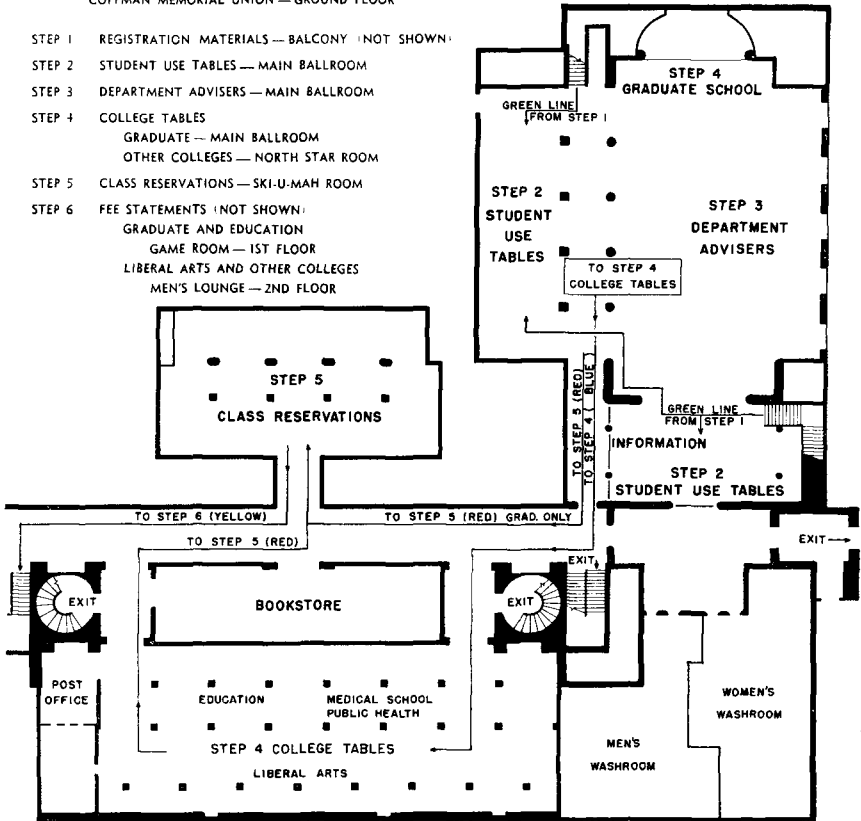
If you are a student enrolling for the Summer Session *only*, you will have a confirmation of Intent to Register or a Statement of Intent to Register (not required for Graduate School) which should be turned in at this point.

The optional Religious Census Card (if completed) should also be turned in when you obtain your fee statement.

SUMMER SESSION REGISTRATION

COFFMAN MEMORIAL UNION — GROUND FLOOR

- STEP 1 REGISTRATION MATERIALS — BALCONY (NOT SHOWN)
- STEP 2 STUDENT USE TABLES — MAIN BALLROOM
- STEP 3 DEPARTMENT ADVISERS — MAIN BALLROOM
- STEP 4 COLLEGE TABLES  
GRADUATE — MAIN BALLROOM  
OTHER COLLEGES — NORTH STAR ROOM
- STEP 5 CLASS RESERVATIONS — SKI-U-MAH ROOM
- STEP 6 FEE STATEMENTS (NOT SHOWN)  
GRADUATE AND EDUCATION  
GAME ROOM — 1ST FLOOR  
LIBERAL ARTS AND OTHER COLLEGES  
MEN'S LOUNGE — 2ND FLOOR



- Step 7.** Pay fees at the Bursar's Office on the first floor of Morrill Hall, or by mail, or (if you are paying by check) a depository is available in Coffman Union. On the St. Paul Campus, you can pay at Cashier's Office, Coffey Hall. The hours are 8:30 a.m.-12 noon and 1-4 p.m. Fees must be paid, or postmarked if mailed, not later than Tuesday, June 14.
- Step 8.** Begin classes Tuesday. Minneapolis Campus classes on the East Bank and on the West Bank begin at 8:00 a.m. Classes on the St. Paul Campus begin at 7:30 a.m.

#### **REGISTRATION PROCEDURE AT COLLEGE OFFICES**

(Other colleges and regularly admitted students in College of Liberal Arts)

- Step 1.** Obtain registration material at your college office. If you have a Summer Session bulletin, please bring it with you. Bulletins will be available only to students who do not already have a copy. Secure *Two* registration blanks if you will be attending both first and second summer terms. Fill out a separate blank for each term.
- Step 2.** Obtain college approval of your study program at your college office.
- Step 3.** Students in Agriculture, Forestry, Home Economics, and Veterinary Medicine should turn in their blanks and class reservation cards and obtain their fee statements on the St. Paul Campus at 220 Coffey Hall.
- Students in other colleges should go to the Coffman Union and proceed with steps 5, 6, and 7 listed under "Registration Procedure at Coffman Union.

## 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 through which the student 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:

	4 credits or less	5 credits or more
Tuition fee (per term) .....	\$46.50	\$59.50
Incidental fee†† (per term) .....	11.00	11.00
	\$57.50	\$70.50
Total fee (per term) .....		

*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, \$52 per term; 3 credits or less or thesis-only, \$26 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) \$7.13 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 two, \$70.00 for four half-hour individual lessons per week—A, D (no cr)

\$35.00 for two (2 cr), \$70.00 for four (4 cr) half-hour individual lessons per

week—11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 100

\$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.

Upper Division music majors check with Music Department office about course fees.

### **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)

†† In lieu of tuition.

## Special Fees

### Music Practice Room

\$1.75 per term, 5 hours per wk 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

### Physical Education—Men (Cooke Hall)

Locker and towel fee—\$3.00 plus \$1.00 deposit

Gym clothing rental fee—\$3.00

### 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.

### 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

## 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 15, 4 p.m.
- Second Term ..... Friday, August 19, 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

## 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 in the credits column. 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.



## Courses to Be Reserved

As part of registration, all students, including Graduate students, must obtain IBM class reservation cards for the courses listed below. Students registering for Education and Liberal Arts courses on June 13 will obtain class reservation cards for these courses in Coffman Memorial Union. Course cards for reserved courses must be attached to the student's registration blank when turned in to obtain a statement of fees.

### Itasca Biology Session

#### First Term: June 13-July 16

##### Botany

116, 135, 138, 155—CofH 220

##### Entomology, Fisheries, and Wildlife

59, 124, 162—CofH 220

##### Soil Science

137—CofH 220

##### Zoology

72, 115, 119, 135—CofH 220

#### Second Term: July 18-August 20

##### Botany

112, 116, 152, 155, 159—CofH 220

##### Entomology, Fisheries, and Wildlife

128, 196—CofH 220

##### Forestry

158—CofH 220

##### Plant Pathology

56, 156—CofH 220

##### Zoology

72, 115, 119—CofH 220

### Minneapolis-St. Paul Campuses

#### First Term

##### Accounting

24—JohH 205

155A—BA 225

##### Analytical Chemistry

57—JohH 205

All other courses under 200—E 136

##### Anthropology

1A—JohH 205

##### Architecture

All courses—E 136

##### Art

All courses under 200 *except* 1, 3, 59,

111, 115, 148—JohH 205

##### Art Education

All courses under 200—Bu 206

##### Astronomy

All courses—JohH 205

##### Biology

1, 54-104—CofH 220 for AFHE stu-  
dents

1—JohH 205 for other students

##### Botany

See Itasca Biology Session

##### Civil Engineering

All courses—E 136

##### Curriculum and Instruction

101A, 101B, 108, 126, 143A, 145,

167—Bu 206

##### Economics

1, 2, 65—JohH 205

##### Education

55A, 75A—Bu 206

##### Educational Administration

128—Bu 206

##### Educational Psychology

110, 116, 116A, 125, 148, 150, 159,

193, 216A, 282A-B—Bu 206

##### Electrical Engineering

All courses—E 136

##### Engineering Graphics

All courses—E 136

- English**  
55, 56, 156—JohH 205
- English Composition**  
1, 3—JohH 205
- Entomology, Fisheries, and Wildlife**  
See Itasca Biology Session
- Family Studies**  
All courses—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
- Geography**  
1—JohH 205
- Geology and Geophysics**  
1, 109C—JohH 205
- German**  
1A—JohH 205
- History and Philosophy of Education**  
90—Bu 206
- Home Economics**  
All courses under 200—CofH 220
- Industrial Education**  
111—TNCd 103
- Inorganic Chemistry**  
All courses under 200—E 136
- Mathematics**  
All IT—E 136  
All Arts—JohH 205
- Mechanical Engineering**  
All courses—E 136
- Mechanics and Materials**  
All courses under 200—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
- Natural Science**  
1 (laboratory)—JohH 205
- 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**  
105, 106, 107—E 136
- Physical Education for Men**  
1A, 1B, 1C, 2A, 2B—JohH 205  
160—Bu 206
- Physical Education for Women**  
3, 7, 8, 11, 25, 32—JohH 205  
45, 46, 70—Bu 206
- Physics**  
1A—JohH 205
- Plant Pathology and Physiology**  
See Itasca Biology Session
- Quantitative Analysis**  
61—BA 225
- Rhetoric**  
22, 51—CofH 220  
47—CofH 220 for AFHE, and JohH 205 for other students
- Soils**  
See Itasca Biology Session
- Speech**  
5X, 65, 69, 81—JohH 205
- Speech Science, Pathology, and Audiology**  
171—JohH 205
- Theatre Arts**  
21, 24—JohH 205
- Zoology**  
See Itasca Biology Session

## Second Term

### Accounting

25, 26—JohH 205  
155B—BA 225

### Art Education

53, 54, 80—Bu 206

### Biology

2—CofH 220 for AFHE students  
2—JohH 205 for other students

### Civil Engineering

All courses—E 136

### Curriculum and Instruction

107, 109—Bu 206

### Economics

1, 2, 66—JohH 205

### Education

55B, 75B—Bu 206

### Educational Administration

239—Bu 206

### Educational Psychology

110, 116, 116A, 148, 150, 159, 193,  
217A, 218A—Bu 206

### Electrical Engineering

All courses—E 136

### Engineering Graphics

All courses—E 136

### English

55, 56—JohH 205

### English Composition

1, 2—JohH 205

### Family Studies

1—JohH 205

### Forestry

See Itasca Biology Session

### General Chemistry

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

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

### General College

All courses—NH 106

### History and Philosophy of Education

90—Bu 206

### Home Economics

All courses under 200—CofH 220

### Inorganic Chemistry

All courses under 200—E 136

### Mechanical Engineering

All courses—E 136

### Mechanics and Materials

All courses under 200—E 136

### Metallurgical Engineering

All courses under 200—E 136

### Music Education

51, 52—Bu 206

### Natural Science

2 (laboratory)—JohH 205

### Physical Education for Men

1A, 1B, 2B, 2C—JohH 205

### Physical Education for Women

7, 8—JohH 205

70—Bu 206

### Physics

2A—JohH 205

### Plant Pathology and Physiology

See Itasca Biology Session

### Quantitative Analysis

61—BA 225

### Rhetoric

22, 51—CofH 220

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

### Speech

6, 50, 81—JohH 205

### Theatre Arts

22, 61, 131, 132—JohH 205



## 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, the College of Veterinary Medicine, and the College of Biological Sciences 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 two terms of 5 weeks each: June 13 to July 16 and July 18 to August 20. 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 14. First Term classes on the Minneapolis Campus (east and west banks) will begin Tuesday, June 14, at 8 a.m. Classes on the St. Paul Campus will begin at 7:30 a.m., Tuesday, June 14.

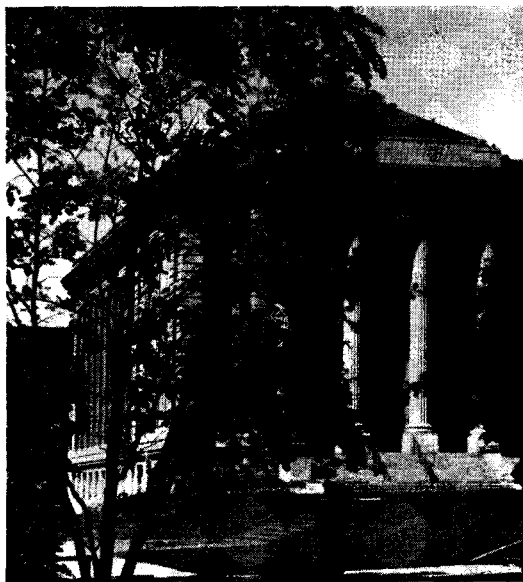
Registration and payment of fees for the Second Term close at 4 p.m. on Tuesday, July 19. Classes for this term will open Tuesday, July 19.

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.

*Johnston Hall - Right*



*Burton Hall - Below*



## **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 and the vacation period following Second Term, the Walter Library is open from 7:45 a.m. to 10 p.m. on weekdays, from 7:45 a.m. to 5 p.m. on Saturdays, and from 2 p.m. to 6 p.m. on Sundays.

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, the College of Veterinary Medicine, and the College of Biological Sciences 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-one student religious organizations, representing 36 faiths and denominations, function on the Minneapolis and St. Paul Campuses. There are nine religious



foundation buildings in the University Avenue area which maintain programs of study, discussion, and recreation. Information may be secured from the Office of the Co-ordinator of Students' Religious Activities, 211 Eddy Hall (telephone: 373-4076).

## **University Health Service**

The University Health Service provides an outpatient and a hospital service 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 certain services 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.

## **Student Counseling Bureau**

The Student Counseling Bureau, 101 Eddy Hall, offers specialized counseling and testing services to students who wish to learn more about themselves or who have personal problems which they would like to discuss with a professional counselor. Nearly one-third of our University students have talked at some time with a counselor about courses they wish to take, vocations they are considering, problems they have with study skills, or personal situations involving dating, engagements, marriage, or family relations. Special services are provided for physically handicapped students and a special library of information about occupations is available to students. The bureau's Reading and Study Skills Center offers help in spelling as well as in development of reading and study skills.

A problem may make itself felt in any one of several ways. Worrying about the lack of money, for example, may show itself through seriously affecting a student's grades. If a student wishes to review his progress in school or if he has problems that worry him, he is urged to talk with a bureau counselor.

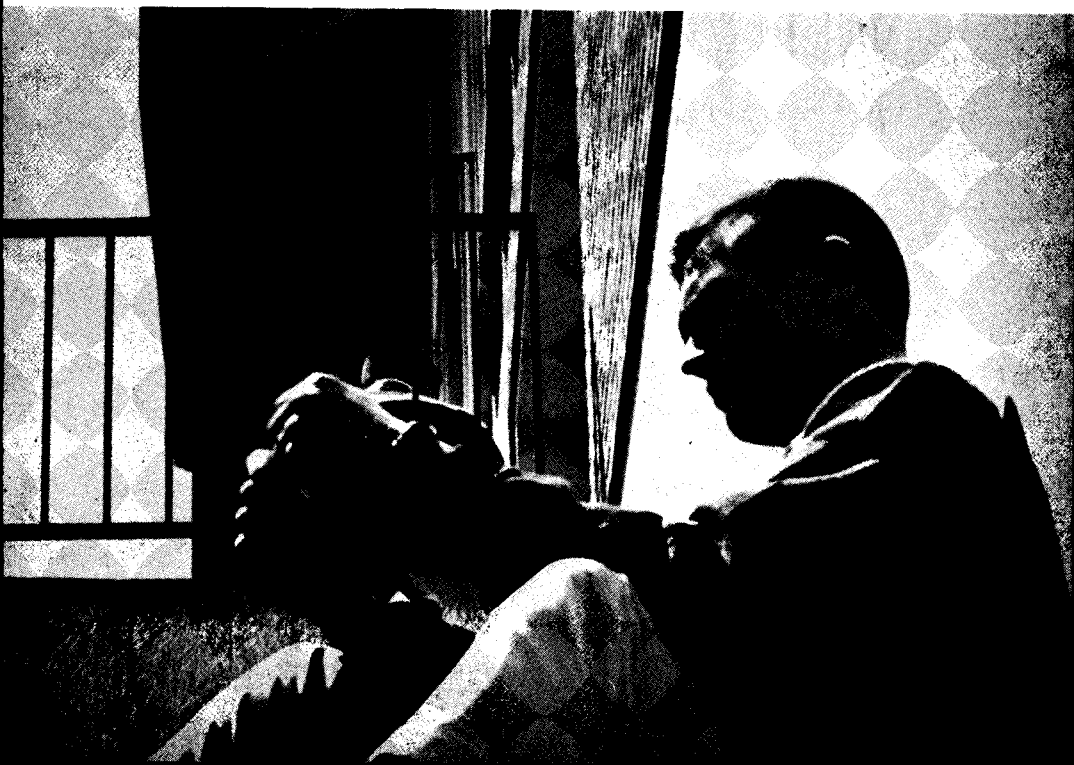
Precollege counseling is available at a small fee to those who have not yet entered the University (no fees are charged University of Minnesota students). As one considers applying for admission to the University, he is encouraged to come to the Student Counseling Bureau for information about the different colleges in the University, courses available to him, and various University services for students.

## Housing and 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**—Cafeterias, lunchrooms, and a soda fountain are available to students in Coffman Memorial Union. The main cafeteria is located on the ground floor. Also there are commuters' lunchrooms for students who bring their lunches. Banquet, party, and private dining room facilities are available. Lunchroom and soda fountain facilities are offered in the St. Paul Campus Student Center.

A lunchroom with a full line of vending machines is furnished in the basement of the Classroom Building on the West Bank of the Minneapolis Campus. Milk and other vending machines are located in many of the other academic buildings on the Minneapolis and St. Paul Campuses.

Privately operated restaurants are located near all campuses.

*Terrace of Coffman Memorial Union*



## 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.

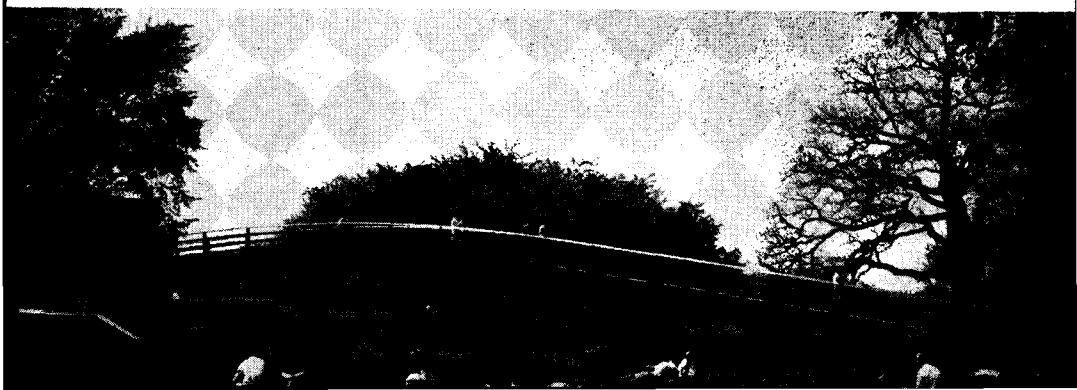
On the St. Paul Campus the pool and the gymnasium will also be open at scheduled hours.

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.

*Footbridge Over Washington Avenue*





*Sailing on Minneapolis Lake - Above*

*Bowling at Coffman Union - Right*

## 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 for their homes and to staff for their 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.



## 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. Rooms can be reserved for group meetings or luncheons. The Coffman Information Center, on the first floor, is open 8 a.m. to 4:30 p.m. daily to assist you.

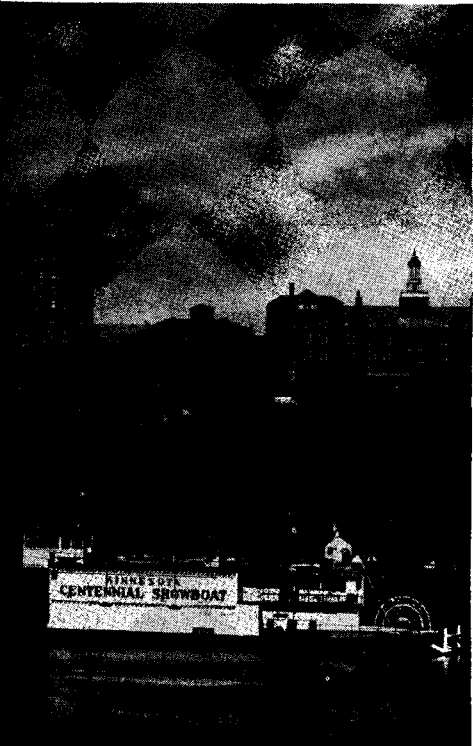
### Facilities

Facilities include billiards, table tennis, and a coeducational game room for recreation . . . modern bowling lanes with automatic pinspotters . . . an Art Craft Studio for general hobby craft—woodworking, leather work, ceramics, jewelry, 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 spacious ballroom for informal dancing, parties, and dance instruction sessions . . . the University Post Office and Union Bookstore . . . and barber and beauty shops.



*Above: Relaxing on Lawn in Front of  
Student Union*

*Below: University of Minnesota  
Centennial Showboat*



*Above: Maestro Stanislaw Skrowaczewski  
in Rehearsal with Minneapolis Symphony  
Orchestra*





*Coffman  
Memorial  
Union*

## **Union Program**

The Union provides a diversified program during the summer which includes instruction in bowling, billiards, crafts, dancing (ballroom and square), and sailing. Art exhibits, band concerts, jazz programs, student-faculty coffee hours, Friday night dances, and weekend trips are some of the events for the summer student.

Students are encouraged to serve on planning committees and provide leadership for events. Visit the program director's office, room 229, for committee opportunities and information on programs.

## **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 and exhibits of other instructional media not regularly scheduled are announced in the *Minnesota Daily* and on the bulletin boards.

## 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 features 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 2:00 to 5:00 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.

In conjunction with the Office for Advanced Drama Research, a Rockefeller Foundation project, a festival of new plays is being planned for presentation in newly air-conditioned Scott Hall during the coming summer. We also hope to bring an outstanding artist from the professional theatre as our guest on campus for 1 week. Past guests have been: Lee Strassberg (1959), Peggy Wood (1960), Harold Clurman (1961), Tyrone Guthrie (1962), Robert Lewis (1963), and Tyrone Guthrie (1964).



## Course Descriptions

*First*

*Term*

# College of Agriculture, Forestry, and Home Economics

*For general information on the College of Agriculture, Forestry, and Home Economics, see section on Schools, Colleges, and Special Programs.*

## Agricultural Economics (AgEc)

- 135 **PROBLEMS IN LAND RESOURCE USE**  
Land as a factor of production; rural and urban utilization; rents and land values; land classification; taxation; land exchange; management of public land. (3 cr; jr, sr, grad; prereq 110 or #; I-II MTWThF [meets first 3 wks only]; HH 100) Raup, Vlasin
- 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

## Agricultural Education

(See Index)

## Agricultural Engineering (AgEn)

### Mechanized Agriculture (MeAg)

- 4 **AGRICULTURAL SHOP—METALWORK**  
Arc and oxyacetylene welding, soldering, use and conditioning of metal working tools, and the identification and characteristics of metals used in farm machinery. (4 cr; prereq CeCh 4 or #; I-III MTWTh, I-IV F; AgEng 35 and 20) Bear
- 12 **AGRICULTURAL MACHINERY**  
Machinery as a factor in agricultural production; development and use. (3 cr; prereq 23; I MTWTh, II MW; AgEng 105 and 37) Solstad
- 12A **AGRICULTURAL MACHINERY LABORATORY**  
Studies of design and adjustment of agricultural machines. (1 cr; prereq 12 or #12; II-III TTh; AgEng 37) Solstad
- 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) Bear
- 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; VI-VIII M, VI-IX TWTh, VI F; AgEng 35 and 20) Bear, Solstad

## Agronomy and Plant Genetics (Agro)

### Agronomy

- 201\* **RESEARCH IN AGRONOMY**  
Problems in physiology and production of crop plants. (Cr and hrs ar; prereq 121, 127) Staff

## Plant Genetics

First  
Term  
Courses

- 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)

- 163 SWINE PRODUCTION  
Adaptability, breeding, feeding, care, and management of commercial and purebred swine. (3 cr; prereq 37, 52 or ‡; III-IV MTWThF; PetH 108) Meade
- 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) Hanson, Jordan, Meade, Rempel, Goodrich, Meiske

## Dairy Husbandry (DyHu)

- 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)

- 170 SPECIAL PROBLEMS IN DAIRY MANUFACTURING  
Individual laboratory or library research on chemical, physical, and engineering problems involved in processing and utilization of dairy products. (1-3 cr; prereq sr or ‡; hrs ar) Coulter, Morris, Thomas
- 180 SPECIAL PROBLEMS IN DAIRY MICROBIOLOGY  
Laboratory or library research on problems related to the microbiology of dairy products. (1-3 cr; prereq sr or ‡; hrs ar) Jezeski, Olson
- 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.

- 243° RESEARCH IN ENTOMOLOGY  
(Cr ar) Hodson, Chiang, Cook, Peterson, Richards, Brooks, Price, Radcliffe
- 267° RESEARCH IN FISHERY BIOLOGY  
(Cr ar) Smith, Waters
- 280° RESEARCH IN WILDLIFE BIOLOGY  
(Cr ar) Marshall, Beer, Tester

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

## Forestry (For)

### (OFFERED ON THE ST. PAUL CAMPUS)

- 200° RESEARCH PROBLEMS IN SILVICULTURE  
(Cr ar) Hansen, B Brown, Bakuzis
- 203° RESEARCH PROBLEMS IN FOREST MANAGEMENT  
(Cr ar) Irving, B Brown, Winsness, Meyer
- 205° RESEARCH PROBLEMS IN FOREST ECONOMICS  
(Cr ar) Skok, Hughes
- 207° RESEARCH PROBLEMS IN FOREST PRODUCTS ENGINEERING  
(Cr ar) Hossfeld, Kaufert, Haygreen
- 213° RESEARCH PROBLEMS IN FOREST UTILIZATION  
(Cr ar) Hossfeld, Kaufert, Haygreen, Skok, Thompson
- 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) Merriam, Hughes, Skok
- 220° RESEARCH PROBLEMS IN FOREST TREE GENETICS  
(Cr ar) Pauley
- 221° RESEARCH PROBLEMS IN FOREST INFLUENCES  
(Cr ar) Thorud
- 222° RESEARCH PROBLEMS IN FOREST POLICY  
(Cr ar) Irving, Skok, Winsness, Merriam

## Home Economics (HE)

### 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

### 5 HOME ECONOMICS IN CONTEMPORARY SOCIETY

Focus of the home economics professions and a historical review of their contributions; professional responsibility in meeting challenges and issues affecting home and families in society. (3 cr; IV MTWThF; McNH 227) Gallagher

### 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 #; I-II MTWThF; McNH 342) Abell

### 28 CONSTRUCTION AND REFINISHING OF HOME FURNISHINGS (Workshop)

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 #; June 13-29; I-VII 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 #; VI-VII MTThF; McNH 128) Ar

### 76 NUTRITION OF THE FAMILY

Principles of nutrition and the problems of food selection most commonly met in everyday living. (4 cr, §170, §171; prereq 31, 40, physiology or human biology; V MTWThF, III-IV Th; McNH 201) Swan

### 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

**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 227) Tallman

**First  
Term  
Courses**

**100 HOMES OF THE WORLD (Workshop)**

(3 cr; June 13-29; I-VII MTWThF; McNH 433) Esteros

**115 SOCIOLOGICAL AND ECONOMIC ASPECTS OF CLOTHING**

Effects of clothing on individual, society, and economy; psychological, sociological, and economic aspects of fashion. (3 cr; prereq 50, AgEc 2 or Econ 2, Soc 1 or 1A, Psy 2, or #; II-III MWF; McNH 303) Grindereing

**123 HISTORY OF HOME INTERIORS AND FURNISHINGS I**

Historic styles in interiors and home furnishings with their corresponding styles in exteriors; effect of historic styles on contemporary design in home furnishings. (3 cr; prereq 120 or equiv; IV MTWThF; McNH 360) Ludwig

**126 CRAFT PROBLEMS II**

Advanced craft design in one selected medium. Readings. (3 cr; prereq 25 or 26 or #; I-II MTWThF; McNH 342) Abell

**127 PURCHASING HOME FURNISHINGS (Workshop)**

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; June 30-July 15; I-VII MTWThF; McNH 433) Myren

**134 CONSUMER SELECTION GUIDES FOR HOUSEHOLD EQUIPMENT (Workshop)**

Important construction and operating components of current models of selected appliances. Suitability of the appliances for kitchen and laundry plans that are in accord with research-based recommendations on kitchen and laundry planning. (3 cr; prereq 49 or equiv, 86 or equiv, 3 cr in related art, and 1 yr experience in teaching, extension, or business, or #; June 13-29; 8:30-11:30 MTWThF and hrs ar; McNH 128) Ehrenkranz

**139 ADVANCES IN THE MANAGEMENT AND PREPARATION OF FOOD**

Recent developments in food materials and methods of preparation; their implications in the management of time, money, and energy expenditures. (3 cr; not for grad cr; prereq 40 or equiv; VI 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

**153 RECENT DEVELOPMENTS IN CLOTHING CONSTRUCTION (Workshop)**

Discussion, demonstration, and laboratory work with emphasis on management of time and materials, including newer construction techniques. (3 cr; prereq 53 or #; June 30-July 15; 8:00-12:00 and 1:00-3:00 MTWThF; McNH 327) Davis

**174 NUTRITION TOPICS**

Assigned readings, reports, and discussions of nutrition topics. (1 cr; prereq 170; IV WF; McNH 48) Morse

**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; VI MTWThF; McNH 48) Ar

**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

**Horticultural Science (Hort)****131 POMOLOGY**

Lecture, laboratory, and field trips. Taxonomy and the role of climate, photoperiod, nutrition, growth regulators, chemical weed control, etc., on fruit production. (3 cr; prereq #; hrs and room ar) E T Andersen

**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, Davis, Lauer, Mullen, E T Andersen, W R Andersen

## Plant Pathology and Physiology (PIPa) ††

- 201° RESEARCH IN NEMATOLOGY  
Taxonomy, or ecology, of plant parasitic and free-living terrestrial or aquatic nematodes.  
(Cr ar; prereq PIPa 101 or #) Kernkamp, MacDonald
- 203° RESEARCH IN PLANT PATHOLOGY  
Special assignment of work in laboratory and field problems in pathological research.  
(Cr ar) Kernkamp, Christensen, Eide, French, Hart, Kommedahl, Rowell, Wilcoxson, Anderson, Moore
- 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 processes; morphology or physiology of special forms. (Cr ar; prereq 105, 106, 107) Christensen, Anderson
- 254° RESEARCH PROBLEMS IN PLANT PHYSIOLOGY  
Special assignment of work in plant physiology. (Cr ar) Rowell, Linck, Sudia, Stadelmann, O'son

## Poultry Science (Poul)

- 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
- 219° RESEARCH IN AVIAN PHYSIOLOGY  
(Cr ar; prereq #; hrs ar) Phillips

## Rhetoric (Rhet)

### 1 COMMUNICATION I

Written communication. Writing from observation and experience. Attention to grammar, sentence, and paragraph construction, punctuation, spelling. Progress tests. (3 cr; limited to 25 students; I MTWThF; AgEng 108) King

### 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; limited to 30 students; Sec 1-5 meet on Mpls Campus) Wright, King, Marchand, Price

Sec 1, I MTWThF, Ar  
Sec 2, II MTWThF, Ar  
Sec 3, III MTWThF, Ar

Sec 4, IV MTWThF, Ar  
Sec 5, V MTWThF, Ar  
Sec 6, III MTWThF, AgEng 315

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



**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 108) Lair

**First  
Term  
Courses**

## **Soil Science (Soil)**

**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; hrs ar) Martin, Burson, Blake, Arneman, Rust, Farnham, Grava, Caldwell, MacGregor, Schmidt, Adams, Baker

# College of Biological Sciences

For general information on the College of Biological Sciences, see section on Schools, Colleges, and Special Programs.

## Botany (Bot) ††

### 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; limited to 158 students; lect V MTWTh, V-VI F, Bo B6; lab VI-VIII MTWTh, Z 101) Ar

### 54-104 SURVEY OF THE PLANT KINGDOM

Brief consideration of evolutionary relationships throughout the plant kingdom, especially as illustrated by life histories. (5 cr; limited to 15 students; prereq Biol 2; II-IV MTWThF; Bo 5) Ar

### 194° PROBLEMS

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

## Biochemistry (BioC)

### 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, Gander, Glass, Lovrien, Warner

### 221 ADVANCED CARBOHYDRATE CHEMISTRY

Lectures and assigned reading on composition, structure, chemical and physical properties, and biochemical functions of carbohydrates. (2 cr; prereq 143 or MdBc 144; I MTWTh; 116 SnH) Lineback

## Zoology (Zool) ††

### 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) Ar

### 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

### 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

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†† 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.

# Biology Session

## LAKE ITASCA FORESTRY AND BIOLOGICAL STATION

*For general information on the Biology Session at Lake Itasca, see section on Schools, Colleges, and Special Programs, or write for Biology Session bulletin, Summer Session, 6690 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.*

### Botany (Bot)

- 116 SUMMER FLORA OF MINNESOTA  
(5 cr; limited to 20 students; prereq 52 or equiv or #; TF) Morley
- 135 ECOLOGY OF THE ITASCA REGION  
(5 cr; limited to 20 students; prereq 50 or 130 or #; MTh) Buell
- 138 FRESHWATER AND WETLAND ECOLOGY  
(5 cr; limited to 20 students; prereq 50 or #; WS) Sjörs
- 155 FRESHWATER ALGAE  
(5 cr; limited to 20 students; prereq 10 cr in botany, biology, or zoology, or #; MTh) Brook
- 196° PROBLEMS IN ECOLOGY, TAXONOMY, BRYOLOGY, OR ALGOLOGY  
(Cr ar; prereq #) Staff
- 208° RESEARCH PROBLEMS IN TAXONOMY  
(Cr ar; prereq #) Morley
- 224° RESEARCH PROBLEMS IN ECOLOGY  
(Cr ar; prereq #) Buell
- 236° RESEARCH PROBLEMS IN CRYPTOGRAMS  
(Cr ar; prereq #) Brook, Sjörs

### Entomology, Fisheries, and Wildlife (Ent)

- 59 FIELD ENTOMOLOGY  
(5 cr; limited to 15 students; prereq Biol 2 or equiv; TF) Cook
- 124 THE BIOLOGY OF IMMATURE INSECTS  
(5 cr; limited to 15 students; prereq 59 or 74 or equiv or #; WS) Cook
- 162 VERTEBRATE ECOLOGY  
(5 cr; limited to 20 students; prereq Bot 50 and Zool 94, or equiv; MTh) Tester, Marshall
- 196° SPECIAL PROBLEMS IN ENTOMOLOGY, FISHERIES, AND WILDLIFE  
(Cr ar; prereq #) Cook, Marshall, Tester

### Soil Science (Soil)

- 130° SPECIAL PROBLEMS IN SOILS  
(Cr ar; prereq #) Farnham
- 137° SOILS AND THE ECOSYSTEM  
(5 cr; limited to 20 students; prereq Bot 50 or equiv or #; TF) Farnham

### Zoology (Zool)

- 72 NATURAL HISTORY OF INVERTEBRATES AND FISHES  
(5 cr; limited to 10 students; prereq Biol 2 or #; MTh) Cole

- 115 **ADVANCED NATURAL HISTORY OF INVERTEBRATES AND FISHES**  
(5 cr; limited to 10 students; prereq 15 cr in zoology or ¶; MTh) Cole
- 119 **LIMNOLOGY**  
(5 cr; limited to 20 students; prereq 15 cr in biology or ¶; WS) Underhill
- 135 **FIELD ORNITHOLOGY**  
(5 cr; limited to 15 students; prereq 15 cr in zoology or ¶; WS) Swanson
- 195° **PROBLEMS IN ORNITHOLOGY, ECOLOGY, AND LIMNOLOGY**  
(Cr ar; prereq Biol 2 or equiv, and ¶) Cole, Swanson, Underhill

# School of Business Administration

For general information on the School of Business Administration, see section on Schools, Colleges, and Special Programs.

## Accounting (Acct)

- 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 MWF, CB 205, Berryman      Sec 3, IV MTWThF, CB 205, Bentley  
Sec 2, II MTWThF, CB 145, Smith
- 25 PRINCIPLES OF ACCOUNTING**  
Continuation of Acct 24. (3 cr, §55B; prereq 24; IV MTWThF; CB 225) Smith
- 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])  
Sec 1, 7:35-8:50 MTWThF, CB 225, Pavlock  
Sec 2, 11:00-12:15 MTWThF, CB 255, Pavlock
- 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 430) Ar
- 75A†† ACCOUNTING LABORATORY I**  
Application of principles of accounting to a series of transactions. (1 cr for both terms; prereq 26 or equiv; VI-VII T; CB 255) Ar
- 105A†† INTERMEDIATE ACCOUNTING I**  
Review of accounting processes, nature and measurement of business income. (3 cr for both terms; prereq 26 or equiv; III MWF; CB 255) Bentley
- 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. (3 cr for both terms, §55C; prereq 26 or equiv; I MWF; CB 430) Bentley
- 125†† AUDITING PRINCIPLES AND PROCEDURES**  
Verification of financial data. Consideration is given to procedures, programs, work papers, standards, and reporting. (4 cr for both terms; prereq 105C or ¶105C and 105B; II MTWF; CB 440) 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. (4 cr for both terms; prereq 55D or 105A or ‡; IV MTWF; CB 440) Heller
- 155A INTRODUCTION TO MANAGERIAL ACCOUNTING**  
(See Acct 55A) (3 cr, §24 or §55A; prereq grad or †)  
Sec 1, 7:35-8:50 MTWThF, CB 225, Pavlock  
Sec 2, 11:00-12:15 MTWThF, CB 255, Pavlock
- 175B DATA PROCESSING**  
Fundamentals underlying processing of data within a business organization; application of such fundamentals in manual, tabulating, and electronic data-processing systems, including programming of such activities as billing, payroll, inventory control, and costing. (3 cr; prereq 115B; 7:35-8:50 MTWF; CB 415) Ar

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

‡‡ Section 1 of Acct 24 runs through both terms. The student must enter in First Term and complete both terms to earn 3 credits.

- 185A†† **ADVANCED ACCOUNTING**  
Consolidated statement, fiduciary and fund accounting, partnership accounting. (3 cr for both terms; prereq 105C or ¶105C; III MWF; CB 430) Heller
- 265A **MANAGERIAL COST ACCOUNTING**  
(See Acct 55C) (3 cr, §55C, §115A, §115B; prereq 26 or equiv; II MTWThF; CB 430) Ar

## Business Finance (BFin)

- 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 105) Kroncke
- 66 **INVESTMENT FUNDAMENTALS**  
(Formerly 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; IV MTWThF; CB 145) 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; II MTWThF; CB 115) Stevenson
- 156 **CORPORATION FINANCE**  
(See BFin 56) (3 cr, §56; prereq grad, Acct 26 or 155B; I MTWThF; CB 105) Kroncke
- 257 **FINANCIAL MANAGEMENT**  
Analysis of financial problems of business enterprises, including the planning, raising, and control of short- and long-term funds. Attention directed to capital structures, valuation situations, capital budgeting, dividend policy. Presented through text, problem, and case material. (3 cr, §76, §old 276; prereq 56 or 156; II MTWThF; CB 115) Stevenson

## Business Law (BLaw)

- 58 **BUSINESS LAW: CONTRACTS**  
Law of contracts. Case methods used. (3 cr, §158; prereq Econ 2 or equiv; I MTWThF; CB 255) Wright
- 158 **BUSINESS LAW: CONTRACTS**  
(See BLaw 58) (3 cr, §58; prereq grad or §; I MTWThF; CB 255) Wright

## Industrial Relations (IR)

- 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 125) England
- 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) England

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

- 152 **PRINCIPLES OF INDUSTRIAL RELATIONS: LABOR MARKETING**  
(See IR 52) (3 cr, §52; prereq grad or #, Econ 2 or equiv; III MTWThF; CB 125) England
- 172 **PRINCIPLES OF INDUSTRIAL RELATIONS: MANPOWER MANAGEMENT**  
(See IR 72) (3 cr, §72; prereq Econ 2 or #; II MTWThF; CB 110) England
- 210 **ORGANIZATION THEORY**  
Survey of theories of organization. The basic focus is upon theories and research concerning work organizations, theories of structuring personal and functional relationships, informal and social organizations within work groups, and the impact of alternative approaches to organization upon individual behavior and performance. (3 cr; prereq 72 or 172; III-IV TTh; CB 230) Mahoney
- 222 **COMPENSATION THEORY**  
Analysis and evaluation of traditional economic wage theories, research findings in wage and salary determination and compensation levels and relationships, and development of modifications of wage theory appropriate to application in industrial relations. (3 cr; prereq 152 or 172; III-IV MWF; CB 230) Mahoney

## Insurance (Ins)

- 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 135) Williams
- 73 **LIFE AND HEALTH INSURANCE**  
Nature and relative importance of insurable personnel risks; analysis of life and health insurance contracts; programming; estate planning; business insurance, pricing, underwriting, and marketing methods. (3 cr, §203; prereq 53; IV MTWThF; CB 240) Williams
- 153 **RISK MANAGEMENT AND INSURANCE I**  
(See Ins 53) (3 cr, §53; prereq grad or #, Econ 2; II MTWThF; CB 135) Williams
- 203 **LIFE AND HEALTH INSURANCE**  
(See Ins 73) (3 cr, §73; prereq grad or #, 153; IV MTWThF; CB 240) Williams

## Management (Mgmt)

- 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 125) Dickson
- 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 common 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 105) Dickson

## Marketing (Mktg)

- 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 125) 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 115) Holloway

- 157 MARKETING FUNDAMENTALS**  
(See Mktg 57) (3 cr, §57; prereq grad or §, Econ 2 or equiv; II MTWThF; CB 125) 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 115) Harper
- 217 MARKET ANALYSIS AND RESEARCH**  
(See Mktg 97) (3 cr, §97; prereq QA 51 or QA 151 and 57 or 157; IV MTWThF; CB 115) 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 115) Harper

## Production (Prod)

- 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; II MTWThF; CB 140) 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 §; IV MTWThF; CB 105) Hoffmann

## Quantitative Analysis (QA)

- 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, I MTWThF, C 111, Kozelka      Sec 2, II MTWThF, C 111, Kozelka
- 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; II MTWThF; CB 230) Hastings
- 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 for both terms; prereq QA 5, Math 10 or equiv; lect I TTh; CB 240) Ar  
Sec 1, ar, CB 93, Ar      Sec 2, ar, CB 93, Ar
- 151 ELEMENTS OF STATISTICS**  
(See QA 51) (3 cr, §5, §Soc 45, §Psy 70; prereq grad or §, Math 10 or equiv or §; III MTWThF; CB 240) Hastings

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



## Transportation (Tran)

First  
Term  
Courses

### 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 125) Harper

### 154 TRANSPORTATION I: PRINCIPLES AND BUSINESS LOGISTICS

(See Tran 54) (3 cr, §54; prereq grad only, Econ 2 or equiv; IV MTWThF; CB 125) Harper

# College of Education

*For general information on the College of Education, see section on Schools, Colleges, and Special Programs.*

## Agricultural Education (AgEd)

- 145 **THE HIGH SCHOOL CURRICULUM IN AGRICULTURE**  
Philosophy, organization, and administration of instruction in agriculture departments in secondary schools. (3 cr; prereq sr, 10 cr in education; III-IV MTWThF first 3 wks, ar last 2 wks; Hr 301) Peterson
- 171 **PROCEDURES IN TEACHING AGRICULTURE**  
New developments in methodology of teaching agriculture; to assess innovations and procedures. Includes consideration of various levels of instruction. (3 cr; prereq #; I-II MTWThF first 3 wks, ar last 2 wks; Hr 301) Ar
- 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

## Art Education (ArEd)

- 17 **PICTORIAL EXPRESSION FOR ELEMENTARY EDUCATION**  
Materials, techniques, and ideas important to children's art expression, relationship to adult expression, and significance in educational growth. (3 cr; limited to 38 students; I-II MTWThF; WuH 240) Bradley
- 18 **DESIGN ACTIVITIES FOR ELEMENTARY EDUCATION**  
Relationships between art and nature. Problems in invention, arrangement and decoration, color, lettering, posters, bulletin board displays. (3 cr; limited to 34 students; III-IV MTWThF; WuH 210) Bradley
- 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. (3 cr; limited to 36 students; I-II MTWThF; WuH 220) Olson
- 81 **PUPPETRY IN EDUCATION**  
Use of simple puppetry as a teaching technique; problems of motivation and correlation with school subjects; construction, manipulation, and stage techniques related to school situations. (3 cr; limited to 34 students; III-IV MTWThF; WuH 220) Olson
- 153 **CURRICULUM BUILDING IN ART EDUCATION**  
Programs for exceptional children. (3 cr; limited to 40 students; I MTWThF; WuH 130) Hastie
- 158 **ART EDUCATION IN EUROPE**  
Current practices, problems, and achievements in art education in western Europe as compared with practices in American art education. (3 cr; limited to 40 students; II MTWThF; WuH 110) Gayne
- 189 **APPLICATION OF AESTHETIC THEORY IN EDUCATION**  
Contemporary theories of art, their psychological and philosophical foundations. Open to teachers, supervisors, and administrators concerned with art in general education at all levels. (3 cr; limited to 40 students; III MTWThF; WuH 130) Hastie
- 284 **RESEARCH IN ART EDUCATION**  
Research techniques; locating, defining, and studying basic problems. (3 cr; IV MTWThF; WuH 110) Gayne

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| 295* | <b>PROBLEMS: ART EDUCATION</b><br>Independent projects under staff guidance; may include advanced studio practice or technical problems requiring experimental or library research. (Cr ar; prereq #) Gayne, Hastie  | First<br>Term<br>Courses |
| 296  | <b>SEMINAR: ART EDUCATION</b><br>Reports, evaluation of problems, recent literature. Participation by art education staff and guest specialists from related departments and off campus. (1 cr; VI T; WuH 130) Gayne |                          |

## Institute of Child Development

### Child Psychology (CPsy)

- 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; I MTWThF; Arch 10) Laubengayer
- 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; II MTWThF; TNCD 113) Willoughby
- 140 **BEHAVIOR PROBLEMS**  
Types, origin, development, and treatment of behavior difficulties in normal children. (3 cr; prereq 80 or equiv; IV MTWThF; CD 218) Goldin
- 143 **PROBLEMS OF MENTAL DEFICIENCY**  
Diagnosis, care, training; social and vocational problems. (3 cr; prereq 80 or equiv; III MTWThF; CD 218) Horowitz
- 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; II MTWThF; CD 218) Nadeau
- 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; WuH 230) Dubanoski
- 190 **TOPICS: CHILD PSYCHOLOGY**  
Independent reading or research. (Cr and hrs ar; prereq #) Ruebush and staff
- 223 **SEMINAR: DEVELOPMENTAL PSYCHOLOGY**  
(Cr and hrs ar; limited to 15 students; prereq #) Becker
- 250 **PRACTICUM: CLINICAL CHILD PSYCHOLOGY**  
Supervised experience in psychodiagnostic work with emotionally disturbed children and their families. (5 cr; prereq #; hrs ar) Goldin
- 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

### Educational Administration (EdAd)

- 101 **PUBLIC SCHOOL ADMINISTRATION**  
Organization, administration, and general support of public schools in state and local school districts. (3 cr; not open to major in EdAd; prereq sr, 9 cr in education; II MTWThF; A 11A) Popper
- 128†† **WORKSHOP: EDUCATIONAL ADMINISTRATION (Data Processing for Schools)**  
A review of basic concepts and operations in electronic data processing. Emphasis on school applications in administrative, business, fiscal, pupil, and instructional functions.

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†† 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.

- (1-6 cr; limited to 25 students; prereq practicing educational administrators or #; June 29-July 15; IV-VII MTWThF; NH 201) Davis
- 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. II MTWThF; Arch 10) Pierce
- 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 coordination and operation of public elementary and secondary schools. (3 cr; III MTWThF; AH 101) 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; I MTWThF; A 11A) Domian
- 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; WuH 130) Lambert
- 226 SCHOOL PLANT PLANNING**  
Plant program planning and financing, including operation and maintenance of public school buildings. (3 cr; II MTWThF; JohH 105) Mueller
- 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; I MTWThF; C 315) 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
- 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, Davis, Lambert, Firth, Popper, Mueller, Nickerson, Pierce
- 239†† SCHOOL PRINCIPAL'S WORKSHOP**  
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. During the workshop each person will make more than 110 decisions relative to operation of the simulated school. (1-4 cr; limited to 25 students; IV-VII MTWThF; June 13-29; NH 201) Popper, Pierce
- 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; NH 107) 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; NH 122) Nickerson
- 270A PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION**  
(Cr ar; prereq #; hrs ar) Curtin, Lambert
- 270B PROBLEMS: SECONDARY SCHOOL ADMINISTRATION**  
(Cr ar; prereq #; hrs ar) Domian, Hooker, Davis, Popper, Firth, Mueller, Nickerson, Pierce

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†† 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.

# Educational Psychology (EPsy)

First  
Term  
Courses

## GENERAL COURSES

- 110 EDUCATIONAL MEASUREMENT IN THE CLASSROOM**  
(3 cr; each section limited to 35 students)  
Sec 1, IV MTWThF, Bu 123, Samuels      Sec 2, VI MTWThF, Bu 123, Becklund
- 116 INTRODUCTORY STATISTICAL METHODS**  
(Not equivalent to EPsy 216, 216A) (3 cr; each section limited to 60 students)  
Sec 1, I MTWThF, JohH 122, Archer      Sec 2, III MTWThF, JohH 113, Hennen
- 116A INTRODUCTORY STATISTICAL METHODS—LABORATORY**  
(2 cr; limited to 22 students; prereq ¶116; VI-VII TWTh; WuH 330) Schluck
- 117 BASIC PRINCIPLES OF MEASUREMENT**  
(3 cr; prereq 116 or 216 or Psy 70 or equiv; VI MTWThF; Bu 125) Anderson
- 133 INTRODUCTION TO GUIDANCE**  
(3 cr; prereq 9 cr in education; II MTWThF; A 205) Dugan
- 140 INSTRUMENTS AND TECHNIQUES OF MEASUREMENT**  
(3 cr; prereq sr, 110 or 117; III MTWThF; IV TTh; FraH B1) Archer
- 148 CLINICAL DIAGNOSIS OF READING DIFFICULTIES**  
(3 cr; limited to 20 students; prereq EdCI 145; II MTWThF; AH 9) Arnold
- 150 CLINICAL PRACTICE IN REMEDIAL TEACHING**  
Remedial tutoring of individual children who have difficulty in school learning. (3 cr; each section limited to 35 students; prereq EdCI 145 or 151 and ¶) Ar  
Sec 1, I MTWThF and 2 hrs ar, Pt 110      Sec 2, II MTWThF and 2 hrs ar, Pt 110
- 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; NH 107) Hall
- 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 50 students) Ar  
Sec 1, I MTWThF, A 116      Sec 2, IV MTWThF, A 116
- 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) Ar
- 183 EDUCATION OF GIFTED CHILDREN**  
(3 cr; prereq Ed 55B or 75B or equiv; III MTWThF; JohH 106) Reynolds
- 184 INTRODUCTION TO EDUCATION OF MENTALLY RETARDED CHILDREN IN THE ELEMENTARY SCHOOLS**  
(3 cr; prereq 182; IV MTWThF; JohH 122) Podolsky
- 185 EDUCATION OF AUDITORIALLY HANDICAPPED CHILDREN**  
(3 cr; hrs and room ar) Fulton
- 186 EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN**  
(3 cr; prereq grad or ¶; I MTWThF; AH 9) Wilderson
- 188 EDUCATION OF THE CULTURALLY DISADVANTAGED CHILD**  
(3 cr; prereq HEd 90, CPsy 90; II MTWThF; JohH 122) Wood
- 193 PSYCHOLOGY OF HUMAN LEARNING**  
(3 cr; each section limited to 60 students) Deno  
Sec 1, II MTWThF, C 315      Sec 2, IV MTWThF, C 315
- 208° METHODS IN EDUCATIONAL RESEARCH**  
Methods and techniques employed in the investigation and report of educational problems. (3 cr; II MTWThF; C 115) Hoyt
- 209 SEMINAR: RESEARCH PLANNING**  
(1 cr; VI MWF; Arch 140) 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, §142; limited to 20 students; prereq 110 or 117 or ¶117 and ¶; VII-VIII MTWThF; Pt 214) Duker

- 216 **STATISTICAL METHODS**  
(3 cr; prereq 116 or Psy 70 or equiv; I MTWThF; Bu 123) MacEachern
- 216A **STATISTICAL METHODS—LABORATORY**  
(2 cr; each section limited to 22 students; prereq ¶216) Lunney  
Sec 1, II-III TWTh, WuH 330      Sec 2, IV-V TWTh, WuH 330
- 218 **STATISTICAL METHODS (Part I)**  
This course extends through both summer terms. Students will register for this course at the beginning of first term and will receive credit at the end of second term. Students will not register for this course second term. (3 cr, †Part I-II; prereq 217; IV MWF; WuH 130) MacEachern
- 218A **STATISTICAL METHODS—LABORATORY (Part I)**  
This course extends through both summer terms. See EPsy 218. (2 cr, †Part I-II; limited to 22 students; prereq ¶218; II-III MF; WuH 330) Schluck
- 225-226 **COUNSELING THEORY AND PROCEDURE I AND II**  
Influences bearing on definition of counseling; theoretical approaches to counseling and vocational choice theories; measurement versus appraisal; diagnostic principles utilized. (3 cr each; prereq 140 or ¶140 and any one of the following: 133, 250 or Psy 130; II-III MTWThF; Bu 125) Blocher, Parker
- 233° **PROBLEMS: GUIDANCE AND PERSONNEL WORK**  
(1-9 cr; VI-VII MW; Bu 120) Dugan, Blocher, Parker, Tennyson
- 253° **RESEARCH PROBLEMS**  
(Cr and hrs ar; prereq §) Wilk, Hoyt, Reynolds, Duker, P Johnson, MacEachern, Podolsky, Wilderson, Wood
- 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; limited to 6 students; prereq 210 or equiv, EdCI 145, §; 1:00-4:00 MTWThF; Pt 110) Wesenberg 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) Wilderson, Wood, Elliott
- 293° **PSYCHOLOGY OF LEARNING**  
(3 cr; prereq 12 cr in psychology and educational psychology; I MTWThF; Arch 140) P Johnson
- 294° **RECENT THEORY AND RESEARCH IN HUMAN LEARNING**  
(3 cr; limited to 10 students; prereq §; III MTWThF; AH 350) P Johnson

## SECONDARY EDUCATION

- 282A-B **SUPERVISED PRACTICUM IN COUNSELING**  
(3 cr each; limited to 10 students; prereq §; V-VIII MTWThF; room ar) Burks, Lundgren

## HIGHER EDUCATION

- 281 **PRACTICE IN PERSONNEL WORK**  
Students must register for this course both terms (for a total of 6 credits) in order to receive credit for either term. (3 cr; prereq 226 or §; V-VI MTWThF; Bu 131) Parker

## General Education

### *Curriculum and Instruction (EdCI)*

#### GENERAL COURSES

- 105 **AUDIO-VISUAL MATERIALS IN EDUCATION**  
(3 cr; prereq sr; I MTWTh and 2 hrs lab ar; NH 211) Pearson
- 106 **CO-ORDINATING AN AUDIO-VISUAL EDUCATION PROGRAM**  
Criteria for equipment, facilities, and materials; in-service training of teachers; problems in schools or industry. (3 cr; prereq 105 or §; III MTWThF; NH 211) 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) Ar  
 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 207) Ashcroft
- 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; Pt 214) 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 116; 1:00-2:30 MTWThF; Pt 111) Ar
- 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 Mrs. Glenda Martin, 108 Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455) (3 cr; limited to 20 students; prereq #; V-VI MTWThF; A 12) Farmer
- 145 **READING DIFFICULTIES**  
 (3 cr; each section limited to 65 students; prereq 143A or 144 or equiv)  
 Sec 1, III MTWThF, Pt 214, Manning      Sec 2, IV MTWThF, JohH 113, Ar
- 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 214) Rubin
- 174-175-176 **CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY**  
 (3 cr each; limited to students attending full time spring quarter 1966; 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 #; I MTWThF; A 205) Ar
- 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 EdCI 115, 118 and #; III MTWThF; A 205) Ar
- 185 **ADVANCED METHODS IN TEACHING FOREIGN LANGUAGES**  
 New curriculums, classroom procedures; use of language laboratory and other mediums and evaluation techniques. Open to teachers of modern languages and registrants in language institutes. (3 cr; III MTWThF; AH 9) Birkmaier
- 201° **PROBLEMS: TEACHING SOCIAL STUDIES**  
 Individual research. (Cr and hrs ar; prereq 102 or 155 or 168, 204 or #) Gardner
- 205° **PROBLEMS: AUDIO-VISUAL EDUCATION**  
 (Cr and hrs ar; prereq #) Pearson
- 232° **PROBLEMS: TEACHING MATHEMATICS**  
 (Cr and hrs ar; prereq 230 or 231 or 291) Jackson, David Johnson, Stochl
- 271° **PROBLEMS: CURRICULUM CONSTRUCTION**  
 (Cr and hrs ar; prereq #) Birkmaier, Boeck, Chase, Curtin, Dykstra, Firth, Gardner, Gennaro, Humphreys, Jackson, Lambert, Manning, Odland, Stochl
- 273° **PROBLEMS: READING**  
 (Cr ar; prereq 143A or 144 or #) Chase, Dykstra, Kegler, Manning, Odland
- 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; AH 9) Birkmaier
- 296° **PROBLEMS: TEACHING ENGLISH**  
 (Cr and hrs ar) Chase, Dykstra, Kegler

## ELEMENTARY EDUCATION

- 60 TEACHING READING IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75A; III MTWThF; Bu 120) Mitchell
- 61 TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75B; II MTWThF; Pt 214) Ar
- 62 TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75A; Math 5; I MTWThF; JohH 113) Jackson
- 63 CHILDREN'S LITERATURE**  
(3 cr; IV MTWThF; Bu 120) Monson
- 64 TEACHING ENGLISH IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75A; II MTWThF; Pt 111) Dykstra
- 65 TEACHING SCIENCE IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75A; 10 cr in natural science; I MTWThF; Pt 111) Humphreys
- 102 TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL**  
The class is 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 214) Servey
- 103 TEACHING SCIENCE IN THE ELEMENTARY SCHOOL**  
The class is 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 s; Ed 75B or tchg exper; III MTWThF; JohH 105) 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 #; II MTWThF; FolH 306) Ashcroft
- 119 ELEMENTARY SCHOOL CURRICULUM**  
(3 cr; prereq Ed 75B or equiv; IV MTWThF; Pt 111) Servey
- 121 LITERATURE FOR THE ELEMENTARY SCHOOL**  
(3 cr; II MTWThF; Bu 120) Odland
- 143A TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL**  
The class is planned for graduate students and for summer students who already hold a Bachelor's degree. Undergraduate students should register for EdCI 60. (3 cr; each section limited to 65 students; prereq 9 cr in education)  
Sec 1, I MTWThF, Bu 120, Manning      Sec 2, II MTWThF, JohH 113, Ar
- 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, §149; prereq 62 or #; I MTWThF; JohH 114) Stochl
- 149B MATERIALS LABORATORY FOR ELEMENTARY SCHOOL MATHEMATICS INSTRUCTION**  
Printed and programmed materials, audio-visual aids, and community resources; laboratory projects and techniques of using mathematical devices and instruments. (3 cr; prereq 62 or 149A or #; III MTWThF; JohH 114) Stochl
- 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 #; II MTWThF; JohH 114) Jackson
- 150 SUPERVISION AND IMPROVEMENT OF INSTRUCTION**  
(3 cr; prereq 9 cr in education; III MTWThF; Pt 111) Lambert
- 153 TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75B or equiv; III MTWThF; Bu 123) 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 in primary, kindergarten, or nursery school or #; IV MTWThF; CD 105) Headley



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|------|--|-----------------------------------|
| 179  | <b>EDUCATION OF MENTALLY RETARDED CHILDREN IN THE ELEMENTARY SCHOOL</b><br>Curriculum content, materials, and methods of instruction for educable mentally retarded children. Preparation of units and development of teaching aids. (3 cr; prereq EPsy 184; I MTWThF; NH 209) Podolsky  | <b>First<br/>Term<br/>Courses</b> |
| 186  | <b>LABORATORY IN ELEMENTARY INSTRUCTIONAL PRACTICES</b><br>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 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 120) Jensen |                                   |
| 261* | <b>PROBLEMS: IMPROVEMENT OF INSTRUCTION</b><br>(Cr and hrs ar; prereq #) Boeck, Chase, Curtin, Dykstra, Humphreys, Jackson, Lambert, Manning, Odland, Stochl   |                                   |

## SECONDARY EDUCATION

- 101A†† **DRIVER EDUCATION I**  
(3 cr; limited to 32 students; prereq Δ; 1:00-2:20 MTWThF, behind-the-wheel hrs ar; Arch 25) Ar
- 101B†† **DRIVER EDUCATION II**  
(3 cr; limited to 32 students; prereq 101, Δ; 2:30-3:50 MTWThF, behind-the-wheel hrs ar; Arch 25) Ar
- 113 **HIGH SCHOOL CURRICULUM**  
(3 cr; prereq Ed 55B or equiv; II MTWThF; NH 207) Ar
- 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 EdCI 118, and #; II MTWThF; NH 209A) Ar
- 122 **LITERATURE FOR ADOLESCENTS**  
(3 cr; prereq Ed 55B or junior-senior high school tchg exper; II MTWThF; Bu 123) 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; IV MTWThF; NH 209) Tennyson
- 135 **GROUP PROCEDURES IN GUIDANCE**  
Content and materials for home room groups, occupation units, and other guidance courses in junior and senior high school. (3 cr; prereq EPsy 133 or #, 9 cr in education; I MTWThF; CD 218) Tennyson
- 139 **CO-ORDINATION TECHNIQUES**  
Problems of co-ordinators in the co-operative part-time program. Guidance and selection; placing students in work stations, assisting job adjustments, developing the training program. (3 cr; VI MTWThF; Bu 105) Klaurens
- 140 **TEACHING OF SPEECH**  
(3 cr; prereq Spch 5 or equiv or #; III MTWThF; FolH 306) Brock
- 141 **CO-OPERATIVE PART-TIME WORK EXPERIENCE PROGRAMS**  
Planning, organizing, curriculum building, plant and equipment, promoting and evaluating co-operative part-time programs. (3 cr; IV MTWThF; Bu 105) Meyer
- 144 **TEACHING READING IN SECONDARY SCHOOLS**  
(3 cr; prereq 9 cr in education; I MTWThF; Bu 125) Chase
- 148 **POST-SECONDARY BUSINESS AND DISTRIBUTIVE EDUCATION**  
Junior college and area technical-vocational school business and distributive education programs. Determining needs, curriculums, facilities, admissions practices, placement, and follow-up of students, teacher qualifications, interorganizational relations. (3 cr; II MTWThF; Bu 105) Ashmun
- 156 **TRENDS IN BUSINESS EDUCATION**  
(3 cr; IV MTWThF; FolH 204) Ar
- 158 **MATERIALS AND METHODS IN OFFICE AND STENOGRAPHIC PROCEDURES**  
Recent research and developments in teaching of office practice, clerical practice, and office machines. (3 cr; I MTWThF; NH 209A) Ar

†† Advance application necessary. Write Dean's office, 204 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

- 159 **MATERIALS LABORATORY, SECONDARY SCHOOL DISTRIBUTIVE EDUCATION**  
Development of specific related vocational materials for distributive occupations, co-operative part-time classes. (3 cr; prereq 137A or EdT 90C or #; I MTWThF; Bu 105) Meyer
- 168 **CURRENT DEVELOPMENTS IN THE SOCIAL STUDIES**  
(3 cr; prereq grad or #; II MTWThF; NH 107) Gardner
- 190 **CURRENT DEVELOPMENTS IN SECONDARY SCHOOL SCIENCE TEACHING**  
(3 cr; prereq EdT 68B-C or 68M, equiv undergrad courses or science tchg exper; II MTWThF; NH 209) Gennaro
- 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; AH 350) Ar
- 194 **NEW CONTENT AND METHODS IN MATHEMATICS**  
Trends and experimentation with content; special programs for the gifted and the slow learner; methods in mathematics; program evaluation. (3 cr; prereq experience in math teaching; VI MTWThF) Ar
- 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; NH 209) Kemp, Piche
- 199E **INTERNSHIP; RECREATION LEADERSHIP**  
(Cr and hrs ar; available for master of education students in recreation) Roys
- 200 **ORGANIZATION AND SUPERVISION OF BUSINESS EDUCATION**  
(3 cr; prereq #; III MTWThF; Bu 105) 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 193, 293, or #; IV MTWThF; PeikH 365) Firth
- 287° **RESEARCH FOUNDATIONS OF SECONDARY SCHOOL SCIENCE TEACHING**  
(3 cr; I MTWThF; FraH B20) Boeck
- 295 **READINGS IN ENGLISH AND MODERN LANGUAGE EDUCATION**  
(1-3 cr; prereq MA or equiv; hrs ar) Birkmaier, Keglér

## Education (Ed)

- 55A **INTRODUCTION TO SECONDARY SCHOOL TEACHING**  
Open only to those 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; SciCB 175) Randleman  
 Sec 1, II MTWThF, Ph 143, Ar                      Sec 4, III MTWThF, Ph 145, Ar  
 Sec 2, II MTWThF, Ph 145, Ar                      Sec 5, IV MTWThF, Ph 143, Ar  
 Sec 3, III MTWThF, Ph 143, Ar
- 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 I MTWThF; Arch 25) Samuels, Mitchell  
 Sec 1, II MTWThF, Arch 25, Mitchell                      Sec 3, II MTWThF, Arch 20, Stang  
 Sec 2, II MTWThF, Arch 30, Harris

## History and Philosophy of Education (HEd)

First  
Term  
Courses

- 90 **THE SCHOOL AND SOCIETY**  
(3 cr; each section limited to 75 students; prereq sr)  
Sec 1, I MTWThF, Arch 40, Vikner      Sec 3, III MTWThF, Arch 35, Beck  
Sec 2, II MTWThF, Arch 40, Vikner
- 131 **COMPARATIVE EDUCATION**  
European, Asiatic, and American systems and philosophies of education; explores possibilities of international education. (3 cr; III MTWThF; NH 107) Corcoran
- 141 **CRITICAL ISSUES IN CONTEMPORARY EDUCATION**  
Introduces students to ideas involved in current theory and practice. (3 cr; II MTWThF; Arch 35) Beck
- 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)

- 62 **EVALUATION IN HOME ECONOMICS**  
Techniques for measuring progress. (3 cr, §192; prereq 60, ¶61; 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
- 160B **HOME ECONOMICS CURRICULUM (College level)**  
Examination of research and literature; course and program development in higher education; analysis of current college programs; production and evaluation of curriculum material. (3 cr, §193B; prereq #; hrs ar; June 13-29) Ar
- 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, §292; prereq 62 and #; III-IV TTh, IV M; McNH 102) Brown
- 190 **READINGS IN HOME ECONOMICS EDUCATION**  
Independent study under tutorial guidance. (1-3 cr; prereq #; hrs ar) Ford
- 201° **PROBLEMS: HOME ECONOMICS EDUCATION**  
Independent study of current educational problems. (1-9 cr, §293; prereq 200A and #; hrs ar) Ford
- 295° **SEMINAR: HOME ECONOMICS EDUCATION**  
Discussion and reports. (1 cr; hrs ar) Ford

## Industrial Education (Ind)

- 90-91-92 **INDEPENDENT STUDY**  
Self-directed study preceded by classroom instruction in basic research procedures. (3 cr each; prereq jr or #; VI MTWThF and ar; TNCD 105) Miletich
- 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 #; II MTWThF; TNCD 116) Miletich
- 106 **INDUSTRIAL EDUCATION WORKSHOP: PLASTICS**  
Instruction and experience in the use and teaching of plastics, involves lecture, discussion, laboratory experiences, and resource development. (3 cr; limited to 24 students; prereq tchg exper or #; lect VI TTh, ME 106; lab VI-VII MWF and VII TTh, ME 251) Holtby
- 111 **INSTRUCTIONAL MATERIALS LABORATORY FOR NONMAJORS—GENERAL WOODWORK AND CRAFTS**  
For special education majors, elementary teachers, and recreational leaders; individual and group instruction and projects. (3 cr; limited to 24 students; prereq tchg exper or #; VIII-IX MTWThF; TNCD 218) Duenk

- 125 PHILOSOPHY AND PRACTICE OF INDUSTRIAL EDUCATION**  
History, objective, development, and current practices of the field. (3 cr, §35; IV MTWThF; TNCD 116) Miletich
- 135 INDUSTRIAL COURSE CONSTRUCTION**  
Principles and techniques; experience in planning, organizing, and building a teaching guide. (3 cr, §40; I MTWThF; TNCD 113) 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) Kavanaugh

## Methods and Student Teaching (EdT)

- 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 #) Ar
- 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) Mork
- 53A TEACHING HANDICAPPED CHILDREN**  
Observing work with special classes; teaching under direction. (3 cr; limited to 1 student; prereq #) Ar
- 69†† STUDENT TEACHING IN THE SOCIAL STUDIES**  
(1 cr; prereq jr, ¶Ed 55A; hrs ar) Ar
- 77†† STUDENT TEACHING IN THE NURSERY SCHOOL**  
Five half days per week in supervised classroom participation. (3 cr; prereq sr, #; hrs ar) Laubengayer
- 84 PRACTICE AND FIELD WORK IN RECREATION LEADERSHIP**  
(2 cr; prereq recreation major; hrs ar) Roys
- 85 PRACTICE AND FIELD WORK IN RECREATION**  
(2 cr for majors, 1 cr for minors; prereq recreation majors or minors; hrs ar) Roys

## Music Education (MuEd)

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

- 51 TEACHING MUSIC**  
(Kindergarten-Primary grades) For nonmusic majors. Appreciation; methods. (2 cr; each section limited to 20 students; prereq Mus 4)  
Sec 1, I MTWThF, WuH 320, Swanson Sec 3, IV MTWThF, WuH 320, Nyberg  
Sec 2, III MTWThF, WuH 320, Nyberg
- 52 TEACHING MUSIC**  
(Intermediate grades) For nonmusic majors. Appreciation, methods, materials. (2 cr; each section limited to 30 students; prereq 51, Mus 4 or #)  
Sec 1, I MTWThF, ScH 3, Sieber Sec 2, III MTWThF, ScH 3, Swanson
- 61†† STUDENT TEACHING AND SUPERVISION OF MUSIC**  
(3-12 cr; prereq sr, 53, Ed 55B, #; hrs ar) Caswell
- 101 PHILOSOPHIES OF MUSIC EDUCATION**  
Analysis and interpretation of philosophies in music and education; objectives, trends, curriculum, evaluation. (3 cr; II MTWThF; ScH 104) Borg
- 114 READING AND STYLISTIC INTERPRETATION OF CHORAL MUSIC**  
Defining means of teaching choristers to read and interpret music of representative periods and styles of compositions. (3 cr; prereq 104 or #; I MTWThF; NMA 4) Caswell

†† Student teaching is open only to students in College of Education regular degree programs. Application must be made prior to May 27. Forms and instructions are available in the Student Teaching Office, 227 Burton Hall.

- 115 ADVANCED STRING TECHNIQUES**  
 Research reports, lecture-demonstrations, and performance by class members and by school age laboratory groups. (3 cr; prereq Bachelor's degree in music education or #; V MTWThF; MusEd 200) Sieber
- 118 ADVANCED WIND AND PERCUSSION TECHNIQUES**  
 Research reports, practical performances, and lectures. (3 cr; prereq Bachelor's degree in music education or #; VII MTWThF; NMA 4) Benciscutto
- 151 SUPERVISION AND ADMINISTRATION OF ELEMENTARY SCHOOL MUSIC**  
 Analysis of syllabi; evaluation of materials; readings; supervisory and administrative techniques; new trends. (3 cr; prereq Bachelor's degree in music or music education; III MTWThF; Sch 104) Borg, Caswell
- 224\* RESEARCH PROBLEMS**  
 (3-9 cr; prereq knowledge of elementary statistics) Borg, Caswell

## Physical Education for Men (PEM)

- 1A†† BEGINNING ARCHERY**  
 (1 cr; each section limited to 22 students) Eibner  
 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, V-VI MW, Golf Course, Bolstad  
 Sec 2, III-IV TTh, Golf Course, Tutt      Sec 4, V-VI TTh, Golf Course, Bolstad
- 1C BEGINNING SWIMMING OR TENNIS**  
 (1 cr each; each section limited to 20 students)  
 Sec 1, Swimming, V MTWTh, CH Pool, Webster  
 Sec 2, Tennis, IV-V MW, Tennis Courts, Serfass  
 Sec 3, Tennis, IV-V TTh, Tennis Courts, Serfass  
 Sec 4, Tennis, III MTWTh, Tennis Courts, Serfass
- 2A†† LIFE SAVING**  
 (1 cr; limited to 20 students; prereq swim 1 qtr mile; VI MTWTh; CH Pool [co-ed])  
 Mowerson
- 2B†† WATER SAFETY INSTRUCTOR'S COURSE**  
 (1 cr; limited to 24 students; prereq Life Saving Certificate; IV MTWThF; NGW 58  
 [co-ed]) Stoner
- 2C†† MODERN DANCE**  
 (1 cr; III MTWTh; NGW 153 [co-ed]) Shick
- 4C†† TRACK FUNDAMENTALS**  
 Demonstrations and practice in all track and field events. (1 cr; III MTWTh; CH 214)  
 Griak
- 7A†† GAMES AND RELAYS**  
 Low organized games for gymnasiums, playgrounds, camps; social games for recreation; progressive game parties; relays. (1 cr; III MTWTh; CH Gym) Donnelly
- 9B†† SQUARE AND BALLROOM DANCE**  
 Instruction in circle, line, square, mixer, couple dances; square dance calling. (1 cr;  
 V MTWTh; NGW 151 [co-ed]) Shick
- 50 HUMAN ANATOMY**  
 Emphasizes bones, nerves, and muscles and their significance in physical education. (3  
 cr; I MTWThF; CH 206) Osell
- 63 ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION**  
 Problems of organization, administration, and supervision in required and elective  
 courses, recreation, and interschool athletics. (3 cr; prereq 32 or 82, 55; II MTWThF;  
 CH 215) Donnelly
- 68 BASKETBALL COACHING**  
 Theory, styles of offense and defense, the conditioning and handling of players. (2 cr;  
 prereq 4B; III MTWThF; CH 215) Kundla

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

- 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
- 101 **FOUNDATIONS OF PHYSICAL EDUCATION**  
Establishment of guidelines 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; II MTWThF; CH 206) McAdam
- 112 **PROGRAMMING IN RECREATION**  
Principles of program planning for an organized offering of recreation opportunities. (3 cr; prereq 57, 58; I MTWThF; CH 215) Schultz
- 118E† **PROBLEMS: TEACHER EDUCATION IN HEALTH, PHYSICAL EDUCATION, AND RECREATION**  
Individual problems course for MED students. (Cr ar; prereq #) Alexander, Donnelly, McAdam
- 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 #; V MTWThF; CH 214) Alexander
- 160 **WORKSHOP: PREVENTION AND CARE OF ATHLETIC INJURIES**  
An overview of problems related to athletic injuries in girls' and boys' secondary and college programs. Demonstrations and practice in technique and familiarity with instruments for athletic rehabilitation. (3 cr; limited to 30 students; 1:00-4:30 MTWThF, July 5-15; CH 215) McAdam, Stein
- 171 **APPLIED PHYSIOLOGY**  
Lectures and laboratory problems demonstrating the physiological bases for objectives and content of the physical education program. (3 cr; prereq PubH 92 or Phys 51 or eqniv; IV MTWThF; CH 214) Alexander
- 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, Alexander, McAdam

## Physical Education for Women (PEW)

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, 22A, 25, 32, 46; 45, 70 for elementary physical education minors.
2. Courses offered this summer which apply to the undergraduate major in physical education are PEW 7, 8, 10, 11, 22A, 25, 45.
3. Courses offered this summer which apply to advanced and graduate degrees with a major in physical education are PEW 103, 114, 115, 118E, 124, 224.

Required Physical Education—Those interested in meeting a college requirement in physical education may register for PEW 3, 7, 8, 10, 11, 32, 46.

Elementary School Majors—PEW 45 and 70 are 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.

- 2A†† LIFE SAVING**  
(1 cr; limited to 20 students; co-ed; prereq swim 1 qtr mile; VI MTWTh; CH Pool) Mowerson
- 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) Eibner  
Sec 1, V MTWTh, NGW 60 (Co-ed)      Sec 2, VI MTWTh, NGW 60 (Co-ed)
- 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. (1 cr; each section limited to 20 students)  
Sec 1, I MTWTh, NGW 151, J Young      Sec 3, III MTWTh, NGW 151, J Young  
Sec 2, II MTWTh, NGW 151, J Young      Sec 4, IV MTWTh, NGW 151, Eibner
- 8†† 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)  
Sec 1, Intermediate Golf, I MTWTh, NGW 60, Plack  
Sec 2, Beginning Golf, II MTWTh, NGW 60, M Young  
Sec 3, Beginning Golf, III MTWTh, NGW 60, M Young  
Sec 4, Beginning Golf, IV MTWTh, NGW 60, M Young
- 10†† MODERN DANCE**  
Instruction will include skills and techniques of modern dance as well as dance composition. (1 cr; III 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; II MTWTh; NGW 153) Shick
- 22A†† FOLK AND BALLROOM DANCE**  
Techniques of ballroom dance and basic square, round, circle, and line dances including methods of organizing classes and calling. (1 cr; co-ed; V MTWTh; NGW 151) Shick
- 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; limited to 35 students; V MTWThF; NGW 3) Wilson
- 32†† SWIMMING**  
Instruction includes orientation activities, crawl, side stroke, backstroke, diving, and water safety skills. (1 cr; each section limited to 20 students) Stoner  
Sec 1, Beginning Swimming, V MTWTh, NGW 58  
Sec 2, Intermediate and Advanced Swimming, VI MTWTh, NGW 58
- 45†† INTRODUCTION TO PHYSICAL EDUCATION ACTIVITIES FOR THE ELEMENTARY SCHOOL**  
Laboratory course for PEW 70. Experience with graded activities for the elementary school child; problems of organization and teaching progressions considered. (2 cr; limited to 45 students; prereq elem ed majors only; VI MTWThF; NGW 153) Plack
- 46†† TEACHING OF AQUATICS**  
Methods and procedures related to organization, content, and teaching of swimming and life saving; opportunity to qualify for the American Red Cross Water Safety Instructor's Certificate. Pool control and sanitation. (2 cr; limited to 24 students; co-ed; prereq current American Red Cross Life Saving Certificate; IV MTWThF; NGW 58) Stoner
- 70 TEACHING HEALTH, PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL**  
Methods of instruction in health and physical education for the elementary education major. (3 cr; limited to 40 students; prereq 45, 3rd qtr soph, elem ed major, III MTWThF, NGW 201) Plack
- 103 ROLE OF THE SCHOOL HEALTH EDUCATOR IN HEALTH APPRAISAL**  
Role of the school medical and dental advisers, nurse, teachers, health educator, and other school personnel in health protection and maintenance phases of school health education. (3 cr; prereq sr, #; III MTWThF; NGW 3) Slocum
- 114 ADMINISTRATION OF SCHOOL HEALTH EDUCATION**  
Co-ordination of total program; health supervision and guidance; relationships between public schools and governmental health organizations and agencies; evaluation; guidance

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

in the solution of individual professional problems. (3 cr; prereq sr, PEW 83, PubH 50, or equiv, or #; II MTWThF; NGW 3) Slocum

**115 ADVANCED KINESIOLOGY**

Techniques of mechanics and kinesiology of movement; skills; evaluation of pertinent research methods and devices; application to individual projects. (3 cr; prereq undergrad course in kinesiology, or #; I MTWThF; NGW 3) Wilson

**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 recreational function of physical education. Individual projects and conferences. (Cr ar; prereq #; hrs ar) Slocum, Wilson

**224\* RESEARCH PROBLEMS: SCHOOL HEALTH, PHYSICAL EDUCATION, AND RECREATION**

Individual problems and conferences for M.A. and Ph.D. candidates. (Cr ar; prereq 136 and 135 or EPsy 116 or #; hrs ar) Slocum, Wilson

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†† Courses marked "E" carry credit toward the degree of master of education.



# General College

*For general information on the General College, see section on Schools, Colleges, and Special Programs.*

## 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

## 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

## 5C PROBLEMS OF ETHICS

The student is given an opportunity to discover and analyze the presuppositions, principles, and standards which he employs in his attempts to do what is right and avoid doing what is wrong. He is asked to consider the nature and justification of moral judgments, extent of individual moral responsibility, and ethical foundations of democratic society. (3 cr; IV MTWThF; Arch 35) Pavlos

## 7D GEOLOGY

Origin and interpretation of the surface features of the land. A consideration of Minnesota's 10,000 lakes leads to the study of the work of glaciers, water, and wind. Mountain-making, common rock types and their origin, age of the earth, and significance of fossils are briefly treated. (5 cr; III-IV MTWThF; SciCB 175; field trips or lab VI-VII T) M Harris

## 8A APPLIED MATHEMATICS

Measurement, calculation with measured data, use of the slide rule, formulas, and equations. The most commonly useful mathematical skills are built up in a steady progression against a background of practical application. Problems provide a broad acquaintance with the language and nature of many fields. (3 cr; I MTWThF; NH 207) Schwabacher

## 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 hrs ar; SciCB 125) Dearden

## 17 CONSUMER PROBLEMS

Fundamentals of financial planning and personal economic decision-making are studied. These concepts are then applied to specific problems, such as: buying insurance protection, saving and investing, using credit facilities, and obtaining and evaluating consumer information. (3 cr, §17A, 17B; IV MTWThF; Arch 30) Roger Larson

## 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. (5 cr; I-II MTWThF; NH 213) Wallace

## 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; II MTWThF; NH 111) Gates

## 29A WORLD LITERATURE I

Seeks to integrate life and literature and to relate the student's experience 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; C 225) Burrows

**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. He 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, Finnberg  
Sec 2, III-IV MTWTh, NH 216, Rathburn

**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

**39 INTRODUCTION TO CULTURAL ANTHROPOLOGY**

By use of a whole-culture approach and the comparative method, basic principles of anthropology are explored. Facts from particular cultures serve as examples of these universal principles. The goal is to understand a way of life in terms of the members who are living it before any attempt is made to assess the culture in terms of the context of world culture. (3 cr; I MTWThF; Arch 5) Appleby

**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 40) F Harris

**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; II MTWThF; Arch 5) Jones

# Law School††

- 125 **REMEDIES**  
Equity, damages, restitution; primary emphasis upon equitable relief, with legal material largely restricted to contract. (6 cr; I MTWThF; FraH 120) Wolfram
- 142 **CONFLICTS**  
Jurisdiction, judgments, choice of law. (6 cr; III MTWThF; FraH 20) Cound
- 162 **STATUTORY INTERPRETATION**  
An examination of the problems involved in interpreting and drafting statutes. Particular emphasis on the use of legislative history in the interpretation of federal statutes. Several problems will be assigned. (3 cr; V MTW from July 5; FraH 120) Christie
- 172 **LEGAL PROBLEMS OF A WELFARE STATE**  
Consideration of the old age and survivors and dependents insurance aspects of the social security system and the problems raised by governmental efforts to aid those in need. (3 cr; IV ThF [1st term], IV MTW [2nd term]; FraH 20) Lewis
- 184 **UNFAIR COMPETITION**  
A study of common law and statutory regulation of trade names and trade marks, appropriation of values, false and misleading advertising, copyright, patents, and disparagement of products. (6 cr; II MTWThF; FraH 120) Livermore
- 188 **THE CHILD AND THE STATE**  
Intensive study of adoption, illegitimacy, neglect of children, delinquency, and custody proceedings. (3 cr; IV MTW [1st term], IV ThF [2nd term]; FraH 20) Levy

Note—Hours and 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.

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†† 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.

# College of Liberal Arts

*For general information on the College of Liberal Arts, see section on Schools, Colleges, and Special Programs.*

## American Studies (AmSt)

(See section on Special Programs)

### 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) Hilty

### 102-202 INTRODUCTION TO AMERICAN STUDIES

Exposition of interdisciplinary methods and of the concept of American Studies; reading of classics in American civilization. (3 cr; open to MA candidates in American Studies and other qualified students; limited to 12 students; prereq  $\Delta$ ; V-VI MTh; VH 6) Trachtenberg

### 252 INDEPENDENT READINGS IN AMERICAN CIVILIZATION

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

## Anthropology (Anth)

### 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 to 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) Stoltman

### 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 150) Stoltman

### 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 155) 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 at Mille Lacs-Kathio State Park. Intensive training in excavation techniques, recordation, analysis and interpretation of archaeological materials. (6 cr [may be taken for credit only once]; prereq 90 and  $\Delta$ ) Johnson

### 170 PRIMATE AND HUMAN EVOLUTION

Origins and relationships of extinct forms of nonhuman primates and man. (3 cr; prereq 1A or 100 and  $\Delta$ ; I MTWThF; ForH 285) Novak

### 175 HUMAN PHYSICAL GROWTH AND DEVELOPMENT

Period of growth—prenatal, birth, infancy, childhood, and adolescence. Sex differences in growth of the head. Growth and eruption of teeth. (3 cr; prereq 1A or # [waived for majors in child development]; II MTWThF; ForH 285) Novak

### 190, 191, 192 DIRECTED RESEARCH

(Cr and hrs ar; prereq sr,  $\Delta$ ) Staff

# Art (Art)

First  
Term  
Courses

(See also Art Education in the College of Education)

## 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; II MTWThF; NH 45) Torbert

### 3 SURVEY OF THE HISTORY OF ART

From the 12th to the 17th century, including the Gothic period, the Northern Renaissance, the Italian Renaissance, the High Renaissance, and the Mannerist period. (3 cr, §57; IV MTWThF; Arch 25) Canedy

### 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 28-August 11, approx 6 wks in Europe) Waldfoegel

### 111 ART OF CHINA

Development of painting, sculpture, and the minor arts in China from earliest times to the present. (3 cr; III MTWThF; J 207B) Poor

### 115 LATER SIXTEENTH-CENTURY PAINTING

Mannerism and other trends in Italy and Northern Europe. (3 cr; II MTWThF; J 207B) Canedy

### 148 MODERN AMERICAN AND EUROPEAN ARCHITECTURE

Development of modern architecture on the international scene. Later work of the modern pioneers. Wright, Berlage, Behrens, Gropius, Mies, LeCorbusier, and their influence. Modern uses of concrete; Wright, Perret, Nervi, Torroja, Candela, Tange, Saarinen. (3 cr; prereq sr, grad or Δ; IV MTWThF; J 207B) Torbert

## 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; limited to 20 students; I-II MTWThF; J 2) Liebling

### 11 PHOTOGRAPHY

For students who have had previous instruction in photography or have worked in photography and know the principles of developing and printing. Develops a personal photographic perception in the student through lectures on photographic history and contemporary trends in photography. Intensive field work. (3 cr; prereq 10; limited to 15 students; III-IV MTWThF; J 2) Liebling

### 20 BASIC DRAWING

An introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums. (3 cr; limited to 25 students; I-II MTWThF; ArtB 150) Quirt

### 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; ArtB 160) Busa

### 32-33 ELEMENTS OF PRINTMAKING

(Sequence limited to 20 students) Myers

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

33 A beginning course designed to introduce the various techniques of etching, engraving employed in working on metal plate. Woodcuts and lithography are included, and lectures and demonstrations are given. (3 cr; I-II MTWThF; ArtB 170)

**40-41 SCULPTURE**

(Sequence limited to 20 students) Randell

- 40 Beginning course. Intensive study of structure in nature with emphasis on accurate observation. Construction in metal and plaster. (3 cr; prereq 1 or #; I-II MTWThF; HolB 154)
- 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. (3 cr; prereq 40; I-II MTWThF; HolB 154)

**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; ArtB 151) 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; ArtB 161) Quirt

**80A, C-81A, C-82A, C SCULPTURE**

(Sequence limited to 15 students; III-IV MTWThF; HolB 154) Randell

- 80A Work with direct metal sculpture and constructions. Attention given to 20th-century tools and equipment. (3 cr; prereq 41)
- 81A Direct metal problems of sculptural expression and organization in relation to architecture. (3 cr; prereq 80A, 80B, 80C)
- 82A Experimental work in direct metal. Class problems are assigned. (3 cr; prereq 81A)
- 80C Metal casting of sculpture. Lost-wax and sand casting techniques are employed. (3 cr; prereq 42)
- 81C Problems concerned with cast metal sculpture for landscape architecture. (3 cr; prereq 80A, 80B, 80C)
- 82C Experimental work in cast metals. Class problems are assigned. (3 cr; prereq 81C)

**83-84-85 PHOTOGRAPHY II**

Gives advanced students an opportunity to carry out creative problems in color development and printing. Experiments in photographic controls to illustrate limitations and capacities. Use of photography to interpret the visual environment, and the photographer's responsibilities in this use. (3 cr; limited to 5 students; prereq 11 or Jour 6 or Δ; III-IV MTWThF; J 2) Liebling

**90-91-92 PRINTMAKING, INTAGLIO PROCESSES**

(3 cr; limited to 15 students; prereq 32 or #; III-IV MTWThF; ArtB 170) Myers

**150-151-152 PROBLEMS IN PAINTING**

(3 cr; limited to 10 students; prereq 72 and #; III-IV MTWThF; ArtB 161) Quirt

**180A, C-181A, C-182A, C SCULPTURE IV**

(Sequence limited to 5 students; prereq 9 cr in courses numbered 81 or above; III-IV MTWThF; HolB 154) Randell

- 180A-181A-182A Advanced work in welding. (3 cr)
- 180C-181C-182C Advanced work in foundry practices. (3 cr)

**190-191-192 ADVANCED PRINTMAKING, INTAGLIO PROCESSES**

(3 cr; limited to 5 students; prereq 90 or #; III-IV MTWThF; ArtB 170) Myers

**193-194-195 ADVANCED PROBLEMS IN STUDIO**

Individual projects and guidance. (3 cr; prereq #; hrs and room ar) Liebling, Quirt, Busa

**200-201-202 ADVANCED PROBLEMS IN PAINTING**

(3 cr; prereq #; hrs and room ar) Quirt, Busa

**203-204-205 ADVANCED PROBLEMS IN PAINTING**

(3 cr; prereq #; hrs and room ar) Quirt, Busa

**220-221-222 ADVANCED PROBLEMS IN PRINTMAKING, INTAGLIO PROCESSES**

(3 cr; prereq 192, #; hrs ar) Myers

**231-232-233 ADVANCED PROBLEMS IN DRAWING**

(3 cr; prereq #; hrs and room ar) Quirt, Busa

**260F-261F-262F FILM**

(3 cr; prereq 125, #; hrs and room ar) Liebling

**260P-261P-262P PHOTOGRAPHY**

(3 cr; prereq 125, #; hrs and room ar) Liebling

## Classics

First  
Term  
Courses

### 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; pre-req soph; I MTWThF; FolH 308) Weber
- 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; pre-req 1 yr foreign language study on college level or equiv, or ‡; IV MTWThF; FolH 303) Banks
- 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 selected tragedies. Emphasis on understanding the problems posed in relation to cultural patterns of the time. (3 cr, §181; pre-req 9 cr in English literature, English beyond C, or foreign literature, or Δ; open to qualified Lower Division students; II MTWThF; FolH 308) Sonkowsky
- 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; FolH 308) Weber
- 181 **GREEK TRAGEDY IN TRANSLATION**  
Meets with Clas 81 but students will do additional work for advanced credit. (3 cr, §81; pre-req grad; II MTWThF; FolH 308) Sonkowsky

### Latin (Lat)

- 171†† **ADVANCED READING**  
(3 cr; open to qualified Lower Division students; may be repeated for credit; pre-req 63 or Δ; III MTWThF; FolH 303) Sonkowsky

### Communication (Comm)

- 1 **COMMUNICATION**  
(3 cr, §Comp 1 or Engl A or 1A or 1B or 10H; pre-req classif card 1 or 1A or 2 or 3; I MTWThF; AH 101) Taubr
- 3 **COMMUNICATION**  
Continuation of Comm 1-2. (3 cr, §Comp 3 or Engl C or 3A or 3B or 10H; pre-req 2; II MTWThF; AH 101) Holtan

### East and South Asian Languages

CIC Far Eastern Language Institute

### Chinese (Chin)

- 1-2-3†† **INTENSIVE FIRST-YEAR MANDARIN**  
Consists of 10 hours with a linguist, 10 hours with drillmasters, 5 hours laboratory. (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; room ar) Mather and staff

†† This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

† Recommended for teachers planning to attend workshop in Second Term.

§§ No knowledge of Latin or Greek is required.

- 51-52-53†† INTENSIVE SECOND-YEAR MANDARIN**  
 Consists of 10 hours with a linguist, 10 hours with drillmasters, 5 hours laboratory. (15 qtr cr for both terms [10 semester cr]; prereq 3; I-IV MTWThF; room ar) Ching and staff
- 101-102-103†† INTENSIVE BEGINNING LITERARY CHINESE**  
 Consists of 3 hours with instructor. (5 qtr cr for both terms [3.3 semester cr]; prereq 3; III MWF; room ar) Lo and staff
- 115-116-117†† INTENSIVE THIRD-YEAR MANDARIN**  
 Consists of 5 hours with a linguist, 10 hours with drillmasters, 5 hours laboratory. (11 qtr cr for both terms [8 semester cr]; prereq 53; I-III MTWThF; room ar) Lyell and staff
- 125-126-127†† MODERN CHINESE DOCUMENTS**  
 Consists of 3 hours with instructor. (5 qtr cr for both terms [3.3 semester cr]; prereq 103 or ‡; IV MWF; room ar) Chih and staff
- 135-136-137†† ADVANCED COMPOSITION AND CONVERSATION**  
 Consists of 3 hours with instructor. (5 qtr cr for both terms [3.3 semester cr]; prereq 103; III MWF; room ar) Chih and staff
- 161-162-163†† READINGS IN CHINESE LITERATURE (CLASSICAL)**  
 Consists of 3 hours with instructor. (5 qtr cr for both terms [3.3 semester cr]; prereq 103; V MWF; room ar) Lyell and staff
- 165-166-167†† CHINESE LINGUISTICS: PHONOLOGY OF MANDARIN, STRUCTURE OF MANDARIN**  
 Consists of 3 hours with linguist. (9 qtr cr for both terms [6 semester cr]; prereq 103, 105-106-107 or ‡; VI MWF; room ar) Chao and staff
- 171-172-173†† READINGS IN T'ANG AND SUNG POETRY**  
 Consists of 3 hours with instructor. (5 qtr cr for both terms [3.3 semester cr]; prereq 103; VI MWF; room ar) Lo and staff
- 191-192-193†† HONORS: RESEARCH**  
 Consists of 1-3 hours with instructor. (1-3 qtr cr for both terms [2 semester cr]; prereq 153 or ‡; hrs and room ar) Staff

## Japanese (Jpn)

- 1-2-3†† INTENSIVE FIRST-YEAR JAPANESE**  
 Consists of 10 hours with a linguist, 10 hours with drillmasters, 5 hours laboratory. (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; room ar) Shabara and staff
- 51-52-53†† INTENSIVE SECOND-YEAR JAPANESE**  
 Consists of 10 hours with a linguist, 10 hours with drillmasters, 5 hours laboratory. (15 qtr cr for both terms [10 semester cr]; prereq 3; I-III MTWThF; room ar) Matsuo and staff
- 101-102-103†† INTENSIVE THIRD-YEAR JAPANESE**  
 Consists of 5 hours with a linguist, 10 hours with drillmasters, 5 hours laboratory. (11 qtr cr for both terms [8 semester cr]; prereq 53; I-III MTWThF; room ar) Wright and staff
- 105-106-107†† INTRODUCTION TO JAPANESE LINGUISTICS**  
 Consists of 6 hours with a linguist. (9 qtr cr for both terms [6 semester cr]; prereq 103 or ‡; III MTWThF; room ar) Miller and staff
- 121-122-123†† READINGS IN CONTEMPORARY JAPANESE TEXTS**  
 Consists of 3 hours with instructor. (5 qtr cr for both terms [3.3 semester cr]; prereq 103; IV MWF; room ar) Copeland and staff
- 151-152-153†† READINGS IN CONTEMPORARY JAPANESE TEXTS, ADVANCED**  
 (5 qtr cr for both terms [3.3 semester cr]; prereq 103 or ‡; room ar)  
 Sec 1, Social Science (First Term only)  
 3 hrs with inst, IV MWF, Yamajiwa and staff  
 Sec 2, Literature (First and Second Term)  
 3 hrs with inst, VI MWF, Otake and staff
- 161-162-163†† CLASSICAL JAPANESE PROSE**  
 Consists of 3 hours with instructor. (5 qtr cr for both terms [3.3 semester cr]; prereq Jpn 103; V MWF; room ar) Copeland and staff

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†† This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.



**191-192-193†† HONORS: RESEARCH**

Consists of 1-3 hours with instructor. (1-3 qtr cr for both terms [2 semester cr max]; prereq Jpn 153 or #; hrs and room ar) Staff

**First  
Term  
Courses**

**Economics (Econ)**

**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

**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 225, Staff      Sec 2, III MTWThF, CB 415, Hofmeister

**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, Sonnenschein  
Sec 2, III MTWThF, CB 130, Richter

**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 1-2 or #; IV MTWThF; CB 425) Fan

**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 66 or equiv; III MTWThF; CB 110) Fan

**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 66 or equiv; II MTWThF; CB 225) Staff

**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 #; IV MTWThF; CB 130) Hofmeister

**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 #; III MTWThF; CB 435) 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) Fan

**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 #; IV MTWThF; CB 110) Brownlee

†† This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

- 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; II MTWThF; CB 155) Richter
- 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
- 290 **INDIVIDUAL GRADUATE RESEARCH**  
(Cr ar) Staff

## English§§

### Composition (Comp)

- 1 **FRESHMAN COMPOSITION**  
(3 cr, §Engl A or 1A or 1B or 10H or Comm 1; each section limited to 28 students; prereq classif card 1 or 1A or 2 or 3)  
Sec 1, I MTWThF, VH 205, Haga                      Sec 3, III MTWThF, VH 205, Haga  
Sec 2, II MTWThF, VH 205, Ar                      Sec 4, IV MTWThF, VH 205, Ar
- 3 **FRESHMAN COMPOSITION**  
(3 cr, §Engl C or 3A or 3B or 12H or Comm 3; each section limited to 28 students; prereq 2)  
Sec 1, I MTWThF, VH 303, Ar                      Sec 3, II MTWThF, VH 303, Ar  
Sec 2, I MTWThF, VH 306, Ar                      Sec 4, II MTWThF, VH 309, Ar

### Literature (Engl)

- 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 301) Leyasmeyer
- 54 **ENGLISH NOVEL**  
Reading of novels by such authors as Trollope, George Eliot, Meredith, Hardy, Conrad, and Butler. (3 cr; prereq ††; III MTWThF; VH 6) Fleishman
- 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 ††)  
Sec 1, III MTWThF, VH 113, Scoggins                      Sec 2, III MTWThF, VH 2, Roth
- 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) Steinmann
- 72 **AMERICAN LITERATURE**  
Notable authors from the Puritans to Melville. (3 cr; prereq ††; I MTWThF; VH 1) Roth
- 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 ††; III-IV MTWThF; VH 207) Stange
- 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

†† 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 and 81.

- 92H SUMMA HONORS THESIS**  
(3 cr; prereq 91H) 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 113) Pederson
- 110 ROMANTIC POETS OF THE EARLY NINETEENTH CENTURY**  
Byron, Shelley, Keats, and their contemporaries. (3 cr; prereq ††; II MTWThF; VH 6) Scoggins
- 120 INTERPRETATION OF POETRY**  
Certain technical aspects of poetry in relation to poetic meaning. Analysis of a number of short poems. (3 cr; prereq ††; III MTWThF; VH 1) Tate
- 139 NINETEENTH-CENTURY LITERATURE**  
The later Victorians. (3 cr; prereq ††; IV MTWThF; VH 6) Fleishman
- 155 AMERICAN NOVEL**  
A history of the American novel from James to the present. (3 cr; prereq ††; III MTWThF; VH 301) Trachtenberg
- 156 AMERICAN DRAMA**  
A study of the principal American dramatists. (3 cr; prereq ††; II MTWThF; VH 207) Kwiat
- 158 AMERICAN POETRY**  
Major poets of the late 19th and of the early 20th centuries. (3 cr; prereq ††; IV MTWThF; VH 1) Tate
- 162 MILTON**  
The minor poems, *Areopagitica*, *Paradise Lost*, and *Samson Agonistes*. (3 cr; prereq ††; II MTWThF; VH 2) Steinmann
- 196 ELIZABETHAN LITERATURE: PROSE, POETRY, DRAMA**  
The decade centering in the last year or two of the Queen's reign. (3 cr; prereq ††; II MTWThF; VH 306) O'Brien
- 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) O'Brien
- 298 INDEPENDENT READING**  
(3 cr; prereq MA degree or equiv) Ar

## Family Studies (FamS)

- 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; limited to 40 students; I MTWThF; JohH 106) Lewis
- 1A DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE**  
(See FamS 1) Designed for Upper Division engaged or married students. (3 cr, \$1; limited to 40 students; II MTWThF; JohH 106) Torbett
- 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; limited to 40 students; I MTWThF; Arch 145) Ludwig

## Foreign Study (FS)

- 161 SEMINAR FOR FOREIGN STUDY I**  
Directed field study (SPAN Program) in Greece, Ireland, Ethiopia, or Argentina, investigating current economic, political, educational, cultural, and religious patterns of life. Each student will study the country carefully before embarking and write a compre-

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

hensive report of his findings upon returning. (12 cr for both terms; prereq approval before December 1965 by a faculty selection committee [grad students must also have approval of adviser])

## Geography (Geog)

- 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 235)
- 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
- 101 WESTERN EUROPE**  
The physical and human geography of western Europe considered as a whole, followed by a more intensive discussion of selected topics on the British Isles, France, the Low Countries, the Rhine Basin, Norway, and Denmark. (3 cr; prereq 5 cr or #; I MTWThF; CB 435) Prince
- 105 MEDITERRANEAN REGION**  
Physical and human geography of lands adjacent to the Mediterranean Sea: Greece, Italy, Spain, Portugal, and Southern France. (3 cr; prereq 5 cr or #; IV MTWThF; CB 435) Prince
- 190 DIRECTED READINGS**  
(1-3 cr; prereq sr) Webb
- 251-252†† SEMINAR: SETTLEMENT AND POPULATION GEOGRAPHY**  
Three weeks in the field studying landform geography of the midwestern prairie, Iowa. (5 cr; limited to 8 students; prereq #) Salisbury
- 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
- 301 RESEARCH PROBLEMS IN GEOGRAPHY**  
(Cr ar) Webb

## German (Ger)

- 1A BEGINNING GERMAN**  
(5 cr; I-II MTWThF; ME 102) Staff
- 3A BEGINNING GERMAN**  
(5 cr; prereq 2A or 2 yrs high school German; I-II MTWThF; FolH 209) Staff
- 4 INTERMEDIATE GERMAN**  
(3 cr; prereq 56 or 4 and Δ; I MTWThF; FolH 205) Menze  
Selected readings from literature. (3 cr; prereq 3A or 3B or 3 yrs high school German ...¶5 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...¶4 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) Taraba
- 68 CONTEMPORARY GERMANY**  
An introduction to the culture and civilization of present day Germany. (3 cr; prereq 56 or 4 and Δ; II MTWThF; FolH 204) Weiss
- 74 NINETEENTH-CENTURY DRAMA**  
(3 cr; prereq 56 or 4 and Δ; I MTWThF; FolH 205) Menze
- 149 DIRECTED READINGS**  
(3 cr; prereq #; first meeting IV T, June 14; FolH 217; individual consultations for remainder of course) Ramras

†† Tri-State Field Seminar (August 23-September 12). See section on Special Programs.

- 165 **GOETHE: FAUST I AND II**  
(3 cr; prereq 14 cr in courses 70 and above or equiv; VI-VII TTh; FolH 208) Ramras
- 176 **THE NINETEENTH-CENTURY DRAMA: BÜCHNER**  
(3 cr; prereq 14 cr in courses 70 and above or equiv; VI-VII MW; FolH 208) Taraba

First  
Term  
Courses

**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

**History (Hist)**

- 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; III MTWThF; CB 5) Imholte
- 19 **HISTORY OF ASIA, PART III**  
Modern Asia: the impact of Europe, nationalism. (3 cr; I MTWThF; CB 110) Marshall
- 23 **AMERICAN HISTORY, PART I**  
Colonial, early national period through the sectional crisis. (4 cr; IV MTWThF; CB 150) Haugland
- 24 **AMERICAN HISTORY, PART II**  
Modern America. (4 cr; 7:55-9:00 MTWThF; CB 250) Brauer
- 61 **HISTORY OF ASIA, PART III**  
Modern Asia: the impact of Europe, nationalism. (3 cr; I MTWThF; CB 110) Marshall
- 94 **HISTORY OF AMERICAN FOREIGN POLICY, PART II**  
Period of commercial expansion and war, 1871-1920. (3 cr; III MTWThF; CB 150) Brauer
- 97 **MINNESOTA AND THE NORTHWEST**  
(3 cr; II MTWThF; CB 5) Jordan
- 100B **DIRECTED STUDY, PART I**  
Qualified senior and graduate students may register for 1 or more quarters with *consent of instructor* for work and training on a tutorial basis. (3 cr; prereq #) Staff
- 115B **FRENCH REVOLUTION AND NAPOLEON, PART I**  
Background and emergence of the Revolution. (3 cr; IV MTWThF; CB 215) Bamford
- 120C **HISTORY OF GERMANY, PART III**  
Since 1871. (3 cr; II MTWThF; CB 150) Pflanze
- 121A **ECONOMIC HISTORY OF EUROPE, PART I**  
Economic life in medieval times. (3 cr; I MTWThF; CB 120) Bamford

†† See Modern Language Residence Houses under Special Programs.

- 136A **HISTORY OF THE SOUTH, PART I**  
1607-1840. (3 cr; IV MTWThF; CB 235) Imholte
- 139A **CURRENT INTERPRETATION AND THE PROBLEM OF SYNTHESIS IN AMERICAN HISTORY**  
The course is designed to acquaint students with current scholarship in the field and its implications for the general interpretation of American history. (3 cr; prereq #; V-VI MTWThF; CB 240) Berkhofer
- 143C **HISTORY OF AMERICAN LABOR, PART II**  
1873-1917. (3 cr; II MTWThF; CB 120) Berman
- 149F **HISTORY OF JAPAN, PART II**  
Since 1600. (3 cr; III MTWThF; CB 205) Marshall
- 171C **PROSEMINAR: EUROPE IN THE EIGHTEENTH CENTURY, PART III**  
(3 cr; 9:00-10:30 MWF; SocSci 628) Wright
- 173D **PROSEMINAR: NINETEENTH-CENTURY GERMANY, PART II**  
(3 cr; III-IV TTh; SocSci 633) Pflanze
- 181J **PROSEMINAR: TWENTIETH-CENTURY AMERICAN HISTORY, PART I**  
(3 cr; II MTWThF; SocSci 633) Vecoli
- 189F **PROSEMINAR: AMERICAN LABOR HISTORY, PART III**  
(3 cr; III MTWThF; SocSci 1383) Berman
- 200 **HISTORICAL BIBLIOGRAPHY AND CRITICISM**  
(3 cr; 12:30-2:00 MWF; SocSci 628) Wright

## Humanities (Hum)

- 1 **HUMANITIES IN THE MODERN WORLD I**  
The Old Regime, the Revolution, neoclassicism, and romanticism. Period from about 1740 to about 1820. Authors: Pope, Voltaire, Goethe. One historical novel, Tolstoy's *War and Peace*. (3 cr, §1A or §51; III MTWThF; FraH 101) 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; II MTWThF; FraH 101) Lambert
- 3 **HUMANITIES IN THE MODERN WORLD III**  
From about 1840 to about 1914. Authors: Darwin, Nietzsche, Kierkegaard, and Mann. (3 cr, §3A or §53; III MTWThF; FraH 102) Siegelman
- 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; IV MTWThF; FraH 101) Amberg
- 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) Lonie
- 51 **HUMANITIES IN THE MODERN WORLD**  
(See Hum 1) (3 cr, §1 or §1A; IV MTWThF; VH 2) Kwiat
- 54 **HUMANITIES IN THE MODERN WORLD**  
(See Hum 4) (3 cr, §4; II MTWThF; FraH 102) Siegelman
- 55 **HUMANITIES IN THE MODERN WORLD V**  
The intellectual climate of the western world since World War II. The worlds of existentialism and "the absurd"; alienation, irrationalism; the anti-hero in literature; the new theology; the influence of Zen. Readings in Buber, Camus, Ionesco, Tillich, Hesse, etc. (2 cr; II MTWThF; VH 1) Kliger
- 61 **GREEK HERITAGE**  
The Heroic Age: Homer. The Golden Age of Athens: Aeschylus, Sophocles. The philosophers: Plato, Aristotle. (3 cr, §11; II MTWThF; AH 150) Louden
- 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; AH 150) Louden

First  
Term  
Courses

**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; II MTWThF; ForH 50) Ames

**133 HUMANITIES PROSEMINAR**

Studies of the theory and practice of witchcraft and magic. Magic and science; the influence of magic on the arts. Major figures include Simon Magus, Paracelsus, Faust, etc. (3 cr; limited to 15 students; prereq sr; IV MTWThF; ForH 50) Ames

## Journalism (Jour)

**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

**18 PRINCIPLES OF ADVERTISING**

Theory, of principles, and functions of advertising; its role in social, economic, and marketing structure. Newspapers, magazines, and radio and television as advertising media. (3 cr; prereq soph, C avg, 1 or 11 or §11; III MTWThF; MurH 302) Mindak

**60 GRAPHIC ARTS: PROCESSES**

Letterpress, offset lithography, gravure, and silk screen printing processes; history of processes, relative costs, effective use, and copy preparation for each; significant graphic art developments. (3 cr, §old 65; prereq jr; I MTWThF; MurH 308) Wilson

**103 LITERARY ASPECTS OF JOURNALISM**

Survey of the literary aspects of journalism as exemplified in, and influenced by, the works of English and American writers, past and present. Lectures, discussion, and weekly papers. (3 cr; prereq #; IV MTWThF; MurH 311) Hage

**112 COMMUNICATION AND PUBLIC OPINION**

Theories of the communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation. (3 cr; prereq 15 cr in social sciences; I MTWThF; MurH 311) Nixon

**124 INTERNATIONAL COMMUNICATIONS AND FOREIGN AFFAIRS**

Channels of international communication and news gathering agencies. Factors affecting flow of news throughout the world. Role of foreign correspondent. Relation of communications to foreign affairs and international understanding. (3 cr, §old 111; prereq 15 cr in social sciences, with inclusion of Upper Division course in history or political science...course in international relations recommended; IV MTWThF; MurH 308) Nixon

**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 newspaper or yearbook editors, and for school publication advisers. (3 cr; not open to U of Minn jour maj; prereq jr, sr, and grad or #; 1:00-4:30 MTWThF, June 13-24; MurH 311) Wilson and others

**213 SEMINAR: MASS COMMUNICATION THEORY**

Intensive examination of research concepts and findings which offer the most promise for development of a general theory of mass communication. Emphasis on empirical studies that throw light on problems of professional journalists in trying to communicate more effectively through mass media. (3 cr; prereq 112, old 113 or #; hrs ar) Nixon

## Library School (Lib) ††

- 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
- 74 LIBRARY MATERIALS IN THE CLASSROOM**  
Correlating the library, as a materials center, with the school program. Sources of information and evaluation of materials for teaching and resource units. (3 cr; I MTWThF; Lib 4A) Kromer
- 101 LIBRARY ADMINISTRATION**  
Introduction to principles of library administration and management. (3 cr; IV MTWThF; Lib 12) Bjorgo
- 102 REFERENCE I**  
General reference tools and other sources of information. Theory and practice of reference work. (3 cr; II MTWThF; Lib 4A) Van der Boom
- 103 CATALOGUING AND CLASSIFICATION**  
Basic principles of descriptive cataloguing rules of entry, subject headings and classification in libraries. (3 cr; III MTWThF; Lib 4A) Hickey
- 105 HISTORY OF LIBRARIES AND LIBRARIANSHIP**  
Social trends affecting libraries and their functions in society; librarianship as a profession. (3 cr; I MTWThF; Lib 12) Shove
- 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 104; II MTWThF; Lib 12) 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 104; III MTWThF; JohH 122) Kromer
- 241 LIBRARY MECHANIZATION**  
Application of data processing and systems analysis principles to library operations; principles, problems, and examples of library mechanization. (3 cr; prereq 101 and 103 or †; III MTWThF; Lib 12) Brekhuis
- 253 HISTORY OF BOOKS AND PRINTING**  
Bookmaking in its various forms from earliest times to the present. Evolution of the the alphabet; the manuscript book, the invention and spread of printing; the design of the modern book. (3 cr; prereq †; III MTWThF; Lib 4B) Shove
- 261 LITERATURE OF THE HUMANITIES**  
Bibliographical and other reference sources, including reviewing mediums. Developments and trends in the subjects covered. (3 cr; prereq 102; IV MTWThF; Lib 4B) Van der Boom
- 262 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 102; II MTWThF; Lib 4B) Bjorgo
- 268 RESEARCH METHODS IN LIBRARIANSHIP**  
Evaluation of research reported in library literature. (3 cr; prereq †; I MTWThF; Lib 4B) Hickey

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†† The graduate Library School is a professional school. Courses numbered above 200 are open only to graduate students and to librarians who hold a fifth-year degree from an A.L.A. accredited library school. Courses numbered below 200 are open to anyone who has been admitted to the Graduate School, to anyone who has been admitted to a Minimum Certification Program, and to any undergraduate student in the College of Liberal Arts or the College of Education.

Students who do not fall in one of the above categories may register for library courses numbered below 200, but in order to avoid loss of credits, a letter requesting permission to register for library courses should be sent to the Library School before May 1 for the first term and before June 1 for the second term. The Library School discourages registration of unadmitted students who have not sent transcripts before these dates, for it is not possible for us to give appropriate advice to students who appear on the last registration day.



# Middle Eastern Languages

First  
Term  
Courses

## Arabic (Arab)

### A BEGINNING INTENSIVE ARABIC

Introduction to Arabic grammar, drill in basic vocabulary, and readings in easy texts. Equivalent to the first 1½ quarters of the regular first-year sequence, Arab 1-2-3. (7½ cr; I-III MTWThF; FolH 70) Chejne, Saada

## Music (Mus)

(See also Music Education under College of Education)

### A\*\* PIANO

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

### 4 FUNDAMENTALS OF MUSIC

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

Sec 1, II MTWThF, NMA 4, Dahle

Sec 2, III MTWThF, NMA 4, McSpadden

Sec 3, IV MTWThF, ScH 3, McSpadden

### 7A EAR TRAINING

Résumé of aural work included in Mus 1T-3T, with concentration on their application. (3 cr; prereq #; I MTWThF, IV MWF; ScH 103) Argento

### 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) Argento

### 11A PIANO: CLASS LESSONS

Development of skills at the keyboard in harmonization, improvisation, sight reading, accompanying, repertoire, technique. (2 cr; prereq 4 for nonmusic majors, # for others; II MTWThF; MusEd 103) McIntyre

### 11E\*\* PIANO

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

### 11L\*\* PIANO

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

### 11U\*\* PIANO

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

### 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) McSpadden, Sambuco

### 13L\*\* VIOLIN

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

### 13U\*\* VIOLIN

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

- 14E<sup>00</sup> **VIOLA**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 14L<sup>00</sup> **VIOLA**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 14U<sup>00</sup> **VIOLA**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 15E<sup>00</sup> **CELLO**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 15L<sup>00</sup> **CELLO**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 15U<sup>00</sup> **CELLO**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 16E<sup>00</sup> **BASS**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 16L<sup>00</sup> **BASS**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 16U<sup>00</sup> **BASS**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 17E<sup>00</sup> **FLUTE**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Niosi, Opava
- 17L<sup>00</sup> **FLUTE**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Niosi, Opava
- 17U<sup>00</sup> **FLUTE**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Niosi, Opava
- 18E<sup>00</sup> **OBOE**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 18L<sup>00</sup> **OBOE**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 18U<sup>00</sup> **OBOE**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 19E<sup>00</sup> **CLARINET, SAXOPHONE**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Williams
- 19L<sup>00</sup> **CLARINET, SAXOPHONE**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Williams
- 19U<sup>00</sup> **CLARINET, SAXOPHONE**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Williams
- 20E<sup>00</sup> **BASSOON**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 20L<sup>00</sup> **BASSOON**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 20U<sup>00</sup> **BASSOON**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 21E<sup>00</sup> **TRUMPET**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Tetzlaff
- 21L<sup>00</sup> **TRUMPET**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Tetzlaff
- 21U<sup>00</sup> **TRUMPET**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Tetzlaff
- 22E<sup>00</sup> **FRENCH HORN**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 22L<sup>00</sup> **FRENCH HORN**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 22U<sup>00</sup> **FRENCH HORN**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar

		<b>First Term Courses</b>
23E**	<b>TROMBONE</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Weinman, Zellmer	
23L**	<b>TROMBONE</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Weinman, Zellmer	
23U**	<b>TROMBONE</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Weinman, Zellmer	
24E**	<b>TUBA</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Walton	
24L**	<b>TUBA</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Walton	
24U**	<b>TUBA</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Walton	
25E**	<b>PERCUSSION</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar	
25L**	<b>PERCUSSION</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar	
25U**	<b>PERCUSSION</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar	
26E**	<b>HARP</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Miller	
26L**	<b>HARP</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Miller	
26U**	<b>HARP</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Miller	
27E**	<b>ORGAN</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fleischer	
27L**	<b>ORGAN</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Fleischer	
27U**	<b>ORGAN</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Fleischer	
28E**	<b>HARPSICHORD</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Eyrich	
28L**	<b>HARPSICHORD</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Eyrich	
28U**	<b>HARPSICHORD</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Eyrich	
29E**	<b>CLASSICAL GUITAR</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Bellson	
29L**	<b>CLASSICAL GUITAR</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Bellson	
29U**	<b>CLASSICAL GUITAR</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Bellson	
30E**	<b>CLASSICAL ACCORDION</b> Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Hane, Malmberg	
30L**	<b>CLASSICAL ACCORDION</b> Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Hane, Malmberg	
30U**	<b>CLASSICAL ACCORDION</b> Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Hane, Malmberg	
43	<b>UNIVERSITY CHORUS</b> (1 cr; prereq §; IV MTWThF, NMA 4, 5, and/or 7:30-9:30 MTh, SciCB 325) Schwartz	

- 46 CONCERT BAND**  
(1 cr; prereq #; V MTWThF; NMA 4, 5) Bencriscutto
- 60 INSTRUMENTAL ENSEMBLE**  
Performance of chamber music of great composers; sonatas, trios, quartets, quintets, etc. (2 cr; hrs ar; ScH 107) McSpadden
- 100\*\* ADVANCED APPLIED MUSIC**  
Advanced literature in piano, voice, organ, and orchestral instruments. (2 cr; prereq entr exam; hrs ar; ScH 107) Staff
- 101 VOICE PRODUCTION FOR THE THEATRE**  
(2 cr; prereq grad in theatre arts, #; III MTThF; ShH 115) Corrigan
- 104A 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 one course from 36, 62, 68, 72, 99, or #; II MTWThF; ScH 3) Riedel
- 113 HISTORY OF VOCAL ART**  
Significant schools of singing from 1600 to the present. (2 cr; prereq 18 cr in 12, or #; VI MTWTh; ScH 103) Schuessler
- 127-128-129\* COMPOSITION**  
Original work in various forms. (2 cr each; prereq 99 and 123; VII MTWThF; ScH 205) Argento
- 140 INTERPRETATION OF CHORAL MASTERPIECES**  
Interpretation and analysis of choral compositions from Renaissance through the 20th century. (3 cr; prereq sr and grad, 6T or #; V MTWThF; ScH 104) Schwartz
- 154 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 104) 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
- 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 non-singer. (3 cr; offered during Summer Session only; prereq singers with #; IV MTWThF; WuH 7) Knowles
- 204\*\* GRADUATE APPLIED MUSIC**  
Individual lessons. (4 cr; prereq entr exam; hrs ar; ScH 107) Staff
- 212\* SPECIAL PROBLEMS**  
(3-9 cr; prereq 110; hrs ar; ScH 107) Staff
- 227-228-229\* SEMINAR: COMPOSITION AND ORCHESTRATION**  
(3 cr each; prereq #; VII MTWThF; ScH 205) Argento

## Natural Science (NSci)

- 11† ORIENTATION IN THE NATURAL SCIENCES**  
Integrated survey course designed primarily for students who have no significant science background and who wish to acquire some comprehension of the field for general education purposes. Student is introduced to basic principles and scope of the physical sciences as well as modes of approach or method developed in each field. Course cuts across conventional outlines of any particular science. The first quarter con-

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†† To receive credit for this course, a student must complete both NSci 1 and 2, but not necessarily in Summer Session.

siders some astronomy, physics, and chemistry. (5 cr, §equiv courses in science depts; prereq 1 yr high school algebra or §; III-IV MTWThF, Ph 166; 2 hrs lab, Ph 246) Dahl

**First  
Term  
Courses**

Lab 1, I MTh	Lab 7, VI MTh
Lab 2, I TF	Lab 8, VI TF
Lab 3, II MTh	Lab 9, VII MTh
Lab 4, II TF	Lab 10, VII TF
Lab 5, V MTh	Lab 11, VIII MTh
Lab 6, V TF	Lab 12, VIII TF

**165 SCIENCE IN WORLD AFFAIRS**

A survey of major aspects of science that exert an impact on modern history: 1. Atomic Energy. 2. Race and Evolution. 3. Population and Natural Resources. 4. Life on Other Planets and Space Travel. Object is to organize data and ideas and help students and teachers present an intelligent perspective of issues. (3 cr; prereq 1 yr of biological and of physical science in high school or college, or §; III MTWThF; Ph 236a) Graubard

**175 A SURVEY OF SCIENCE HISTORY**

Brief glimpses into major works constituting classics of science from Hippocrates to Einstein. Actual books and experimental efforts are stressed, rather than secondary sources. Representative scientific works are chosen from antiquity, and medieval, early modern, and recent periods. (3 cr, §171, §172, §173; prereq 1 yr of biological and of physical science in high school or college, or §; IV MTWThF; Ph 236a) Graubard

## Philosophy (Phil)

**1A PROBLEMS OF PHILOSOPHY**

Introduction to the subject; main fields of investigation; permanent problems; principal methods and schools of philosophy; historical and contemporary views. (3 cr; I 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, IV MTWThF, ForH 115, Terrell      Sec 2, I MTWThF, ForH 130, Cohen

**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; III MTWThF; ForH 115) Murphy

**50A HISTORY OF WESTERN PHILOSOPHY (Ancient)**

The origin of Greek thought, from Thales to Aristotle, with special emphasis on Plato and Aristotle. (3 cr; III MTWThF; ForH 130) Cohen

**107 PHILOSOPHY IN MODERN LITERATURE**

Survey of basic philosophical ideas in modern civilization as they are expressed in major works of literature. (3 cr; prereq major or minor in philosophy or literature, or §; II MTWThF; ForH 150) Terrell

**108 POLITICAL AND SOCIAL ETHICS**

Ethical principles, theoretical and practical, at the basis of the social order. (3 cr; prereq 3 or §; I MTWThF; ForH 150) Murphy

**164 THE LOGIC OF THE SOCIAL SCIENCES I**

Philosophical examination of foundations of behavioral sciences in general; their concepts, laws, and theories; concrete illustrations from these sciences; problems of value and objectivity; logical nature of social philosophies and ideologies; role of social scientist in a democratic society. (3 cr; prereq 15 cr in social science, psychology, education, history, or philosophy, or §; III MTWThF; ForH 285) Brodbeck

## Physical Education for Women (PEW)

(See College of Education)

The following First Term courses may be taken for elective credit in the College of Liberal Arts: PEW 3, 7, 8, 10, 11, 32.

# Political Science (Pol)

- 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; III 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 410) Scott
- 25 WORLD POLITICS**  
Introduction to contemporary international relations, policies of the great powers, nationalism, internationalism. (3 cr; IV MTWThF; CB 155) Ar
- 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 ‡; II MTWThF; CB 435) Eidenberg
- 108 LEGISLATIVE ORGANIZATION AND PROCEDURE**  
Congress and the state legislatures at work. (3 cr; prereq 2 or ‡; III MTWThF; CB 135) Eidenberg
- 118 LOCAL GOVERNMENT III**  
Metropolitan problems; governmental organization and political processes. (3 cr; prereq 2 or ‡; IV MTWThF; CB 250) Scott
- 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 250) Fogelman
- 146 SOCIAL LEGISLATION AND SOCIAL INSTITUTIONS IN THE SCANDINAVIAN COUNTRIES**  
A descriptive analysis and evaluation of the Scandinavian Social Security, Public Health, and related social programs, with special attention to the programs of Sweden, in comparison with counterpart social programs in the United States. (3 cr; prereq 2 or Soc 1; III MTWThF; CB 225) Rosenthal
- 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; IV MTWThF; CB 120) Hauser
- 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 120) 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; V MTWThF; CB 135) 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 140) McLaughlin
- 184 INTERNATIONAL POLITICS I**  
State action in international relations; forms of state action; foreign policy-making analysis; capabilities analysis. (3 cr; II MTWThF; CB 105) Hauser
- 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; III MTWThF; CB 140) Riggs

# Psychology

First  
Term  
Courses

## Psychology (Psy)

### 1-2† GENERAL PSYCHOLOGY

General introduction to study of human behavior. Prerequisite for all advanced courses in psychology. (6 cr; prereq soph or 3rd qtr fr with B avg; III-IV MTWThF; NH 45) Pettman

### 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; prereq soph; I-III MTWThF; WeH 101) Katzenmeyer

### 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; prereq 9 cr in psychology; II-III MTWThF; WuH 230) Overmier

### 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

### 215 SEMINAR: SPECIAL AREAS OF PSYCHOLOGY—PSYCHOLINGUISTICS

(See section on Special Programs) A consideration of the relationship between linguistics and psychology and a study of their area of intersection. Linguistic structure is viewed from the point of view of the generative grammarian. This is presumed to constitute the competence of a language user. How this competence is acquired and how it is manifested in linguistic behavior are the questions seen as basic to a psychology of language. Alternative models are critically reviewed. (3 cr; prereq #; hrs and room ar) Fodor

### 216 SEMINAR: SPECIAL AREAS OF PSYCHOLOGY—COMMUNICATION DEVICES IN ANIMALS AND MEN

(See section on Special Programs) A consideration of the necessary components of an effective communication system for animals and men. Nature of the communicative code, the role of feedback, the part played by learned and innate components of the system will be important topics. Questions concerning the possibility of teaching a system such as a natural human language to animals will be considered. Problems in the production and perception of language will be treated. (3 cr; prereq #; hrs and room ar) Premack

### 217 SEMINAR: SPECIAL AREAS OF PSYCHOLOGY—INFORMATION PROCESSING MODELS FOR COGNITION AND THINKING

(See section on Special Programs) An attempt to provide experience with the concepts and investigative techniques of such models to enable students to continue their education in this area and to utilize such techniques when they need them. The models deal with the form, uses, and organization of information in memory, with mediating processes operating on this information and with such complex overt behaviors as problem-solving, language, and skilled performance. The models are concerned with elementary mental processes, with information units, with the problem of what is learned and with the problem of how it is utilized. (3 cr; prereq #; hrs and room ar) Reitman

## Personal Orientation (PO)

### I 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

## Public Administration (PA)

### 182A ADMINISTRATIVE INTERNSHIP

Field work in an approved administrative agency under the joint supervision of an employee of the agency and a member of the faculty. Rotation through various administrative assignments, solution of special problems, seminar discussion of experiences, and preparation of an internship report. (3 cr; prereq # of Public Administration Center; hrs ar) Rosenthal

### 210 FOUNDATIONS OF PUBLIC ADMINISTRATION

An examination of the political and governmental factors which condition the structure and functioning of public administration in the United States. (3 cr; prereq grad; I MTWThF; CB 425) Jemberg

### 214 CURRENT ISSUES OF PUBLIC ADMINISTRATION AND POLICY DEVELOPMENT IN MINNESOTA

Background study through lectures, panel discussions, and seminar sessions of vital issues of public policy and administration which currently confront Minnesota's governmental units. Topics for 1966 will include higher education, welfare, metropolitan problems, resource development, and taxation. Some 25 legislators, government officials, civic leaders, and university professors will serve as faculty for the course. (3 cr; prereq grad; VI-VII TW, CB 430; VI-VII Th, CB 435) Warp and others

## Romance Languages

### French (Fren)

#### 1 BEGINNING FRENCH

(5 cr; III-IV MTWThF; FolH 201) Fadell

#### 3 BEGINNING FRENCH

(5 cr; prereq 2, or 2 yrs high school French; I-II MTWThF; FolH 201) Johnstone

#### 25 INTERMEDIATE FRENCH

(5 cr; prereq 3, or 3 yrs high school French; III-IV MTWThF; NH 209A) Todd

#### 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; FraH B1) Francis

#### 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; II MTWThF; FolH 202) Highnam

#### 66 SURVEY OF FRENCH LITERATURE: THE AGE OF ENLIGHTENMENT

(3 cr; prereq 30...[86 for majors; III MTWThF; FolH 207) Waldauer

#### 129 THE NOVEL OF THE SEVENTEENTH CENTURY

(3 cr; V MTWThF; FolH 203) Waldauer

#### 159 THE ART OF THE NOVEL: MAURIAC AND MALRAUX

(3 cr; III MTWThF; FolH 203) Dubois

#### 190 DIRECTED READINGS FOR UNDERGRADUATES

(1-3 cr; prereq #; hrs ar) Johnstone, Waldauer

#### 259 DIRECTED READINGS FOR GRADUATE STUDENTS

(1-3 cr; prereq #; hrs ar) Francis, Waldauer

### OFFERED ONLY IN LA MAISON FRANCAISE††

#### 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

†† See Modern Language Residence Houses under Special Programs.



- |       |  |                                   |
|-------|--|-----------------------------------|
| 56**  | <b>ADVANCED PRACTICAL FRENCH CONVERSATION</b><br>Fluency acquired by presenting short oral reports and oral <i>explications de texte</i> , and participating in debates. (5 cr; prereq 25 or equiv; VI-VII MTWThF) Staff                       | <b>First<br/>Term<br/>Courses</b> |
| 106** | <b>ORAL DICTION</b><br>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 209) Garofalo

## Portuguese (Port)

- 1 BEGINNING PORTUGUESE**  
(5 cr; I-II MTWThF; FolH 302) Hamilton
- 190 DIRECTED READINGS FOR UNDERGRADUATES**  
(1-3 cr; prereq #; hrs ar) Hamilton
- 259 DIRECTED READINGS FOR GRADUATE STUDENTS**  
(1-3 cr; prereq #; hrs ar) Hamilton

## Spanish (Span)

- 1 BEGINNING SPANISH**  
(5 cr; III-IV MTWThF; FolH 202) Cúneo
- 1A BEGINNING SPANISH: CONVERSATIONAL APPROACH**  
(5 cr; I-II MTWThF; FolH 209½) Cúneo
- 3 BEGINNING SPANISH**  
(5 cr; prereq 2, or 2 yrs high school Spanish; I-II MTWThF; Arch 55) Rudder
- 25 INTERMEDIATE SPANISH**  
(5 cr; prereq 3 or 3A, or 3 yrs high school Spanish; I-II MTWThF; NH 122) Hamilton
- 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 #; III MTWThF; FolH 307) Rundorff
- 55 SPANISH CONVERSATION**  
(3 cr; prereq 25 or equiv; II MTWThF; FolH 205) Franklin
- 62A SPANISH CIVILIZATION AND CULTURE OF THE TWENTIETH CENTURY**  
(3 cr; III MTWThF; NH 207) Pattison
- 64A LATIN-AMERICAN CIVILIZATION AND CULTURE OF THE TWENTIETH CENTURY**  
(3 cr; III MTWThF; FolH 308) Cúneo
- 66 SURVEY OF SPANISH LITERATURE: THE GOLDEN AGE**  
(3 cr; prereq 30; I MTWThF; FolH 202) Serrano-Plaja
- 131 THE PICARESQUE NOVEL**  
(3 cr; IV MTWThF; FolH 208) Rundorff
- 171 THE SPANISH NOVEL FROM VALERA TO PALACIO VALDÉS**  
(3 cr; V MTWThF; FolH 208) Pattison
- 176 TWENTIETH-CENTURY SPANISH LITERATURE: POETRY**  
Juan Ramón Jiménez, Unamuno, Antonio and Manuel Machado, Valle Inclán, García Lorca, Alberti, Moreno Villa, Aleixandre, León Felipe, Guilleu, and Salinas. (3 cr; III MTWThF; FolH 204) Serrano-Plaja
- 190 DIRECTED READINGS FOR UNDERGRADUATES**  
(1-3 cr; prereq #; hrs ar) Cúneo, Pattison, Rundorff, Serrano-Plaja
- 259 DIRECTED READINGS FOR GRADUATE STUDENTS**  
(1-3 cr; prereq #; hrs ar) Pattison, Rundorff, Serrano-Plaja

## Scandinavian (Scan)

### 161 THE LATE NINETEENTH-CENTURY SCANDINAVIAN NOVEL

Examination of "the great tradition" in the modern Scandinavian novel, together with the circumstances, intellectual and political, social and economic, out of which it grew. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only; I MTWThF; FolH 204) Naess

### 171 IBSEN AND THE BEGINNINGS OF THE MODERN DRAMA

Intensive examination of plays of Ibsen, especially with reference to the role he has played as "founder" of modern European drama. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian required for majors only; III MTWThF; FolH 209½) Naess

*Note*—See also Pol 146, Social Legislation and Social Institutions in the Scandinavian countries.

## Slavic and East European Languages

### Russian (Russ)

(See section on Special Programs)

#### A BEGINNING INTENSIVE RUSSIAN

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; A 12) Donchenko

#### 4-5-6† INTENSIVE INTERMEDIATE RUSSIAN

(9 cr; prereq 3; I-II MTWTh, I F; FolH 203) Prokopov

#### 24 SCIENTIFIC RUSSIAN I

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; A 116) Sjoberg

## Social Science (SSci)

### 1 PERSONALITY

An investigation of the factors that influence individual human action. Among the topics studied are personality in nature, culture, and society; personality as a shaper of society; the American character; the validation of theories of personality. (3 cr; II MTWThF; CB 205) Rubin

### 2 WORK

Division of labor and economic organization studied within a general social context. The social functions of economic systems. An analysis of work ideals from a historical and social point of view. Power and status in industrial societies. (3 cr; prereq 1; III MTWThF; CB 220) Rubin

## Social Work (SW)

### Soc 90 AMERICAN SOCIAL WELFARE

(See Sociology) Walz

### Soc 91 INTRODUCTION TO SOCIAL WORK PROCESSES

(See Sociology) Walz

### 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; CB 450) Keeley

### 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; NH 207) Rackner

- 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; CB 450) Stewart
- 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; VI MTWThF; CB 450) Goldman
- 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; IV MTWThF; CB 440) Keeley
- 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; CB 450) France

## Sociology (Soc)

- 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; I MTWThF; CB 5) Staff
- 2 **THE AMERICAN COMMUNITY**  
Sociological analysis of modern American society. Topics emphasized include distribution of population, urban-rural differences, social factors in business systems, occupational groups, determination of social status, and minority group adjustment. Attempts to familiarize student with current research methods. (3 cr; prereq 1 or 1A or 1H or 3; III MTWThF; CB 410) Zwerman
- 3 **SOCIAL PROBLEMS**  
Survey course in contemporary social problems with special emphasis on personal demoralization and social disorganization. (3 cr; IV MTWThF; CB 5) Gerson
- 53 **ELEMENTS OF CRIMINOLOGY**  
General survey of field of criminology. (3 cr; prereq 1 or 1A or 1H or 3; I MTWThF; CB 410) Bennett
- 90 **AMERICAN SOCIAL WELFARE**  
Analysis of American social welfare as a basic social institution. (3 cr; prereq 3; IV MTWThF; CB 150) Walz
- 91 **INTRODUCTION TO SOCIAL WORK PROCESS**  
Analysis of the nature of the social work helping process through a study of the development of social work theory and its implementation in the field of practice. (3 cr; prereq 90 or consent of major adviser; VI MTWThF; CB 155) Walz
- 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 3; III MTWThF; CB 145) Bennett
- 123 **MINORITY GROUP RELATIONS**  
Interaction of social and cultural groups in America with particular reference to the Negro. Processes leading to group contact; characteristics and contributions of ethnic groups in United States; mechanisms and problems of group adjustment. Democratic theory and practice; sources of prejudice; contemporary status of principal minority groups; international implications; trends and proposed solutions. (3 cr; prereq 1 or 3; II MTWThF; CB 435) Gerson
- 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 3; I MTWThF; CB 155) Zwerman
- 144 **SOCIAL STRATIFICATION AND MOBILITY**  
Relationship of social mobility to social stratification and social organization. Analysis of the hierarchical structure of society in relation to class and status. (3 cr; prereq 1 or 3; III MTWThF; CB 155) McNall

- 155 SOCIAL STRUCTURE AND POLITICAL BEHAVIOR**  
 Analysis of the structural and ideological conditions influencing the legitimation of political institutions and the relationships of this process to political participation, political apathy, and the rise of mass movements. (3 cr; prereq 1; IV MTWThF; CB 415) McNall

## Speech, Communication, and Theatre Arts

(See University Theatre and programs in speech pathology and audiology in section on Special Programs)

### Speech (Spch)

- 5X†† FUNDAMENTALS OF SPEECH**  
 Development of basic skills in meeting a variety of speech situations: extemporaneous speaking, oral reading, discussion. Development of basic understanding of speech processes and forms. (3 cr; limited to 25 students) Scott and staff  
 Sec 1, I MTWThF, FolH 306                      Sec 2, II MTWThF, FolH 305
- 51 ADVANCED PUBLIC SPEAKING**  
 Preparation and delivery of speeches on current public issues. (3 cr; prereq 5; I MTWThF; FolH 307) Scott
- 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 20 students; prereq 5; V MTWThF; MurH 302 and AE 309) Bart
- 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; FolH 406) Wendahl
- 69 RADIO AND TELEVISION PRODUCTION**  
 An introduction to the problems of radio and television production. Equipment and staff organization; interrelationships with program design. Exercises in production. (3 cr; limited to 18 students; prereq 65; VI MTWThF; AE 309) Bart
- 81 INTERPRETATIVE READING**  
 Aesthetic theory of literature and of oral reading. Practice in reading fiction for interpretation and mastery of technique. (3 cr; limited to 25 students; prereq 5; III MTWThF; FolH 305) Fredricks
- 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; I MTWThF; FolH 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; FolH 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; IV MTWThF; FolH 307) Brockriede
- 181, 182, 183 READINGS IN SPEECH ARTS**  
 Directed reading and preparation of reports on selected subjects. (Cr ar; prereq Spch 5, and 6 addtl cr and §; hrs ar) Staff
- 205 SEMINAR: CONTEMPORARY ARGUMENTATION**  
 Critical examination of forms of argument in contemporary rhetorical theory and practice. (3 cr; hrs ar) Brockriede
- 277 SEMINAR: RHETORIC**  
 History and critical study of rhetorical theory. Examination of research in rhetoric. (3 cr; prereq 109 or §; hrs ar) Scott

†† Credit for Spch 5X without Spch 6 by petition only.

291, 292, 293 RESEARCH

Open to graduate students engaged in research on special problems. (Cr and hrs ar)  
Staff

First  
Term  
Courses

Note—For teaching of speech at secondary school level, see College of Education, EdCI 140.

**Speech Science, Pathology, and Audiology (SSPA)††**

99 INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY

Survey of concepts basic to the understanding of normal and abnormal speech and hearing functions. Introduction to the causes, characteristics, and modification of communication problems. (3 cr; VI MTWThF; FolH 303) McDermott

101, 102, 103 READINGS

Directed readings and preparation of reports on selected subjects. (Cr ar; prereq ‡; hrs ar) Starr and staff

142 VOICE DISORDERS

Voice disorders (pitch, loudness, quality), their symptomatology, etiology, diagnosis, and treatment. Topics considered include: organic pathologies of the voice, psychological factors and voice, methods of diagnosis and treatment of voice disorders. (3 cr; prereq 99, 120 or ‡; II MTWThF; FolH 303) C Thompson

147 REHABILITATION OF THE LARYNGECTOMIZED

Historical and contemporary types of surgical intervention. Relation between types of surgery and the development of speech. Methods of initiating and developing communication. Use of the artificial larynx. Co-operation with other rehabilitation agencies and personnel. (2 cr; prereq 99, 120 and ‡; IV MTWTh; FolH 305) Henrikson

166A CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY: CLEFT PALATE

(1-3 cr; prereq 141, 142, or ‡; hrs and room ar) Starr

166C CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY: ARTICULATION

(1-3 cr; prereq 141, 142, or ‡; hrs and room ar) McDermott

166D CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY: STUTTERING

(1-3 cr; prereq 141, 142, or ‡; hrs and room ar) Martin

166F CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY: APHASIA

(1-3 cr; prereq 141, 142, or ‡; hrs and room ar) Greenberg

166G CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY: LARYNGECTOMY

(1-3 cr; prereq 141, 142, or ‡; hrs and room ar) Henrikson

171 AUDIOMETRY I

(7 weeks) Pure tone audiometry; air and bone conduction; screening audiometry; hearing conservation programs. (4 cr; limited to 10 students; prereq 99 and 119; II MTWThF; Mayo A-675) Chaiklin

176 HEARING SCIENCE

Fundamental concepts in normal audition. Psychoacoustic methods; sensitivity and acuity; loudness, pitch, timbre, distortion, aural harmonics; masking, adaptation; the auditory reflex; binaural phenomena, localization. (3 cr; prereq 170 or Psy 55; I MTWThF; Mayo A-675) Ward

182 LIPREADING AND LIPREADING METHODS

Theory, principles, and methods of teaching lipreading. Considerations of visual perception and learning. Supervised practice in teaching lipreading to hard-of-hearing persons. (3 cr; prereq 170 or ‡; IV MTWThF; ForH 160) Houchins

183 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 170 or ‡; I MTWThF; ForH 160) Houchins

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†† 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, 215 Shevlin Hall.

- 190, 191, 192†† **CLINICAL METHODS AND PRACTICE IN AUDIOLOGY**  
Methods and supervised practice in analysis diagnosis and habilitation of communication disorders of persons with auditory impairments. (3 cr; prereq 173 or 174 or ‡; hrs ar) Lassman
- 201 **SEMINAR: ADVANCED PROBLEMS**  
(3 cr; prereq ‡; V MTWThF; FolH 307) C Thompson
- 204, 205, 206 **RESEARCH**  
Open to graduate students engaged in research on special problems. (Cr and hrs ar) Staff
- 242 **SEMINAR: VOICE**  
Advanced study and independent research in the area of voice. (3 cr; prereq 142 or ‡; III MTWThF; FolH 406) Wendahl
- 249 **SEMINAR: CURRENT ISSUES IN SPEECH PATHOLOGY**  
Significant problem areas in speech pathology; relation to other rehabilitation programs and personnel. Class projects involving in-depth exploration of a specific problem. (3 cr; prereq grad major in speech pathology or ‡; hrs ar) Henrikson
- 290, 291, 292†† **ADVANCED CLINICAL METHODS AND PRACTICE IN AUDIOLOGY**  
Supervised internship experiences for advanced graduate students working with communication disorders of persons with auditory impairments. (3 cr; prereq 190, 191, 192 and ‡; hrs and room ar) Lassman

*Note*—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 production 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 ¶11; meet first day with Th 11, then hrs and room ar) Scales
- 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 18 students; prereq fr with Δ, soph, 12; II MTWThF; WeH 302) Staff
- 24 **STAGE MAKE-UP**  
Theory and practice in the art of stage make-up. (1 cr; limited to 15 students; prereq 12; VI-VII TTh; ScH 23) Dusek
- 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) Scales
- 90 **COSTUMING**  
Theory, design, and construction of costumes for stage and television. (3 cr; prereq 12, 34; V MTWThF; NH 315) Bakkom
- 92 **LIGHTING**  
Theory and practice in applying methods and principles of lighting in theatre and television. (3 cr; prereq 12, 34; III MTWThF; WeH 306) Josal

*Note*—Total cumulation of credits allowable in courses 101, 102, 103, 114, 118, 119, 120, 121, 122, 123, 124, 141, 142, 143, 151, 174, 175, 176—M.F.A. candidates, unlimited credit; M.A. candidates, 9 credits; Ph.D. candidates, 18 credits.

- 101, 102, 103 **THEATRE PRACTICUM**  
Individual creative projects meeting approval of a faculty committee in one or more of these areas: playwriting, 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

†† This course, which runs for 7 weeks, will overlap Second Term.

- |               |  |                          |
|---------------|--|--------------------------|
| 112           | <b>STAGE DIRECTION</b><br>Rehearsal problems and direction of two one-act plays in conjunction with High School Theatre Workshop (See Special Programs). (3 cr; prereq sr, 21, 90 or 92, 91 and #; II MTWThF; ScH 19) Adey   | First<br>Term<br>Courses |
| 118           | <b>STAGE-FENCING AND COMBAT</b><br>History and execution; history of weapons through the ages; fighting and fencing with these weapons. Emphasis on their use in stage combat. (1 cr; limited to 12 students; prereq 12 or #12, #; I MWF; WeH 302) Dusek   |                          |
| 121           | <b>PROBLEMS IN ACTING</b><br>Acting problems stemming from differences in genres and style 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 18 students; prereq 61, 62 or #; IV MTWThF; WeH 302) Kazanoff |                          |
| 181, 182, 183 | <b>READINGS IN THEATRE ARTS</b><br>Directed reading and preparation of reports on selected subjects. (Cr ar; prereq Spch 5, and 6 addtl cr and #; hrs ar) Staff  |                          |
| 272           | <b>SEMINAR: DRAMATIC THEORY</b><br>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 115) Ballet  |                          |
| 281, 282, 283 | <b>RESEARCH</b><br>Open to graduate students engaged in research on special problems. (Cr ar) Staff  |                          |
| 294           | <b>SEMINAR: VISUAL ARTS OF THE DRAMA</b><br>Examination of selected aesthetic theories of plastic and poetic arts; relationship to visual aspects of the dramatic production. Theory of art as a symbol. (3 cr; prereq major in theatre or #; VI MTWThF; WeH 306) Josal  |                          |

*Note*—For Voice Production for Theatre (graduate students only), see Mus 101.

## Statistics (Stat)

- |     |  |
|-----|--|
| 101 | <b>INTRODUCTION TO DECISION THEORY</b><br>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 42 or 13 or #; I MTWThF; ForH 175) Ar |
| 121 | <b>THEORY OF STATISTICS</b><br>(For nonmajors). Probability distributions, law of large numbers, sampling, likelihood function. (3 cr; prereq Math 10 or equiv; II MTWThF; ForH 175) Ar  |

# College of Medical Sciences

*For general information on the College of Medical Sciences, please see section on Schools, Colleges, and Special Programs.*

## MEDICAL SCHOOL

### Anatomy (Anat)

#### 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)

#### REQUIRED COURSES

- 101 PRINCIPLES OF ANESTHESIA**  
(2 cr; prereq regis med) Van Bergen and staff

#### ELECTIVE COURSES

- 169 RESEARCH IN ANESTHESIOLOGY**  
Anesthesia problems in experimental laboratory or in hospital. (Cr and hrs ar) Van Bergen and staff
- 181 EXTERNSHIP IN ANESTHESIOLOGY**  
(6 cr; limited to 6 students; hrs ar) Van Bergen and staff
- 182 EXTERNSHIP IN ANESTHESIOLOGY AND RESPIRATORY PROBLEMS**  
(6 cr; limited to 3 students; prereq 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  
Courses

### 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) Carr, Van Pilsum, Von Korff

### 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) Carr, Van Pilsum, Von Korff
- 205 **RESEARCH IN BIOCHEMISTRY**  
(Cr and hrs ar) Carr, Van Pilsum, Von Korff

## Laboratory Medicine (LMed)

- 180 **PROBLEMS IN FLUID AND ELECTROLYTE METABOLISM**  
(Cr and hrs ar; prereq regis med) Evans, Benson, and staff
- 235 **ADVANCED CLINICAL LABORATORY MEDICINE**  
(Cr and hrs ar; prereq #) Evans, Benson, and Staff
- 236 **RESEARCH ON CLINICAL LABORATORY PROBLEMS**  
(Cr and hrs ar; prereq #) Evans, Benson, and Staff

## Medical Technology (MedT)

- 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

## Medicine (Med)

### Division of Internal Medicine

#### 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, and Hennepin County General Hospitals. (6 cr per period; offered 3 elective periods; hrs ar) Watson, Hall, Schultz, Hammarsten
- 181 **RESEARCH IN MEDICINE**  
Research opportunities in the following areas are available at University or affiliated hospitals (as above): 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

†† Prior arrangements with departmental office.

is available in the departmental office. (6 cr per period; offered 3 elective periods; hrs ar) Staff

- 184 **SPECIAL CLINICAL PROBLEMS**  
Opportunities for study in the following areas of clinical interests are available at University or affiliated hospitals (as above): 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; offered 3 elective periods; hrs ar) 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
- 205 **DISEASES OF CHEST**  
(Cr and hrs ar) Hall, Lillehei
- 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*

### **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; 1:00-5:00 MTTh, 9:00-11:00 Th, 1:00-4:00 W, 1:30-2:30 F; Hosp Eustis Amph) Lynch and staff

### **ELECTIVE COURSES††**

- 182 **EXTERNSHIP IN DERMATOLOGY**  
(Cr and hrs ar; limited to 4 students) Lynch
- 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

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†† Prior arrangements with departmental office.

- 227 **HISTOPATHOLOGY OF THE SKIN**  
(1 cr; hrs ar) Lynch and staff
- 228 **RESEARCH: DERMATOLOGY**  
(Cr and hrs ar) Lynch and staff
- 230 **FUNCTIONAL BIOLOGY OF THE SKIN**  
(Cr and hrs ar) Lynch and staff

**First  
Term  
Courses**

## Microbiology (MicB)

- 122 **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

## Obstetrics and Gynecology (Obst)

### ELECTIVE COURSES

- 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

- 201 **ADVANCED OBSTETRICS AND GYNECOLOGY, PART I**  
(Ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff
- 205 **ADVANCED OBSTETRICS AND GYNECOLOGY, PART II**  
(Ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff
- 209 **ADVANCED OBSTETRICS AND GYNECOLOGY, PART III**  
(Ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff
- 216 **RESEARCH**  
(Ar) McKelvey, Prem, Makowski, Adcock, Spellacy, and staff

## Ophthalmology (Oph)

- 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
- 203 **BASIC AND APPLIED OPHTHALMOLOGY**  
(2 cr; 9:00-12:00 S; O-P Clin) Harris and staff

## Otolaryngology (Otol)

### 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; 1:00-4:00 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)

- 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 ‡; hrs ar) Dawson

## Pediatrics (Ped)

### REQUIRED COURSES

- 120 **CLINICAL LECTURES IN PEDIATRICS**  
(2 cr; prereq regis med; 1:00-2:00 W; Eustis 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)
- 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)
- 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)

### 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

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†† Second Term 112 and 113 are not repetitions of the First Term but rather continuations.

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|-----|---|-----------------------------------|
| 202 | <b>PEDIATRIC CLINIC</b><br>(5 cr; II-IV MTWThF; O-P depts of Hennepin County General Hospital or University Hospitals) J Anderson and staff   | <b>First<br/>Term<br/>Courses</b> |
| 204 | <b>RESIDENCY IN PEDIATRICS</b><br>Three-month residency in pediatrics at University Hospitals, Hennepin County General Hospital, St. Paul Children's Hospital, St. Paul Ramsey Hospital. (7 cr; I-X MTWThF) J Anderson and staff  |                                   |
| 206 | <b>PEDIATRIC SPECIAL INTEREST</b><br>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 | <b>PEDIATRIC RESEARCH</b><br>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)

- 109 **PHARMACOLOGICAL PROBLEMS**  
(Cr and hrs ar) Cafruny and staff
- 203 **RESEARCH IN PHARMACOLOGY**  
(Cr and hrs ar) Cafruny and staff

## Physical Medicine and Rehabilitation (PMed)

- 103 **PHYSICAL THERAPY CLINIC**  
(Cr and hrs ar) Gullickson
- 161 **CLINICAL MEDICINE IN REHABILITATION**  
(5 cr) Kottke
- 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

- 94-95-96 **CLINICAL TRAINING IN OCCUPATIONAL THERAPY**  
A total of 9 months of supervised training in affiliated hospitals. (18 cr per qtr for senior O. T. students)

## Physiology (Phsl)

- 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
- 113 PROBLEMS IN PHYSIOLOGY  
(Cr and hrs ar) Visscher and staff
- 202 READINGS IN PHYSIOLOGY  
(Cr and hrs ar) Visscher and staff
- 203 RESEARCH IN PHYSIOLOGY  
(Cr and hrs ar) Visscher and staff

## Psychiatry and Neurology (NPsy)

- 101 CLINICAL NEUROLOGY  
(4 cr; prereq regis med or grad clin psychol; 8:00 am 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 PhD candidate in clinical psychology with #) Staff
- 206 MEDICAL PSYCHOLOGY I  
Introduction to clinical psychology clerkship. (3 cr; prereq grad) Briggs, Hafner
- 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, 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

First  
Term  
Courses

## Radiology (Rad)

### ELECTIVE COURSES FOR THIRD- AND FOURTH-YEAR STUDENTS

- 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)
- 183 **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

- 110 **RADIATION BIOLOGY INSTITUTE**  
Effects of irradiation on living systems. Radioisotopic procedures. Physics and chemistry fundamental to radiation biology and effects on all types of chemical and biological systems. (Cr and hrs ar)
- 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 had x-ray diagnostic procedures are reviewed from both the clinical and roentgenological points of view. (1 cr; II T; Eustis Amph) Feinberg, Langer
- 135 **SURGICAL ROENTGENOLOGIC CONFERENCE**  
Weekly meetings with the surgical staff at which all the important surgical cases which have had x-ray diagnostic procedures are reviewed from both the clinical and roentgenological standpoints. (1 cr; II S; Todd Amph) Amplatz, Gedgaudas

- 163 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 ar) Peterson and others
- 202 CARDIOVASCULAR ROENTGENOLOGIC CONFERENCE**  
(1 cr; VII M; Todd Amph) Amplatz, Gedgaudas
- 204 TUMOR CLINIC CONFERENCE**  
(Cr ar; IV M; Todd Amph) D'Angio
- 205 RESEARCH: RADIATION THERAPY, NUCLEAR MEDICINE, RADIOBIOLOGY**  
(Cr ar) D'Angio, Loken
- 206 ROENTGENOSCOPY**  
Theory and practical application of roentgenoscopy, particularly to diseases of the gastrointestinal tract, lungs, and heart. (3 cr) Peterson and others
- 209 ROENTGEN DIAGNOSIS**  
Theory and practical application of roentgen diagnostic methods to medical cases in general. (3 cr) Peterson and others
- 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) Peterson and others
- 211 DOSIMETRY OF INTERNAL, EXTERNAL RADIATION EMITTERS**  
(1 cr; 7:00-8:00 am W; Mayo B-142) Moore
- 212 SEMINAR: RADIATION BIOPHYSICS AND NUCLEAR MEDICINE**  
Research approaches to problems in radiation biophysics; use of radioactive isotopes discussed. Recent advances reviewed. (1 cr; V M) Jacobson
- 236 RADIOISOTOPE SEMINAR**  
Recent developments in nuclear medicine. (1 cr; 12:30-1:20 M; Mayo C-239) Loken
- 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; 4:00-6:00 Th; Todd Amph) Lober, Peterson, and others
- 240 RADIATION THERAPY CONFERENCE**  
Recent advances in clinical radiotherapy. (1 cr; 4:00-5:00 M; PoH Amph) D'Angio

## **Surgery (Surg)**

### *Division of General Surgery*

#### **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

First  
Term  
Courses

- 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
- 203 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 SURGICAL ROENTGENOLOGICAL 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, Arneson, Kane, and staff

- 416 **ORTHOPEDIC RESEARCH**  
Problems in experimental or clinical surgery. University Hospitals. (5 cr) Moe, Arnesen, Kane, and staff

**First  
Term  
Courses**

## *Division of Urology*

### **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 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

## **SCHOOL OF NURSING**

### **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 2, Lect III-IV TTh, Owre 113

Sec 3, Lect III-IV TTh, Owre 117

Sec 4, Lect III-IV TTh, MH 118

Sec 5, Lect III-IV TTh, PoH 2317

Lab III-IV, VI-VII MWF

### **Nurs 185C MEDICAL-SURGICAL NURSING**

Continuing analysis of health and disease; exploration of nursing role in man's movement to health goals. Selected community laboratory experiences. (4 cr; open only to students who will also be registered for 4 cr in this course Second Term; prereq Nurs 185A and B; hrs ar) Sarosi

### **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, Cowlishaw

### **Nurs 195 PROBLEMS IN NURSING**

Individual study of a problem in the field of nursing. (3 cr; prereq regis in Master's programs or employed as nurse supervisor or instructor and  $\Delta$ ; hrs ar) Staff

## **SCHOOL OF PUBLIC HEALTH (PubH)**

### **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) Downey
- 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
- 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) 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, Kroska
- 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, Kroska, Sparrow
- 177B†† CLINICAL SEMINAR; PUBLIC HEALTH NURSING**  
Experience with selected patients and families; concurrent seminar. Continued Second Term. (3 cr for both terms; prereq 177A) E Anderson, Blanchard, Fredlund, McIntyre, Sparrow
- 189 FIELD WORK IN PUBLIC HEALTH NUTRITION**  
Placement in an approved agency with opportunity for experience in various facets of public health nutrition programs. (Cr ar; prereq #) Stief and associates
- 190\*\* FIELD PRACTICE IN PUBLIC HEALTH EDUCATION**  
Two terms of supervised field experience in selected community health agencies. (Cr ar; prereq 183, 227) Craig
- 196 SEMINAR: PUBLIC HEALTH NUTRITION**  
(Cr ar; prereq #) Stief
- 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
- 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, and 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 baselines;

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†† The entire course includes both terms. No credit is given for First Term until satisfactory completion of Second Term.

appraisal and recognition of advancing eutrophication in surface and underground waters. (6 cr; prereq §) Olson, Odlaug

First  
Term  
Courses

## **Biostatistics (PubH)**

### **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,  $t$ ,  $\chi^2$ ,  $F$ , binomial, Poisson; special distributions arising from non-parametric procedures. (3 cr; prereq ¶111; IV MTWThF; ForH 185) Brown, Boen

### **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)

### **211 SEMINAR: BIOMETRY**

(Cr ar) Bearman, Brown, Boen

# Mortuary Science (Mort) ††

## 8 ORIENTATION

An overview of funeral service; history, customs, development, personal qualifications, aptitudes. Field trips. (2 cr; II MTWTh; VH 113) 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 113) Grayson

## 76 EMBALMING LABORATORY

Laboratory procedure; practical experience in embalming; evaluations of theory. (2 cr; prereq 56 or ‡; hrs and room ar) Stroud

## 77 CLINICAL TRAINING

Practical experience in embalming; evaluations of theory. (2 cr; prereq 56 or ‡; hrs and room ar) Stroud

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†† 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 1966 for their final year in either the Plan A or Plan B program for the associate in mortuary science degree. 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.

# Institute of Technology

## COLLEGE OF ENGINEERING

### Aeronautics and Engineering Mechanics

#### *Mechanics and Materials (MM)*

#### 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 31 or ¶Math 31 and Phys 21 or 13; III-IV MWF, III TTh; Arch 20) Bohne

#### 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 100 A; prereq Math 32 or ¶Math 32 and Phys 21 or 13; 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 31 or ¶Math 31; I-II MWF, II TTh; AE 21) Blatherwick

## Civil Engineering

### *Civil Engineering (CE)*

#### 61 SURVEYING INSTRUMENTATION

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 traverses, triangulation, and level nets. Elements of simple, spiral, and vertical curves. (4 cr; prereq Math 21 or equiv or §; lect I-II MWF, lab VI-IX TTh; Ex 265) G Johnson

#### 63 LAND SURVEY SYSTEMS

Land survey systems in the U.S.; U.S. Public Land Survey, metes and bounds surveys, state record surveys. Rules, regulations, and court decisions for the proper procedure to locate property lines from title descriptions. (2 cr; prereq 2nd yr or §; lect I-II TTh; Ex 265) G Johnson

#### 141A INTERMEDIATE STRUCTURAL DESIGN

Structural steel design by plastic methods. Design of timber members, connections, and frames. The properties of reinforced concrete. Design of reinforced concrete by working stress method and ultimate strength method. Design of slabs, beams, and columns. Design diagrams and tables. (3 cr; prereq 83; lect II MTWThF, lab III-IV TTh; Ex 193) P Andersen

#### 142A ADVANCED STRUCTURAL DESIGN

Two-way slab and flat slab structures. Statically indeterminate frames of reinforced concrete. Prestressed concrete structures. Footings and retaining walls. Composite construction of structural steel and reinforced concrete. (3 cr; prereq 141A; lect II MTWThF; Ex 193) P Andersen

#### 264 SANITARY ENGINEERING UNIT OPERATIONS

Lectures, laboratory studies, and pilot plant-scale studies on screening, hydraulic separation, chemical coagulation, aeration, filtration, disinfection, drying, incineration, and digestion. (3-5 cr; prereq grad or §; hrs ar; Ex 250) W Johnson

## Hydromechanics (Hydr)

### 101 FLUID MECHANICS

Fluid statics and dynamics for liquids and gases. Viscous effects, dimensional analysis and similitude, potential flow. (3 cr; prereq MM 35; lect III-IV MWF; Ex 193) L Johnson

### 104 FLUID MECHANICS LABORATORY

Introduction to laboratory techniques, calibration principles, and fluid measurements. Open channel, pipeline, and hydraulic machinery experiments. (1 cr; prereq 101 or ¶101; III-IV TTh; Ex 138) L Johnson

## Electrical Engineering (EE)

### 30 CIRCUIT ANALYSIS I

Steady-state and transient response of linear passive circuits under DC excitation; steady-state response to sinusoidal excitation; instantaneous and average power. (3 cr; prereq Phys 14 or 23, Math 31; lect II MTWThF; Arch 130) Ar

### 30A ELECTRICAL ENGINEERING LABORATORY

Laboratory to accompany EE 30. (1 cr; prereq ¶30) Ar

Lab 1, III-IV TTh, EE 121

Lab 3, VI-VII TTh, EE 121

Lab 2, VI-VII MW, EE 121

### 65 ELECTRONICS II

Piecewise linear and incremental models, biasing, operating characteristics of active devices in single-stage circuits; applications of diodes for rectification, clipping, and clamping. (4 cr, §105; prereq 64; lect I-II MWF, rec I-II TTh; Arch 135) Ar

### 85 JUNIOR ELECTRICAL ENGINEERING LABORATORY

Experimental study of electronic circuits. (2 cr; prereq ¶65, ¶Engl 85B) Ar

Lab 1, V-VIII MW, EE 218

Lab 3, V-VIII TTh, EE 205

Lab 2, V-VIII TTh, EE 218

### 107 LINEAR SYSTEM ANALYSIS I

Development of time-invariant linear models for electrical, mechanical, thermal, and acoustic systems; analysis of the models in time and frequency domains. Applications of transform techniques to linear systems. (3 cr; prereq 31, Math 60A; III MTWThF; ME 208) Ar

## Mechanical Engineering

### Engineering Graphics (EG)

#### 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 description, 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)

### 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 36; lect III MTWThF, VI W, ME 321; lab VI-IX F, ME 325) Frohrib



### 33 MEASUREMENTS LABORATORY I

Fundamental principles of measurement. Standards, accuracy, calibration. Treatment of experimental data. (2 cr; prereq ¶30A; lect VI TTh, ME 321; lab VII-IX TTh, ME 308) Liu

First  
Term  
Courses

### 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 for both terms; prereq ¶work-study program; hrs ar) Lund

### 91†† INDUSTRIAL ASSIGNMENT, PART I

(See ME 90) (2 cr for both terms; prereq ¶work-study program; hrs ar) Lund

### 92†† INDUSTRIAL ASSIGNMENT, PART I

(See ME 90) (2 cr for both terms; prereq ¶work-study program; hrs ar) Lund

### 93†† INDUSTRIAL ASSIGNMENT, PART I

(See ME 90) (2 cr for both terms; prereq ¶work-study program; hrs ar) Lund

### 146A AN INTRODUCTION TO COMBUSTION AND PROPULSION

Flame propagation, quenching, and ignition in a gaseous mixture; combustion of solid and liquid particles, and gaseous jets. Principles of propulsion, thrust, specific impulse, and exhaust velocity. (4 cr; prereq 133 or ¶133; lect II TWThF, IV MTWF; ME 321) Murphy

### 170 MANUFACTURING PROCESSES

Analysis and description of the physical and economic principles underlying manufacturing processes. Illustration of the principles as they are applied in basic manufacturing operations. (4 cr; prereq Met 56; lect V MTWThF, VI M, ME 321; lab VII-IX MW, ME 50) Holtby

## SCHOOL OF ARCHITECTURE (Arch) ††

### 81-82-83† ARCHITECTURAL DESIGN

Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making. (6 cr each for both terms; prereq 2nd yr for IT students, jr for CLA students and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

### 91-92-93† ARCHITECTURAL DESIGN

Architectural problems with emphasis on development of structures as an integral part of design; site planning. (6 cr each for both terms; prereq 83 and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

### 111-112-113† ARCHITECTURAL DESIGN

Advanced architectural problems of complex requirements, involving thorough study and detailed solution; electrical and mechanical equipment as well as structure as an integral part of design; research techniques. Individual effort and group collaboration. (7 cr each for both terms; prereq 93, MM 93 and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

### 121-122† ARCHITECTURAL DESIGN

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. (9 cr each for both terms; prereq 113, CE 41, and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

## SCHOOL OF CHEMISTRY

### Analytical Chemistry (AnCh)

#### 40 INTRODUCTION TO ANALYTICAL CHEMISTRY

Equilibria involved in analytical processes. Properties and formation of precipitates. Methods of separation. Introduction to electrochemical methods. (4 cr; for physics and

†† This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

†† All courses run through both First and Second Terms. Students must enter at the beginning of First Term.

engineering majors; prereq GeCh 14, 15; lect, rec, quiz V MTWThF, VI T, C 325; lab I-III any 2 days of the wk, C 310) Staff

**57A QUANTITATIVE ANALYSIS**

A survey of modern quantitative methods of analysis. Lecture. (3 cr [no cr until 57B completed], for nonchemistry majors; prereq GeCh 6; V MTWThF, VI T; C 325) Staff

**57B QUANTITATIVE ANALYSIS**

A survey of modern quantitative methods of analysis including elementary physico-chemical procedures. Laboratory. (2 cr; for nonchemistry majors; prereq 57A or ¶57A; I-III MTWThF; C 310) Staff

**201 SPECIAL TOPICS**

Analytical topics not covered in regular courses are selected after discussion with instructor. (Cr ar; prereq ‡; hrs ar) Staff

**301 RESEARCH IN QUANTITATIVE ANALYSIS**

(Cr and hrs ar) Staff

## General Chemistry (GeCh)

**4 GENERAL PRINCIPLES OF CHEMISTRY**

General laws of chemistry, principles of structure, and chemical behavior of matter. (5 cr; for premedics, predentals, etc.; prereq predicted Math GPA 1.90 on ACT...Math Y or Z or college course in algebra or 4 years high school math and high school chemistry recommended; 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; limited to College of Engineering students; prereq Phys 21, 22, or ‡; 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

## Inorganic Chemistry (InCh)

**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 102A or ‡; lect III MTWThF, C 315; rec ar) Hugus

**220 ADVANCED INORGANIC CHEMISTRY LABORATORY METHODS**

(Cr and hrs ar) Hugus

**301\* RESEARCH IN INORGANIC CHEMISTRY**

(Cr and hrs ar) Hugus, Brasted, and staff

## Organic Chemistry (OrCh)

**61†† ELEMENTARY ORGANIC CHEMISTRY**

Discussion of important classes of organic compounds, both aliphatic and aromatic. Laboratory includes the preparation of typical substances. (5 cr; open to all colleges; prereq 12-15 cr chemistry; lect I MTWThF, C 325; rec II TTh, C 325; lab II-IV MWF, C 390; lab conf III TTh, C 325) Staff

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†† To receive credit for any part of this course, the student must complete OrCh 61 and 62.

- 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 115; 18 hrs lab work ar) Staff
- 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) Staff
- 301 **RESEARCH IN ORGANIC CHEMISTRY**  
(Cr ar; prereq 102 or equiv,  $\Delta$ )
- GRADUATE THESIS IN ORGANIC CHEMISTRY**  
(0 cr; prereq  $\Delta$ ) Staff

## Physical Chemistry (PCh)

- 105, 106 **PHYSICAL CHEMISTRY LABORATORY**  
(1 or 2 cr; prereq 101A or 102 or 108; VI-VIII MW; C 190) Bolton
- 107 **ELEMENTARY PHYSICAL CHEMISTRY**  
(3 cr; prereq 1 yr college chemistry, Phys 9 or 6 with  $\Delta$ , Math 25A or 32 or 44; 1 MTWThF; C 115) Livingston

## SCHOOL OF EARTH SCIENCES

### Geology and Geophysics (Geo)

- I **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 72 students; prereq high school physics and chemistry recommended; lect II MTWThF, P 110) Rapp  
Lab 1, III-IV MWF, Arch 15                      Lab 2, VI-VII MWF, Arch 15
- 103 **GEOLOGIC PROBLEMS**  
(Cr and hrs ar; prereq #)
- 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,  $\S$ old Geol I, A, Geo I, 11; limited to 18 students; only for students holding degrees in education; prereq 1 term college chemistry or physics; lect II MTWThF, seminar V TTh; P 110) Rapp  
Lab 1, III-IV MWF, Arch 15                      Lab 2, VI-VII MWF, Arch 15

## SCHOOL OF MATHEMATICS (Math)

- T (Arts) **TRIGONOMETRY**  
Analytic trigonometry emphasizing identities, equations, and properties of the functions; right and oblique triangles without logarithmic computation. (3 cr [open for cr if taken before 43, even to students with high school trigonometry]; prereq plane geometry and high school higher algebra... $\S$ 10 allowed; II MTWThF; AE 209) Ar
- Z (Arts) **PREPARATORY MATHEMATICS**  
Designed to supplement the background in algebra for those students whose background is insufficient. Covers most of the material of the high school elementary and higher algebra courses, with emphasis on the latter. (0 cr; III-IV MTWThF; AE 313) 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  $\Delta$ ; III MTWThF; AE 209) Ar

**10 (Arts) COLLEGE ALGEBRA AND ANALYTIC GEOMETRY**

For students 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; AE 321) 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; AE 319) 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; AE 225) 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; AE 309) Loye

**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; AE 309) 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; AE 225) Ar

**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; AE 313) Ar

**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; AE 319) 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; ME 102) Ar

**44 (Arts) ANALYTIC GEOMETRY AND CALCULUS III**

(See Math 42 for course description) (5 cr; prereq 43; I-II MTWThF; AE 321) 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 25A or 26B or 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; Arch 5) Ar

**111 (Arts) DEVELOPMENT OF THE NUMBER SYSTEM**

Systematic construction of the real number system by extension from the natural numbers via rational numbers to irrational numbers, negative numbers; properties of the system; operations with numbers and laws governing the operations. (3 cr; prereq 25A or 26B or 44; III MTWThF; ME 106) Ar

**119 (Arts) TOPICS IN FINITE GROUPS**

An introduction to the theory of finite groups. Group axioms, examples of groups, subgroups and direct products, factor groups and composition series, permutation groups, prime power groups, Abelian groups. (3 cr; prereq 44; V MTWThF; Arch 135) Harper

**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; Arch 145) Ar

**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; determinants; 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; Arch 10) 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; AE 215) Wilcox

**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; AE 215) Polansky

**148C†† (IT) DIFFERENTIAL EQUATIONS AND VECTOR ANALYSIS**

A combined course emphasizing linear differential equations and vector analysis; their applications to physical phenomena; some methods for solving ordinary differential equations of various types with the necessary theory for developing these methods; vector algebra and vector calculus, and applications. (5 cr for both terms; prereq admission to Summer Institute and integral calculus; II MTWThF; Ph 170) Wilde

**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; III MTWThF; AE 317) Polansky

**168A (IT) ELEMENTARY THEORY OF COMPLEX VARIABLES**

Derivative and integral of a function of a complex variable. Cauchy's integral theorem and formula residues. Application to evaluation of integrals, conformal mapping. (3 cr; prereq 151, 153 or 147, 148, 149 or 108 or §; III MTWThF; Arch 135) Miracle

†† 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.) This course runs through both terms. The student must enter in the First Term and complete both terms to receive credit.

184 (IT) **ELEMENTARY NUMERICAL ANALYSIS IN ENGINEERING**

Finite differences, interpolation, summation of series, numerical integration. Euler-Mac-Laurin 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; AE 215) Ar

## SCHOOL OF MINERAL AND METALLURGICAL ENGINEERING

### Metallurgical Engineering (MetE)

56 **PHYSICAL METALLURGY**

(ME, MinE, PetE, IndAdm) Introductions to principles. Theory of metals and alloys, constitution diagrams, heat treatment, relation of structure of properties. (3 cr; prereq 3rd yr [IndAdm see adviser]; I MTWThF, VI Th; MinMet 116) Sivertsen

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) Sivertsen

124\*†† **SPECIAL PROBLEMS IN MINERAL DRESSING**

(Cr and hrs ar; prereq 112) Cooke

170-171†† **SPECIAL PROBLEMS IN PHYSICAL METALLURGY**

Laboratory investigation. (1, 2, or 3 cr) Staff

201 **RESEARCH IN PROCESS METALLURGY**

(Cr and hrs ar) Bitsianes

204 **RESEARCH IN MINERAL DRESSING**

(Cr and hrs ar) Cooke

### Mineral Engineering (MinE)

15A **MINE SURVEYING FIELD WORK**

(3 cr; prereq 13; 3 wks beginning about June 15) Lacabanne, Yardley

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)

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 210) 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 MTWTh and 2 clear evenings per wk for observation; Ph 210) Kaufmanis

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†† Open only to students previously registered at the University of Minnesota. Advance arrangement necessary.

# Physics (Phys)

First  
Term  
Courses

## 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; I MTWThF; Ph 166) 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 ¶1) Ar

Lab 1, III-IV TTh, Ar

Lab 2, VI-VII MW, Ar

## 23 GENERAL PHYSICS, PART I

Electricity and magnetism. (2 cr; prereq 22, ¶23A, Math 23 or ¶Math 23 or Math 44 or ¶Math 44; II MTWThF; Ph 166) Ar

## 23A PHYSICS LABORATORY, PART I

Laboratory exercises in electricity and magnetism. (½ cr; prereq ¶23; 2 lab hrs per wk ar) Ar

## 51 INTERMEDIATE GENERAL PHYSICS, PART I

Elementary nuclear physics. Introduction to wave mechanics and solid state physics. Selected topics in modern physics. (2 cr; prereq 50 and Math 32 or ¶Math 32 or Math 106 or ¶Math 106; III MTWThF; Ph 170) Ar

## 51A PHYSICS LABORATORY, PART I

Parallel to 51. (½ cr; prereq ¶51; 2 lab hrs per wk ar) Ar

## 100C†† PRINCIPLES OF DYNAMICS

An analysis of motion in one, two, and three dimensions; Newtonian dynamics applied to particles, systems of particles and rigid bodies; special emphasis on dynamics of a central force, the conservation principles, oscillations and waves. Vector algebra and vector calculus introduced where needed. (5 cr for both terms; prereq 114C or equiv, ¶Math 148C; I MTWThF; Ph 170) Ar

## 107C†† MODERN PHYSICS I

An analysis of atomic physics with emphasis on experimental phenomena. Topics include: Atomicity of matter, special relativity, atomic structure, quanta, and atoms; particles and waves. (5 cr for both terms; prereq 114C or equiv and Math 126C or equiv; IV MTWThF, Ph 170; lab hrs ar) Ar

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†† NSF Institute for High School Teachers of Physics and Chemistry. (See also section on Special Programs) This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

# College of Veterinary Medicine††

All classes scheduled by arrangement

## 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, Marquardt, Smith
- 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, #) Warner

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†† 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.



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| <p><b>158° VETERINARY SURGICAL PATHOLOGY</b><br/>Neoplasms, surgical biopsies, postmortem material; review of pertinent literature. (1-3 cr; prereq 153, #) Barnes, Bergland, Perman</p> <p><b>201° ADVANCED VETERINARY AND POULTRY PATHOLOGY</b><br/>Clinical material, collateral reading, and conferences. (Cr ar; prereq #) Higbee, Sautter</p> <p><b>203° NEOPLASMS OF DOMESTIC ANIMALS</b><br/>(Cr ar; prereq #) Perman and others</p> <p><b>241° PROBLEMS IN VETERINARY PARASITOLOGY</b><br/>(Cr ar; prereq 102 or equiv, #) Griffiths</p> | <p><b>First<br/>Term<br/>Courses</b></p> |
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### **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, Stowe

### **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, Gourley
- 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, #) Gourley
- 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



Schools • Colleges

and

Special Programs

# 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.

## Home Economics

Graduate, undergraduate, and special students as well as teachers interested in renewing certification will be able to choose from classes and workshops in the several areas of home economics and home economics education.

Workshops include Consumer Selection Guides in Household Equipment (June 13-29), Homes of the World (June 13-29), Construction and Refinishing of Home Furnishings (June 13-29), New Developments in Clothing Construction based on new fibers and finishes (June 30-July 15), and Purchasing Home Furnishings (June 30-July 15).

## 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.

# COLLEGE OF BIOLOGICAL SCIENCES

The College of Biological Sciences was officially established on September 1, 1965, for the purpose of providing a visible structure for the co-ordination and unification of basic biological research and training activities throughout the University.

At the present time, the college is composed of the Departments of Biochemistry, Botany, Genetics, and Zoology. The course offerings listed are available on the Minneapolis-St. Paul Campuses to all eligible University students through the college or institute of their registration.

Many summer courses in the biological sciences are offered through the Biology Session held at the Lake Itasca Forestry and Biological Station. Students interested in the opportunity to study at a field station should refer to a separate section of this bulletin describing the Biology Session and to the special bulletin available upon request from the Dean of the Summer Session, 6690 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## BIOLOGY SESSION

### LAKE ITASCA FORESTRY AND BIOLOGICAL STATION

During two 5-week terms of the Summer Session (June 13-August 20) an excellent opportunity for field work in terrestrial and freshwater 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 Biological Sciences. Classes will be held at the station beginning June 13, ending August 20.

Interested persons may find the following opportunities offered:

1. Instruction in field biology 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, prairies, or forests of the area.
3. Facilities for guest investigators for independent research in terrestrial and freshwater biology.

For a *Bulletin of Lake Itasca Biology Session* describing in detail the opportunities and facilities at the station, write to the Dean of the Summer Session, 6690 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 Lake Itasca 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.

Reservations for housing and course work should be made as early as possible. A special form for this purpose is included in the *Bulletin of Lake Itasca Biology Session*. This Request for Reservation form should be mailed to the Director of Field Biology, 300 Coffey Hall, University of Minnesota, St. Paul, Minnesota 55101 as early as possible. Assignments to classes and housing will be verified by March 15. The necessary class reservation cards will be held with the reservation request for use by the student when he registers at the station on June 13 or July 18.

## 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 13 or July 18 and must be paid before registration is completed:

Tuition fee	\$59.50
Incidental fee	11.00
Laboratory fee	8.50
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Total fees for the term	\$79.00

Graduate students may register for thesis-only upon payment of \$31 tuition per term and required 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 \$75 for the 5 weeks. A charge of \$15 is made for room in the cabins of the 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 \$169 for each 5-week term does not include traveling expenses, clothing, laundry, and minor incidental personal expenses.

Tuition and fees are payable on or before June 14 or July 19. After June 14 or July 19, the late fee will be charged according to the following schedule:

June 15-17 or July 20-22 .....	\$ 3.00
June 20-24 or July 25-29 .....	5.00
Thereafter .....	10.00

No registration will be accepted after June 15 or July 20 without the approval of the director.

†† See section on Admission and Registration.

# 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.

# 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: D. L. Anderson, Clark, Gorlin, Hall, Hampel, Holland, Holte, Isaacson, Jensen, Korn, LaBelle, Meyer, Morstad, Olsen, Petersen, Serene, Serr, Singer, Stallard, Wakely, 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

Under the division headings of Curriculum and Instruction (EdCI) and Educational Psychology (EPsy) in the course listings section of this bulletin, the courses are grouped for those interested in the elementary, secondary, and higher education offerings. Under each of these, courses of general interest are listed under *General Courses*; these are followed by 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 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 listed in elementary and secondary education may be used for *renewal of teaching certificates*. Former teachers re-entering the profession should consult the advisers in elementary and secondary education or the 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 programs is open *only* to certain groups of students completing programs in the College of Education: (a) regularly approved applicants for student teaching 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**

A broadened summer program of enrichment, standard, and remedial courses will be offered at the University High School at Peik Hall during First Term.

Interdisciplinary studies in mathematics-science and English-social studies will be provided among courses in these fields in addition to those in art, business, and modern languages for grades 7 through 12.

Students registered in student teaching will be assigned to observation and instruction in selected classes in University High School. The facilities are also available to college classes for demonstration purposes.

Admission to the Summer Session of University High School is open to any student of secondary 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.

## **Summer Demonstration Elementary School**

Tuttle Elementary School, kindergarten and grades 1 through 6, 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 Southeast, Minneapolis, Minnesota)

## **Psycho-Educational Clinic**

The Psycho-Educational Clinic will be in operation during both terms for the 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) an average of 2.80 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.

## Detailed Description of Courses

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

## Physical Education for Women

**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 1:30 to 3:30 p.m. during the First Term. All facilities, including the swimming pool, are available for recreational use from 1:30 to 3:30 p.m. during the Second Term. The rental fee for suits and towels for swimming is 20 cents and the rental fee for towels is 10 cents. Participating in intramural and recreational activities within the limits indicated by one's activity rating is the responsibility of the individual student.

The University tennis courts and golf course are open to students at a nominal fee.

## **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 14 and closing July 15. 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.

## **Art Education**

The Department of Art Education offers professional training and guidance for teaching and supervisory positions in the field of art. Art education provides opportunities to combine a creative art career with a teaching position, a combination popular with many outstanding contemporary artists.

During the Summer Session the department places a strong emphasis on non-specialist 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.

## **Workshops in Weaving and Contemporary Crafts**

The Art Education Department is offering weaving and contemporary crafts in 2 ½-week workshops to provide for intensive work in a concentrated time. ArEd 53, Introduction to Weaving, including weaving design and setting up and operation of table and floor looms, will run from July 18 to August 3. ArEd 80, Contemporary Crafts (August 4-19) includes design and techniques utilizing textiles, wool, metal, and ceramics, with application to educational programs in elementary and secondary schools, adult education, special education, recreation, and occupational therapy. Those with limited time may register for one workshop. Both may be taken during the regular 5-week term.

## Secondary Curriculum and Instruction

Programs, methods, and materials in English; social studies; mathematics; science; modern languages; business, distributive, and audio-visual education are considered in courses for secondary teachers listed under Curriculum and Instruction (EdCI). Teachers are urged to combine registration in courses of this nature with those in the content of their subject fields offered by other departments.

## Special Education—Programs and Scholarships

Summer offerings in special education include speech correction and courses for teachers of the educable retarded, the deaf and hard-of-hearing, the blind, the crippled, the gifted, and the emotionally disturbed. (See information below.) Scholarships open to students from any state are offered for those attending classes on education of blind children. (See following section on Education of Blind and Partially Seeing Children for information on applying for scholarships in this area.)

## Teaching the Mentally Retarded

Courses for teachers of mentally retarded children will be available First Term: Introduction to Education of the Mentally Retarded (EPsy 184); Education of Mentally Retarded Children in the Elementary School (EdCI 179); and Problems of Mental Deficiency (CPsy 143).

## Education of Blind and Partially Seeing Children

In the First Term, three courses will provide minimum preparation for an experienced regular class teacher to serve visually handicapped children. This work may be taken for graduate credit or for credit as a summer student with the permission of the instructor.

A demonstration resource room for visually handicapped children will be in operation at the Tuttle Laboratory School.

A course on orientation and mobility for blind children will be held during the First Term on the Minneapolis Campus. It provides teachers with basic techniques which help blind children gain skill in orientation and mobility. (See EdCI 126)

Those who wish may apply for scholarships for teachers of blind children by writing to the American Foundation for the Blind, 15 West 16th Street, New York 11, New York. Other sources of scholarship support are available. For this information contact Mrs. Glenda Martin, 108 Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## Teaching Emotionally Disturbed Children

Education of Emotionally Disturbed and Socially Maladjusted Children (EPsy 186) will be offered First Term; and an advanced course, Education of Emotionally Disturbed and Socially Maladjusted Children (EPsy 286), will be offered Second Term.

## Teaching Culturally Disadvantaged Children

Education of the Culturally Disadvantaged Child (EPsy 188) will be offered both terms.

## Teaching the Deaf and Hard-of-Hearing

Courses for teachers of the deaf and hard-of-hearing will be offered both terms. (Check class schedules in both Speech Department and the College of Education.) Observation of hearing-impaired children will be available during the First Term.

## Mathematics in Elementary Schools

Graduate courses relating to the teaching of mathematics in elementary schools have been revised and expanded to bring in the new materials which teachers need in this rapidly changing field. Three courses will be available during the summer terms: Teaching and Supervision of Mathematics in the Elementary School (EdCI 149A); Current Developments in Elementary School Mathematics Instruction (EdCI 149C); and Materials Laboratory for Elementary School Mathematics Instruction (EdCI 149B). Course listings indicate prerequisites and desired sequences.

## Demonstration Facilities

The Tuttle Demonstration Elementary School will operate during the First Term. All school staff members will be welcome to observe the programs at Tuttle. Special attention is called to the teaching demonstrations in physical education, of particular value to many students in this field.

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

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

The University High School will be in operation during the First Term with regular classes, special interdepartmental courses, remedial instruction, and workshops in debate and theater. Any Summer Session student is welcome to observe the work of University High School.

## Introduction to Teaching: Elementary and Secondary

The basic course sequence for persons preparing to teach in the elementary schools is Ed 75A (First Term) and Ed 75B (Second Term). The basic sequence for secondary teachers is Ed 55A (First Term) and Ed 55B (Second Term).

These sequence courses are available *only* to students who have been approved *in advance* of the Summer Session registration period for admission as regular degree students in the College of Education. Application for admission should be made to the director of admissions of the University by May 15 as each applicant must present an official record of previous college work and must complete speech, health, and psychological tests. These courses are *not open* to students planning to complete a teacher education program at another institution.

## Workshops in Educational Administration

In response to the expressed needs of educational administrators, the summer offering includes a number of workshops, scheduled to meet 4 hours per day for 2½ weeks. In the First Term, June 13-29, one workshop (EdAd 239) employs the technique of "simulation" and emphasizes the decision-making role of the administrator. The second one (EdAd 128), scheduled June 29-July 15, focuses on the use of computers for processing, storing, and retrieving information in educational institutions.

The "simulation" workshop (EdAd 239) will be repeated in the Second Term, July 18-August 4, but this section is limited to elementary school principals.

A course of special interest to persons in higher education is scheduled from August 3 to August 19, 3 hours daily (EdAd 274, The Junior College). It is designed to acquaint students with issues and problems in the administration of junior colleges.

## Music Education

Two new graduate courses afford the instrumental music teacher opportunity to gain specific techniques for teaching orchestra and band instruments: MuEd 115 (advanced violin, viola, cello, and string bass techniques) and MuEd 118 (advanced woodwind, brass, and percussion techniques) include practical performances, lecture-demonstration using school age laboratory groups, and seminars on materials and teaching practices. They are scheduled in First Term. (See Summer Music Festival on page 152.)

For choral teachers, also, a new course will be offered in the First Term: MuEd 114, Reading and Stylistic Interpretation of Choral Music. In the Second Term, MuEd 104, Advanced Topics: Vocal Music, is scheduled for these teachers.

Two courses relate to music in elementary schools: MuEd 151, Supervision and Administration of Elementary School Music (First Term), and MuEd 102, General Music in Elementary and Junior High Schools (Second Term).

## Elementary and Secondary Music Education Workshop

The fourth annual music education elementary and secondary workshop (June 15-17) will feature demonstrations of the Kodaly approach to creativity, music reading, and choral singing. Guest lecturer, Mrs. Katinka Daniel, a former student of Zoltan Kodaly and teacher in Hungarian schools, will discuss and illustrate the newly published materials available for use in American Schools.

## Higher Education Workshops

The higher education workshops (EdCI 228), planned with committees from the North Central Association, will be available again. The two workshops (one for faculty members from liberal arts colleges and one for the staff of teacher education institutions) will meet concurrently in the Second Term for 4 weeks, July 18-August 12.

## **Graduate Programs for Counselors**

In both terms the regular graduate program in counselor education will be offered, except that the practicum in secondary counseling will be available only in the First Term. Courses not always available in summer will be offered this year: EPsy 225-226, Counseling Theory and Procedure; and EPsy 281, Practice in Personnel Work (college level).

## **Secondary School Instruction**

Special courses on methods and materials will be available for high school teachers of modern languages, science, mathematics, and English, listed under Curriculum and Instruction. Teachers are urged to combine registration in these courses with offerings under other departments in their teaching subjects.

## **Educational Administration Two-Year Programs**

Advanced graduate programs (1 year beyond 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 is available upon request to the Department of Educational Administration, 203 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## **Industrial Education Workshop: Plastic Technology**

An Industrial Education Workshop (Ind 106) has been planned for the First Term to be conducted by Professor Fulton Holtby of Mechanical Engineering. Instruction will include basic theory and practice in processing thermoplastic and thermosetting materials. Classes will meet for 2 hours each day with instruction divided between technical understandings and content and application.

## **Workshop: Personal Finance**

The College of Education and the School of Business Administration have planned a 6-credit offering in the First Term for teachers of business education, mathematics, social studies, and home economics. Included will be 3 graduate credits in business finance (BFin 101, Workshop on Personal Finance), and 3 graduate credits in education (EdCI 133A, Workshop: Teaching Personal Finance). These two courses will provide teachers an opportunity to study such topics as budgeting, consumer credit, financial services, investing, insurance, real estate, taxation, and estate planning. Curriculum application, methods, and materials will also be studied. Interested teachers should write to Marvin A. Clark, College of Education, University of Minnesota, Minneapolis, Minnesota 55455, concerning admission to the courses and tuition scholarships available for the participants. The final date for application is April 15, 1966.

## **National Science Foundation Institute in Economics and Economic Education**

The institute, Economic Education (EdCI 164B), is designed for secondary school teachers in the Minnesota region, who are teaching in economics, and who have completed the in-service or summer program of the Minnesota State Council on Economic Education or its equivalent. All applicants must certify that they will be teaching in economics in the 1966-67 school year and the statement must be endorsed by an appropriate school official. A baccalaureate degree and at least 1 year of teaching experience is required. Preference will be given to teachers with large course loads in economics, and to those with extensive teaching experience. Interested teachers should write to Professor Roman F. Warmke, Business Administration Building, University of Minnesota, Minneapolis, Minnesota 55455, concerning admission to the institute and stipends available for participants.

## **NDEA Institute for Advanced Study for Trainers of Teachers of Geography**

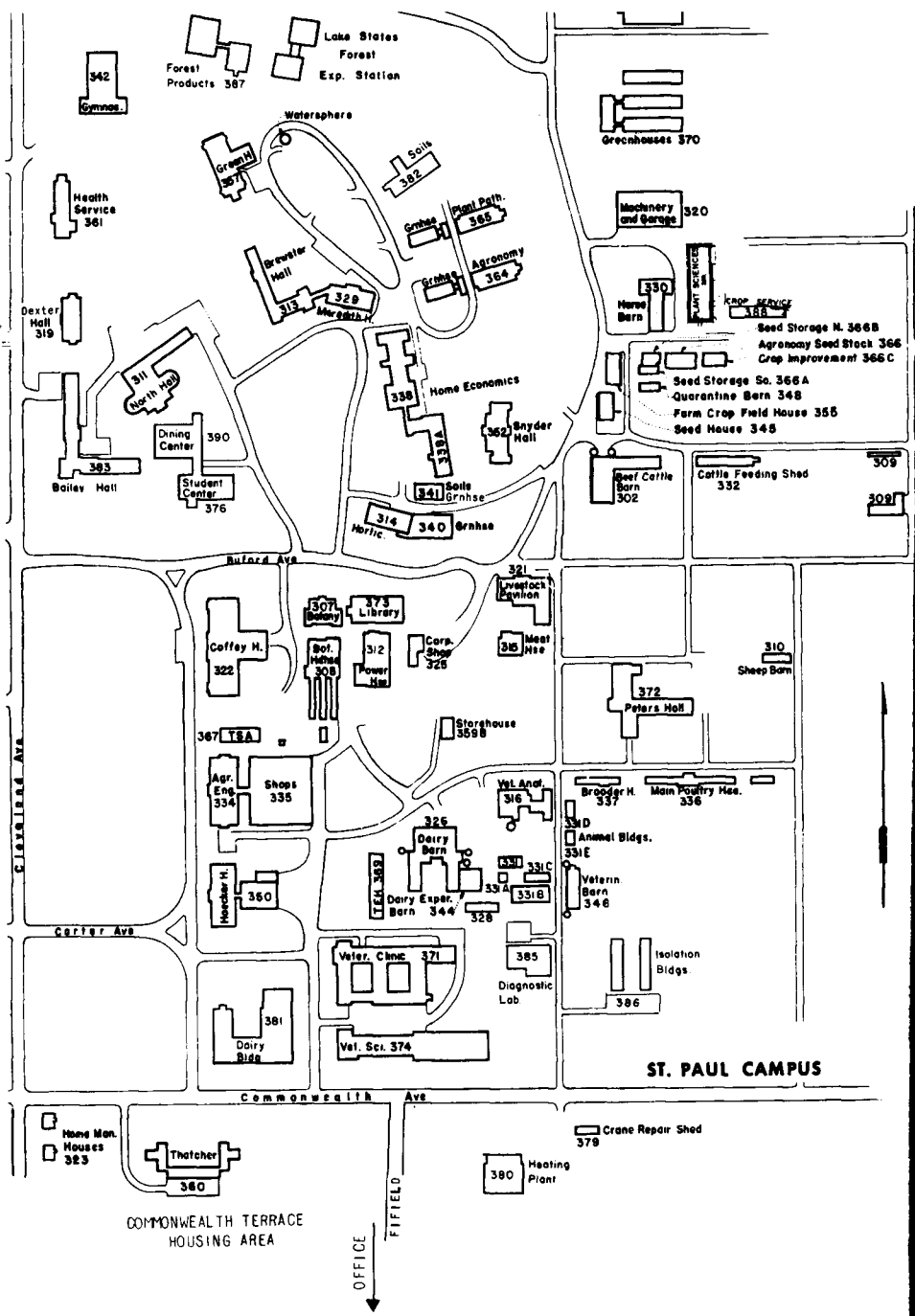
This 7-week institute will be held June 20 through August 5. A full course of study in geography is offered for 25 college teachers of students preparing for elementary or secondary school certificates to teach geography. Applicants should have an M.A. or its equivalent in geography. Application deadline is March 21. For information, write to Director of the Institute for Advanced Study, Department of Geography, University of Minnesota, Minneapolis, Minnesota 55455.

## **NDEA Language Institute for Teacher Trainers**

A 7-week institute under the National Defense Education Act will be offered for 30 college and university methods teachers and student teacher supervisors in the area of foreign languages. Basic courses include the teaching of beginning foreign languages; applied linguistics, materials, and techniques for advanced foreign language courses; conducting and interpreting research in second language learning. Other activities include a film series, an integrating seminar, curriculum and language laboratory workshops, special lectures, small group discussions and individual conferences. For information write to Dale L. Lange, 224 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## **NDEA Summer English Institute**

The Department of Secondary Education in the College of Education, in cooperation with the Department of English and the Department of Speech and Theatre Arts in the College of Liberal Arts will offer a special NDEA Summer English Institute from June 20 to August 5. The 30 participants will be selected from applicants who are involved in teacher training programs at their home colleges and universities. Potential applicants may receive further information by writing to Professor Stanley B. Kegler, 214 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.



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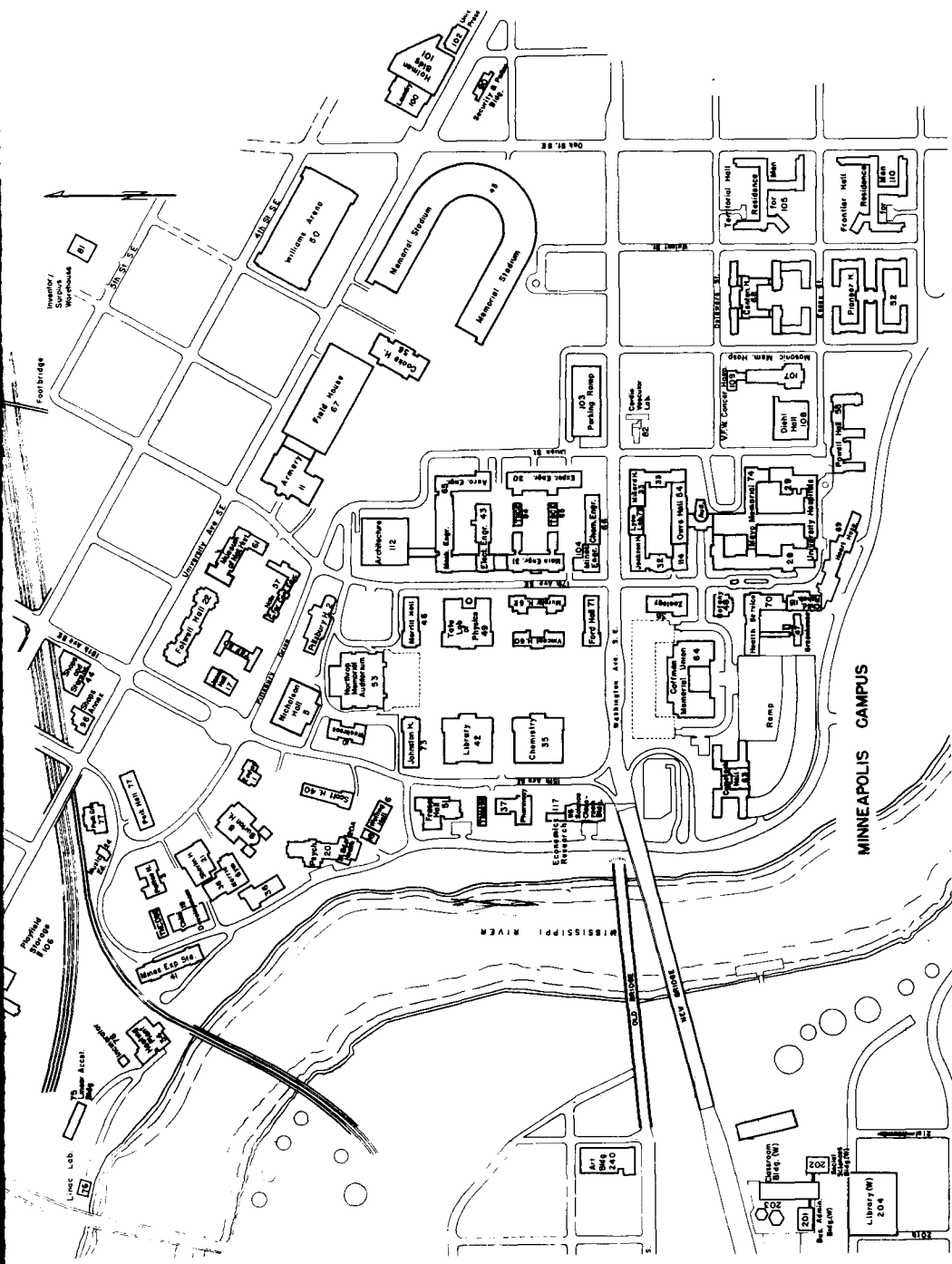
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## GENERAL COLLEGE (GC)

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*.

## 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*—one official transcript 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 (Monday, May 16, 1966 for First Term and Monday, June 20, 1966 for Second Term). 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 Graduation

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 20, 1966; Second Term—Friday, June 24, 1966). Oral examinations must be completed at least 5 weeks prior to the commencement date (First Term—Friday, June 10, 1966; Second Term—Friday, July 15, 1966).

## 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 1966 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 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 13) to the Arts College desk in the Coffman Union Main Ballroom.

College of Liberal Arts departments offer a wide-ranging and representative group of courses during the Summer Session at both the undergraduate and graduate levels. In addition a series of special programs are available; these are described in the following paragraphs.

### 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 \$1,490 including University fees. An examination will be required.

Members of the group will depart from New York by air on June 28, spend approximately 6 weeks in Europe, and return to New York on August 11.

## Workshop for Teachers of Latin

The Classics Department offers an expanded program, in Second Term, specifically designed to meet the needs of Latin teachers.

**Multi-sensory Latin: Grades 7-12**—The Classics Department is conducting a pilot program in junior and senior high school Latin classes to develop instructional materials and techniques. These are audio-lingual, pictorial, and kinesic methods of presenting structure and vocabulary suitable for ages 11-15.

In Lat 110 (see also EdCI 188A in the College of Education), teachers can evaluate the materials and methods that were evolved in the pilot program and develop them for their own use. Lat 101 specializes in oral Latin as one of the sensory modes of teaching: the formulation of questions and answers on Latin texts and Latin-to-Latin transformations. In Clas 108, teachers can gain experience in the oral reading of selected passages from such authors as Virgil, Catullus, and Cicero, with special attention to audio-lingual, imagistic, and kinesic meaning. Lat 172A considers a wide selection of Latin writings with a view to their suitability for younger students.

For further information, write Professor Robert Sonkowsky, Chairman of the Department of Classics, 309 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## Chinese and Japanese Language and Linguistics

The CIC Far Eastern Language Institute, sponsored by the Committee on Institutional Cooperation (CIC), is a joint program in which the Council of Ten and the University of Chicago participate.

The fourth institute will be held at the University of Minnesota for the 10-week Summer Session in 1966.

A full range of intensive language training courses is offered as well as courses in linguistics. An additional feature of the program is a series of lectures on Chinese and Japanese linguistics.

The faculty of the institute is made up of members of the Far Eastern language faculties of the participating midwestern universities and distinguished visiting professors from other universities.

Language houses are provided for students of the institute. For detailed information write Professor E. M. Copeland, Director, CIC Far Eastern Language Institute, 322 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## Middle Eastern Languages

The Department of Middle Eastern Languages will offer an intensive beginning course in written Arabic (Arab A and B) which covers the same ground as a full-year beginning Arabic course. Students completing the intensive 15-credit summer course will be eligible to enroll for the second-year level Arabic offered in the fall quarter.

The course will cover grammar, vocabulary, and reading of easy texts, with constant drill and laboratory aids. It is open to all students, and may be taken toward the fulfillment of the language requirements.

## Scandinavian Area Studies

The Scandinavian Area Studies program, held alternate summers at the Universities of Minnesota and Wisconsin, is scheduled for the summer of 1966 at the University of Minnesota. For detailed information consult Professor Alrik Gustafson, Department of Scandinavian, 210 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## 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**—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.

## Expanded Offerings in German

The German Department has increased its offerings this summer in order to make it possible for in-service teachers to make more rapid progress toward the objective of earning an M.A. degree in German. Careful planning should enable a student to satisfy the requirement for an M.A. degree in about three summers. The policy of an expanded German program will be continued in the future.

## Expanded Offerings in French and Spanish

The Department of Romance Languages is offering a wider range of courses 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.

## 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 East European Languages two courses in scientific Russian. Students with no prior knowledge of the Russian language may register for Russ 24, Scientific Russian I. The major goal of this course will be the acquisition of the basic principles of grammar essential to a reading skill, with practice in translating simple scientific texts included in the textbook. Russ 25, Scientific Russian II, introduces work with dictionaries and other supplementary materials for reading standard literature in the various fields.

In addition, the Department of Slavic and East European Languages is offering two intensive courses in Russian, which cover the same ground given in the regular 3-quarter sequences offered during the academic year. These courses are a beginning course in spoken and written Russian (Russ A and B) and an intermediate course (Russ 4-5-6). Students completing the intensive summer courses will be prepared to join those at the next higher level in the fall.

## American Studies

During the summer of 1966, 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, Geography, Art, Music, Philosophy, and Political Science, the School of Journalism, and the College of Education.

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.

## New Courses in Humanities

The Humanities Program is offering two entirely new courses this summer: Hum 55, dealing with the intellectual climate of the Western world since World War II; and Hum 99, Science and the Humanities. Two new proseminars will be offered First Term: Studies in Western Mysticism and Studies in Western Witchcraft and Magic.

## Summer Music Festival

Maestro Stanislaw Skrowaczewski and the Minneapolis Symphony Orchestra have been engaged full time with the Departments of Music and Music Education for 4 weeks of the First Term.

A unique offering for non-music majors will be a new *music literature course* taught in Northrop Auditorium by Hugh Ross of Tanglewood Music Festival. He will use the Minneapolis Symphony Orchestra in 2-hour afternoon demonstration-concerts.

Mr. Ross will also direct the *Sixth Annual Choral Arts Institute*. This year the institute will work with the Minneapolis Symphony Orchestra and the Summer Session Chorus.

A new *contemporary music workshop* will bring a leading orchestral composer to the campus to direct intensive study, rehearsal, and public performance of major modern compositions.

New graduate courses in advanced instrumental and choral techniques will be co-ordinated with a 4-week program for 100 of the most talented Minnesota high school orchestra, band, and chorus students selected from the all-state organizations. These young music students will work individually and in groups with the Minneapolis Symphony Orchestra personnel and serve as demonstration groups for graduate instrumental technique and choral materials classes. They will sit in with the Minneapolis Symphony Orchestra, receive instruction from the symphony personnel, study theory, literature, and perform in their own concert band ensemble, orchestra, and chamber vocal group.

Many of the rehearsals of the Minneapolis Symphony Orchestra and the student groups will be open to music specialists attending the Summer Session.

The Summer Music Festival will feature several major presentations in Northrop Auditorium.

For further information about any of the Music Festival programs, write to Professor Roy A. Schuessler, Acting Chairman, Department of Music, 107 Scott Hall, 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 at the Upper Division-Graduate level in the area



of mass communications. These include Communication and Public Opinion; International Communications and Foreign Affairs; Mass Communications and the News; History of Journalism; Topics in the History of Journalism; Mass Media in a Dynamic Society; Literary Aspects of Journalism; Public Relations Methods; Graphic Arts: Processes; and Seminars in Mass Communication Theory and in the History of Communications. Several Lower Division courses are also offered.

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

## Higher Mental Processes

In collaboration with the Center for Research in Human Learning the Psychology Department is offering a special program in higher mental processes and cognition during the First Term. The program is being conducted by visiting professors selected for their work on such problems. In an effort to make progress in these difficult areas, psychologists have resorted to a number of different strategies. One strategy is best represented by the research area of psycholinguistics. Professor Jerry Fodor of the Massachusetts Institute of Technology will give a course, Psy 215, showing how one may work toward a psychology of language from the model of language developed in another field, linguistics. A second strategy is to attempt to develop interesting and complex behavior in members of another species as a way of making clear exactly what psychological processes and native psychological "equipment" are required in the behavior. Professor David Premack of the University of California at Santa Barbara will present this attack in Psy 216. A third strategy is to attempt to simulate the cognitive behavior of interest by constructing a device which can accomplish the behavior. This usually takes the form of a computer simulation of the organism (through an appropriate program of instructions rather than a physical-mechanical model). Professor Walter Reitman of the University of Michigan will exemplify this approach in Psy 217.

The courses will be conducted as seminars with admission by consent of instructor only. Permission to enroll may be secured through the Human Learning Center, 400 Ford Hall, University of Minnesota, Minneapolis, Minnesota 55455 (telephone 373-5303).

## Minnesota Government and Politics Workshop

The Workshop on Minnesota Government and Politics will be offered during the First Term for members of civic organizations, school teachers and administrators, and others interested in the government of Minnesota. The workshop will introduce those who attend the sessions to some of the major problems of Minnesota government and politics. Topics will include higher education, welfare, metropolitan problems, resource development, and taxation. One week will be devoted to each topic. A lecture on Tuesdays will introduce the topic. On Wednesdays, a panel of public officials, civic leaders, and educators will discuss the topic. On Thursdays, the topic will be discussed in a seminar session. For further information write to Director, Public Administration Center, University of Minnesota, Minneapolis, Minnesota 55455. (See PA 214)

## High School Forensics 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 140 is available for students desiring instruction in teaching speech at the high school level (see College of Education in course listing section of this bulletin).

## High School Theatre Workshop

The Department of Speech and Theatre Arts in co-operation with the College of Education will sponsor a special enrichment program in theatre for high school students. Lectures in theatre history, classes in acting and stagecraft, and participation in a series of one-act plays are included in the curriculum. College students may work with the high school students if enrolled in Th 111 or 112, Stage Direction.

## Theatre Lectures

*Mirror of Man II* is to be a series of lectures by distinguished men of the theatre focused on the Minnesota Theatre Company 1966 season at the Tyrone Guthrie Theatre. Among those invited to lecture are Elia Kazan, Douglas Campbell, Thornton Wilder, Robert Brustein, Jules Irving, and Henry Hewes, among others.

For further information, write the General Extension Division, 152 Nicholson Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## Speech Pathology

During the First Term the Division of Speech Science, Pathology, and Audiology of the Department of Speech and Theatre Arts will offer an expanded program at the graduate and undergraduate levels. Professor Carl Thompson of the Communication Sciences Laboratory at the University of Florida will be a visiting lecturer. He will offer a course in the clinical management of voice disorders and in voice science. Associate Professor Ronald Wendahl of the University of Minnesota Voice Science Laboratory will offer a course on the application of laboratory techniques to the study of the larynx and Professor Ernest Henrikson will offer a course on the rehabilitation of the laryngectomized. During Second Term, courses will be offered in stuttering, aphasia, and speech retardation. Students interested in summer work toward a graduate or undergraduate degree should contact Professor Clark D. Starr, Speech and Hearing Clinic, 215 Shevlin Hall, University of Minnesota, Minneapolis, Minnesota 55455.

## **Audiology (Hearing)**

Courses in audiology will be available during both summer terms. Courses will be offered in the areas of hearing science, hearing disorders, audiometry, hearing aids, lip reading, and language for the hearing impaired. Seminars and clinical practice will be arranged through the facilities of the Audiology Clinic. Professor Irwin Shore, Director of the Hearing Clinic, Central Institute for the Deaf, St. Louis, Missouri, will provide specialized courses in audiology.

Interested students should arrange an early conference with Professor Frank Lassman, Audiology Clinic, D-311 Mayo, University of Minnesota, Minneapolis, Minnesota 55455.

## **Archaeological Field Session**

The archaeological field techniques course, Anth 140, will be offered during the First Term. Upper Division and graduate students registered for the 6-credit course will participate in excavations at a late prehistoric village site in the Mille Lacs-Kathio State Park. The course will include instruction in site survey techniques, mapping, excavation procedures, and preliminary laboratory analysis. Students registering for the course must have permission from the instructor. Graduate students with previous field techniques credit who wish to conduct special research in connection with the field course may register for Directed Research (Anth 190) with permission of the instructor.

## **Geographical Field Session**

An intensive field research seminar, Geog 214, will be given from August 6 to August 27 (6 days will be on the University of Minnesota campus and on traverses to and from the field headquarters at Platteville, Wisconsin; the remainder of the period will be in the environs of the field headquarters). Research will be focused upon related problems in cultural and rural geography. Reservations must be made no later than June 5. For costs, detailed information, and reservations contact Department of Geography, University of Minnesota, Minneapolis, Minnesota 55455.

## **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 23 to September 12. Professors Clarence W. Olmstead of the University of Wisconsin and Neil Salisbury of the State University of Iowa will conduct the field seminars concerning agricultural geography and land use (Geog 276-277) and landform geography (Geog 251-252). 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.

# 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 St. Paul-Ramsey 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 Nolte Center for Continuing Education. These courses are primarily for practitioners and are largely practical in nature. Circulars may be obtained from the Nolte Center for Continuing Education.

Clinics and conferences in the University Hospitals, the Hennepin County General Hospital, the Veterans Administration Hospital, and the St. Paul-Ramsey 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 \$168 for residents of Minnesota, and \$400 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 \$27. 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.

## SCHOOL OF NURSING

**Courses and Fees**—Several of the courses in the 1966 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, master of science in medical-surgical 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 and medical-surgical 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 baccalaureate 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 for elective courses in the College of Liberal Arts and pay Summer Session fees. For further information, see the *Bulletin of the School of Nursing*.

Students already enrolled in the baccalaureate programs 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*.

## SCHOOL OF PUBLIC HEALTH

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 fall quarter.

### Ground Water Development

For the seventh 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 13 to August 19. 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 13 to July 16. For detailed information write the School of Public Health, University of Minnesota, Minneapolis, Minnesota 55455.

## 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.

## Institute for Teachers of 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 13 to August 20 (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.

## 3M Distinguished Lectures in Chemistry

The 3M visiting lecturer this summer will be the noted X-ray crystallographer, J. D. Dunitz, professor of organic chemistry at the Swiss Federal Institute of Technology, Zurich. He will present a series of lectures on structural chemistry elucidated by X-ray crystallography. The dates for the series will be announced later.

## Geology for High School Teachers

The Department of Geology and Geophysics offers 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.

For the first time, in the Second Term of Summer Session, the department will offer a course in systematic mineralogy, Geo 162, especially slanted toward the interest of high school teachers. The sequence of Geo 109C, 122C, and 162 can be accepted for the fulfillment of the minor requirements of the M.A. program of graduate students in education.

# GENERAL EXTENSION DIVISION

## Nolte Center for Continuing Education Program

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

- June 15-16—Automation Institute for Business School Teachers
  - June 15-17—Dentistry for Children
  - June 16-18—Evaluation of Hypnosis in Medicine
  - June 20-24—Prosthodontics—Dental
  - June 22-24—Touch Shorthand Workshop
  - June 23-24—Seminar for Clerks of District Courts
  - June 23-24—Workshop on the Role of the Principals in the Modern Math Program
  - June 23-25—Leadership Training for Voluntary Agencies
  - June 27-July 1—Creative Writing for Children and by Children
  - July 5-8—Crown and Bridge—Dental
  - July 12-16—Technics of Infrared Spectroscopy
  - July 18-22—Chemical Interpretation of Infrared Spectra
- Summer Technology Seminars

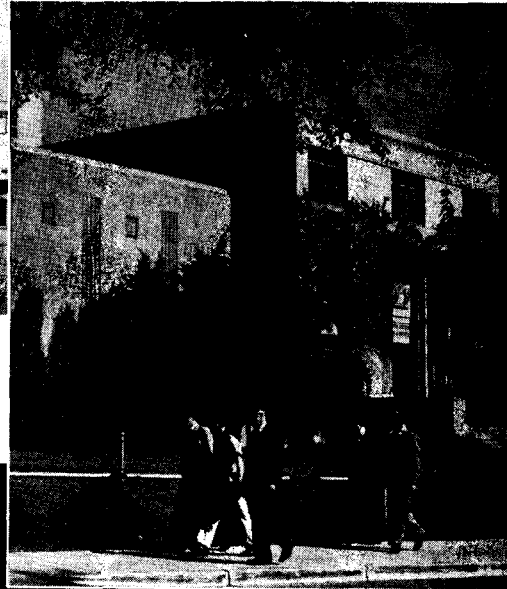
For further information, please write to the Director, Nolte Center for Continuing Education, University of Minnesota, Minneapolis, Minnesota 55455.

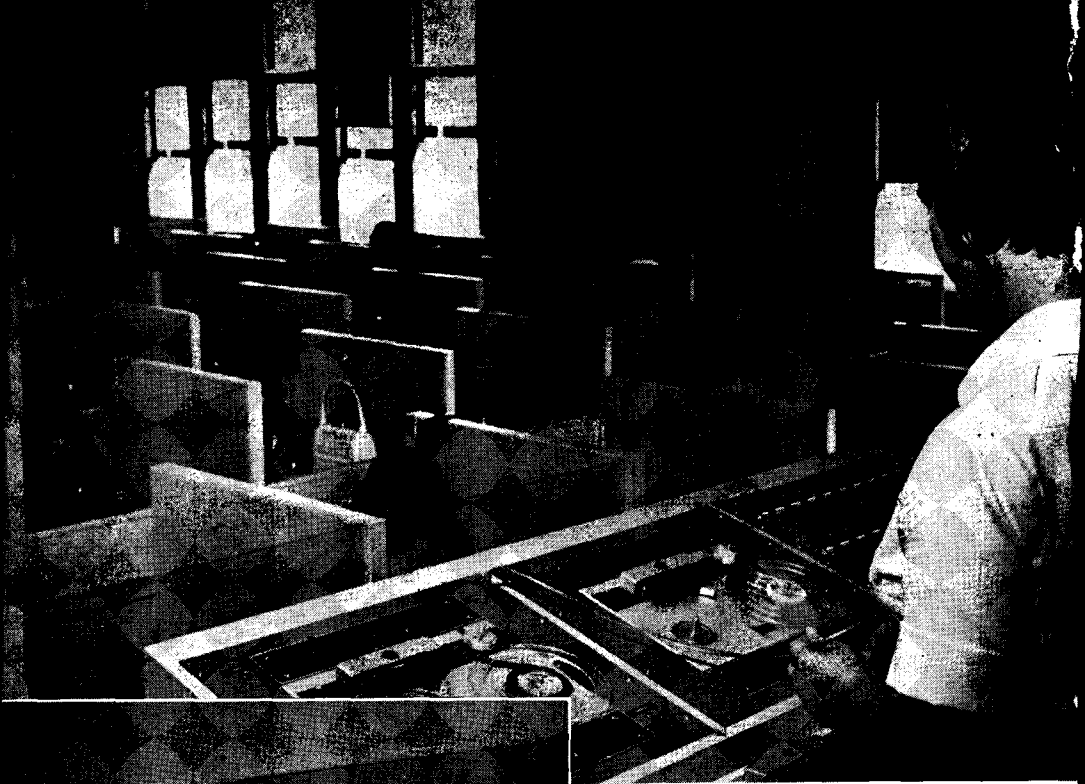
## Introduction to Orchestral Repertoire

Music Literature (See Summer Music Festival, page 152), First Term, for 4 weeks. Twice each week, in Northrop Auditorium, a distinguished guest conductor will deliver a half-hour lecture and conduct the Minneapolis Symphony in a 2-hour demonstration concert of master works. Emphasis will be on structure, elements of orchestral tone color, and the roles of the performer and conductor. The course is primarily for those who are not majoring in music. However it is open to all. It is designed to help meet the liberal arts requirements for students from all colleges (University of Minnesota), to meet needs of concert-goers from campus and community. It is suitable also as an elective for education majors. Evaluation will be by short factual tests and a final factual examination. Instructors: Mr. Hugh Ross, visiting professor (from Tanglewood), Professor Paul Fetler, composer and music theorist, and Professor Milton Babbitt, visiting professor-composer.

**Fee and Registration**—The course is available (credit or audit) as a special class in the General Extension Division. The fee is \$22 for those not enrolled in the Summer Session. For information please write Dean of Summer Session, 152 Nicholson Hall. Summer Session students may register for it as a regular Summer Session offering. The course description will appear on a supplemental list, to be published in May. The course will be listed as Mus 66su (First Term), Introduction to Orchestral Repertoire (2 cr; primarily for nonmusic majors).







*Above: Language Laboratory*



*Left and  
Below: Scenes from  
Foreign Language  
Programs*



# Course Descriptions

*Second  
Term*



# College of Agriculture, Forestry, and Home Economics

*For general information on the College of Agriculture, Forestry, and Home Economics, see section on Schools, Colleges, and Special Programs.*

## Agricultural Economics (AgEc)

### 201 GENERAL SEMINAR: AGRICULTURAL ECONOMICS

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

## Agricultural Education

(See Index)

## Agricultural Engineering (AgEn)

### Mechanized Agriculture (MeAg)

#### 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) Bear, Solstad

## Agronomy and Plant Genetics (Agro)

### 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)

#### 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) Hanson, Jordan, Meade, Rempel, Goodrich, Meiske

## Dairy Husbandry (DyHu)

Second  
Term  
Courses

- 202° **RESEARCH IN DAIRY PRODUCTION**  
Special problems assigned to fit student needs. (Cr ar; prereq prelim grad work; hrs ar)  
Cole, Donker, Graham, Williams, Young, Otterby

## Dairy Industries (DInd)

- 170 **SPECIAL PROBLEMS IN DAIRY MANUFACTURING**  
Individual laboratory or library research on chemical, physical, and engineering problems involved in processing and utilization of dairy products. (1-3 cr; prereq sr or ‡; hrs ar)  
Coulter, Morris, Thomas
- 180 **SPECIAL PROBLEMS IN DAIRY MICROBIOLOGY**  
Laboratory or library research on problems related to the microbiology of dairy products. (1-3 cr; prereq sr or ‡; hrs ar) Jezeski, Olson
- 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.

- 243° **RESEARCH IN ENTOMOLOGY**  
(Cr ar) Hodson, Chiang, Cook, Peterson, Richards, Brooks, Price, Radcliffe
- 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

- 200° **RESEARCH PROBLEMS IN SILVICULTURE**  
(Cr ar) Hansen, B Brown, Bakuzis
- 203° **RESEARCH PROBLEMS IN FOREST MANAGEMENT**  
(Cr ar) Irving, B Brown, Winsness, Meyer
- 205° **RESEARCH PROBLEMS IN FOREST ECONOMICS**  
(Cr ar) Skok, Hughes
- 207° **RESEARCH PROBLEMS IN FOREST PRODUCTS ENGINEERING**  
(Cr ar) Hossfeld, Kaufert, Haygreen
- 213° **RESEARCH PROBLEMS IN FOREST UTILIZATION**  
(Cr ar) Hossfeld, Kaufert, Haygreen, Skok, Thompson
- 215° **RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY**  
(Cr ar) Sucoff
- 218° **RESEARCH PROBLEMS IN FOREST MEASUREMENTS AND PHOTOGRAMMETRY**  
(Cr ar) Meyer, John

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

- 219° RESEARCH PROBLEMS IN FOREST RECREATION  
(Cr ar) Merriam, Hughes, Skok
- 220° RESEARCH PROBLEMS IN FOREST TREE GENETICS  
(Cr ar) Pauley
- 221° RESEARCH PROBLEMS IN FOREST INFLUENCES  
(Cr ar) Thorud
- 222° RESEARCH PROBLEMS IN FOREST POLICY  
(Cr ar) Irving, Skok, Winsness, Merriam

#### OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION

##### Special Term for Forestry Students

(August 22 to September 24)

Required of all forest resources development (formerly 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 Forestry 54 and 56, special field trips to federal, state, and private forestry operations are required of all students. All students must register for the following courses:

- 50 IMPORTANT FOREST PLANTS  
(Formerly For 2) Identification of forest plants as related to forest types. (2 cr, §2) Ar
- 54 FOREST ECOLOGY  
(Formerly For 5) Ecological principles. Silvical characteristics of tree and shrub species. Forest communities and environmental factors. (4 cr, §5) Hansen, Thorud
- 56 FIELD FOREST MEASUREMENTS  
(Formerly For 6) Woods surveying, tree measurements, and timber estimating. (1 cr, §6) Hallgren
- 57 INTRODUCTION TO FOREST RECREATION  
(Formerly For 14) An introduction to recreational use of the forest based upon the planning, management, and interpretation at Itasca State Park. (1 cr, §14) Merriam, Frissell
- 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)

- 20 INTRODUCTION TO RELATED ART  
Development of an appreciation of art involved in everyday life of student; cultivation of taste in varied fields such as home furnishings and architecture. Arts and crafts of various countries studied briefly for their contribution to student's breadth of view, enjoyment, and understanding of other cultures. (3 cr; II MTWThF; McNH 360) Forsyth
- 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 §; IV-V MTWThF; McNH 342) Abell
- 120 ART HISTORY  
Art from the Egyptian period to present. Painting, sculpture, and architecture of the past studied for influence on contemporary period. Field trips. (3 cr; III MTWThF; McNH 360) Forsyth
- 126 CRAFT PROBLEMS II  
Advanced craft design in one selected medium. Readings. (3 cr; prereq 25 or 26 or §; IV-V MTWThF; McNH 342) Abell

- 183 THE FAMILY IN WORLD PERSPECTIVE**  
Comparison of family organization and modes of functioning in selected major world civilizations. Emphasis on adaption of the family to urbanization and industrialization, and family influences on personality formation. (3 cr; prereq HEED 90 or #; III MTWThF; McNH 201) Ar
- 201 READINGS IN TEXTILES AND CLOTHING**  
Independent study—survey of literature in selected areas. Written reports. (1-3 cr; prereq 112, 115, or 116, #) Davison
- 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

## Horticultural Science (Hort)

- 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 [max 9]) Staff
- 249° RESEARCH IN HORTICULTURAL CROP BREEDING**  
(Cr ar [max 9]) Currence, Davis, Lauer, Mullin, W R Andersen, White

## Plant Pathology and Physiology (PIPa) ††

- 201° RESEARCH IN NEMATOLOGY**  
Taxonomy, or ecology, of plant parasitic and free-living terrestrial or aquatic nematodes. (Cr ar; prereq 101 or #) Kernkamp, MacDonald
- 203° RESEARCH IN PLANT PATHOLOGY**  
Special assignment of work in laboratory and field problems in pathological research. (Cr ar) Kernkamp, Christensen, Eide, French, Hart, King, Kommedahl, Rowell, Wilcoxson, Anderson, Moore
- 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 processes; morphology or physiology of special forms. (Cr ar; prereq 105, 106, 107) Christensen, Anderson
- 254° RESEARCH PROBLEMS IN PLANT PHYSIOLOGY**  
Special assignment of work in plant physiology. (Cr ar) Rowell, Linck, Sudia

## Poultry Science (Poul)

- 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
- 219° RESEARCH IN AVIAN PHYSIOLOGY**  
(Cr ar; prereq #; hrs ar) Phillips

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

## Rhetoric (Rhet)

### 22 PUBLIC SPEAKING

A practical course in the fundamentals of speechmaking. 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 307) Nichols

### 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; limited to 30 students; all sections will meet on the Minneapolis Campus) Geier, Horberg

Sec 1, I MTWThF, Ar  
Sec 2, II MTWThF, Ar

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

### 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 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)

### 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

### 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; hrs ar) Martin, Burson, Blake, Arneman, Rust, Farnham, Grava, Caldwell, MacGregor, Schmidt, Adams, Baker



# College of Biological Sciences

*For general information on the College of Biological Sciences, see section on Schools, Colleges, and Special Programs.*

## Botany (Bot) ††

### Biol 2†† GENERAL BIOLOGY

(See Biol 1, First Term) (5 cr; limited to 168 students; prereq 1 or equiv; lect V MTWTh, V-VI F, Bo B6; lab VI-VIII MTWTh, Z 101ABCD) Ar

### 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. (5 cr; limited to 25 students; prereq 52 or equiv or #; II-IV MTWThF; HS W30-40) Baker

### 195° PROBLEMS

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

## Biochemistry (BioC)

### 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, Gander, Glass, Lovrien, Warner

## Zoology (Zool) ††

### Biol 2†† GENERAL BIOLOGY

(See Biol 1, First Term) (5 cr; limited to 168 students; prereq 1 or equiv; lect V MTWTh, V-VI F, Bo B6; lab VI-VIII MTWTh, Z 101ABCD) Ar

### 101 BASIC ZOOLOGY

(Cr ar; prereq grad only; hrs ar) 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

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†† 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.

# Biology Session

## LAKE ITASCA FORESTRY AND BIOLOGICAL STATION

*For general information on the Biology Session at Lake Itasca, see section on Schools, Colleges, and Special Programs, or write for Biology Session Bulletin, Summer Session, 6690 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455*

### Botany (Bot)

- 112 **AQUATIC FLOWERING PLANTS**  
(5 cr; limited to 20 students; prereq 52 or equiv or #; MTh) Beal
- 116 **SUMMER FLORA OF MINNESOTA**  
(5 cr; limited to 20 students; prereq 52 or equiv or #; WS) Thieret
- 152 **ECOLOGY OF FRESHWATER ALGAE**  
(5 cr; limited to 20 students; prereq 150 or 155 or #; MTh) Brook
- 155 **FRESHWATER ALGAE**  
(5 cr; limited to 20 students; prereq 10 cr in botany, biology, or zoology, or #; TF) Meyer
- 159 **LICHENS**  
(5 cr; limited to 20 students; prereq 10 cr in botany or zoology or #; TF) Hale
- 158 **THEORY AND PRACTICE IN ENVIRONMENTAL MEASUREMENT**  
(See Forestry 158)

### Entomology, Fisheries, and Wildlife (Ent)

- 129 **AQUATIC ENTOMOLOGY**  
(5 cr; limited to 15 students; prereq 59, 74 or equiv or #; MTh) Cook
- 196° **SPECIAL PROBLEMS IN ENTOMOLOGY, FISHERIES, AND WILDLIFE**  
(Cr ar; prereq #) Cook, Marshall

### Forestry (For)

- 158 **THEORY AND PRACTICE IN ENVIRONMENTAL MEASUREMENT**  
(Same as Bot 158) (5 cr; limited to 20 students; prereq college physics, ecology, or physiology; MTh) Sucoff
- 215° **RESEARCH PROBLEMS IN FOREST-TREE PHYSIOLOGY**  
(Cr ar; prereq #) Sucoff

### Plant Pathology and Physiology (PIPa)

- 56 **INTRODUCTION TO THE STUDY OF FUNGI**  
(5 cr; limited to 7 students; prereq 9 cr in botany, or #; WS) French
- 156 **STUDY OF FUNGI FOR ADVANCED STUDENTS**  
(5 cr; limited to 8 students; prereq 9 cr in botany, or #; WS) French
- 210° **SPECIAL PROBLEMS IN MYCOLOGY**  
(Cr ar; prereq grad, Myc 107) French

## Zoology (Zool)

Second  
Term  
Courses

- 72 **NATURAL HISTORY OF INVERTEBRATES AND FISHES**  
(5 cr; limited to 10 students; prereq Biol 2 or #; TF) Cole
- 115 **ADVANCED NATURAL HISTORY OF INVERTEBRATES AND FISHES**  
(5 cr; limited to 10 students; prereq 15 cr in zoology or #; TF) Cole
- 119 **LIMNOLOGY**  
(5 cr; limited to 20 students; prereq 15 cr in biology or #; WS) Underhill
- 195\* **PROBLEMS IN ECOLOGY AND LIMNOLOGY**  
(Cr ar; prereq Biol 2 or equiv, and #) Cole, Underhill

# School of Business Administration

*For general information on the School of Business Administration, see section on Schools, Colleges, and Special Programs.*

## Accounting (Acct)

- 24 **PRINCIPLES OF ACCOUNTING**  
(Continuation of Section 1—see First Term) (3 cr for both terms, §55A; prereq 3rd qtr fr; I MWF; CB 125) Berryman
- 25 **PRINCIPLES OF ACCOUNTING**  
(Continuation of Acct 24) (3 cr, §55B; prereq 24)  
Sec 1, IV MTWThF, CB 230, Ar                      Sec 2, II MTWThF, CB 125, Bentley
- 26 **PRINCIPLES OF ACCOUNTING**  
(Third quarter—see Acct 24) (3 cr, §55B; prereq 25)  
Sec 1, IV MTWThF, CB 125, Ar                      Sec 2, II MTWThF, CB 115, Ar
- 75A†† **ACCOUNTING LABORATORY I**  
(See First Term) (1 cr for both terms; prereq 26 or equiv; VI-VII T; CB 110) Ar
- 105A†† **INTERMEDIATE ACCOUNTING I**  
(See First Term) (3 cr for both terms; prereq 26 or equiv; III MWF; CB 430) Bentley
- 115A†† **COST ACCOUNTING**  
(See First Term) (3 cr for both terms, §55C; prereq 26 or equiv; I MWF; CB 430) Bentley
- 125†† **AUDITING PRINCIPLES AND PROCEDURES**  
(See First Term) (4 cr for both terms; prereq 105C or ¶105C and 105B; II MTWF; CB 430) Berryman
- 135†† **INCOME TAX ACCOUNTING**  
(See First Term) (4 cr for both terms; prereq 55D or 105A or §; IV MTWF; CB 430) Heller
- 155B **INTRODUCTION TO MANAGERIAL ACCOUNTING**  
(Combined course—continuation of Acct 155A) (See Acct 55B) (3 cr, §25-26 or §55B; prereq grad or §, 155A)  
Sec 1, 7:35-8:50 MTWThF, CB 110, Ar  
Sec 2, 11:15-12:30 MTWThF, CB 110, Ar
- 185A†† **ADVANCED ACCOUNTING**  
(See First Term) (3 cr for both terms; prereq 105C or ¶105C; III MWF; CB 110) Heller

## Business Finance (BFin)

- 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 115) Kroncke
- 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; III MTWThF; CB 105) Ar

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

- 156 **CORPORATION FINANCE**  
(See BFin 56) (3 cr, §56; prereq grad, Acct 26 or 155B; I MTWThF; CB 115) Kroncke

Second  
Term  
Courses

## Industrial Relations (IR)

- 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; II MTWThF; CB 205) Smythe
- 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 #; III MTWThF; CB 105) Smythe
- 142 **SETTLEMENT OF INDUSTRIAL RELATIONS DISPUTES**  
The nature of industrial conflict in employment relations; stresses contributing to conflict and dispute situations; public and private approaches to the prevention, reduction, and resolution of conflicts. (3 cr; prereq 52 or 152; I MTWThF; CB 120) Seltzer
- 152 **PRINCIPLES OF INDUSTRIAL RELATIONS: LABOR MARKETING**  
(See IR 52) (3 cr, §52; prereq grad or #, Econ 2 or equiv; II MTWThF; CB 205) Smythe
- 172 **PRINCIPLES OF INDUSTRIAL RELATIONS: MANPOWER MANAGEMENT**  
(See IR 72) (3 cr, §72; prereq Econ 2 or #; III MTWThF; CB 105) Smythe
- 182B **INTERMEDIATE MANPOWER MANAGEMENT**  
Manpower management policy development, application, and evaluation within union and company managements; manpower research and auditing. (3 cr; prereq 72 or 172; VII-VIII MWF; CB 430) Mahoney

## Marketing (Mktg)

- 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; I MTWThF; CB 205) 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 205) Lewis
- 107 **RETAIL MANAGEMENT I**  
Retailing principles and methods; relations of retailing to other parts of the economy; problems associated with operation of stores of various types. (3 cr, §227 [available for grad cr only by #]; prereq 57; III MTWThF; CB 225) Hancock
- 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 205) Lewis
- 157 **MARKETING FUNDAMENTALS**  
(See Mktg 57) (3 cr, §57; prereq grad or #, Econ 2 or equiv; I MTWThF; CB 205) Hancock
- 207 **ADVERTISING AND SALES PROMOTION**  
(See Mktg 77) (3 cr, §77; prereq 57 or 157; II MTWThF; CB 205) Lewis
- 227 **RETAIL MANAGEMENT**  
Retailing principles and methods; relation of retailing to other parts of the economy; problems associated with operation of stores of various types. (3 cr, §107; prereq 57; III MTWThF; CB 225) Hancock
- 237 **SALES MANAGEMENT**  
(See Mktg 117) (3 cr, §117; prereq 57 or 157; IV MTWThF; CB 440) Lewis

## Quantitative Analysis (QA)

### 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; I MTWThF; CB 255) Kozelka

### 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; I MTWThF; CB 140) Willis

### 58 QUANTITATIVE METHODS FOR ADMINISTRATION

Application of probability and mathematics in the solution of operational problems in business. General elements of model construction; inventory models; allocation models; queuing models. (3 cr, §258; prereq 51, Econ 65, Math 40 or 42 or equiv; II MTWThF; CB 140) Andrew

### 61†† INTRODUCTION TO ELECTRONIC COMPUTERS

(See First Term) (2 cr for both terms; prereq 5, Math 10 or equiv; lect I TTh; CB 220) Ar

Sec 1, hrs ar, CB 93

Sec 2, hrs ar, CB 93

### 150 MATHEMATICS FOR BUSINESS ANALYSIS

Introduction to mathematical concepts and notation as applied to the description and analysis of business operations. Applications of differential and integral calculus to business problems. For graduate students with limited mathematical background. (3 cr, §Math 40, §ITM 24A; prereq grad or §, Math 10 or equiv; II MTWThF; CB 220) Willis

### 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; III MTWThF; CB 140) Andrew

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

# College of Education

*For general information on the College of Education, see section on Schools, Colleges, and Special Programs.*

## Agricultural Education (AgEd)

- 221 **FIELD PROBLEMS**  
(3 cr; hrs ar) Peterson, Kitts, Swanson, Marvin
- 232° **RESEARCH IN AGRICULTURAL EDUCATION**  
(Cr ar; prereq 15 cr in education) Peterson, Kitts, Swanson, Marvin

## Art Education (ArEd)

- 17 **PICTORIAL EXPRESSION FOR ELEMENTARY EDUCATION**  
(3 cr; limited to 38 students; III-IV MTWThF; WuH 240) Mitra
- 18 **DESIGN ACTIVITIES FOR ELEMENTARY EDUCATION**  
(3 cr; limited to 34 students; I-II MTWThF; WuH 210) Mitra
- 19 **FUNCTIONAL ARTS AND CRAFTS IN ELEMENTARY EDUCATION**  
(3 cr; limited to 36 students; III-IV MTWThF; WuH 220) Hegg
- 53 **INTRODUCTION TO WEAVING**  
(3 cr; limited to 17 students; VI-IX MTWThF; July 18-August 3; WuH 340) Smits
- 54 **ADVANCED WEAVING**  
(3 cr; limited to 3 students; VI-IX MTWThF; July 18-August 3; WuH 340) Smits
- 80 **CONTEMPORARY CRAFTS**  
(3 cr; limited to 24 students; VI-IX MTWThF; August 4-19; WuH 120) Bradley
- 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; limited to 40 students; prereq tchg exper or #; III MTWThF; WuH 110) Gayne
- 295° **PROBLEMS: ART EDUCATION**  
(Cr ar; prereq #) Gayne

## Institute of Child Development

### Child Psychology (CPsy)

- 80 **CHILD PSYCHOLOGY**  
(3 cr; prereq Psy 2; II MTWThF; CD 218) Knights
- 132 **ADOLESCENT DEVELOPMENT**  
(3 cr; prereq sr, 12 cr in psychology, educational psychology, sociology, or home economics; I MTWThF; CD 218) Goldin
- 140 **BEHAVIOR PROBLEMS**  
(3 cr; prereq 80 or equiv; III MTWThF; CD 218) Goldin
- 144 **PSYCHOLOGY OF THE GIFTED CHILD**  
Psychology and development of high intellectual ability and of special talents. (3 cr; prereq 80 or equiv; III MTWThF; WuH 230) Nadeau
- 179 **CLINICAL PROCEDURES WITH CHILDREN**  
(3 cr; prereq 12 cr in psychology, educational psychology, sociology, or child psychology; IV MTWThF; CD 218) Knights





- 116 **INTRODUCTORY STATISTICAL METHODS**  
(Not equivalent to EPsy 216, 216A) (3 cr; each section limited to 45 students) Hennen  
Sec 1, III MTWThF, Bu 123                      Sec 2, V MTWThF, Bu 123
- 116A **INTRODUCTORY STATISTICAL METHODS—LABORATORY**  
(2 cr; limited to 22 students; prereq ¶116; I-II TWTh; WuH 330) Schluck
- 117 **BASIC PRINCIPLES OF MEASUREMENT**  
(3 cr; prereq 116 or 216 or Psy 70 or equiv; III MTWThF; Bu 120) Anderson
- 133 **INTRODUCTION TO GUIDANCE**  
(3 cr; prereq 9 cr in education; I MTWThF; Bu 125) Blocher
- 148 **CLINICAL DIAGNOSIS OF READING DIFFICULTIES**  
(3 cr; limited to 20 students; II MTWThF; Lib 12) Arnold
- 150 **CLINICAL PRACTICE IN REMEDIAL TEACHING**  
(3 cr; each section limited to 35 students; prereq EdCI 145 or 151 and §) Ar  
Sec 1, I MTWThF and 2 hrs ar, Pt 110      Sec 2, II MTWThF and 2 hrs ar, Pt 110
- 159 **PERSONALITY DEVELOPMENT AND MENTAL HYGIENE**  
(3 cr; each section limited to 40 students) Borow  
Sec 1, II MTWThF, NH 207                      Sec 2, IV MTWThF, NH 207
- 182 **EDUCATION OF EXCEPTIONAL CHILDREN**  
(3 cr; prereq Ed 55B or 75B; I MTWThF; Pt 214) Ar
- 188 **EDUCATION OF THE CULTURALLY DISADVANTAGED CHILD**  
(3 cr; prereq HED 90, CPsy 90; I MTWThF; AH 9) Wood
- 193 **PSYCHOLOGY OF HUMAN LEARNING**  
(3 cr; each section limited to 40 students) Deno  
Sec 1, II MTWThF, WuH 230                      Sec 2, IV MTWThF, WuH 230
- 208° **METHODS IN EDUCATIONAL RESEARCH**  
(3 cr; I MTWThF; Arch 140) Hoyt
- 209 **SEMINAR: RESEARCH PLANNING**  
(1 cr; VI MWF; Bu 125) Hoyt
- 217 **STATISTICAL METHODS**  
(3 cr; prereq 216; I MTWThF; Bu 123) MacEachern
- 217A **STATISTICAL METHODS—LABORATORY**  
(2 cr; each section limited to 22 students; prereq ¶217) Lunney  
Sec 1, III-IV TWTh, WuH 330                      Sec 2, V-VI TWTh, WuH 330
- 218 **STATISTICAL METHODS (Part II)**  
(3 cr, †parts I-II; IV MWF; Bu 123) MacEachern
- 218A **STATISTICAL METHODS—LABORATORY (Part II)**  
(See EPsy 218, First Term) (2 cr, †Parts I-II; limited to 22 students; II-III MF; WuH 330) Schluck
- 233° **PROBLEMS: GUIDANCE AND PERSONNEL WORK**  
(1-9 cr; VI-VII MW; Bu 105) Blocher
- 253° **RESEARCH PROBLEMS**  
(Cr and hrs ar; prereq §) Wilk, Borow, Hoyt, Houchins, MacEachern, Wilderson, Wood
- 257 **CLINICAL PRACTICE IN EDUCATIONAL DIAGNOSIS**  
(3 cr, §151; limited to 6 students; prereq 210 or equiv, EdCI 145, §; 1:00-4:00 MTWThF; Pt 110) Wesenberg and clinical staff
- 286 **ADVANCED COURSE: EDUCATION OF EMOTIONALLY DISTURBED, SOCIALLY MALADJUSTED CHILDREN**  
(3 cr; prereq §; I MTWThF; AH 101) Wilderson
- 288 **PRACTICUM: SPECIAL EDUCATION**  
(3-9 cr; prereq §; hrs ar) Wilderson, Wood

**SECONDARY EDUCATION**

- 134 **COUNSELING PROCEDURES**  
(3 cr; prereq 110 or 117, 113, §; III MTWThF; Pt 111) Parker

## HIGHER EDUCATION

### 281 PRACTICE IN PERSONNEL WORK

(See First Term) Students must register for this course both terms (for a total of 6 credits) in order to receive credit for either term. (3 cr; prereq 226 or #; V-VI MTWThF; Bu 131) Parker

## General Education

### Curriculum and Instruction (EdCI)

#### GENERAL COURSES

##### 105 AUDIO-VISUAL MATERIALS IN EDUCATION

(3 cr; prereq sr; I MTWTh 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 #105; IV MTWThF; WeH 206) Ar

Sec 1, VI MW, WeH 206

Sec 2, IV TTh, WeH 206

##### 128 INTRODUCTION TO THE EDUCATION OF HEARING-IMPAIRED CHILDREN

Educational programs, services, and resources for hearing-impaired individuals; historical background; philosophy; sociology and psychological problems. (3 cr; prereq #; I MTWThF; Arch 140) Houchins

##### 145 READING DIFFICULTIES

(3 cr; prereq 143A or 144 or equiv; III MTWThF; JohH 113) Manning

##### 174-175-176 CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY

(3 cr each; limited to students attending full time spring qtr 1966; prereq #; hrs ar) Starr

##### 201° PROBLEMS: TEACHING SOCIAL STUDIES

(Cr and hrs ar; prereq 102 or 155 or 168, 204 or #) Gardner, Keach

##### 205° PROBLEMS: AUDIO-VISUAL EDUCATION

(Cr and hrs ar; prereq #) Pearson

##### 232° PROBLEMS: TEACHING MATHEMATICS

(Cr and hrs ar; prereq 230 or 231 or 291) Jackson, David Johnson

##### 271° PROBLEMS: CURRICULUM CONSTRUCTION

(Cr and hrs ar; prereq #) Boeck, Curtin, Dykstra, Gardner, Gennaro, Goossen, Humphreys, Jackson, Keach, Lambert, Manning, Odland

##### 273° PROBLEMS: READING

(Cr ar; prereq 143A or 144 or #) Dykstra, Kegler, Manning

##### 296° PROBLEMS: TEACHING ENGLISH

(Cr and hrs ar) Dykstra, Kegler

#### ELEMENTARY EDUCATION

##### 60 TEACHING READING IN THE ELEMENTARY SCHOOL

(3 cr; prereq Ed 75A; II MTWThF; Bu 120) Mitchell

##### 61 TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL

(3 cr; prereq Ed 75B; II MTWThF; Pt 214) Keach

##### 62 TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL

(3 cr; prereq Ed 75A, Math 5; I MTWThF; JohH 113) Jackson

##### 63 CHILDREN'S LITERATURE

(3 cr; I MTWThF; Bu 120) Lilja

##### 64 TEACHING ENGLISH IN THE ELEMENTARY SCHOOL

(3 cr; prereq Ed 75A; IV MTWThF; JohH 114) Lilja

##### 65 TEACHING SCIENCE IN THE ELEMENTARY SCHOOL

(3 cr; prereq Ed 75A, 10 cr in natural science; III MTWThF; Pt 214) Gennaro

- 102 **TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75B or equiv; IV MTWThF; Pt 214) Keach
- 103 **TEACHING SCIENCE IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq sr, Ed 75B or tchg exper; IV MTWThF; Bu 120) Goossen
- 119 **ELEMENTARY SCHOOL CURRICULUM**  
(3 cr; prereq Ed 75B or equiv; II MTWThF; JohH 105) Goossen
- 121 **LITERATURE FOR THE ELEMENTARY SCHOOL**  
(3 cr; II MTWThF; Bu 123) Monson
- 143A **TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq 9 cr in education; I MTWThF; Pt 111) Manning
- 149A **TEACHING AND SUPERVISION OF MATHEMATICS IN THE ELEMENTARY SCHOOL**  
(3 cr, §149; prereq 62 or §; II MTWThF; JohH 114) Jackson
- 150 **SUPERVISION AND IMPROVEMENT OF INSTRUCTION**  
(3 cr; prereq 9 cr in education; II MTWThF; NH 201) Lambert
- 153 **TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL**  
(3 cr; prereq Ed 75B or equiv; I MTWThF; JohH 105) Dykstra
- 261\* **PROBLEMS: IMPROVEMENT OF INSTRUCTION**  
(Cr and hrs ar; prereq §) Curtin, Boeck, Dykstra, Goossen, Jackson, Keach, Lambert, Manning

## SECONDARY EDUCATION

- 113 **HIGH SCHOOL CURRICULUM**  
(3 cr; prereq Ed 55B or equiv; II MTWThF; NH 216) Ar
- 122 **LITERATURE FOR ADOLESCENTS**  
(3 cr; prereq Ed 55B or junior-senior high school tchg exper; I MTWThF; C 111) Kemp
- 125 **OCCUPATIONAL INFORMATION LABORATORY**  
(3 cr; limited to 25 students; prereq §; II MTWThF; Bu 125) Ar
- 131 **ADVANCED TEACHING OF TECHNICAL BUSINESS SUBJECTS**  
Recent research and trends. (3 cr; I MTWThF; Bu 105) Price
- 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; III MTWThF; Bu 105) Meyer
- 144 **TEACHING READING IN SECONDARY SCHOOLS**  
(3 cr; prereq 9 cr in education; II MTWThF; JohH 106) Kemp
- 155 **MATERIALS LABORATORY FOR SOCIAL STUDIES TEACHERS**  
Printed and audio-visual material useful in social studies classes. (3 cr; prereq §; II MTWThF; JohH 113) Gardner
- 161 **CURRICULUM CONSTRUCTION IN BUSINESS EDUCATION**  
Curriculum problems; organization and preparation of teaching units. (3 cr; prereq 113; II MTWThF; Bu 105) Price
- 170B **CURRICULUM AND COURSE OF STUDY CONSTRUCTION**  
Principles and methods for selection and organization of units, courses of study, and curriculums. (3 cr; prereq 113 or 119 or §; III MTWThF; PeikH 175) Firth
- 188A **DEMONSTRATION AND PRACTICUM ON SEVENTH-GRADE LATIN**  
Intensive work with methods and materials which have been used in the Department of Classics' pilot program. See Special Programs and also courses offered by the Classics Department. (3 cr; prereq Latin tchr at jr or sr high school level or Δ; I MTWThF; FolH 303) Erickson
- 190 **CURRENT DEVELOPMENTS IN SECONDARY SCHOOL SCIENCE TEACHING**  
(3 cr; prereq EdT 68B-C or 68M, equiv undergrad courses or exper in science tchg; I MTWThF; JohH 114) Boeck
- 199E **INTERNSHIP: RECREATION LEADERSHIP**  
(Cr and hrs ar; available for master of education students in recreation) Roys

- 225° **PROBLEMS: SECONDARY SCHOOL SUPERVISION**  
(Cr and hrs ar; prereq #) Firth
- 237 **SEMINAR: RESEARCH IN BUSINESS, DISTRIBUTIVE, AND ECONOMIC EDUCATION**  
(0 cr; prereq #; hrs ar) Meyer, Price
- 238° **PROBLEMS: DISTRIBUTIVE EDUCATION**  
(Cr and hrs ar; prereq #) Meyer
- 239° **PROBLEMS: BUSINESS EDUCATION**  
(Cr and hrs ar; prereq #) Price
- 295 **READINGS IN ENGLISH AND MODERN LANGUAGE EDUCATION**  
(1-3 cr; prereq MA or equiv; hrs ar) Kegler, Piche

## HIGHER EDUCATION

- 228°†† **WORKSHOP: PROBLEMS OF HIGHER EDUCATION AND TEACHER EDUCATION**  
(6 cr; hrs ar MTWThF; room ar)  
Sec 1 (Problems of Higher Education), Churchill, McCune, and consultants  
Sec 2 (Problems of Teacher Education), Mork, Woestehoff, and consultants

## Education (Ed)

- 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, Ph 143, Gennaro                      Sec 4, III MTWThF, Ph 145, Ar  
Sec 2, II MTWThF, Ph 145, Ar                              Sec 5, IV MTWThF, Ph 143, Ar  
Sec 3, III MTWThF, Ph 143, Ar
- 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, Mitchell  
Sec 1, IV MTWThF, Arch 145, Mitchell              Sec 3, IV MTWThF, Arch 135, Stang  
Sec 2, IV MTWThF, Arch 30, Harris

## History and Philosophy of Education (HEd)

- 90 **THE SCHOOL AND SOCIETY**  
(3 cr; each section limited to 75 students; prereq sr) Herrick  
Sec 1, III MTWThF, Arch 55                              Sec 2, IV MTWThF, Arch 55

## Home Economics Education (HEEd)

- 60 **CURRICULUM IN HOME ECONOMICS EDUCATION**  
Selection and organization of content in home economics curriculum at secondary level.  
(3 cr; prereq 49, Soc IA or 1, Ed 55B or ¶Ed 55B; VI MTWThF; McNH 144) Wantoch
- 201° **PROBLEMS: HOME ECONOMICS EDUCATION**  
Independent study of current educational problems. (1-9 cr, §293; prereq 200A and #; hrs ar) Brown, Ford

## Industrial Education (Ind)

- 90-91-92 **INDEPENDENT STUDY**  
(3 cr each; prereq jr or #; VI MTWThF and hrs ar; TNCD 105) Miletich

†† 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; I MTWThF; TNCD 113) Kavanaugh
- 103 **INSTRUCTIONAL AIDS**  
Planning, construction, use. (3 cr; prereq 55 or 100 or equiv; IV MTWThF; TNCD 113) Randleman
- 109 **CONFERENCE LEADING FOR INDUSTRY**  
Purposes, advantages, and limitations of conference method. Techniques of conference procedure. Experience in planning, leading, and evaluating conferences and in writing summaries. (3 cr; prereq #; II MTWThF; TNCD 116) Miletich
- 200° **RESEARCH PROBLEMS**  
(3, 6, or 9 cr; prereq approval of candidacy for Master's degree; hrs ar MTWThF; TNCD 103) Kavanaugh

Second  
Term  
Courses

## Methods and Student Teaching (EdT)

- 84 **PRACTICE AND FIELD WORK IN RECREATION LEADERSHIP**  
(2 cr; prereq recreation major; hrs ar) Roys
- 85 **PRACTICE AND FIELD WORK IN RECREATION**  
(2 cr for majors, 1 cr for minors; prereq recreation majors or minors; hrs ar) Roys

## Music Education (MuEd)

- 51 **TEACHING MUSIC**  
(2 cr; each section limited to 25 students; prereq Mus 4)  
Sec 1, I MTWThF, ScH 104, Borg      Sec 2, II MTWThF, ScH 3, Sieber
- 52 **TEACHING MUSIC**  
(2 cr; each section limited to 25 students; prereq 51, Mus 4 or #) Sieber  
Sec 1, I MTWThF, ScH 3      Sec 2, IV MTWThF, ScH 3
- 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 52 or #; III MTWThF; ScH 104) Borg
- 104 **ADVANCED TOPICS: VOCAL MUSIC**  
Empirical research and literature on voice development in individual, class, and choral work; individual surveys of performance practices and organization of school vocal groups; selection of vocal music. (3 cr; prereq #; I MTWThF; ScH 103) Caswell
- 224° **RESEARCH PROBLEMS**  
(3-9 cr; prereq knowledge of elementary statistics) Borg, Caswell

## Physical Education for Men (PEM)

- 1A†† **BEGINNING GOLF**  
(1 cr; each section limited to 20 students) Bolstad  
Sec 1, V-VI MW, Golf Course      Sec 2, V-VI TTh, Golf Course
- 1B†† **BEGINNING SWIMMING**  
(1 cr; limited to 20 students; VII MTWThF; CH Pool) Richardson
- 2B†† **INTERMEDIATE SWIMMING**  
(1 cr; limited to 25 students; prereq swim 100 yds; II MTWThF; CH Pool) Mowerson
- 2C†† **BEGINNING TENNIS**  
(1 cr; each section limited to 25 students) Mowerson  
Sec 1, VI-VII MW, Tennis Courts      Sec 2, VI-VII TTh, Tennis Courts

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



# General College (GC)

*For general information on the General College, see section on Schools, Colleges, and Special Programs.*

## 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; IV MTWThF; NH 213) Latts

## 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, propaganda, and persuasion. (3 cr; II MTWThF; Arch 30) Zanon

## 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; NH 207) McCutcheon

## 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; SciCB 125) Owen

## 20B LAW IN SOCIETY

The aim is to develop a broad understanding of law as opposed to a limited knowledge of a body of facts relating to specific laws. Through the examination of corporation, negotiable instrument, bankruptcy, mortgage, and conditional sale contract laws, the student acquires an appreciation of the dynamic role of law in an ever-changing society. (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) Caswell

## 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; NH 213) Stockdale

## 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) Reisman

## 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; open to all; I MTWThF; NH 107) Benson

## 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; Arch 35) 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. (3 cr; I MTWThF; NH 213) F Johnson

**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 25) Lupton



# Law School††

Second  
Term  
Courses

- 125 **REMEDIES**  
(See First Term) (6 cr for both terms; I MTWThF; FraH 120) Wolfram
- 142 **CONFLICTS**  
(See First Term) (6 cr for both terms; III MTWThF; FraH 20) Cound
- 162 **STATUTORY INTERPRETATION**  
(See First Term) (3 cr for both terms; V MTW from July 5; FraH 120) Christie
- 172 **LEGAL PROBLEMS OF A WELFARE STATE**  
(See First Term) (3 cr for both terms; IV MTW [2nd term]; FraH 20) Lewis
- 184 **UNFAIR COMPETITION**  
(See First Term) (6 cr for both terms; II MTWThF; FraH 120) Livermore
- 188 **THE CHILD AND THE STATE**  
(See First Term) (3 cr for both terms; IV ThF [2nd term]; FraH 20) Levy

*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	

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†† All courses run through both terms. Students must enter in the First Term and complete both terms.

# College of Liberal Arts

*For general information on the College of Liberal Arts, see section on Schools, Colleges, and Special Programs.*

## American Studies (AmSt)

(See section on Special Programs)

- Hum 21 AMERICAN LIFE I**  
Individualism in American life and thought. (3 cr; I MTWThF; VH 6) Lonie

## Anthropology (Anth)

- 2A INTRODUCTION TO ANTHROPOLOGY: CULTURAL ANTHROPOLOGY**  
Varieties and range of human behavior as revealed through study of primitive societies in all parts of the world. Scientific analysis of the ways in which primitive men 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]; II MTWThF; ForH 155) Salovesh
- 119 PEOPLES AND CULTURES OF MIDDLE AMERICA**  
A survey of both Indian- Spanish-speaking people of Middle America. Analysis of the processes of acculturation which have produced the contemporary cultures of Mexico and Central America. (3 cr; prereq 2A or 100 [waived for major in Latin-American Area Studies]; IV MTWThF; ForH 285) Salovesh
- 125 PEOPLES AND CULTURES OF INDIA**  
Survey of the primitive tribes, Hindu caste society, and the modern communities of India. (3 cr; prereq 2A or 100 or Δ; I MTWThF; ForH 285) Hiebert
- 161 ANTHROPOLOGY OF RELIGION**  
The varieties and range of religious beliefs and practices. The relation of religion to other aspects of culture. (3 cr; prereq 2A or 100; III MTWThF; ForH 285) Hiebert
- 190, 191, 192 DIRECTED RESEARCH**  
(Cr and hrs ar; prereq sr, Δ) Staff

## Art (Art)

### HISTORY OF ART

- 4 SURVEY OF THE HISTORY OF ART**  
From the 17th century to the present, including the baroque and rococo periods, neoclassicism, the 19th century and the movements of modern art. (3 cr, §58; II MTWThF; Arch 25) Waldfogel
- 77 NINETEENTH-CENTURY ART**  
Major styles in European painting, primarily France and Germany: neoclassicism, romanticism, realism, impressionism and postimpressionism. England, Spain, and the United States will also be considered. Parallel developments in sculpture, prints, and architecture. (3 cr; prereq 3 cr in history of art; IV MTWThF; J 207B) Waldfogel
- 112 ART OF JAPAN**  
Development of painting, sculpture, and minor arts in Japan from earliest times to the present. (3 cr; prereq 3 cr in art history; III MTWThF; J 207B) Poor

## STUDIO COURSES

Second  
Term  
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; limited to 20 students; I-II MTWThF; J 2) Wilcox

### 11 PHOTOGRAPHY

For students who have had previous instruction in photography or have worked in photography and know the principles of developing and printing. Develops a personal photographic perception in the student through lectures on photographic history and contemporary trends in photography. Intensive field work. (3 cr; prereq 10 or practical experience and #; limited to 15 students; 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 media. (3 cr; limited to 25 students; III-IV MTWThF; ArtB 150) Priede

### 32-33 ELEMENTS OF PRINTMAKING

(Sequence limited to 20 students) Priede

32 Foundation course. Familiarizes the student with the media of printmaking in general. Problems in engraving, etching, and other techniques employed in working on metal plate, as well as lithography, woodcuts, and combined processes. (3 cr; I-II MTWThF; ArtB 170)

33 A beginning course designed to introduce the various techniques of etching, engraving employed in working on metal plate. Woodcuts and lithography are included, and lectures and demonstrations are given. (3 cr; I-II MTWThF; ArtB 170)

### 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; ArtB 151) Rowan

### 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; ArtB 161) Rowan

### 150-151-152 PROBLEMS IN PAINTING

(3 cr; limited to 10 students; prereq 72 and #; III-IV MTWThF; ArtB 161) Rowan

### 200-201-202 ADVANCED PROBLEMS IN PAINTING

(3 cr; prereq #; hrs ar) Rowan

### 203-204-205 ADVANCED PROBLEMS IN PAINTING

(3 cr; prereq #; hrs ar) Rowan

## Classics

### 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; I MTWThF; FolH 308) Forbes

#### 108†† CLASSICAL VOICES OF POETRY AND PROSE

Beginning instruction and practice in the oral reading of selected Greek and Roman texts. Readings both in original languages and translations. Previous study of language and literature (Greek, Latin, or other) or some dramatic training, but not necessarily both, is expected. (3 cr; open to qualified Lower Division students; prereq jr; II MTWThF; FolH 306) Sonkowsky

#### 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; FolH 308) Forbes

†† No knowledge of Latin or Greek is required.

†† This course is part of the workshop for teachers of Latin. See Section on Special Programs.

## Latin (Lat)

- 101†† THE STRUCTURE OF LATIN**  
Practicum in Latin-to-Latin transformations as useful alternatives to the translation—grammar approach; oral Latin techniques as an integral part of the reading of Caesar, Cicero, and Virgil. (3 cr; prereq 63 or Δ; III MTWThF; FolH 303) Forbes
- 110†† DEMONSTRATION AND PRACTICUM ON SEVENTH GRADE LATIN**  
Intensive work with methods and materials which have been used in the Department of Classics' pilot program. (See Special Programs and also EdCI 188A in the College of Education) (3 cr; prereq Latin tchr at jr or sr high level or Δ; I MTWThF; FolH 303) Erickson
- 172A†† SELECTED READINGS**  
Latin works selected for their intrinsic interest and suitability for rapid reading; Dares Phrygius, Apollonius of Tyre, medieval and postrenaissance Latin translations of Greek classics. Meets with 172B on MWF. In the TTh meetings (172A only), participants will prepare adaptations and concomitant teaching materials suitable for younger students. (3 cr; prereq Latin tchr in jr or sr high school levels or Δ; IV MWF, ar TTh; FolH 303) Erickson
- 172B SELECTED READINGS**  
Meets with 172A on MWF; same readings as 172A; but TTh meetings (172B only) will comprise a workshop in the craft of translation. (3 cr; prereq 63 or Δ; IV MTWThF; FolH 303) Erickson

## East and South Asian Languages

CIC Far Eastern Language Institute

### Chinese (Chin)

- 1-2-3†† INTENSIVE FIRST-YEAR MANDARIN**  
(See First Term) (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; room ar) Mather and staff
- 51-52-53†† INTENSIVE SECOND-YEAR MANDARIN**  
(See First Term) (15 qtr cr for both terms [10 semester cr]; prereq 3; I-IV MTWThF; room ar) Ching and staff
- 101-102-103†† INTENSIVE BEGINNING LITERARY CHINESE**  
(See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 3; III MWF; room ar) Lo and staff
- 105-106† INTRODUCTION TO CHINESE LINGUISTICS: HISTORY OF THE CHINESE LANGUAGE, PHONOLOGY OF OLD CHINESE**  
Consists of 5 hours with linguist. (5 qtr cr [3.3 semester cr]; prereq 103 or Clas 56 or #; III MTWThF; room ar) Pulleyblank and staff
- 115-116-117†† INTENSIVE THIRD-YEAR MANDARIN**  
(See First Term) (11 qtr cr for both terms [8 semester cr]; prereq 53; I-III MTWThF; room ar) Lyell and staff
- 125-126-127†† MODERN CHINESE DOCUMENTS**  
(See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 103 or #; IV MWF; room ar) Chih and staff
- 135-136-137†† ADVANCED COMPOSITION AND CONVERSATION**  
(See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 103; III MWF; room ar) Chih and staff
- 161-162-163†† READINGS IN CHINESE LITERATURE (CLASSICAL)**  
(See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 103; V MWF; room ar) Lyell and staff

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†† This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

†† This course is part of the workshop for teachers of Latin. See Section on Special Programs.

- 165-166-167†† CHINESE LINGUISTICS: PHONOLOGY OF MANDARIN, STRUCTURE OF MANDARIN** **Second Term Courses**  
 (See First Term) (9 qtr cr for both terms [6 semester cr]; prereq 103, 105-106-107 or ‡; VI MWF; room ar) Chao and staff
- 171-172-173†† READINGS IN T'ANG AND SUNG POETRY**  
 (See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 103; VI MWF; room ar) Lo and staff
- 191-192-193†† HONORS: RESEARCH**  
 (See First Term) (1-3 qtr cr for both terms [2 semester cr max]; prereq 153 or ‡; hrs and room ar) Staff

## Japanese (Jpn)

- 1-2-3†† INTENSIVE FIRST-YEAR JAPANESE**  
 (See First Term) (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; room ar) Shohara and staff
- 51-52-53†† INTENSIVE SECOND-YEAR JAPANESE**  
 (See First Term) (15 qtr cr for both terms [10 semester cr]; prereq 3; I-III MTWThF; room ar) Matsumoto and staff
- 101-102-103†† INTENSIVE THIRD-YEAR JAPANESE**  
 (See First Term) (11 qtr cr for both terms [8 semester cr]; prereq 53; I-III MTWThF; room ar) Wright and staff
- 105-106-107†† INTRODUCTION TO JAPANESE LINGUISTICS**  
 (See First Term) (9 qtr cr for both terms [6 semester cr]; prereq 103 or ‡; III MTWThF; room ar) Miller and staff
- 121-122-123†† READINGS IN CONTEMPORARY JAPANESE TEXTS**  
 (See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 103; IV MWF; room ar) Copeland and staff
- 151-152-153†† READINGS IN CONTEMPORARY JAPANESE TEXTS, ADVANCED**  
 (See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 103 or ‡; room ar) Staff
- 161-162-163†† CLASSICAL JAPANESE PROSE**  
 (See First Term) (5 qtr cr for both terms [3.3 semester cr]; prereq 103; V MWF; room ar) Copeland and staff
- 191-192-193†† HONORS: RESEARCH**  
 (See First Term) (1-3 qtr cr for both terms [2 semester cr max]; prereq 153 or ‡; hrs and room ar) Staff

## Economics (Econ)

### 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, II MTWThF, CB 120, Foster

Sec 2, III MTWThF, CB 250, Perry

### 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, I MTWThF, CB 435, Benewitz

Sec 3, III MTWThF, CB 435, Jarrett

Sec 2, II MTWThF, CB 435, Benewitz

### 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 ‡; IV MTWThF; CB 130) Simler

†† This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

- 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 1-2 or #)  
 Sec 1, II MTWThF, CB 240, Jarrett      Sec 2, III MTWThF, CB 130, Green
- 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 66 or equiv; IV MTWThF; CB 415) Green
- 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 66 or equiv; III MTWThF; CB 145) Foster
- 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 #; II MTWThF; CB 410) Maynes
- 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 #; III MTWThF; CB 215) Simler
- 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 415) Coen
- 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; II MTWThF; CB 135) Maynes
- 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 #; IV MTWThF; CB 130) Simler
- 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 240) Buttrick
- 176B DYNAMIC MACROECONOMICS**  
 Theories of the pattern of movements over time of employment, incomes, and prices. Effects of various economic policies upon the magnitude of fluctuations; stability of the economy. (3 cr; prereq 176A or equiv or #; II MTWThF; CB 255) Perry
- 185B ADVANCED MICROECONOMICS**  
 Price and output policies under conditions of imperfect competition. Problems of choice under conditions of uncertainty. (3 cr; prereq 185A or #; III MTWThF; CB 115) Buttrick
- 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
- 290 INDIVIDUAL GRADUATE RESEARCH**  
 (Cr ar) Staff

# English§§

Second  
Term  
Courses

## Composition (Comp)

### 1 FRESHMAN COMPOSITION

(3 cr, §Engl A or 1A or 1B or 10H or Comm 1; each section limited to 28 students; prereq classif card 1 or 1A or 2 or 3)

Sec 1, I MTWThF, VH 205, Ar

Sec 3, II MTWThF, VH 205, Ar

Sec 2, I MTWThF, VH 6, Ar

### 2 FRESHMAN COMPOSITION

(3 cr, §Engl B or 2A or 2B or 11H or Comm 2; each section limited to 28 students; prereq 1)

Sec 1, I MTWThF, VH 306, Ar

Sec 3, II MTWThF, VH 6, Ar

Sec 2, I MTWThF, VH 113, Ar

## Literature (Engl)

### 23 INTRODUCTION TO LITERATURE

The Romantic Movement and the Victorians. Wordsworth, Byron, Shelley, Keats, Carlyle, Tennyson, Browning, and Arnold. (6 cr; prereq ††; I-II MTWThF; VH 301) Stricker

### 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 ††)

Sec 1, III MTWThF, VH 306, Kirchner    Sec 2, III MTWThF, VH 2, Ar

### 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 †)

Sec 1, III MTWThF, VH 113, Eggenschwiler

Sec 2, III MTWThF, VH 303, Ar

### 74 AMERICAN LITERATURE

Crane to the present. (3 cr; prereq 72 except for education minors or †; IV MTWThF; VH 207) Reed

### 77 TWENTIETH-CENTURY BRITISH AND AMERICAN LITERATURE

A critical survey of major figures, with emphasis on basic trends and the interrelations of the two literatures. (3 cr, §Engl 142; prereq ††; II MTWThF; VH 207) Reed

### 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

### 104 EMERSON AND THOREAU

(3 cr; prereq ††; II MTWThF; VH 1) Alsen

### 137 NINETEENTH-CENTURY LITERATURE

The earlier Victorians. (3 cr; prereq ††; II MTWThF; VH 113) Eggenschwiler

### 157 AMERICAN POETRY

Critical survey of American poetry from Anne Bradstreet to Emily Dickinson. (3 cr; prereq ††; IV MTWThF; VH 1) Ar

### 165 THE STRUCTURE OF MODERN ENGLISH

An introductory study of English phonemics, morphemics, and syntax. (3 cr; prereq ††; IV MTWThF; VH 301) Kirchner

†† 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 45.

- 181 **MODERN LITERARY CRITICISM**  
Major texts and movements in modern literary criticism; examination of a few of the more important historical documents from earlier centuries. (3 cr; prereq ††; IV MTWThF; VH 113) R Foster
- 188 **EIGHTEENTH-CENTURY LITERATURE**  
The literature of the mid-century. (3 cr; prereq ††; III MTWThF; VH 6) Sommer
- 190 **TWENTIETH-CENTURY WRITERS**  
Faulkner, Fitzgerald, Mailer. (3 cr; prereq ††; III MTWThF; VH 207) R Foster
- 194 **ELIZABETHAN LITERATURE: PROSE, POETRY, DRAMA**  
From beginning of Tudor period to about 1580; medieval origins of the drama. (3 cr; prereq ††; IV MTWThF; VH 6) Sommer
- 299 **INDEPENDENT READING**  
(3 cr; prereq MA degree or equiv) Ar

## Family Studies (FamS)

- 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; limited to 40 students; I MTWThF; JohH 106) Burr

## Foreign Study (FS)

- 162 **SEMINAR FOR FOREIGN STUDY II**  
Continuation of FS 161. (See First Term) Stavrou, McKierman, Makuen, Younaszai

## Geography (Geog)

- 41 **ECONOMIC GEOGRAPHY**  
Introductory survey and analysis of world patterns of economic activity. Emphasis is placed on raw material occurrence and resource potential, centers of industrial fabrication and circulation of trade and services. (5 cr; II-III MTWThF; CB 10) Adams
- 112 **WESTERN UNITED STATES**  
Regional analysis of the physical and human resources of western United States. (3 cr; I MTWThF; CB 235) Hewes
- 114 **HISTORICAL GEOGRAPHY OF NORTH AMERICA**  
Sequential analysis of settlement and economy in the changing environment and resource patterns of North America. (3 cr; IV MTWThF; CB 435) Hewes
- 190 **DIRECTED READINGS**  
(1-3 cr; prereq sr) Adams
- 214†† **SEMINAR: HISTORICAL FIELD**  
Six days 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 land use in Southwestern Wisconsin in the Platteville region. (5 cr; limited to 12 students; prereq #) Mather
- 301 **RESEARCH PROBLEMS IN GEOGRAPHY**  
(Cr sr) Mather

## German (Ger)

- 2A **BEGINNING GERMAN**  
(5 cr; prereq 1A or 1 yr high school German; I-II MTWThF; FolH 209½) Staff

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

†† Special session, August 6-27. See section on Special Programs.



- 4 **INTERMEDIATE GERMAN**  
Selected readings from literature. (3 cr; prereq 3A or 3B or 3 yrs high school German ...¶5 recommended; I-II MWF; FolH 209) Staff
- 5 **INTERMEDIATE GERMAN**  
Elementary composition and conversation. (2 cr; prereq 3A or 3B or 3 yrs high school German...¶4 recommended; I-II TTh; FolH 209) 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 207) Staff
- 75 **MODERN DRAMA**  
(3 cr; prereq 56 or 4 and Δ; I MTWThF; FolH 208) Menze
- 149 **DIRECTED READINGS**  
(3 cr; prereq #; 1st meeting III T, July 19, FolH 217½; individual consultations for remainder of course) F Wood
- 188 **LYRIC POETRY: RILKE**  
(3 cr; prereq sr, grad, 14 cr in courses 70 and above or equiv; VI-VII TTh; FolH 208) 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)

- 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) Mork
- 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) Bailey
- 16 **ANCIENT CIVILIZATION, PART III**  
Roman civilization to A.D. 305. (3 cr; I MTWThF; CB 250) Kildahl
- 24 **AMERICAN HISTORY, PART II**  
Modern America. (4 cr; 11:00-12:05 MTWThF; CB 250) Spear
- 52 **ANCIENT CIVILIZATION, PART III**  
Roman civilization to A.D. 305. (3 cr; I MTWThF; CB 250) Kildahl
- 88 **AMERICAN COLONIES, PART III**  
Empire and revolutionary crisis. (3 cr; II MTWThF; CB 145) Rutman
- 95 **HISTORY OF AMERICAN FOREIGN POLICY, PART III**  
American foreign policy since Versailles. (3 cr; I MTWThF; CB 215) Lupton
- 101B **DIRECTED STUDY, PART II**  
Qualified senior and graduate students may register for 1 or more quarters *with consent of instructor* for work and training on a tutorial basis. (3 cr; prereq #) Staff
- 104C **HISTORY OF ROME, PART II**  
(3 cr; III MTWThF; CB 255) Kildahl
- 108B **EUROPE IN THE HIGH MIDDLE AGES, PART III**  
Rise of western monarchies, decline of papacy and empire. (3 cr; IV MTWThF; CB 235) Hoyt
- 119E **HISTORY OF EARLY RUSSIA, PART II**  
The appanage period and the development of the Muscovite state (to 1613). (3 cr; I MTWThF; CB 205) Noonan
- 119F **MODERN RUSSIA, PART II**  
The reign of Alexander III, the reign of Nicholas II, World War I, the fall of the Russian monarchy. (3 cr; III MTWThF; CB 150) Noonan
- 133E **AMERICAN HISTORY, 1850-1900, PART I**  
Compromise of 1850 to Appomattox. (3 cr; II MTWThF; CB 230) Loehr
- 134E **AMERICAN HISTORY, 1850-1900, PART II**  
1865 to 1880. (3 cr; III MTWThF; CB 230) Loehr

- 140J **RACE AND NATIONALITY IN AMERICAN HISTORY, PART II**  
1865-1920. (3 cr; III MTWThF; CB 135) Spear
- 147A **SURVEY OF LATIN-AMERICAN HISTORY, PART III**  
Recent Latin-American history. (3 cr; I MTWThF; CB 220) Beatty
- 164A **PROSEMINAR: MEDIEVAL HISTORY, PART II**  
(3 cr; VI MTWThF; SocSci 633) Hoyt
- 182A **PROSEMINAR: SEVENTEENTH- AND EIGHTEENTH-CENTURY AMERICAN HISTORY, PART II**  
(3 cr; IV-V MW; SocSci 633) Rutman
- 182J **PROSEMINAR: TWENTIETH-CENTURY AMERICAN HISTORY, PART II**  
(3 cr; II MTWThF; SocSci 628) Vecoli

## Humanities (Hum)

- 1 **HUMANITIES IN THE MODERN WORLD I**  
The old regime, the revolution, neoclassicism, and romanticism. Period from about 1740 to about 1820. Authors: Pope, Voltaire, Goethe. One historical novel, Tolstoy's *War and Peace*. (3 cr, §1A or §51; I MTWThF; VH 207) Ramsland
- 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; II MTWThF; FraH 101) Ramsland
- 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; IV MTWThF; FraH 101) Bryan
- 21 **AMERICAN LIFE I**  
Individualism in American life and thought. (3 cr; I MTWThF; VH 6) Ar
- 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; FraH 101) Bryan
- 54 **HUMANITIES IN THE MODERN WORLD**  
(See Hum 4) (3 cr, §4; III MTWThF; FraH 102) Berryman
- 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; FraH 102) Berryman
- 99 **SCIENCE AND THE HUMANITIES**  
Examines the warfare between the "two cultures," the scientific and the humanistic, through a consideration of decisive documents from *Ficino* and *Vives* to the recent work of Polanyi, Koestler, Bronowski, A. Huxley. Selected topics include: humanistic scholarship and the methodological character of the sciences, creativity in the arts and sciences, and the problem of the scientist's moral responsibility. (3 cr; II MTWThF; FraH 102) Penn

## Journalism (Jour)

- 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, or students with Jour 3 or Spch 3) 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
- 16 **MASS COMMUNICATIONS LAW**  
Study of the origins and background of principles of press law. Libel and its defenses, penalties. Right of privacy; problems of fair trial. Law and self-regulation in advertising, in broadcast media. Copyright, obscenity statutes, and other legal problems of communications media. (2 cr; prereq 1 or 11; III MTWTh; MurH 311) Gillmor

- 78 PUBLIC RELATIONS METHODS**  
Publicity, external and internal 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 79; II MTWThF; MurH 302) Lindsay
- 90 MASS COMMUNICATIONS AND THE NEWS**  
How the news gets to and affects the public, in print, on the air, by film. 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; III MTWThF; MurH 308) Lindsay
- 109 HISTORY OF JOURNALISM**  
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 present-day leading newspapers; examination of major periods of change and of developing trends. Individual projects and readings. (3 cr; prereq 109; II MTWThF; MurH 311) Emery
- 121 MASS MEDIA IN A DYNAMIC SOCIETY**  
Economic, political, and social determinants of the character and content of mass communications. Patterns of operations, their effect on content, and their relative social utility. Government and mass communications. (3 cr; prereq 50 or old 15 or 18 for jour maj, # for others; I MTWThF; MurH 308) Gillmor
- 210 SEMINAR: HISTORY OF COMMUNICATIONS**  
Research in history and development of mass media. Historical bibliography and criticism in the field of journalism. (3 cr; prereq 110 or #; hrs ar) Emery

## Library School (Lib) ††

- 102 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; I MTWThF; Lib 4A) Quenzel
- 104 SELECTION OF LIBRARY MATERIALS**  
Theory, principles, and techniques of selection; an introduction to the basic tools for selection of books, magazines, pamphlets, phonograph records, films, etc., for all types of libraries. (3 cr; III MTWThF; Lib 4A) Slavens
- 172 READING GUIDANCE FOR ADOLESCENTS**  
The library's relationship to the teen-ager in terms of his interests and needs. Method of introducing books and developing and guiding reading. Required for minimum certification. (3 cr; prereq 104; IV MTWThF; Lib 4A) Olson
- 242 INTRODUCTION TO INFORMATION RETRIEVAL**  
Theory of various methods of subject analysis; methods of data representation, including coding; search strategies. (3 cr; prereq 103 or #; II MTWThF; Lib 4A) Simonton
- 255 THE COLLEGE AND UNIVERSITY LIBRARY**  
The place of the library in the college and university organization. The influence on the library of developments and trends in higher education. (3 cr; prereq 101; I MTWThF; Lib 12) Slavens

†† The graduate Library School is a professional school. Courses numbered above 200 are open only to graduate students and to librarians who hold a fifth-year degree from an A.L.A. accredited library school. Courses numbered below 200 are open to anyone who has been admitted to the Graduate School, to anyone who has been admitted to a minimum certification program, and to any undergraduate student in the College of Liberal Arts or the College of Education. Students who do not fall in one of these categories may register for library courses numbered below 200, but in order to avoid loss of credits, a letter requesting permission to register for library courses should be sent to the Library School before May 1 for the First Term and before June 1 for the Second Term. The Library School discourages registration of unadmitted students who have not sent transcripts before these dates, for it is not possible for us to give appropriate advice to students who appear on the last registration day.

**257 SCHOOL LIBRARY PROBLEMS**

Library objectives in relation to educational objectives, larger units of school service, value and effect of standards. (3 cr; prereq 101; II MTWThF; Lib 4B) Olson

**260 LITERATURE OF THE SOCIAL SCIENCES**

Bibliographical and other reference sources. The development of knowledge, landmark books, and current trends in the subjects covered. (3 cr; prereq 102; III MTWThF; Lib 4B) Quenzel

**265 ADVANCED BIBLIOGRAPHY**

The national and trade bibliographies of the world, with emphasis on those of the United States, Great Britain, France, Germany, and Russia. Their use in the selection and acquisition of books and in the preparation of subject bibliographies. (3 cr; prereq 102; I MTWThF; Lib 4B) Simonds

## Middle Eastern Languages

### Arabic (Arab)

**B BEGINNING INTENSIVE ARABIC**

(Continuation of Arab A) Covers the equivalent of the second 1½ quarters of the regular first-year sequence, Arab 1-2-3. (7½ cr; prereq A; I-III MTWThF; ForH 70) Chejne, Saada

## Music (Mus)

(See also Music Education under College of Education)

**A\*\* PIANO**

(0 cr; for students without entrance requirements in piano; hrs ar; ScH 107) McNab

**4 FUNDAMENTALS OF MUSIC**

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

Sec 1, II MTWThF, NMA 4, McSpadden

Sec 2, IV MTWThF, NMA 4, McSpadden

**7B EAR TRAINING**

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

**8A HARMONY**

Résumé of part writing and harmonization of chorales, which are included in Mus 1T-3T, with concentration on their application. (3 cr; prereq #; III MTWThF; ScH 103) Fetler

**11E\*\* PIANO**

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

**11L\*\* PIANO**

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

**11U\* PIANO**

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

**12E\*\* VOICE**

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

**12L\*\* VOICE**

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

**12U\*\* VOICE**

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

**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) Ar
- 16L\*\* **BASS**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 16U\*\* **BASS**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 17E\*\* **FLUTE**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 17L\*\* **FLUTE**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 17U\*\* **FLUTE**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 18E\*\* **OBOE**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 18L\*\* **OBOE**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 18U\*\* **OBOE**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 19E\*\* **CLARINET, SAXOPHONE**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 19L\*\* **CLARINET, SAXOPHONE**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 19U\*\* **CLARINET, SAXOPHONE**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 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) Ar
- 21L\*\* **TRUMPET**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 21U\*\* **TRUMPET**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 22E\*\* **FRENCH HORN**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 22L\*\* **FRENCH HORN**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 22U\*\* **FRENCH HORN**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 23E\*\* **TROMBONE**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 23L\*\* **TROMBONE**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar

- 23U\*\* TROMBONE**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 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) Ar
- 26L\*\* HARP**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 26U\*\* HARP**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 27E\*\* ORGAN**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 27L\*\* ORGAN**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 27U\*\* ORGAN**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 28E\*\* HARPSICHORD**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 28L\*\* HARPSICHORD**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 28U\*\* HARPSICHORD**  
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) Ar
- 29L\*\* CLASSICAL GUITAR**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 29U\*\* CLASSICAL GUITAR**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 30E\*\* CLASSICAL ACCORDION**  
Elective for nonmusic majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 30L\*\* CLASSICAL ACCORDION**  
Lower Division for music majors. (2 cr; prereq entr exam; hrs ar; ScH 107) Ar
- 30U\*\* CLASSICAL ACCORDION**  
Upper Division for music majors. (2 cr; prereq placement test; hrs ar; ScH 107) Ar
- 60 INSTRUMENTAL ENSEMBLE**  
Performance of chamber music of great composers; sonatas, trios, quartets, quintets, etc. (2 cr; hrs ar; ScH 107) McSpadden
- 100\*\* ADVANCED APPLIED MUSIC**  
Advanced literature in piano, voice, organ, and orchestral instruments. (2 cr; prereq entr exam; hrs ar; ScH 107) Staff
- 115 VOCAL LITERATURE**  
Preparation and performance of representative solo vocal works from major and minor composers. (2 cr; prereq 12 cr in 12, or #; IV MTWTh; ScH 103) Schuessler
- 127-128-129\*\* COMPOSITION**  
Original work in various forms. (2 cr each; prereq 99 and 123; VII MTWThF; ScH 203) Fetler

- 132A NEOROMANTIC MUSIC**  
1885-1917. Music of Bruckner, Mahler, Sibelius, Strauss, Schonberg, Reger, Elgar, Puccini, Leoncavallo, Charpentier, Franz, Cornelius, Wolf; impressionism. (3 cr; prereq 36 or ‡; II MTWThF; ScH 104) Pisk
- 164 MUSIC IN THE BAROQUE ERA**  
In Italy, Netherlands, Germany, Austria, France, Spain. (3 cr; prereq 36; IV MTWThF; ScH 104) Pisk
- 204\*\* GRADUATE APPLIED MUSIC**  
Individual lessons. (4 cr; prereq entr exam; hrs ar; ScH 107) Staff
- 212° SPECIAL PROBLEMS**  
(3-9 cr; prereq 110; hrs ar; ScH 107) Staff
- 227-228-229\*\* SEMINAR: COMPOSITION AND ORCHESTRATION**  
(3 cr each; prereq ‡; VII MTWThF; ScH 203) Fetler

## Natural Science (NSci)

- 2†† ORIENTATION IN THE NATURAL SCIENCES**  
(See NSci I, First Term) The second quarter continues with chemistry, introduces geology, and finishes physics and astronomy. (5 cr; prereq 1; III-IV MTWThF, Ph 166; 2 hrs lab, Ph 246) Dahl and staff
- |               |                  |
|---------------|------------------|
| Lab 1, I MTh  | Lab 7, VI MTh    |
| Lab 2, I TF   | Lab 8, VI TF     |
| Lab 3, II MTh | Lab 9, VII MTh   |
| Lab 4, II TF  | Lab 10, VII TF   |
| Lab 5, V MTh  | Lab 11, VIII MTh |
| Lab 6, V TF   | Lab 12, VIII TF  |

## Philosophy (Phil)

- 1A PROBLEMS OF PHILOSOPHY**  
Introduction to the subject; main fields of investigation; permanent problems; principal methods and schools of philosophy; historical and contemporary views. (3 cr; II MTWThF; ForH 115) Raab
- 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, III MTWThF, ForH 115, Martin    Sec 2, IV MTWThF, ForH 115, Lewis
- 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 130) Raab
- 52A HISTORY OF WESTERN PHILOSOPHY (Modern)**  
Early modern philosophy from Descartes through Hume; impact of science; backgrounds of contemporary philosophical problems. (3 cr; II MTWThF; ForH 130) Lewis
- 114 ARISTOTLE**  
Philosophy of Aristotle based on analysis of selected passages from his major works. Particular attention given to his relationship to Plato. Survey made of Aristotelian tradition in Western philosophy. (3 cr; prereq 1 qtr history of philosophy or ‡; IV MTWThF; ForH 285) Trentman
- 137 KIERKEGAARD**  
A detailed examination of the major philosophical works of Kierkegaard. (3 cr; prereq 1 qtr history of philosophy or ‡; II MTWThF; ForH 285) Trentman
- 140 SURVEY OF CONTEMPORARY PHILOSOPHY**  
Current systematic and critical philosophies, especially idealism, naturalism, realism, pragmatism, positivism, as represented by their principal exponents. (3 cr; prereq 52 or ‡; I MTWThF; ForH 150) Mason

†† To receive credit for this course, a student must complete both NSci I and 2, but not necessarily in Summer Session.

- 151 **PRINCIPLES OF AESTHETICS**  
Sample topics: standards of evaluation; aesthetic experience; representation, meaning and truth in the arts. (3 cr; prereq 3 cr or #; I MTWThF; ForH 130) Martin
- 182 **PHILOSOPHY OF RELIGION**  
Discussion of ground and sanctions of religion, according to various philosophies. (3 cr; prereq 6 cr; III MTWThF; ForH 130) Matthews

## Physical Education for Women

(See College of Education)

The following Second Term courses may be taken for elective credit in the College of Liberal Arts: PEW 7, 8.

## Political Science (Pol)

- B THE STATE IN THE MODERN WORLD**  
(Part B of Pol A-B-C) The development, principles, and operation of the modern nation state. (3 cr; III MTWThF; CB 250) Blue
- 2 AMERICAN GOVERNMENT AND POLITICS**  
(Part 2 of Pol 1-2†-3) Organization of national, state, and local government: legislative, executive, and judicial branches and their procedures. (3 cr; II MTWThF; CB 150) Jernberg
- 26 AMERICAN FOREIGN POLICY**  
An introduction to the institutions and processes which determine American foreign policy. Traditional and postwar foreign policies. (3 cr; IV MTWThF; CB 155) Klein
- 131 PUBLIC ADMINISTRATION**  
Organization and areas, administrative responsibility. (3 cr; prereq 2 or #; IV MTWThF; CB 205) Jernberg
- 149 GOVERNMENT AND POLITICS OF SOUTH ASIA**  
Political institutions of South Asian countries in their social setting; sources and nature of ideologies; politics and class structure; parties and elections; economic and social policies. (3 cr; prereq 6 cr or #; II MTWThF; CB 215) Blue
- 155 LATIN-AMERICAN GOVERNMENT AND POLITICS I**  
Analysis of factors such as colonial institutions, the economy, the social structure, which condition constitutional and political organization. (3 cr; prereq 2 or #; III MTWThF; CB 155) Klein
- 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 #; III MTWThF; CB 235) Cooperman

## Psychology

### Psychology (Psy)

- 1-2† GENERAL PSYCHOLOGY**  
General introduction to study of human behavior. Prerequisite for all advanced courses in psychology. (6 cr; prereq soph or 3rd qtr fr with B avg; II-III MTWThF; SciCB 175) Foss
- 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; prereq soph; I-III MTWThF; WeH 101) Woodworth



**117 ANALYSIS OF BEHAVIOR**

A systematic formulation of the topics of psychology based upon a Skinnerian analysis. Scientific method, learning, motivation, and emotion are discussed. (3 cr; prereq 2, and one course numbered 50 and above; IV MTWThF; JohH 113) Winokur

**Second  
Term  
Courses**

**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; prereq 70, or 5 and 5 cr in statistics for 125...125 for 126; II-III MTWThF; JacH 74) Dawis

**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

**Public Administration (PA)**

**182B ADMINISTRATIVE INTERNSHIP**

Field work in an approved administrative agency under the joint supervision of an employee of the agency and a member of the faculty. Rotation through various administrative assignments, solution of special problems, seminar discussion of experiences, and preparation of an internship report. (3 cr; prereq consent of Public Administration Center; hrs ar) Rosenthal

**224 SOCIAL WELFARE ADMINISTRATION**

Critical analysis of the administration of social welfare programs with special attention to the development of the Social Security Act, the intergovernmental context of administrative issues and problems, the relation of program concepts to administrative feasibility, and the accommodation of social welfare programs to the general management functions of government. (3 cr; prereq grad; I-II TTh; CB 425) Rosenthal

**270A PUBLIC ADMINISTRATION SEMINAR: ORGANIZATION THEORY AND ADMINISTRATIVE BEHAVIOR**

Factors conditioning organization; theories of organization; models and typologies; leadership, authority, and decision-making; communication; automation, operations research, and management systems. (3 cr; prereq grad; III-IV TTh; CB 425) Warp

**Romance Languages**

**French (Fren)**

**2 BEGINNING FRENCH**

(5 cr; prereq 1, or 1 yr high school French; I-II MTWThF; FolH 201) Rydell

**25 INTERMEDIATE FRENCH**

(5 cr; prereq 3, or 3 yrs high school French; I-II MTWThF; FolH 205) Booker

**54 FRENCH COMPOSITION**

(3 cr; prereq 25 or equiv; I MTWThF; FolH 203) Francis

**58 ADVANCED FRENCH CONVERSATION**

(3 cr; prereq 55 or #; IV MTWThF; FolH 207) Rydell

**67 SURVEY OF FRENCH LITERATURE: ROMANTICISM TO SURREALISM**

(3 cr; prereq 30; III MTWThF; FolH 302) Johnstone

**87 NINETEENTH- AND TWENTIETH-CENTURY FRENCH LITERATURE**

(2 cr; prereq 30 or #, 67 for majors; V MTWTh; FolH 204) Johnstone

**172 THE NOVEL OF L'ENTRE-DEUX GUERRES**

(3 cr; II MTWThF; FolH 203) Francis

- 191 DIRECTED READINGS FOR UNDERGRADUATES  
(1-3 cr; prereq #; hrs ar) Hughes
- 260 DIRECTED READINGS FOR GRADUATE STUDENTS  
(1-3 cr; prereq #; hrs ar) Francis

### Italian (Ital)

- 2 BEGINNING ITALIAN  
(5 cr; prereq 1, or 1 yr high school Italian; III-IV MTWThF; FoIH 205) Seim

### Portuguese (Port)

- 2 BEGINNING PORTUGUESE  
(5 cr; prereq 1, or 1 yr high school Portuguese; I-II MTWThF; FoIH 204) Hamilton
- 191 DIRECTED READINGS FOR UNDERGRADUATES  
(1-3 cr; prereq #; hrs ar) Hamilton
- 260 DIRECTED READINGS FOR GRADUATE STUDENTS  
(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; FoIH 201) Hamilton
- 25 INTERMEDIATE SPANISH  
(5 cr; prereq 3 or 3A, or 3 yrs high school Spanish; III-IV MTWThF; FoIH 209) Serrano-Plaja
- 67 SURVEY OF SPANISH LITERATURE: NEOCLASSICISM TO EARLY TWENTIETH CENTURY  
(3 cr; prereq 30; II MTWThF; FoIH 207) Pattison
- 175 TWENTIETH-CENTURY SPANISH LITERATURE: PROSE  
Unamuno, Azorín, Baroja, Valle Inclán, Ortega y Gasset, Pérez de Ayala, Gómez de la Serna. (3 cr; prereq 65, 66, 67; III MTWThF; FoIH 203) Pattison
- 191 DIRECTED READINGS FOR UNDERGRADUATES  
(1-3 cr; prereq #; hrs ar) Pattison, Serrano-Plaja
- 260 DIRECTED READINGS FOR GRADUATE STUDENTS  
(1-3 cr; prereq #; hrs ar) Pattison, Serrano-Plaja

*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.

### Scandinavian (Scan)

- 162 CONTEMPORARY TRENDS IN THE SCANDINAVIAN NOVEL  
Characteristic trends in Scandinavian life and thought in the 20th century as expressed in the prose fiction of Sigrid Undset, Johannes V. Jensen, Olav Dunn, Hjalmar Bergman, Pär Lagerkvist, Halldor Laxness, F. E. Sillanpää, and others. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian required for majors only; I MTWThF; FoIH 207) Hustvedt
- 172 STRINDBERG AND THE DRAMA IN REVOLT AND TRANSITION  
Strindberg as master of the naturalistic drama and as "father of modernity" in European and American theater since his day. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only; III MTWThF; FoIH 209½) Moulton

*Note*—See also Phil 137, Kierkegaard.

# Slavic and East European Languages

Second  
Term  
Courses

## Russian (Russ)

(See section on Special Programs)

### B BEGINNING INTENSIVE RUSSIAN

Covers the same material covered in the first 1½ quarters of the regular first-year sequence, Russ 1-2-3. (7½ cr; prereq A or #; I-III MTWThF; FolH 202) Donchenko

### 4-5-6+ INTENSIVE INTERMEDIATE RUSSIAN

(9 cr; I-II MTWTh, I F; FolH 302) Wykoff

### 25 SCIENTIFIC RUSSIAN II

Concentration on the development of reading skill for students of science who wish to make use of Soviet technical publications. (5 cr; prereq 24 or #; II-III MTWThF; FolH 308) Sjoberg

## Social Science (SSci)

### 1 PERSONALITY

An investigation of the factors that influence individual human action. Among the topics studied are personality in nature, culture, and society; personality as a shaper of society; the American character; the validation of theories of personality. (3 cr; II MTWThF; CB 415) Sykes

### 3 COMMUNITY

The web of human relations in traditional and modern societies. Types of group behavior. Caste and class in the United States. The government of societies: democracy and totalitarianism. (3 cr; prereq 1 or 2; III MTWThF; CB 415) Drobac

## Social Work (SW)

### Soc 90 AMERICAN SOCIAL WELFARE

(See Sociology) Cohn

### Soc 91 INTRODUCTION TO SOCIAL WORK PROCESS

(See Sociology) Cohn

### 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

### 106 SPECIAL TOPIC: COPING PATTERNS

The role of professionals, especially teachers, social workers, public health nurses, in understanding and developing adequate coping methods in various client groups, with focus on the culturally deprived. (3 cr; III MTWThF; CB 450) Hess

### 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; CB 450) Kidneigh

## Sociology (Soc)

### 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) Zwerman

- 90 AMERICAN SOCIAL WELFARE**  
Analysis of American social welfare as a basic social institution. (3 cr; prereq 3; IV MTWThF; CB 135) Cohn
- 91 INTRODUCTION TO SOCIAL WORK PROCESS**  
Analysis of the nature of the social work helping process through a study of the development of social work theory and its implementation in the field of practice. (3 cr; prereq 90 or consent of major adviser; VI MTWThF; CB 155) Cohn
- 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 #; II MTWThF; CB 235) Johnson
- 142 RELIGION AS A SOCIAL INSTITUTION**  
Study of the structure and function of religious organizations in various types of societies, the nature of religious leadership, type of religious participation, and relationship of religion to other social institutions. (3 cr; prereq 1 or #; IV MTWThF; CB 235) Johnson
- 146 INDUSTRIAL AND OCCUPATIONAL SOCIOLOGY**  
Analyzes the occupational group, the factory, and the business enterprise as social institutions, with particular attention to contrasting functions of formal and informal organizations, and to significance of cooperation, authority, communication, status, and group norms in the working situation. (3 cr; prereq 1 and 15 cr in sociology, psychology, political science, or economics; III MTWThF; CB 130) Zwerman
- 170 ANALYTIC SOCIAL THEORY**  
Examination of major problems of sociological theory (positivistic, rationalistic, idealistic); major theoretical concepts. (3 cr; prereq 1 or #; IV MTWThF; CB 130) Francis

## Speech, Communication, and Theatre Arts

(See University Theatre and programs in speech pathology and audiology in section on Special Programs)

### Speech (Spch)

- 5X†† FUNDAMENTALS OF SPEECH**  
Development of basic skills in meeting a variety of speech situations: extemporaneous speaking, oral reading, discussion. Development of basic understanding of speech processes and forms. (3 cr; limited to 25 students; 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 305) Shapiro 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 Division standing; II MTWThF; FolH 307) Ar
- 81 INTERPRETATIVE READING**  
Aesthetic theory of literature and of oral reading. Practice in reading fiction for interpretation and mastery of technique. (3 cr; limited to 25 students; prereq 5; III MTWThF; FolH 305) D Thompson
- 101 ARGUMENTATION AND PERSUASION**  
Theories of modern motivational rhetoric. Analysis of persuasive speaking; practice in preparation and delivery of oral argument. (3 cr; prereq 5, Psy 2, 10 cr in social science; III MTWThF; FolH 306) Howell
- 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; I MTWThF; FolH 305) D Thompson

†† Credit for Spch 5X without Spch 6 by petition only.

- 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; II MTWThF; FolH 406) Cashman
- 108 THE CLASSICAL VOICES OF POETRY: EPIC, LYRIC, DRAMATIC**  
The oral performance of selected Greek and Roman texts both in the original language and in translation. Previous Upper Division work either in the study of a literature or in performance, but not necessarily in both, is expected. (3 cr, §Clas 108; prereq 82, or 83, or Th 61, or 3 cr in Latin or Greek courses numbered 60 or above, or 3 cr in Upper Division courses in English literature or foreign literature, or #; II MTWThF; FolH 306) Sonkowsky
- 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; VI MTWThF; FolH 305) Bormann
- 126B HISTORY AND CRITICISM OF AMERICAN PUBLIC ADDRESS**  
A survey of the history and criticism of political speaking in the United States from the time of the Revolution to the present. (3 cr; prereq 5, Psy 1-2; V MTWThF; FolH 305) Bormann
- 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
- 181, 182, 183 READINGS IN SPEECH ARTS**  
Directed reading and preparation of reports on selected subjects. (Cr and hrs ar; prereq 5, and 6 addtl cr and #) Staff
- 208 SEMINAR: PERSUASION**  
Contemporary public address. Literature of persuasion, methods in study and persuasion. (3 cr; prereq 5, 101, 102, 103, Psy 2, 140, 10 cr in social science; hrs ar) Howell
- 221 SEMINAR: ORAL INTERPRETATION OF LITERATURE**  
Problems of silent and oral reading. Speech in relation to language and type of literature. (3 cr; prereq 81, 82, 83, 105; VI-VII TTh; FolH 306) D Thompson
- 251 SEMINAR: LISTENING COMPREHENSION**  
Research problems and methods. Evaluation of published research. (2 cr; prereq undergrad spch major, #; III MTWThF; AgEng 221) Nichols
- 291, 292, 293 RESEARCH**  
Open to graduate students engaged in research on special problems. (Cr and hrs ar) Staff

### *Speech Science, Pathology, and Audiology (SSPA)††*

- 101, 102, 103 READINGS**  
Directed readings and preparation of reports on selected subjects. (Cr and hrs ar; prereq #) Starr and staff
- 145 APHASIA—IN ADULTS AND CHILDREN**  
Etiology, language, and associated nonlanguage problems; therapeutic considerations and procedures. (2 cr; prereq 99, 120 or #; II MTWTh; FolH 303) Greenberg
- 150 SPEECH RETARDATION**  
Considers theory and experimental research dealing with speech development as related to delayed or retarded speech. (3 cr; prereq 99; III MTWThF; FolH 307) Siegel
- 166 CLINICAL METHODS AND PRACTICE IN SPEECH PATHOLOGY**  
F: Aphasia. (1-3 cr; prereq 141, 142, or #; hrs ar) Greenberg
- 170 HEARING DISORDERS**  
Basic orientation to audiology. Symptomatology and pathology of hearing disorders, their medical and surgical treatment. Clinical and educational management. Psychological effects of hearing impairment. (3 cr; prereq 99, 119 or #; IV MTWThF; Mayo A-675) Shore

†† 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, 215 Shevlin Hall.

- 190, 191, 192†† **CLINICAL METHODS AND PRACTICE IN AUDIOLOGY**  
Methods and supervised practice in analysis, diagnosis, and habilitation of communication disorders of persons with auditory impairments. (3 cr; prereq 173 or 174 or ‡; hrs ar) Chaiklin
- 204, 205, 206 **RESEARCH**  
Open to graduate students engaged in research on special problems. (Cr and hrs ar) Staff
- 241 **SEMINAR: STUTTERING**  
Intensive exploration of selected theoretical explanation of stuttering, including consideration of research data and methodologies subserving the respective theories. Students independently design and, when feasible, execute research studies which derive from, and are consistent with a particular theory of stuttering. (3 cr; prereq 141 or ‡; hrs ar) Martin
- 272 **PEDIATRIC AUDIOLOGY**  
Assessment and clinical management of infants and children with hearing disorders. Problems of differential diagnosis; screening, conditioning procedures; electrophysiologic methods. Selection and use of hearing aids for children. Guidance of parents. (3 cr; prereq 173, 174 and ‡; I MTWThF; Mayo A-675) Shore
- 290, 291, 292†† **ADVANCED CLINICAL METHODS AND PRACTICE IN AUDIOLOGY**  
Supervised internship experiences for advanced graduate students working with communication disorders of persons with auditory impairments. (3 cr; prereq 190, 191, 192 and ‡; hrs and room ar) Lassman

## Theatre Arts (Th)

- 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 †11; meet V first day, WeH 306, then hrs and room ar) Adey
- 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 18 students; prereq 21; II MTWThF; WeH 302) Klein
- 61 **ADVANCED ACTING**  
Characterization, styles of acting, and stage technique. Presentation of scenes from great plays. (3 cr; limited to 18 students; prereq 21; II MTWThF; ShH 115) Reynolds
- 91 **SCENE DESIGN**  
Theory and practice of designing scenery as a functional environment for the stage and television. (3 cr; prereq 12, 34; IV MTWThF; WeH 306) Adey
- Note*—Total cumulation of credits allowable in courses 101, 102, 103, 114, 118, 119, 120, 121, 122, 123, 124, 141, 142, 143, 151, 174, 175, 176: M.F.A. candidates, unlimited credit; M.A. candidates, 9 credits; Ph.D. candidates, 18 credits.
- 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; VI 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. (2-6 cr; prereq consent of adviser and committee necessary before registration; hrs ar) 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; III MTWThF; ScH 19) Loppnow

†† This course runs 7 weeks. Students must begin 2 weeks prior to the opening of Second Term. For further information, write Professor Frank M. Lassman, D-311 Mayo, University of Minnesota, Minneapolis, Minnesota 55455.

- 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 60 students; prereq 12 or §12 or elementary education major or §...21 recommended; IV MTWThF; FoH 209) Davis
- 132 CHILDREN'S THEATRE**  
Selection, direction, and production of plays for children's audiences. (3 cr; limited to 30 students; prereq 12, Spch 5 or §; II MTWThF; NH 213) Davis
- 172 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 §100, Spch 5; IV MTWThF; WeH 302) Klein
- 180 AMERICAN THEATRE**  
The theatre as an aspect of American culture from 1752 to the present. (3 cr; prereq 12 or grad; I MTWThF; NH 201) Woods
- 181, 182, 183 READINGS IN THEATRE ARTS**  
Directed reading and preparation of reports on selected subjects. (Cr and hrs ar; prereq Spch 5, and 6 addtl cr and §) Staff
- 191 TECHNICAL STAGE PROBLEMS: SCENIC DESIGN**  
Special projects and reports. (3 cr; prereq 111, 112, or §; III MTWThF; WeH 306) J Thompson
- 212 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; ShH 105) Ar
- 281, 282, 283 RESEARCH**  
Open to graduate students engaged in research on special problems. (Cr and hrs ar) Staff

## Statistics (Stat)

- 90 INTRODUCTION TO PROBABILITY AND STATISTICS**  
Elementary probability and probability distributions; sampling and elements of statistical inference. (3 cr; prereq differential and integral calculus; I MTWThF; ForH 175) Ar
- 122 THEORY OF STATISTICS**  
Estimation, hypothesis testing, confidence intervals. (3 cr; for nonmajors; prereq 121, Math 43 or equiv; II MTWThF; ForH 175) Ar

# College of Medical Sciences

*For general information on the College of Medical Sciences, see section on Schools, Colleges, and Special Programs.*

## MEDICAL SCHOOL

### Anatomy (Anat)

#### 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)

#### ELECTIVE COURSES

- 169 **RESEARCH IN ANESTHESIOLOGY**  
Anesthesia problems in experimental laboratory or in hospital. (Cr and hrs ar) Van Bergen and staff
- 181 **EXTERNSHIP IN ANESTHESIOLOGY**  
(6 cr; limited to 6 students; hrs ar) Van Bergen and staff
- 182 **EXTERNSHIP IN ANESTHESIOLOGY AND RESPIRATORY PROBLEMS**  
(6 cr; limited to 3 students; prereq 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)

#### REQUIRED COURSES

- 101 **BIOCHEMISTRY**  
(7 cr; prereq 100; lect IV, VI MTWThF, Owre 15; lab I-III MTWTh, MH 201)  
Koerner, Ungar, Edstrom



## ELECTIVE COURSES

Second  
Term  
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) Koerner, Ungar, Edstrom
- 205 **RESEARCH IN BIOCHEMISTRY**  
(Cr and hrs ar) Koerner, Ungar, Edstrom

## Laboratory Medicine (LMed)

- 180 **PROBLEMS IN FLUID AND ELECTROLYTE METABOLISM**  
(Cr and hrs ar; prereq regis med) Evans, Benson, and staff
- 235 **ADVANCED CLINICAL LABORATORY MEDICINE**  
(Cr and hrs ar; prereq #) Evans, Benson, and staff
- 236 **RESEARCH ON CLINICAL LABORATORY PROBLEMS**  
(Cr and hrs ar; prereq #) Evans, Benson, and staff

## Medical Technology (MedT)

- 111 **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 110; hrs ar) Hovde and staff

## Medicine (Med)

### Division of Internal Medicine

#### 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 **INTERNSHIP IN MEDICINE**  
Care of medical patients on an inpatient service at an advanced level of responsibility. University, Veterans Administration, and Hennepin County General Hospitals. (6 cr per period; offered 3 elective periods; hrs ar) Watson, Hall, Schultz, Hammarsten
- 181 **RESEARCH IN MEDICINE**  
Research opportunities in the following areas are available at University or affiliated hospitals (as above): 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; offered 3 elective periods; hrs ar) Staff
- 184 **SPECIAL CLINICAL PROBLEMS**  
Opportunities for study in the following areas of clinical interests are available at University or affiliated hospitals (as above): 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, im-

†† Prior arrangements with departmental office.

munology, cardiovascular and pulmonary disease, clinical hemodynamics. A detailed listing of these opportunities is available in the departmental office. (6 cr per period; offered 3 elective periods; hrs ar) 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
- 205 **DISEASES OF CHEST**  
(Cr and hrs ar) Hall, Lillehei
- 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*

### **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; 1:00-5:00 MTTh, 9:00-11:00 Th, 1:00-4:00 W, 1:30-2:30 F; Hosp Eustis Amph) Lynch and staff

### **ELECTIVE COURSES††**

- 182 **EXTERNSHIP IN DERMATOLOGY**  
(Cr and hrs ar; limited to 4 students) Lynch
- 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) Lynch and staff
- 228 **RESEARCH: DERMATOLOGY**  
(Cr and hrs ar) Lynch and staff
- 230 **FUNCTIONAL BIOLOGY OF THE SKIN**  
(Cr and hrs ar) Lynch and staff

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†† Prior arrangements with Dermatology office.

## Microbiology (MicB)

- 201 RESEARCH  
(Cr and hrs ar) Staff

Second  
Term  
Courses

## Obstetrics and Gynecology (Obst)

### ELECTIVE COURSES

- 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

- 204 ADVANCED OBSTETRICS AND GYNECOLOGY, PART I  
(Ar) Prem, Makowski, Adcock, Spellacy, and staff
- 208 ADVANCED OBSTETRICS AND GYNECOLOGY, PART II  
(Ar) Prem, Makowski, and staff
- 212 ADVANCED OBSTETRICS AND GYNECOLOGY, PART III  
(Ar) Prem, Makowski, and staff
- 219 RESEARCH  
(Ar) Prem, Makowski, Adcock, Spellacy, and staff
- 302 EXTERNSHIP  
(6 cr) Prem, Makowski, Adcock, Spellacy, and staff
- 303 OBSTETRIC AND GYNECOLOGIC HISTOLOGY  
(6 cr; hrs ar) Prem and staff

## Ophthalmology (Opth)

- 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 Room) Harris and staff

## Otolaryngology (Otol)

### COURSES FOR GRADUATE STUDENTS

- 230 CLINICAL OTOTOLOGY  
(3 cr; 1:00-4:00 MWThF; O-P Clin) Boies and staff
- 231 CLINICAL RHINOLOGY AND LARYNGOLOGY  
(3 cr; 1:00-4:00 MWThF; O-P Clin) Boies and staff
- 232 SURGERY OF EAR, NOSE, AND THROAT  
(3 cr; 9:00-12:00 MTWThF; O-P Clin and Oper Room) Boies and staff

## Pathology (Path)

- 104 AUTOPSIES  
(Cr and hrs ar; prereq 102) Dawson, Hebbel
- 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 and hrs ar; prereq 102) Hebbel
- 121 **DISEASES OF THE ALIMENTARY TRACT**  
(1 cr; prereq 102; hrs ar) Hebbel
- 150†† **PROBLEMS IN PATHOLOGY**  
(Cr and hrs ar; prereq 102) Dawson, Hebbel
- 201 **RESEARCH**  
Students with the necessary preliminary training may elect research either as a major or minor in pathology. (Cr and hrs ar; prereq †) Dawson, Hebbel

## Pediatrics (Ped)

### REQUIRED COURSES

- 120 **CLINICAL LECTURES IN PEDIATRICS**  
(2 cr; prereq regis med; 1:00-2:00 W; Eustis 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)
- 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)
- 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)

### 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
- 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, St. Paul-Ramsey Hospital. (7 cr; I-X MTWThF) J Anderson and staff

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†† Path 112 and 113 are not repetitions of the First Term but rather continuations.

**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

**Second  
Term  
Courses**

**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)**

**109 PHARMACOLOGICAL PROBLEMS**

(Cr and hrs ar) Cafruny and staff

**203 RESEARCH IN PHARMACOLOGY**

(Cr and hrs ar) Cafruny and staff

## **Physical Medicine and Rehabilitation (PMed)**

**103 PHYSICAL THERAPY CLINIC**

(Cr and hrs ar) Gullickson

**161 CLINICAL MEDICINE IN REHABILITATION**

(5 cr) Kottke

**180 PROBLEMS IN PHYSICAL THERAPY**

(Cr ar; prereq physical therapist) Staff

**181 EXTERNSHIP 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**

**94-95-96 CLINICAL TRAINING IN OCCUPATIONAL THERAPY**

A total of 9 months of supervised training in affiliated hospitals. (18 cr per qtr for sr OT students)

## **Physiology (Phsl)**

**113 PROBLEMS IN PHYSIOLOGY**

(Cr and hrs ar) Visscher and staff

- 202 **READINGS IN PHYSIOLOGY**  
(Cr and hrs ar) Visscher and staff
- 203 **RESEARCH IN PHYSIOLOGY**  
(Cr and hrs ar) Visscher and staff

## **Psychiatry and Neurology (NPsy)**

- 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 PhD 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

Second  
Term  
Courses

## Radiology (Rad)

### 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)
- 183 **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

- 110 **RADIATION BIOLOGY INSTITUTE**  
Effects of irradiation on living systems. Radioisotopic procedures. Physics and chemistry fundamental to radiation biology and effects on all types of chemical and biological systems. (Cr and hrs ar)
- 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 had x-ray diagnostic procedures are reviewed from both the clinical and roentgenological points of view. (1 cr; II T; Eustis Amph) Feinberg, Langer
- 135 **SURGICAL ROENTGENOLOGIC CONFERENCE**  
Weekly meetings with the surgical staff at which all the important surgical cases which have had x-ray diagnostic procedures are reviewed from both the clinical and roentgenological standpoints. (1 cr; II S; Todd Amph) Amplatz, Gedgaudas
- 163 **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 ar) Peterson and others
- 202 **CARDIOVASCULAR ROENTGENOLOGIC CONFERENCE**  
(1 cr; VII M; Todd Amph) Amplatz, Gedgaudas
- 204 **TUMOR CLINIC CONFERENCE**  
(Cr ar; IV M; Todd Amph) D'Angio

- 205 **RESEARCH: RADIATION THERAPY, NUCLEAR MEDICINE, RADIOBIOLOGY**  
(Cr ar; prereq #) D'Angio, Loken
- 206 **ROENTGENOSCOPY**  
Theory and practical application of roentgenoscopy, particularly to diseases of the gastrointestinal tract, lungs, and heart. (3 cr) Peterson and others
- 209 **ROENTGEN DIAGNOSIS**  
Theory and practical application of roentgen diagnostic methods to medical cases in general. (3 cr) Peterson and others
- 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) Peterson and others
- 211 **DOSIMETRY OF INTERNAL, EXTERNAL RADIATION EMITTERS**  
(1 cr; 7:00-8:00 am W; Mayo B-142) Moore
- 212 **SEMINAR: RADIATION BIOPHYSICS AND NUCLEAR MEDICINE**  
Research approaches to problems in radiation biophysics; use of radioactive isotopes discussed. Recent advances reviewed. (1 cr; prereq #; V M) Jacobson
- 236 **RADIOISOTOPE SEMINAR**  
Recent developments in nuclear medicine. (1 cr; 12:30-1:20 M; Mayo C-239) Loken
- 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; 4:00-6:00 Th; Todd Amph) Lober, Peterson and others
- 240 **RADIATION THERAPY CONFERENCE**  
Recent advances in clinical radiotherapy. (1 cr; 4:00-5:00 M; PoH Amph) D'Angio

## **Surgery (Surg)**

### *Division of General Surgery*

#### **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) Wangensteen and staff
- 202 **APPLIED SURGICAL ANATOMY ON THE CADAVER**  
Surgical fellows prepare dissections with staff supervision. (1 cr; hrs ar) Wangensteen and staff
- 203 **PROCTOSCOPY AND SIGMOIDOSCOPY**  
Diagnosis and treatment of lesions of the lower bowel. (1 cr; hrs ar) Wangensteen, W Bernstein, and staff



<p>204 <b>TUMOR CLINIC</b>          Combined clinical-pathological consideration of tumors as seen by general surgeon. (1 cr; hrs ar) Wangenstein and staff</p> <p>205 <b>SURGICAL DIAGNOSIS</b>          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</p> <p>208 <b>STUDY OF SURGICAL PROBLEMS</b>          Surgical fellow acts as house surgeon at hospital. (1 cr; hrs ar) Wangenstein and staff</p> <p>211 <b>OPERATIVE SURGERY</b>          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</p> <p>214 <b>SURGICAL WARD CONFERENCE</b>          Presentation of interesting cases by the students. (1 cr; hrs ar) Surgical staff</p> <p>215 <b>SURGICAL ROENTGENOLOGICAL CONFERENCE</b>          Weekly reviews of films of all surgical patients. (1 cr; hrs ar) Staffs of Departments of Radiology, Pathology, and Surgery</p> <p>216 <b>SURGICAL RESEARCH</b>          Problems in experimental surgery. (1 cr; hrs ar) Surgical staff</p> <p>217 <b>SURGICAL SEMINAR</b>          Conferences for review of surgical literature, for presentation of cases, and as research. (1 cr; hrs ar) Surgical staff</p> <p>218 <b>SURGERY, MEDICINE, AND PEDIATRICS PATHOLOGICAL CONFERENCE</b>          Review of interesting cases by the medical, surgical, pediatrics, and pathology staffs. (1 cr; hrs ar) Surgical staff</p> <p>219 <b>SURGERY-LITERATURE CONFERENCE</b>          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</p> <p>220 <b>PERIPHERAL VASCULAR CONFERENCE</b>          Vascular clinic with conference following. (1 cr; hrs ar) Wangenstein and staff</p> <p>221 <b>SURGERY-PHYSIOLOGY CONFERENCE</b>          Seminar discussing physiological aspects of surgery. (1 cr; VIII T) Wangenstein and staff</p>	<p><b>Second Term Courses</b></p>
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*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*

### **REQUIRED COURSES FOR UNDERGRADUATE STUDENTS**

- 173 **UROLOGY LECTURES**  
(1 cr; prereq regis med) Staff

## ELECTIVE COURSES FOR UNDERGRADUATE STUDENTS

- 180 **INTERNSHIP IN UROLOGY**  
(Cr and hrs ar) Creevy and staff

Second  
Term  
Courses

## REQUIRED COURSES FOR GRADUATE STUDENTS

- 250 **UROLOGICAL SURGERY**  
Urological fellow first assists at 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

## SCHOOL OF NURSING (Nurs)

- 82B **NURSING INTERVENTION**  
Application, evaluation, and modification of nursing treatment. (4 cr; prereq 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
- 185C **MEDICAL-SURGICAL NURSING**  
Continuing analysis of health and disease; exploration of nursing role in man's movement to health goals. Selected community laboratory experiences. (4 cr; open only to students who were registered for 4 cr in this course First Term; hrs ar) Sarosi
- 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 were registered for 2 cr in this course First Term; hrs ar) Lewis, Hubbard, Cowlislaw

## SCHOOL OF PUBLIC HEALTH (PubH)

- 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) (Cr ar; prereq nurses) 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
- 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 and staff

†† The entire course includes both terms. No credit is given for First Term until satisfactory completion of Second Term.

- 123 **TOPICS IN PUBLIC HEALTH**  
Selected readings in public health with discussion based on these readings. (Cr ar; prereq #) 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
- 139†† **ADVANCED FIELD PRACTICE IN PUBLIC HEALTH NURSING: BLOCK PLACEMENT**  
(See First Term) (Cr ar; prereq #) von Bergen
- 172†† **STUDIES IN PUBLIC HEALTH NURSING**  
(See First Term) (3 cr for both terms; prereq 171) Murphy, Kroska
- 173†† **ADVANCED FIELD PRACTICE IN PUBLIC HEALTH NURSING: FUNCTIONAL AREA**  
(See First Term) (Cr ar; prereq public health nurses only, 174, 177, or #) Murphy, E Anderson, Blanchard, Fredlund, Kroska, Sparrow
- 177B†† **CLINICAL SEMINAR: PUBLIC HEALTH NURSING**  
(See First Term) (3 cr for both terms; prereq 177A) E Anderson, Blanchard, Fredlund, McIntyre, Sparrow
- 189 **FIELD WORK IN PUBLIC HEALTH NUTRITION**  
Placement in an approved agency with opportunity for experience in various facets of public health nutrition programs. (Cr ar; prereq #) Stief and associates
- 190 **FIELD PRACTICE IN PUBLIC HEALTH EDUCATION**  
(See First Term) (Cr ar; prereq 183, 227) Craig
- 196 **SEMINAR: PUBLIC HEALTH NUTRITION**  
(Cr ar; prereq #) Stief
- 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**  
(See First Term) (Cr ar; prereq 179) E Anderson
- 224†† **SEMINAR: PUBLIC HEALTH NURSING WITHIN THE CURRICULUM**  
(See First Term) (Cr ar; prereq #) 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 (PubH)**

- 120 **BIostatISTICS II**  
(Continuation of PubH 110) (3 cr; prereq 110 with grade not lower than C, ¶121; IV MTWThF; ForH 180) Bearman
- 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)
- 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 by #; III MTWThF, Owre 111; 9 hrs per wk lab ar, Mayo 1220) Boen
- 211 **SEMINAR: BIOMETRY**  
(Cr ar) Bearman, Brown, Boen

†† The entire course includes both terms. No credit is given for First Term until satisfactory completion of Second Term.

# Mortuary Science (Mort) ††

14 **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 113) Grayson

77 **CLINICAL TRAINING**

Practical experience in embalming; evaluations of theory. (2 cr; prereq 56 or #) Stroud

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†† 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 1966 for their final year in either the Plan A or Plan B program for the associate in mortuary science degree. 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.

# Institute of Technology

For general information on the Institute of Technology, see section on Schools, Colleges, and Special Programs.

## COLLEGE OF ENGINEERING

### Aeronautics and Engineering Mechanics

#### Mechanics and Materials (MM)

##### 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 or 13; I-II MWF, II TTh; AE 21) Bohne

##### 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 31 or ¶Math 31; III-IV MWF, III TTh; AE 21) Wilcox

### Civil Engineering (CE)

##### 62 MAPPING

Map types and applications of use. Topographic map production by stadia, cross section, and photogrammetric methods. The study of photographs and photogrammetric plotting equipment for interpretative, measurement, and mapping projects. (2 cr; prereq 2nd yr or §; lect I-II TTh, lab VI-IX T; Ex 265) G Johnson

##### 64 ENGINEERING SURVEYS

Elements of earthwork; areas, volumes, and mass diagram. Design of alignment, geometrics, and grades for highways. Analysis of design problems with computer programming. (4 cr; prereq 61; lect I-II MWF, lab VI-IX MW; Ex 265) G Johnson

### Electrical Engineering (EE)

##### 31 CIRCUIT ANALYSIS II

Response of linear passive circuits to step, impulse, and exponential forcing functions. Complex frequency; natural and forced response. Magnetically coupled circuits. (3 cr; prereq 30; lect II MTWThF; Arch 130) Ar

##### 31A ELECTRICAL ENGINEERING LABORATORY

Laboratory to accompany EE 31. (1 cr; prereq ¶31) Ar

Lab 1, III-IV TTh, EE 121

Lab 2, VI-VII MW, EE 121

Lab 3, VI-VII TTh, EE 121

##### 76 ELECTROMAGNETIC FIELDS III

Applications of electrostatic, magnetostatic, and electromagnetic field theory. (4 cr; prereq 75; lect I-II MWF, rec I-II TTh; Arch 135) Ar

##### 86 JUNIOR ELECTRICAL ENGINEERING LABORATORY

Experimental study of electromagnetic fields and linear systems. (2 cr; prereq 76, 107 or ¶76, ¶107 and ¶Engl 85C) Ar

Lab 1, V-VIII MW, EE 216

Lab 2, V-VIII TTh, EE 216

Lab 3, V-VIII TTh, EE 205

108 **LINEAR SYSTEM ANALYSIS II**

Introduction to feedback systems. Analog computer simulation. Spectral analysis, correlation, noise, and sampling. (3 cr; prereq 107; III MTWThF; ME 208) Ar

**Mechanical Engineering**

**Mechanical Engineering (ME)**

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 37; lect V MTWTh, ME 321; lab VII-IX MW, 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 23, Math 32; lect II MTThF, IV MTWF; Arch 40) Ibele

34 **MEASUREMENTS LABORATORY II**

Static and dynamic characteristics of generalized measurement systems. Electromechanical transducers. Measurement of temperature, pressure, vacuum, humidity, density, viscosity, heating valves, speed, power, force, stress, strain, and radioactivity. (2 cr; prereq ¶30A; lect VI TTh, ME 321; lab VII-IX TTh, ME 370) Liu

90†† **INDUSTRIAL ASSIGNMENT, PART II**

(See First Term) (2 cr for both terms; prereq ¶work-study program; hrs ar) Lund

91†† **INDUSTRIAL ASSIGNMENT, PART II**

(See First Term) (2 cr for both terms; prereq ¶work-study program; hrs ar) Lund

92†† **INDUSTRIAL ASSIGNMENT, PART II**

(See First Term) (2 cr for both terms; prereq ¶work-study program; hrs ar) Lund

93†† **INDUSTRIAL ASSIGNMENT, PART II**

(See First Term) (2 cr for both terms; prereq ¶work-study program; hrs ar) Lund

197 **SYSTEM ANALYSIS AND CONTROL**

Study of basic theory of linear feedback control systems. The transfer function representation of solid body, fluid, pneumatic, and electro-mechanical components. On-off, proportional, floating, and rate response in control systems, including industrial instrumentation. (3 cr; prereq 21A; lect III MTWThF, IV Th; ME 321) Ogata

**Industrial Engineering (IE)**

100 **INTRODUCTION TO INDUSTRIAL ENGINEERING ANALYSIS**

Management and decision-making, analytical methods in production management, design of production systems, operation and control of production systems. (3 cr; prereq ME 99 or #; lect I MTWThF, II W; ME 106) Johnson

**SCHOOL OF ARCHITECTURE (Arch) ††**

81-82-83† **ARCHITECTURAL DESIGN**

(See First Term) (6 cr each for both terms; prereq 2nd yr for IT students, jr for CLA students and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

91-92-93† **ARCHITECTURAL DESIGN**

(See First Term) (6 cr each for both terms; prereq 83 and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

†† This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

†† All courses run through both First and Second Terms. Students must enter at the beginning of First Term.

**111-112-113† ARCHITECTURAL DESIGN**

(See First Term) (7 cr each for both terms; prereq 93, MM 93 and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

**121-122† ARCHITECTURAL DESIGN**

(See First Term) (9 cr each for both terms; prereq 113, CE 41, and Δ; 1:00-5:00 pm MTWThF; Arch 210) Myers

## SCHOOL OF CHEMISTRY

### Analytical Chemistry (AnCh)

**111 PHYSICOCHEMICAL METHODS OF ANALYSIS**

Optical and electrochemical methods and methods of separation. Lecture. (3 cr; prereq 102 or 102A or 47, PCh 103 or 103A, or ‡; V MTWThF, VI T; C 325) Staff

**112 PHYSICOCHEMICAL METHODS OF ANALYSIS**

Quantitative application of electrochemical, optical, and other physical techniques. Laboratory. (3 cr; prereq 111 or ¶111; I-III TWThF; C 310) Staff

**113 PHYSICOCHEMICAL METHODS OF ANALYSIS**

A more advanced treatment of the material covered in 112. (3 cr; prereq 111 or ¶111 and ‡; I-III MTWThF, V-VII W; C 310) Staff

**211 PHYSICOCHEMICAL METHODS OF ANALYSIS**

Optical and electrochemical methods and methods of separation. Lecture. (3 cr; prereq 102 or 102A or 47, PCh 103 or 103A, or ‡; V MTWThF, VI T; C 325) Staff

**212 PHYSICOCHEMICAL METHODS OF ANALYSIS**

Quantitative application of electrochemical, optical, and other physical techniques. Laboratory. (3 cr; prereq 211 or ¶211; I-III MTWThF, V-VII W; C 310) Staff

**202 SPECIAL TOPICS**

Analytical topics not covered in regular courses are selected after discussion with instructor. (Cr ar; prereq ‡; hrs ar) Staff

**301 RESEARCH IN QUANTITATIVE ANALYSIS**

(Cr and hrs ar) Staff

### General Chemistry (GeCh)

**5 GENERAL PRINCIPLES OF CHEMISTRY**

General laws of chemistry, principles of structure, and chemical behavior of matter. (5 cr; for premedics, predentals, etc.; prereq 4; lect I MTWThF, C 100; rec ar; lab V-VIII MW, C ar) Staff

**15 GENERAL PRINCIPLES OF CHEMISTRY**

Basic principles and concepts of chemistry with a similar but more rigorous treatment than that of GeCh 5. (4 cr; limited to College of Engineering students; prereq 14; lect I MTWThF, C 100; rec ar; lab V-VIII MWF, C ar) Staff

**25 GENERAL PRINCIPLES OF CHEMISTRY**

Basic principles and concepts of chemistry with a similar but more rigorous treatment than that of GeCh 5. (5 cr; for chemistry and chemical engineering majors; prereq 24; lect I MTWThF, C 100; rec ar; lab V-VIII MWF, C ar) Staff

### Inorganic Chemistry (InCh)

**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 ‡; lect III MTWThF, C 315; rec ar) Hugus

**302° RESEARCH IN INORGANIC CHEMISTRY**

(Cr and hrs ar) Hugus, Brasted, and staff



## Organic Chemistry (OrCh)

Second  
Term  
Courses

- 62†† **ELEMENTARY ORGANIC CHEMISTRY**  
(See OrCh 61, First Term) (5 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) Staff
- 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)

- 105, 106 **PHYSICAL CHEMISTRY LABORATORY**  
(1 or 2 cr; prereq 101 or 101A or 102 or 108; VI-VIII MW; C 190) Bolton
- 108 **ELEMENTARY PHYSICAL CHEMISTRY**  
(3 cr; prereq 107; I MTWThF; C 115) Livingston

## SCHOOL OF EARTH SCIENCES

### Geology and Geophysics (Geo)

- 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; limited to 72 students; prereq 1 or 11; lect II MTWThF, P 110) Sloan  
Lab 1, III-IV MWF, Arch 60      Lab 2, VI-VII MWF, Arch 60
- 62 **MINERALOGY AND LITHOLOGY**  
Introduction to crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Classification of rocks. Textural, structural, and mineralogical variations of rocks and some ores. (5 cr, §old Geol 23-24; prereq 1 or 11 or ‡, 1 term college chemistry; lect III MTWThF, P 110; lab VI-VIII MTWTh, P 100) Bartels
- 103 **GEOLOGIC PROBLEMS**  
(Cr and hrs ar; prereq ‡) 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; limited to 18 students; only for students holding degrees in education; prereq 1 or 11 or 109C or ‡; lect II MTWThF, seminar V TTh; P 110) Sloan  
Lab 1, III-IV MWF, Arch 60      Lab 2, VI-VII MWF, Arch 60
- 162 **SOIL MINERALOGY**  
Introduction to crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Classification of rocks. Textural, structural, and mineralogical variations of rocks and some ores. Term paper. (4 cr; not open to geology, mining and metallurgy majors; prereq 1 or 11 or 109C, a term of college chemistry; lect III MTWThF, seminar V TTh, P 110; lab VI-VIII MTWTh, P 100) Zoltai, Bartels

## SCHOOL OF MATHEMATICS (Math)

- 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; I MTWThF; AE 317) Ar

†† To receive credit for any part of this course, the student must complete both OrCh 61 and 62.

**Z (Arts) PREPARATORY MATHEMATICS**

Designed to supplement the background in algebra for those students whose background is insufficient. Covers most of the material of the high school elementary and higher algebra courses, with emphasis on the latter. (0 cr; III-IV MTWThF; AE 309) 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  $\Delta$ ; II MTWThF; Arch 55) Ar

**10 (Arts) COLLEGE ALGEBRA AND ANALYTIC GEOMETRY**

For students 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; I-II MTWThF; AE 225) 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; I-II MTWThF; AE 209) 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; I-II MTWThF; AE 319) 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; III-IV MTWThF; AE 225) Ar

**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; AE 313) Ar

**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; III-IV MTWThF; AE 317) 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; AE 309) 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; AE 321) Ar

**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 and physics 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; III-IV MTWThF; AE 319) Ar

**43 (Arts) ANALYTIC GEOMETRY AND CALCULUS II**  
(See Math 42 for course description) (5 cr; prereq 42, or 40 with grade of B; I-II MTWThF; AE 321) Ar

**44 (Arts) ANALYTIC GEOMETRY AND CALCULUS III**  
(See Math 42 for course description) (5 cr; prereq 43; III-IV MTWThF; AE 313) 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 25A or 26B or 44; I MTWThF; Arch 5) Ar

**125B (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 125A; II MTWThF; Arch 145) Ar

**131B (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; determinants; 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; prereq 131A; IV MTWThF; Arch 5) Harper

**148C†† DIFFERENTIAL EQUATIONS AND VECTOR ANALYSIS**  
(See First Term) (5 cr for both terms; prereq admission to Summer Institute and integral calculus; II MTWThF; Ph 170) Wilde

**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; AE 215) Ar

**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; III MTWThF; AE 215) Polansky

**168B (IT) APPLICATIONS OF COMPLEX VARIABLES**  
Conformal mapping, Schwarz-Christoffel transformations, Laplace transforms, and applications. (3 cr; prereq 168A or §; III MTWThF; Arch 135) Ar

**178 (Arts) INTRODUCTION TO PROBABILITY**  
Elementary principles of probability, total and compound probability, expectation, repeated trials, and as time permits topics chosen from the following: Stirling's formula, the probability integral, geometrical probability, probability of causes, Bayes' theorem, errors of observation, principle of least squares. (3 cr; prereq 44 or 25A or 26B; V MTWThF; Arch 5) Ar

†† NSF Institute for High School Teachers of Physics and Chemistry. (See also section on Special Programs.) This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

†† 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.

**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 equations. Programming of computers. (6 cr; prereq 184 or §; III-IV MTWThF; AE 209) Ar

**187 (Arts) NON-EUCLIDEAN GEOMETRY**

Foundations of Euclidean geometry, Euclid's fifth postulate and its implications. Hyperbolic plane geometry and trigonometry. Elliptic plane geometry and trigonometry. Consistency of non-Euclidean geometry. (3 cr; prereq 25A or 25B or 32 or 44; III MTWThF; Arch 5) Harper

## SCHOOL OF MINERAL AND METALLURGICAL ENGINEERING

### Metallurgical Engineering (MetE)

**124\*†† SPECIAL PROBLEMS IN MINERAL DRESSING**

(Cr and hrs ar; prereq 112) Cooke

**170-171†† SPECIAL PROBLEMS IN PHYSICAL METALLURGY**

Laboratory investigation. (1, 2, or 3 cr) Staff

**201 RESEARCH IN PROCESS METALLURGY**

(Cr and hrs ar) Bitsianes

**204 RESEARCH IN MINERAL DRESSING**

(Cr and hrs ar) Cooke

### Mineral Engineering (MinE)

**139†† ENGINEERING FIELD STUDY**

Study of mining and petroleum operations; mine and petroleum plants, and metallurgical plants in selected regions. (3 cr; prereq §; 2 wks beginning about September 12) Pfeider, Yardley

**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)

**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 131) 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 MTWTh and 2 clear evenings per wk for observation; Ph 131) Kaufmanis

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†† Open only to students previously registered at the University of Minnesota. Advance arrangement necessary.

†† Special 2-week term beginning about September 12.

## Physics (Phys)

Second  
Term  
Courses

### 2 INTRODUCTION TO PHYSICAL SCIENCE

Demonstration lectures on the principles of physics and physical phenomena underlying these principles. Electricity and magnetism. (3 cr; prereq 1 or §; lect I MTWThF; Ph 133) Ar

### 2A PHYSICAL SCIENCE LABORATORY

Laboratory course given in conjunction with Phys 2. The combination of 2 and 2A may be applied toward group requirements in the College of Liberal Arts. (1 cr; prereq 2 or §2) Ar

Lab 1, III-IV TTh, Ar

Lab 2, VI-VII MW, Ar

### 23 GENERAL PHYSICS, PART II

Electricity and magnetism. (2 cr; prereq 23 [Part I]; II MTWThF; Ph 166) Ar

### 23A PHYSICS LABORATORY, PART II

Laboratory exercises in electricity and magnetism. ( $\frac{1}{2}$  cr; prereq §23; 2 lab hrs per wk ar) Ar

### 51 INTERMEDIATE GENERAL PHYSICS, PART II

Elementary nuclear physics. Introduction to wave mechanics and solid state physics. Selected topics in modern physics. (2 cr; prereq 51 [Part I]; III MTWThF; Ph 133) Ar

### 51A PHYSICS LABORATORY, PART II

Parallel to 51. ( $\frac{1}{2}$  cr; prereq §51; 2 lab hrs per wk ar) Ar

### 100C†† PRINCIPLES OF DYNAMICS

(See First Term) (5 cr for both terms; prereq 114C or equiv, prereq §Math 148C; I MTWThF; Ph 170) Ar

### 107C†† MODERN PHYSICS I

(See First Term) (5 cr for both terms; prereq 114C or equiv and Math 126C or equiv; IV MTWThF; Ph 170; lab hrs ar) Ar

†† NSF Institute for High School Teachers of Physics and Chemistry. (See also section on Special Programs.) This course runs through both terms. The student must enter in the First Term and complete both terms in order to receive credit.

# College of Veterinary Medicine††

All classes scheduled by arrangement

## 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, Marquart, Smith
- 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, #) Warner

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†† 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.

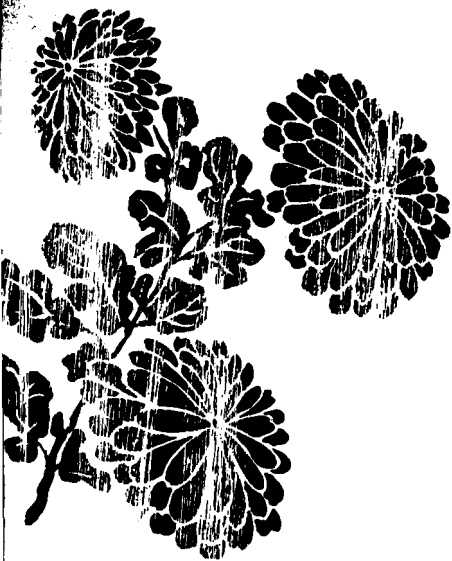
- 158° **VETERINARY SURGICAL PATHOLOGY**  
Neoplasms, surgical biopsies, postmortem material; review of pertinent literature. (1-3 cr; prereq 153, #) Barnes, Bergland, Perman
- 201° **ADVANCED VETERINARY AND POULTRY PATHOLOGY**  
Clinical material, collateral reading, and conferences. (Cr ar; prereq #) Higbee, Sautter
- 203° **NEOPLASMS OF DOMESTIC ANIMALS**  
(Cr ar; prereq #) Perman and others
- 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, Stowe

## 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, Gourley
- 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, #) Gourley
- 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



## 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 many lakes in 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 the Marshall W. Alworth Planetarium.

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 6 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.*



## Courses Newly Scheduled on a Ten-Week Basis

Several courses will be scheduled on a 10-week basis, with classes running uninterrupted through the entire Summer Session. Hence, students taking these courses will find themselves in a summer "quarter." It is felt that the scheduling of selected courses on this basis may result in a better learning situation.

## Graduate Program

The Graduate School offers, on the Duluth Campus, a master of arts degree with majors in education, in curriculum and instruction, in educational psychology (school counseling), in English, and in American history. These studies are designed to serve elementary school teachers and principals, secondary school teachers, counselors, and persons interested in the field of rural education. Students may complete all course work at Duluth. The Graduate School also provides all the course work necessary for the completion of a master of science degree in inorganic chemistry, organic chemistry, or physical chemistry. These courses are for college teachers and those planning additional graduate study or careers in industry. The program is under the jurisdiction of the dean of the Graduate School and is identical in all requirements to the parallel program on the Minneapolis Campus. A complete description of graduate requirements and courses is given in the latest Duluth *General Bulletin*, available at the News Service office, Communications Center, and in the *Bulletin of the Graduate School*.

Students who have not already applied for admission to the Graduate School and who contemplate a program of graduate studies at Duluth may request information and application forms from the Office of the Academic Dean, University of Minnesota, Duluth, Duluth, Minnesota 55812. This office or the office of the Division of Education and Psychology also may be consulted for information concerning selection of courses and other degree requirements.

Application 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. Students who wish to become candidates for the Master's degree or who wish to receive graduate credit for their course work must make application for admission to the Graduate School. (See section on Graduate School)

## Master's Degree in English

A 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

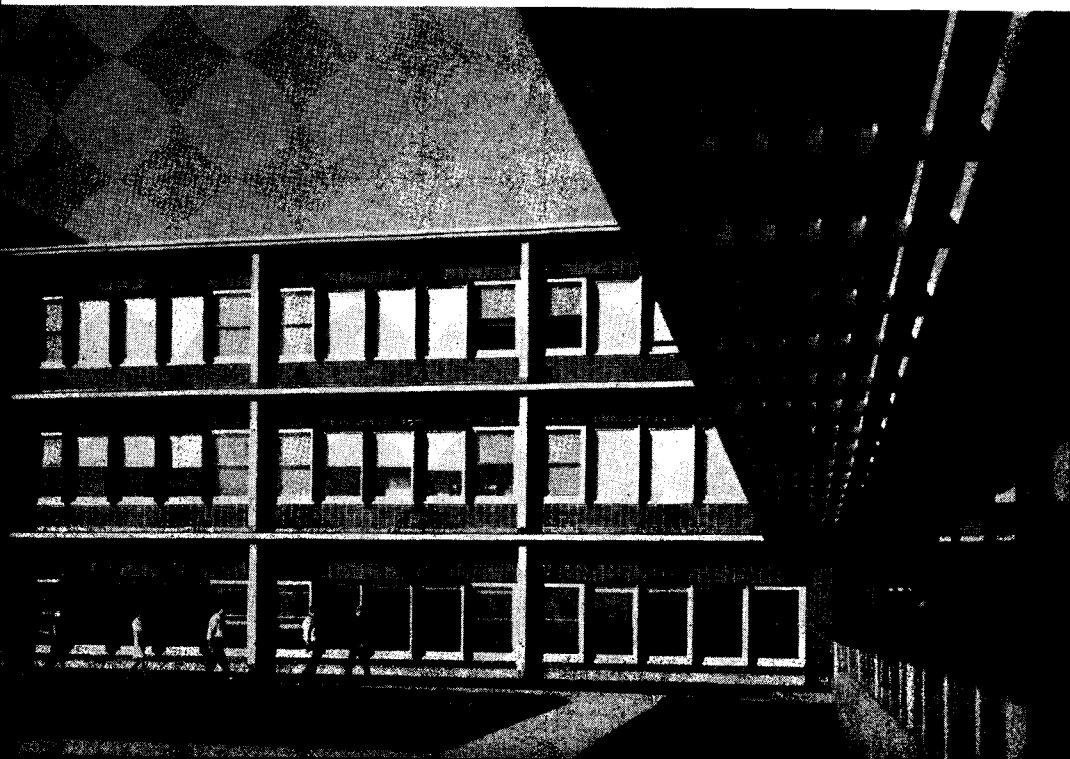
The major in chemistry is a Plan A program; that is, research leading to a thesis is required. A student can major in inorganic, organic, or physical chemistry.

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.

## Master's Degree in History

A graduate major is offered leading to the master of arts degree in American history. This program is designed to serve those interested in pursuing either the Plan A or Plan B programs of the Graduate School of the University of Minnesota.

*Court of Education and Science Buildings*



## **NDEA Institute for Secondary School Teachers of English**

An English institute will be offered on the Duluth Campus during the Second Term for junior and senior high school English teachers. The program, supported by the National Defense Education Act, is planned especially for teachers who are teaching on an English minor and for English majors who have had few English courses during the last 10 years. The courses will emphasize the close reading of literary texts and the evaluation of expository writing, both student and professional. A workshop will assist teachers to incorporate the materials into their own teaching. Participation in the institute is limited to teachers from Minnesota and northern Wisconsin, with priority being given to teachers from the nine northeastern counties in Minnesota.

## **NDEA Institute in Reading—Duluth and Morris Campuses**

An 8-week institute will be conducted jointly on the Duluth and Morris Campuses. The programs on both campuses will focus on primary reading instruction. Enrollment on each campus will be limited to 30 participants who must be full-time first or second grade teachers. For information, write to either Vernon L. Simula, Co-director, NDEA Institute in Reading, University of Minnesota, Duluth, Duluth, Minnesota 55812, or to E. Louise Curtis, Co-director, NDEA Institute in Reading, University of Minnesota, Morris, Morris, Minnesota 56268.

## **Educational Administration**

The Duluth Campus summer courses in educational administration have been expanding in recent years but do not yet constitute a complete program for the Superintendent's or Secondary School Principal's Certificates. Graduate students wishing to major in this field may do so by being admitted at the Minneapolis Campus, and may then take certain Duluth courses with the consent of their graduate adviser. For further information write to Department of Educational Administration, 203E Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Persons applying for the Elementary School Principal's Certificate prior to September 1, 1967 in Minnesota, as well as in most other states, may meet their requirements with courses taken entirely on the Duluth Campus. Inquiries may be addressed to Department of Elementary Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

## **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, persons interested 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.



*Duluth  
Harbor*

## **Courses for School Librarians**

Three basic courses in library science will be offered. During the First Term: Library Materials in the Classroom (Lib 74). During the Second Term: School Library Management (Lib 53) and Selection of Library Materials (Lib 104). 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.

## **Economic Education for Teachers**

Scholarships in economic education will be available to present or prospective public or parochial school teachers during the first summer term. Teachers will take two graduate courses in economics from the following group: Econ 168 (Public Finance), Econ 180A (History of Economic Thought), and Econ 182 (Economic Security); and take one graduate education course from the following group: EdCI 132 (Teaching the Basic Business Subjects), and EdCI 131B (Advanced Course in Teaching Bookkeeping, Accounting, and Data Processing). Information on scholarships may be obtained from the Division of Social Sciences, University of Minnesota, Duluth, Duluth, Minnesota 55812.

## 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. All persons holding such positions in Minnesota must meet specific requirements.

Certain courses in this program may have limited enrollment or may require the making of special arrangements. Persons, therefore, 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: Reading Clinic, 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 First Term. Principles and techniques will be discussed and there will be opportunities for construction of programmed materials for classroom use.

## 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; EdCI 179, Education of Mentally Retarded Children in the Elementary School; 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 annual clinic for children with speech and hearing disorders, held June 20 to August 12. 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.

## Beginning Spanish

A 10-week course will be offered to provide the student with basic proficiency in Spanish with special emphasis on the spoken language. The class will meet five times a week, 3 hours per day; 2 hours will be spent in the classroom, 1 hour in the language laboratory. Upon completion of the course, the student will have earned 15 credits. This is equivalent to the regular first year sequence (Span 1-2-3). Credit for the First Term will not be granted without completion of the Second Term. A student should not take any other courses.

## **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—and the Duluth area is admirably suited for field applications.

## **Courses for Recent High School Graduates**

Many courses are open 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.

## **Courses for New Engineering Students**

Since engineering students should register for either Math 12 or Math 13 during their first regular quarter, those with deficiencies in high school mathematics would profit by taking either Math 11 or Math 11 and Math 12. Math 11 is offered both terms and Math 12 the Second Term.

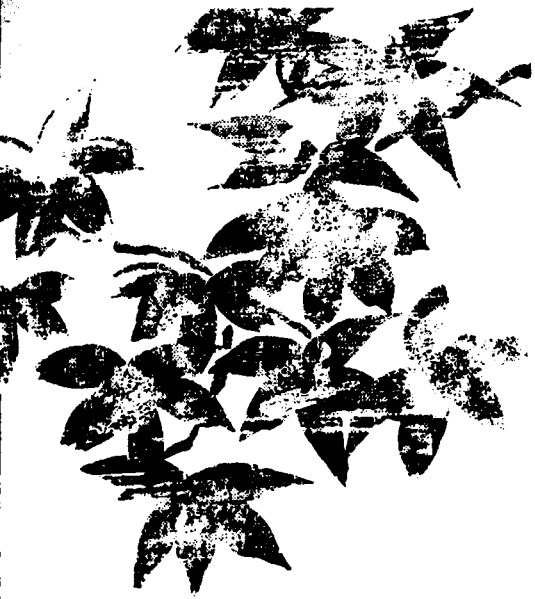
## **Painting Workshop**

The eighteenth annual summer painting workshop will again be conducted by Mr. Henry C. Pearson, well-known New York artist. Mr. Pearson studied at the University of North Carolina and Yale University as well as the Art Student's Guild. His work has been represented in group exhibitions at the Pennsylvania Academy of Fine Arts, Museum of Modern Art, American Federation of Arts Circulating Exhibitions, and Corcoran Gallery of Art, Washington, D. C. Mr. Pearson's paintings have been purchased for permanent collections at the Museum of Modern Art, William Rockhill Nelson Gallery, Corcoran Gallery of Art, and Chrysler Art Museum, University of Massachusetts.

This Second Term offering is the latest in a series of special workshops conducted by such distinguished artists as Charles Burchfield, Jean Charlot, Max Weber, and Will Barnett.

## **Air Force ROTC**

Three courses in aerospace studies will be offered during the First Term. 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 to Department of Aerospace Studies, University of Minnesota, Duluth, Duluth, Minnesota 55812.



Morris Campus

# Morris Campus

## 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; 10:30-12:00 and 1:00-2:30 MTWThF; Hum 110) Cavazos

### 3 SOCIAL PROBLEMS

A survey course in contemporary social problems with special emphasis on personal demoralization and social disorganization. An analysis of the role of society's value pattern in bringing about social problems will be made. (3 cr; III MTWThF; Sci 111) Milstone

### 5A FUNDAMENTALS OF SPEECH

An introductory theory-performance course dealing with the basic principles of oral discourse as found in a variety of speech situations: extemporaneous speaking, oral reading, and discussion. (3 cr; II MTWThF; Sci 105) Lammers

### 10 INTRODUCTION TO MUSIC

A general survey to develop an intelligent understanding and appreciation of music. Designed for students not majoring in music. (5 cr; IV-V MTWThF; Sci 105) Johnson

### 50 INTRODUCTION TO EDUCATION

Introductory course required of all students who plan to teach; basic orientation to public school teaching; the role of the school in the American society; consideration of critical educational issues; and consideration of teaching as a profession. (3 cr; III MTWThF; Sci 205) Hinmon

### 55 AMERICAN LITERATURE I

*American literature from its beginning to 1860; concentration upon the Puritan period, Cooper, Emerson, Thoreau, Hawthorne, and Melville.* (3 cr; I MTWThF; Sci 105) McGinnis

### 60 CONTEMPORARY POLITICAL IDEOLOGIES

Major currents of political theory from Marx to present: Marxism, socialism, syndicalism, anarchism, fascism, political ideologies of antidemocratic thought and totalitarian regimes. (3 cr; II MTWThF; Sci 205) Lee

### 62A HISTORY OF PHILOSOPHY

A survey of the major developments in Western philosophic thought from about 1800 to the present time. Consideration will be given to Kant and the 19th-century German idealists, 19th-century British thought (especially Bentham and Mill), American pragmatism (James and Dewey), and contemporary philosophies in the United States and abroad. (3 cr; IV MTWThF; Sci 111) Uehling

### 65 CULTURE AND PERSONALITY

The role of culture in the formation of personality. Problems of individual adjustments to the demands of culture. Evidence will be gathered from diverse cultures. (3 cr; I MTWThF; Sci 205) Nord

### 69 THE MODERN THEATRE

Development of the dramatic arts from the 19th century to the present: plays, playwrights, and physical theatre from Ibsen to Ionesco. (3 cr; V MTWThF; Sci 111) Fosgate

### 73 THE NOVEL I

A study of the development of the novel from the 18th century through the 19th century. (3 cr; II MTWThF; Sci 111) Grant

### 84 NINETEENTH-CENTURY ART, 1784-1880

Painting, sculpture, and architecture in Europe from 1784 to 1880 are discussed in terms of the major styles of neoclassicism, romanticism, realism, and impressionism. Emphasis is placed upon painting as a manifestation of these styles exemplified in the work of David, Delacroix, Courbet, and Monet. (3 cr; V MTWThF; Sci 205) Peterson

### 86 THE FAMILY

The study of the development of family unity or disunity, roles of members, methods of investigation, the cycle of family life, and cultural and subcultural variations of the family. (3 cr; III MTWThF; Sci 11) Nord



## 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; 10:30-12:00 and 1:00-2:30 MTWThF; Hum 110) Lieberman

### **59 CURRICULUM THEORY AND PRACTICE**

An investigation of theory as it applies to the development of programs of study in the school. Workshop provisions for the development of instructional materials that may be utilized in the classroom. (3 cr; 8:30-12:00 daily for 2-wk period beginning July 18 and ending July 30; Sci 205) Bruning

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# INSTRUCTIONS

1. Who should file a Statement of Intent to Register?

Summer Session students as defined on page 9.

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 A-82 SUMMER SESSION

Name	LAST	FIRST	MAIDEN	MIDDLE	File No.
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Current Mailing Address	STREET	CITY	COUNTY	STATE	ZIP	<b>S</b>	<b>C</b>
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Date Of Birth	MO	DAY	YEAR	Last School Attended: College _____	NAME High School _____	CITY _____	STATE _____
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<b>C</b>	Plan on Summer Term	1 _____	2 _____	Minnesota Resident	1 _____	2 _____	Sex: Male _____ Female _____
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Office Use	NH	NA	PR	O	Fr	So	Jr	Sr	AS	SS
	1	2	3	3						

If previously registered in \_\_\_\_\_ Last \_\_\_\_\_  
 University of Minnesota indicate: College \_\_\_\_\_ When \_\_\_\_\_

Do you expect to earn a degree Yes \_\_\_\_\_  
 from the University of Minnesota? No \_\_\_\_\_ College \_\_\_\_\_

Are you in a "dropped" status from any college Yes \_\_\_\_\_ If yes Where \_\_\_\_\_  
 No \_\_\_\_\_ When \_\_\_\_\_

**First Class**  
**Permit No. 9040**  
**Minneapolis, Minn.**

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**105 Morrill Hall—Summer**  
**University of Minnesota**  
**Minneapolis, Minnesota 55455**



