

University of Minnesota

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*Lake
Itasca
Biology
Session*

Summer 1973



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*Lake
Itasca
Biology
Session*

First Term June 17-July 21

Second Term July 22-August 25



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, the College of Agriculture, and the College of Forestry. By agreement, the University of Wisconsin and the University of North Dakota are participating in the policy and planning of the Biology Session through membership on the advisory committee.

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.

RESEARCH AND ACADEMIC OPPORTUNITIES

THE ITASCA HABITATS

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, phyecology, aquatic insects, and fungi as well as 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 communities developing into climax 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 varied ecosystems, but also a singular range of fauna and flora with southern, northern, and western origins. 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 behavior and ecological problems for study.

INDEPENDENT INVESTIGATORS

Qualified investigators may arrange with the chairman for research in various fields of terrestrial and freshwater biology at any season.

COURSE WORK AND RESEARCH

The variety of courses available in both terms I and II allow for an entire summer, either of intensive work in a particular field of interest or a sampling of several types of field experiences.

Graduate and undergraduate students of biology will find an excellent field laboratory for both research and course work. Graduate students may devote themselves exclusively to research problem work.

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 should make prior arrangements with the chairman.

INSTRUCTIONAL FACILITIES

Eleven well-equipped laboratories are located in six 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. Four complete sets of aerial photos of the park area made in 1938, 1951, 1959, and 1966 are maintained at the station with adequate stereoscopic equipment.

The station equipment includes necessary compound and dissecting microscopes, collecting equipment, various types of nets, rowboats, and launches, and the minor accessories for instruction and research.

The library has ample room for study and excellent series of journals as well as books basic to field work. Other books and journals are available from the University libraries.

ADMISSION AND 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 of undergraduates to the Summer Session apply to the Biology Session. Students are advised to consult these regulations in the general *Summer Session Bulletin*.

The Board of Regents has committed itself and the University of Minnesota to the policy that there shall be no discrimination in the treatment of persons because of race, creed, color, sex or national origin. This is a guiding policy in the admission of students in all colleges and in their academic pursuits. It is also to be a governing principle in University-owned and University-approved housing, in food services, student unions, extracurricular activities and all other student and staff services. This policy must also be adhered to in the employment of students either by the University or by outsiders through the University and in the employment of faculty and civil service staff.

Summer-Only Students—Students with previous college work, who wish to attend the Summer-Session-only, may do so without filing applications, provided they are in good standing and are not candidates for a degree.

Graduate Students—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. Graduate students in good standing in a degree program at another recognized graduate school may apply for admission as transient students on Transient Graduate Form

218. All 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.

All correspondence or applications related to Graduate School admissions should be directed to the Graduate School, 322 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.

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.

For information and applications write to the Graduate School, University of Minnesota, Minneapolis, Minnesota 55455.

The Caroline M. Crosby Memorial Fellowship in Botany provides for tuition, room and board, travel, and miscellaneous expenses up to \$400. Open only to students majoring in botany at the University of Minnesota. For information and applications write to the Graduate School, University of Minnesota, Minneapolis, Minnesota 55455.

The Josephine Herz Fellowship to encourage an outstanding student in research on avian behavior. Write to Chairman, Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455.

The Fishery and Wildlife Management Summer Scholarships for tuition and fees provided by the Minnehaha Chapter, Izaak Walton League, Question Club of Minneapolis, and the James R. Beer Memorial Scholarship. Write to Chairman, Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455.

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 and mail to 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455. *This form must be accompanied by a recent transcript of academic record, a listing of courses being taken at present, a deposit of \$25, and a letter of evaluation from the student's adviser.* 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 will be made as soon as possible after April 1 and will be considered on the basis of prerequisites for the courses desired, scholarship, and date of application. Late application will be accepted for classes that are not closed, up to the time of registration.

REGISTRATION

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.

Whenever possible, students should complete their registration at the Office of Admissions and Records on the Twin Cities Campus (either Minneapolis or St. Paul). After May 14, the IBM class reservation cards may be picked up at 130 Coffey Hall in St. Paul.

Registration by out-of-town students can be completed at the station on June 17, First Term, or July 22, Second Term. The necessary IBM cards will be held with the reservation.

A total of 10 quarter credits per term is considered a normal academic load. This may be accomplished by (a) registration for two courses (students should check the condensed class schedule on page 23 to avoid scheduling two classes on the same day); (b) registration for one course and a research problem which may be related to the course.

TUITION FEES AND OTHER COSTS

ACADEMIC FEES

The following fees, per term, are payable by each regular registrant on or before June 17 or July 22.

	<i>5 credits</i>	<i>10 credits</i>
Tuition	\$62.50	\$125.00
Student Services Fee	12.50	12.50
Laboratory Fee	8.50	8.50
TOTAL	<u>\$83.50</u>	<u>\$146.00</u>

A \$25 deposit is required of all persons making reservations for course work during the Biology Sessions. This fee will be returned if notice of cancellation is received before May 1 for the First Term, or June 11 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 \$3 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 \$46 tuition and the student services and laboratory fees per term.

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 17 or July 22. Late fees will be charged as follows:

June 18-22 or July 23-25	\$6.00
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No registration will be accepted after June 17 or July 22 without the approval of the chairman of the Field Biology Program and the payment of the late fee.

ROOM AND BOARD COSTS

There is a \$20 per term service charge for dormitory facilities. An initial payment of \$100 for board is payable to the Itasca Dining Club which is run on an actual cost basis. These costs are payable at the beginning of each term.

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.

ON-CAMPUS ARRANGEMENTS

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 chairman for the students who form a cooperative Itasca Dining Club. Meals are carefully planned, well balanced, and prepared by experienced cooks.

CABINS

There are ten cabins for men, each accommodating eight students, and seven 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 but no outdoor cooking facility. Registered married students and their spouses and children have top priority in use of the campground. Applications should be made well in advance of the session. The weekly charge is \$5.

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 Itasca Dining Club if meal tickets are purchased in advance.

MAIL

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

TRANSPORTATION

Public transportation to the station is by bus to Park Rapids or Bemidji or by air to Bemidji. The depots are 24 and 42 miles from the station. Students will be met if prior arrangements are made with the chairman. State Highway 92 and U.S. Highway 71 provide easy access by car through the towns of Bagley, Bemidji, or Park Rapids.

PERSONAL NEEDS

Students must provide their own pillows, 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, note-

books, pocket field manuals, and the equipment necessary for individual work in the field or laboratory.

A branch of the University bookstores is maintained at the station during the sessions to make books and student supplies readily available.

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. Domestic pets are not allowed on the station.

Off campus, and within park boundaries, the State Park regulations govern. The State Park entry sticker (\$3) must be bought for private cars at the park entrance.

RECREATION

Opportunities to relax by swimming, fishing, canoeing, and hiking in the park are excellent. Volleyball, softball, and horseshoe equipment is available at the station. Evening social events may be planned by the students. Weekly evening lectures by staff or visiting scientists and outstanding films on field biology will be scheduled.

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 chairman. This will not include such things as physical examinations, treatment of chronic conditions, nor will it include payment for drugs.

Requests for additional bulletins, and specific inquiries as to courses, accommodations, equipment, etc., should be sent to the:

**Chairman of Field Biology
349 Bell Museum of Natural History
University of Minnesota
Minneapolis, Minnesota 55455**



Staff Members

Robert E. Beer, Professor, University of Kansas, is an authority on systematics and ecology of phytophagous mites, and development and behavior of sawflies.

Lewis Berner, Professor and Director, Division of Biological Sciences, University of Florida, has worked extensively with the ecology and systematics of mayflies in the southeastern United States.

Eugene C. Bovee, Professor, Department of Physiology and Cell Biology, University of Kansas. Authority on biomechanics of protozoan locomotion and relationship of motile mechanisms to taxonomy and systematics of amebas and other Sarcodina. Has studied feeding behavior of protozoa, and ecology and distribution of protozoa across the United States. Has described many new species of free-living and parasitic protozoa.

Alan J. Brook, Professor and Head, Department of Ecology and Behavioral Biology, University of Minnesota, specializes in freshwater algae. Has had extensive experience in the Sudan, Scotland, and Minnesota which has led to many publications on the ecology and systematics of the algal floras of these areas. Author of the text, *The Living Plant*, and of several recently published papers on algae of the Itasca region.

Murray F. Buell, Professor Emeritus, 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.

David W. French, Professor and Associate Chairman of the Biology Session, University of Minnesota, specializes in forest pathology and wood products deterioration.

Donald E. Gilbertson, Associate Professor, University of Minnesota, has conducted research on the metabolism and biochemical taxonomy of freshwater snails. He is also studying the factors leading to outbreaks of schistosome dermatitis.

Eville Gorham, Professor of Botany and Ecology, University of Minnesota, is concerned with chemical aspects of the ecology of lakes and wetlands, and particularly with the use of fossil plant pigments as a guide to lake productivity over postglacial time.

David F. Grigal, Assistant Professor, University of Minnesota, is interested in plant community-soil interrelationships and in nutrient cycling in forest ecosystems.

Omer R. Larson, Associate Professor, University of North Dakota, has major interests in the taxonomy, distribution, and life cycles of helminth parasites and fleas of vertebrates.

Robert K. Maxwell, Assistant Professor, University of Minnesota, works with the physical transfer processes which operate between an organism and its surroundings.

Robert O. Megard, Associate Professor, University of Minnesota, is studying nutrients and the growth of algae in lakes. Previously he has done research on biostratigraphy and sedimentation in lakes.

Thomas Morley, Professor, University of Minnesota, is carrying out research on the taxonomy of pondweeds and woody tropical plants related to the myrtle family.

Lewis W. Oring, Associate Professor, University of North Dakota, has studied the behavior of closely related birds occupying similar niches in Sweden and North America. He is currently evaluating the efficiency of communication and social systems with regard to the environments in which they occur.

David F. Parmelee, Professor and Chairman of Field Biology Program, University of Minnesota, specializes in the distribution, ecology, and behavior of arctic and antarctic birds.

Jack D. Rogers, Professor in Plant Pathology, and Forestry and Range Management, Washington State University, is primarily interested in fungal systematics and evolution, particularly cytology and cytogenetics of ascomycetes.

Harold E. Schlichting, Jr., Associate Professor, North Carolina State University and Visiting Professor of Botany, University of Oklahoma Biological Station, is conducting research on the dispersal of algae and polymorphism of algae from unusual habitats.

William D. Schmid, Associate Professor, University of Minnesota, is currently studying winter ecology and local distribution patterns of organisms in different habitats.

John R. Tester, Professor, University of Minnesota, has investigated prairie ecology and vertebrate distribution and abundance in the Itasca area and is actively working in radiation ecology and on studies of home range and behavior of vertebrates using telemetry techniques.

John W. Thieret, Edwin Lewis Stephens Professor of Science and Professor of Biology, 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.

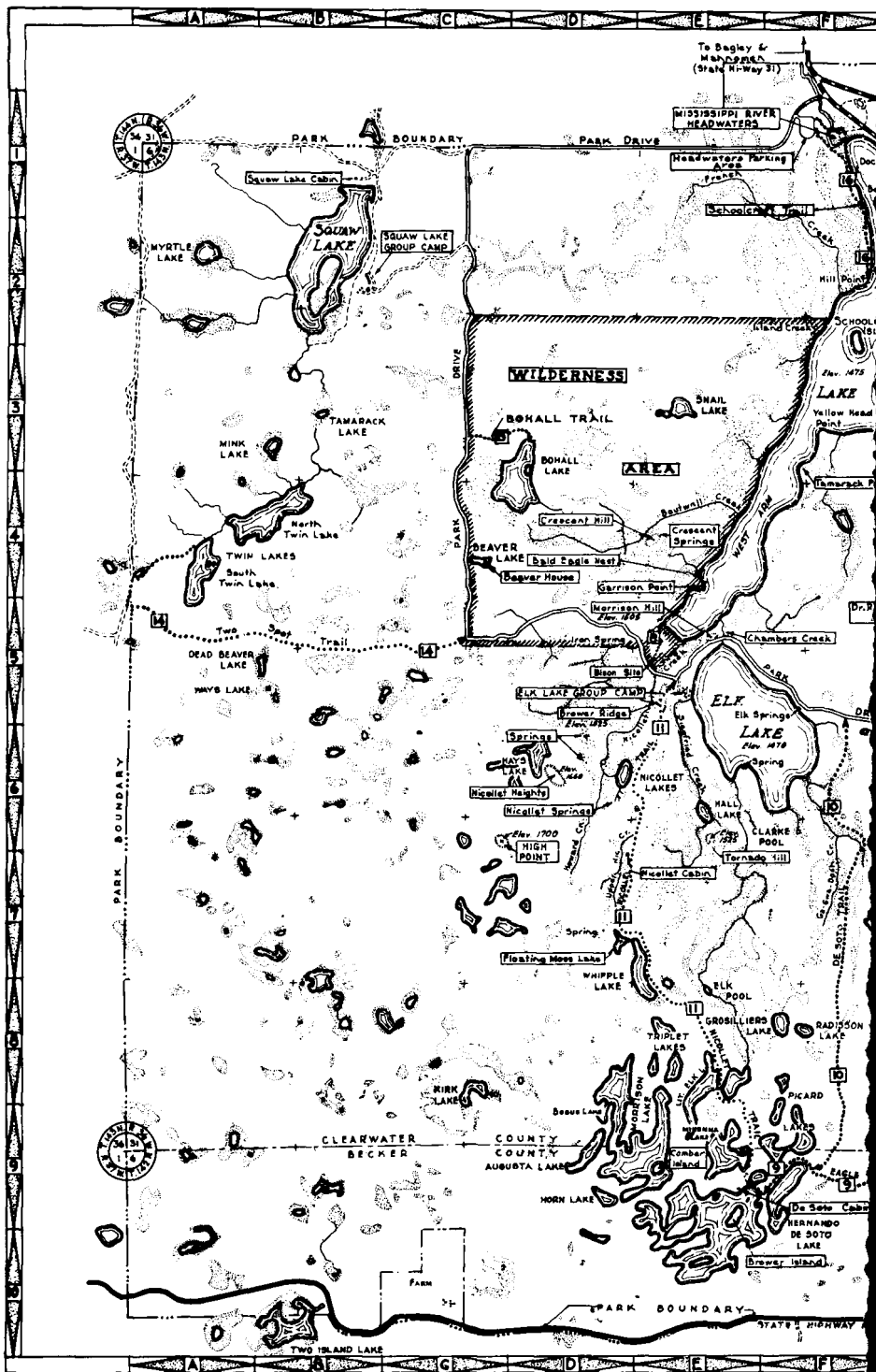
Warren H. Wagner, Jr., Professor and Curator of Pteridophytes, University of Michigan, specializes in comparative biology of the ferns and other homosporous vascular plants.

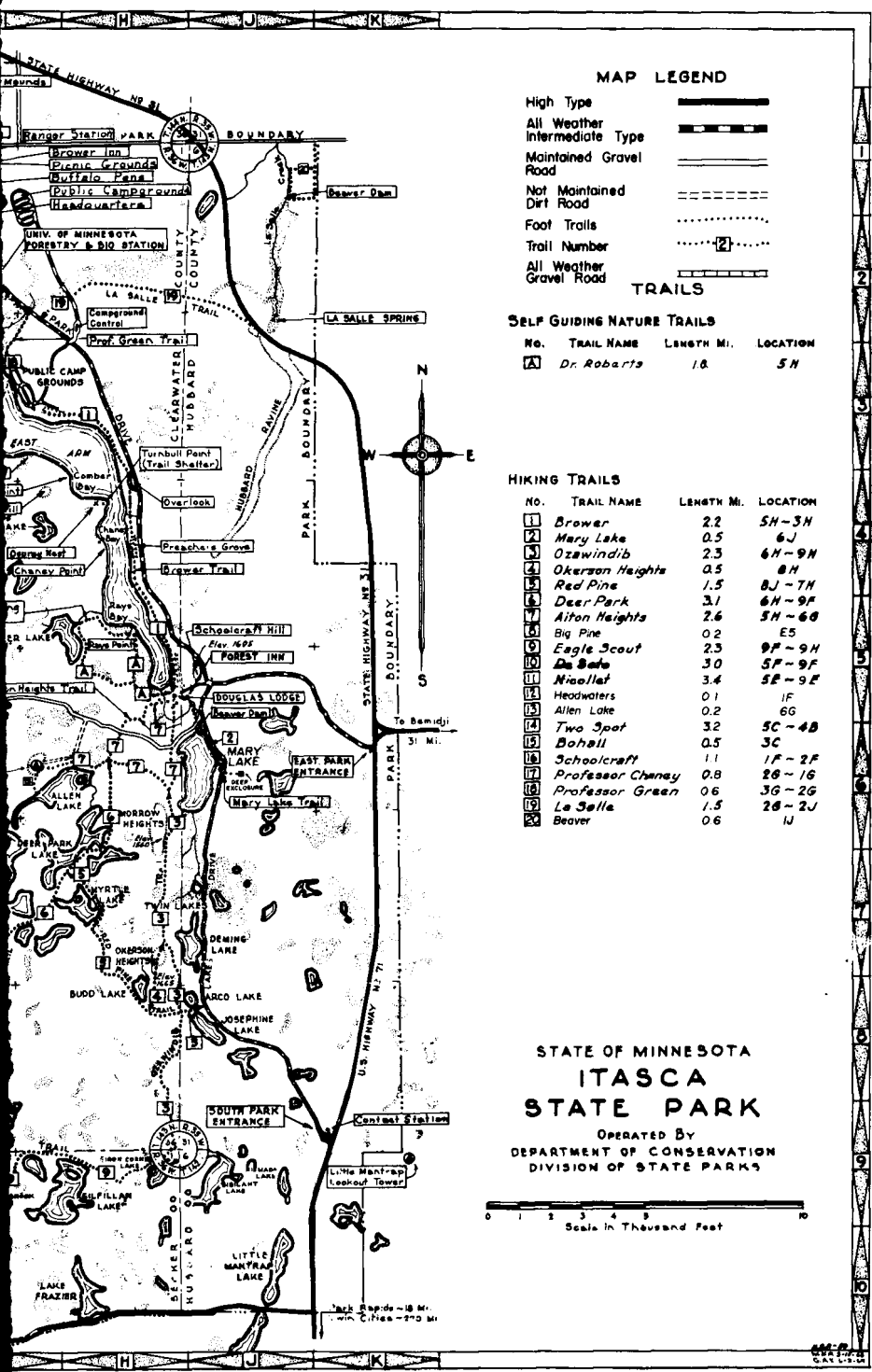
Dwain W. Warner, Professor and Curator of Birds, University of Minnesota, is engaged in research on the systematics and ecology of birds, especially black-birds and owls, and in the long-distance dissemination of microorganisms by birds.

Melbourne C. Whiteside, Assistant Professor, University of Tennessee, Knoxville, studies aquatic Cladoceran. His studies have included paleolimnological investigations and more recently population dynamics and structure of Chydorid Cladocerans.

Forestry and Biology Station — Permanent Staff

James L. App, Ph.D., Superintendent
Craig A. Gannon, M.A., Administrative Assistant
Robert P. Boyle, B.S., Resident Manager
Vera Boyle, Bookstore Manager





MAP LEGEND

- High Type
 - All Weather
 - Intermediate Type
 - Maintained Gravel Road
 - Road
 - Not Maintained Dirt Road
 - Foot Trails
 - Trail Number 2
 - All Weather Gravel Road
- TRAILS**

SELF GUIDING NATURE TRAILS

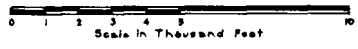
No.	TRAIL NAME	LENGTH MI.	LOCATION
A	Dr. Roberts	1.8	5H

HIKING TRAILS

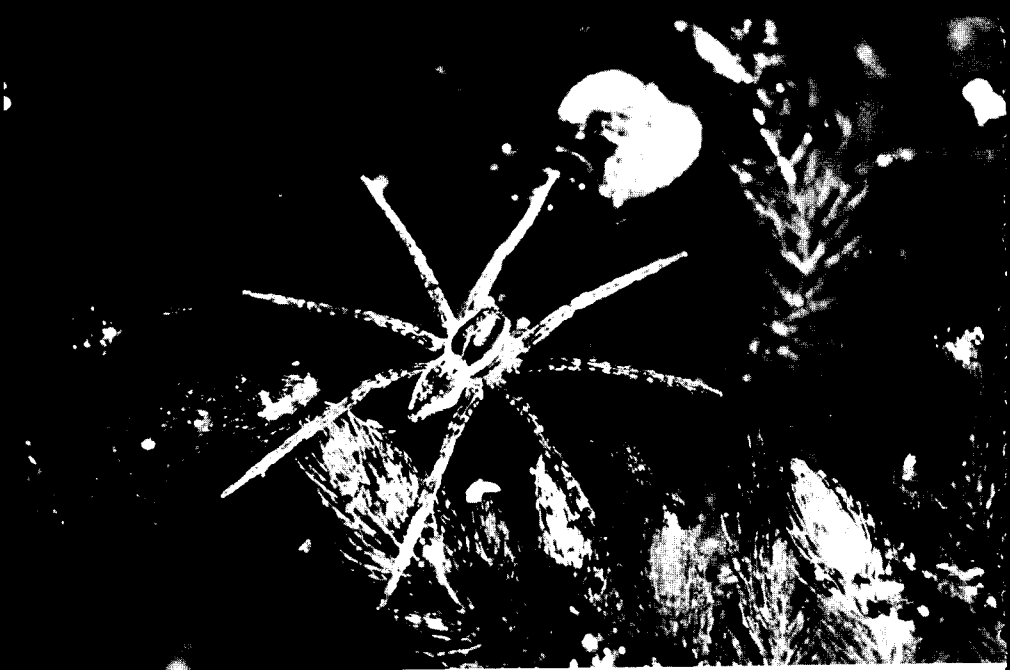
No.	TRAIL NAME	LENGTH MI.	LOCATION
1	Brower	2.2	5H-3H
2	Mary Lake	0.5	6J
3	Ozawindib	2.3	6H-9H
4	Okearson Heights	0.5	8H
5	Red Pine	1.5	8J-7H
6	Deer Park	3.1	6H-9F
7	Aiton Heights	2.6	5H-6G
8	Big Pine	0.2	E5
9	Eagle Scout	2.3	9F-9H
10	De Soto	3.0	5F-9F
11	Nicolet	3.4	5E-9E
12	Headwaters	0.1	1F
13	Allen Lake	0.2	6G
14	Two Spot	3.2	5C-4B
15	Bohall	0.5	3C
16	Schoolcraft	1.1	1F-2F
17	Professor Cheney	0.8	2B-1B
18	Professor Green	0.6	3G-2G
19	LaSalle	1.5	2B-2J
20	Beaver	0.6	1J

**STATE OF MINNESOTA
ITASCA
STATE PARK**

OPERATED BY
DEPARTMENT OF CONSERVATION
DIVISION OF STATE PARKS



Back Rapids - 18 mi.
C. Nees - 270 mi.



Courses of Instruction

§ No credit given if credit has been received for equivalent course listed after the symbol

means consent of instructor

Classes begin at 8:00 a.m. and continue all day

BIOLOGY (Biol)

5-890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY; OR SOIL SCIENCE; OR ZOOLOGY

Undergraduate and graduate students may develop a short-term research project in any departmental area listed here during one or both terms. (Cr ar; prereq #) Staff

BOTANY (Bot)

3-990. RESEARCH PROBLEMS

Individual research for undergraduate majors. (1-5 cr; prereq major in biological sciences, #) Staff

5-801. SUMMER FLORA OF MINNESOTA

A survey of the summer flowering plants and ferns of the state with particular reference to the local flora. Identification by technical keys; important plant families; field recognition of common species; habitat preferences; collecting methods; literature; taxonomic methods. Text: Gleason and Cronquist, *Manual of Vascular Plants of Northeastern United States*. (5 cr; limited to 20 students; prereq course in taxonomy; MTh; I term) Morley

5-805. 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 course in taxonomy; WS; II term) Thieret

5-811. FRESHWATER ALGAE

Designed to acquaint the student with the taxonomy and morphology of freshwater algae as related to ecology. Culturing techniques and identification of field collections will be emphasized and the utilization of this information in teaching and research will be stressed. Text: Round, *The Biology of the Algae*. Also keys by Prescott and Whitford and Schumacher. (5 cr; limited to 20 students; prereq 10 cr in botany, biology or zoology; TF; I term) Schlichting

8-970. SPECIAL TOPICS: BIOLOGY OF THE FERNS

Field and laboratory study of lower vascular plants, including the ferns, horse-tails, clubmosses, and quillworts, their evolution, classification, morphology, and ecology. Emphasis on field exploration for rare taxa, including natural hybrid forms, and life cycles. (5 cr; limited to 20 students; prereq #; undergraduates should enroll in Bot 3-970; MTh; II term) Wagner

8-990. GRADUATE RESEARCH PROBLEMS

(Cr ar; prereq #) Staff

ECOLOGY AND BEHAVIORAL BIOLOGY (EBB)

5-012. WEATHER IN THE BIOSPHERE

The distribution and variability of weather parameters such as solar and long-wave radiation, temperature, water vapor, and wind speed are studied in micro-habitats found in the Itasca region. Emphasis will be upon field measurement, and, in conclusion, the effect of the parameters on the energy budget of an organism. (5 cr, §5-024, §5-025; limited to 15 students; prereq 1 yr physics and course in ecology; WS; I term) Maxwell

5-026. PHYSICAL ASPECTS OF FIELD BIOLOGY III

Principles of biometeorology and basic measuring systems are applied to the terrestrial and aquatic habitats found in the Itasca region. (5 cr; limited to 5 students; prereq EBB 5-025 or #; time ar; I term) Maxwell

5-812. AQUATIC ECOLOGY

The nature, origin, and development of lakes, and conditions for plant and animal life in the water. Individual and team projects in field and laboratory research will be undertaken. Text: Reid, *Ecology of Inland Waters and Estuaries*. (5 cr; limited to 20 students; prereq 15 cr in biology and 5 cr in chemistry; MTh; I and II terms) Whiteside, Gorham

5-813. ADVANCED LIMNOLOGY

Measurement and theoretical analysis of the relationships between photosynthesis and population densities of phytoplankton. Lectures, laboratory, and field work. Text: Fogg, *Algal Cultures and Phytoplankton Ecology*. (5 cr; limited to 12 students; prereq introductory course in limnology [EBB 5-812 or equiv] and concurrent enrollment in EBB 5-816 required; WS; II term) Megard

5-814. COMMUNITY STRUCTURE AND FUNCTIONING

Communities represented in Itasca Park and vicinity and their dynamic relationships. Also, the relationships of local communities to the flora and fauna of Minnesota as a whole. Use of modern methods of community analysis and measurement. (5 cr; limited to 20 students; prereq course in ecology; TF; II term) Buell

5-815. FIELD ETHOLOGY

Studies of behavioral function, evolution, causation, and development stressing the relationship between environment and behavior. Sound recording, motion picture photography, tape and film analysis, and marking techniques are emphasized. Each student completes an individual research project and term paper on the social behavior of one species of bird, mammal, frog, or dragonfly. Projects require a considerable amount of time outside of class. Text: Manning, *An Introduction to Animal Behavior*. (5 cr; limited to 15 students; prereq course in ornithology or ecology; TF; I term) Oring

5-816. ECOLOGY OF FRESHWATER ALGAE

Emphasis on phytoplankton as a biotic community; its spatial and temporal distribution and consideration of the factors influencing periodicity. Field and laboratory instruction in relevant research techniques. Text: Fogg, *Algal Cultures and Phytoplankton Ecology*. (5 cr; limited to 12 students; prereq Bot 5-811 or equiv and concurrent enrollment in EBB 5-813 required; TF; II term) Brook

5-817. VERTEBRATE ECOLOGY

Field studies on populations and their relationships to local environments; habitat analysis and ecological research methods. Individual and team research projects, field trips, and lectures. Reports and complete data analysis required on two research projects. A considerable amount of time outside of class is required for these projects. (5 cr; limited to 15 students; prereq course in ecology; WS; I term) Tester

ENTOMOLOGY (Ent), FISHERIES AND WILDLIFE (FW)

5-020. 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 habitats of local species under ecological conditions governing the distribution of insect fauna of the region. Text: Borror and DeLong, *An Introduction to the Study of Insects*. (5 cr; limited to 15 students; prereq 10 cr in biology; MTh; I term) Beer

5-130. AQUATIC ENTOMOLOGY

Identification and biology of aquatic and littoral insects in all stages. Text: Usinger, *Aquatic Insects of California*. (5 cr; limited to 15 students; prereq Ent 5-020 or equiv; MTh; II term) Berner

PLANT PATHOLOGY (PIPd)

5-102. INTRODUCTORY MYCOLOGY

A survey of the major groups of fungi, including slime molds, with emphasis on their life histories, habitats, and relationships with human affairs. Field collecting and identification. (5 cr; limited to 15 students; prereq 6 cr in botany; WS; II term) Rogers

SOIL SCIENCE (Soil)

5-532. SOILS AND THE ECOSYSTEM

The functional and structural aspects of soils as a component of the ecosystem. Interrelationships of soil and vegetation on the landscape. (5 cr; limited to 20 students; may be taken in place of EBB 5-819; prereq course in ecology; MTh; I term) Grigal

ZOOLOGY (Zool)

5-807. PROTOZOOLOGY

A general treatment of morphology, classification, growth, development, physiology, genetics, ecology and distribution of protozoa. Laboratory emphasizes local protozoa and their habitats. (5 cr; limited to 15 students; prereq Biol 1-106 or equiv; MTh; II term) Bovee

5-814. NATURAL HISTORY OF INVERTEBRATES

Advanced taxonomic and ecological survey of the local fauna and independent ecological studies of several taxonomic groups. Texts: Eddy and Hodson, *Taxonomic Keys of the Common Animals of Minnesota*, and Pennak, *Freshwater Invertebrates of the United States*. (5 cr; limited to 20 students; prereq Biol 1-106 or equiv; WS; I term) Gilbertson

5-819. NATURAL HISTORY OF VERTEBRATES

Taxonomic survey of local vertebrates, exclusive of birds; and study of morphological, physiological, and behavioral adaptations to different habitats. (5 cr; limited to 20 students; prereq Biol 1-106 or equiv; TF; II term) Schmid

5-834. FIELD ORNITHOLOGY

Field and laboratory studies of birds in the Itasca Park region. Field trips to a variety of habitats will allow the student to learn bird identification, study avian ecology and behavior, and observe and practice techniques for conducting field studies. Laboratory sessions will investigate family distinctions and species identification. Students will undertake individual field projects. Texts: Pettingill, *Ornithology in Laboratory and Field*, 1970; Robbins, et al. *Birds of North America*, 1966. (5 cr; limited to 15 students; prereq Biol 1-106 or equiv; TF; I term) Warner

5-843. ANIMAL PARASITES

Parasites of local fauna with special reference to helminths. Text: Read, *Animal Parasitism*. (5 cr; limited to 15 students; prereq Biol 1-106 or equiv; WS; II term) Larson

PROPOSED COURSE PROGRAMS

In order that students may plan more effectively to utilize the academic resources of the Biology Session, the following projected program of courses is presented. Courses will be offered as indicated although shifts may be made to take advantage of especially competent staff or to meet enrollment needs.

Annual Course Offerings

Bot 5-801, 5-805, 5-811
EBB 5-812, 5-813, 5-814, 5-815, 5-817
Ent 5-020, 5-130
PIPa 5-102
Soil 5-532
Zool 5-814, 5-819, 5-834, 5-843

Proposed Courses for 1974

Bot 5-821	Lichens
EBB 5-018	Wetland Ecology
EBB 5-019	Paleoecology
EBB 5-818	Quantitative Ecology
Zool 5-169	Physiological Ecology

Proposed Courses for 1975

Bot 5-815	Bryophytes
EBB 5-026	Physical Aspects of Field Biology III
EBB 5-816	Ecology of Freshwater Algae



Recent Research Publications

- FORBES, RICHARD B. Some aspects of the water economics of two species of chipmunks. *J. of Mamm.*, 48(3):466-468. 1967.
- FROYD, J. D. and D. W. FRENCH. Ejection and dissemination of ascospores of *Hypoxylon pruinautum*. *Can. J. Bot.*, 45:1507-1517. 1967.
- GARNER, JASPER H. B. Some notes on the study of bark fungi. *Can. J. Bot.*, 45:540-541. 1967.
- HEDEEN, STANLEY. Feeding behavior of the great blue heron. (*Ardea herodias* L.). *Loon*, 39(4):116-120. 1967.
- IVERSON, S. L., R. W. SEABLOOM and J. M. HNATIUK. Small-mammal distribution across the prairie-forest transition of Minnesota and North Dakota. *Amer. Midl. Nat.*, 78:188-197. 1967.
- JANSSEN, C. R. A comparison between the recent regional pollen rain and the subrecent vegetation in four major vegetation types in Minnesota. *Review of Paleobotany and Palynology*, 2:331-342. 1967.
- JANSSEN, C. R. A floristic study of forests and bog vegetation, northwestern Minnesota. *Ecology*, 48(5):751-765. 1967.
- JANSSEN, C. R. Stevens Pond: A postglacial pollen diagram from a small typha swamp in northwestern Minnesota interpreted from pollen indicators and surface samples. *Ecological Monographs*, 37:145-172. 1967.
- JOHNSON, TERRY W. and D. T. WAGNER. The aquatic fungi of the Lake Itasca region. *Duke University*, 111 pp. (mimeo). 1967.
- JORDAN, O. RAY. The occurrence of *Thamnophis sirtalis* and *R. radix* in the prairie-forest ecotone west of Itasca State Park, Minnesota. *Herpetologica*, 23(4):303-308. 1967.
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- MCANDREWS, JOHN H. Pollen analysis and vegetational history of the Itasca region, in: Cushing-Wright, eds., *Quaternary Paleocology*. Yale University Press. 1967.
- MEGARD, ROBERT O. Limnology, primary productivity, and carbonate sedimentation of Minnesota lakes. Interim Report No. 1, Limnological Research Center, University of Minnesota, p. 698. 1967.
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- MILLER, D. W. and J. WESTPHAL. Further evidence on sexual isolation within *Drosophila athabasca*. *Evolution*, 24(3):479-494. 1967.
- PHILLIPS, GARY L. Sexual dimorphism in the Western Blacknose Dace, *Rhinichthys atratulus meleagris*. *J. Minn. Acad. Sci.*, 34:11-13. 1967.
- SHAW, ROSS F. The occurrence of Opalinids in amphibians from northern Minnesota. *Journal of Protozoology*, 14:38. 1967.
- TAINTER, FRANK H. The histology of germinating embryos of the eastern dwarfmistletoe (*Arcuthobium pusillum* Peck). *J. Minn. Acad. Sci.*, 34(2):88-90. 1967.
- TAINTER, FRANK H. and DAVID W. FRENCH. Dwarfmistletoe of eastern larch in Minnesota. *Plant Disease Reporter*, 51(5):418. 1967.
- THERET, JOHN W. Life-forms in the flora of Minnesota. *J. Minn. Acad. Sci.*, 34(2):91-94. 1967.
- UNDERHILL, JAMES C. and G. A. COLE. The summer standing crop, growth and distribution of *Chironomus plumosus*, in Lake Itasca, Minnesota. *J. Minn. Acad. Sci.*, 34(2):181-186. 1967.
- WUJEK, DANIEL E. *Microglena punctifera* (O.F.M.) Ehrenberg in the United States. *Trans. Amer. Microsc. Soc.*, 86(3):340-341. 1967.
- CLARK, HOWARD L. and JOHN W. THERET. The duckweeds of Minnesota. *The Michigan Botanist*, 7:67-76. 1968.
- FAHEY, PATRICIA L. Great Blue Herons. *Loon*, 40(2):37-40. 1968.
- FRENCH, DAVID W., M. P. MEYER, and R. L. ANDERSON. Control of dwarfmistletoe in black spruce. *J. of Forestry*, 66(4):359-360. 1968.
- MCKINNELL, ROBERT G. and JOSEPH ZAMBERNARD. Virus particles in renal tumors obtained from spring *Rana pipiens* of known geographic origin. *Cancer Research*, 28:684-688. 1968.
- MEYER, R. L. and A. J. BROOK. Freshwater algae from the Itasca State Park, Minnesota. I. Chlorophyta. *Nova Hedwigia*, 16:251-266. 1968.
- MOEN, AARON. Thermal energy exchange of a birch tree and a spruce tree at night. *Ecology*, 49(1):145-149. 1968.
- MOEN, AARON. Energy exchange of white-tailed deer, western Minnesota. *Ecology*, 49(4):676-682. 1968.
- MOYLE, PETER and JAMES BACON. Distribution and abundance of molluscs in a freshwater environment. *J. Minn. Acad. Sci.*, 35(2):82-85. 1968.

- OHMANN, LEWIS F. Random tree distribution in jack pine plains near Itasca Park, Minnesota. *Bull. Torrey Bot. Club*, 95(1):28-31. 1968.
- ROSS, B. A., J. R. TESTER and W. J. BRECKENRIDGE. Ecology of mima-type mounds in northwestern Minnesota. *Ecology*, 49(1):172-177. 1968.
- TAINTER, FRANK H. and DAVID W. FRENCH. Further observations of dwarfmistletoe on eastern larch in Minnesota. *Phytopathology*, 58(6):880-881. 1968.
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- CVANCARA, VICTOR A. Studies on tissue arginase and ureogenesis in freshwater teleosts. *Comp. Biochem. Physiol.*, 30:489-496. 1969.
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- LANG, JEFFREY W. Hibernation and movements of *Storeria occipitomaculata* in northern Minnesota. *J. Herpetology*, 3(3-4):196-197. 1969.
- MEYER, R. L. and A. J. BROOK. Freshwater algae from Itasca State Park, Minnesota. II. Chrysophyceae and Xanthophyceae. *Nova Hedwigia*, 17:105-122. 1969.
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- PEARSON, L. C. Influence of temperature and humidity on distribution of lichens in a Minnesota bog. *Ecology*, 50(4):740-746. 1969.
- QUADE, HENRY W. Cladoceran faunas associated with aquatic macrophytes in some lakes in northwestern Minnesota. *Ecology*, 50(2):171-179. 1969.
- SCHMID, WILLIAM D. Physiological specializations of amphibians to habitats of varying aridity. *Physiological Systems in Semiarid Environments*, 135-142. 1969.
- WAGNER, DIANE T. A monocentric, holocarpic fungus in *Lemna minor* L. *Nova Hedwigia*, 18. 1969.
- WARNER, D. W. and D. A. BEIMBORN. First Caspian Tern Nesting in Minnesota. *Loon*, 41(3):83-84. 1969.
- BROOK, A. J., A. L. BAKER and A. R. KLEMER. The use of turbidimetry in studies of the population dynamics of phytoplankton populations with special reference to *Oscillatoria agardhii* var *isothrix*. Contribution to Int. Limnol. Assoc. Symposium, Sept. 1970.
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- BAKER, A. L. and A. J. BROOK. Optical density profiles as an aid to the study of microstratified phytoplankton populations in lakes. *Archiv fur Hydrobiol*, 69(2):214-233. 1971.
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- SHAFFER, ELLEN. Incidence of trematode infection of snails in a small Minnesota lake. *J. Minn. Acad. Sci.*, 37(1):27-30. 1971.
- SHAY, C. T. The Itasca bison kill site: an ecological analysis. Minnesota Historical Society. 1971.
- THIERET, JOHN W. Observations on some aquatic plants in northwestern Minnesota. *The Michigan Botanist*, 10:117-124. 1971.
- UTTER, J. M., E. A. LEFEBVRE and J. S. GREENLAW. A technique for sampling blood from small passerines. *Auk*, 88(1):169-171. 1971.

- MORLEY, T. Deciduous trees of Minnesota: A winter key. *J. Minn. Acad. Sci.*, 38:27-36. 1972.
- PARMELEE, DAVID F. and RICHARD J. OEHLenschLAGER. Connecticut Warbler nest in Hubbard County, Minnesota. *Loon*, 44(1):5-6. 1972.
- SCHMID, WILLIAM D. Nocturnalism and variance in ambient water vapor pressure. *Physiol. Zool.*, 45(4):302-309. 1972.
- TARAPCHAK, STEVE. Studies on xanthophyceae of the Red Lakes wetlands, Minnesota. *Nova Hedwigia*, 23:1-45. 1972.
- WEAVER, MARGARET G. and ROBERT L. SHAFFER. Higher fungi of Minnesota, II. *J. Minn. Acad. Sci.*, 38:46-52. 1972.
- GILBERTSON, D. E. and L. SCHMID. Free amino acids in the hemolymph of five species of pulmonate snails. *Comp. Biochem. Physiol.* (in press).
- MEYER, R. L. and A. J. BROOK. Freshwater algae from Itasca State Park, Minnesota. IV. Cyanophyta, Rhodophyta, Chloromonodophyceae and Cryptophyceae. *Nova Hedwigia* (in press).



Graduate Student Theses

- WUJEK, DANIEL E. Ultrastructure of selected flagellated Chrysophytes. Ph.D. Thesis. 1966.
- ZINER, MARVIN DALE. A taxonomic study of *Picea mariana*: *P. Glauca* in the Lake Itasca Region in Minnesota. M.A. Thesis. 1966.
- COATS, ROBERT N. Evaluation of an ecological nutrient gradient in the central pine section of Minnesota. M.S. Thesis. 1967.
- COLLINS, THOMAS W. Oxygen-uptake, shell morphology and desiccation of the fingernail clam, *Sphaerium occidentale* Prime. Ph.D. Thesis. 1967.
- KELLEHER, KEVIN EDMOND. Distribution of breeding birds in deciduous forests at the prairie-hardwood forest ecotone in northwestern Minnesota. Ph.D. Thesis. 1967.
- MASCHWITZ, DAVID E. Studies on insect dissemination of wood rotting fungi. M.S. Thesis. 1967.
- MEIEROTTO, RICHARD R. The distribution of small mammals across a prairie-forest ecotone. Ph.D. Thesis. 1967.
- WARNER, GLORIA M. The role of birds in the dissemination of fungi. M.S. Thesis. 1967.
- BARBER, WILLARD E. On the summer food habits of the cyprinid fish *Semotilus atromaculatus* (Mitchill). M.S. Thesis, Arizona State University. 1968.
- CHEMBERLIN, ROBERT D. Ecological studies of the leech *Haemopsis grandis*. M.S. Thesis, Mankato State College. 1968.
- FISHBECK, DALE W. A study of some phases in the ecology of *Rana sylvatica* Le Conte. Ph.D. Thesis. 1968.
- HAGGERTY, SHARON M. The ecology of the franklin's ground squirrel (*Citellus franklinii*) at Itasca Park, Minnesota. M.S. Thesis. 1968.
- PHILLIPS, GARY L. *Chrosomus erythrogaster* and *C. eos* (Osteichthyes: Cyprinidae): taxonomy, distribution, ecology. Ph.D. Thesis. 1968.
- BREDAHL, EDWARD A. A study of water balance in hibernating and nonhibernating *Citellus franklinii*. Ph.D. Thesis, University of North Dakota. 1969.
- EWERT, MICHAEL ALLYN. Seasonal movements of the toads *Bufo americanus* and *B. cognatus* in northwestern Minnesota. Ph.D. Thesis. 1969.
- HOFSTETTER, RONALD H. Floristic and ecological studies of wetlands in Minnesota. Ph.D. Thesis. 1969.
- KURMIS, VILIS. Dynamics of advance reproduction in upland forest communities in Itasca State Park, Minnesota. Ph.D. Thesis. 1969.
- MOYLE, PETER B. Ecology of the fishes of an oligotrophic Minnesota lake, with special reference to the minnows (Cyprinidae): *Notropis volucellus*, *N. cornutus*, and *Pimephales notatus*. Ph.D. Thesis. 1969.
- WILLIAMS, PATRICK K. Ecology of *Bufo hemiophrys* and *B. americanus* tadpoles in northwestern Minnesota. M.S. Thesis 1969.
- HEDEEN, STANLEY E. The ecology and life history of the mink frog, *Rana septentrionalis* Baird. Ph.D. Thesis. 1970.
- NELSON, DARBY M. Ecology of the cisco, *Coregonus artedii* in two Minnesota lakes. Ph.D. Thesis. 1970.
- ANTHONY, R. S. Mechanism of varve formation in Lake of the Clouds, Lake County, Minnesota. M.S. Thesis. 1971.
- BALL, I. J. Movements, habitat use and behavior of wood duck (*Aix sponsa*) broods in north-central Minnesota as determined by radio tracking. M.S. Thesis. 1971.
- BLAND, R. D. The spatial distribution of desmids in certain northern Minnesota lakes. Ph.D. Thesis. 1971.
- BROWN, E. B. Some aspects of the ecology of the small, winter-active mammals of a field and adjacent woods in Itasca State Park, Minnesota. Ph.D. Thesis. 1971.
- GILMER, DAVID S. Home range and habitat use of breeding mallards (*Anas platyrhynchos*) and wood ducks (*Aix sponsa*) in north-central Minnesota as determined by radio tracking. Ph.D. Thesis. 1971.
- STARK, DONNA M. I. A paleolimnological study of Elk Lake in Itasca State Park, Clearwater County, Minnesota. Ph.D. Thesis. 1971.
- URBAN, RICHARD D. The psammon dynamics on bars and beaches of two small northwestern Minnesota streams. Ph.D. Thesis, University of North Dakota. 1971.
- BOERNKE, WILLIAM E. Adaptations of the amphibian ornithine-urea cycle enzyme, arginase. Ph.D. Thesis. 1972.
- BURGER, JOANNA. Breeding adaptations of Franklin's Gull (*Larus pipixcan*) to a marsh habitat. Ph.D. Thesis. 1972.
- KNUDSON, MERLE L. Functional analysis of song in the Spotted Sandpiper, *Actitis macularia* (L.). M.S. Thesis, University of North Dakota. 1972.
- SWAIN, PATRICIA C. An analysis of morphological differences among oaks in selected Minnesota stands of the *Quercus borealis*-*Q. ellipsoidalis*. M.S. Thesis. 1972.

Condensed Course Schedule*

I TERM

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Bot 5-801	Bot 5-811	EBB 5-012	Bot 5-801	Bot 5-811	EBB 5-012
EBB 5-812	EBB 5-815	EBB 5-817	EBB 5-812	EBB 5-815	EBB 5-817
Ent 5-020	Zool 5-834	Zool 5-814	Ent 5-020	Zool 5-834	Zool 5-814
Soil 5-532			Soil 5-532		

II TERM

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Bot 8-970	EBB 5-814	Bot 5-805	Bot 8-970	EBB 5-814	Bot 5-805
EBB 5-812	EBB 5-816	EBB 5-813	EBB 5-812	EBB 5-816	EBB 5-813
Ent 5-130	Zool 5-819	PIPa 5-102	Ent 5-130	Zool 5-819	PIPa 5-102
Zool 5-807		Zool 5-843	Zool 5-807		Zool 5-843

* Schedule only one course per day.

Request for Reservation — ITASCA BIOLOGY SESSION

Name _____ Date _____

Current Address _____

City _____ State _____ Zip _____

Telephone: Office _____ Home _____

Status: Grad., Adult Special, Freshman, Sophomore, Junior, Senior (circle one)

University or College now attending: _____

If U. of M., college last enrolled in _____ Year _____

Reserve a place in following course(s) 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 (check or money order payable to University of Minnesota) to be credited to the tuition fee on completion of registration. A letter of evaluation from my adviser and a recent transcript of my academic record, including a listing of all courses being taken at present, are enclosed or will be sent directly (circle one).
IMPORTANT: Applications will not be reviewed until all items listed above are received.

Please mail this form to:

Chairman, Field Biology Program
 349 Bell Museum of Natural History
 University of Minnesota
 Minneapolis, Minnesota 55455



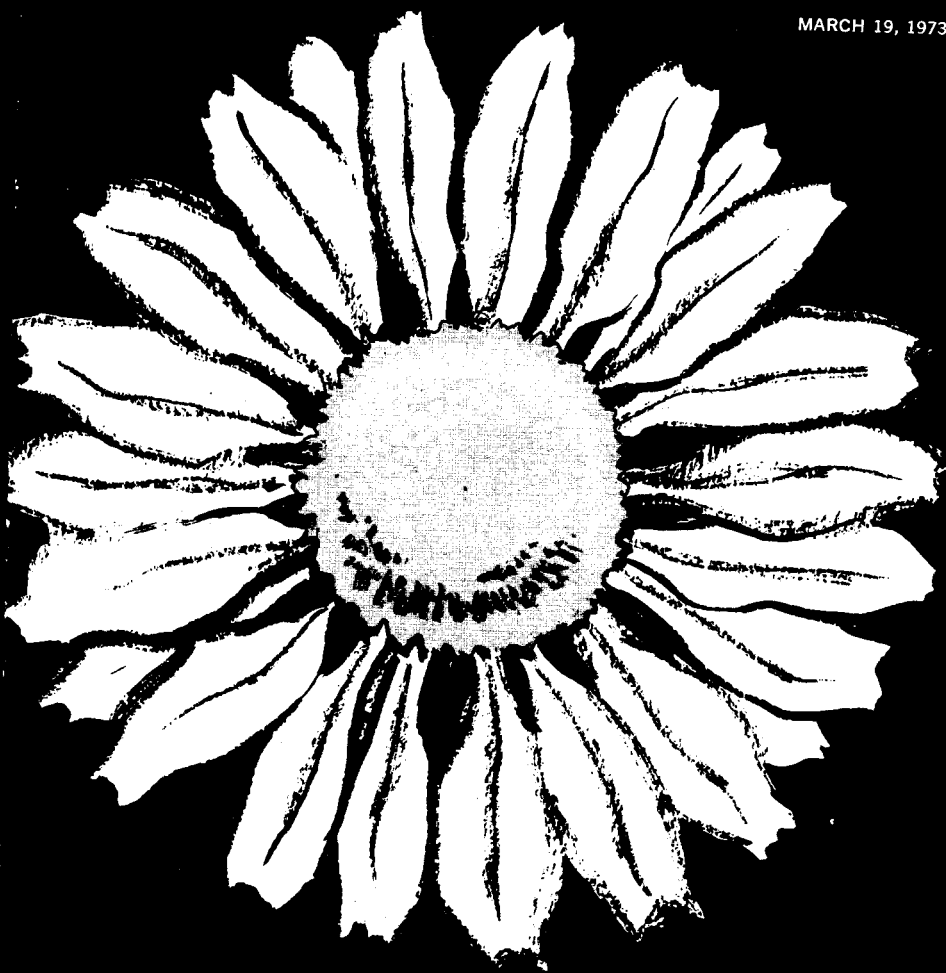
The Lake Itasca Biology Session offers the serious student of limnology, terrestrial biology, and ecology unparalleled opportunities to pursue courses in environments which have been minimally disturbed by human activity. A broad array of classes for undergraduate and graduate students is taught in a personalized manner by a faculty recruited not only from the University of Minnesota but from various colleges and universities across the United States and Canada and at times from Europe. Independent studies for the advanced student or researcher are unlimited and may be carried on throughout the year.

If there are matters in this bulletin requiring further explanation or elaboration, please do not hesitate to seek additional information by writing to Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455.

*David F. Parmelee
Chairman, Field Biology Program*

UNIVERSITY OF MINNESOTA BULLETIN

MARCH 19, 1973



SUMMER
SESSION

1973



UNIVERSITY OF MINNESOTA

Board of Regents

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Volume LXXVI, Number 2

March 19, 1973

UNIVERSITY OF MINNESOTA BULLETIN

Published by the University of Minnesota, Office of Admissions and Records, 105 Morrill Hall, Minneapolis, Minnesota 55455, monthly January, semi-monthly March, April, May, September, tri-monthly July, August, and four times in June. Second class postage paid at Minneapolis, Minnesota. Send change of address notices and other communications to Office of Admissions and Records, Minneapolis, Minnesota 55455.

The contents of this bulletin and other University bulletins, publications, or announcements are subject to change without notice.



UNIVERSITY OF MINNESOTA

SUMMER SESSION

1973

FIRST TERM

JUNE 18-JULY 20

SECOND TERM

JULY 23-AUGUST 24

Calendar

- May 16 Thesis Registration for First Term (graduate students only).
- May 21 Graduate School application deadline for First Term admission.
- May 23-June 5 Registration period. Students may register for First Term or both terms at this time.
- June 7-15 Registration closed.
- June 13 Final Oral Exam Report and all other forms due (graduate students only).
- June 18 Last day to register without incurring late fee. Late fees assessed according to the following schedule:
- | | |
|------------|---------|
| June 19-22 | \$ 6.00 |
| June 25-28 | \$10.00 |
| Thereafter | \$20.00 |
- June 19 First Term classes begin.
- June 20 Thesis Registration for Second Term (graduate students only).
- June 27 Two bound copies of Master's or Doctoral Thesis due.
- July 4 Holiday
- July 6 Last day to cancel classes with "W" grade.
- July 13 Last day to cancel classes with "I" or "no grade."
- July 16-20 Registration period for Second Term.
- July 18 Final Oral Exam Report and all other forms due (graduate students only).
- July 20 Last day of class for First Term.
Individual collegiate graduation and honors events as scheduled by each unit.
- July 23 Last day to register without incurring late fee. Late fees assessed according to following schedule:
- | | |
|------------------|---------|
| July 24-29 | \$ 6.00 |
| July 30-August 3 | \$10.00 |
| Thereafter | \$20.00 |
- July 24 Second Term classes begin.
- August 2 Two bound copies of Master's or Doctoral Thesis due.
- August 10 Last day to cancel classes with "W" grade.
- August 17 Last day to cancel classes with "I" or "no grade."
- August 24 Last day of class for Second Term.
Individual collegiate graduation and honors events as scheduled by each unit.
All-University Commencement.

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— IMPORTANT —

Compliance with the regulations in this bulletin is expected of each student. This is particularly true with respect to fees, cancellations, and refunds.

Please note that the appropriate late fees will be assessed for registrations subsequent to Monday, June 18, 1973 and registrations subsequent to Monday, July 23, 1973.

Fee statements prepared on the Mondays stipulated above may be paid on the following Tuesday without the penalty for late payment of fees.

All students not regularly enrolled spring quarter 1973 must be prepared to show their United States Social Security numbers.

A Guide to the Summer Session Bulletin

Symbols—The following symbols are used throughout the course descriptions in lieu of 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, class limits, prerequisites, class hours, days of the week, location of the class, and class instructor.

Prerequisites—Entrance into certain courses requires that the student have completed or be concurrently enrolled in other specified courses, or possess particular qualifications or class standing. 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:

- 0-000 to 0-998 no credit
- 1-000 to 1-998 for freshmen and sophomores
- 3-000 to 3-998 for juniors, seniors, and fifth-year students
- 5-000 to 5-998 for juniors, seniors, fifth-year students, graduate students, and professional students
- 8-000 to 8-998 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.

When no abbreviated departmental 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.

Example: "prereq 1-011 or 1-017 and Psy 1-002" (you must have had either course 1-011 or 1-017 of the same department and Psychology 1-002).

Work equivalent to a prerequisite course (having the same content) is ordinarily accepted in lieu of that prerequisite. 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 Banks)	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.

Many courses, especially those in the College of Business Administration, meet for longer than the regular 50 minutes, and these extended periods are indicated in the course description. Check these carefully before registering to avoid conflicts.

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 of the *Minnesota Daily* and in supplements to the *Summer Session Bulletin*.



The Summer Session

DATES OF SUMMER SESSION

The Summer Session consists of two terms of 5 weeks each—June 18 through July 20; and July 23 through August 24. Students may register for subjects of their choice in either or both terms. Payment of fees for the First Term closes at 3:30 p.m. on Monday, June 18. First Term classes in Minneapolis (East and West Banks) will begin Tuesday, June 19 at 8 a.m.; classes in St. Paul will begin at 7:30 a.m., Tuesday, June 19.

Payment of fees for the Second Term closes at 3:30 p.m. on Monday, July 23. Classes for Second Term will open Tuesday, July 24.

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

Admission

Summer Session courses are open to all qualified high school graduates, to all regularly admitted students of the University, and to those with previous college work.

DEGREE CANDIDATES

All students who expect to receive a degree from the University of Minnesota must file an application, any necessary credentials, and a \$10 (\$15 for Graduate School) credentials examination fee in order to gain regular admittance to a college of the University. Summer-only admission will not qualify a student for entry to a University degree program.

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

INCOMING FRESHMEN

Students graduating from high school in June may be admitted to those colleges of the University of Minnesota admitting freshmen to begin their studies in either summer term. Exception is the College of Liberal Arts, which does not admit freshmen for Summer Session (see below). A number of colleges invite students to orientation programs during the week before summer classes begin.

Applications for freshman admission must be received by the Office of Admissions and Records by May 1. All freshman applicants are required to present application forms, ACT test scores, and a \$10 credentials examination fee. Some colleges have other special admission requirements. For further information, see the *General Information Bulletin* or the college bulletin, or call or write the Office of Admissions on the campus where classes will be taken.

TRANSFER STUDENTS

Students with previous college work may be admitted to most colleges and schools of the University of Minnesota to begin course work during the summer session. Exceptions are some professional and paraprofessional programs which begin course sequences at a specified term, and the College of Liberal Arts (see below).

May 1 is the deadline for receipt of applications by the Office of Admissions on the appropriate campus. See the appropriate bulletins for information on necessary credentials.

COLLEGE OF LIBERAL ARTS STUDENTS

Qualified students applying for summer admission will begin their CLA work as "summer-only" students (see section below). They will be considered as regular fall admissions. Summer courses completed satisfactorily will become part of the degree programs after the student registers for a subsequent term. Registration procedures for summer-only students in CLA are described below. Advisers will be available in the college advising offices to assist students who need this service.

SUMMER-ONLY STUDENTS

Persons who may attend the University as summer-only students include the following:

1. Students with previous college work (who are not in a "dropped" status from another university) who wish to attend the Summer Session but do not plan to obtain a degree from the University of Minnesota.
2. High school graduates without previous college work who do not plan to obtain a degree from the University of Minnesota but wish to complete certain college subjects. Persons under 24 years of age must have the approval of the Office of Admissions and Records.
3. Students who have been admitted to the College of Liberal Arts for the fall quarter.

Attendance during the summer terms does not guarantee admission to regular degree programs at the University. Summer-only students who wish to be considered for admission to subsequent terms during the regular academic year must file regular admission applications (see *General Information Bulletin*).

Intent to Register

Students who are defined as summer-only students should submit the Intent to Register card found inside the back cover. This does not obligate the student to pay fees or attend classes. A confirmation of Intent to Register and registration forms will be sent to qualified students.

Students in attendance spring quarter 1973, Graduate School students, new regularly admitted students or those who have applied for regular admission (except to CLA), and formerly admitted students returning as regular students should NOT submit the Intent to Register.

GRADUATE STUDENTS

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, doctor of philosophy, doctor of education, and the specialist's certificate in education and in library science.

The privileges of the Graduate School are open, upon application, to those with 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 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.

Acceptance for a summer institute offering course work at the graduate level does not, in itself, establish permission for registration in the Graduate School. The procedures that have been set up for admission to the Graduate School still must be followed.

Admission and Registration

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 from each college attended, and the credentials examination fee and test results if required—at least 4 weeks prior to the opening of the quarter or summer term in which the student expects to register (Monday, May 21, 1973, for First Term; and Monday, June 25, 1973, for Second Term). Applications should be sent to: Graduate School, 322 Johnston Hall, 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-only students. These students, if they subsequently decide to make application for admission to the Graduate School, may transfer *only their first term's work as an adult special or summer-only student* to their graduate program. Only courses of graduate character taught by members of the graduate faculty may be transferred. It should be noted that courses numbered 8-000 and above are open only to students registering in the Graduate School.

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.

Following registration for at least 15 graduate credits, the student who expects to obtain a Master's degree shall present the program and thesis title (for Plan A) or program (for Plan B) for the adviser's recommendation and

transmission to the Graduate School for the appropriate Unit Committee's 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 *Graduate School Bulletin*, 1972-74, pages 8-18.

Deadline Dates for Summer Session Graduation

Theses of all graduate degree candidates must be complete and registered in the Graduate School, and final degree examinations must be passed and required forms submitted by the following dates for graduation in the term shown:

First Term:

Thesis registration—May 16, 1973

Final Oral Examination Report and all other forms due—June 13, 1973

Two bound copies of the Master's (Plan A) or Doctoral thesis—June 27, 1973

Degree date (no ceremony)—July 20, 1973

Second Term:

Thesis registration—June 20, 1973

Final Oral Examination Report and all other forms due—July 18, 1973

Two bound copies of the Master's (Plan A) or Doctoral thesis—August 1, 1973

Commencement—August 24, 1973

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 Summer Session admission to take work between their junior and senior years in high school. Credits earned will be counted toward graduation if the student later enrolls in the University. Registration for these students is usually restricted to those courses at the 1-xxx level.

Registration, Fees

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 correct registration period. All students not regularly enrolled during Spring Quarter 1973 must be prepared to show their United States Social Security numbers.

Students who register for the First Term and who plan to attend Second Term should register for both terms at the same time.

Registration will not be open between June 6 and June 15.

TWIN CITIES CAMPUS STUDENTS

● Students in residence Spring Quarter should register on the dates announced in the *Minnesota Daily* and in their college offices and should register through the college in which they were last registered. Registration permits are required.

● Students in residence some previous quarter(s) should also register on these announced dates through the college in which they were last registered. Registration permits are required. Previously registered College of Liberal Arts students who no longer seek an Arts College degree should register as "summer-only" (see below).

● Students admitted to the University as degree candidates effective either summer term should register according to instructions given by the college to which they have been admitted.

● Students transferring from one University of Minnesota college to another should follow the instructions received with the transfer approval.

SUMMER-ONLY STUDENTS

Students who should register as summer-only students include the following:

● Persons with previous college work taken at an institution other than the University of Minnesota Twin Cities campus (not in a "dropped" status from that institution).

● Qualified persons over 24 years of age.

● Former University of Minnesota students, no longer seeking degrees, who prefer to register as summer-only.

● Qualified high school graduates under age 24 (see Admissions section).

● Outstanding high school students (see Admissions section).

● High school graduates who have been accepted to begin their studies as freshmen in the College of Liberal Arts in Fall Quarter 1973.

● Students admitted from non-University of Minnesota colleges for Fall Quarter 1973.

First Term

Dates: May 23 through June 5 and on June 18 (registration is closed June 6 through June 15).

Time: 8 a.m. to 3 p.m. (in-service teachers registering through the College of Education may register until 4 p.m., May 23-June 5).

Place: Register in the college in which most courses are taken. Teachers registering for any course and other persons taking professional education courses should register through the College of Education.

Second Term

Dates: May 23 through June 5 and on June 18; July 16 through July 20 and on July 23 (registration is closed June 6 through June 15, and June 19 through July 13).

Time: See First Term

Place: See First Term

COLLEGE REGISTRATION OFFICES

Agriculture, 130 Coffey Hall (St. Paul)

Biological Sciences, P190 Kolthoff Hall

Business Administration, 225 Business Administration Building (West Bank)

Dental Hygiene, 360A Millard Hall

Dentistry, 136 Owre Hall

Education, 206 Burton Hall (phone 373-2234)

Forestry, 130 Coffey Hall (St. Paul)

General College, 20 Nicholson Hall

Graduate School, 316 Johnston Hall

(Students registered in Graduate School in Spring Quarter 1973 may obtain registration materials in their major departments. All students planning to register in the Graduate School should see page 11 for information.)

Home Economics, 130 Coffey Hall (St. Paul)

Institute of Technology, 105 Main Engineering Building

Liberal Arts

Regular Students, college offices

Summer-Only Students, 18 Johnston Hall

Medical Technology, 5307 Powell Hall

Medicine, 1360 Mayo Memorial Building

Mortuary Science, 114 Vincent Hall

Nursing, 3313 Powell Hall

Pharmacy, 115 Appleby Hall

Physical and Occupational Therapy, 860 Mayo Memorial Building

Public Health, 1325 Mayo Memorial Building
University College, 105 Walter Library
Veterinary Medicine, 130 Coffey Hall (St. Paul)

REGISTRATION PROCEDURE

1. Obtain registration material at college registration office.
2. Obtain college approval of study program at college office.
3. Obtain class reservation cards for reserved courses (see course descriptions).
4. Turn in registration blanks and class reservation cards and obtain fee statements in Morrill Hall. (On June 18, Education graduate and undergraduate students may obtain fee statements in Burton Hall.)

Exceptions: Students in Agriculture, Forestry, Home Economics, Biological Sciences, and Veterinary Medicine, and Graduate School students whose majors are based in St. Paul turn in their registration blanks and class reservation cards and obtain their fee statements at 130 Coffey Hall, St. Paul.

5. Pay fees at the Bursar's Office on the first floor of Morrill Hall; the West Bank Bursar's Office; Cashier's Office, Coffey Hall; or by mail. The hours are 8:15 a.m. to 3:30 p.m. Fees must be paid or postmarked, if mailed, not later than Tuesday, June 19 for First Term or Tuesday, July 24 for Second Term.

CHANGES IN REGISTRATION

After a student's registration has been accepted by the University Records Office, any change must be approved by the Committee on Student Scholastic Standing or the dean of the college through which the student is registered. Forms for changing registration may be obtained in the office of the college in which the student is registered. *Only in exceptional cases will any change be made after classes have begun.*

Friday of the third week of classes is the last day to cancel with "W." Thereafter, cancellation is with "I" if the student is failing and with "no grade" only if he is passing at the time of cancellation. Cancellation during the fifth week generally is not permitted.

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

TUITION AND INCIDENTAL FEES

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

TUITION FEE (per term)	
Per credit	\$12.50

STUDENT SERVICES FEE††

Per term; not included in tuition fee \$22.00

Note—Regular tuition fees as provided during the academic year will be charged all students in medicine and nursing. In 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.

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 \$35 per summer term with student services fee optional to maintain required continuous registration.

Summer Session staff members are entitled to the same fee privileges in the summer as during the academic year.

For additional fee information, refer to the *General Information Bulletin*.

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)

Required of students on University field trips such as anthropology, civil engineering, geology, mines, etc.—\$11.75 per summer term

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

Laboratory Fee—\$8.50

Research Table Fee—\$5.00 per week††

MATHEMATICS

Math 0-009—\$70.00 plus student services fee

MODERN LANGUAGES

French — \$75.00 for program in Besançon, France

German — \$75.00 for programs in Erlangen and Bochum, Germany

Spanish — \$75.00 for program in Barcelona, Spain

MUSIC

Two Half-hour Individual Lessons per Week—\$60.00

Four Half-hour Individual Lessons per Week—\$120.00

Two (2 cr) Half-hour Individual Lessons per Week—\$60.00

Four (4 cr) Half-hour Individual Lessons per Week—\$120.00

Student paying \$60.00 or more in music fees pays only the special fees indicated for these courses. Such students may take other courses by paying regular summer tuition and student services fee in addition to the applied music fee.

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

†† In lieu of tuition.

‡‡ Students taking 3 or more credits must pay the student services fee of \$22. This entitles each student to receive the privileges of the Coffman Memorial Union, the Health Service, and the recreation program including the *Minnesota Daily*.

PHYSICAL EDUCATION

PE 1-205—\$20.00 per term

PUBLIC HEALTH

5-068 (Field Work)—\$100.00

5-239 (Hospital Problems)—\$150.00

8-002 (September Field Course)—\$200.00

SPECIAL FEES

MUSIC PRACTICE ROOM

5 hours per week for 5 weeks—\$1.75 per term

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

Small Organ—25c per hour

Large Organ—50c per hour

PHYSICAL EDUCATION††

Cooke Hall

Locker and Towel Fee—\$5.00 deposit

Gym Clothing Rental Fee—\$6.00

Norris Gymnasium

Locker and Towel Fee—\$4.00 plus \$1.00 deposit

St. Paul Gymnasium

Locker and Towel Fee—\$5.00

SPEECH AND HEARING CLINIC—Nonstudents

Speech Therapy (days)—\$2.00 per term

Speech Therapy (evenings)—\$2.50 per term

Consultation (outpatient)—\$5.00

Evaluation (outpatient)—\$20.00

Summer Session Intensive Therapy—\$125.00

SPEECH AND HEARING CLINIC—Students

Special Clinical Treatment—\$5.00 per term

MISCELLANEOUS

Foreign Student Health Fee—\$2.50 per term (required of all noncitizens)

Foreign Student Aid Fee—\$1.00 per term (required of all noncitizens)

Credentials Examination Fee—\$10.00 (\$15.00 for Graduate School)

Graduation Fee (each degree; includes small diploma)—\$10.00

Laboratory Fee—\$4.00 (required in certain laboratory courses)

Large Diploma—\$7.50

Master's Thesis Binding—\$5.00

Ph.D. Thesis Binding—\$25.00

Special Examination—\$20.00

Record Service Fee—\$3.00 (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:

†† Locker, towel, and gym clothing rental fees are for one or both terms.

1. Curriculum Requirements—Certification by the University Records Office 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 courses) may apply toward the residence requirement.

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

5. Attendance at Commencement is optional. Commencement exercises for Summer Session candidates will be held on Friday, August 24, at 4 p.m.

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)	15.00
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 100 percent refund of fees. Students who cancel after having attended classes shall be allowed a refund of fees on the following basis:

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

AUDITORS

Fees for auditors are the same as for students registered for credit. Permission to attend classes as auditors may be granted by the dean of the college or school with the consent of the department concerned. The procedure for registration as auditor is the same as for registration for credit, except that "auditor" should be indicated on the registration sheet 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

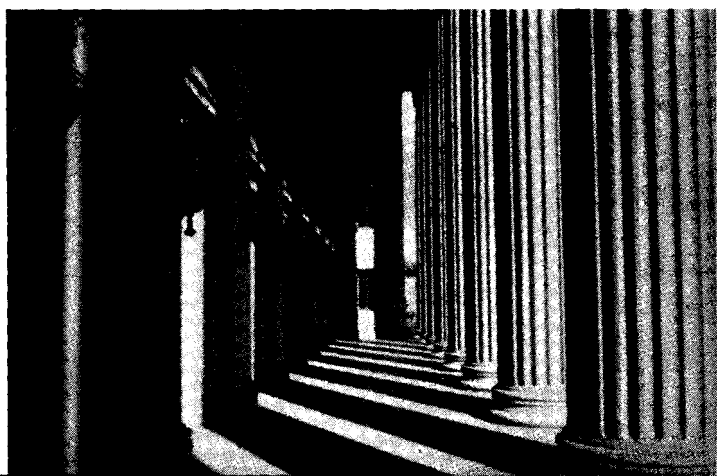
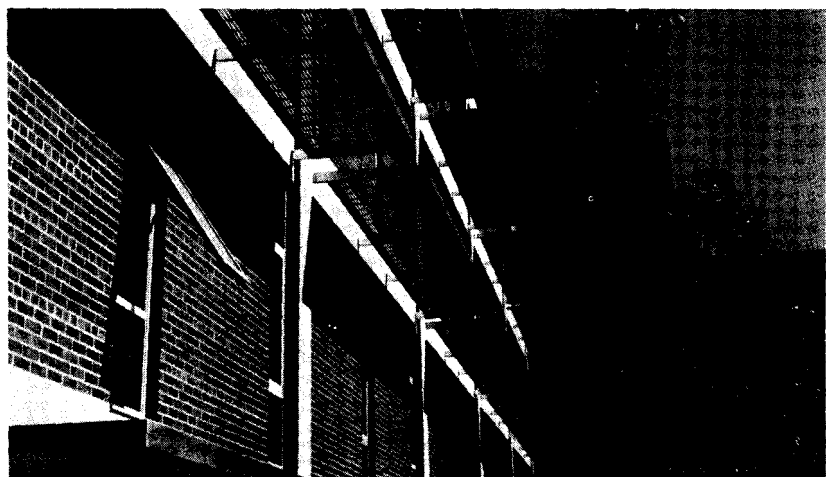
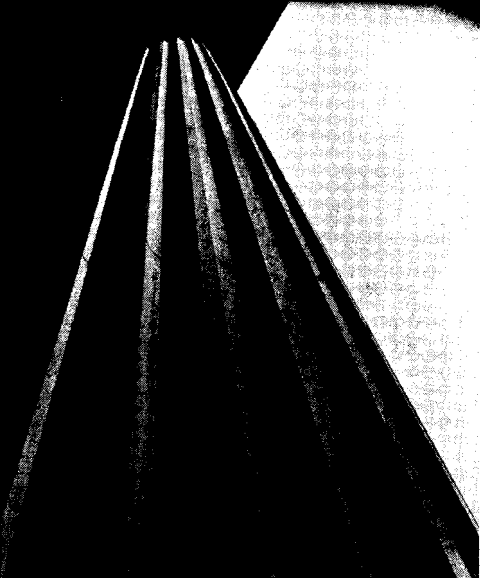
A maximum of 10 credits is considered a full program for either term. Registration for a greater number requires special permission from the Committee on Student Scholastic Standing or the dean of the school or college in which the student is registered.

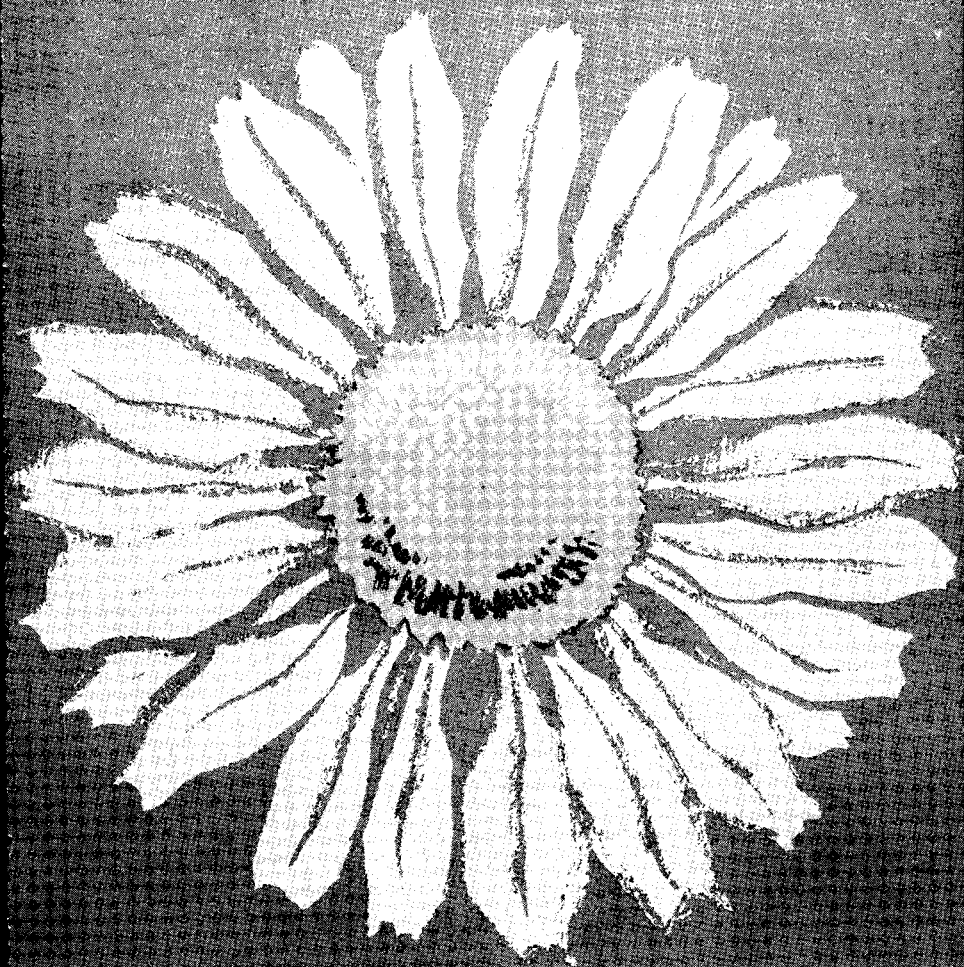
EXAMINATIONS

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

GRADING

New grading procedures went into effect fall quarter of 1972 for the Twin Cities, Duluth, and Morris Campuses. They involve two systems: A-B-C-D-N and S-N, with the N grade indicating no-credit or no-record. Students should check with their college offices to find out which courses may be taken S-N and should indicate on their registration blanks which type of evaluation is desired for each course. An excellent explanation of the new system appears in the *College of Liberal Arts Bulletin* for 1972-74.





The University

General Information

HOUSING AND FOOD SERVICE

The Housing Office provides room and board and personal services in the residence halls during the Summer Session. Resident advisers are available to assist with individual and group activities and problems.

Minneapolis Residence Hall

Middlebrook Hall, an air-conditioned residence on the West Bank, has been reserved for Summer Session students. Middlebrook offers comfortable living in large single and double rooms and a 7-day (19-meal) food service program under the direction of a trained food manager. In both terms, the meal service will begin the first day of regularly scheduled classes.

Applications for residence will be filled in order of date received. To assure a choice of rooms, application should be made as early as possible. For information and application forms, write to: Director of Middlebrook Hall (or) Director of Housing, University of Minnesota, Minneapolis, Minnesota 55455. The Housing Office telephone number is 373-7542.

St. Paul Residence Hall

Bailey Hall is an attractive coeducational residence hall offering comfortable accommodations in large double rooms. Spaces are available for men and women summer students and for conference participants. A room and 7-day (21-meal) board contract will be offered. Meals will be served beginning on 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; (or) Director of Housing, University of Minnesota, Minneapolis, Minnesota 55455.

Off-Campus Housing—Private Residences

Rooms in private homes, rooming houses, fraternities, and sororities are available. Vacancy listings for all types of off-campus housing (including sublets in housekeeping units such as apartments and houses) are available beginning in May.

Information about housing facilities and assistance in locating off-campus residence accommodations may be secured from the Housing Office at 312-15th Avenue S.E. in Minneapolis (East Bank), 190 Coffey Hall in St. Paul, and 1818 - 4th Street S. in Minneapolis (West Bank). The telephone number of the central off-campus housing office is 373-4184.

HUMAN RIGHTS

The Board of Regents has committed itself and the University of Minnesota to the policy that there shall be no discrimination in the treatment of persons because of race, creed, color, sex, or national origin. This is a guiding policy in the admission of students in all colleges and in their academic pursuits. It is also to be a governing principle in University-owned and University-approved housing, in food services, student unions, extracurricular activities, and all other student and staff services. This policy must also be adhered to in the employment of students either by the University or by outsiders through the University and in the employment of faculty and civil service staff.

CAMPUS BUS SYSTEM

Intercampus Bus — Lines 13-G and 13-U

Free transportation between the Minneapolis and St. Paul Campuses is available *Monday through Friday* on special buses labeled "Line 13 — Intercampus" (see page 9 in the *Student-Staff Directory* for route map and bus stops).

During both summer terms, intercampus buses will leave Blegen Hall on the West Bank and the St. Paul Student Center simultaneously for the opposite campus as follows:

7:05 a.m. to 9:25 a.m. — Every 10 minutes

9:25 a.m. to 5:25 p.m. — Every 15 minutes

Those that leave at 25 and 55 minutes after each hour (Line 13-U) will travel via University Avenue. All others (Lines 13-A and 13-G) will follow the Como Avenue route. Thirty-minute service is available between 7:30 a.m. and 1:30 p.m. on *Saturdays*. Specific schedules are posted at each stop along the routes.

There is no charge for riding these buses unless the student enters or exits at off-campus stops (see *Student-Staff Directory* map). Special bus fare discount cards offering 18 rides for \$3 are available at all Bursar's offices. In addition, special discount cards offering 20 rides for \$2 can be obtained at the Bursar's offices for students who board or exit at the Como Avenue parking lot (29th and Como Avenues S.E.) where free parking is available.

West Bank Bus — Lines 13-G, 13-U, and 24

Free bus service is also available between the East and West Banks at 5-, 10-, and 20-minute intervals in the mornings and 15- and 30-minute intervals in the afternoons *Monday through Friday* (see page 9 of *Student-Staff Directory* for route map and stops). Buses labeled "To Jones Hall" (Lines 13-G and 24) will travel between Blegen Hall and Jones Hall. Buses labeled "Lyon Lab" (Line 13-U) will travel between Blegen Hall and Lyon Lab. Specific schedules are posted at each stop.

Lines 25 and 26 will not operate during the summer months.

Small handout schedules are available at the information counters in Coffman Union, West Bank Union, St. Paul Student Center, Morrill Hall, and

224 Northrop Auditorium. For further information, please come to the Transit Services Office, 224 Northrop Memorial Auditorium or call 373-0374.

LOCKER RENTAL SERVICE

Lockers are available for rental at the rate of 50 cents per session for full-size lockers or 30 cents per session for half-size lockers. Padlocks are furnished free while the locker is rented. To rent a locker, a deposit card must be obtained for \$5 at any University Bursar or Cashier Office (Morrill Hall; next to the Smith Bookstore on the West Bank; or Coffey Hall on the St. Paul Campus). The deposit card should then be brought to a Locker Rental Office where the actual locker location can be chosen. The Locker Rental Office locations are as follows: For East Bank lockers—224 Northrop Memorial Auditorium; For West Bank lockers—110 Anderson Hall; For St. Paul Campus lockers—212 McNeal Hall, 213 Agricultural Engineering Building, and 239a Veterinary Science Building. Refunds for the unused portion of the initial \$5 deposit can also be obtained at any of these offices when the locker is vacated. Lockers are available in the following buildings and halls: EAST BANK—Aeronautical Engineering; Appleby; Architecture; Chemical Engineering; Civil Engineering; Electrical Engineering; Fraser; Johnston; Main Engineering; Murphy; Nicholson; Peik; Scott; Smith; and Vincent. WEST BANK — Blegen; Studio Arts; and Wilson Library. ST. PAUL — Agricultural Engineering; McNeal; and Veterinary Science.

For further information, please come to the main Locker Rental Office in 224 Northrop Memorial Auditorium, or call 373-0374.

PARKING FACILITIES

Parking is available for a nominal fee in transient lots spotted at various places on both the Minneapolis and St. Paul Campuses.

UNIVERSITY POST OFFICE

The University post office contract stations are located on the ground floor of Coffman Memorial Union (Minneapolis) and in Coffey Hall (St. Paul). Most post office services are available at these stations, and both locations are open Monday through Friday, 8 a.m. to 4:15 p.m. in Minneapolis and 8 a.m. to 4:30 p.m. in St. Paul.

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

STUDENT SERVICES

Student Counseling Bureau

The Student Counseling Bureau, 101 Eddy Hall, offers counseling on a year-round basis to all students. This is a University-wide service for students in all of the University's colleges and schools. Counseling is available not only for those in all fields of study but also for those at any stage of academic

progress, from the beginning freshman to students at graduate and professional levels. The range of concerns brought to the Student Counseling Bureau is likewise wide, including vocational choice, educational planning, reading and study improvement, family relationships, peer relationships, and sex-related problems. Tests and inventories are often used to assist the counseling process in the various problem areas. Referrals are sometimes made to appropriate University and community resources. There is no fee, and counseling and testing information is confidential.

Interested students should come to 101 Eddy Hall to see a counselor. Counselors are available from 8 a.m. to 4:30 p.m., Monday through Friday, to see students on a walk-in basis.

Student Employment Service

For students on the Minneapolis or St. Paul Campus who need a job to help meet school expenses, the Student Employment Service, 30 Wulling Hall, Minneapolis Campus, will aid in finding part-time work either on or off campus. Apply in person at the office after enrollment is completed and the class schedule is known. Chances of being placed depend on the supply of jobs, the student's qualifications, need, and the hours available. Very frequently a job will provide valuable experience as well as financial assistance. Work for board and room is usually available.

Dormitory counseling opportunities are also available for men and women in the Residence Halls Counseling Program. Write to the Student Employment Service for further information.

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 student services fee. For certain services such as dentistry, drugs, prolonged hospitalization, surgical operations, etc., special fees are charged. Surgical care for preexisting conditions is not provided.

LIBRARY FACILITIES AND SERVICES

The University library system, with over 3,000,000 volumes, is one of the ten largest of its kind in the United States. It provides the basic resources for the teaching and research needs of the students and faculty of the University. There are many library units on campus, with the O. Meredith Wilson Library serving as the headquarters for the library system. The library handbook, *A Guide to the University of Minnesota Libraries*, serves to guide the user to the correct location of needed materials and services.

O. Meredith Wilson Library

This library building contains the humanities and social sciences collections of the University libraries. Located on the West Bank, it houses the general reference services, the circulation services, the central technical services, and the administrative offices.

The specialized collections housed separately in Wilson Library are: the Ames Library of South Asia; the James Ford Bell Library which contains rare volumes dealing with exploration and trade from the 16th through the 18th centuries; the East Asian Library; the Middle East Library; and the Rare Books Division of the Special Collections Department, which is responsible for rare books and other unique collections.

Specialized resources in the Wilson Library are the Newspaper and Microform Division, the Map Division, the Government Documents Division, the Periodicals Division, the Business Reference Service, and the Listening Room housing a collection of spoken-word recordings.

Walter Library

Until 1968, this building served as the University's central library. It now houses the Art Library; the Chemistry Library, including resources in science and technology; the College Library, primarily for undergraduate study; the Education Library; Library Science Library; the Psychology Library; the Music Library; the Kerlan Collection of Children's Literature; and the University Archives.

Departmental Libraries

The library needs of students in some of the specialized scientific and professional fields are generally met through the collections of the various departmental libraries. On the Minneapolis Campus are the Architecture, Bio-Medical, Engineering, Geology, Journalism, Law, Mathematics, Mines, Metallurgy and Chemical Engineering, Natural History, Pharmacy, Physics, and Public Administration Libraries.

St. Paul Campus Libraries

The St. Paul Campus is served by a central library which houses resources relating to agriculture and home economics. Other departmental libraries serve the fields of Biochemistry, Entomology, Forestry, Plant Pathology, and Veterinary Medicine.

General Library Information

For information about the Twin Cities Campus libraries, call: 373-2424 or inquire at the General Information Desk, Basement Lobby, Wilson Library.

Summer Session Library hours are posted in each library or may be obtained by telephoning the library in question as listed in the *Student-Staff Directory*.

THE MINNESOTA UNION

All Twin Cities Campus students, by virtue of student services fee payment, become members of the Minnesota Union, an association of students, faculty, staff, and alumni. The Minnesota Union is organized through a coordinating board of three constituent governing bodies to provide the services, conveniences, and amenities needed by the University community members in their daily lives together. The union aims to conduct programs geared to the intellectual, cultural, social, and recreational needs of the community, and to provide opportunities for significant student participation and leadership.

Two major building facilities (St. Paul Student Center and Coffman Memorial Union) currently exist to further the goals of the Minnesota Union and a third building for the West Bank is being planned.

Coffman Memorial Union

After 32 years of service, Coffman Union is undergoing substantial remodeling. It is hoped that the resulting inconveniences will be excused. The newly remodeled cafeteria and bowling lanes are indicative of the shape of things to come—designed for the enjoyment and convenience of all users.

Coffman Memorial Union provides a diversified program for the summer student which includes instruction in crafts, art exhibits, music programs, and dances. Consult *Socially Speaking* and the *Minnesota Daily* for specific program events.

Students are encouraged to serve on planning committees and provide leadership for events. Visit the program office in Room 205 for committee opportunities and information on programs.

Facilities include billiards and table tennis . . . bowling lanes . . . an art craft studio for general hobby/craft activities (woodworking, leatherwork, ceramics, jewelry, photography) . . . a student/faculty/staff craft sale outlet (The Market Place) . . . a sweet shoppe . . . a cafeteria for dining . . . a commuters' lunchroom with vending machines . . . coeducational lounges for resting and studying . . . an outdoor terrace for lounging or dining . . . a spacious ballroom for informal dancing, parties, lectures, and special activities . . . the Student Store and the University Post Office . . . and barber and beauty shops. The building is joined to the parking ramp by an enclosed walkway.

Coffman Union is open from 7 a.m. to 10 p.m. each weekday. Rooms can be reserved for group meetings and luncheons.

West Bank Union

West Bank Union (WBU) programs are planned to provide learning experiences or to assist with special interests. They are organized by those interested. To act on an interest or idea come to 110 Anderson Hall.

The WBU Common Room in Anderson Hall provides music listening and chess facilities.

The WBU Video Access Center sponsors workshops in use of video equipment and loans equipment to qualified users.

The WBU Service Center is the place on West Bank for programs' information, lost-and-found, locker rentals, and general assistance.

St. Paul Student Center

The air-conditioned St. Paul Student Center will be open throughout the Summer Session. Complete information about the Student Center and campus activities may be obtained at the Information Desk or by calling 373-1046.

Facilities include lounges, art galleries, ballroom, workshop, television, magazines, conference rooms, and a games area with bowling lanes, table tennis, and billiard tables. Outings equipment is available.

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

Meeting rooms are available for groups. Building hours are from 7 a.m. to 10 p.m. week days.

Special Features

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 lakeshores 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 . . . all 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

Summer Session students may participate in a variety of recreational activities such as archery, badminton, golf, swimming, table tennis, and volleyball at Cooke Hall, Norris Gymnasium, and the St. Paul Gymnasium.

Tournaments for men in bowling, golf, horseshoes, fast and slow pitch softball, and tennis are arranged each summer. Similar tournaments are occasionally arranged for women; and special clinics are held for men and women students in selected activities such as archery, golf, swimming, and tennis.

Most of the activities included in the program involve no extra charge with the exception of locker-towel service.

Sports Facilities

Facilities offered by the University include:

Gymnasiums and swimming pools for men and women in Cooke Hall, Norris Gymnasium for Women, and the St. Paul Gymnasium. Swimming pools are open Monday through Friday at scheduled hours. A gymnasium is also available in Bierman Field Athletic Building.

Baseball and softball facilities on Bierman Field.

One 18-hole golf course, one 9-hole par 3 course, and tennis courts may be used by regularly enrolled Summer Session students upon presentation of a fee statement and a small fee. The golf courses can be reached by inter-campus bus.

CONCERTS AND LECTURES

Through the Department of Concerts and Lectures, Summer Session provides a variety of free entertainment. Blues, jazz, folk, opera, symphonic, modern, and chamber music, and classical, modern, and folk dance are all part of the summer program; many of these informal programs are held outdoors, and all are open to the public.

FILM

Each year the Summer Session sponsors a film program which centers around a theme of current interest or study. Check the campus bulletin boards and the announcements in *Socially Speaking* for the titles and exact time and location of these showings.

UNIVERSITY THEATRE

The University Theatre, known for its international tours as well as its scores of campus and regional productions, including those of the Minnesota Centennial Showboat, will present seven plays during the 1973 Summer Session.

Two will be on the Showboat at its Mississippi River location below the University Hospitals. The Showboat will open May 31 and play through August 25.

Two plays will be presented in air-conditioned Scott Hall Auditorium (Minneapolis Campus). The First Term play will run July 11 through 14, the second August 15 through 18. A play will be offered by the High School Theatre Workshop July 25 through 28 in Scott Hall Auditorium. (See page 46).

The University Theatre's two annual plays for children in the red-and-white-striped Peppermint Tent near the Showboat, will run from June 25 through August 17.

BELL MUSEUM OF NATURAL HISTORY

The James Ford Bell Museum of Natural History, 17th and University Avenues S.E., Minneapolis, features fine exhibitions of the wildlife of Minnesota, a natural history library, extensive study collections of birds, mammals, reptiles, and fish, and the Jaques Gallery of natural history art.

The museum is free and is open from 9 a.m. to 5 p.m., Monday through Saturday, until 9 p.m. on Wednesday, and from 2 to 5 p.m. on Sundays. Guide services are available to groups of 15 or more upon advance request. There is a bookstore in the lobby which also sells prints, stationery, and bird call recordings. Call (612) 373-2423 for further information.

The museum's Touch and See Room is an area where everything is built at children's level and everything can be handled. There are pelts, bones, and mounted heads of animals for their close inspection. This air-conditioned part of the museum also contains a reading room designed for parents and babysitters with very young children where a wide collection of children's books is maintained by the Minneapolis Public Library Children's Department.

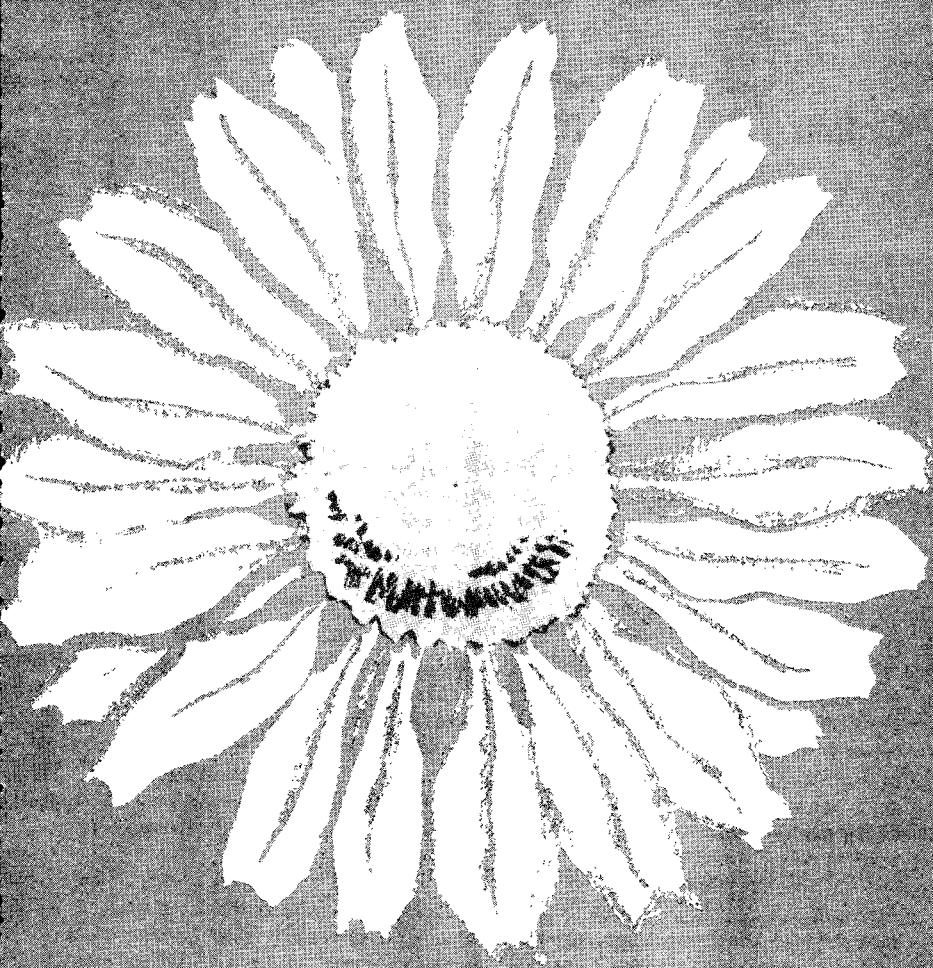
UNIVERSITY GALLERY

The University Gallery, on the upper floors of Northrop Auditorium, presents frequently changing exhibitions with a wide variety of original works of art from all periods and in all media.

Students who seek liberal education in the arts may supplement classroom, studio, and library experiences at the gallery. Research facilities and specialized materials are available.

The gallery rents framed prints to students and staff and provides original art works for public spaces on the campus. Gallery hours are from 11 a.m. to 4 p.m., Monday through Friday, and from 2 to 5 p.m. on Sundays. The main office is in 316 Northrop Auditorium (telephone 373-3424).





*Workshops, Institutes,
and Special Programs*

College of Education

DEMONSTRATION FACILITIES

Summer students are welcome to observe programs at the Institute of Child Development and the Psycho-Educational Center.

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 during the summer terms.

Nursery School—The Nursery School will be in session from 8:50 a.m. to 12 noon, beginning June 19 and closing July 20. Applications for the enrollment of children will be received at the office of the Nursery School. Tuition is \$50 for the term. Parents are responsible for the transportation of their children to and from the school.

ART EDUCATION

In response to requests from teachers of many disciplines outside of the field of art education a course in puppetry (ArEd 3-030) will be offered in First Term. Construction, manipulation, and stage techniques for many basic puppet types from simple to complex will be explored. Emphasis will be on the values of puppetry in education.

Contemporary Crafts (ArEd 3-020) will again be offered First Term to include exploration of materials, equipment, design criteria, and techniques for textiles, wood, metal, and ceramics.

In the First Term a special 2½-week course will be offered (ArEd 5-316, Intercultural Education Through Art). This course will afford teachers and administrators the opportunity to examine various approaches to international understanding through recognition of aesthetic contributions of diverse peoples to American life.

In the Second Term a special 2½-week course (ArEd 8-300, Research in Art Education) will be offered. A review of art education research techniques and the orientation of developing research tools into action research will be presented. The relationship of art materials and empirical procedures will be stressed.

EDUCATIONAL ADMINISTRATION

Administrative Development Seminar

An innovative 8-week, day-long, block-of-time program is offered only in the summer terms to students of educational administration at the program

entrance level. The three broad areas of focus are assessment and counseling, skill development, and familiarization with contemporary issues in the field.

Assessments of administrative potential are conducted by means of standardized tests, peer evaluations, and professors' evaluations, and go beyond traditional measures of cognitive capacity to measures of ability to lead, influence, and cooperate with other individuals. Counseling is based on the broad array of assessments.

Skill development is provided in the context of cooperative planning and conducting of a project for a local school district (typically a community opinion poll); group decision making relative to course projects and activities; explication of research and theory bearing on administrative behavior.

Familiarization with contemporary issues in education is provided in a seminar setting in which students interact with University staff, administrators in the field, and members of various agencies related to education.

In the First Term, participants will register concurrently for 5 weeks (3 credits) in EdAd 5-139, Laboratory in Decision Making; and for 5 weeks (3 credits) in EdAd 5-130, Administrator Development Seminar, making certain to register for the same section for each course. In the Second Term, participants will register for 3 weeks for EdAd 5-130, Administrator Development Seminar, for the remaining 6 credits. Applicants for admission to degree programs in educational administration are required to participate in this program, and a full 8-week registration is mandatory.

Preapplication is required and inquiries concerning applications, requirements, and procedures may be addressed to Professor Gary F. Alkire or Professor Thomas L. Jackson, Division of Educational Administration, 225 Health Services Building, University of Minnesota, St. Paul, Minnesota 55101.

Two-Year Programs

Several pertinent courses, workshops, and seminars are available this summer for students pursuing advanced graduate programs leading to the Specialist Certificate in School Administration: elementary and secondary school principals, superintendents, school business administrators, and superintendents of intermediate units. An announcement describing these programs will be sent upon request to: Division of Educational Administration, 225 Health Services Building, University of Minnesota, St. Paul, Minnesota 55101.

Doctor of Education Programs

The Division of Educational Administration also offers programs leading to the doctor of education (Ed.D.) degree for administrators in elementary and secondary schools. These programs emphasize a breadth of preparation in education and substantively related fields, and include heavy concentration in history and philosophy of education, social psychology, and curriculum and instruction. Through independent study, internship, and clinical experiences, students are encouraged to make the application of theoretical knowledge to the practical situations of a school setting. A brochure describing these programs is available by writing to: Division of Educational Administration, 225 Health Services Building, University of Minnesota, St. Paul, Minnesota 55101.

EDUCATIONAL PSYCHOLOGY

Special Education Programs and Scholarships

Summer offerings in special education include courses for teachers of children who are retarded, hearing handicapped, gifted, emotionally disturbed, disadvantaged, or who have learning disabilities. Many State Departments of Education offer summer traineeships, and students should contact their State Department of Education for information after February 1, 1973.

Teaching Emotionally Disturbed Children

In the First and Second Terms, Education of Emotionally Disturbed and Socially Maladjusted Children (SpEd 5-150) will be offered.

Teaching Disadvantaged Children

Education of the Disadvantaged (SpEd 5-180) is listed in both the First and Second Terms.

Trainable Mentally Retarded Children

Several courses for persons interested in the mentally retarded are offered this summer. Methods and Materials for Severely Retarded Preschool and School Age Pupils (SpEd 5-123) and Introduction to Mental Retardation (SpEd 5-120) will be offered in First Term. During Second Term a special workshop for teachers of trainable retarded children (SpEd 5-320) is listed. Admission to the workshop is through application only. Write or call the Department of Special Education, 101A Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455, for the workshop application form.

Institutes: Teaching Exceptional Children

Resource or Clinical Teacher Sequence—The University of Minnesota will offer the courses which constitute the methods and practicum core for Resource Teaching in Special Education (SpEd 5-110, 5-610, 5-111, 5-611) as a special 8-week, full-time institute for which 12 credits will be given. Credits may be applied to SLBP certification and/or the M.A. degree. The institute is scheduled from June 18 to August 10. Enrollment will be limited to approximately 60 students who have been formally admitted as graduate or adult special students in special education and have completed all prerequisites for the courses listed. Priority will be given to persons working as resource teachers in special education who are recommended by their employing educational agency.

Supervising or Lead Teacher Sequence—Courses related to planning and implementing in-service training programs for exceptional children and in-service training for resource teachers will be offered through a special 8-week, full-time institute paralleling the institute for resource or clinical teachers. Students will register for up to 6 credits each summer term under the work-

shop course number (SpEd 5-302) and/or up to 3 credits under the practicum course number (SpEd 5-601). In addition to the basic practicum and supervision in leadership associated with the institute, individualized programs of practicum and course work will be planned with each student. The institute is scheduled from June 18 to August 10. Enrollment is limited to 10 students who have completed the requirements for special certification as teachers of children with special learning and behavior problems and who have classroom experience as teachers of such children. Priority will be given to persons who hold leadership positions such as lead teachers, supervisors, coordinators, or teacher-educators, or who present evidence that they will hold such positions during the 1973-74 school year.

Requests for applications or information on either of these workshops should be directed to Professor Stanley L. Deno, Department of Special Education, 108 Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455, and must be submitted by May 1, 1973.

Teaching Hearing-Impaired Children

Teachers of the hearing impaired will be interested in several newly designed courses in the area: in First Term, Psycho-Social and Educational Aspects of Deafness (SpEd 5-140) and Teaching Speech to Hearing Impaired I (SpEd 5-145), followed in the Second Term with Teaching Speech to the Hearing Impaired II (SpEd 5-146).

HIGHER EDUCATION

Regular graduate courses in higher education will be available in First Term: Effective College Teaching (Educ 8-252), Curriculum Trends in American Colleges (Educ 8-251), Higher Education in the United States (Educ 8-250) and The Two-Year College (EdAd 8-274). Students interested in administration or supervision of student teaching may register for Supervision of Student Teaching (Educ 5-184) in the First Term. Qualified students in the Graduate School may register for individual research problems (Educ 8-228) with the consent of the instructor.

PHYSICAL EDUCATION

Coaching of Individual, Dual, or Team Sports

A special 2-week course will be scheduled from June 11 through 22 for men and women on the techniques of coaching. Dr. Marigold Edwards from the University of Pittsburgh will give instruction at the advanced level in specific techniques of coaching, methods of training and conditioning including analysis of skill for coaches of tennis, badminton, and squash. (See PE 5-740)

Practicum on Prevention and Care of Athletic Injuries

The latest training and rehabilitation techniques will be demonstrated in a special 2-week course offered for men and women on the prevention and

care of athletic injuries in school sports programs. Class members will have an opportunity to practice these techniques in the practicum scheduled from June 25 to July 6. (See PE 5-620)

Workshop: Dance in Education

Students will register for 6 credits in a 3-week workshop on dance in education scheduled from July 23 through August 10, taught by Don Redlich and Company and the dance staff of the Department of Physical Education. Don Redlich and Company has performed in the United States and Europe; he is currently on the dance faculty at Sarah Lawrence College, Bronxville, New York. Emphasis of the workshop will be on fundamentals of movement, modern dance technique, improvisation, composition, dance repertory, dance production, rhythmic analysis, and dance therapy. Because enrollment is limited to 125 students, participants are encouraged to make inquiry of Nadine Jette, 68 Norris Gymnasium, University of Minnesota, Minneapolis, Minnesota 55455 about enrollment in PE 5-700 during Second Term.

SCHOOL HEALTH

Educational Aspects of Drug Use and Abuse

In response to the critical need for basic background information and methodology in drug use and abuse, the School of Public Health and the Department of School Health Education of the School of Physical Education and Recreation are jointly offering this course for school personnel. It is specifically designed for education seniors and those directly involved in and responsible for curriculum development and teaching in this area, and those providing nursing and referral services. The course aims to (a) disseminate accurate, up-to-date, unbiased information on the nature, use, and effects of drugs and dependency, prevention, and treatment; (b) examine concepts, methods, and instructional materials appropriate for elementary and junior and senior high schools; and (c) familiarize participants with various referral procedures and community resources available for providing assistance to individuals and families. Course registration is limited to 80 students. Classes will meet from June 18 to July 20, II MTWThF. (See Hkth 5-400 and PubH 5-032)

Death Education in Contemporary Society

This special 3-week course is a joint offering of the School of Public Health, Department of Mortuary Science, Center for Death Education and Research, and the School Health Education Program of the School of Physical Education and Recreation. It is specifically designed to prepare education seniors, teachers, school nurses, and mortuary science majors to cope with the problem of death education in their specific areas.

The course aims to (a) provide basic background information on concepts and attitudes toward death, grief, and bereavement including instructional aspects for elementary and secondary schools; (b) analyze motivations toward suicide and suicide attempts; (c) examine the school's role in suicide preven-

tion. Course registration is limited to 80 students. Classes will meet from June 18 through July 6, 1:30 to 3:30 p.m. daily. (See Hlth 5-402 and PubH 5-040 for course description.)

SECONDARY EDUCATION AND BUSINESS EDUCATION

See also "Study Abroad" in this section of the bulletin.

Workshops in Secondary Education

Two 3-credit workshops are offered under BsEd 5-112, Program Developments in Business Education. In the First Term, scheduled from July 9 to July 20, the concentration will be on adult business and office education, a study of the business and office education teacher's role in the organization, administration, and teaching of adult business and office education courses. Topics will include reimbursement qualification, procedures for determining courses and course content, and adapting teaching methods and materials for adult use. In the Second Term, a section on new office technology scheduled from July 23 to August 10 will focus on word processing systems, electronic office machines, remote filing and retrieval systems, reprographics, office landscaping, and other innovations for the "office of the future."

The workshop on secondary reading instruction (SeEd 5-349) will focus on secondary education remedial materials. Establishment of a new Reading Materials Center in Peik Hall has enabled the department to acquire a relatively complete collection of these materials. The workshop will provide teachers the opportunity to survey the range of material available, make in-depth studies of selected materials, and create supporting material to be used in the classroom.

In the Second Term (July 30 through August 15) a special workshop on Improvisational Drama Techniques in the Classroom will provide the opportunity for secondary school teachers to explore the implications of theater games, characterizations, role-playing, and improvisations in a range of subject matter and classroom contexts. Emphasis will be on the psychic pragmatism of such modes of self expression with concentrated periods of experiential learning combined with lectures, discussions, and current reading and research related to the dramatic mode of learning through play. (See SeEd 5-325)

Students with strong interests in this area should investigate the possibility of enrolling in Th 5-714, Producing Improvisational Theatre for Secondary Schools, during the First Term. The course is taught in conjunction with the High School Theatre Workshop.

Also in Second Term, a workshop on film studies scheduled from July 24 through August 10 will provide opportunity for an intensive study of film as an adjunct to traditional literary forms and as an integral and autonomous communicative art with major implications for curriculum development and planning. Participants will view and analyze a broad range of film materials for use in film study classes or in conjunction with general curricular offerings in the fields of English and language arts. The workshop will stress varied

activities including the making of short film sequences, analysis of responses to film, and the planning and execution of instruction in and about film. (See SeEd 5-326)

Curriculum and Instruction

Two offerings are available during Second Term. The first is an 11-day workshop on Curriculum Laboratory Practice (SeEd 5-371) featuring instructional strategies for elementary and secondary teachers, scheduled from July 24 through August 3. It will be an action laboratory, permitting participants to tape results of their involvement in leading groups in various strategies and self-evaluate according to criteria set for the strategy. Attention will be given to small group, demonstration, independent study, role-playing, peer tutoring, simulation, large group, drill and practice, discussion with open questioning, and use of concepts and generalization.

Also of interest is SeEd 5-173, Preparation of Curriculum Materials, a concentrated offering over the period July 24 through August 3. It will be structured to meet the diverse needs of individual teachers, department chairmen, curriculum specialists, or groups of teachers from a specific school and will provide the opportunity for developing curricula in all subject fields. Provision will be made for the individual who desires to develop specific material for a class or for more general program development. All of the resource materials developed by elementary and secondary schools throughout the United States which were on display at the ASCD 1973 Annual Conference will be available for workshop participants.

Two complementary concentrated offerings in language arts curriculum have been scheduled from July 23 through August 10. SeEd 5-194, Curriculum Development in Secondary English and Speech, will provide theoretical and thematic bases for the development of language arts curricula. Current issues, problems, and trends in the field will be examined with particular attention to the electronics media and implications for language arts programs. The second offering is conceived as an adjunct to the first and will provide an opportunity for teachers, individually or in faculty groups, to apply the ideas and material made available in SeEd 5-194 to the particular needs and conditions of their school or classroom. The advantages of such a proximate coupling of theory and practice are manifold. However, provision will be made for those unable to enroll in both sections. (See SeEd 5-195)

Social Studies

In the Second Term, August 6 through 17, SeEd 5-153, New Perspectives in Social Studies, will concentrate its workshop format on life science, biology, and social studies. Designed to facilitate the development and use of value clarification materials and techniques for the classroom, it will focus on the various models for value education and include gaming simulations and an examination of new materials.

Science Education

Two workshops including readings, discussions, field work, and laboratory experience relating methods and materials useful in teaching secondary school science are being offered in each term. In the First Term, these will relate to chemistry (Section 1, June 19-29) and to earth science (Section 2, July 9-20). In the Second Term, areas of concern will be environmental biology (Section 1, July 23-August 3) and an interdisciplinary effort "Controversial Issues—Value Clarification and the Classroom for Science and Social Studies Teachers" (Section 2, August 6-17). (See SeEd 5-394)

In addition, the Department of Forest Resources Development is offering a Summer Forestry Workshop for Secondary Teachers for 2 weeks at the Cloquet Forestry Center. (See description under "College of Forestry" in this section and FRD 5-404 under course description section)

The Department of Aerospace Engineering and Mechanics is conducting a 2-week workshop for elementary and secondary teachers, June 18-29. (See "Institute of Technology" in this section and/or AEM 5-001 under course description section)

VOCATIONAL TECHNICAL EDUCATION AND COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY

Workshops in Career Education

Staff members in the Departments of Distributive Education and Counseling and Student Personnel Psychology will again coordinate course work to offer two 2-week workshops on career education, for educational personnel working in school settings. Students will register June 18-29, for 3 credits in DE 5-400, Program Development in Distributive Education, section 1; and for 3 credits in CSPP 5-300, Workshop: Counseling Psychology, section 3. For the second workshop scheduled from July 7 to 20, students will register for 3 credits each in DE 5-400, section 2, and CSPP 5-300, section 4. These programs will be designed to upgrade the leadership capability of those personnel who are looked to to provide in-service training in career education for their school system. Preference in selection will be given to those applying as a member of a team of two or three from the same school system. Registration is limited to 40 students and application for admission may be secured by writing Professor W. Wesley Tennyson, 259 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455 (telephone 373-2239).

Home Economics Education

Courses and workshops are planned so that those seeking certification in consumer-homemaking or in occupational education may earn 9 credits. To acquaint teachers with the role of home economics in career education, the trends course, HEEd 5-325, will focus on this development.

Other courses of importance in graduate programs as well as in preparation for certification for consumer-homemaking, family life, or occupational education will be found under College of Home Economics and Distributive Education listings.

College of Forestry

FORESTRY WORKSHOP FOR SECONDARY TEACHERS

The College of Forestry is sponsoring a special workshop for secondary teachers at the Cloquet Forestry Center, Cloquet, Minnesota. The 5-credit course (FRD 5-404) will be held for 2 weeks during the First Term, June 18-29.

Lecture sessions will involve biological foundations of forest, watershed, and wildlife management; social and economic aspects of forestry; timber management; and recreation and amenity values of the forest. Laboratory sessions will consist of the initiation and development of forestry-related projects adaptable in junior and senior high school curricula.

Objectives of the course are threefold: (1) to increase the student's understanding and ability to interpret to others the forest ecosystem, (2) to convey to the student an appreciation of the various roles of the forest and the processes of forest management in modern society, and (3) to impart skills and teaching techniques and the development of materials usable in transferring the awareness of the forest ecosystem and forest management in secondary indoor and outdoor classrooms.

College of Liberal Arts

FOREIGN TRAVEL AND STUDY

SPAN Study Abroad

SPAN, the Student Project for Amity Among Nations, will open its second quarter-century of foreign study with the goal of enhancing international friendship and understanding. The program is a cooperative effort of the University of Minnesota and 10 other Minnesota colleges. In 1973 it is sponsoring student groups in Hungary, Libya, and Peru.

The SPAN program involves extensive preparation, 8 to 10 weeks abroad, and production of a research paper. Preparation, through the year preceding the summer abroad, includes study of the language, history, social and political ambiance, and culture of the area to be visited. Each "country group" of about a dozen students meets regularly with its faculty adviser. During their period of study abroad students conduct interviews, visit appropriate institutions, use libraries and other research facilities, and often live with local families. Upon return, they complete their SPAN papers, major academic reports growing from their study at home and abroad. Satisfactory completion of a paper earns 12 quarter-credits in Foreign Studies Seminar, FS 5-960.

Students apply for SPAN appointments not later than the fall quarter preceding the summer abroad; information about future applications may be obtained from Professor Theofanis Stavrou, History Department, 652 Social Sciences Building, University of Minnesota, Minneapolis, Minnesota 55455.

FIELD WORK OPPORTUNITIES

Archaeological Field Session

Archaeological field methods and techniques, Anth 5-376 and 8-508, will be given for undergraduate and graduate students during the First Term. Students with permission to enroll will participate in the excavation of prehistoric archaeological sites in Minnesota. Undergraduate students and graduate students without previous field training register for Anth 5-376; graduate students with field experience register for Anth 8-508. Those seeking permission to register must apply in person or by mail before March 15, 1973, to the Archaeology Laboratory, 215 Ford Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Classics

In 1973, from April through August, the University of Minnesota Messenia Expedition will continue its series of summer campaigns, initiated in 1969, in the excavation of a Bronze Age habitation site in southwest Greece. Credit may be earned through enrollment in Clas 5-120.

Geographical Field Session

An intensive field research seminar, Geog 8-330, will be given from June 28 to July 19. Field headquarters will be at Red Wing, Minnesota. Research will be focused upon the Mississippi Corridor and the development of its natural and human resources. Reservations must be made by May 23. For costs, detailed information, and reservations, consult Professor Cotton Mather, Department of Geography, 414 Social Sciences Building, University of Minnesota, Minneapolis, Minnesota 55455.

LANGUAGE STUDY OPPORTUNITIES

See also programs under "Study Abroad."

Arabic

The Department of Middle Eastern Languages will offer Intensive Beginning Arabic (Arab 1-101/1-102/1-103, 15 credits). The 10-week course is intended for undergraduate and graduate students without previous formal knowledge of the language. For information, consult Professor Anwar G. Chejne, 157 Temporary South of Folwell, University of Minnesota, Minneapolis, Minnesota 55455.

Russian

The Department of Slavic and East European Languages will offer two intensive courses in Russian: a beginning course in spoken and written Russian

(Russ 1-101/1-102/1-103, 15 credits) and an intermediate course (Russ 1-104/1-105/1-106, 15 credits). Students in either sequence must enroll for both summer terms. Completion of each course prepares a student to continue at the next higher level.

South Asian Studies

The CIC summer program in South Asian Studies, under the sponsorship of the University of Minnesota and five other universities, will be held in summer 1973 at the University of Illinois, Urbana.

The program will include intensive instruction in 10 languages—Bengali, Hindu, Kannada, Kashmiri, Malayalam, Marathi, Sanskrit, Tamil, Telugu, Urdu—as well as courses in South Asian history, politics, anthropology, sociology, music, and art.

Information about the program may be obtained from the South Asian Center, 192 Klaeber Court, University of Minnesota, Minneapolis, Minnesota 55455 (telephone 373-9834 or 373-7700).

Swedish

The Department of Scandinavian Languages will offer Intensive Beginning Swedish (Swed 1-101/1-102/1-103). The 10-week course is intended for undergraduate and graduate students without previous formal knowledge of the language. For information, consult Anne Lundquist, 210 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

OTHER SPECIAL OPPORTUNITIES

Acting Workshop

The Department of Theatre Art's series of 1-week-long acting workshops directed by distinguished artists will continue in Summer Session 1973. Directed by Paul Sills, creator of "Story Theatre," the workshop will be held June 25-29. Further information may be obtained from the Department of Theatre Arts, University of Minnesota, Minneapolis, Minnesota 55455 (telephone 373-3118).

American Studies

Visiting professors and University of Minnesota staff members will offer courses in aspects of American culture in the Departments of Anthropology, History, English, Sociology, Economics, Geography, Art History, Music, Philosophy, and Political Science, the College of Education, and the School of Journalism and Mass Communication.

The program serves candidates for B.A., M.A., and Ph.D. degrees. Candidates for degrees design programs in courses in the departments listed above and in "integrating" American Studies seminars. Knowledge of a foreign civilization is required of Ph.D. candidates.

Family Study Workshop

The Minnesota Family Study Center and the Department of Sociology will sponsor a workshop on family theory and concept development. The class will be open to graduate and postgraduate students who have an interest in theorizing as a scientific activity, especially with respect to family phenomena.

Students will apply principles from the philosophy of science, logic, and the sociology of knowledge to the study of the family. Topics and activities will include: nature and types of scientific theory, theory evaluation criteria, theory building strategies, the current status of family theory, theory construction attempts by family scholars, and exercises in family theory generation and systematization. Professor Reuben Hill and David Klein will be primary instructors.

Students wishing to register for this workshop (Soc 8-090, 5 credits) should contact the Minnesota Family Study Center, 1014 Social Sciences Building, Minneapolis, Minnesota 55455 (telephone 373-2607).

The workshop will meet during the Second Term on Mondays, Wednesdays, and Fridays, and will be limited to 20 students.

Hearing Screening Workshop

A workshop on screening audiometry will be offered by the Department of Communication Disorders during the first week of First Term. It will treat theory and application of manual and automatic procedures, with special emphasis on validity, reliability, and efficiency. Enrollment will be limited to 20 persons.

The workshop is directed to public school speech clinicians, school nurses, public health and industrial nurses, industrial technicians, and others who bear responsibility for conducting or supervising screening or monitoring audiometry.

Professors Joseph B. Chaiklin and Charles E. Speaks and Mrs. Suzanne Marth will conduct the workshop from 10:30 a.m. to 12:30 p.m. daily in 119 Shevlin Hall. Supervised practice may be arranged. There are no prerequisites. Further information may be obtained from the department at 110 Shevlin Hall, University of Minnesota, Minneapolis, Minnesota 55455 (telephone 373-4116).

High School Forensics Workshop

High school students interested in competitive speech activities may participate in the Forensics Workshop offered during First Term by the Department of Speech-Communication and the College of Education. College speech students who desire to observe the workshop should apply to James Klumpp, 404 Ford Hall (telephone 373-2570). The workshop will meet in 406 Folwell Hall, I-IV MTWThF.

High School Music Project

The Department of Music, in cooperation with the Minnesota Orchestra, will invite 160 specially qualified high school musicians to spend 4 weeks on campus to participate in the annual music project. The program, running from June 17 to July 16, will include intensive band, orchestra, and chorus rehearsals and concert performances; introduction to composition and "creative music"; music theory and literature; private applied vocal lessons; repertory and coaching sessions; chamber music rehearsals, orchestral repertory sessions, and class lessons with the Minnesota Orchestra; weekly solo recitals and chamber concerts; and social and recreational activities.

Auditions for admission to the program are open to all high school students in the Midwest. Information and application forms should be requested from Professor Richard E. Sieber, 320 Westbrook Hall, University of Minnesota, Minneapolis, Minnesota 55455.

High School Theatre Workshop

High school students may participate in a First Term program emphasizing theatre improvisation under the Department of Theatre Arts and the College of Education. Among courses and subjects will be Introduction to the Theatre, Theatre Improvisation, Voice for the Theatre, and technical theatre laboratory work. Participation in a Scott Hall production directed by Tony Steblay, visiting instructor from Hopkins High School, will form part of the program.

Information may be obtained from Mrs. Lin Wright, 304 Westbrook Hall, University of Minnesota, Minneapolis, Minnesota 55455.

College student participants may register for Th 5-714, Producing Improvisational Theatre for Secondary Schools.

Journalism and Mass Communication

The annual intensive 3-week workshop, principally for high school journalism teachers and newspaper, yearbook, or magazine advisers but open to others, will be offered during the First Term (June 19-July 6). In afternoon sessions, Jour 5-182, Publications Workshop (4 credits) will permit students to enroll for other courses in the full 5-week term.

School of Journalism and Mass Communication (SJMC) programs in each term offer courses to undergraduate and graduate students interested in professional training. A number of the courses are open to majors in other fields without earlier journalism work who wish to pursue studies in mass communication.

Murphy Hall, the SJMC building, is the headquarters for the National Scholastic Press Association (secondary level) and the Associate Collegiate Press. Summer Session students are invited to visit the office (18 Murphy Hall) of these organizations to obtain counsel on publication problems.

Although not part of the Summer Session and not offering college credit, workshops for high school yearbook and newspaper staff members are offered

by the SJMC in August. Details may be obtained from MHSPA, 110 Murphy Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Media Generalist Certification Program

The Library School and the College of Education have proposed a program leading to certification as a media generalist as a part of an M.A. program. Audio-visual coordinators and school librarians already certified and working in public schools may be partially qualified for media generalist certification, and may apply for admission to the media generalist program up to May 1, 1976. Write to the Library School for application forms and additional information.

Minnesota History Workshop

Designed primarily to assist elementary and secondary school teachers who teach history, this workshop will make use of both the academic content of Minnesota history and the various museums and historic restorations throughout the state. Topics to be covered include: The Land, The Native Americans, The Contact and Conflict of Cultures, The Immigrants, Political Structure and History, Resources and Tasks of the Minnesota Historical Society, and The How's and Why's of Historic Archaeology and Reconstruction.

In addition to regular lecture and discussion sessions, students will participate in field trips to the Minnesota Historical Society and the Fort Snelling Restoration.

This 5-credit workshop will be held from July 23 to August 3. Interested persons should register for Hist 5-381.

Department of Military Science

ARMY ROTC SUMMER PROGRAM

The Department of Military Science will offer the Army ROTC courses on a trial basis this summer to all Summer Session students who think they might be interested. No military obligation is incurred by those students taking these Department of Military Science courses as part of the ROTC program.

Students may take either or both of the courses for credit as ROTC or non-ROTC students. Enrollment in the summer courses as an Army ROTC student will enable those who are interested to continue in the Army ROTC program during the regular academic term, pursuing a commission as a second lieutenant in the U.S. Army.

School of Public Health

WATER QUALITY INVESTIGATIONS

Two special courses on training and research techniques in water quality investigation will be offered First Term to specialists who have an interest in water quality control. They will be given at Duluth, Minnesota, and will be headquartered at the Limnological Research Station of the University of Minnesota, Duluth. Activities will include formal lectures, laboratory work, and field operations. The latter will be centered around Knife River Harbor where two fully equipped research vessels are available for the scheduled field studies. The course will be limited in registration and will run from June 18 to July 20. For detailed information write: School of Public Health, 1112 Mayo Memorial Building, University of Minnesota, Minneapolis, Minnesota 55455.

DEATH EDUCATION IN CONTEMPORARY SOCIETY

See School Health Education, page 38.

EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE

See School Health Education, pages 38-39.

EPIDEMIOLOGY

A special 3-week intensive program in epidemiology will be offered by the School of Public Health in collaboration with the University Department of Conferences, Nolte Center, June 17-July 7. This program of study, which carries full graduate credit, is designed for but not limited to teachers of preventive medicine in medical schools and offers a wide variety of courses in basic as well as specialized fields of epidemiology. Registration is limited. Inquiries as well as applications should be addressed to the School of Public Health, 1158 Mayo Memorial Building, or the Department of Conferences, Nolte Center, University of Minnesota, Minneapolis, Minnesota 55455.

Institute of Technology

AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY SCHOOL TEACHERS

An Aerospace Engineering Workshop for Elementary and Secondary School Teachers will be held in Minneapolis for 2 weeks, from June 18 to June 29. Given with the cooperation of the National Aeronautics and Space Administration (Lewis Center), the Civil Air Patrol Liaison Personnel (United States Air Force), Minnesota Department of Aeronautics, and the Department

of Aerospace Engineering and Mechanics of the University of Minnesota, the workshop is designed to provide the elementary and secondary school teacher with a background in recent discoveries in the space sciences, which can be used as the basis for new or existing classroom programs. Participation in the workshop is by application, and enrollment will be limited. Application forms and further information may be obtained from the Aerospace Workshop Coordinator, 107 Aerospace Engineering Building, University of Minnesota, Minneapolis, Minnesota 55455.

See Aerospace Engineering and Mechanics for course description (AEM 5-001).

COMPUTERS IN THE HUMANITIES

During the First Term, the Department of Computer, Information, and Control Sciences will conduct a workshop on Computers in the Humanities. Offered just prior to the International Conference on Computers in the Humanities, the workshop is designed to complement the spectrum and content of papers to be presented at the conference. It will provide a comprehensive introduction to the uses of the computer in disciplines outside science and technology, such as social science, English, literature and fine arts, linguistics, and humanities. (See SSci 5-704; Engl 5-590; LFA 5-701, 5-703, 5-705; Ling 5-910; Hum 3-049)

Further information is available from Allen Hanson, CICS, 114 Main Engineering, University of Minnesota, Minneapolis, Minnesota 55455.

Student Union Programs

CRAFT SEMINAR

This week-long, noncredit seminar is designed to give craft ideas to persons who work with elementary school-age children. Among the topics to be covered are Sketching with Charcoal, Nature in the Classroom, and Preserving with Decoupage. The Artcraft Studio in Coffman Memorial Union is sponsoring the seminar which will begin at 1:30 p.m. daily, June 25-29. Interested persons may register at the Studio between noon and 10 p.m., Tuesday and Thursday, and between noon and 6 p.m., Monday, Wednesday, and Friday. The \$8.50 registration fee includes all the necessary materials for the workshops.

A children's art exhibit will be on display in the Coffman Art Gallery in conjunction with the seminar. The works are on loan from the Twin Cities area schools.

Study Abroad

Besancon, France — July 2-August 10. Offered through a cooperative agreement between the departments of French and Secondary Education, this program will emphasize spoken and written French and the French culture and literature. In addition, there will be a workshop for in-service teachers, Development of Materials and Short Courses for Individualized Instruction (see SeEd 5-192). The tour is limited to 20 in-service teachers and 20 undergraduates and graduate students in French, education, or the social sciences. Students must have completed the equivalent of 2 years of college French.

Information is available from the Department of French and Italian, 200 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Bochum, Germany — July 23-August 24. During Second Term the Department of German will hold a summer program at the Ruhr-University in Bochum, Germany. The program is especially designed for graduate or undergraduate majors or minors in German as well as for students of history, social sciences, or theater arts. All participants are expected to have a background equivalent to at least 2 years of college-level German. The program will feature study in German conversation, contemporary cultural and social developments, contemporary drama, as well as the opportunity for independent reading courses. The cost is approximately \$800, and a \$100 deposit is required with application to the program. Further information and applications are available from the Department of German, 219 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Erlangen, Germany — July 2-August 10. This tour is sponsored by the Department of Secondary Education and is limited to 20 in-service teachers of German. It will feature a workshop for developing instructional materials (SeEd 5-192) and a course on the culture of contemporary Germany. Information is available from Foreign Language Education, 224 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Barcelona, Spain — June 25-July 27. Conversation, culture, and various aspects of the structure of the Spanish language will be stressed in this program offered through the departments of Spanish and Secondary Education. It is open to 20 in-service teachers and 20 graduate and undergraduate students with at least 2 years of Spanish. Teachers will be expected to enroll for 12 credits of SeEd 5-192. Information is available from Foreign Language Education, 224 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Summer Arts Study Center

A LIVING ARTS EXPERIENCE

One-Week Courses of Study and Creativity in a Total Arts Environment

Located at one of northern Minnesota's finest resorts, the Summer Arts Study Center provides the ideal environment for intensive study and creative activity in all areas of the arts. A faculty of leaders in the academic and professional worlds offers 1- and 2-week workshops and courses in humanities, theatre, music, and the plastic and graphic arts.

The 2-month session, sponsored by the University of Minnesota in cooperation with the Grand Rapids Performing Arts Council, opens June 18 at Quadna Mountain resort. This "arts community" in which the faculty and students can share ideas and discussions outside the classroom on a full-time basis, in an atmosphere of total involvement, will have access to the total recreational facilities of the resort including swimming (both an indoor pool and Hill Lake), golf, water skiing, horseback riding, and other outdoor sports such as tennis.

Art Center workshops are planned both for people with a general background in the arts as well as those seeking advanced work with an expert in their field. The courses are designed to stimulate the student to discover and learn about the arts creatively, through participation in them. University of Minnesota graduate and undergraduate credit is available (quarter hours).

PHOTOGRAPHY (Arts 3-710/5-710) • June 18 - 22

A workshop conducted by Gary Hallman, Studio Arts Department, University of Minnesota, for those with some experience and familiarity with basic photographic processes. The workshop will consist of field trips, lectures, demonstration, and dark room. Of concern throughout will be the relationships of camera and light meter to film, development, and printing. Emphasis will be placed on personal expression through the photographic medium with attention given to individual interests. Students are to bring a camera, or a camera with light meter.

\$60.00 plus a laboratory fee of \$14.00 — 3 credits

EARLY MUSIC (Mus 5-440, Section 1) • June 18 - 22

A workshop in baroque and rococo music taught by the Philidor Trio, members of the New York Pro Musica. The trio, returning to the Arts Center for its fifth consecutive year, is well known for its rare musical skill and sensitivity in performance. The workshop will open with a concert Sunday evening, June 17. Shelley Gruskin will teach beginning, intermediate, and advanced recorder and renaissance band. Elizabeth Humes will present sessions in renaissance and baroque song repertoire and madrigal literature and performance, small group practice, and combined vocal and instrumental repertoire. Edward Smith will teach harpsichord and coach keyboard and chamber music. All classes will meet daily.

\$60.00 — 2 credits

HUMANITIES (Hum 5-030) • June 18 - 22

A seminar conducted by Assistant Professor Mark Lowry of the University of Minnesota on the subject, "The Concept of Classicism—Changing Views of an Aesthetic Ideal." The term "classical" has meant many things to many ages. This course will investigate the changing concept of classicism in post-Renaissance Europe. The primary emphasis of the course will fall on four plays—one from each of the last four centuries—which will be compared with their classical Greek models. The insights which result from these comparisons will be supplemented by the study of parallel manifestations of classicism in the music, architecture, painting, and sculpture of each period. Further, examples of aesthetic theory from Aristotle to T. S. Eliot will be compared with the artistic realities of their contemporaries.

\$60.00 — 3 credits

ORFF SCHULWERK (MuEd 5-750) • June 25 - 29

A workshop in Orff Schulwerk techniques conducted by Orff specialist Jane Frazee, currently on the faculties of Macalester College and Hamline University. The workshop will explore the interrelationship of movement, language, and music. Participants will work with the musical elements in a variety of activities designed for primary and intermediate grade levels, with emphasis on practical classroom application. The Orff instrumentarium, assorted percussion instruments, and recorder will be used to perform ensemble compositions and improvisations. Class members will compose and share applications of class material. Classroom teachers as well as music specialists without previous Orff experience are welcome to attend.

\$60.00 — 3 credits

TECHNICAL THEATRE (Costuming and Make-up) (Th 5-520) • June 25 - 29

Practical stage costuming for community and high school theatre, with an emphasis on basic silhouette, pattern drafting and adaptation. Make-up will be coordinated with costuming to allow each student the opportunity to create several styles of make-up under close guidance of the instructor. Practical problems such as character make-up, make-up for various sized theatres, inexpensive costumes, and the relation between colored light, make-up, and costume will be included. The course will be taught by George E. Bogusch, former technical director at Louisiana State University, former technical director in Opera Workshop at the University of Pittsburgh, currently assistant professor at the University of Minnesota. Professor Bogusch's assistant for this course will be announced at a later date. Grand Rapids area organizations such as Show Boat and Itasca State Junior College will lend space, facilities, and equipment to the workshop.

\$60.00 — 2 credits

ADVANCED PHOTOGRAPHY (Arts 5-710) • June 25 - 29

This workshop, taught by Gary Hallman of the University of Minnesota's Studio Arts Department, will be an intensive week of image making for the mature and technically proficient photographer. Interpersonal structuring of the photographic image will be emphasized over singular efforts. Participants will work with each other, in changing and various sized groups, formulating and solving creative problems. Participants will need their own cameras. A detailed letter, with materials and a recommended reading list, will follow registration.

\$60.00 plus a laboratory fee of \$14.00 — 3 credits

LANDSCAPE PAINTING (Problems: Design in Nature) (HE 5-585) • July 2 - 6

A 1-week workshop taught by Professor Eugene Larkin of the College of Design. The study of configuration and the elements of configuration in landscape painting, point, line, plane, color, value, and texture. Two hours per day will be spent in lecture; 8 hours in studio work, drawing, analysis, and observation. In addition to painting in the surrounding area, students will spend time discussing their own work as well as the work of other artists. The instructor will work with both the group and individuals during the studio period.

\$60.00 — 3 credits

GLASSBLOWING (Arts 5-810) • July 2 - 14

A 2-week studio course in offhand glassblowing using bench, blowpipe, and melting furnace. Techniques of shaping (both sculptural and functional), coloring, finishing, and assembling will be included. The workshop will be taught by Douglas Johnson, Studio Arts Department, University of Wisconsin, River Falls, and assistants.

\$75.00 plus a laboratory fee of \$16.00 — 4 credits

TECHNICAL THEATRE (Scene Design and Construction Laboratory) (Th 5-515) • July 2 - 6

This workshop, conducted by Professor George E. Bogusch, will present practical problems in scene design related to performing spaces, and problems encountered in educational and community theatre. The course format will include sessions on individual design problems faced by students in their upcoming productions. Evenings will be devoted to special problem-solving sessions related to the student's own productions. The construction laboratory will concentrate on practical, moveable set pieces such as arches, pillars, trees, rocks, and stylized furniture suitable for use in arena and platform applications as well as more conventional stages. Basic concepts of design will deal with adaptability, economy, and stylistic concepts. The course is designed for school and community theatre people without an art background; no previous design or art experience is necessary.

\$60.00 — 2 credits

POP CHORUS (MuEd 5-750, Section 2) • July 9 - 13

This 1-week workshop to be conducted by Norman Luboff, internationally known choral conductor, is designed specifically for public school and church choral directors who are presently directing, or are interested in beginning, pop or swing choirs. Mr. Luboff will present repertoire, rehearsal techniques, and arranging for pop choruses as well as for small instrumental ensembles required for accompaniment. Material will be included suitable for both school and church choruses. Most of the repertoire will be read and evaluated by the students enrolled in the course; however, rehearsal techniques will be applied to several guest choirs and instrumentalists. Norman Luboff is known internationally for his work with professional choral groups, as an arranger of choral material, and as a successful clinician.

\$60.00 plus a laboratory fee of \$10.00 — 3 credits

TWENTIETH-CENTURY WRITERS (Engl 5-610) • July 23 - 27

A 1-week workshop covering the contemporary British and Irish dramatists. The period since 1956 has seen a major revival of creativity in the British drama, resulting in plays which have received international production and discussion. Many of these have passed into the repertoire of American theatre and are to be found in college and high school English and theatre syllabi. The principal dramatists of the movement (John Osborne, Arnold Wesker, John Arden, Harold Pinter, Brendan Behan, Samuel Beckett, and Tom Stoppard) will be studied and discussed in this course both analytically and in the context of the social and political changes that have taken place in England since 1965. The course will be taught by John Dennis Hurrell, professor of English, University of Minnesota.

\$75.00 — 4 credits

THEATRE (Th 5-321) • July 30 - August 3

A 1-week workshop focusing on the practical application of techniques used in the director-actor relationship, including the use of improvisation and extension. Special emphasis will be placed on solving specific actor problems. The course will involve both theory and practice, with students preparing scenes and working out actor-director problems that arise in these scenes. The workshop will be conducted by Warren Frost, director, writer, and actor. Mr. Frost has appeared in television, films, and on stage in such varied capacities as "A Play" by Solzhenitsyn at the Guthrie Theatre, in "Slaughterhouse Five" currently showing in local movie theatres, as a one-man show "An Evening with Mark Twain," and as director for a number of theatres, including the University of Minnesota Theatre, Theatre in the Round, and Chimera Theatre. He is also professor in the Theatre Department at the University of Minnesota where he teaches classes in acting, directing, and playwrighting.

\$60.00 — 2 credits

THEATRE (Research) (Th 8-990) • July 30 - August 3

A course designed for graduates, and near graduates, who have worked in the area of stage movement and dance. Content will include review of new developments, with each participant encouraged to present material drawn from his own recent work, or from materials which he has developed. Where possible, people familiar with the national scene will be invited as guest lecturers. Professor Robert Moulton of the University of Minnesota's Department of Theatre Arts will conduct the course. Prerequisite courses are History and Technique of Stage Movement (Th 8-325, 8-327, or 8-328) or instructor's permission from: Professor Robert Moulton, 304A Westbrook Hall, University of Minnesota, Minneapolis, Minnesota 55455.

\$60.00 — 2 credits

POTTERY (Arts 5-280) • July 30 - August 11

A studio course in pottery taught by Douglas Johnson of the University of Wisconsin, River Falls. Accent will be on salt glazing as well as raku firing, bon firing, fuel oil firing, kiln and potter's wheel construction, clay mixing, wheel throwing, and hand-building. Beginners to professionals accepted.

\$75.00 plus a laboratory fee of \$16.00 — 4 credits

JAZZ AND 20TH-CENTURY MUSICAL STYLES (Mus 5-670) • August 6 - 10

A 1-week workshop designed primarily for public school music teachers which will examine the relationships between jazz and 20th-century musical styles. Units of jazz study will be based upon stylistic comparisons rather than chronological developments. Resource materials will consist of selected readings, listening assignments, and several live demonstrations by guest jazz musicians. Class participants will be encouraged to construct syllabi for use in public school teaching situations. The workshop will be con-

ducted by Richard Sieber, former conductor of the University of Minnesota Symphony Orchestra, now coordinator of Continuing Education in Music at the University of Minnesota.

\$60.00 — 3 credits

SUZUKI TALENT EDUCATION (Mus 5-631) • August 6-10

A 1-week workshop conducted by Mark Bjork, coordinator of Suzuki string instruction at the University of Minnesota's MacPhail Center for the Performing Arts. The workshop will give an introduction to Shinichi Suzuki's Talent Education movement, its philosophy and application to teaching violin to very young children. Special emphasis will be placed on teaching techniques at beginning levels. Children from MacPhail Center will demonstrate in various contexts, as appropriate. Audio-visual aids will be used, including audio and video tapes.

\$60.00 — 3 credits

WORKSHOP IN MUSICAL THEATRE (Voice and Movement) (Th 5-334) • August 13-17

For teachers, directors, and performers, this workshop will cover basic techniques of stage movement, acting styles, and their application to various forms of musical theatre. Sessions on dance steps used in musical theatre, choreography, and coaching techniques for actors and dancers will be offered as well as lecture/demonstration sessions on the various types of musical comedies ranging from operettas through "vaudeville musicals," "back-home musicals," and "book musicals." Particular attention will be given to needs of teachers and directors with limited experience. Offered concurrently with Mus 5-467, the course will combine students and faculty of both courses for participation sessions in which sections of musicals will be staged and rehearsed, giving participants an opportunity to experience the styles and techniques as they are applied in actual practice. Robert Moulton, professor of theatre at the University of Minnesota and choreographer for shows at the Guthrie Theatre, the Contemporary Canadians, and the Winnipeg Ballet, among others, will be the instructor. Vern Sutton, professor of music at the University of Minnesota and leading tenor with the Minnesota Opera Company (formerly Center Opera) will conduct sessions on chorus and solo music.

\$60.00 — 2 credits

WORKSHOP IN MUSICAL COMEDY (Mus 5-467) • August 13-17

For music teachers, conductors, and performers in musical theatre, this intensive workshop will cover training of soloists and chorus in basic techniques of musical comedy performance. Sessions in singing techniques, styles of performance, and movement/dance for musical theatre will be taught by Vern Sutton, professor of music at the University of Minnesota and leading tenor with the Minnesota Opera Company (formerly Center Opera). The workshop will cover various types of musical comedy, ranging from operetta to contemporary Broadway musical forms. Offered concurrently with Th 5-334, the course will combine students in both groups for sessions in which sections of musicals will be staged and rehearsed, giving participants an opportunity to experience styles and techniques as they are applied in actual practice. Professor Robert Moulton, of the University of Minnesota's Department of Theatre Arts and internationally known choreographer, will lead sessions on choreographing and coaching leads and dancers. Special problem-solving sessions will be held each evening. Daytime sessions will include demonstration, participation, and lecture/seminar.

\$60.00 — 2 credits

COURSE APPLICATION FORM

Mail to:

**Prof. Dale D. Huffington
Summer Arts Study Center
University of Minnesota
1128 La Salle Avenue
Minneapolis, Minnesota 55403**

**Telephone:
(612) 373-4947
or
373-1925**

Please enroll me in the following:

- | | |
|---|---|
| <input type="checkbox"/> Photography (June 18) | <input type="checkbox"/> Pop Chorus (July 9) |
| <input type="checkbox"/> Early Music (June 18) | <input type="checkbox"/> 20th-Century Writers (July 23) |
| <input type="checkbox"/> Humanities (June 18) | <input type="checkbox"/> Theatre (Frost) (July 30) |
| <input type="checkbox"/> Orff Schulwerk (June 25) | <input type="checkbox"/> Theatre (Moufton) (July 30) |
| <input type="checkbox"/> Technical Theatre (June 25) | <input type="checkbox"/> Pottery (July 30) |
| <input type="checkbox"/> Advanced Photography (June 25) | <input type="checkbox"/> Jazz (August 6) |
| <input type="checkbox"/> Landscape Painting (July 2) | <input type="checkbox"/> Suzuki (August 6) |
| <input type="checkbox"/> Technical Theatre (July 2) | <input type="checkbox"/> Musical Theatre (August 13) |
| <input type="checkbox"/> Glassblowing (July 2) | <input type="checkbox"/> Musical Comedy (August 13) |

Name _____

Address _____

City _____ State _____ Zip _____

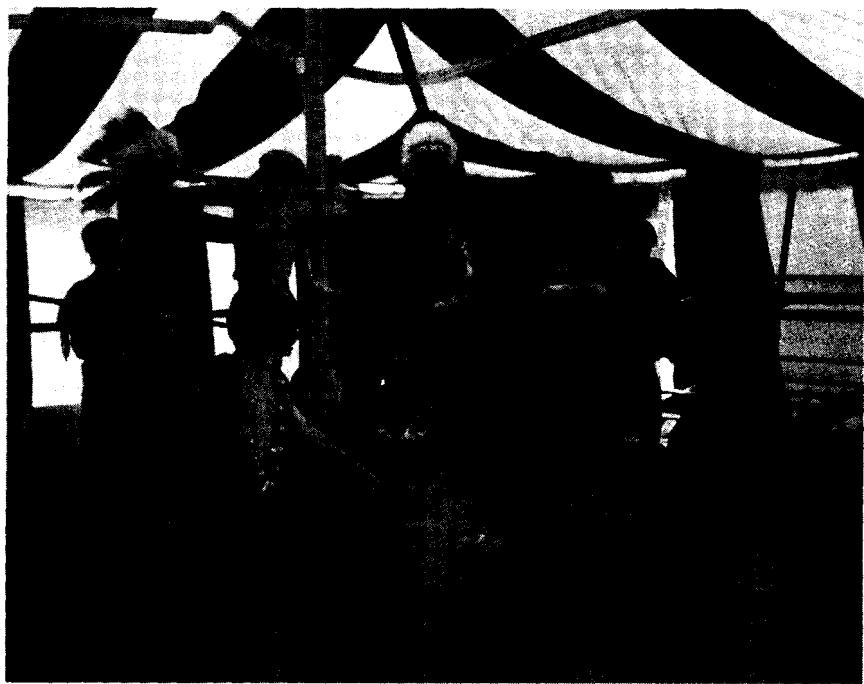
Position _____ Firm or Institution _____

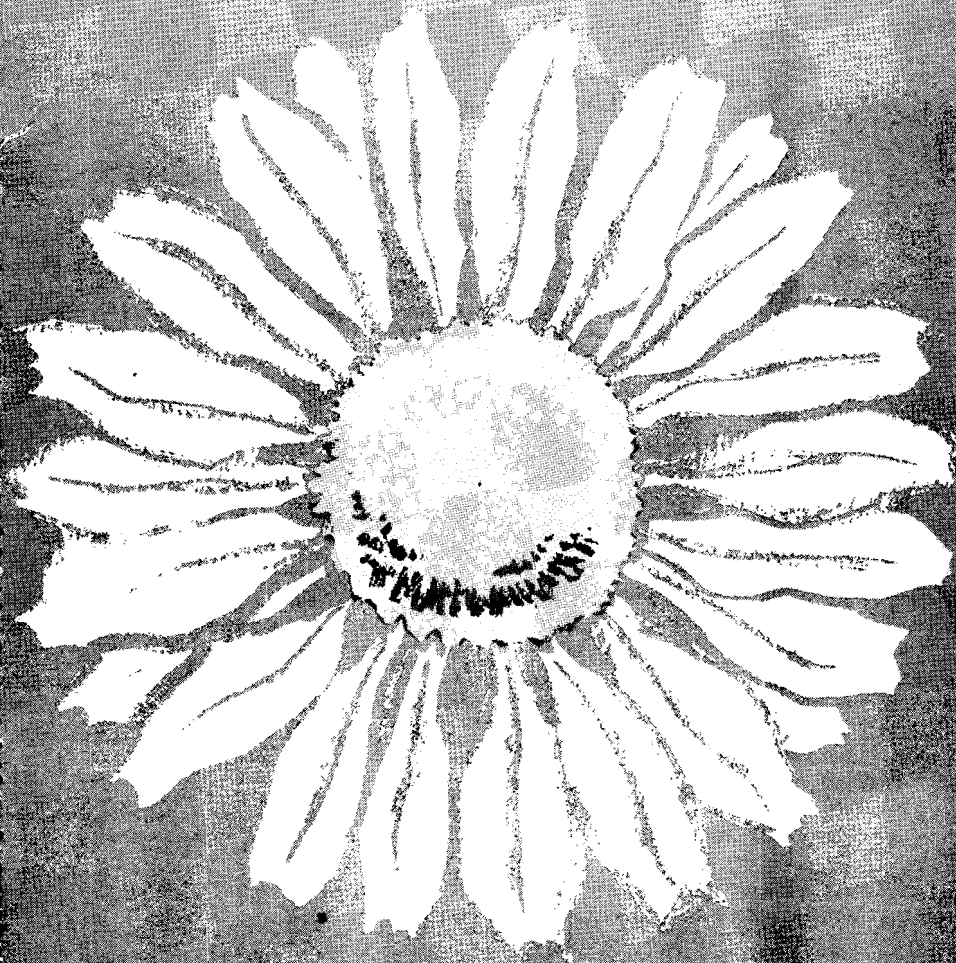
Tuition Enclosed \$ _____

Checks for tuition are payable to the University of Minnesota and must accompany this application form. Further information on courses will be mailed after receipt of this application form and the full tuition.

**Make Reservations for Room and Board Directly with: QUADNA MOUNTAIN RESORT
HILL CITY, MINNESOTA 55748**







First Term Courses
Second Term Courses

College of Agriculture

There are many courses, primarily for graduate students, in the College of Agriculture. 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 section on College of Education, pages 114-115).

Included in the summer program are readings, seminars, special problems, and concentrated courses as well as regularly scheduled classes.

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 in which they will be working.

Agricultural and Applied Economics (AgEc)

FIRST TERM

5-110 AGRICULTURAL ECONOMIC ANALYSIS

The economic behavior of households, firms, and industries with special applications to agriculture; competition and monopoly power; factors affecting pricing and production decisions. (3 cr; not available to students majoring in agricultural economics; prereq 1-030; III-IV MTWThF [meets June 18-July 6 only]; HckrH 111) Helmberger

8-200 GENERAL SEMINAR: AGRICULTURAL ECONOMICS

(3 cr; hrs and rm ar) Staff

SECOND TERM

8-201 GENERAL SEMINAR: AGRICULTURAL ECONOMICS

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

Agricultural Engineering

Agricultural Engineering Technology (AgEn)

FIRST TERM

1-020 AGRICULTURAL SHOP-METAL WORK

Arc and oxyacetylene welding, soldering use and conditioning of metalworking tools and the identification and characteristics of metals used in farm machinery. \$4 lab fee. (4 cr; prereq Chem 1-004 or #; 2 lect and 6 lab hrs per wk; I-III MTWThF, I-IV F; AgEng 20 and 35) Clarke

5-020 PROGRAM PLANNING AND INSTRUCTIONAL METHODS IN AGRICULTURAL MECHANICS

Planning and designing high school vocational agriculture facilities, organizing equipment, tools, supplies and storage as demanded by the instructional program. Administering the agricultural mechanics program. Developing teaching techniques and program planning as related to the student-supervised study programs in agricultural mechanics. \$4 lab fee. (4 cr; prereq 10 cr in agricultural engineering technology, AgEd 3-031 or ¶AgEd 3-031; hrs and rm ar; AgEng 218) Bear

5-030 PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE-AGRICULTURAL TRACTOR AND ENGINE POWER

Principles and practices pertaining to the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment used in agricultural mechanics as pertaining to the specific instructional program. (1-3 cr per qtr; prereq 5-020 or ¶; special problem as ar; AgEng 218) Bear

5-034 PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE-NATURAL RESOURCES DEVELOPMENT AND MANAGEMENT

Principles and practices pertaining to the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment used in agricultural mechanics as pertaining to the specific instructional program. (1-3 cr per qtr; prereq 5-020 or ¶; special problem as ar; AgEng 218) Bear

SECOND TERM

5-030 PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE-AGRICULTURAL TRACTOR AND ENGINE POWER

Principles and practices pertaining to the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment used in agricultural mechanics as pertaining to the specific instructional programs. (1-3 cr per qtr; prereq 5-020 or ¶; special problem as ar; AgEng 218) Bear

5-035 PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE-METAL FABRICATION MATERIALS AND TECHNIQUES

Principles and practices pertaining to the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment used in agricultural mechanics as pertaining to the specific instructional programs. (1-3 cr per qtr; prereq 5-020 or ¶; special problem as ar; AgEng 218) Bear

Agromony and Plant Genetics (Agro)

Agromony

FIRST AND SECOND TERMS

8-010* RESEARCH IN AGRONOMY

Problems in physiology and production of crop plants. (Cr ar; prereq ¶) Staff

Plant Breeding

FIRST AND SECOND TERMS

8-310* ORIENTATION TO FIELD CROP BREEDING

Field study of plant breeding programs and techniques. (1 cr; prereq 5-020 or ¶) Lambert

8-330* RESEARCH IN PLANT GENETICS

(Cr ar) Staff

Animal Science (AnSc)

FIRST TERM

3-221 ANIMAL BREEDING FOR VOCATIONAL AGRICULTURE TEACHERS

Application of qualitative genetic principles to animal breeding. Introduction to quantitative genetics. Concepts of livestock improvement through breeding and selection systems. (3 cr, §3-220; 1 MTWThF June 18-July 6; PetH 110) Rempel

5-710 SPECIAL PROBLEMS

Research in an area of animal science under the supervision of a staff member. A written report of the research is required. (Cr ar; open to students who have completed pertinent prereqs; prereq #) Staff

8-810* RESEARCH IN ANIMAL SCIENCE

Research including experimental studies in the disciplines associated with animal production and research with special emphasis on interdisciplinary studies embracing environmental and managerial considerations. (Cr and hrs ar; prereq #) Staff

8-820* RESEARCH IN ANIMAL GENETICS

Research in quantitative genetics, cytogenetics, and other areas related to animal breeding. (Cr and hrs ar; prereq #) Staff

8-830* RESEARCH IN ANIMAL PHYSIOLOGY

Individual research under faculty direction. Topics to be determined by consultation; may be a specialized aspect of a thesis problem or an independent problem of mutual interest to graduate student and adviser. (Cr and hrs ar; prereq #) Staff

8-840* RESEARCH IN ANIMAL NUTRITION

Research in selected areas of animal nutrition. Research topics and animal species determined by consultation. (Cr and hrs ar; prereq #) Staff

8-850* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY

Individual, original research under staff direction on selected problems involving the chemical, biochemical, and physiological aspects of muscle and meat technology. The topic may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser. (Cr and hrs ar; prereq #) Staff

SECOND TERM

See First Term for the following courses: 5-710, 8-810*, 8-820*, 8-830*, 8-840*, 8-850*.

Entomology, Fisheries, and Wildlife‡‡

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.

Entomology (Ent)

FIRST TERM

3-100 ENTOMOLOGICAL TECHNIQUES

Practical laboratory instruction in mounting, preservation of insect larvae, preparation of microscopic mounts of minute insects; labeling, classifying, and cataloging specimens of insects for scientific study. (Cr ar; prereq 3-175 or equiv, #) Staff

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

5-022 HOUSE AND GARDEN INSECTS

Designed to provide a background in the recognition and life history of commonly encountered Minnesota insects. Will include some lectures by selected faculty and short field trips. Intended for individuals interested in learning about insects. \$4 lab fee. (3 cr; limited to 20 students, reserved in CofH 130; 3 lect and 6 lab hrs per wk; VI-VIII MWTh; EntFW 485) Price

8-503* RESEARCH IN ENTOMOLOGY

(Cr ar) Hodson, Brooks, Chiang, Cook, Cutkomp, Furgala, Harein, Kulman, Peterson, Price, Richards, Radcliffe

SECOND TERM

3-100 ENTOMOLOGICAL TECHNIQUES

See First Term.

8-503* RESEARCH IN ENTOMOLOGY

See First Term.

Fisheries and Wildlife (FW)

FIRST AND SECOND TERMS

8-367* RESEARCH IN FISHERY BIOLOGY

(Cr ar) Smith, Underhill, Waters

8-380* RESEARCH IN WILDLIFE BIOLOGY

(Cr ar) Frenzel, Marshall, Tester, Cooper, Peek

Food Science and Nutrition (FScN)

FIRST TERM

HE 5-392 READINGS IN NUTRITION

Survey of literature in the field. Oral and written reports. (2 cr; limited to 15 students; reserved in CofH 130; prereq 5-361 and #; hrs and rm ar) Morse and staff

5-311 SPECIAL PROBLEMS IN FOOD CHEMISTRY

Laboratory or library research on problems related to chemistry, applied to foods or food processing. \$4 lab fee. (1-5 cr; hrs ar) Morr, Reineccius

5-321 SPECIAL PROBLEMS IN DAIRY AND FOOD MICROBIOLOGY

Laboratory or library research on problems related to the microbiology of dairy and food products. \$4 lab fee. (1-5 cr; prereq sr or #; hrs ar) Busta, McKay, Tatini

5-561 SUPERVISED INDUSTRY PRACTICE

Practical training and experience in some operational phase of the dairy and food industries. Includes a minimum of 2 months' employment in an approved position and written reports. (4 cr; prereq 15 cr and #) Thomas

5-571 SPECIAL PROBLEMS IN FOOD MANUFACTURING

Individual laboratory or library research on chemical, physical, and engineering problems involved in processing and utilization of food products. \$4 lab fee. (1-5 cr; prereq sr or #; hrs ar) Staff

5-581 INTERNATIONAL FOOD TECHNOLOGY

Independent study of food processing problems and developments throughout the world. The relation of food technology to adequate feeding of peoples of the world will be emphasized. (3-4 cr; prereq sr; hrs ar) Thomas, Morris

HE 8-396 PROBLEMS: NUTRITION

Independent study and written reports. (1-5 cr; prereq #; hrs and rm ar) Morse and staff

SECOND TERM

- HE 5-392 READINGS IN NUTRITION
See First Term.
- 5-311 SPECIAL PROBLEMS IN FOOD CHEMISTRY
See First Term.
- 5-321 SPECIAL PROBLEMS IN DAIRY AND FOOD MICROBIOLOGY
See First Term.
- 5-561 SUPERVISED INDUSTRY PRACTICE
See First Term.
- 5-571 SPECIAL PROBLEMS IN FOOD MANUFACTURING
See First Term.
- 5-581 INTERNATIONAL FOOD TECHNOLOGY
See First Term.
- HE 8-396 PROBLEMS: NUTRITION
See First Term.

Horticultural Science (Hort)

FIRST TERM

- 5-001 HORTICULTURE CURRICULUM DEVELOPMENT
Development and application of curriculum for vocational horticulture. (3 cr; intended primarily for vocational horticulture instructors; II-IV MTWThF; 423 HortS) Staff

Plant Pathology (PIP)

FIRST AND SECOND TERMS

- 8-090* RESEARCH IN PLANT PATHOLOGY
Special assignment of work in laboratory and field problems in pathological research. (Cr ar) Wood, Anderson, Christensen, French, Kennedy, Kernkamp, Kommedahl, MacDonald, Mirocha, Rowell, Wilcoxson, Banttari
- 8-110* PROBLEMS IN MYCOLOGY
Individual research in taxonomy, ecology, and genetics of special groups of fungi. (Cr ar; prereq 5-106, 5-107) Anderson, Christensen, French
- 8-301* RESEARCH IN PLANT VIROLOGY
Identification, transmission, purification, serological or histological studies involving viruses, their host plants, and vectors. (Cr ar; prereq 5-400 or §) Banttari
- 8-401* RESEARCH IN PLANT BACTERIOLOGY
Special assignments on problems of current interest; investigations related to ecology and interaction among bacterial plant pathogens and their hosts. (Cr ar; prereq 5-400 or §) Kennedy
- 8-501* CURRENT TOPICS, PROBLEMS: PLANT NEMATOLOGY
Taxonomy or ecology of plant parasitic nematodes. (Cr ar; prereq 5-500 or §) MacDonald

Rhetoric (Rhet)

FIRST TERM

- 1-147 EFFICIENT READING
Designed for students, teachers, business or professional people of average reading ability wishing to improve speed, comprehension, and vocabulary. Techniques valu-

able 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; reserved in CofH 130; open by petition to CLA students) Holloway, Marchand, Wright

Sec 1, I MTWThF, ForH 115

Sec 2, II MTWThF, ForH 115

Sec 3, III MTWThF, ForH 115

1-222 PUBLIC SPEAKING

A practical course in the fundamentals of speechmaking. Particular emphasis upon organizing the speech and projecting it to the audience. (4 cr; limited to 20 students; reserved in CofH 130; prereq satisfaction of freshman communication requirements; II MTWThF; AgEng 307) Connolly

3-270 SPEECH: SPECIAL PROBLEMS

Designed for supervised reading and research on advanced speech-communication topics not covered in regularly scheduled speech offerings. (1-5 cr; prereq #) Connolly

3-374 HUMANITIES: SPECIAL PROBLEMS

Primarily for supervised reading and research on topics not covered in regularly scheduled humanities offerings. (1-5 cr; prereq #) Marchand

3-562 SCIENTIFIC AND TECHNICAL WRITING

Methods of exposition in scientific and technical writing; types of reports; audience analysis; continuous practice in report writing. (3 cr; limited to 25 students, reserved in CofH 130; either 3-562 or 3-551 is required of all students unless exempted through deptl exam; prereq jr; III MTWThF; AgEng 307) McBride

5-180 INTERNSHIP IN TECHNICAL COMMUNICATION

Designed to give technical communication majors practical on-the-job experience with communication problems. (Cr ar) Schuelke

SECOND TERM

1-147 EFFICIENT READING

See First Term. (3 cr; limited to 30 students, reserved in CofH 130; open by petition to CLA students) Price, Ferguson

Sec 1, I MTWThF, ForH 115

Sec 2, II MTWThF, ForH 115

1-251 EFFECTIVE LISTENING

Designed to increase listening comprehension by developing three central abilities. Readings, research, theory, and practice. (3 cr; limited to 25 students, reserved in CofH 130; II MTWThF; AgEng 307) Steil

3-270 SPEECH: SPECIAL PROBLEMS

See First Term. (1-5 cr; prereq #) Steil

3-374 HUMANITIES: SPECIAL PROBLEMS

See First Term. (1-5 cr; prereq #) Price

3-551 PROFESSIONAL WRITING

Projects and reports in professional communication: the résumé, application letter, interview; study of professional journals; the review of literature; specialized bibliographic tools; the feature article. (3 cr; limited to 25 students, reserved in CofH 130; either 3-551 or 3-562 is required of all students unless exempted through deptl exam; prereq jr; III MTWThF; AgEng 307) Horberg

5-165 STUDIES IN ORGANIZATIONAL COMMUNICATION, CONFLICT, AND CHANGE

The roles of internal and external organizational communication, conflict-problem identification, and change processes will be the focal points of this course. Participants will first examine contemporary theory and research in organizational development and then investigate methods of problem identification and diagnosis. The course will end with a study of change processes and applications to actual organizational settings. (4 cr; limited to 30 students, reserved in CofH 130; prereq freshman communication or equiv; IV MTWThF; AgEng 307) Schuelke

5-180 INTERNSHIP IN TECHNICAL COMMUNICATION

See First Term. (Cr ar) Schuelke

Soil Science (Soil)

FIRST TERM

5-114* SPECIAL PROBLEMS IN SOILS

Research, readings, instruction. (1-5 cr per term [10 cr may]; prereq 1-122 or equiv)
Martin, Adams, Arneman, Baker, Blake, Caldwell, Farnham, MacGregor, Rust,
Schmidt, Gast, Grava, Ham, Grigal

5-532* SOILS AND THE ECOSYSTEM

The functional and structural aspects of soils as a component of the ecosystem. Interrelationships of soil and vegetation on the landscape. (5 cr; limited to 20 students, reserved in CofH 130; prereq course in ecology; may be taken in place of EBB 5-819; taught in Itasca Biology Session).

8-124* RESEARCH PROBLEMS IN SOILS

Individual laboratory or field work in 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, Adams, Arneman, Baker, Blake, Caldwell, Farnham, MacGregor, Rust, Schmidt, Gast, Grava, Ham, Grigal

SECOND TERM

5-114* SPECIAL PROBLEMS IN SOILS

See First Term.

8-124* RESEARCH PROBLEMS IN SOILS

See First Term.

College of Biological Sciences

The College of Biological Sciences provides a visible structure for the coordination and unification of basic biological research and training activities throughout the University on the Twin Cities Campus. Information concerning its undergraduate programs leading to a bachelor of science degree may be obtained from the college's bulletin or the college office in P-190 Kolthoff Hall and 123 Snyder Hall.

The college is composed of the Departments of Biochemistry, Biology, Botany, Ecology and Behavioral Biology, Genetics and Cell Biology, and Zoology, as well as the Dight Institute of Human Genetics and the James Ford Bell Museum of Natural History. The course offerings listed are available on the Twin Cities Campus to all eligible students through the University of Minnesota college in which they are registered.

Many summer courses in the biological sciences are offered through the Biology Sessions held at the Lake Itasca Forestry and Biological Station. Students interested in studying at a field station should refer to the section on the Biology Session and to the special bulletin available upon request from: Summer Session, 135 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Biochemistry (BioC)

FIRST TERM

3-990 UNDERGRADUATE RESEARCH

Research problems for B.S. thesis (optional). (1-3 cr; prereq sr biochemistry maj) Staff

5-970 DIRECTED STUDIES

Enables students to make up certain deficiencies in background course work. (1-3 cr; prereq #, Δ) Staff

8-990 GRADUATE RESEARCH

Research problems in various fields in biochemistry represented by staff interests. (2-5 cr; prereq #; hrs ar) Dagley, Gander, Henderson, Jenness, Kirkwood, Liener, Schultze, Bloomfield, Chapman, Glass, Lovrien, Warner, Anderson, Fuchs, Nelsestuen, Woodward

SECOND TERM

3-990 UNDERGRADUATE RESEARCH

Research problems for B.S. thesis (optional). (1-3 cr; prereq sr biochemistry maj) Staff

5-001 INTRODUCTION TO BIOCHEMISTRY

Introduction to the biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents, and cellular regulatory mechanisms. (4 cr, §Biol 3-021; limited enrollment, reserved in Kolth P-190; prereq Chem 3-302, IV MTWThF; Owre 113) Fuchs

5-970 DIRECTED STUDIES

Enables students to make up certain deficiencies in background course work. (1-3 cr; prereq #, Δ) Staff

8-990 GRADUATE RESEARCH

Research problems in various fields in biochemistry represented by staff interests. (2-5 cr; prereq #; hrs ar) Dagley, Gander, Henderson, Jenness, Kirkwood, Liener, Schultze, Bloomfield, Chapman, Glass, Lovrien, Warner, Anderson, Fuchs, Nelsestuen, Woodward

Biology (Biol)

FIRST TERM

1-011 GENERAL BIOLOGY

The importance of biology and its relationship to the life of man. \$4 lab fee. (5 cr; reserved in JohH 12 or CofH 130; V MTWThF, BoB 6; lab 1, III-IV MTWTh, lab 2, VI-VII MTWTh, Kolth S-160, ar) Bland

3-012 PLANT BIOLOGY

Comparative study of growth, development, and function in plants; emphasis on adaptations that have evolved in various groups of plants providing suitable means of support; transport of materials, nutrition, and reproduction; evolution and diversity of plant life. \$4 lab fee. (5 cr; limited to 40 students, reserved in Kolth P-190; prereq 1-011, Chem 1-005; V MTWThF, BioSci 151; VI-VIII MWF, BioSci 6) Ar

3-041 ECOLOGY

Interactions of plant and animal populations and their environments. The organization, functioning, and development of ecological systems; population growth and regulation. Modern man's impact on the biosphere. \$4 lab fee. (4 cr; limited to 40 students, reserved in Kolth P-190; prereq 1 qtr calculus, 3-032 or #; VI MTWThF, Owre 113; lab 1, VII-VIII TTh, lab 2, VII-VIII MW, Kolth S-187) Taylor

SECOND TERM

1-103 GENERAL BOTANY

Levels of organization of plants, plant function, plant growth and development, plant reproduction. \$4 lab fee. (5 cr; limited to 40 students, reserved in JohH 12 and CofH 130; prereq 1-011; IV MTWThF, McNH 227; lab 1, II-III MTWTh, BioSci 182; lab 2, VI-VII MTWTh, BioSci 182) Abbe

1-106 GENERAL ZOOLOGY

Survey of animal phyla; considerations of structure, function, behavior, adaptation, and evolutionary relationships. \$4 lab fee. (5 cr; limited to 96 students, reserved in JohH 12 and CofH 130; prereq 1-011; V MTWThF, BoB 6; lab 1, VI-VIII MW, Kolth P-168, P-174, lab 2, VI-VIII TTh, Kolth P-168, P-174) Underhill

3-011 ANIMAL BIOLOGY

Survey of types of animals; emphasis on the varied ways in which different animals have solved similar problems. \$4 lab fee. (5 cr; limited to 40 students, reserved in Kolth P-190; prereq 1-011, Chem 1-005; VI MTWThF, Z 110; lab 1, II-IV TTh, Z 101D, lab 2, VII-IX TTh, Z 101D) Herman

3-021 BIOCHEMISTRY

Introduction to the biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents, and cellular regulatory mechanisms. (4 cr; limited enrollment, reserved in Kolth P-190; prereq 1-011, Chem 3-302; IV MTWThF; Owre 113) Fuchs

3-051 BIOLOGY AND THE FUTURE OF MAN

A nontechnical discussion of biological factors affecting the quality of life—pollution, chemical and biological warfare, population growth, food supply, resource sufficiency, value of wilderness, genetics and eugenics, public health, aging, behavior control, and biological aspects of ethics, morals, and societal organization. (4 cr; offered SN only; II MTWThF; BoB 6) Pratt

Botany (Bot)††

FIRST TERM

5-141 SURVEY OF PLANT PHYSIOLOGY

A critical study of the physiological processes which occur in living plants, with emphasis on higher plants. Growth and development, energy relations, mineral nutrition, water relations, respiration, photosynthesis, and nitrogen metabolism. (3 cr; prereq Biol 1-011 or 3-012, course in organic chemistry, 1 yr physics; V MTWThF; BioSci 12) Soulen

5-142 PLANT PHYSIOLOGY LABORATORY

A laboratory course to accompany Bot 5-141. \$4 lab fee. (2 cr; limited to 18 students, reserved in BioSci 220; prereq 5-141 or ¶5-141; VI-VIII TTh; BioSci 192) Soulen

8-990 RESEARCH PROBLEMS

(Cr ar; prereq #) Staff

Genetics and Cell Biology (GCB)

FIRST TERM

3-022 GENETICS

The mechanisms of heredity, their implications for biological populations, and applications to practical problems. (4 cr; primarily designed for students other than CBS majors and CLA biology majors; prereq Biol 1-002, 1-011 or equiv; II MTWThF; PalmC 10)

3-970 INDEPENDENT STUDY

Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature. (Cr ar; prereq #) Staff

3-990 LABORATORY RESEARCH

Individual projects on selected topics and problems. (Cr ar; prereq #) Staff

5-022 GENETICS

Same as GCB 3-022. (3 cr [offered for grad students at reduced cr]; not open to grad students in genetics; II MTWThF; PalmC 23)

5-023 GENETICS AND THE BIOLOGY OF POPULATIONS

Emphasis is on elementary development of basic concepts in population genetics and population biology. Topics include population expansion and deterioration of the environment, analysis of gene frequency changes under natural and relaxed selection, genetic loads and reproductive excess, population genetics of quantitative characters, inbreeding, and the genetics of population isolates. Examples are to be drawn largely from human populations. (3 cr; III MTWThF; PalmC 10) Hartl

8-990 RESEARCH

(Cr ar) Staff

SECOND TERM

3-970 INDEPENDENT STUDY

Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature. (Cr ar; prereq #) Staff

3-990 LABORATORY RESEARCH

Individual projects on selected topics and problems. (Cr ar; prereq #) Staff

8-990 RESEARCH

(Cr ar) Staff

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

Zoology (Zool)††

FIRST TERM

3-990 INDIVIDUAL WORK IN SOME SPECIAL DISCIPLINE

(Cr ar; prereq 1-013 or Biol 1-106 or Biol 1-002 or Biol 3-011 and §) Staff

8-990 RESEARCH

(Cr ar) Staff

SECOND TERM

3-990 INDIVIDUAL WORK IN SOME SPECIAL DISCIPLINE

See First Term.

8-990 RESEARCH

See First Term.

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

Biology Session

Held at Lake Itasca Forestry and Biological Station

During two 5-week terms of the Summer Session (June 17-July 21 and July 22-August 25) 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 cooperatively by various departments in the College of Agriculture and the College of Biological Sciences. 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 the *Lake Itasca Biology Session Bulletin*, describing in detail the opportunities and facilities at the station, write to: Director of Summer Session, 135 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.

ADMISSION AND REGISTRATION

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

Course work taken at the Itasca Biology Session may be considered for resident requirement at the University of Wisconsin 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 *Lake Itasca Biology Session Bulletin*. This Request for Reservation form should be mailed to: Chairman of Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455. Assignments to classes and housing will be verified by April 1. Late applications will be accepted for classes that are not closed, up to the time of registration. 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 17 or July 22.

FEES AND EXPENSES

The following fees are payable by each registrant on or before June 17 or July 22 and must be paid before registration is completed:

Tuition Fee \$12.50 per credit

Student Services Fee	13.10 per term
Laboratory Fee	8.50 per term

Graduate students may register for thesis-only upon payment of \$46 tuition per term and required student services 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, on the basis of the experience of other groups of students, it is estimated that board which is on a cost basis will be approximately \$100 for the 5 weeks. A charge of \$20 per term is made for room in the cabins of the station and is to be paid to the chairman during the first week of each term.

Laboratory fee includes the use of microscopes, nets, boats, and various kinds of equipment and supplies.

The estimated cost of \$260 for each 5-week term does not include books, various class supplies, traveling expenses including class field trips, clothing, laundry, and minor incidental personal expenses.

Tuition and fees are payable on or before June 17 and July 22. After June 17 or July 22 the late fee will be charged according to the following schedule:

June 18-20 or July 23-25	\$ 6.00
June 21-23 or July 26-28	10.00
Thereafter	20.00

No registration will be accepted after June 17 or July 22 without the approval of the chairman. Fee statements dated June 17 may be paid on June 18, without penalty. However, fee statements dated June 18 will carry the late fee described above.

Biology (Biol)

FIRST TERM

5-890 RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY; OR SOIL SCIENCE; OR ZOOLOGY

(Cr ar; prereq #) Staff

SECOND TERM

5-890 RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY; OR SOIL SCIENCE; OR ZOOLOGY

(Cr ar; prereq #) Staff

Botany (Bot)

FIRST TERM

3-990 RESEARCH PROBLEMS

(1-5 cr; prereq major in biological sciences, #) Staff

- 5-801 SUMMER FLORA OF MINNESOTA**
(5 cr; limited to 20 students, reserved in CofH 130; prereq course in taxonomy; MTh) Morley
- 5-811 FRESHWATER ALGAE**
(5 cr; limited to 20 students, reserved in CofH 130; prereq 10 cr in botany, biology, or zoology; TF) Schlichting
- 8-990 GRADUATE RESEARCH PROBLEMS**
(Cr ar; prereq #) Staff

SECOND TERM

- 3-990 RESEARCH PROBLEMS**
(1-5 cr; prereq major in biological sciences, #) Staff
- 5-805 AQUATIC FLOWERING PLANTS**
(5 cr; limited to 20 students, reserved in CofH 130; prereq course in taxonomy; WS) Thieret
- 8-970 SPECIAL TOPICS: BIOLOGY OF THE FERNS**
(5 cr; limited to 20 students, reserved in CofH 130; prereq #; undergraduates should enroll in Bot 3-970; MTh) Wagner

Ecology and Behavioral Biology (EBB)

FIRST TERM

- 5-012 WEATHER IN THE BIOSPHERE**
(5 cr, §5-024, §5-025; limited to 15 students, reserved in CofH 130; prereq 1 yr physics and course in ecology; WS) Maxwell
- 5-026 PHYSICAL ASPECTS OF FIELD BIOLOGY III**
(5 cr; limited to 5 students, reserved in CofH 130; prereq EBB 5-025 or #; hrs ar) Maxwell
- 5-812 AQUATIC ECOLOGY**
(5 cr; limited to 20 students, reserved in CofH 130; prereq 15 cr in biology, 5 cr in chemistry; MTh) Whiteside
- 5-815 FIELD ETHOLOGY**
(5 cr; limited to 15 students, reserved in CofH 130; prereq course in ornithology or ecology; TF) Oring
- 5-817 VERTEBRATE ECOLOGY**
(5 cr; limited to 15 students, reserved in CofH 130; prereq course in ecology; WS) Tester

SECOND TERM

- 5-812 AQUATIC ECOLOGY**
(5 cr; limited to 20 students, reserved in CofH 130; prereq 15 cr in biology, 5 cr in chemistry; MTh) Gorham
- 5-813 ADVANCED LIMNOLOGY**
(5 cr; limited to 12 students, reserved in CofH 130; prereq introductory course in limnology [EBB 5-812 or equiv] and ¶EBB 5-816 required; WS) Megard
- 5-814 COMMUNITY STRUCTURE AND FUNCTIONING**
(5 cr; limited to 20 students, reserved in CofH 130; prereq course in ecology; TF) Buell
- 5-816 ECOLOGY OF FRESHWATER ALGAE**
(5 cr; limited to 12 students, reserved in CofH 130; prereq Bot 5-811 or equiv and ¶EBB 5-813 required; TF) Brook

Entomology (Ent)

FIRST TERM

5-020 FIELD ENTOMOLOGY

(5 cr; limited to 15 students, reserved in CofH 130; prereq 10 cr in biology; MTh) Beer

SECOND TERM

5-130 AQUATIC ENTOMOLOGY

(5 cr; limited to 15 students, reserved in CofH 130; prereq Ent 5-020 or equiv; MTh) Berner

Plant Pathology (PIPa)

SECOND TERM

5-102 INTRODUCTORY MYCOLOGY

(5 cr; limited to 15 students, reserved in CofH 130; prereq 6 cr in botany; WS) Rogers

Soil Science (Soil)

FIRST TERM

5-532 SOILS AND THE ECOSYSTEM

(5 cr; limited to 20 students, reserved in CofH 130; may be taken in place of EBB 5-819; prereq course in ecology; MTh) Grigal

Zoology (Zool)

FIRST TERM

5-814 NATURAL HISTORY OF INVERTEBRATES

(5 cr; limited to 20 students, reserved in CofH 130; prereq Biol 1-106 or equiv; WS) Gilbertson

5-834 FIELD ORNITHOLOGY

(5 cr; limited to 15 students, reserved in CofH 130; prereq Biol 1-106 or equiv; TF) Warner

SECOND TERM

5-807 PROTOZOOLOGY

(5 cr; limited to 15 students, reserved in CofH 130; prereq Biol 1-106 or equiv; MTh) Bovee

5-819 NATURAL HISTORY OF VERTEBRATES

(5 cr; limited to 20 students, reserved in CofH 130; prereq Biol 1-106 or equiv; TF) Schmid

5-843 ANIMAL PARASITES

(5 cr; limited to 15 students, reserved in CofH 130; prereq Biol 1-106 or equiv; WS) Larson

College of Business Administration

ADMISSION

For admission to the College of Business Administration a student must have satisfied the requirements of the 2-year pre-business curriculum. These requirements may be completed at another institution. A student must have approximately 90 credits, with an overall grade average of at least "C." See the Pre-Business Planning Folder and the *College of Business Administration Bulletin*, both of which are available at 206 Business Administration Building.

Accounting (Acct)

FIRST TERM

1-050 PRINCIPLES OF ACCOUNTING I

Introduction to basic financial accounting concepts and their application to the recording and reporting of business events. (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 3rd qtr fr; no S-N grading)

Sec 1, I-II MTWF, BlegH 125, Cumming

Sec 2, III-IV MTWF, BlegH 125, Purdy

Sec 3, V-VI MTWF, BlegH 125, Purdy

Sec 4, I-II MTWF, BlegH 210, Ar

1-051 PRINCIPLES OF ACCOUNTING II

Accounting analysis and reports for management and investor decision making. (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 1-050; no S-N grading)

Sec 1, I-II MTWF, BlegH 105, Ar

Sec 2, III-IV MTWF, BlegH 105, Ar

3-101 ACCOUNTING THEORY AND PRACTICE I

The search for principles and postulates for income determination and for valuation. Includes measurement problems and funds concepts. (4 cr; limited to 35 students, reserved in BA 225; prereq 1-051; III-IV MTWF; BlegH 210) Simmons

3-201 COST ACCOUNTING

Process and standard costs, behavior of costs under varying conditions, cost allocations, variance analysis, capital budgeting. (4 cr; limited to 35 students, reserved in BA 225; prereq 1-051, MIS 3-099, OAM 3-055; I-II MTWF; BlegH 110) Gray

5-125 AUDITING PRINCIPLES AND PROCEDURES

The external and internal auditor's role and function. Includes audit standards, ethics, procedures, legal responsibilities. (4 cr; limited to 40 students, reserved in BA 225; prereq 3-102 and 3-201; III-IV MTWF; BlegH 110) Barrett

5-135 INCOME TAX ACCOUNTING

Individual, partnership, and corporation taxation; emphasizing income tax planning. (4 cr; each section limited to 35 students, reserved in BA 225; prereq 1-051)

Sec 1, I-II MTWF, BlegH 220, Jacobs

Sec 2, III-IV MTWF, BlegH 220, Jacobs

5-270 REPORTING FOR MANAGEMENT CONTROL

Responsibility accounting; transfer pricing problems, capital budgeting; management control systems. (4 cr; limited to 30 students, reserved in BA 225; prereq 3-201; I-II MTWF; BlegH 415) Zimmer

SECOND TERM

1-050 PRINCIPLES OF ACCOUNTING I

See First Term. (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 3rd qtr fr; no S-N grading)

Sec 1, I-II MTWF, BlegH 125, Ar

Sec 2, III-IV MTWF, BlegH 125, Ar

1-051 PRINCIPLES OF ACCOUNTING II

See First Term. (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 1-050; no S-N grading)

Sec 1, I-II MTWF, BlegH 210, Ricketts

Sec 2, I-II MTWF, BlegH 220, Ar

Sec 3, III-IV MTWF, BlegH 210, Ar

3-102 ACCOUNTING THEORY AND PRACTICE II

Concepts and problems in accounting for specific assets and equities. (4 cr; limited to 35 students, reserved in BA 225; prereq 3-101; III-IV MTWF; BlegH 220) Ar

5-180 ADVANCED ACCOUNTING

Consolidated statements, partnerships, fiduciary, international and fund accounting. (4 cr; limited to 40 students, reserved in BA 225; prereq 3-102; III-IV MTWF; BlegH 110) Cumming

5-310 CURRENT TOPICS IN FINANCIAL ACCOUNTING

Current topic(s) in financial accounting. Topics in Federal Income Taxation. (4 cr [may be repeated for cr]; limited to 35 students, reserved in BA 225; prereq 3-102 and 5-180; I-II MTWF; BlegH 110) White

Business Administration (BA)

FIRST TERM

3-002 BUSINESS AND SOCIETY

Examines the strategic and dynamic relations of business and society in a goals-oriented and problem-solving context. Focuses on the interfaces of business institutions with the physical environment, the social milieu, the political process, and economic activity. Gives specific attention to the on-going debate regarding national priorities and the respective roles of the private and public sectors concerning the challenges confronting U.S. society. Includes assessment of the concept, determinants, and indicators of the "quality of life" and the social responsibilities of business. (4 cr; limited to 50 students, reserved in BA 225; 10:10-11:25 MTWThF; AndH 330) Ar

Business Finance (BFin)

FIRST TERM

3-000 FINANCE FUNDAMENTALS

Provides students with a comprehensive, analytical introduction to the principal concepts in finance. After considering the general business environment, the course examines valuation theory. Then financial management decisions concerning uses and sources of funds are presented, thus introducing students to capital budgeting. The course concludes by surveying the nation's financial markets. (4 cr, \$8-000; limited to 40 students, reserved in BA 225; prereq Acct 1-051; 10:10-11:25 MTWThF; BlegH 330) Ar

3-100 FINANCIAL MANAGEMENT

A broad case-oriented course building on concepts introduced in BFin 3-000. The viewpoint of a corporation's principal financial officer is generally used. Case discussions, augmented by lectures and readings, enable students to apply finance principles in actual business situations. Students gain experience in problem definition, specification of alternatives, analysis, and decisions. Effective verbal and written communication is stressed. (4 cr, \$8-100; limited to 30 students, reserved in BA 225; prereq 3-000; 11:45-1:00 MTWThF; BlegH 330) Rosko

3-300 INVESTMENT MANAGEMENT

Provides students with a comprehensive introduction to investment decision making from the viewpoints of both individual and institutional investors. Principal focus is on risk-return relationships of various marketable securities. Presents analytical techniques of security selection and portfolio management in the context of the nation's changing securities markets. (4 cr, \$8-300; limited to 40 students, reserved in BA 225; prereq 3-000; 7:45-9:00 MTWThF; BlegH 255) Jessup

3-500 REAL ESTATE INVESTMENT ANALYSIS

Analysis of investments in real property. Economic aspects of such investments including: cash flows; accounting depreciation vs. market value depreciation or appreciation; financing methods and costs; sources of funds; measures of return on investment. Ellwood techniques. Computer models for investment analysis. Impact of property taxes on urban land use. (4 cr; limited to 40 students, reserved in BA 225; prereq Econ 1-002 or equiv; 10:10-11:25 MTWThF; BlegH 255) Rosko

8-990 READINGS AND RESEARCH IN FINANCE

Advanced readings in finance. Experimental subject areas and materials for seminar discussion. Opportunities for individualized readings and research programs developed under faculty supervision. (Cr ar; prereq consent of adviser and # in field covered) Ar

SECOND TERM

3-000 FINANCE FUNDAMENTALS

See First Term. (4 cr, \$8-000; limited to 40 students, reserved in BA 225; prereq Acct 1-051; 11:45-1:00 MTWThF; BlegH 255) Collins

3-300 INVESTMENT MANAGEMENT

See First Term. (4 cr, \$8-300; limited to 40 students, reserved in BA 225; prereq 3-000; 10:10-11:25 MTWThF; BlegH 255) Ar

8-990 READINGS AND RESEARCH IN FINANCE

See First Term. (Cr ar; prereq consent of adviser and # in field covered) Ar

Business Law (BLaw)

FIRST TERM

3-058 INTRODUCTION TO LAW, AND THE LAW OF CONTRACTS AND AGENCY

Study of the origin of law, its place in and effect upon society; the history and development of law; the systems of courts, and legal procedure. An extensive study of the law of contracts as the basic law affecting business transactions. Also a study of law affecting the relationship between principal and agent, master and servant, and employer and employee. (4 cr, \$8-158; each section limited to 50 students, reserved in BA 225; prereq Econ 1-002 or equiv) Wright

Sec 1, I MTWThF, BlegH 425

Sec 2, II MTWThF, BlegH 425

8-158 INTRODUCTION TO LAW, AND THE LAW OF CONTRACTS AND AGENCY

See BLaw 3-058. (4 cr, \$3-058; each section limited to 5 students, reserved in BA 225; prereq Econ 1-002 or equiv) Wright

Sec 1, I MTWThF, BlegH 425

Sec 2, II MTWThF, BlegH 425

Industrial Relations (IR)

FIRST TERM

3-002 INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES

Study of labor markets, manpower management, federal/state employment policy, industrial conflict resolution; processes of valuing, employing, developing, motivating, maintaining human resources. (4 cr; prereq Econ 1-001, 1-002, Psy 1-001; 11:45-1:00 MTWTh; BlegH 230) Bognanno

3-010 HUMAN RELATIONS AND APPLIED ORGANIZATION THEORY

Human relations problems arising in modern organization, approaches to solution; philosophies/theories of human relations, translation into policy; discussions, cases, role-playing, skill-building sessions. (4 cr; 7:45-9:00 MTWTh; BlegH 230) Pinto

8-000 GRADUATE TOPICS IN INDUSTRIAL RELATIONS

Selected topics. (Cr ar; prereq 8-002 and §; 11:45-1:00 MTWThF; BlegH 350) Mahoney

8-002 INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES

See IR 3-002. (5 cr; prereq Econ 1-001, 1-002, Psy 1-001; 11:45-1:00 MTWTh; BlegH 230) Bognanno

SECOND TERM

3-002 INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES

See First Term. (4 cr; prereq Econ 1-001, 1-002, Psy 1-001; 11:45-1:00 MTWTh; BlegH 230) Milkovich

3-007 COLLECTIVE BARGAINING NEGOTIATIONS AND MODERN LABOR RELATIONS

Analysis of collective bargaining negotiations between employers and/or employer associations, unions; policies of employers, unions, the public; labor movement background; labor relations practices; significant trends. (4 cr; 7:45-9:00 MTWTh; BlegH 230) Zaidi

8-002 INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES

See IR 3-002. (5 cr; prereq Econ 1-001, 1-002, Psy 1-001; 11:45-1:00 MTWTh; BlegH 230) Milkovich

8-003 ORGANIZATION AND STAFFING

Integration of organization goals/objectives with individual needs/objectives through staffing processes of manpower planning, recruitment, selection/reduction, allocation, evaluation of manpower resources. (4 cr; prereq 8-002 or §; 11:45-1:00 MTWTh; BlegH 350) England

Insurance (Ins)

FIRST TERM

3-100 RISK MANAGEMENT AND INSURANCE

How to recognize and evaluate the property, liability, and personnel risks facing a business firm, a family, or some other economic unit. The tools of risk management—retention, loss prevention, and insurance—and the conditions under which they should be used. How to select and deal with an insurer. Public policy issues: government regulation, social insurance, and automobile insurance problems. (4 cr, §8-100; 10:10-11:25 MTWThF; BlegH 230) Ar

3-200 LIFE AND HEALTH INSURANCE

Types of individual life and health insurance contracts, their uses, and their major provisions. Insurance and pension components of employee benefit plans—their

characteristics and regulation. Programming and estate planning. Business uses of individual life and health insurance. Selection of a life and health insurer. (4 cr, §8-200; prereq 3-100 or equiv; 7:45-900 MTWThF; BlegH 245) Ar

8-100 RISK MANAGEMENT AND INSURANCE

Recognizing and evaluating the property, liability, and personnel risks facing a business firm, a family, or other economic unit. Tools of risk management—retention, loss prevention, and insurance—and conditions under which they should be used. Selecting and dealing with an insurer. Public policy issues: government regulation, social insurance, and automobile insurance problems. (4 cr, §3-100; 10:10-11:25 MTWThF; BlegH 230) Ar

8-990 READINGS IN RISK MANAGEMENT AND INSURANCE

Readings useful to student's individual program and objectives but not available in regular course offerings. (Cr ar; prereq consent of adviser and \$ in field covered) Ar

Management (Mgmt)

FIRST TERM

3-001 FUNDAMENTALS OF MANAGEMENT

An evolving study of concepts, theory, research, and operational problems. Includes the principal functional areas of management. Examines provisions of necessary factors and relationships to achieve organizational objectives; establishment of goals, policies, procedures; the planning process; control systems; organizational structure and behavior; leadership. (4 cr, §8-001; limited to 50 students, reserved in BA 225; I-II MTWThF; BlegH 435) Wonder

3-002 PSYCHOLOGY IN MANAGEMENT

Centers on development and application of behavior principals; methods, and skills which underlie managerial competence in preventing and solving problems within and between individuals and groups and aid in effective utilization of human resources. Various laboratory procedures are used to highlight concepts, methods, and skills and furnish practice in applying them to management problems. (4 cr, §8-006; limited to 30 students, reserved in BA 225; III-IV MTWThF; BlegH 260) Heinen

3-004 BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION

Undergraduate level integrating course designed to develop skill in the management function of identifying and analyzing problems, establishing corporate or divisional goals, and designing realistic programs of action. Class time is devoted to case analysis and discussion. Students meet in small groups at other times to prepare cases and occasionally presentations to be made to the entire class. Students utilize data supplied in the case as well as concepts, tools, and theories (previously presented in other courses) as they bear on the solution of goal selection and strategy implementation problems. Usually the viewpoint of the general line manager (department, division, or executive level) is taken. (5 cr; limited to 35 students, reserved in BA 225; prereq sr and completion of business core or ¶final core course; I-II MTWThF; BlegH 330) Anderson

8-001 FUNDAMENTALS OF MANAGEMENT

Evolving study of concepts, theory, research, and operational problems of management. Examines necessary factors and relationships to establish and achieve organizational objectives: goals, policies, procedures; the planning process; control systems, organizational structure and behavior; leadership. Case studies to develop analytic skills and to provide insight into management problems. (4 cr, §3-001; limited to 35 students, reserved in BA 225; III-IV MTWThF; BlegH 225) Wonder

8-006 PSYCHOLOGY IN MANAGEMENT

See Mgmt 3-002. (4 cr, §3-002; limited to 30 students, reserved in BA 225; I-II MTWThF; BlegH 225) Heinen

SECOND TERM

3-001 FUNDAMENTALS OF MANAGEMENT

See First Term. (4 cr, §8-001; limited to 50 students, reserved in BA 225; III-IV MTWThF; BlegH 415) Ar

3-004 BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION

See First Term. (5 cr, limited to 35 students, reserved in BA 225; prereq sr and completion of business core or final core course; I-II MTWThF; BlegH 330) Ar

Management Information Systems (MIS)

FIRST TERM

3-098 ELEMENTARY COBOL

An introduction to programming in the COBOL language. This language is used primarily for programming of computer data processing applications. Self-paced instruction involving programming in COBOL of a structured set of problems, taking short quizzes, and participating in a programming laboratory. (1 cr; limited to 50 students, reserved in BA 225; Lab fee required; I MW; BlegH 135)

3-099 PROGRAMMING COMPUTERS USING FORTRAN

Introduction to the FORTRAN programming language which is especially useful in writing programs for data analysis. Use of prewritten computer routines for statistical analysis. Problem-oriented approach to instruction with individual pacing. Problems will be run on University computers. (1 cr; limited to 50 students, reserved in BA 225; lab fee required; I TTh; BlegH 135)

3-100 COMPUTERS AND SYSTEMS DESIGN

Concepts of computer logic and computer systems. Application of introductory software systems to the development of models for organizational decision making. The student will program decision models and basic file-oriented information systems using FORTRAN and COBOL. (4 cr, §8-208; limited to 50 students, reserved in BA 225; prereq 3-099 or 3-098 or §3-099 or §3-098, and OAM 3-055; III-IV MTWTh; BlegH 135)

SECOND TERM

5-101 INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS

An overview of the field of management information systems. Topics include the relationship of information, management and systems; what the manager should know about the computer; information systems for operational, tactical, and strategic decision making; administration and control of MIS development; and behavioral aspects of information processing. (4 cr; limited to 50 students, reserved in BA 225; IV-V MTWTh; BlegH 135)

Marketing (Mktg)

FIRST TERM

3-000 PRINCIPLES OF MARKETING

Study of the basic policy and strategy issues in marketing and the environmental factors that affect these issues. Legal, behavioral, ethical, competitive, economic, and technological factors are examined as they affect product, pricing, promotion, and marketing channel decisions. (4 cr, §8-000; each section limited to 50 students, reserved in BA 225; prereq Econ 1-002 or equiv) Walker

Sec 1, 7:45-9:00 MTWThF, BlegH 250

Sec 2, 10:10-11:25 MTWThF, BlegH 250

3-077 ADVERTISING AND SALES PROMOTION

The promotion function in marketing; media, audience, message. Establishing objectives for advertising and sales promotion, budget and media allocation decisions,

sales promotion, mix components, advertiser-agency structure and relationships, measuring advertising and sales promotion effectiveness, and socioeconomic considerations. (4 cr, §8-077; prereq 3-000; 10:10-11:25 MTWThF; BlegH 415) Ross

3-098 INTRODUCTION TO CONSUMER BEHAVIOR

Application of the behavioral sciences to understanding human behavior in the marketplace. Topics include perception, learning, attitude theory and measurement, persuasion, motivation, personality, social and cultural influences, family decision making, the social influence process, consumer decision-making strategies, managerial implications of consumer research and "consumerism." (4 cr; prereq 3-000; 11:45-1:00 MTWThF; BlegH 415) Nelson

8-000 PRINCIPLES OF MARKETING

See Mktg 3-000. (4 cr, §3-000; limited to 10 students, reserved in BA 225; prereq Econ 1-002 or equiv) Walker

Sec 1, 7:45-9:00 MTWThF, BlegH 250

Sec 2, 10:10-11:25 MTWThF, BlegH 250

8-077 ADVERTISING AND SALES PROMOTION

See Mktg 3-077. (4 cr, §3-077; prereq 3-000; 10:10-11:25 MTWThF; BlegH 415) Ross

SECOND TERM

3-000 PRINCIPLES OF MARKETING

See First Term. (4 cr, §8-000; each section limited to 50 students, reserved in BA 225; prereq Econ 1-002 or equiv; 10:10-11:25 MTWThF; BlegH 250) Sauter

3-075 SALES MANAGEMENT

Management of the personal selling function, including sales organization; selection, training, compensation, motivation, supervision, and control of the field sales force; sales forecasting; sales budgets; sales and cost analysis. Case materials used extensively. (4 cr; prereq 3-000; 11:45-1:00 MTWThF; BlegH 250) Lewis

3-085 PRICE AND PRODUCT POLICY

Managerial aspects of pricing and product policies and strategies. Methods used and factors considered in developing and updating product line and pricing decisions in both industrial and consumer markets. Topics covered include pricing and product line objectives, product planning and evaluation, managing the product line, environmental factors affecting product and pricing strategies, and quantitative aspects of product line and pricing decisions. (4 cr; prereq 3-000; 7:45-9:00 MTWThF; BlegH 250) Sauter

8-000 PRINCIPLES OF MARKETING

See Mktg 3-000, First Term. (4 cr, §3-000; limited to 15 students, reserved in BA 225; prereq Econ 1-002 or equiv; 10:10-11:25 MTWThF; BlegH 250) Sauter

8-075 SALES MANAGEMENT

See Mktg 3-075. (4 cr, §3-075; 11:45-1:00 MTWThF; BlegH 250) Lewis

8-085 PRICE AND PRODUCT POLICY

See Mktg 3-085. (4 cr, §3-085; prereq 3-000; 7:45-9:00 MTWThF; BlegH 250) Sauter

Operations Analysis and Management (OAM)

FIRST TERM

3-055 INTRODUCTION TO MANAGEMENT SCIENCES

First course in the use of analytical approaches and techniques within business contexts. Emphasis on the role of mathematical models, statistical techniques related to data acquisition, and the use of computers and computer techniques in solving organizational problems. Examples will illustrate the use of both deterministic and stochastic models. Laboratory session will include problem solving and case analysis. (4 cr; limited to 50 students, reserved in BA 225; prereq QA 1-050, MIS 3-099 or MIS 3-099, Math 1-142 or equiv; lab fee required; III-IV MTWTh; AndH 110)

Quantitative Analysis (QA)

FIRST TERM

1-050 ELEMENTARY MANAGERIAL STATISTICS

Introduction to quantitative decision making. Probabilistic and statistical techniques in decision making, data analysis, and management information systems, e.g., laws of probability, sampling, estimation, and regression. (4 cr; limited to 50 students, reserved in BA 225; prereq Math 1-141 or equiv or Math 1-131; lab fee required; I-II MTWTh; BlegH 240)

SECOND TERM

1-050 ELEMENTARY MANAGERIAL STATISTICS

See First Term. (4 cr; limited to 50 students, reserved in BA 225; prereq Math 1-141 or equiv or Math 1-131; lab fee required; I-II MTWTh; BlegH 240)

Transportation (Tran)

FIRST TERM

3-054 FUNDAMENTALS OF TRANSPORTATION

Organizational and economic aspects of the transportation system of the United States including rail, highway, air, pipeline, and water transportation. Administration of transportation by users of transportation, providers of transportation (carriers), and government. (4 cr, \$8-154; limited to 50 students, reserved in BA 225)

Sec 1, I-II MTWThF, BlegH 215, Beier

Sec 2, III-IV MTWThF, BlegH 435, Beier

College of Education

Students expecting to become candidates for a Bachelor's degree or an M.Ed. 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. Summer admissions are possible in the following B.S. degree programs: business education, distributive education, industrial education, music education, and school health education. Students interested in degree programs are encouraged to contact the Student Personnel Office in 206 Burton Hall at once to learn when students are accepted and the deadline for applications. The *College of Education Bulletin* provides current information about programs and requirements.

Summer Session students who do not expect to become candidates for an undergraduate or graduate degree do not need to present credentials (see main sections on Admission and Registration). They are classified as "summer-only." Those wishing to enter the Graduate School should apply immediately for admission to the Graduate School (see Admission information on page 11).

COUNSELING SERVICES

The staff of the Student Personnel Office of the College of Education will be available during both terms for consultation concerning admission, for information about requirements of the teaching profession, and for counseling. Appointments should be made in 206 Burton Hall.

COMMITTEE ON STUDENT SCHOLASTIC STANDING

Undergraduate and master of education students with questions concerning program adjustments and substitutions for required work should consult their advisers or a representative of the Committee on Student Scholastic Standing.

DETAILED DESCRIPTION OF COURSES

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

GRADUATE CREDIT FOR WORKSHOPS

The amount of graduate credit in workshops which may be used on a Master's degree program is limited. Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

STUDENT TEACHING

Student teaching during the summer 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 credits or less for completion of graduation requirements in the First Term; (c) some students in special education. Application must be made by May 14 in the Office of Clinical Experiences, 227 Burton Hall. Because of limited facilities, it is NOT possible to offer student teaching to students completing programs in other institutions.

Art Education (ArEd)

FIRST TERM

1-207 EXPERIENCES WITH PICTORIAL EXPRESSION

Materials, techniques, and ideas important in art expression; relationship between adult expression, child expression, and art history. (3 cr; limited to 30 students, reserved in Bu 206; III-IV MTWThF; WuH 240) Rice

3-001 SURVEY OF ART ACTIVITIES

Introduction to pictorial expression, design, and the function of art in the school environment. (4 cr; limited to 30 students, reserved in Bu 206; I-II MTWThF; WuH 240) Rice

3-020 CONTEMPORARY CRAFTS

Materials, equipment, design criteria, and techniques for textiles, wood, metal, and ceramics. \$4 lab fee. (3 cr; limited to 25 students, reserved in Bu 206; I-II MTWThF; WuH 210) Kain

3-030 PUPPETRY

Construction, manipulation, and stage technique for basic puppet types. (3 cr; limited to 30 students, reserved in Bu 206; III-IV MTWThF; WuH 220) Olson

3-309 INDEPENDENT STUDY

Individual exploration and study of basic types of art expression with the opportunity for in-depth professional research and creative involvement in one area of interest. (1-4 cr [4 cr max]; prereq 3-306, 3-307; hrs ar) Olson

5-302 CURRICULUM BUILDING IN ART EDUCATION: INNOVATIONS

Selection, evaluation, and organization of material for teaching units and projects. (4 cr; III-IV MTWThF; WuH 110) Kain

5-316 INTERCULTURAL EDUCATION THROUGH ART

(July 5-20)

Approaches to international understanding through recognition of aesthetic contributions of diverse peoples to American life. (3 cr; I-IV MTWThF; WuH 120) Slettehaugh

5-900 PROFESSIONAL PROBLEMS

Independent study for MEd candidates integrating learning from art education, art, and education. (3 cr; prereq MEd student; hrs ar) Olson

8-306 SEMINAR: ART EDUCATION

(1 cr; VI T; WuH 130) Olson

8-900* PROBLEMS: ART EDUCATION

Independent projects under staff guidance; may include advanced studio practice or technical problems requiring experimental or library research. (Cr ar; prereq #) Olson

SECOND TERM

1-208 EXPERIENCES WITH DESIGN AND MATERIALS

Projects in invention, arrangement, and decoration; color, lettering, posters, bulletin board displays. (3 cr; limited to 30 students, reserved in Bu 206; I-II MTWThF; WuH 220) Pisani

1-209 EXPERIENCES WITH FUNCTIONAL DESIGN AND CRAFTS

Projects related to clothing, architecture, and interior design, community planning, commercial and industrial design, puppetry, dramatics, intercultural relations. (3 cr; limited to 30 students, reserved in Bu 206; III-IV MTWThF; WuH 240) Hiniker

1-501 INTRODUCTION TO ART EDUCATION

For art education majors; a preview of career opportunities, basic problems of teaching; professional qualifications, and use of educational resources at the University. (2 cr; limited to 25 students, reserved in Bu 206; III MTWThF; WuH 110) Leary

3-001 SURVEY OF ART ACTIVITIES

See First Term. (4 cr; limited to 30 students, reserved in Bu 206; I-II MTWThF; WuH 240) Hiniker

3-009 WEAVING WITHOUT A LOOM

Developing fundamental weaving skills employing inexpensive equipment and techniques without use of the floor loom. \$4 lab fee. (4 cr; limited to 25 students, reserved in Bu 206; I-II MTWThF; WuH 340) Smits

3-010 INTRODUCTION TO WEAVING

Equipment, design, setting up and operation of table and floor looms. \$4 lab fee. (3 cr; limited to 25 students, reserved in Bu 206; III-IV MTWThF; WuH 340) Smits

8-300 RESEARCH IN ART EDUCATION

(July 24-August 9)

Review of research techniques; orientation of developing research tools into action stressing the relationship of art materials and empirical procedures. (3 cr; I-IV MTWThF; WuH 130) Slettehaugh

Child Psychology (CPsy)

FIRST TERM

3-301 CHILD PSYCHOLOGY

Introduction to science of child behavior; emphasis upon critical review of theories and research. (4 cr; prereq 5 cr introductory psychology; III MTWThF; Arch 50) Sameroff

5-303 ADOLESCENT PSYCHOLOGY

Physical, cognitive, and social development during adolescence. (4 cr; prereq 5 cr introductory psychology; II MTWThF; Arch 40) Sternberg

5-311 BEHAVIOR PROBLEMS

Types, origin, development, and treatment of behavior difficulties in normal children. (4 cr; prereq 3-301 or equiv; IV MTWThF; WuH 230) Mokros

5-313 PSYCHOLOGY OF ATYPICAL CHILDREN

Problems of research, assessment and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, language, intellectual, and physical deviation. (4 cr; prereq 3-301 or equiv; I MTWThF; Pt 102) Brown

5-319 CLINICAL PROCEDURES WITH CHILDREN

Survey of methods of clinical psychology; basic concepts and research problems in clinical work with children. Primarily for students not majoring in clinical psychology. (4 cr; prereq 12 cr in child psychology, psychology, educational psychology, or sociology; I MTWThF; PeikH 335) Gross

5-330 DIRECTED EXPERIENCES WITH CHILDREN

Intellectual and/or social development of children as individuals or members of peer groups. Quarter experiences offered in case study, social behavior, cognitive stimulation of children. (4 cr; S-N only; limited to 25 students, reserved in JohH 12; prior application required; prereq 3-301 and #; II MTWThF; CD 216) Collins

5-331 PROCESSES OF SOCIALIZATION OF CHILDREN

Processes of social learning; identification, imitation, reward and punishment, internalization, and object choice. (4 cr; prereq 3-301 or grad; III MTWThF; Arch 5) Collins

5-333 PERSONALITY DEVELOPMENT

Psychoanalytic and behavior theory formulations and related research literature in content areas (e.g., attachment, dependency, aggression, and sex typing). (4 cr; prereq 5-331; II MTWThF; Arch 5) Maurer

5-339 PARENT-CHILD RELATIONS

Discussion of parent-child relationships and evaluation of relevant research literature. (4 cr; prereq 5-331; IV MTWThF; CD 216) Kilmer

5-343 COGNITIVE DEVELOPMENT

Development of cognitive processes; discussion of relevant theory, research literature, and methodology. (4 cr; prereq 3-301; IV MTWThF; CD 218) Roberts

5-345 LANGUAGE DEVELOPMENT

Development of structure and function of language; factors influencing development; methodological problems, language scales, theories. (4 cr; prereq 3-301; III MTWThF; CD 218) Maratsos

5-970 DIRECTED READINGS IN CHILD PSYCHOLOGY

Independent readings. (Cr ar; prereq #) Masters

5-990 DIRECTED RESEARCH IN CHILD PSYCHOLOGY

Individual empirical investigation. (Cr ar; prereq #) Masters

8-360 SEMINAR: DEVELOPMENTAL PSYCHOLOGY

Intensive study of selected topics. (Cr.ar; prereq #; I MTWThF; CD 105) Sameroff

SECOND TERM**3-301 CHILD PSYCHOLOGY**

See First Term. (4 cr; prereq 5 cr introductory psychology; II MTWThF; Arch 50) Martin

5-303 ADOLESCENT PSYCHOLOGY

See First Term. (4 cr; prereq 5 cr introductory psychology; III MTWThF; WuH 230) Ludeke

5-311 BEHAVIOR PROBLEMS

See First Term. (4 cr; prereq 3-301 or equiv; II MTWThF; Arch 5) Tomlinson

5-315 INTRODUCTION TO MENTAL RETARDATION

Psychological and educational problems related to the mentally retarded. (4 cr, §SpEd 5-120; prereq 3-301 or equiv; VI-VII TTh; Arch 5) Libby

5-319 CLINICAL PROCEDURES WITH CHILDREN

See First Term. (4 cr; prereq 12 cr in child psychology, psychology, educational psychology, or sociology; I MTWThF; PeikH 335) Reed

5-331 PROCESSES OF SOCIALIZATION OF CHILDREN

See First Term. (4 cr; prereq 3-301 or grad; IV MTWThF; Arch 5) Anderson

5-970 DIRECTED READINGS IN CHILD PSYCHOLOGY

See First Term. (Cr ar; prereq #) Masters

5-990 DIRECTED RESEARCH IN CHILD PSYCHOLOGY

See First Term. (Cr ar; prereq #) Masters

Education

Higher Education and Teacher Education (Educ)

FIRST TERM

5-184 SUPERVISION OF STUDENT TEACHING

For persons planning to supervise or administer student teaching and other professional laboratory experiences in elementary and secondary education. (3 cr; prereq 15 cr in education or #; II MTWThF; CD 105) Mork

8-228* PROBLEMS: HIGHER EDUCATION AND TEACHER EDUCATION

(Cr and hrs ar; prereq #) Keller, Moen, Mork, Williams

8-250 HIGHER EDUCATION IN THE UNITED STATES

Development, present status, and outlook for American colleges; purposes; current and projected programs; trends in curriculum, instruction, and administration; evaluation of outcomes. (3 cr; prereq yr of grad study in any field or 18 cr in education; II MTWThF; Bu 125) Keller

8-251 CURRICULUM TRENDS IN AMERICAN COLLEGES

Principles in development of college programs; current curricula in liberal arts and professional fields; general education courses and sequences. (3 cr; prereq 8-250, yr of grad study in any field, 18 cr in education; I MTWThF; CD 216) Moen

8-252 EFFECTIVE COLLEGE TEACHING

Teaching-learning relationship; study and appraisal of methods employed to encourage, guide, and appraise students' learning. (3 cr; prereq 8-250 and yr of grad study in any field or 18 cr in education; III-IV TTh and hrs ar; PeikH 385) Williams

Educational Administration (EdAd)

FIRST TERM

5-101 PUBLIC SCHOOL ADMINISTRATION

Organization, administration, and general support of public schools in state and local school districts. (3 cr; not open to educational administration majors; prereq sr, 9 cr in education; III MTWThF; EntFW 495) Popper

5-130 ADMINISTRATOR DEVELOPMENT SEMINAR

Section 1: Part I

See section on 10-week courses.

Section 2: Part I

See section on 10-week courses.

5-139 LABORATORY IN DECISION MAKING

Contribution of recent research and theory to effective administration; analysis of administrative behavior in realistic settings and relations of administration to human behavior. Component of the unique block-time program in leadership development emphasizing decision making, recent research and theory related to everyday school problems, participants' self-evaluation as administrators, and 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; each section limited to 25 students, reserved in Bu 206; participants will register concurrently in corresponding section of EdAd 5-130 [Part I])

Sec 1, II-VIII MTWThF, EntFW 490, Jackson, Morris

Sec 2, II-VIII MTWThF, HortS 310, Alkire, Hendrix, Mueller

5-167 JUNIOR HIGH SCHOOL

Source of the movement; purposes, functions, and limitations; fundamental problems, types, and curricular implications of reorganization. (3 cr; prereq 9 cr in education; IV MTWThF; EntFW 495) Popper

8-201 FOUNDATIONS OF EDUCATIONAL ADMINISTRATION

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; BioSci 16) Ammentorp

8-210 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; HortS 415) Mueller

8-215 THE ELEMENTARY SCHOOL PRINCIPALSHIP

Problems in elementary school administration and the principal's role of leadership. (3 cr; prereq 8-201 and 8-202, or §; I MTWThF; HortS 310) Benson

8-220 ANALYSIS OF ADMINISTRATIVE PROBLEMS

Quantitative techniques for analysis of problem and decision situations in the administration of educational organizations. (3 cr [8-220, 8-222]); prereq educational administration major or Δ; III MTWThF; HortS 415) Hendrix

8-227 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; II MTWThF; HortS 415) Stark

8-264 THE SECONDARY SCHOOL PRINCIPALSHIP

The role of the principal: qualifications, duties, and problems, including current issues, and factors of staff and student relationships. (3 cr; V MTWThF; EntFW 495) Ar

8-270* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION

(Cr and hrs ar; prereq §) Lambert, Alkire

8-271* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION

(Cr and hrs ar; prereq §) Mueller, Hendrix, Popper, Ammentorp, Stark, Morris

8-272* PROBLEMS: EDUCATIONAL ADMINISTRATION

For superintendents and principals qualified to make intensive studies of a school system. (1-3 cr; hrs ar) Mueller, Hendrix, Lambert, Popper, Alkire, Stark, Ammentorp, Morgan, Jackson, Morris

8-273 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) Mueller, Lambert, Popper, Alkire, Ammentorp, Stark, Morgan, Jackson, Morris

8-274 THE TWO-YEAR COLLEGE

Present status, development, functions, organization, curriculum, and trends in post-secondary but nonbaccalaureate institutions. (3 cr; IV MTWThF; BioSci 18) Morgan

8-275 TWO-YEAR COLLEGE ADMINISTRATION

Selected topics and problems associated with administration and administrative positions, and organization of postsecondary but nonbaccalaureate institutions. (3 cr; prereq 8-274 or §; V MTWThF; BioSci 18) Morgan

8-290 FINANCING HIGHER EDUCATION

(3 cr; prereq §; III MTWThF; BioSci 16) Ammentorp

SECOND TERM**5-130 ADMINISTRATOR DEVELOPMENT SEMINAR**

See First Term.

8-202 FOUNDATIONS OF EDUCATIONAL ADMINISTRATION

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; IV MTWThF; EntFW 495) Hooker

8-221 ANALYSIS OF ADMINISTRATIVE PROBLEMS

Quantitative techniques for the analysis of problem and decision situations in the administration of educational organizations. (3 cr; prereq 8-220, educational administration major or Δ ; IV MTWThF; HortS 415) Hendrix

8-224 LEGAL ASPECTS OF PUBLIC SCHOOL ADMINISTRATION

Constitutional, statutory, and common law bases of school administration; principles growing out of fundamental legal procedures. (3 cr; V MTWThF; EntFW 495) Hooker

8-270* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION

(Cr and hrs ar; prereq $\#$) Lambert, Alkire

8-271* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION

(Cr and hrs ar; prereq $\#$) Mueller, Hendrix, Hooker, Morris

8-272* PROBLEMS: EDUCATIONAL ADMINISTRATION

(1-3 cr; hrs ar) Mueller, Hendrix, Hooker, Lambert, Alkire, Jackson, Morris

8-273 FIELD STUDY

(0-10 cr; prereq $\#$; hrs ar) Mueller, Hooker, Lambert, Alkire, Jackson, Morris

Educational Psychology

Counseling and Student Personnel Psychology (CSPP)

FIRST TERM

5-130 INTRODUCTION TO GUIDANCE

Philosophy, principles, and practices in development and operation of pupil personnel services; role of counselor, teacher, principal, and specialized personnel; guidance techniques and case studies. (3 cr; sec 1 limited to 80 students, sec 2 limited to 40 students, reserved in Bu 206; prereq 9 cr in education)

Sec 1, I MTWThF, WuH 230, Tennyson

Sec 2, I MTWThF, WuH 130, Briskin

5-300†† WORKSHOP: COUNSELING PSYCHOLOGY

For experienced counselors who want to design and test applications of counseling concepts to specific problems related to the profession. (3-6 cr per qtr [12 cr max]; sec 1 limited to 20 students, secs 2 and 4 each limited to 40 students with concurrent regis in DE 5-400, sec 3 limited to 30 students, reserved in Bu 206; prereq $\#$; see also DE 5-400)

Sec 1, I-IV MTWThF, Ph 143, Blocher

Sec 2 (June 18-29, ¶DE 5-400), II-IV MTWThF, FraH B1, B20, B25, Hansen, Tennyson

Sec 3, II MTWThF, Bu 120, Briskin

Sec 4 (July 7-20, ¶DE 5-400), II-IV MTWThF, FraH B1, B20, B25, Hansen, Tennyson

5-320 GROUP COUNSELING: PRINCIPLES AND PROCEDURES

Basic principles of group dynamics related to the group counseling process; emphasis on developing concepts, attitudes, and skills necessary; includes theory and laboratory experiences. (3 cr; prereq counseling certification or $\#$; VI-VII MWF; Bu 125) A Anderson

5-550 SEMINAR: PSYCHOLOGICAL EDUCATION

Review of curriculum programs in psychological/affective education including achievement training, sensitivity groups, psychological and moral education. (3 cr per qtr [9 cr max]; prereq ¶5-650 and $\#$; III-V TTh; Bu 123) Sprinthall

5-620 PRACTICUM IN GROUP COUNSELING

Supervised practice in counseling several groups, preferably in the setting in which the student intends to work; emphasis on systematic evaluation of progress through

†† Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

direct observations and tapes, and developing skills in interpersonal perception, communication, and research. (1-6 cr per qtr [6 cr max]; prereq counseling certification and §; hrs and rm ar) A Anderson

8-140 COLLEGE STUDENT PERSONNEL WORK—FOUNDATIONS AND SCOPE

For potential personnel workers in college or university; scope, administration, coordination, and evaluation of program. (3 cr; prereq course in higher education or ¶ or §; hrs and rm ar) Parker

8-900* RESEARCH METHODS IN COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY

Research methodology and techniques; critical examination of literature; participation in formulating and executing a research proposal. (1-3 cr per qtr [9 cr max]; prereq MA student and §; hrs and rm ar) Blocher, Parker, Tennyson, A Anderson, Briskin

SECOND TERM

5-110 COUNSELING PROCEDURES

For persons whose professional work includes counseling and interviewing, not for certification as school counselors. Emphasis on counseling relationship and principles of interviewing, utilizes case studies, role playing, and demonstration. (3 cr; III-IV TTh; Bu 125) Shaffer

5-130 INTRODUCTION TO GUIDANCE

See First Term. (3 cr; prereq 9 cr in education; II MTWThF; WuH 230) Tennyson

5-300†† WORKSHOP: COUNSELING PSYCHOLOGY

See First Term. (3-6 cr per qtr [12 cr max]; prereq §; III MTWThF; Pt 215) Briskin

5-540 SEMINAR: THE COLLEGE STUDENT

Psychology and sociology of college students; research concerning diversity of college student populations, vocational development of students, student society, culture, mental health, underachievement, dropouts, values, and attitudes; relevant research methodology. (3 cr; prereq 6 cr in psychology or educational psychology or §; VI-VII TWTh; Bu 247) Parker

5-620 PRACTICUM IN GROUP COUNSELING

Supervised practice in counseling several groups, preferably in the setting in which the student intends to work; emphasis on systematic evaluation of progress through direct observations and tapes, and developing skills in interpersonal perception, communication, and research. (1-6 cr per qtr [6 cr max]; prereq counseling certification and §; II-V MWF; Bu 125) A Anderson

8-701 INTERNSHIP: COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY

Supervised employment at departmentally approved internship sites. (0-6 cr [9 cr max for MA and Specialist students, 18 cr for PhD students]; hrs and rm ar) Shaffer

8-900* RESEARCH METHODS IN COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY

See First Term. (1-3 cr per qtr [9 cr max]; prereq MA student and §; hrs and rm ar) Tennyson, Shaffer

8-905* PROBLEMS: COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY

Independent study of areas of special interest. (Cr ar; prereq §; hrs and rm ar) Tennyson

Psychological Foundations (PsyF)

FIRST TERM

5-110 INTRODUCTORY STATISTICAL METHODS

(Not equivalent to PsyF 8-110, 8-310) Basic statistical techniques; comprehension of literature using elementary concepts and methods. (3 cr; each section limited to 60 students, reserved in Bu 206) Collier

Sec 1, I MTWThF, EitH N119

Sec 2, II MTWThF, WuH 230

†† Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

5-120 EDUCATIONAL MEASUREMENT IN THE CLASSROOM

Principles and methods for construction, evaluation, and improvement of classroom measures; techniques for describing results statistically; use of measurement in evaluating instruction and student performance; assignment of grades. (3 cr; each section limited to 35 students, reserved in Bu 206) Stecklein

Sec 1, III MTWThF, Bu 125

Sec 2, IV MTWThF, CD 105

5-125 PRINCIPLES AND METHODS OF EVALUATION

Nature of inquiry in education (evaluation vs. elucidation); internal and external validity of designs; analytical operations on data; overview of models. (3 cr; II MTWThF; CD 218) Bracht

5-141 PSYCHOLOGY OF SCHOOL LEARNING

Survey of psychological conceptions of the learner, the schooling process, and implications of these conceptions for education. (3 cr; limited to 50 students, reserved in Bu 206; II MTWThF; FraH 120) Ar

5-144 LEARNING: THEORY AND PRACTICE

Methodologies of applied psychology; critical examination of psychological variables which support learning through instruction; procedures for interpretation of data. (4 cr; prereq 5-342 or §; IV MTWThF; Pt 215) Ar

5-162 PERSONALITY AND SOCIAL DEVELOPMENT

Major concepts and research findings in adjustment and development, with special emphasis on educational implications. (3 cr, \$5-160; each section limited to 45 students, reserved in Bu 206; prereq 5 cr introductory psychology) Ar

Sec 1, I MTWThF, Arch 60

Sec 2, III MTWThF, Arch 60

5-170 SOCIAL PSYCHOLOGY OF EDUCATION

Concepts and theories in the field applied to educational problems and settings; laboratory sessions to make applications and develop skills in group behavior. (4 cr; II MTWThF; Pt 215) D Johnson

5-330 COMPUTER PROGRAMMING

Computer as a tool for research in behavioral sciences; computer systems, language, and development of specific programs that demonstrate computer characteristics; laboratory experience. \$4 lab fee. (3 cr; prereq sr; II MTWThF; Jones 4) D Anderson

5-342 EXPERIMENTAL PSYCHOLOGY OF SCHOOL LEARNING (PART I)

See section on 10-week courses.

8-110 STATISTICAL METHODS

Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems. (3 cr; prereq 5-110 or Psy 3-801 or equiv; I MTWThF; Arch 35) MacEachern

8-112 STATISTICAL METHODS (PART I)

See section on 10-week courses.

8-573 SMALL GROUP PROCEDURES USED FOR PERSONAL AND ORGANIZATIONAL CHANGE

Review of theory, research, and procedures for using small group techniques for changing individuals and organizations; laboratory experiences to make applications and develop skills in leading small groups. (4 cr; prereq 5-170 or equiv; III MTWThF; Pt 215) D Johnson

8-900* RESEARCH PROBLEMS

(Cr ar; prereq §; hrs and rm ar) Collier, Stecklein, D Anderson, D Johnson, MacEachern, Rest

8-921* PROBLEMS: CURRICULUM EVALUATION

Designing, implementing, and analyzing strategies; students will work on their own problems, on evaluation problems in schools of the area, or on problems associated with national curriculum projects. (Cr ar; prereq 5-621 or 8-525; hrs and rm ar) Bracht

SECOND TERM

- 5-110 INTRODUCTORY STATISTICAL METHODS**
See First Term. (3 cr; IV MTWThF; Pt 215) Hoyt
- 5-120 EDUCATIONAL MEASUREMENT IN THE CLASSROOM**
See First Term. (3 cr; II MTWThF; Bu 123) Ar
- 5-141 PSYCHOLOGY OF SCHOOL LEARNING**
See First Term. (3 cr; II MTWThF; PeikH 335) Ar
- 5-342 EXPERIMENTAL PSYCHOLOGY OF SCHOOL LEARNING (PART II)**
See section on 10-week courses.
- 8-111 STATISTICAL METHODS**
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems. (3 cr; prereq 8-110; I MTWThF; PeikH 275) MacEachern
- 8-112 STATISTICAL METHODS (PART II)**
See section on 10-week courses.
- 8-120* METHODS IN EDUCATIONAL RESEARCH**
Methods and techniques employed in investigation and report of educational problems. Suggested for all candidates for degrees. (3 cr; II MTWThF; PeikH 275) Hoyt
- 8-900* RESEARCH PROBLEMS**
(Cr ar; prereq #; hrs and rm ar) Hoyt, MacEachern

School Psychology (SchP)

FIRST TERM

- 8-510 SEMINAR: SCHOOL PSYCHOLOGY**
Intensive study of significant topics from the behavioral sciences as such topics apply to contemporary educational problems. (Cr ar; prereq #; hrs and rm ar) Weinberg
- 8-520 SEMINAR: RESEARCH IN SCHOOL PSYCHOLOGY**
Seminar for doctoral candidates planning dissertation research in school psychology. (1 cr; prereq #; hrs and rm ar) Egeland
- 8-600 CLINICAL PRACTICE: SCHOOL PSYCHOLOGY**
Supervised diagnosis and treatment of children referred to Psycho-Educational Center; training in a broad range of approaches to problems of adjustment in school-age children, their families, schools, and community settings. (1-5 cr; prereq 8-310; hrs and rm ar) Shrago
- 8-610 PRACTICUM: SCHOOL PSYCHOLOGICAL SERVICES**
Field experience under supervision; typical functions of school psychologists; assessment procedures, case studies, consultation with parents, school personnel, and community agencies; participation in seminar. (1-5 cr; prereq #; hrs and rm ar) Linker
- 8-700 INTERNSHIP: SCHOOL PSYCHOLOGICAL SERVICES**
Advanced field experience; for doctoral candidates in school psychology. (5-15 cr; prereq 8-610, #; hrs and rm ar) Hall
- 8-900* RESEARCH PROBLEMS**
(Cr ar; prereq #; hrs and rm ar) Egeland
- 8-910 DIRECTED STUDY: SCHOOL PSYCHOLOGY**
Reading and critical analysis of research on selected problems in school psychology. (1-5 cr; prereq #; hrs and rm ar) Egeland

SECOND TERM

- 8-510 SEMINAR: SCHOOL PSYCHOLOGY**
See First Term. (Cr ar; prereq #; hrs and rm ar) Linker
- 8-600 CLINICAL PRACTICE: SCHOOL PSYCHOLOGY**
See First Term. (1-5 cr; prereq 8-310; hrs and rm ar) Shrago
- 8-610 PRACTICUM: SCHOOL PSYCHOLOGICAL SERVICES**
See First Term. (1-5 cr; prereq #; hrs and rm ar) Weinberg
- 8-700 INTERNSHIP: SCHOOL PSYCHOLOGICAL SERVICES**
See First Term. (5-15 cr; prereq 8-610, #; hrs and rm ar) Hall
- 8-900* RESEARCH PROBLEMS**
See First Term. (Cr ar; prereq #; hrs and rm ar) Weinberg
- 8-910 DIRECTED STUDY: SCHOOL PSYCHOLOGY**
See First Term. (1-5 cr; prereq #; hrs and rm ar) Weinberg, Shrago

Special Education (SpEd)

FIRST TERM

- 5-100 CHILDHOOD LANGUAGE DEVELOPMENT: CLASSROOM IMPLICATIONS**
Recent trends and findings in the study of language acquisition; classroom implications for the education of exceptional children. (3 cr; limited to 40 students, reserved in Bu 206; VII MTWThF; Pt 215) Carlson
- 5-101 EDUCATION OF EXCEPTIONAL CHILDREN**
Introduction to field of special education for classroom teachers and other school personnel. (3 cr; I MTWThF; Pt 215) Force
- 5-110 DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY I**
Survey, demonstration, and evaluation of special techniques for diagnosis and remediation of severe learning deficits appearing in reading and written language (including dyslexia) and basic quantitative concepts. (3 cr; limited to 60 students, reserved in Bu 206; prereq #; VI MTWThF; Pt 215) Deno
- 5-112 EDUCATION OF LEARNING-DISABLED CHILDREN**
Analysis of considerations in design and conduct of services for learning-disabled children; approaches to education of such children. (3 cr; VI MTWThF; Pt 102) Balow
- 5-120 INTRODUCTION TO MENTAL RETARDATION**
Issues which relate to educational practices; community planning; educational philosophy, administration, organization, and programming. (4 cr, §CPsy 5-315; prereq 5-101; V-VI TTh; Bu 120) Bruininks
- 5-121 METHODS AND MATERIALS FOR ELEMENTARY AND SECONDARY MENTALLY RETARDED PUPILS**
Curriculum content, materials, and methods of instruction for educable mentally retarded children; preparation of units and development of teaching aids. (4 cr; prereq 5-101 or equiv; II MTWThF; PeikH 335) Grismer
- 5-123 METHODS AND MATERIALS FOR SEVERELY RETARDED PRESCHOOL AND SCHOOL-AGE PUPILS**
Issues and problems in curriculum development; pupil assessment and evaluation techniques; materials and teaching strategies. (4 cr; limited to 35 students, reserved in Bu 206; prereq 5-101 or equiv; III MTWThF; Pt 102) Waltz
- 5-140 PSYCHOSOCIAL AND EDUCATIONAL ASPECTS OF DEAFNESS**
Historical and current societal perceptions of the deaf; analysis of effects and patterns of auditory impairment on children and adults; intelligence, personal and social adjustment, effect of the psychological processes on acquisition of language, speech, and speechreading. (3 cr; IV-VI TTh; PeikH 335) Ar

5-145 TEACHING SPEECH TO THE HEARING IMPAIRED I

Survey of speech methodologies employed in teaching auditorily impaired children; major emphasis on techniques in teaching specific sounds, articulation, voice and sentence rhythm stressing intelligibility of speech. Demonstration and practice are provided with individual and groups of auditorily impaired children. (3 cr; prereq #: IV-VI MW; Jones 4) Ar

5-150 EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN

Discussion and evaluation of curricula, materials, and methods for instruction of disturbed and delinquent children in hospital, training school, and public school settings. (3 cr; limited to 40 students, reserved in Bu 206; prereq grad or #: II MTWThF; WuH 130) McCauley

5-180 EDUCATION OF THE DISADVANTAGED

Educational needs of children handicapped by behavior related to deficiencies of physical and/or cultural environment; adaptations of educational programs. (3 cr; prereq 12 cr in psychology, educational psychology, or sociology; III MTWThF; Peikh 335) Ar

5-190 OUTSTANDING ABILITIES AND THE EDUCATIONAL PROCESS

Critical analysis of the origin and development of terms such as giftedness, creativity, genius, talent, and intelligence; implications for educational practice; current issues and trends. (3 cr; III MTWThF; Pt 214) Rubin

5-301 CONTINGENCY MANAGEMENT IN SPECIAL EDUCATION SYSTEMS

Designing special instructional systems based on an experimental analysis of academic and social behavior. (3 cr; limited to 20 students, reserved in Bu 206; VII MTWThF; Pt 102) Deno

5-302†† WORKSHOP: SPECIAL EDUCATION

(June 18-August 10)

(See Section on Workshops, Institutes, and Special Programs) Laboratory approach provides opportunities for school personnel to study specific problems related to special education. (Cr ar; limited to 10 students, reserved in Bu 206; prereq #: VII MTWThF; Pt 111) McCauley

5-601 PRACTICUM: SPECIAL EDUCATION

Supervised experience in teaching or related work in schools or other agencies serving exceptional children. (Cr and hrs ar; prereq #) Force, Gedo, Waltz

5-610 PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY I

(June 18-August 10)

Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5-110. (3 cr; limited to 60 students, reserved in Bu 206; prereq #5-110 and #: I-IV MTWThF; rm ar) Wood, Fischer, Gedo

8-900* PROBLEMS

(Cr and hrs ar; prereq #) Wood, Force, Balow, Bruininks, Deno, McCauley

SECOND TERM**5-100 CHILDHOOD LANGUAGE DEVELOPMENT: CLASSROOM IMPLICATIONS**

See First Term. (3 cr; limited to 40 students, reserved in Bu 206; VII MTWThF; Pt 111) Carlson

5-101 EDUCATION OF EXCEPTIONAL CHILDREN

See First Term. (3 cr; III MTWThF; Pt 102) Wood

5-111 DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY II

Survey, demonstration, and evaluation of special techniques for amelioration of deficits in perceptive, integrative, and expressive processes. (3 cr; limited to 60 students, reserved in Bu 206; prereq 5-110, #5-611 and #: VI MTWThF; Pt 214) Deno

5-112 EDUCATION OF LEARNING-DISABLED CHILDREN

See First Term. (3 cr; VI MTWThF; Pt 111) Balow

†† 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.

5-146 TEACHING SPEECH TO THE HEARING IMPAIRED II

Survey of speech methodologies employed in teaching auditorily impaired children; major emphasis on techniques in teaching specific sounds, articulation, voice and sentence rhythm stressing intelligibility of speech. Demonstration and practice are provided with individual and groups of auditorily impaired children. (3 cr; prereq #: IV-VI TTh; PeikH 335) Ar

5-150 EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN

See First Term. (3 cr; limited to 40 students, reserved in Bu 206; prereq grad or #: II MTWThF; Pt 214) McCauley

5-180 EDUCATION OF THE DISADVANTAGED

See First Term. (3 cr; prereq 12 cr in psychology, educational psychology, or sociology; III MTWThF; PeikH 275) Ar

5-302†† WORKSHOP: SPECIAL EDUCATION

(June 18-August 10)

See First Term. (Cr ar; limited to 10 students, reserved in Bu 206; prereq #: VII MTWThF; Pt 102) Deno, McCauley

5-320†† WORKSHOP: EDUCATION OF TRAINABLE RETARDED CHILDREN

Curriculum and materials for teaching trainable mentally retarded children. (6 cr; limited to 16 students, reserved in Bu 206; prereq #: II-VIII MTWThF; Jones 2) Waltz

5-601 PRACTICUM: SPECIAL EDUCATION

See First Term. (Cr and hrs ar; prereq #) Gedo

5-611 PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY II

(June 18-August 10)

Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5-111. (3 cr; limited to 60 students, reserved in Bu 206; prereq 5-610, ¶5-111, and #: I-IV MTWThF; rm ar) Fischer, Gedo

8-900* PROBLEMS

(Cr and hrs ar; prereq #) Wood, Balow, Deno, McCauley

Elementary Education (Elem)

FIRST TERM**3-604‡‡ STUDENT TEACHING IN THE NURSERY SCHOOL**

(3 cr; S-N only; prereq approval of major adviser and director of student tchg; hrs ar) Ar

5-100 ELEMENTARY SCHOOL CURRICULUM

(3 cr; limited to 40 students, reserved in Bu 206; prereq 3-101; IV MTWThF; Pt 214) Ryan

5-108 SUPERVISION AND IMPROVEMENT OF INSTRUCTION

(3 cr; limited to 25 students, reserved in Bu 206; prereq 9 cr in education; I MTWThF; Bu 125) Ar

5-300 LITERATURE FOR THE ELEMENTARY SCHOOL

(3 cr; each section limited to 30 students, reserved in Bu 206) Odland
Sec 1, I MTWThF, Bu 123
Sec 2, III MTWThF, Bu 120

5-317 MATERIALS LABORATORY FOR TEACHING ENGLISH IN ELEMENTARY SCHOOLS

Examination and evaluation of textbooks, programmed materials, and audio-visual

†† 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 is open only to students in the College of Education regular degree programs. Application must be made prior to May 1. Forms and instructions are available in the Clinical Experiences Office, 227 Burton Hall.

resources for elementary school language arts instruction. (3 cr; limited to 25 students; reserved in Bu 206; prereq 3-316 or elem tchg exper; II MTWThF; Bu 123) Dykstra

5-331 TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL

For graduate students and summer students who already hold a Bachelor's degree in elementary education. (3 cr; each section limited to 50-students, reserved in Bu 206; prereq 9 cr in education) Ar

Sec 1, I MTWThF, Bu 120

Sec 2, II MTWThF, Bu 120

Sec 3, IV MTWThF, Bu 120

5-334 READING DIFFICULTIES

(3 cr; each section limited to 40 students, reserved in Bu 206; prereq 5-331 or SeEd 5-344) Ar

Sec 1, III MTWThF, Pt 111

Sec 2, IV MTWThF, Bu 123

5-335 CLINICAL DIAGNOSIS OF READING DIFFICULTIES

Relationship to psychological factors and clinical remedial correction. (3 cr; students registering for sec 1 of this course are required to register concurrently in the same-numbered sec of Elem 5-336; each section limited to 23 students, reserved in Bu 206; prereq 5-334) Schreiner

Sec 1, I MTWThF, Tuttle School

Sec 2, IV MTWThF, Tuttle School

5-336 CLINICAL PRACTICE IN REMEDIAL TEACHING

Remedial tutoring of individual children who have difficulty in school learning. (3 cr; students registering for sec 1 of this course are required to register concurrently in the same-numbered sec of Elem 5-335; each section limited to 23 students, reserved in Bu 206; prereq 5-334 or 5-107 and §) Manning

Sec 1, II-III MTWThF, Tuttle School

Sec 2, II-III MTWThF, Tuttle School

5-338 TEACHING READING IN THE INTERMEDIATE GRADES

For teachers and specialists interested in problems of teaching reading beyond the decoding stage; emphasis on comprehension strategies, basic study skills, and reading in the content areas. (3 cr; limited to 30 students, reserved in Bu 206; prereq 3-331 and §; III MTWThF; Bu 123) Ar

5-347†† WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SCIENCE

An in-depth study of newer teaching techniques and programs in elementary school science, with specific program focus to be determined by participating school staff. The course will be held at an elementary school in Edina and will offer laboratory practice in classrooms with children and materials. (3-6 cr [this offering for 3 cr]; each section limited to 25 students, reserved in Bu 206; prereq elem tchg exper) Humphreys

Sec 1, June 19-July 3, 8:30 a.m.-2:00 p.m.

Sec 2, July 5-20, 8:30 a.m.-2:00 p.m.

5-361 TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL

For graduate students and summer students who already hold a Bachelor's degree in elementary education. (3 cr; limited to 40 students, reserved in Bu 206; prereq 3-101 or equiv; I MTWThF; Pt 214) Cogan

5-362 MATERIALS LABORATORY FOR ELEMENTARY SOCIAL STUDIES TEACHERS

Printed, audio-visual, and other materials; investigation and evaluation of teaching materials and devices. (3 cr; limited to 25 students, reserved in Bu 206; prereq 3-361 or 5-361 or §; II MTWThF; Pt 214) Ellis

5-363†† WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES

(June 18-July 6)

Analysis of new instructional materials, and recent curriculum developments in the field; training in innovative instructional procedures; using inquiry strategies in elementary school social studies. (Cr ar [9 cr max, this offering for 3 cr]; each section limited to 25 students, reserved in Bu 206; prereq elem tchg exper and §)

Sec 1, VI-VII MTWThF, Pt 214, Ryan

Sec 2, IV-VI MTWThF, Cornelia School (Edina), Ellis

†† 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.

5-376 CURRENT TRENDS IN KINDERGARTEN EDUCATION

Continuing needs of children in our changing culture; current practices and recent research; not intended for kindergarten certification requirements. (3 cr; limited to 40 students, reserved in Bu 206; prereq tchg exper in kindergarten or primary school or #; II MTWThF; Pt 102) Hansen

5-377 KINDERGARTEN: MATERIALS AND RESOURCES

Experiences in the selection and use of commercial and teacher-made educational materials and media common to teaching in the kindergarten. (3 cr; limited to 25 students, reserved in Bu 206; prereq 3-377 or 5-376 and tchg exper or #; IV MTWThF; Pt 102) Hansen

8-317 RESEARCH IN SKILL DEVELOPMENT IN SPELLING, HANDWRITING, AND LISTENING

Review of findings with implications for the classroom teacher; evaluation criteria and needed research. (3 cr; limited to 15 students, reserved in Bu 206; prereq 5-316; IV MTWThF; Bu 125) Dykstra

8-916* PROBLEMS: TEACHING ENGLISH

(Cr ar; limited to 3 students, reserved in Bu 206) Dykstra

8-931* PROBLEMS: READING

(Cr and hrs ar; each section limited to 5 students, reserved in Bu 206; prereq 5-331 or SeEd 5-344 or #)

- Sec 1, Manning
- Sec 2, Odland
- Sec 3, Schreiner

8-961* PROBLEMS: TEACHING SOCIAL STUDIES

(Cr and hrs ar; each section limited to 5 students, reserved in Bu 206; prereq 5-361 or SeEd 5-155, 8-104, or #)

- Sec 1, Cogan
- Sec 2, Ellis
- Sec 3, Ryan

8-976 PROBLEMS: TEACHING KINDERGARTEN

Opportunity for in-depth study or research related to self-selected interest areas in kindergarten education. (3 cr; limited to 2 students, reserved in Bu 206; prereq #) Hansen

8-991* PROBLEMS: IMPROVEMENT OF INSTRUCTION

(Cr and hrs ar; each section limited to 5 students, reserved in Bu 206; prereq #)

- | | |
|----------------|-------------------|
| Sec 1, Dykstra | Sec 7, Ellis |
| Sec 2, Lambert | Sec 8, Hansen |
| Sec 3, Manning | Sec 9, Humphreys |
| Sec 4, Odland | Sec 10, Post |
| Sec 5, Stochl | Sec 11, Ryan |
| Sec 6, Cogan | Sec 12, Schreiner |

SECOND TERM**5-107 DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES**

(July 23-August 10)

(3 cr; limited to 40 students, reserved in Bu 206; III-IV MTWThF; Pt 214) Aullis

5-300 LITERATURE FOR THE ELEMENTARY SCHOOL

(July 23-August 10)

See First Term. (3 cr; limited to 40 students, reserved in Bu 206; III-IV MTWThF; Bu 120) Green

5-316 TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL

(July 23-August 10)

(3 cr; limited to 30 students, reserved in Bu 206; prereq 3-316 or elem tchg exper; 7-10 p.m. MWTh; EItH N-119) Green

5-318 CREATIVE WRITING FOR AND BY CHILDREN

(July 23-August 3)

Language arts in the elementary school for experienced teachers, supervisors, graduate students and college instructors; emphasis on creative aspects of the writing

of children's literature and the children's own writing. (3-6 cr [6 cr max, this offering for 3 cr]; limited to 50 students, reserved in Bu 206; prereq 3-300 or 3-336 or elem tchg exper and §; II, VII-VIII MTWThF; EltH N119) Chase

5-331 TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL

(July 23-August 10)

See First Term. (3 cr; limited to 40 students, reserved in Bu 206; prereq 9 cr in education; I-II MTWThF; Bu 120) Aulls

5-334 READING DIFFICULTIES

(July 23-August 10)

See First Term. (3 cr; limited to 40 students, reserved in Bu 206; prereq 5-331 or SeEd 5-344; III-IV MTWThF; Bu 123) Pearson

5-335 CLINICAL DIAGNOSIS OF READING DIFFICULTIES

(July 23-August 10)

See First Term. (3 cr; each section limited to 23 students, reserved in Bu 206; prereq 5-334) Ar

Sec 1, I-II MTWThF, Bu 125

Sec 2, III-IV MTWThF, Bu 125

5-336 CLINICAL PRACTICE IN REMEDIAL TEACHING

(July 23-August 10)

See First Term. (3 cr; limited to 23 students, reserved in Bu 206; prereq 5-334 or 5-107 and §; III-IV MTWThF; Tuttle School) Manning

5-346 TEACHING SCIENCE IN THE ELEMENTARY SCHOOL

(July 23-August 10)

(3 cr; limited to 30 students, reserved in Bu 206; prereq elem tchg exper or §; V-VI MTWThF; Pt 102) R Johnson

5-348† WORKSHOP: OUTDOOR SCIENCE EDUCATION

(August 13-17)

Classroom and field work activities dealing with models, materials, and methods in the outdoor setting. The course will be held in Itasca State Park with participants required to provide sleeping bags and other necessary items. There will be an additional charge of \$15 to cover the cost of food and the Group Camp Site. The course will cover most aspects of outdoor "sciencing" including forestry activities, nature trail development, marsh studies, stargazing. Follow-up activities include survey of a nature center in your area, school site study. An information sheet is available on request to Roger Johnson, 242 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455. (3 cr; limited to 25 students, reserved in Bu 206; prereq elem tchg exper; all day MTWThF; Itasca State Park) R Johnson

8-916* PROBLEMS: TEACHING ENGLISH

See First Term. (Cr and hrs ar; limited to 2 students, reserved in Bu 206) Chase

8-931* PROBLEMS: READING

(Cr and hrs ar; each section limited to 5 students, reserved in Bu 206; prereq 5-331 or SeEd 5-344 or §)

Sec 1, Chase

Sec 4, D Pearson

Sec 2, Manning

Sec 5, Aulls

Sec 3, Odland

8-991* PROBLEMS: IMPROVEMENT OF INSTRUCTION

(Cr and hrs ar; each section limited to 5 students, reserved in Bu 206; prereq §)

Sec 1, Chase

Sec 6, R Johnson

Sec 2, Jackson

Sec 7, D Pearson

Sec 3, Lambert

Sec 8, Aulls

Sec 4, Manning

Sec 9, Green

Sec 5, Odland

Mathematics Education (MthE)

FIRST TERM

5-101†† WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS

Modern trends, methods, and materials used to convey mathematical ideas. (3 cr;

†† 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.

limited to 30 students, reserved in Bu 206; not open to mathematics education majors; prereq #: II MTWThF; Pt III) Stochl

5-311 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; limited to 30 students, reserved in Bu 206; prereq Elem 3-391 or #: IV MTWThF; Pt 111) Stochl

5-312 TEACHING AND SUPERVISION OF MATHEMATICS IN THE SECONDARY SCHOOL
Methods, materials, and curriculum development; principles of learning; review of research; preparation and evaluation of tests, units, and materials of instruction. (3 cr; prereq mathematics tchg exper or #: I MTWThF; PeikH 315) R Johnson

5-355 MATHEMATICS FOR SLOW-LEARNING CHILDREN
(July 2-20)
Units of instruction emphasizing mathematical concepts essential for vocational competence; experimental materials and methods designed to improve performance of low achievers. (3 cr; limited to 40 students, reserved in Bu 206; prereq 5-311 or Elem 3-391 or #: V-VI MTWThF; Pt 111) Post

5-322 MATERIALS LABORATORY FOR SECONDARY SCHOOL MATHEMATICS INSTRUCTION
Sources and types of materials, laboratory projects and techniques of using mathematics devices and instruments, visual aids, and community resources. (3 cr; limited to 25 students, reserved in Bu 206; III-IV MTWThF; PeikH 315) R Johnson

8-980* PROBLEMS: MATHEMATICS EDUCATION
Surveying the most recent literature; designing and preparing research reports on special problems. (Cr ar; prereq 8-500 or 8-570) Post, Stochl

SECOND TERM

5-301 INSTRUCTIONAL LEADERSHIP IN ELEMENTARY SCHOOL MATHEMATICS
(July 23-August 10)
Current trends in methods, materials, content, and evaluation; program development and research; intended for supervisors and principals. (3 cr; limited to 25 students, reserved in Bu 206; not open to majors in mathematics education; prereq #: I-II MTWThF; Pt III) Jackson

5-355 MATHEMATICS FOR SLOW-LEARNING CHILDREN
(July 23-August 10)
See First Term. (3 cr; limited to 40 students, reserved in Bu 206; prereq 5-311 or Elem 3-391 or #: III MTWThF; Pt III) Jackson

8-980* PROBLEMS: MATHEMATICS EDUCATION
See First Term. (Cr ar; prereq 8-500 or 8-570) Jackson

Music Education (MuEd)

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

FIRST TERM

1-515 WOODWIND TECHNIQUES
Playing experience on all woodwind instruments; basic concepts of teaching with study of methods and materials. (4 cr; VI-VII TWTh; MusEd 200) Schultz

3-011 TEACHING MUSIC IN THE ELEMENTARY SCHOOL
For nonmusic majors; methods and materials in teaching singing, rhythm, music reading, creativity, classroom instruments, fundamentals, appreciation in K-6. (4 cr; each section limited to 20 students, reserved in Bu 206; prereq Mus 1-001 or exemption)
Sec 1, III MTWThF, Sch 4, Byrne
Sec 2, V MTWThF, Sch 4, Steffen

5-214 PSYCHOLOGICAL FOUNDATIONS

Analysis and interpretation of psychologies of music and education as applied to the teaching of music. (5 cr; prereq ♯; I MTWThF; ScH 103) Caswell

5-221 MUSIC AND THE HUMANITIES IN THE SECONDARY SCHOOLS

Teaching music as part of the humanities emphasis in high schools; methods and music materials appropriate to the humanities. (4 cr; prereq Mus 1-506 and 1-603 or ♯; V MTWThF; ScH 103) Turrentine

5-231 SUPERVISION AND ADMINISTRATION OF ELEMENTARY MUSIC

Analysis and evaluation of instructional techniques; supervisory and administrative techniques; readings; new trends. (4 cr; prereq major or minor in music or music education; III MTWThF; ScH 103) Borg

5-308 TEACHING MUSIC READING

Objectives, materials, research, teaching procedures, and evaluation; class and individual projects; emphasis on general music class approach. (4 cr; prereq 3-011, 3-302 or ♯; IV MTWThF; ScH 4) Borg

5-327 TECHNIQUES AND MATERIALS: ORFF-SCHULWERK APPROACH

Demonstration and class practice in teaching and performance skills of Orff-Schulwerk instrument playing; the recorder; movement, improvisation, singing, and creation of musical forms; techniques to encourage children to create and improvise song, instrumental music, and related bodily movement; class exercises in adapting indigenous and foreign ethnic musical material for school use. (4 cr; II MTWThF; ScH 4) Caswell

5-582 SELECTION OF INSTRUMENTAL MATERIAL II

Analytical survey of larger wind, chamber, and band music and its use in the teaching of instrumental music on the precollegiate level. (4 cr; IV MTWThF; ScH 2) Turrentine

5-591 NEW DIMENSIONS IN INSTRUMENTAL MUSIC EDUCATION

Study of instrumental music through analysis, performance, listening, and composition; evaluative procedures; curriculum structure and design; scheduling. (4 cr; VIII-IX TWTh; ScH 103) Schultz

5-970 INDEPENDENT STUDY

An independent study project organized by the student in consultation with the appropriate instructor. (1-4 cr; prereq consent of adviser and department; hrs ar; ScH 104) Caswell, Turrentine, Borg, Schultz

8-990* RESEARCH PROBLEMS

Individual projects. (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScH 104) Caswell, Turrentine, Borg

SECOND TERM

1-525 BRASS TECHNIQUES

Theory and technical development of instruments; elementary instruction in performing, special attention to routine class instruction. (4 cr; prereq music education major or ♯; IV-V TWTh; MusEd 200) Turrentine

3-011 TEACHING MUSIC IN THE ELEMENTARY SCHOOL

See First Term. (4 cr; limited to 20 students, reserved in Bu 206; prereq Mus 1-001 or exemption; III MTWThF; ScH 4) Byrne

3-851† CLINICAL INTERNSHIP IN MUSIC THERAPY

Six-month resident internship in music therapy at an affiliated, approved hospital or clinic. (2 cr; prereq Δ; hrs ar; MusEd 102) Jellison

5-111 BIBLIOGRAPHY

Sources, materials, and techniques. (4 cr; II MTWThF; ScH 2) Turrentine

5-534 ADVANCED PERCUSSION TECHNIQUES

Contemporary approaches to teaching percussion in the elementary, junior high, and high school; emphasis on performing techniques; playing of teaching materials, solo and ensemble repertoire. (4 cr; VI-VII TWTh; NMA 4) Schultz

5-564 BAND ARRANGING

Current scoring techniques for wind and percussion instruments. Scoring for band; creative arrangements for marching or concert band. (4 cr; prereq Mus 1-506, 5-563 or MuEd 3-516 or §; III MTWThF; ScH 2) Schultz

5-801 INFLUENCE OF MUSIC ON BEHAVIOR

Methods and principles of the behavioral and biological sciences as they relate to the art of music. (4 cr; IV MTWThF; MusEd 101) Jellison

5-804 MUSIC IN THERAPY

Application of methods and principles of music therapy through observation, research, and case studies. (4 cr; prereq 5-801; V MTWThF; MusEd 101) Jellison

5-970 INDEPENDENT STUDY

See First Term. (1-4 cr; prereq consent of adviser and department; hrs ar; ScH 104) Turrentine, Schultz

8-990* RESEARCH PROBLEMS

See First Term. (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScH 104) Turrentine

Physical Education, Recreation, and School Health

Physical Education (PE)

Nonprofessional Physical Education—Students interested in meeting a college requirement in physical education or in taking activity courses for elective credit may register for PE 1-007, 1-038, 1-059, 1-107, 1-138, 1-205, 1-306, 1-410, 1-800.

Professional Physical Education—Courses are offered for men and women at the advanced and graduate level and in the undergraduate major in physical education. Many of these courses apply toward meeting the certification requirements for teaching physical education in the state of Minnesota. For men and women, courses are offered that will apply toward the athletic coaching credential requirements. Courses offered this summer that apply toward meeting the requirements in the various programs are as follows:

1. An Advanced Degree in Physical Education—
PE 5-100, 5-120, 5-125, 5-130, 5-152, 5-162, 5-170, 5-255, 5-620, 5-980, 5-981, 5-982, 8-111, 8-330, 8-980, 8-981
2. Undergraduate Major in Physical Education—
PE 1-563, 1-800, 3-110, 3-113, 3-115, 3-171, 3-178
3. State of Minnesota Coaching Credential for Men—
PE 3-110, 3-113, 3-115, 3-171, 3-178, 5-620, 5-740
4. State of Minnesota Coaching Credential for Women—
PE 3-110, 3-113, 3-115, 3-178, 5-255, 5-620, 5-740

Elementary School Majors—PE 3-327 and Hlth 3-330 are offered to accommodate elementary school education majors and classroom teachers.

ACTIVITY CLASSES—NONPROFESSIONAL (PE)

(Open to all students)

Health Service approval is needed for activity classes. Courses are designated as coed; women only; or men only.

FIRST TERM

1-007 SWIMMING

(For nonswimmers) Course includes aquatic breathing, floating, bobbing, treading, finning, human stroke, elementary backstroke, sidestroke, front crawl. (1 cr; coed; limited to 24 students, reserved in JohH 12; V MTWTh; CH 10) Wells

1-038 TENNIS

Includes fundamental strokes such as service, forehand and backhand, drives and volley; court positions and strategy for singles and doubles; rules, terminology, and etiquette. (1 cr; coed; each section limited to 24 students, reserved in JohH 12; CH 325) Dillin

Sec 1 (coed), I MTWTh, CH 325

Sec 2 (coed), II MTWTh, CH 325

1-050 GOLF

Emphasizes fundamentals of grip, stance, and swing in addition to etiquette and rules. (1 cr; each section limited to 24 students, reserved in JohH 12) Bolstad

Sec 1 (coed), 12:30-1:45 MW, Golf Course

Sec 2 (coed), 12:30-1:45 TTh, Golf Course

1-059 TRACK AND FIELD

Survey of basic rules of fundamental running, hurdling, jumping, and throwing skills, and of modern training techniques. (1 cr; men, women; limited to 24 students, reserved in JohH 12; II MTWTh; BFAB 125) Osterhoudt

1-138 TENNIS

Students should have developed good ball control in basic strokes. The volley, lob, and advanced strategy for singles and doubles will be stressed. (1 cr; coed, men, women; limited to 24 students, reserved in JohH 12; prereq 1-038 or equiv; III MTWTh; CH 325) Wells

1-205 SCUBA AND SKIN DIVING

Skills, techniques, and safety precautions of scuba and skin diving. (1 cr; men, women; limited to 16 students, reserved in JohH 12; prereq women 1-207 or equiv, men 1-107 or equiv; see Special Fees list; VI-VII MTWThF; CH 15) Mowerson

1-306 SENIOR LIFE SAVING

Designed for students interested in obtaining the Red Cross Life Saving Certificate. (1 cr; men, women; limited to 24 students, reserved in JohH 12; prereq ability to swim 440 yds; V MTWTh; CH 15) Mowerson

1-410 WATER SAFETY INSTRUCTOR

For those interested in obtaining the Red Cross Swimming Instructor's Certificate. (2 cr; coed; limited to 20 students, reserved in JohH 12; prereq current American Red Cross Senior Lifesaving Certificate; II-III MTWThF; CH 15) Stoner

SECOND TERM

1-038 TENNIS

See First Term. (1 cr; coed; limited to 24 students, reserved in JohH 12; III MTWTh; NGW 3) Workinger

1-050 GOLF

See First Term. (1 cr; coed; each section limited to 24 students, reserved in JohH 12)

Sec 1, 9:30-10:45 MW, Golf Course, LaPoint

Sec 2, 12:30-1:45 MW, Golf Course, Bolstad

Sec 3, 12:30-1:45 TTh, Golf Course, Bolstad

1-107 SWIMMING

(1 cr; men, women; limited to 24 students, reserved in JohH 12; prereq men ability to swim 100 yds, women 1-007 or equiv; II MTWTh; CH 15) Liang

1-138 TENNIS

See First Term. (1 cr; coed, men, women; limited to 24 students, reserved in JohH 12; prereq 1-038 or equiv; IV MTWTh; CH 325) Liang

1-306 SENIOR LIFE SAVING

See First Term. (1 cr; coed; limited to 24 students, reserved in JohH 12; prereq ability to swim 440 yds; V MTWThF; NGW 58) Workinger

PROFESSIONAL COURSES (PE)**FIRST TERM****1-563 GAMES, SPORTS, TRACK, AND FIELD FOR THE ELEMENTARY SCHOOL CHILD**

Elementary school games and sports programs emphasizing use for leisure time. (2 cr; coed; prereq physical education major, 1-870, 1-875; I MTWTh; NGW 153) Roethlisberger

1-800 WATER SAFETY INSTRUCTOR'S COURSE

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. (2 cr; coed; prereq current American Red Cross Senior Life Saving Certificate; II-III MTWThF; CH 15) Stoner

3-178 TRACK AND FIELD COACHING

Technique of performance in all standard events; methods of coaching; organization of track meets; study of rules; officiating methods and practice. (2 cr; coed; prereq 1-654 or 1-059 or #; IV MTWThF; BFAB 125) Griak

5-100 TEACHING PHYSICAL EDUCATION FOR THE HANDICAPPED

Introduction to the role of physical education in the education of the handicapped individual, emphasizing understanding, principles of organization, administration, curriculum, supervision, and evaluation. (3 cr; coed; prereq #; IV MTWThF; CH 214) Cato

5-120 ADVANCED KINESIOLOGY

Principles of mechanics applied to human movement, analysis of motor skills, application to individual projects. (3 cr; prereq undergrad kinesiology or #; I MTWThF; CH 420) Stoner

5-125 ADVANCED PHILOSOPHY OF PHYSICAL EDUCATION AND SPORT

Examination of comprehensive, systematic, and revealing accounts of the status of physical education and sport with respect to reality, knowledge, and value. (3 cr; prereq 3-125 or #; V MTWThF; CH 214) Osterhoudt

5-162 PRACTICUM: CONSTRUCTION OF WRITTEN TESTS

Practical experience in the development of written tests with emphasis placed on test design and evaluation of the items. (3-6 cr, §H1th 5-160; prereq PsyF 5-120; III MTWThF; CH 420) Shick

5-255 INTRAMURALS-EXTRAMURALS

Analysis and interpretation of philosophies of men's and women's programs; principles, objectives, and techniques of program development. (4 cr; III MTWThF; CH 214) Mueller, Anderson

5-620 PRACTICUM: PREVENTION AND CARE OF ATHLETIC INJURIES

(June 25-July 6)

An overview of problems (recognition, principles, and responsibilities) related to athletic injuries in secondary and college programs; demonstration and practice in training techniques and familiarity with the use of instruments for athletic rehabilitation. (3 cr; limited to 50 students, reserved in Bu 206; 1:30-5:00 MTWThF; BFAB 144) Marshall, Stein

5-740 WORKSHOP: COACHING OF INDIVIDUAL, DUAL, OR TEAM SPORTS

(June 11-22)

Instruction at the advanced level in individual, dual, or team sports, including

analyses of skills, game strategies, specific techniques of coaching, and methods of training and conditioning. (1-12 cr [12 cr max, this offering for 3 cr]; 1:00-4:00 p.m. MTWThF; BFAB 101) Gunderson, Edwards

5-980 INTRODUCTION TO RESEARCH

Methods and design for research in health, physical education, and recreation. (3 cr; prereq #; II MTWThF; CH 420) Shick

5-981 PROBLEMS

Focus on teaching of physical education. (Cr and hrs ar; prereq MEd candidate, #) Alexander, Jaeger, Osterhoudt, Shick, Stoner

5-982 INTEGRATING PAPER

Independent paper integrating learnings from a course or courses in education with learnings in physical education. (3 cr, §Hlth 5-982; MEd only; hrs ar) Alexander, Jaeger, Osterhoudt, Shick, Stoner

8-111 INTERSCHOLASTIC ATHLETICS ADMINISTRATION

Principles and procedures in the management of school athletic programs for boys and girls; state high school athletic associations; regulations, finances, issues, trends, research. (3 cr; prereq 8-110; II MTWThF; CH 214) Jaeger

8-980 RESEARCH PROBLEMS

Designing, reporting on individual problems; required of all MA and PhD candidates. (3 cr; prereq 5-980, PsyF 5-110 or #; IV MTWThF; CH 420) Alexander

8-981 RESEARCH PROBLEMS

Individual problems. (Cr and hrs ar; prereq 8-980 or #) Alexander, Jaeger, Osterhoudt, Shick, Stoner

SECOND TERM

3-110 HUMAN ANATOMY

Emphasizes bones, nerves, and muscles and their significance in physical education. (3 cr; coed; I MTWThF; CH 420) Serfass

3-113 MOTOR LEARNING AND MOTOR DEVELOPMENT

Examination of the motor growth and development of children, adolescents, and adults with emphasis on sociopsychological factors. (4 cr; coed; IV MTWThF; CH 420) Bole

3-115 PHYSIOLOGICAL APPLICATION TO SPORTS

Consideration of muscular contraction for strength development programs; contributions of training programs to endurance, speed, and skill acquisition; influence of training on the cardiovascular system; fatigue and recovery; early season training pregame meals and ergogenic aids in athletes. Required for the Minnesota Coaching Certificate. (3 cr, §PubH 3-385, 3-386; coed; V MTWThF; CH 420) Alexander

3-171 BASKETBALL COACHING

Techniques, styles of offense and defense, conditioning and handling of players. (2 cr; men only; prereq 1-652 or #; II MTWThF; CH 325) Kundla

3-327 TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL

An overview of the elementary school physical education program; primarily a lab course with participation in representative physical education activities for children; opportunities for observations of children, micro teaching, skill analysis and group discussions. (3 cr, §1-560, §3-325 or §Hlth 3-325; limited to 35 students, reserved in Bu 206; prereq elementary education major; III MTWThF; NGW 153) Lampe

5-130 MOTOR LEARNING AND HUMAN PERFORMANCE

Mechanisms of human motor skill learning; emphasis on theories of motor learning and control of movement, motor memory, and individual differences. (3 cr; prereq 3-113 or #; II MTWThF; CH 214) Bole

5-152 CURRICULUM DEVELOPMENT

Trends, issues, and problems at selected levels of interest: elementary, secondary, junior college; for experienced teachers. (3 cr; prereq 5-151 or equiv; IV MTWThF; CH 214) Young

5-170 FOUNDATIONS OF PHYSICAL EDUCATION

Establishment of guidelines for individual and group professional action; examination of pertinent social forces, educational philosophies and general ethics. (3 cr; prereq grad or MEd; III MTWThF; CH 214) LaPoint

5-700 WORKSHOP: DANCE IN EDUCATION

(July 23-August 10)

History, principles, instructional techniques, and materials for teaching dance in schools and recreational agencies. (Cr ar [12 cr max, this offering for 6 cr]; limited to 125 students, reserved in Bu 206; 8:30 a.m.-3:15 p.m. MTWThF; NGW 151, 153) Jette, Redlich

5-981 PROBLEMS

See First Term. (Cr and hrs ar; prereq MEd candidate, §) Jaeger, LaPoint, Serfass, Young

5-982 INTEGRATING PAPER

See First Term. (3 cr, §Hlth 5-982; MEd only; hrs ar) Jaeger, LaPoint, Serfass, Young

8-330 SEMINAR: MOTOR LEARNING AND HUMAN PERFORMANCE

Advanced reading and discussion of research on specialized topics dealing with human performance and motor skills learning. (3-9 cr [9 cr max]; prereq 5-130 or §; V MTWThF; CH 214) Bole

8-981 RESEARCH PROBLEMS

See First Term. (Cr and hrs ar; prereq 8-980 or §) Alexander, Jaeger, Osterhoudt, Shick, Stoner

Recreation and Park Administration (Rec)

FIRST TERM**1-520 ORIENTATION TO LEISURE AND RECREATION**

Examination of the history and development of park and recreation movement; sociological, economical, psychological, and political considerations of leisure and recreation in contemporary societies; professional and service organizations and their interrelationship; orientation to the professional field. (5 cr; prereq recreation major or minor; II-III MTWThF; CH 206) Boudreau

1-525 FIELD OBSERVATION

Independent observation and participation under supervision. (1-4 cr; prereq 1-520, §; VI-VIII T and ar; CH 206) Boudreau

1-700 RECREATION FIELD WORK WITH SPECIAL GROUPS

Supervised experiences in selected agencies. (1-15 cr; S-N only; prereq recreation students for special groups program only; hrs ar) Smith

3-700 SENIOR INTERNSHIP

Supervised experiences in selected agencies. (1-12 cr; prereq 1-525, sr, recreation major or minor, §3-701 and §; I T and ar; CH 206) Cajucom

5-160 CONSERVATION OF NATURAL RESOURCES

Importance and relation to recreation and outdoor education. (2 cr; prereq 3-150; I MWThF; CH 206) Cajucom

5-200 SCHOOL RECREATION

Principles of organizing and conducting school-sponsored recreation programs. (3 cr; IV MTWThF; CH 215) Chapman

5-230 RECREATION FOR THE MENTALLY RETARDED

Characteristics and special needs in relation to recreation programs; consideration of skills and techniques for work with retarded persons in institutions and in the community. (3 cr; prereq 5-210, 5-220 or §; III MTWThF; CH 215) Chapman

5-981 PROBLEMS

Focus on conduct of recreation programs. (Cr ar; prereq MEd candidate, §; hrs ar) Cajucom

5-983 READINGS: RECREATION

Independent study under tutorial guidance. (1-3 cr; prereq sr honor, grad, MEd or #; hrs ar) Boudreau

8-620 PRACTICUM: COLLEGE UNIONS

Supervised experiences in program operation; administrative and supervisory duties. (3-9 cr; prereq 12 grad cr in recreation; hrs ar) Cajucom

8-630 PRACTICUM: THERAPEUTIC RECREATION

Supervised experiences in program operation; administrative and supervisory duties. (3-9 cr; prereq 12 grad cr in recreation; hrs ar) Chapman

8-640 PRACTICUM: PUBLIC RECREATION AND PARKS

Supervised experiences in program operation; administrative and supervisory duties. (3-9 cr; prereq 12 grad cr in recreation; hrs ar) Cajucom

8-981* RESEARCH PROBLEMS

Individual problems. (Cr ar; prereq 8-980 or #; hrs ar) Chapman

SECOND TERM**1-525 FIELD OBSERVATION**

See First Term. (1-4 cr; prereq 1-520, #; VI-VIII T and ar; CH 206) Weiss

1-700 RECREATION FIELD WORK WITH SPECIAL GROUPS

See First Term. (1-15 cr; S-N only; prereq recreation students for special groups program only; hrs ar) Smith

3-700 SENIOR INTERNSHIP

See First Term. (1-12 cr; prereq 1-525, sr, recreation major or minor, ¶3-701 and #; I T and ar; CH 206) Weiss

5-140 RECREATION PROGRAMMING

Principles of program planning and leadership in all aspects of recreation. (5 cr; prereq 1-520 or #; II-III MTWThF; CH 215) Cheatham

5-981 PROBLEMS

See First Term. (Cr ar; prereq MEd candidate, #; hrs ar) Cheatham

5-983 READINGS: RECREATION

See First Term. (1-3 cr; prereq sr honor, grad, MEd or #; hrs ar) Cheatham

8-630 PRACTICUM: THERAPEUTIC RECREATION

See First Term. (3-9 cr; prereq 12 grad cr in recreation; hrs ar) Weiss

8-640 PRACTICUM: PUBLIC RECREATION AND PARKS

See First Term. (3-9 cr; prereq 12 grad cr in recreation; hrs ar) Weiss

8-981* RESEARCH PROBLEMS

See First Term. (Cr ar; prereq 8-980 or #; hrs ar) Weiss

School Health Education (Hlth)

Teaching Requirements for School Health Education—Those interested in teaching school health education in the state of Minnesota may qualify through one of the following professional programs.

1. Courses offered this summer which apply to the undergraduate major in school and community health education are Hlth 1-500, 3-100, 3-320, 5-400, 5-402.
2. Courses offered this summer which apply to advanced and graduate degrees in school health education are Hlth 5-120, 5-400, 5-402, 5-981, 5-982, 5-983, 8-890, 8-891.

FIRST TERM

3-100 CURRICULUM IN SCHOOL HEALTH EDUCATION

Study of the content included in units for the secondary school. (3 cr; prereq PubH 1-003 or 3-001, school health education major or minor; II MTWThF; NGW 201) Sande

3-330 TEACHING HEALTH IN THE ELEMENTARY SCHOOL

Content (including critical health issues) and methods of instruction in health education for the elementary school. (3 cr, §3-325, §PE 3-325; limited to 35 students, reserved in Bu 206; prereq elementary education major; I MTWThF; NGW 201) Sande

5-120 ROLE OF THE SCHOOL HEALTH EDUCATOR IN HEALTH APPRAISAL

Role of school medical and dental advisers, nurse, teachers, and other school personnel in protection and maintenance phases. (3 cr; III MTWThF; NGW 3) Slocum

5-160 PRACTICUM: CONSTRUCTION OF WRITTEN TESTS

Practical experience in the development of written tests with emphasis on test design and evaluation of the items. (3-6 cr, §PE 5-162; prereq PsyF 5-120; III MTWThF; CH 420) Shick

5-400 TOPICS: EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE

Basic background information on alcohol and other drugs and chemicals with emphasis on curriculum concepts, teaching methodology, materials and referral procedures appropriate for elementary, junior, and senior high school. (3 cr, §PubH 5-032; limited to 80 students, reserved in Bu 206; prereq sr, cert tchr, school nurse; II MTWThF; Owre 111) Borstad

5-402 DEATH EDUCATION IN CONTEMPORARY SOCIETY

(June 25 through July 13)

Basic background information on concepts and attitudes toward death, grief, and bereavement with emphasis on instructional aspects for the elementary and secondary schools; role of the school in suicide prevention. (3 cr, §PubH 5-040; limited to 80 students, reserved in Bu 206; prereq education sr, cert tchr, school nurse, mortuary science major and §; 1:30-3:30 MTWThF; Mayo 100) Slocum, Fulton, Fredlund, Slater

5-891 PROBLEMS

Focus on teaching of school health education. (Cr and hrs ar; prereq §) Slocum

5-982 INTEGRATING PAPER

Independent paper integrating learnings from a course or courses in education with learnings in school health education. (3 cr, §PE 5-982; prereq MEd only) Slocum

5-983 READINGS: HEALTH EDUCATION

Independent study under tutorial guidance. (1-3 cr; prereq sr honor, grad, §) Slocum

8-980* RESEARCH PROBLEMS

Designing, reporting on individual problems; required of all MA and PhD candidates. (3 cr; prereq PE 5-980, PsyF 5-110 or §) Slocum

8-891* RESEARCH PROBLEMS

Individual problems. (Cr ar; prereq 8-890 or §) Slocum

SECOND TERM

1-500 AMERICAN RED CROSS FIRST AID: STANDARD, ADVANCED

(2 cr; limited to 35 students, reserved in Bu 206; IV MTWThF; NGW 201) Borstad

3-320 METHODS AND MATERIALS IN SCHOOL HEALTH EDUCATION

Methods, materials, problems, and evaluation in preparation for health teaching; allocation and gradation of subject matter. (3 cr; prereq 3-100; II MTWThF; NGW 201) Ar

Secondary Education (SeEd)

FIRST TERM

3-150 INTRODUCTION TO SECONDARY SCHOOL TEACHING

Secondary education; purposes, history, organization, curriculum, pupils; organiza-

tion of instructional units; teaching; teaching profession; lecture, discussion section, and individual youth leadership project. (5 cr; limited to 30 students, reserved in Bu 206; prereq 5 cr introductory psychology; I-II MTWThF; PeikH 235) Griffin

3-151 DIRECTED STUDY

Analysis of specific instructional, curricular, organizational, and operational situations or problems in secondary education. (1-9 cr; prereq Δ) Williams

3-155 INTRODUCTION TO SECONDARY SCHOOL TEACHING

Individual differences and educational measurement; statistics, standardized tests, teacher-made tests, marking and promotion, educational research; psychology of learning and human development; lecture, discussion section, and individual youth leadership project. (5 cr; each section limited to 30 students, reserved in Bu 206; prereq 5 cr in introductory psychology) Burnham

Sec 1, I-II MTWThF, PeikH 165
Sec 2, IV-V MTWThF, PeikH 165

3-600† STUDENT TEACHING

Supervised teaching for students wishing to elect credits in student teaching in addition to regular requirements. (Cr ar; prereq Δ) E Anderson

5-105 AUDIO-VISUAL MATERIALS IN EDUCATION

Characteristics, advantages, limitations, and practical classroom use of audio-visual materials of nonprojected and projected types; practice in operation of audio-visual equipment. \$4 lab fee. (3 cr; prereq sr; I MTWThF and 1 hr ar; NH 211) Pearson

5-106 COORDINATING AN AUDIO-VISUAL EDUCATION PROGRAM

Criteria for equipment, facilities, and materials; in-service training of teachers; problems in schools or industry. \$4 lab fee. (3 cr; prereq 5-105 or $\$$; III MTWThF; WeH 202) Pearson

5-109 PROJECTED AUDIO-VISUAL MATERIALS AND EQUIPMENT LABORATORY

Planning and making projected materials for audio-visual education; use of materials and equipment. \$4 lab fee. (3 cr; each section limited to 15 students, reserved in Bu 206; lect IV MTWTh; WeH 202) Holt

Sec 1, VI MW, WeH 206
Sec 2, VI TTh, WeH 206

5-110 APPLIED INSTRUCTIONAL MEDIA EVALUATION AND SELECTION

Analysis of traditional and newer types of audio-visual materials; emphasis on selection applied to content, learning situations, and technical quality; opportunity for students to follow subject area and grade-level interests. (3 cr; limited to 30 students, reserved in Bu 206; prereq 5-105; II MTWThF; WeH 202) Holt

5-113 PRINCIPLES OF SECONDARY SCHOOL CURRICULUM

Concepts and basic principles; forces influencing curricular objectives, organization, and construction; evaluation and trends. (3 cr; prereq 3-155 or equiv; III MTWThF; PeikH 375) Kimpston

5-115 RETRIEVING INFORMATION

Finding and evaluating sources of information; identification of available options and development of skills needed to search them efficiently. (3 cr; II MTWThF; PeikH 375) Amundson

5-116 MODELS OF TEACHING

Examination of existing models of teaching and development of explicit, coherent, and personally satisfying models drawing on research literature to develop an adequate conceptual framework. (3 cr; III MTWThF; PeikH 235) Stockton

5-129 TRENDS AND ISSUES IN SECONDARY CURRICULUM

(July 9-20)
Research findings and analysis of current proposals at the national, state, and local levels. (3 cr; prereq 5-113 or equiv; 12:30-3:30 MTWThF; PeikH 375) Kimpston

†† Student teaching is open only to students in the College of Education regular degree programs. Application must be made prior to May 1. Forms and instructions are available in the Student Teaching Office, 227 Burton Hall.

5-152 TECHNIQUES OF INSTRUCTION IN SOCIAL STUDIES

Analysis of teaching strategies and contemporary curriculum materials in the social studies; techniques of instruction useful in inquiry strategies of analysis; classroom behavior and evaluation. (3 cr; required of MA, MEd, and PhD candidates; prereq 5-150; IV MTWThF; PeikH 155) Mackey

5-153 NEW PERSPECTIVES IN THE SOCIAL STUDIES

(June 18-July 5)

Issues, materials, and instructional techniques related to current topics of particular relevance to social studies teachers. (1-3 cr [12 cr max]; I-III MTWThF; PeikH 155) Mackey

5-172 SUPERVISION OF SECONDARY INSTRUCTION

Achievement of appropriate teaching expectations focusing on problems of personnel responsible for their improvement. (3 cr; prereq 5-113; I MTWThF; PeikH 375) Speiker

5-189 MATERIALS AND CURRICULUM CONSTRUCTION IN MODERN LANGUAGES

Curriculum development, preparation of units; testing techniques; materials for classroom, language laboratory, televised instruction, and programmed learning. (3 cr; prereq 5-385 and #; II MTWThF; PeikH 225) Lange

5-191†† WORKSHOP: TEACHING OF FOREIGN LANGUAGES

Related specifically to the needs of the in-service teacher. (1-10 cr [10 cr max])

Sec 1: Approaches to the Teaching of Literature

(June 18-July 3)

(This offering for 3 cr; limited to 30 students, reserved in Bu 206; IV-VI MTWThF; PeikH 215) Lange

Sec 2: Approaches to the Teaching of Culture

(July 9-20)

(This offering for 3 cr; limited to 30 students, reserved in Bu 206; IV-VI MTWThF; PeikH 215) Lange

5-192†† FOREIGN LANGUAGE WORKSHOP: DEVELOPMENT OF MATERIALS AND SHORT COURSES FOR INDIVIDUALIZED INSTRUCTION

For foreign language teachers to develop and test new types of curriculum materials in French, German, or Spanish, including independent study units, learning packages, minicourses, quarter courses, small group projects, and enrichment materials to be tried out with high school students, revised, and published for the benefit of teachers of the state. Three sections will be offered in the locations listed below. Students will register for 12 credits, with enrollment limited in each section. Undergraduate students will be accepted for the overseas program but will register for applicable language courses. Deadline for advanced application is April 15; interested students should write for information and application forms to Dale L. Lange, 148 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455. (3-12 cr)

Sec 1, July 2-August 10, limited to 20 students, reserved in PeikH 148; Besançon, France; Jorstad

Sec 2, July 2-August 10, limited to 20 students, reserved in PeikH 148; Erlangen, Germany; Momber

Sec 3, June 25-July 27, limited to 20 students, reserved in PeikH 148; Barcelona, Spain; Sanchez

5-321 TEACHING LITERATURE IN THE SECONDARY SCHOOLS

Background for guidance in reading of secondary school students; services of information and theory in development of program of instruction in literature. (3 cr; prereq 3-155 or jr-sr high school tchg exper; I MTWThF; PeikH 215) Ar

5-322 TEACHING RHETORIC AND COMPOSITION IN SECONDARY SCHOOLS

Contemporary directions in rhetorical theory and analysis of recent curriculum developments bearing on the teaching of oral and written composition. (3 cr; II MTWThF; PeikH 215) Michlin

5-344 TEACHING READING IN SECONDARY SCHOOLS

Procedures, objectives, and materials for teaching reading in subject-matter fields. (3 cr; prereq 9 cr in education; II MTWThF; PeikH 175) Graves

†† Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

5-349†† WORKSHOP: SECONDARY READING INSTRUCTION

Principles, instructional techniques, and materials for teaching reading in secondary schools. Each offering will focus on a single topic. (1-12 cr [12 cr max, this offering for 3 cr]; limited to 25 students, reserved in Bu 206; prereq #: IV MTWThF; PeikH 375) Graves

5-394†† WORKSHOP: SCIENCE EDUCATION

Analysis of issues, materials, and instructional techniques on current topics of relevance to secondary school and college science teachers. (1-12 cr [12 cr max])

**Sec 1: Teaching Environmental Chemistry in Secondary Schools
(June 18-29)**

An extension of the 1972 offering into the area of pollution in air, water, and foods. This offering for 3 credits. (Limited to 20 students, reserved in Bu 206; II-III and V-VI MTWThF; PeikH 355) Boeck

**Sec 2: Teaching Schoolyard and Backyard Earth Science
(July 9-20)**

Construction and use of simple devices for measurement in earth science study of immediate environment. This offering for 3 credits. (Limited to 20 students, reserved in Bu 206; II-III and V-VI MTWThF; PeikH 355) Boeck

5-404 LANGUAGE, CULTURE, AND EDUCATION

Psychological and social-psychological perspectives for the study of language-communication; dimensions of language variation (dialects, codes, registers); implications for program development and instructional practices. (3 cr, §Spch 5-404; III MTWThF; FolH 201) Piché

5-609 INTERNSHIP

(Cr ar; prereq #) E Anderson

5-670/5-671† INTERNSHIP: SUPERVISION OF SOCIAL STUDIES STUDENT TEACHERS

On-the-job supervision of social studies student teachers; coordinating seminar. (2 cr for 5-670, 1 cr for 5-671; prereq #: hrs ar) Mackey

8-801* PROBLEMS: TEACHING SOCIAL STUDIES

Individual research. (3-9 cr; prereq 5-150, 5-152, 5-156, 8-104 or #: hrs ar) Gardner, Mackey

8-805* PROBLEMS: AUDIO-VISUAL EDUCATION

(Cr and hrs ar; prereq #) Pearson

8-807* PROBLEMS: RADIO-TELEVISION EDUCATION

For students whose work in SeEd 5-107 has indicated an aptitude or interest in the field. (1-3 cr per qtr; prereq 5-107; hrs ar) Pearson

8-825* PROBLEMS: SECONDARY SCHOOL SUPERVISION

An individual problems course on improvements of instruction. (Cr and hrs ar; prereq #) Kimpston

8-871* PROBLEMS: CURRICULUM CONSTRUCTION

Individual research. (Cr and hrs ar; prereq #) Boeck, Lange, Kimpston

8-895 READINGS IN ENGLISH AND MODERN LANGUAGE EDUCATION

Readings in high school English or modern language instruction. (Cr ar; prereq #) Lange

8-896* PROBLEMS: TEACHING ENGLISH

For those qualified to undertake individual research. (Cr and hrs ar) Piché, Graves

SECOND TERM

3-151 DIRECTED STUDY

See First Term. (1-9 cr; prereq Δ) Williams

5-105 AUDIO-VISUAL MATERIALS IN EDUCATION

See First Term. \$4 lab fee. (3 cr; prereq sr; I MTWTh and 1 hr ar; WeH 202) Pearson

†† Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

5-107 RADIO AND TELEVISION IN EDUCATION

Production, techniques of classroom use, selection of equipment, teaching appreciation, and the administration of radio and television in the schools. \$4 lab fee. (3 cr; prereq 9 cr in education; III MTWThF; WeH 202) Pearson

5-108 NONPROJECTED AUDIO-VISUAL MATERIALS AND EQUIPMENT LABORATORY

Planning and making nonprojected materials for audio-visual education. \$4 lab fee. (3 cr; prereq 5-105 or ¶5-105; each section limited to 15 students, reserved in Bu 206; lect IV MTWThF; WeH 202) Holt

Sec 1, VI MW, WeH 206

Sec 2, VI TTh, WeH 206

5-150 INTRODUCTION TO SOCIAL STUDIES EDUCATION

Advanced methods for social studies teachers; prerequisite to other graduate level courses in social studies education. (3 cr; IV MTWThF; PeikH 155) Glenn

5-153 NEW PERSPECTIVES IN THE SOCIAL STUDIES

(August 6-17)

See First Term. (1-3 cr [12 cr max]; limited to 25 students, reserved in Bu 206; I-III MTWThF; PeikH 155) Glenn

5-173 PREPARATION OF CURRICULUM MATERIALS

(July 23-August 3)

Principles and procedures for the selection, development, and organization of curriculum materials including learning packages, teacher-made games and simulations, units, courses of study, and curriculum guides. (1-12 cr [this offering for 3 cr]; 12:30-3:30 MTWThF; PeikH 375) Kimpston

5-194 CURRICULUM DEVELOPMENT IN SECONDARY ENGLISH AND SPEECH

(July 23-August 10)

Analysis and evaluation of curricula and trends; emphasis on articulation. (3 cr; limited to 25 students, reserved in Bu 206; prereq 3-326 or equiv; I-II MTWThF; PeikH 225) Brunetti

5-195 WORKSHOP: CURRICULUM DEVELOPMENT IN ENGLISH AND SPEECH

(July 23-August 10)

Establishing curricular goals; planning new programs, courses, experiences in secondary language arts curricula; developing and selecting pertinent materials and processes. (3 cr; limited to 25 students, reserved in Bu 206; prereq 5-194 or ¶5-194 or ¶; VI-VII MTWThF; PeikH 225) Brunetti

5-325 IMPROVISATIONAL DRAMA TECHNIQUES IN THE CLASSROOM

(July 30-August 15)

Experiences in improvisation, including training in beginning theatre games, sound and motion, characterization and plot structure; development of improvisational activities based on themes and literature of subject interest and suited to the needs of students. (3-6 cr [6 cr max, this offering for 6 cr]; limited to 25 students, reserved in Bu 206; II-III and VI-VII MTWThF; PeikH 165, 175) Wright

5-326†† WORKSHOP: FILM STUDIES

(July 23-August 3)

Applications of film as extension and as alternative to study of traditional literary forms; as context or stimulus for discussion, for reading, for writing; analysis and evaluation of range of film and published materials available for use with secondary school students in film-study classes. (3 cr; limited to 30 students, reserved in Bu 206; III-IV MTWThF; PeikH 215) Yesner

5-371†† WORKSHOP: CURRICULUM LABORATORY PRACTICE

(July 23-August 3)

Analysis and construction of units, courses of study, and curricula according to needs, interests, level, and specialization. (0-3 cr per qtr; prereq 5-113 or Elem 5-100, ¶; 9:00-12:00 MTWThF; PeikH 375) Kimpston

†† Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

5-394†† WORKSHOP: SCIENCE EDUCATION

Analysis of issues, materials, and instructional techniques on current topics of relevance to secondary school and college science teachers. See page 41 for further details. (1-12 cr [12 cr max])

Sec 1: Teaching Environmental Biology in Secondary Schools

(July 23-August 3)

This offering for 3 credits. (Limited to 25 students; reserved in Bu 206; I-IV MTWThF; PeikH 385) Gennaro

Sec 2: Controversial Issues, Value Clarification and the Classroom; An Interdisciplinary Approach for Science and Social Studies Teachers

(August 6-17)

This offering for 3 credits. (Limited to 25 students; reserved in Bu 206; I-III MTWThF; PeikH 165) Gennaro

5-670/5-671† INTERNSHIP: SUPERVISION OF SOCIAL STUDIES STUDENT TEACHERS

See First Term. (2 cr for 5-670, 1 cr for 5-671; prereq #; hrs ar) Glenn

8-801* PROBLEMS: TEACHING SOCIAL STUDIES

See First Term. (3-9 cr; prereq 5-150, 5-152, 5-156, 8-104 or #; hrs ar) Glenn

8-805* PROBLEMS: AUDIO-VISUAL EDUCATION

See First Term. (Cr and hrs ar; prereq #) Pearson

8-807* PROBLEMS: RADIO-TELEVISION EDUCATION

See First Term. (1-3 cr per qtr; prereq 5-107; hrs ar) Pearson

8-825* PROBLEMS: SECONDARY SCHOOL SUPERVISION

See First Term. (Cr and hrs ar; prereq #) Kimpston

8-871* PROBLEMS: CURRICULUM CONSTRUCTION

See First Term. (Cr and hrs ar; prereq #) Gennaro, Kimpston

Business Education (BsEd)

FIRST TERM

5-101 RESEARCH AND METHODS IN TEACHING TYPEWRITING AND SHORTHAND

(June 18-July 3)

Application of research findings to classroom methodology. (3 cr; III-V MTWThF; PeikH 255) McLean

5-104 OFFICE COORDINATION TECHNIQUES

(July 9-20)

Problems in the cooperative program; guidance and selection; placing students in offices; job adjustments; developing and evaluation of the training program. (3 cr, §DE 5-105; 8:00-11:00 MTWThF; PeikH 255) Ar

5-112 PROGRAM DEVELOPMENTS IN BUSINESS EDUCATION (Adult Business and Office Education)

(July 9-20)

Developments emerging from research and local, state, and national programs and projects. This offering for 3 credits will include the business and office education teacher's role in the organization, administration, and teaching of adult business and office education courses. Topics include reimbursement qualifications; procedures for determining courses and course content; adapting teaching methods and materials for adult use. (1-12 cr [12 cr max]; 1:00-4:00 MTWThF; PeikH 175) Hopkins

5-114 OFFICE OCCUPATIONAL EXPERIENCE

Observation and practice in business offices; weekly seminars on application to teaching and guidance of high school and post-high school students. Each 3 credit offering requires 250 hrs of work; may not apply for credit toward an advanced degree. (3-12 cr, §SeEd 3-100; prereq #; IX T and hr ar; PeikH 255) Ar

†† Graduate students planning to register for any workshop should consult their advisers concerning the possibility of using credit for the workshop in their graduate programs.

- 8-300 SEMINAR: RESEARCH IN BUSINESS AND ECONOMIC EDUCATION**
Primarily for doctoral level students; planning and evaluation of research and individual projects. (1 cr per qtr; prereq #; hrs ar) Hopkins, McLean
- 8-600 INTERNSHIP: BUSINESS EDUCATION**
In-service experience in a business education specialist role, supervised experience in communication, planning, decision making, materials, curriculum development, and supervising and working with people. (3-12 cr; hrs ar) Hopkins, McLean
- 8-900* PROBLEMS: BUSINESS EDUCATION**
Investigations in field of student's interest. (Cr and hrs ar; prereq #) Hopkins, McLean

SECOND TERM

- 5-103 CONSUMER EDUCATION IN THE SCHOOLS**
(July 23-August 3)
Objectives, content, and curriculum organization at elementary and secondary levels. (3 cr; 1:00-4:00 MTWThF; PeikH 215) Hopkins
- 5-107 MATERIALS AND METHODS IN OFFICE EDUCATION**
(July 23-August 10)
Recent research and developments in teaching office procedures and the preparatory and related classes for office education. (3 cr; III-IV MTWThF; PeikH 355) McLean
- 5-112 PROGRAM DEVELOPMENTS IN BUSINESS EDUCATION (Office Technology)**
(July 23-August 10)
See First Term. This offering for 3 credits will focus on word processing systems, electronic office machines, remote filing and retrieval systems, reprographics, office landscaping, and other innovations for the "office of the future." (1-12 cr [12 cr max]; I-II MTWThF; PeikH 215) McLean
- 8-300 SEMINAR: RESEARCH IN BUSINESS AND ECONOMIC EDUCATION**
See First Term. (1 cr per qtr; prereq #; hrs ar) Hopkins, McLean
- 8-600 INTERNSHIP: BUSINESS EDUCATION**
See First Term. (3-12 cr; hrs ar) Hopkins, McLean
- 8-900* PROBLEMS: BUSINESS EDUCATION**
See First Term. (Cr and hrs ar; prereq #) Hopkins, McLean

Social and Philosophic Foundations of Education

History and Philosophy of Education (HEd)

FIRST TERM

- 3-090 THE SCHOOL AND SOCIETY**
Readings in social science and philosophy give the student opportunity to integrate points of view in thinking about the role of the school in present-day society. (3 cr; each section limited to 65 students, reserved in Bu 206; prereq sr)
Sec 1, II MTWThF, Arch 15, Weidman
Sec 2, III MTWThF, Arch 15, Harkins
Sec 3, IV MTWThF, Arch 15, Weidman
- 3-099 DIRECTED STUDY**
Independent readings with guidance of the faculty. (1-6 cr; prereq #; hrs ar) Harkins, Weidman
- 8-241* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION**
For graduate students interested in research and original work in these areas. (Cr and hrs ar; prereq #) Harkins, Weidman

SECOND TERM

3-090 THE SCHOOL AND SOCIETY

See First Term. (3 cr; each section limited to 65 students, reserved in Bu 206; prereq sr)

Sec 1, I MTWThF, Arch 15, Harkins
Sec 2, II MTWThF, Arch 15, Weidman

3-099 DIRECTED STUDY

See First Term. (1-6 cr; prereq ‡; hrs ar) Beck, Harkins, Weidman

5-101 HISTORICAL FOUNDATIONS OF MODERN EDUCATION

Analysis and interpretation of important elements in modern education derived from the Greeks, Romans, the Middle Ages, and Renaissance; background course for all other courses in the history and philosophy of education. (3 cr; II MTWThF; Pt 215) Beck

5-141 CRITICAL ISSUES IN CONTEMPORARY EDUCATION

Introduces graduate students to ideas involved in current theory and practice. (3 cr; III MTWThF; PeikH 335) Beck

5-190 SOCIOLOGY OF EDUCATION

Advanced studies in the social aspects of education including the school as a socialization process, the social structure of education, the role of the school in social change. (3 cr, §Soc 5-953; IV MTWThF; Jones 4) Weidman

8-241* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION

See First Term. (Cr and hrs ar; prereq ‡) Beck, Harkins, Weidman

Vocational-Technical Education

Agricultural Education (AgEd)

FIRST TERM

5-071 SUPERVISED OCCUPATIONAL EXPERIENCES IN AGRICULTURE

Organization and administration of an occupational experience program in agriculture for high schools and area schools. (3 cr; June 18 to July 6, VI-VII MTWThF; July 9-20 ar; Hr 301) Ar

5-072 PRACTICUM: AGRICULTURAL BUSINESS AND INDUSTRY

Observation, study, and experience in agricultural business and industry; application to educational programs in agriculture. (1-3 cr [9 cr max]; June 18 to July 6, hr and rm ar; July 9-20 ar) Bear, Norenberg

5-084 CURRICULA FOR CAREER EXPLORATION IN AGRICULTURE OCCUPATIONS

Analysis and evaluation of material; criteria for selection of material; content, organization, resource activities, and teaching techniques. (3 cr; June 18 to July 6, III-IV MTWThF; July 9-20 ar; Hr 301) Swanson

5-090 INDEPENDENT STUDY

Topics may be chosen to permit study of areas within education or to supplement areas of inquiry not provided in the regular course structure. (1-3 cr; prereq sr; hr and rm ar) Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

5-095 INDEPENDENT STUDY

Preparation of a paper dealing with learnings in agricultural education applied to professional responsibilities. (3 cr; prereq MEd student in agricultural education; hrs ar) Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

8-001* RESEARCH IN AGRICULTURAL EDUCATION

Selecting problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts. (Cr ar; prereq 15 cr in education)

Sec 1, limited to 25 students, reserved in CofH 130; June 18 to July 6, VIII-IX MTWThF; July 9-20 ar; Hr 301; Swanson

Sec 2, limited to 30 students, reserved in CofH 130; hrs and rm ar; Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

8-091 FIELD PROBLEMS

Making investigations, gathering data, and formulating plans regarding agricultural education. (3 cr; hrs ar) Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

SECOND TERM

5-028 AGRICULTURAL EDUCATION IN THE SECONDARY SCHOOLS

Fundamentals for teaching production agriculture and agribusiness to secondary school students; use of the home, farms, and businesses and community in structuring and implementing educational programs; FFA, orientation to careers, records of planning and performance developing, and utilizing teaching units. \$4 lab fee. (5 cr; prereq SeEd 3-155 or ¶SeEd 3-155; I-II MTWThF; Hr 301) R Peterson

5-090 INDEPENDENT STUDY

See First Term. (1-3 cr; prereq sr; hr and rm ar) Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

5-095 INDEPENDENT STUDY

See First Term. (3 cr; hr ar; prereq MEd student in agricultural education) Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

5-128 METHODS OF TEACHING

Methods of teaching agriculture or related subjects; developing competencies in planning, organizing, implementing, and evaluating instruction with practice in instructional techniques. (3 cr; prereq nonagricultural education major and/or ¶; VI-VII MTWThF; Hr 301) R Peterson

5-129 CURRICULUM PLANNING

Methods and procedures in planning a curriculum to teach within a specific subject matter area; curriculum construction in the subject matter field for use in native country setting. (3 cr; prereq 5-128 or ¶5-128, nonagricultural education major and/or ¶; III-IV MTWThF; Hr 301) Persons

8-001* RESEARCH IN AGRICULTURAL EDUCATION

See First Term. (Cr and hrs ar; prereq 15 cr in education) Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

8-091 FIELD PROBLEMS

See First Term. (3 cr; hrs ar) Marvin, Bear, M Peterson, Swanson, Persons, R Peterson, Copa, Norenberg

Distributive Education (DE)

FIRST TERM

5-100 ORGANIZATION AND ADMINISTRATION OF DISTRIBUTIVE EDUCATION

Principles, practices, and legislation followed in developing cooperative vocational and adult programs under federal vocational acts; basic course for teacher-coordinators and vocational administrators. (3 cr; limited to 30 students, reserved in Bu 206; IV MTWThF; PeikH 275) Meyer

5-110 CURRICULUM IN COOPERATIVE VOCATIONAL EDUCATION

Planning, organizing, implementing, and evaluating cooperative vocational education curriculum. (2 cr; limited to 30 students, reserved in Bu 206; II MWF; PeikH 275) Meyer, Whiteford

5-111 CURRICULUM IN COOPERATIVE DISTRIBUTIVE EDUCATION

Application in secondary and post-secondary distributive education; certification course for distributive education teacher-coordinators. (2 cr; prereq 5-110 or ¶5-110; II TTh and ar; PeikH 275) Meyer

5-115 POST-SECONDARY BUSINESS AND DISTRIBUTIVE EDUCATION

Determining needs, curriculum facilities, admission practices, placement and follow-up of students, teacher qualifications, interorganizational relations in junior college and area technical institute programs. (3 cr; limited to 30 students, reserved in Bu 206; V MTWThF; PeikH 275) Ashmun

5-300 MATERIALS AND METHODS IN COOPERATIVE VOCATIONAL EDUCATION

Basic course for teacher-coordinators of cooperative vocational education programs. (2 cr; limited to 30 students, reserved in Bu 206; I MWF; PeikH 275) Ashmun, Whiteford

5-301 MATERIALS AND METHODS IN COOPERATIVE DISTRIBUTIVE EDUCATION

For teacher-coordinators of cooperative and project plan distributive education; certification course for distributive education teacher-coordinators. (2 cr; prereq 5-300 or ¶5-300; I TTh and ar; PeikH 275) Ashmun

5-400 PROGRAM DEVELOPMENTS IN DISTRIBUTIVE EDUCATION

Problems, practices, methodology, and relationships, on topics of concern to distributive educational personnel; two 2-week workshops coordinating course work on career education for personnel working in school settings. For the first workshop (June 18-29) students will register for 3 credits each in DE 5-400, section 1, and in CSPP 5-300, section 3. For the second workshop (July 7-20) students will register for 3 credits each in DE 5-400, section 2, and in CSPP 5-300, section 4. Advance application required; information from Professor W. Wesley Tennyson, 259 Burton Hall, University of Minnesota. (1-12 cr [12 cr max]; each section limited to 40 students, reserved in Bu 206; prereq §) Klaurens

Sec 1, June 18-29, II-IV MTWThF, FraH B1, B20, B25

Sec 2, July 7-20, II-IV MTWThF, FraH B1, B20, B25

8-300 SEMINAR: RESEARCH IN DISTRIBUTIVE EDUCATION

Planning and evaluation of research and individual projects. Primarily for doctoral level students. (1 cr; prereq doctoral student or §; hrs and rm ar) Ashmun, Klaurens, Meyer

8-600 INTERNSHIP: DISTRIBUTIVE EDUCATION

Practical participation in supervisory or teaching positions; in-service experience in leadership role includes a seminar-related project. (3-9 cr; required for specialist in distributive education certificate; hrs ar) Ashmun, Meyer, Klaurens

8-900* PROBLEMS: DISTRIBUTIVE EDUCATION

Individual research. (Cr ar; prereq §) Ashmun, Meyer, Klaurens

SECOND TERM**3-100 DISTRIBUTIVE OCCUPATIONAL EXPERIENCE**

Observation and practice combined with weekly seminars on application to the teaching and guidance of high school and post-high school students. (1-15 cr; prereq jr, sr, distributive education majors only, §; hrs ar) Klaurens

5-105 COORDINATION TECHNIQUES

Problems of coordinators in the cooperative vocational education program; guidance and selection; placing students in work stations, assisting job adjustments, developing the training program. (2 cr; limited to 30 students, reserved in Bu 206; IV MWF; PeikH 275) Klaurens

5-106 COORDINATION TECHNIQUES IN COOPERATIVE DISTRIBUTIVE EDUCATION

Application in secondary and post-secondary cooperative and project plan programs; certification course for distributive education teacher-coordinators. (2 cr; prereq 5-105 or ¶5-105; IV TTh and ar; PeikH 275) Klaurens

8-300 SEMINAR: RESEARCH IN DISTRIBUTIVE EDUCATION

See First Term. (1 cr; prereq doctoral student or §; hrs and rm ar) Klaurens

8-900* PROBLEMS: DISTRIBUTIVE EDUCATION

See First Term. (Cr ar; prereq §) Klaurens

Home Economics Education (HEEd)

FIRST TERM

5-111 CURRICULUM IN HOME ECONOMICS OCCUPATIONAL EDUCATION

Application in secondary and post-secondary home economics education; certification course for home economics teacher-coordinators. (2 cr; prereq DE 5-110 or ¶DE 5-110; II TTh; PeikH 275) Whiteford

5-300 HOME ECONOMICS CURRICULUM

(June 18-July 3)

Examination of research and literature; development of units of study and programs at elementary and secondary levels; production and evaluation of materials. Application to consumer homemaking and occupational education. (3 cr; prereq 3-530 and #; II-IV MTWThF and ar; McNH 102) Wantoch

5-301 MATERIALS AND METHODS IN HOME ECONOMICS OCCUPATIONAL EDUCATION

For teacher-coordinators of cooperative and project plan home economics education; certification course for home economics teacher-coordinators. (2 cr; prereq DE 5-300 or ¶DE 5-300; I TTh; PeikH 275) Whiteford

5-305 HOME ECONOMICS CURRICULUM: COLLEGE LEVEL

(July 5-20)

Examination of research and literature; course and program development in higher education; analysis of current college programs; production and evaluation of curriculum materials. (3 cr; prereq #; II-IV MTWThF and ar; McNH 108) Ar

5-310 METHOD IN TEACHING HOME ECONOMICS: THEORY AND TECHNOLOGY

(July 5-20)

Derivation of theory for educational method from relevant research; application to the educational objectives; analysis of technology related to teacher method. (3 cr; prereq 3-530, #; II-IV MTWThF and ar; McNH 102) Henrie

5-325 TRENDS IN HOME ECONOMICS EDUCATION

Current status, purposes, programs, content emphasis, research, problems, and issues in the field. (3 cr; prereq 5-300 or 5-305; VI MTWThF; McNH 102) Whiteford

5-900 READINGS IN HOME ECONOMICS EDUCATION

Independent study under tutorial guidance. (1-3 cr; prereq #; V T and ar; McNH 108) Ford

8-900* PROBLEMS: HOME ECONOMICS EDUCATION

Independent study of current educational problems. (1-9 cr; prereq 8-300, #; VII T and ar; McNH 108) Ford

SECOND TERM

5-900 READING IN HOME ECONOMICS EDUCATION

See First Term. (1-3 cr; prereq #; V T and ar; McNH 108) Ford

8-900* PROBLEMS: HOME ECONOMICS EDUCATION

See First Term. (1-9 cr; prereq 8-300, #; VII T and ar; McNH 108) Ford

Industrial Education (Ind)

FIRST TERM

5-100 COMMUNICATIONS OCCUPATIONAL EXPERIENCE

Structured/supervised employment in the communications industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5-100, 5-101, 5-102, and 5-103 may not exceed 15. (1-5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-101 PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE

Structured/supervised employment in the production/manufacturing industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5-100, 5-101, 5-102, and 5-103 may not exceed 15. (1.5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-102 POWER/ENERGY OCCUPATIONAL EXPERIENCE

Structured/supervised employment in the power/energy industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5-100, 5-101, 5-102, and 5-103 may not exceed 15. (1.5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-103 CONSTRUCTION OCCUPATIONAL EXPERIENCE

Structured/supervised employment in the construction industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5-100, 5-101, 5-102, and 5-103 may not exceed 15. (1.5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-314 ADMINISTRATION OF INDUSTRIAL EDUCATION

General and vocational phases; objectives, programs, and practices; laws, rulings, and standards for aid; significant literature. (3 cr; prereq 3-330 or #; I MTWThF; PeikH 65) Nelson

5-325 PHILOSOPHY AND PRACTICE OF INDUSTRIAL EDUCATION

History, objectives, development, and current practices of the field. (3 cr, §3-330; III MTWThF; PeikH 65) Miletich

8-310 RESEARCH

Critical analysis of existing research; selection of problems; organization and presentation of projects. (3 cr; prereq #; II MTWThF; PeikH 65) Pucel

8-900, 8-901, 8-902* RESEARCH PROBLEMS

Individual conferences. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar) Bjorkquist, Moss, Nelson, Pucel, Randleman, Smith

SECOND TERM

3-344 EQUIPMENT AND MANAGEMENT

Planning, evaluating, and management of industrial education shop and laboratory facilities. (3 cr; prereq 1-300 or 3-340 or #; IV MTWThF; PeikH 65) Bjorkquist

5-100 COMMUNICATIONS OCCUPATIONAL EXPERIENCE

See First Term. (1.5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-101 PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE

See First Term. (1.5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-102 POWER/ENERGY OCCUPATIONAL EXPERIENCE

See First Term. (1.5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-103 CONSTRUCTION OCCUPATIONAL EXPERIENCE

See First Term. (1.5 cr per qtr [15 cr max]; limited to 10 students, reserved in Bu 206; prereq #; hrs ar) Miletich

5-303 INSTRUCTIONAL AIDS

Planning, construction, use. (3 cr; prereq 3-360 or 5-360 or equiv; I MTWThF; PeikH 65) Kavanaugh

5-305 CRITICAL ISSUES IN INDUSTRIAL EDUCATION

Identification, analysis, and discussion of major current problems in the field. (3 cr; III MTWThF; PeikH 65) Kavanaugh

5-310 COORDINATION

Duties and responsibilities of coordinators in trade schools, part-time programs, and comprehensive high schools. (3 cr; prereq 3-330 or 5-325 or #; II MTWThF; PeikH 65) Miletich

8-900, 8-901, 8-902* RESEARCH PROBLEMS

See First Term. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar) Bjorkquist, Kavanaugh, Moss, Nelson, Randleman, Smith

College of Forestry

Undergraduate forestry field clinic studies are provided for beginning juniors, both resident and transfers, at the Itasca Forestry and Biological Station, Itasca State Park, during the 4 weeks immediately preceding the opening of the fall quarter. This field clinic work is required of all forestry students majoring in forest resources development and forest science. Required courses at Itasca are FBio 3-100, Important Forest Plants (2 credits); FBio 3-101, Forest Ecology (3 credits); and FRD 3-201, Field Forest Measurements (1 credit). This intensive field clinic provides all students entering professional forestry courses in the junior year with an introduction to forestry in an outstanding field setting and is timed to interfere as little as possible with summer employment.

About one-half of the basic nonforestry courses required for graduation in all College of Forestry curricula are available during the Summer Session on the Twin Cities Campus through various departments as shown elsewhere in this bulletin. Students with deficiencies or those desiring to speed up their graduation can effectively utilize the required Summer Session offerings in the biological and physical sciences, mathematics, social sciences, communications, etc.

Graduate course offerings are largely limited to the "research problem" area and are intended primarily for students majoring in some field of forestry.

OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION††

(SPECIAL TERM FOR FORESTRY STUDENTS—AUGUST 28 TO SEPTEMBER 21)

Required of all Forest Resources Development and Forest Science majors. Must be completed between the sophomore and junior years. Freshman and sophomore courses listed on page 15 of the 1971-74 *College of Forestry Bulletin* must be completed before the Itasca Forestry Session. Admission without these courses requires the approval of the director of the Itasca Forestry Session. Transfer students must have been accepted for admission into the College of Forestry, and registration for Itasca is administered at the same time as the fall quarter registration in early August. The schedule is arranged to occupy the student's full time for 5½ days per week. Largely field or laboratory work. All students must register for the following courses.

Forest Biology (FBio)

3-100 IMPORTANT FOREST PLANTS

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

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

3-101 FOREST ECOLOGY

Ecological principles. Silvical characteristics of trees and shrub species. Forest communities and environmental factors. The ecology of recreational areas. (3 cr)
Sucoff

Forest Resources Development (FRD)

3-201 FIELD FOREST MEASUREMENTS

Introduction to and use of instruments in forest mensuration. (1 cr; prereq Math 1-008) Hallgren

OFFERED ON THE ST. PAUL CAMPUS

Forest Biology (FBio)

FIRST AND SECOND TERMS

8-100* RESEARCH PROBLEMS IN SILVICULTURE

(Cr ar) Bakuzis, B Brown, Hansen, Scholten, Tappeiner

8-101* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY

(Cr ar) Sucoff

8-102* RESEARCH PROBLEMS IN FOREST TREE GENETICS

(Cr ar) Mohn

8-103* RESEARCH PROBLEMS IN FOREST HYDROLOGY

(Cr ar) Mace

Forest Resources Development (FRD)

FIRST AND SECOND TERMS

8-200* RESEARCH PROBLEMS IN FOREST MANAGEMENT

(Cr ar) B Brown, Irving, Hallgren

8-201* RESEARCH PROBLEMS IN FOREST ECONOMICS

(Cr ar) Gregersen, Skok

8-202* RESEARCH PROBLEMS IN FOREST MEASUREMENTS

(Cr ar) Meyer, Gerrard, Ulliman

8-203* RESEARCH PROBLEMS IN FOREST RECREATION

(Cr ar) Hansen, Merriam, Knopp

8-204* RESEARCH PROBLEMS IN FOREST POLICY

(Cr ar) Irving, Merriam, Skok, Gregersen, Hallgren

8-205* RESEARCH PROBLEMS IN REMOTE SENSING AND PHOTOGRAMMETRY

(Cr ar) Meyer, Gerrard, Ulliman

Forest Products (ForP)

FIRST AND SECOND TERMS

8-300* RESEARCH PROBLEMS IN FOREST PRODUCTS ENGINEERING

(Cr ar) Haygreen, Hossfeld, Kaufert, Erickson, Gertjejansen

8-301* RESEARCH PROBLEMS IN FOREST UTILIZATION

(Cr ar) Haygreen, Hossfeld, Kaufert, Erickson, Gertjejansen, Thompson

OFFERED AT CLOQUET FORESTRY CENTER

FIRST TERM

5-404 SUMMER FORESTRY WORKSHOP FOR SECONDARY TEACHERS

(June 18-29)

Lecture sessions on biological foundations of forest, watershed, wildlife management; social and economic aspects of forestry; timber management; recreation and amenity values of the forest. Laboratory sessions on initiation and development of forestry-related projects adaptable in junior and senior high school curricula. (5 cr) Ar

General College

The General College is open to any resident of Minnesota who is a high school graduate and for whom its courses and student personnel services are appropriate. Non-high school graduates who perform satisfactorily on scholastic aptitude tests also may apply for admission.

A student enrolled in the General College pursues a course of study individually planned in consultation with an adviser, selecting subjects from a free-choice curriculum. He may use this program to explore educational and personal interests, to test his ability to succeed in college-level academic work, or (if his grades are acceptable) to prepare himself for advanced study at the University of Minnesota or at another institution. He may combine general and liberal arts courses with instruction in such career education sequences as electronics technology, dental assisting, marketing, law enforcement, legal secretarial training, recreation for special groups, legal assistant, legal administrator, and human services generalist programs. Credits earned in these occupational options, and in some cases through work experience, can be applied toward the requirements for the degrees offered through the General College.

Recently the Board of Regents gave the General College faculty permission to accept candidates for work in certificate and degree programs extending beyond the associate in arts (A.A.) degree. Two degrees, the bachelor of general studies (B.G.S.) and the bachelor of applied studies (B.A.S.) have been approved. Students wishing to discuss proposals for work at the University of Minnesota through the General College after completion of an Associate's degree should make inquiry in the Student Personnel Office, 10 Nicholson Hall.

General or liberal studies courses in the General College resemble those offered in a traditional curriculum in that they can be classified into the social sciences, the natural sciences, and the humanities. However, the curriculum departs from tradition in some respects. Instruction focuses not only upon factual content but also on relations in and among fields of knowledge, on practical applications, and on critical and creative thinking. The courses tend to be broad in scope rather than specialized. They can be used to give an overview of a field, but students deciding upon a major should register for the basic courses offered by the department in which they hope to do advanced study.

Students enrolling in the college for the first time as entering freshmen are required to register for General College courses only. After they have satisfactorily completed 1 quarter in the college, they may consult an adviser about the possibility of registering for a "combination program," in which some of their course work is taken in other colleges of the University. The

combination program is especially valuable during summer sessions, when only a limited number of General College courses is available.

General College students may transfer to other colleges of the University, without undue loss of time or academic credits, if they earn grades demonstrating ability to meet the level of academic competition characteristic of the college they hope to enter.

Students and prospective students are urged to bring problems and questions to the General College Student Personnel Office, 10 Nicholson Hall, or to the Office of the Dean, 106 Nicholson Hall.

General College (GC)

FIRST TERM

1-131 BIOLOGICAL SCIENCE: PRINCIPLES

A study of the variety and relationships of living organisms illustrates general principles of biology applied to man, animals, and plants. Principles drawn from fields such as study of cells, relationships of organisms in nature, heredity, chemical and physical properties of living organisms, evolution, and reproduction. \$4 lab fee. (5 cr; limited to 75 students, reserved in NH 20; 4 lab hrs per wk; I-II MTWThF; SciB 125) Dearden

1-166 PHYSICAL SCIENCE: PRINCIPLES OF CHEMISTRY

Fundamental principles and laws stressing development and application of theories and their roots in experience. Classification of matter, reactions, elements, atomic and molecular structure, chemical bonding theory, and other topics which may vary from quarter to quarter. (5 cr; limited to 60 students, reserved in NH 20; III-IV MTWThF; SciCB 175) Schwabacher

1-211 MAN IN SOCIETY: HIS PERSONAL ROLE

Interdisciplinary approach to study social problems. American values examined in an attempt to make the student aware of how he orients himself to social problems in terms of his own personal values. Problem of minority-group relations is studied in detail. (5 cr; limited to 50 students, reserved in NH 20; I-II MTWThF; NH 207) F Johnson

1-261 CURRENT HISTORY

Analysis of current problem areas of the world (such as Latin America, Southeast Asia, Africa, and the Soviet Union) or of domestic topics (such as national and state elections and labor-management disputes). Sharpening of student's alertness to news media and of his ability to make critical judgments about current events is stressed. (3 cr; limited to 50 students, reserved in NH 20; III MTWThF; NH 213) Moen

1-283 SOCIAL SCIENCE: PSYCHOLOGY OF HUMAN DEVELOPMENT

Focuses on growth and development of the individual from conception through adolescence. Aspects of development emphasized include physical, motor, social, emotional, and psychological growth. Integration of facets of development is made in order to understand the human being as a complex organism functioning in a complex environment. (3 cr; limited to 50 students, reserved in NH 20; V MTWThF; NH 213) Latts

1-312 ART TODAY I

Role and importance of contemporary art and design in related fields such as architecture, painting, sculpture, photography, and industrial art. Student challenged to develop powers of observation, sensitivity, and judgment, and to communicate these in a thoughtful and intelligent manner. Discussion, illustrated lectures, explorative exercises, and gallery trips. (3 cr; limited to 40 students, reserved in NH 40; II MTWThF; NH 111) Gates

1-333 MUSIC: MUSIC WITH WORDS

Problems a composer faces when setting music to words; his materials and how he can achieve his intentions. Musical types studied include folksong, popular song, hymn, chant, madrigal, art-song, and opera. (3 cr; limited to 40 students, reserved in NH 20; IV MTWThF; NH 111) MacInnes

1-357 PHILOSOPHY: MAN'S RELIGIOUS BELIEFS

Readings from the literature of the world's religions familiarizes student with five major beliefs. Brief historical account of each religious belief and its development in the world today. (5 cr; limited to 50 students, reserved in NH 20; I-II MTWThF; NH 213) Zanoni

1-365 LITERATURE: IDEALS AND VALUES OF THE UNITED STATES

Ideals, values, and aspirations recorded by writers in the United States trace development of the democratic idea, emerging social problems, great variety of people who participated in shaping this country, and issues that concerned them. Methods and forms which writers used to present their thoughts also examined. (4 cr; limited to 50 students, reserved in NH 20; IV MTWThF; NH 213) Rathburn

1-402 READING AND VOCABULARY DEVELOPMENT

Reading films, slides, programmed-learning texts, and reading and vocabulary exercises help the student enlarge his vocabulary, increase his reading speed, and expand his comprehension. Reading material varies from the level of the popular magazines to that of the college textbook. \$4 lab fee. (3 cr; each section limited to 18 students, reserved in NH 20)

Sec 1, I MTWThF, NH 201, Kivits

Sec 2, II MTWThF, NH 201, Sicilia

1-421 WRITING LABORATORY: PERSONAL WRITING

To increase awareness of himself, his surroundings, and his relationships with friends and family, the student reads and writes descriptions, incidents, character and autobiographical sketches. He works on his own writing difficulties, dictionary usage, and brief study of the history and development of language. (4 cr; each section limited to 30 students, reserved in NH 20)

Sec 1, I-II TWThF, NH 122, Hagen

Sec 2, III-IV TWThF, NH 122, Sheldon

1-422 WRITING LABORATORY: ORGANIZING IDEAS

Student learns how to organize ideas in expository writing, how to read at the level of comprehension required in University courses, and how to detect central ideas and supporting details. He writes summaries, outlines, and various pieces of explanatory writing. (4 cr; limited to 30 students, reserved in NH 20; III-IV TWThF; NH 216) Stockdale

1-533 FINANCIAL MATHEMATICS: PROCEDURES AND APPLICATIONS

Methods used to solve problems corrected with percentages, simple interest and discount, compound interest, the most common annuities, and investment securities. Student develops the calculations and the understanding which will assist him in dealing with a wide variety of financial matters. (5 cr; limited to 40 students, reserved in NH 20; I-II MTWThF; NH 216) Folz

1-540, 1-541 ACCOUNTING FUNDAMENTALS I-II

Study of basic concepts of accounting, with emphasis on theory of the accounting cycle and more routine bookkeeping processes. Attention to use and interpretation of accounting information in the decision-making process of business, and close examination of financial statements. (2 cr each; students must register for both courses which will be taught as a single course; limited to 40 students, reserved in NH 20; III-IV TWThF; NH 207) Roger Larson

SECOND TERM

1-132 BIOLOGICAL SCIENCE: THE HUMAN BODY

Problems of physical, mental, and social health related to the anatomy, physiology, and needs of the human organism. Films, televised dissections, and demonstrations supplement the lectures. (5 cr; limited to 75 students, reserved in NH 20; I-II MTWThF; SciCB 125) Jefferson

1-233 UNITED STATES: PROBLEMS OF GOVERNMENT

The general principles, procedures, and problems of government. Topics include federal-state relations, conduct of foreign relations; executive and legislative conflicts; the relation of government to agriculture, labor, and business; taxation; and the relationship of the individual citizen to his government. (5 cr; limited to 50 students, reserved in NH 20; III-IV MTWThF; NH 213) Hathaway

1-282 SOCIAL SCIENCE: FIELDS OF APPLIED PSYCHOLOGY

Survey of the use of psychological principles in the study of human affairs. Examines the contributions that psychological research has made in fields such as teaching and learning, vocational guidance, mental health, personnel selection and training in industry, the measurement and improvement of worker efficiency and morale, law and crime, and consumer research and advertising. (5 cr; limited to 50 students, reserved in NH 20; I-II MTWThF; NH 207) Borow

1-291 SOCIAL SCIENCE: GENERAL GEOGRAPHY

Topics are selected from the following: philosophy and tools of the geographer, the Twin Cities, Minnesota, a comparison of the U.S.S.R. with the U.S., Japan, and a summary of world geography. Each approached in terms of man's culture, physical environment, and problems man faces in making a living. (5 cr; limited to 50 students, reserved in NH 20; I-II MTWThF; NH 213) Steinhauser

1-311 ART: GENERAL ARTS

Student given opportunities to formulate and evaluate his attitudes and ideas relating to the arts through an examination of the basic similarities which underlie all art forms and through an investigation of the development of these art forms in terms of human needs. (4 cr; limited to 40 students, reserved in NH 20; I MTWThF; NH 111) Byrne

1-371 LITERATURE: READING SHORT STORIES

Representative short stories by American, British, and Continental writers used to show how individual writers have used the short story to express in a concise artistic form their ideas about human experience. (3 cr; limited to 50 students, reserved in NH 20; III MTWThF; NH 207) Kurak

1-422 WRITING LABORATORY: ORGANIZING IDEAS

See *First Term*. (4 cr; each section limited to 30 students, reserved in NH 20)

Sec 1, I-II TWThF, NH 209, Koch

Sec 2, III-IV TWThF, NH 209, Warren

1-445 MATHEMATICS: INTERMEDIATE ALGEBRA

To provide student with fundamental algebraic skills and mathematical concepts necessary to compete in college algebra is the primary aim of this course. Topics include real number system, special products and factoring, logarithms, functions and graphs, exponents and radicals, linear and quadratic equations, inequalities, and analytic geometry. (5 cr; limited to 40 students, reserved in NH 20; prereq high school elementary algebra and high school geometry; III-IV MTWThF; FolH 102) Policoff

1-465 ORAL COMMUNICATION: INTERPERSONAL COMMUNICATION

Students apprehensive about the personal dimension should not take this course. Student examines various aspects of his own communication patterns: verbal, nonverbal, and vocal. He tries to discover why he is an effective or ineffective communicator, and to uncover some of the origins of his communicative behavior. (3 cr; limited to 25 students, reserved in NH 20; IV MTWThF; NH 107) Hansen

1-731 HOME LIFE: CONSUMER PROBLEMS

Fundamentals of financial planning and personal economic decision making, and the application of these concepts to such specific problems as buying insurance protection, saving and investing, using credit facilities, and obtaining and evaluating consumer information. (5 cr; limited to 40 students, reserved in NH 20; III-IV MTWThF; FolH 102) Kroll

Health Sciences

SCHOOL OF DENTISTRY

The School of Dentistry will offer instruction in the clinical disciplines for those students who elect to continue their clinical experience during the summer months.

MEDICAL SCHOOL

Anatomy (Anat)

FIRST AND SECOND TERMS

Elective Courses

8-156 ADVANCED ANATOMY

Individual problems in gross anatomy, embryology, histology, or neuroanatomy. (Cr and hrs ar; prereq #) Staff

8-204 RESEARCH IN ANATOMY

Gross anatomy, cytochemistry, histology, endocrinology, embryology, hematology, or neuroanatomy. (Cr and hrs ar; prereq #) Staff

Anesthesiology (Anes)

All anesthesiology courses are listed in the section on 10-week courses.

Biochemistry (MdBc)

FIRST TERM

Elective Courses

5-053 PROBLEMS IN BIOCHEMISTRY

Special work arranged with qualified students. (Cr and hrs ar; may be taken one or both terms; prereq 5-743 or 5-101) Staff

8-215 TOPICS IN LIPID METABOLISM

(3 cr; minimum of 8 students; prereq 5-743 or 5-101 or #) Frantz

8-300 RESEARCH IN BIOCHEMISTRY

(Cr and hrs ar) Staff

SECOND TERM

Elective Courses

5-053 PROBLEMS IN BIOCHEMISTRY

See First term. (Cr and hrs ar; may be taken one or both terms; prereq 5-743 or 5-101) Staff

8-300 RESEARCH IN BIOCHEMISTRY
(Cr ar and hrs ar) Staff

Dermatology (Derm)

FIRST AND SECOND TERMS

5-182 DERMATOLOGY EXTERNSH:P

(Cr ar) Goltz, Manick, Gentry, and staff

5-183 DERMATOLOGY PROBLEMS

(Cr ar) Goltz, Manick, Gentry, and staff

8-225 CLINICAL DERMATOLOGY

Wards and outpatient departments of University Hospitals, Veterans Hospital, Hennepin County General Hospital, and St. Paul-Ramsey Hospital. (Cr ar) Goltz, Gentry, and staff

8-226 CLINICAL SEMINAR: DERMATOLOGY

Conference twice weekly on diagnosis and treatment of skin conditions. (Cr ar) Goltz, Gentry, and staff

8-227 HISTOLOGY OF THE SKIN

Includes histopathology, histochemistry, and fluorescence microscopy. (Cr ar) Goltz, Orkin, and staff

8-228 RESEARCH IN DERMATOLOGY

(Cr ar) Goltz, Zelickson, and staff

8-229 ELECTRON MICROSCOPY IN DERMATOLOGY

(Cr ar) Zelickson and staff

8-230 FUNCTIONAL BIOLOGY OF THE SKIN

(Cr ar) Goltz and staff

Family Practice and Community Health (FPCH)

FIRST AND SECOND TERMS

Elective Courses

8-201 CLINICAL FAMILY MEDICINE

(9 cr; prereq #: hrs ar) Ciriacy and staff

8-202 DYNAMICS OF MARRIAGE AND FAMILY

(2 cr; prereq #: hrs ar) Nelson

8-204 QUANTITATIVE LOGIC IN CLINICAL JUDGMENT

(1 cr; prereq #: hrs ar)

8-206 PSYCHOLOGY IN MEDICINE

(2 cr; prereq #: hrs ar) Iretton

8-207 COMMON DISEASES SEEN IN FAMILY PRACTICE

(1 cr; prereq #: hrs ar) Ciriacy and staff

8-208 FAMILY MEDICINE CONFERENCES

(1 cr; prereq #: hrs ar) Ciriacy and staff

8-210 FAMILY MEDICINE GRAND ROUNDS

(1 cr; prereq #: hrs ar) McConnell

8-211 PRACTICE MANAGEMENT

(2 cr; prereq #: hrs ar) Lawson

- 8-242 ECONOMICS OF HEALTH CARE DELIVERY SYSTEMS**
(3 cr; prereq #; hrs ar) Peterson and staff
- 8-245 ANALYSIS OF INSTRUCTION AND EDUCATIONAL EVALUATION**
(Cr ar; prereq #; hrs ar) Lenarz
- 8-253 RESEARCH PROBLEMS**
(Cr and hrs ar; prereq #) O'Leary and staff

Laboratory Medicine (LMed)

Laboratory Medicine (LMed)

FIRST AND SECOND TERMS

- 5-103 PRINCIPLES OF DIAGNOSTIC MICROBIOLOGY**
(3 cr; prereq MdBc 3-102 and 5-232 or #) Blazevic, Ederer
- 5-139 ADVANCED MICROBIOLOGY**
(Cr ar; prereq #) Matsen and staff
- 5-169 RESEARCH: HUMAN GENETICS**
(Cr ar; prereq #) J Yunis
- 5-170 ADVANCED PROBLEMS: MEDICAL GENETICS**
(Cr ar; prereq #) J Yunis and staff
- 5-179 CHEMISTRY SEMINAR**
(1 cr; prereq #) Benson and staff
- 5-180 ADVANCED CHEMISTRY**
(Cr ar; prereq #) Benson and staff

LMed 5-181 to 5-201 offered for Medical Students Only

- 5-181 LABORATORY AND CLINICAL HEMATOLOGY**
(Cr and hrs ar; prereq #) Sundberg
- 5-182 LABORATORY STUDIES OF GENETIC DISORDERS**
(Cr and hrs ar; prereq #) J Yunis
- 5-183 CLINICAL AND LABORATORY IMMUNOLOGY**
(Cr and hrs ar; prereq #) E Yunis
- 5-184 IMMUNOHEMATOLOGY IN BLOOD BANKING**
(Cr and hrs ar; prereq #) McCullough
- 5-185 LABORATORY PROBLEMS IN BLOOD COAGULATION**
(Cr and hrs ar; prereq #) Edson
- 5-186 CLINICAL PATHOLOGY EXTERNSHIP (Hennepin County General Hospital)**
(Cr and hrs ar; prereq #) Strom
- 5-187 CLINICAL PATHOLOGY EXTERNSHIP (Mt. Sinai Hospital)**
(Cr and hrs ar; prereq #) Ward
- 5-189 CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank)**
(Cr and hrs ar; prereq #) Polesky
- 5-190 COMPUTER APPLICATIONS IN LABORATORY MEDICINE**
(Cr and hrs ar; prereq #) Rosenberg
- 5-191 GENERAL CLINICAL MICROBIOLOGY**
(Cr and hrs ar; prereq #) Matsen

- 5-193 CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital)**
(Cr and hrs ar; prereq #) Alexander
- 5-194 COMPUTER APPLICATIONS IN MEDICINE**
(Cr and hrs ar; prereq #) Ackerman
- 5-195 COMPUTER APPLICATIONS IN MEDICAL RESEARCH**
(Cr and hrs ar; prereq #) Ackerman
- 5-197 CLINICAL PATHOLOGY BIOCHEMISTRY (St. Paul-Ramsey Hospital)**
(Cr and hrs ar; prereq #) Lakatua, Haus
- 5-199 CLINICAL GENETICS**
(Cr and hrs ar; prereq #) J Yunis
- 5-200 DIAGNOSTIC MICROBIOLOGY FOR THE PRACTICING PHYSICIAN**
(Cr and hrs ar; prereq #) Matsen
- 5-201 DIAGNOSTIC LABORATORY PROCEDURES FOR THE PRACTICING PHYSICIAN**
(Cr and hrs ar; prereq #) Bradley
- 5-267 MUSCLE CELL STRUCTURE, FUNCTION**
(1 cr; prereq MdBc 5-101, 5-300 or #) Benson
- 5-272 IMMUNOLOGY SEMINAR**
(1 cr; prereq #; VII Th) Azar
- 5-273 ADVANCED IMMUNOLOGY**
(Cr and hrs ar; prereq #) Azar
- 5-768 ADVANCED HEMATOLOGY**
(Cr and hrs ar; prereq #) Brunning
- 8-235 ADVANCED CLINICAL LABORATORY MEDICINE**
(Cr and hrs ar; prereq #) Benson, J Yunis
- 8-236 RESEARCH ON CLINICAL LABORATORY PROBLEMS**
(Cr and hrs ar; prereq #) Benson, J Yunis

Medical Technology (MedT)

FIRST AND SECOND TERMS

- 5-082 APPLIED CLINICAL CHEMISTRY**
Application of basic methods and techniques in chemistry in the clinical laboratory. (4 cr; prereq Δ ; hrs ar) Freier and staff
- 5-086 APPLIED CLINICAL HEMATOLOGY AND IMMUNOHEMATOLOGY**
Application and use of laboratory methods in hematology. Morphology of blood cells. Application of technical methods in procurement of blood and blood grouping and cross matching for transfusions. (4 cr; prereq Δ ; hrs ar) Buckman, Carter
- 5-088 APPLIED DIAGNOSTIC MICROBIOLOGY**
Identification of bacteria by microbiologic techniques. Correlation with clinical cases. Identification of parasites and fungi. (4 cr; prereq Δ ; hrs ar) Blazevic, Ederer
- 5-090 SPECIAL LABORATORY METHODS**
Special assignment on an individual basis in one of a wide variety of special areas of experience within the clinical laboratory; field experience. (4 cr; prereq Δ ; hrs ar) Staff
- 5-092 HONORS PROGRAM IN LABORATORY METHODS**
Individual assignment on special projects or research with more intensive treatment in theory in one of the clinical areas of chemistry, hematology, immunohematology, or microbiology. (9 cr; prereq Δ ; hrs ar) Staff

5-110 ADVANCED CLINICAL LABORATORY TECHNIQUES

Assignment on individual basis for observation, study, and practice in special problems; techniques and methodology in the clinical laboratories (bacteriology, chemistry, hematology, or immunology). (5 cr; prereq Δ ; hrs ar) Staff

Medicine (Med)

FIRST AND SECOND TERMS

Elective Courses

5-501 MEDICAL ONCOLOGY EXTERNSHIP AT UNIVERSITY HOSPITALS

To provide training in internal medicine with emphasis on the total care of patients with cancer by assuming direct patient responsibilities as a co-intern. (9 cr per period; offered all periods; report at 411 MasonH first day of course) Kennedy

5-502 MEDICINE EXTERNSHIP

Introduces students to the diagnosis, treatment, and management of patients on medicine wards, allowing as much individual patient care responsibility as possible. (9 cr per period; offered all periods; report to Department of Medicine of assigned hospital at 8:30 a.m. on first day of course) Murray

5-504 SUBSTITUTE INTERNSHIP AT NORTHWESTERN HOSPITAL

Student will be assigned duties of a regular medical intern. (9 cr per period; offered all periods; prereq Med 5-502; report to Dr. Howard's office, 9 a.m. on first day of course) Howard

5-510 RESEARCH IN INFECTIOUS DISEASE

Can be carried out under the supervision of Dr. Wendell Hall or Dr. Horace Zineman at the Veterans Administration Hospital or through Dr. Robert Gruninger, St. Paul-Ramsey Hospital. (9 cr per period; offered all periods) Gruninger

5-511 RESEARCH IN GASTROENTEROLOGY

Arrangements made with Dr. Blackwood at Veterans Administration Hospital. Students will be assigned to a staff member and participate in some aspects of his program. (9 cr per period; offered all periods; hrs ar)

5-512 RESEARCH IN HEMATOLOGY AT UNIVERSITY HOSPITALS

Course will acquaint the student who is specifically interested in research with a problem or problems currently under investigation in hematology. (18 cr per period; offered all periods; report at C-313 Mayo first day of course) McArthur

5-522 MEDICAL GASTROENTEROLOGY

Provides the opportunity for the student to do work-ups and attend teaching rounds on patients with gastrointestinal disease, to attend conferences at the assigned hospital as well as attend interhospital conferences, and gain outpatient clinical experience. Students may express a preference for base hospital when registering. (9 cr per period; offered all periods; report to GI Section, University Hospitals, VFW Building, 4th floor) Bond

5-523 MEDICAL ENDOCRINOLOGY, METABOLISM, AND CLINICAL PHARMACOLOGY

Provides an introductory experience in clinical endocrinology and metabolic disease. Emphasis will be placed on clinical diagnosis, efficient and incisive work-ups and clinical management in both inpatient and outpatient settings. Students may express a preference for base hospital when registering. A clinical externship is available in the Clinical Research Center of the University Hospitals each period. (9 cr per period; offered all periods; report to C-338 Mayo at 8:15 a.m. on first day of each period) Rose

5-524 CLINICAL INFECTIOUS DISEASES

Emphasis will be on inpatients on all hospital services with clinical problems related to infection. Students will become familiar with antibiotic use, relevant laboratory procedures, and the approach to the patient with infectious disease. Students may express a preference for base hospital when registering. (9 cr per period; offered all periods; report at room 2126 St. Paul-Ramsey Hospital 8:30 a.m. first day of course) Gruninger

5-525 CARDIOVASCULAR MEDICINE

The first week of each period includes four ½-day introductory sessions on basic cardiology for all students. Students initially report to the Cardiology Section at the Veterans Administration Hospital for an orientation session. Each student will spend all elective time other than the introductory session at one of the participating hospitals. Student's preference for a base hospital will be honored in accordance with positions available at each hospital. (9 cr per period; offered periods 3-8; hrs ar) Richman

5-526 ELECTROCARDIOGRAPHY AT UNIVERSITY HOSPITALS

Full-time instruction in clinical electrocardiography. (4.5 cr per period; offered periods 3-8; hrs ar) Tuna

5-528 CLINICAL HEMATOLOGY

Clinical and research aspects of hematology. Will be structured to the student's specific goals, but generally the student will be given initial responsibility for proposing diagnosis and treatment plans for patients with hematologic illnesses. Students may express a preference for base hospital when registering. (9 cr per period; offered all periods; report to C-313 Mayo first day at 8:30 a.m.) McArthur

5-531 CLINICAL RHEUMATOLOGY AT UNIVERSITY HOSPITALS

Clinical aspects of diseases of rheumatic and immunologic nature including the broad areas of Collagen disease, autoimmune disease, and all types of arthritic and musculoskeletal disease. (9 cr per period; offered periods 3-8; hrs ar) Flinn

5-533 CLINICAL ALLERGY AT UNIVERSITY HOSPITAL

The practical features of doing an allergic and immunologic work-up and of treating patients in a safe and medically acceptable fashion. (4.5 or 9 cr per period; offered all periods; hrs ar) Blumenthal

5-554 FLUID, ELECTROLYTE, ACID-BASE METABOLISM AT VETERANS ADMINISTRATION HOSPITAL

Prevention, diagnosis, and treatment of acid-base (A/B) and fluid and electrolyte (F/E) disorders. The student will be a member of a consulting team which evaluates patients with A/B and F/E abnormalities associated with a variety of medical and surgical disease. (9 cr per period; offered all periods; report to VA Dialysis Unit, Building 1, fifth floor at 8:00 a.m. on the first day of period) Mulhausen, Brown, Masler, Rose

5-562 MEDICAL NEPHROLOGY

Evaluation and treatment of patients with acute and chronic renal disease, acid-base and electrolyte disturbances and hypertension. Students may express a preference for base hospital when registering. Phone 373-4326. (9 cr per period; offered all periods; report to H-118 Diehl Hall at least 1 wk prior to start of the period) Kunau

5-590 PRECEPTORSHIPS IN INTERNAL MEDICINE

The student will work with physicians either in rural or city clinics by arrangement. (9 cr per period; offered all periods; hrs ar) Fuller

5-595 INTRODUCTION TO THE PSYCHOLOGICAL ASPECTS OF MEDICAL CARE

Student-patient interviews on closed circuit TV, reading seminars, diagnostic conferences, supervised psychotherapies. Focus will be on patients characteristic of a medical practice population. (Cr ar; offered all periods; hrs ar) Wilder, Simon, and staff

Microbiology (MicB)

FIRST TERM**5-970 SPECIAL PROBLEMS**

(Cr ar; prereq #)

5-122 ADVANCED MICROBIOLOGY LABORATORY

Experimentation in physiology, genetics, and virology. (3 cr; prereq 5-321, 5-424, or #; 8:30-11:30 MTWThF) Bernlohr

8-237 METHODS IN CLINICAL MICROBIOLOGY, PART I

Diagnostic bacteriology and serology. (3 cr; prereq #; II-X MTWThF) Klein

8-990 RESEARCH IN MICROBIOLOGY

Graduate students with the requisite preliminary training may elect research, either as majors or minors. (Cr and hrs ar) Staff

SECOND TERM**5-970 SPECIAL PROBLEMS**

(Cr ar; prereq #)

8-112 MICROBIAL GENETICS

Genetics of microorganisms; mutation, recombination, control of phage and animal viruses. (2 cr; limited to grad students only; VII MTWThF) Zissler

8-237 METHODS IN CLINICAL MICROBIOLOGY, PART I

See First Term.

8-990 RESEARCH IN MICROBIOLOGY

See First Term.

Neurology (Neur)

All neurology courses are listed in the section on 10-week courses.

Neurosurgery (NSur)

FIRST AND SECOND TERMS**Required Courses for Undergraduate Students****5-127 CLINICAL LECTURES IN NEUROSURGERY**

(1 cr per yr; prereq regis med) Staff

Elective Courses for Undergraduate Students**5-500 NEUROSURGERY EXTERNSHIP (UNIVERSITY HOSPITALS)**

(Cr ar; prereq regis med; MTWThF) Staff

5-510 NEUROSURGERY EXTERNSHIP (VETERANS ADMINISTRATION HOSPITAL)

(Cr ar; prereq regis med; MTWThF) Staff

5-511 NEUROSURGERY EXTERNSHIP (Hennepin County General Hospital)

(Cr ar; prereq regis med; MTWThF) Staff

5-512 NEUROSURGERY EXTERNSHIP (St. Paul-Ramsey Hospital)

(Cr ar; prereq regis med; MTWThF) Staff

5-520 NEUROSURGERY INVESTIGATION

(Cr ar; prereq regis med; MTWThF) Staff

5-530 NEURORADIOLOGICAL CONFERENCE

A review of x-ray films and case histories on neurosurgical service. (1 cr; prereq regis med; Friday) Staff

5-540 NEUROSURGICAL CONFERENCE

In-depth review of selected topics in basic and clinical neurosurgery. (1 cr; prereq regis med; Saturday) Staff

Required Courses for Graduate Students**8-305 NEUROSURGICAL DIAGNOSIS**

Neurosurgical fellow assists in instruction of clinical clerks and interns, and studies problems in diagnosis in the University and affiliated hospitals. (3 cr; MTWThF) Chou, French, Long

8-308 NEUROSURGICAL PROBLEMS AND MANAGEMENT

Neurosurgical fellow acts as house surgeon at University and affiliated hospitals. (4 cr; MTWThF) Chou, French, Long

8-311 OPERATIVE NEUROSURGERY

Neurosurgical fellow acts as first assistant at operations at University Hospitals and later may be permitted to operate. (4 cr; MTWThF) Chou, French, Long

8-316 NEUROSURGICAL RESEARCH

Problems in experimental or clinical surgery. (3 cr; MTWThF) Chou, French, Long, Bloedel

8-318 NEURORADIOLOGICAL CONFERENCE

A review of x-ray films and case histories on neurosurgical service. (1 cr; Friday) Chou, French, Long

8-320 NEUROSURGICAL CONFERENCE

In-depth review of selected topics in basic and clinical neurosurgery. (1 cr; Saturday) Chou, French, Long

8-322 NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART I

A review and discussion of topics in neuro-ophthalmology. (1 cr; Tuesday; offered summer and winter) Staff

8-323 NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART II

Advanced review and discussion of topics in neuro-ophthalmology. (1 cr; prereq 8-322; Tuesday; offered fall and spring) Staff

Obstetrics and Gynecology (Obst)

FIRST AND SECOND TERMS

Elective Courses for Undergraduate Students

5-500 EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY

A clinical experience which includes total care of inpatients and outpatients on obstetrics and gynecology at University Hospitals, St. Mary's Hospital, and St. Joseph's Hospital with emphasis on the medical aspects of obstetrics and gynecology. (1½-12 cr; limited to 12 students; prereq sr med students only) Sciarra, Bendel, and staff

5-520 OBSTETRICS AND GYNECOLOGY EXTERNSHIP IN CLINICAL PRACTICE

A practical community experience in obstetrics and gynecology under the preceptorship of one or more practicing members of the clinical staff. Both office and hospital practice will be included. (1½-12 cr; limited to 3 students; for sr med students only; prereq 5-500) Sciarra, Bendel, and staff

5-540 ADVANCED EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY

Full-time clinical experience as an acting intern on the obstetrical and gynecological service at Hennepin County General Hospital or St. Paul-Ramsey Hospital. (1½-12 cr; limited to 5 students; prereq 5-500; 12 wks full rotation or, if places available, 6-wk rotation may be taken on obstetrics alone) Sciarra, Bendel, and staff

5-550 PSYCHIATRIC ASPECTS OF OBSTETRICS AND GYNECOLOGY

(Clinical course) Psychiatric problems relating to the reproductive system. (1½-12 cr; limited to 3 students; for sr med students only) Sciarra, Bernstein

5-560 RESEARCH IN REPRODUCTION

Topics selected for each student. (1½-12 cr; limited to 2 students; for sr med students only) Sciarra

5-570 FELLOWSHIPS IN REPRODUCTION

Limited opportunities for study at other institutions, some of which provide a travel stipend. Applications should be prepared prior to mid-April. (1½-12 cr; for sr med students only; enrollment is individual) Sciarra

5-580 EXTERNSHIP IN OBSTETRIC ANESTHESIOLOGY
See Anes 5-184, section on 10-week courses.

Courses for Graduate Students

- 8-201 ADVANCED OBSTETRICS AND GYNECOLOGY**
(Cr ar) Sciarra and staff
- 8-205 ADVANCED OBSTETRICS AND GYNECOLOGY**
(Cr ar) Sciarra and staff
- 8-209 ADVANCED OBSTETRICS AND GYNECOLOGY**
(Cr ar) Sciarra and staff
- 8-210 ADVANCED OBSTETRICS AND GYNECOLOGY**
(Cr ar) Sciarra and staff
- 8-213 ADVANCED OBSTETRICS AND GYNECOLOGY**
(Cr ar) Sciarra and staff
- 8-217 SEMINAR IN OBSTETRICS AND GYNECOLOGY**
(Cr ar) Sciarra and staff
- 8-221 SEMINAR IN OBSTETRICS AND GYNECOLOGY**
(Cr ar) Sciarra and staff
- 8-222 GYNECOLOGICAL ONCOLOGY**
(Cr ar) Sciarra and staff
- 8-223 GYNECOLOGICAL ONCOLOGY**
(Cr ar) Sciarra and staff
- 8-224 GYNECOLOGICAL ENDOCRINOLOGY, PART I**
(Cr ar) Sciarra and staff
- 8-225 GYNECOLOGICAL ENDOCRINOLOGY, PART II**
(Cr ar) Sciarra and staff
- 8-226 OBSTETRICAL PHYSIOLOGY AND ANESTHESIOLOGY**
(Cr ar) Sciarra and staff
- 8-230 RESEARCH IN REPRODUCTION**
(Cr ar) Sciarra and staff

Ophthalmology (Oph)

FIRST TERM

- 8-151 BASIC AND APPLIED OPHTHALMOLOGY**
(2 cr; 8 a.m.-12:00 S; Owre 117) Harris and staff

FIRST AND SECOND TERMS

- 8-101 CLINICAL OPHTHALMOLOGY**
(6 cr; 8:00 a.m.-6:00 p.m. MTWThF; O-P Clin) Harris and staff
- 8-106 STRABISMUS MANAGEMENT**
(Cr ar; 8:00-9:00 a.m. F; Mayo A-675) Letson
- 8-107 ANATOMY OF ORBIT**
(1 cr; 3:00-6:00 p.m. Th; JacH 390) Letson
- 8-131 PRACTICAL OCULAR SURGERY**
(3 cr; 7:30 a.m.-12:00 MTWThF; Oper Rm) Harris and staff
- 8-152 OPHTHALMOLOGY LABORATORY**
(9 cr; 8:00 a.m.-5:00 p.m. MTWThF; DiehlH 250) Harris and staff

Orthopedic Surgery (OrSu)

FIRST AND SECOND TERMS

Elective Courses for Undergraduate Students

- 5-185 EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES**
(Cr ar; prereq regis med)
- 5-186 RESEARCH PROBLEMS IN ORTHOPEDIC SURGERY**
(Cr ar; prereq regis med)
- 5-187 EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES**
St. Paul-Ramsey Hospital. (Cr ar; prereq regis med)
- 5-188 EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES**
Gillette Children's Hospital, St. Paul. (Cr ar; prereq regis med)
- 5-189 EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES**
Fairview-St. Mary's Hospitals. (Cr ar; prereq regis med)
- 5-190 EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES**
Veterans Administration Hospital. (Cr ar; prereq regis med)
- 5-191 ORTHOPEDIC EXTERNSHIP AT HENNEPIN COUNTY GENERAL HOSPITAL.**
(Cr ar; prereq regis med)
- 5-195 ORTHOPEDICS I**
(Cr ar; prereq regis med)
- 5-198 ORTHOPEDICS II**
(Cr ar; prereq regis med)

Required Courses for Graduate Students

- 8-401 ORTHOPEDIC CONFERENCE**
Review of x-ray films and case histories of patients on the orthopedic inpatient or outpatient service. (3 cr) Moe, House, Bradford, Lai
- 8-403 FRACTURES**
Orthopedic fellow acts as house surgeon on the fracture service at Hennepin County General Hospital. (5 cr) Gustilo and staff
- 8-404 FRACTURES**
Orthopedic fellow acts as house surgeon on the fracture service at St. Paul-Ramsey Hospital. (5 cr) Comfort and staff
- 8-405 ORTHOPEDIC DIAGNOSIS**
Orthopedic fellow assists in instruction of medical students and interns and studies problems in diagnosis in the Outpatient Department and in the University Hospitals. (3 cr) Moe, House, Bradford, Lai
- 8-407 PEDIATRIC ORTHOPEDICS**
Orthopedic fellow acts as house surgeon at Gillette Children's Hospital. (5 cr) Moe, Winter, and staff
- 8-408 ORTHOPEDIC PROBLEMS AND MANAGEMENT**
Orthopedic fellow acts as house surgeon at University Hospitals. (5 cr) Moe, House, Bradford, Lai
- 8-409 ORTHOPEDIC PROBLEMS AND MANAGEMENT**
Orthopedic fellow acts as house surgeon on the orthopedic service at Fairview Hospital. (5 cr) Moe, Winter, House
- 8-410 ORTHOPEDIC PATHOLOGY**
Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities. (2 cr) Moe, House, Bradford, Lai

8-411 ORTHOPEDIC OPERATIVE SURGERY

Orthopedic fellow acts as first assistant at operations at University and affiliated hospitals and later may be permitted to operate. (5 cr) Moe, House, Bradford, Lai

8-412 ORTHOPEDIC ANATOMY

Orthopedic fellow dissects upper and lower extremities and aids in instruction of medical students in anatomy of the extremities. (2 cr) Moe, House

8-416 ORTHOPEDIC RESEARCH

Problems in experimental or clinical surgery, University Hospitals. (5 cr) Moe, House, Bradford, Lai

Otolaryngology

FIRST AND SECOND TERMS

Elective Courses for Undergraduate Students

5-500 FAMILY PRACTICE

(4½ cr; 3 wks) Staff

5-501 SURGICAL ENT

(4½ cr; 3 wks) Staff

5-502 NEUROLOGICAL SCIENCES ENT

(4½ cr; 3 wks) Staff

5-503 RESEARCH IN ENT BASIC SCIENCE

(4½ cr; 3 wks) Staff

5-504 MEDICAL ENT

(4½ cr; 3 wks) Staff

Courses for Graduate Students

8-220 RESEARCH IN OTOLARYNGOLOGY

(18 cr) Paparella and staff

8-230 CLINICAL OTORHINOLARYNGOLOGY

(6 cr; hrs ar) Paparella and staff

8-231 SURGERY OF THE EAR, NOSE, AND THROAT

(4 cr; hrs ar) Paparella, Duvall, and staff

8-232 MAXILLOFACIAL SURGERY

(1 cr; hrs ar) Paparella and staff

8-233 PLASTIC AND RECONSTRUCTIVE SURGERY ON THE HEAD AND NECK

(1 cr; hrs ar) Paparella and staff

8-234 ANATOMY OF THE HEAD AND NECK AND TEMPORAL BONE DISSECTION

(2 cr; hrs ar) Paparella and staff

8-235 ROENTGENOLOGY OF THE HEAD AND NECK

(2 cr; hrs ar) Paparella and staff

8-236 PHARMACOLOGY IN OTOLARYNGOLOGY

(2 cr; hrs ar) Paparella and staff

8-237 ENDOSCOPY

(2 cr; hrs ar) Paparella, Duvall, and staff

8-238 PATHOLOGY OF THE EAR, NOSE, AND THROAT

(2 cr; hrs ar) Paparella, Duvall, and staff

8-239 OTONEUROLOGY

(2 cr; hrs ar) Paparella, Duvall, Capps

- 8-240 ALLERGY**
(2 cr; hrs ar) Quick and staff
- 8-241 TUMOR CLINIC**
(1 cr; hrs ar) Paparella and staff
- 8-242 AUDIOLOGY OF SPEECH PATHOLOGY**
(2 cr; hrs ar) Lassman and staff
- 8-243 INTRODUCTION TO RESEARCH METHODOLOGY**
(2 cr; hrs ar) Paparella and staff
- 8-244 SEMINAR: CURRENT LITERATURE**
(1 cr; hrs ar) Staff
- 8-245 MASTER'S THESIS RESEARCH**
(Cr ar) Staff
- 8-246 PH.D. THESIS RESEARCH**
(Cr ar) Staff

Pathology (Path)

FIRST TERM (June 4 through July 30)

- 5-101 GENERAL PATHOLOGY**
(6 cr; prereq regis Phase A/Grad-Med, #) Templeton and staff

FIRST AND SECOND TERMS

- 5-104 AUTOPSIES**
(Cr and hrs ar; prereq Phase B or equiv) Staff
- 5-106 DISEASES OF THE HEART**
(1 cr; prereq Phase B or equiv; hrs ar) Edwards
- 5-111 CONFERENCE ON AUTOPSIES**
(1 cr; prereq Phase B or equiv; hrs ar) Staff
- 5-112 SURGICAL PATHOLOGY**
See section on 10-week courses.
- 5-113 SURGICAL PATHOLOGY**
(Cr and hrs ar; prereq Phase B or equiv) Hebbel
- 5-114 SURGICAL PATHOLOGY (Hennepin County General Hospital)**
(Cr and hrs ar; prereq Phase B or equiv) Staff
- 5-115 SURGICAL PATHOLOGY (Veterans Administration Hospital)**
(Cr and hrs ar; prereq Phase B or equiv) Staff
- 5-125 CHRONOBIOLOGY**
(Cr and hrs ar; prereq #) Halberg
- 5-140 SEMINAR: EXPERIMENTAL PATHOLOGY**
(1 cr; prereq #) Halberg
- 5-141 PROBLEMS IN EXPERIMENTAL PATHOLOGY**
(Cr and hrs ar; prereq #) Halberg
- 5-142 EXPERIMENTAL PATHOBIOLOGY**
(Cr and hrs ar; prereq #) Day
- 5-143 COMPARATIVE PATHOLOGY**
History and philosophy of the disease process in man and animals. (Cr and hrs ar; prereq #; term paper required) Day

5-150 PROBLEMS IN PATHOLOGY

(Cr and hrs ar; prereq Phase B) Staff

5-151 PROBLEMS IN PATHOLOGY (Hennepin County General Hospital)

(Cr and hrs ar; prereq Phase B) Staff

5-152 PROBLEMS IN PATHOLOGY (Veterans Administration Hospital)

(Cr and hrs ar; prereq Phase B) Staff

5-153 CARDIAC PATHOLOGY

(Cr and hrs ar; prereq Phase D or equiv and #) Edwards

8-201 RESEARCH

Students with the necessary preliminary training may elect research either as a major or minor in pathology. (Cr and hrs ar; prereq #) Staff

8-207 RESEARCH IN EXPERIMENTAL PATHOLOGY

(Cr and hrs ar; prereq #) Halberg

Pediatrics (Ped)

FIRST AND SECOND TERMS

Elective Courses

5-501 INPATIENT EXTERNSHIP (University Hospitals, Hennepin County General Hospital, St. Paul-Ramsey Hospital, Children's Hospital)

(Cr ar)

5-510 OUTPATIENT EXTERNSHIP (Minneapolis Public Health Department)

(Cr ar) Anderson and staff

5-511 OUTPATIENT EXTERNSHIP (University Hospitals)

(Cr ar)

5-512 OUTPATIENT (Hennepin County General Hospital)

(Cr ar)

5-513 CLINICAL EXPERIENCE (Community-University Health Care Center)

(Cr ar)

5-515 OUTPATIENT HEALTH CARE (St. Paul-Ramsey Hospital)

(Cr ar)

5-516 CLINICAL PEDIATRIC (Mayo Clinic)

(Cr ar) Anderson and staff

5-517 PRECEPTORSHIP IN CLINICAL PEDIATRICS

(Cr ar) Anderson and staff

5-531 NEO-INFANT PROGRAM

(Cr ar) Anderson and staff

5-532 CLINICAL IMMUNOLOGY (University Hospitals)

(Cr ar) Anderson and staff

5-533 PEDIATRIC CARDIOLOGY (Mayo Clinic)

(Cr ar) Anderson and staff

5-534 PEDIATRIC CARDIOLOGY (University Hospitals)

(Cr ar) Anderson and staff

5-535 INFECTIOUS DISEASE

(Cr ar) Anderson and staff

5-536 PEDIATRIC HEMATOLOGY-ONCOLOGY (University Hospitals)

(Cr ar) Anderson and staff

- 5-537 PEDIATRIC ENDOCRINOLOGY AND METABOLISM (University Hospitals)**
(Cr ar) Anderson and staff
- 5-538 PEDIATRIC GASTROENTEROLOGY (University Hospitals)**
(Cr ar) Anderson and staff
- 5-539 INTRODUCTION TO NEONATOLOGY**
(Cr ar) Anderson and staff
- 5-540 PEDIATRIC NEUROLOGY (University Hospitals)**
(Cr ar) Anderson and staff
- 5-541 PEDIATRIC NEUROLOGY (Mayo Clinic)**
(Cr ar) Anderson and staff
- 5-543 NEPHROLOGY (University Hospitals)**
(Cr ar) Anderson and staff
- 5-544 PEDIATRIC PULMONARY DISEASE**
(Cr ar) Anderson and staff
- 5-545 CHILD PSYCHIATRY (Mayo Clinic)**
(Cr ar) Anderson and staff
- 5-546 PEDIATRIC PATHOLOGY**
(Cr ar) Anderson and staff

Pharmacology (Phcl)

FIRST AND SECOND TERMS

- 5-109 PHARMACOLOGICAL PROBLEMS**
(Cr and hrs ar) Shideman and staff
- 8-203 RESEARCH IN PHARMACOLOGY**
(Cr and hrs ar) Shideman and staff

Physical Medicine and Rehabilitation (PMed)

FIRST AND SECOND TERMS

- 8-200 PHYSICAL MEDICINE SERVICE**
(Cr and hrs ar) Staff
- 8-205 READINGS**
(1 cr; I-II M) Kottke
- 8-206 CONFERENCE**
(Cr and hrs ar) Staff
- 8-210 RESEARCH IN PHYSICAL MEDICINE**
(Cr and hrs ar) Staff
- 8-212 ELECTROMYOGRAPHY**
(Cr and hrs ar) Awad

Occupational Therapy

FIRST AND SECOND TERMS

- 5-396, 5-397 CLINICAL EDUCATION**
A total of 6 months of supervised training in affiliated hospitals. (15 cr per qtr; for sr OT students) Eliason

Physical Therapy

FIRST AND SECOND TERMS

5-255 CLINICAL TRAINING

Five weeks of supervised practice at affiliating hospitals. (3 cr; limited to physical therapy students in the professional program; hrs ar at affiliating hospitals) Ellingham

8-103 PHYSICAL THERAPY CLINIC

(Cr ar; prereq physical therapy) Staff

8-130 SEMINAR: CURRENT LITERATURE

(1 cr; prereq #) Graduate staff

8-170 SPECIAL TOPICS

(1 cr; prereq #) Staff

8-185 PROBLEMS IN PHYSICAL THERAPY

(Cr ar; prereq physical therapy) Staff

8-193 RESEARCH PROBLEMS IN PHYSICAL THERAPY

(Cr ar; prereq physical therapy) Staff

8-195 RESEARCH IN PHYSICAL THERAPY

(Cr ar; prereq #) Kottke, Skowlund, and staff

Physiology (Phsl)

FIRST TERM

3-051 HUMAN PHYSIOLOGY

Introduction to human physiology. (5 cr; primarily for baccalaureate nursing students and physical therapy students; prereq zoology and 1 yr college chemistry; lect VI MW, VII-VIII TTh, VI-VII F; conf IV TTh, Owre 111; lab VII-IX MW, 307 MIRDH) Staff

5-113 PROBLEMS IN PHYSIOLOGY

Topics assigned for laboratory study, conferences, and readings. (Cr and hrs ar) Staff

5-552 READINGS IN PHYSIOLOGY

Topics selected for each student; written reviews prepared and discussed. (Cr and hrs ar) Staff

5-553 RESEARCH IN PHYSIOLOGY

(Cr and hrs ar) Staff

8-113 PROBLEMS IN PHYSIOLOGY

Topics assigned for laboratory study; conferences and readings. (Cr and hrs ar) Staff

8-202 READINGS IN PHYSIOLOGY

Topics selected for each student; written reviews prepared and discussed. (Cr and hrs ar) Staff

8-203 RESEARCH IN PHYSIOLOGY

(Cr and hrs ar) Staff

Psychiatry

Adult Psychiatry (AdPy)

FIRST AND SECOND TERMS

5-500 ADULT PSYCHIATRY (Hennepin County General Hospital)

Experience on Adult Inpatient Unit; emphasizes diagnosis and team treatment. This

is combined with the Crisis Intervention Unit in the E.R. with rapid evaluation, prompt psychosocial intervention, home visits, suicide phone, agency contacts, individual patient responsibility, and seminars. (9 cr per period; offered all periods; hrs ar) Jepson, Dean

- 5-507 ADULT PSYCHIATRY (University Hospitals, Station 60)**
General adult psychiatry with special emphasis on pharmacology treatment and research. Inpatients and outpatients. (9 cr per period; offered all periods; hrs ar) Flomenbaum
- 5-508 ADULT PSYCHIATRY (University Hospitals, Station 62)**
General adult psychiatry with emphasis on acutely ill patients and outpatient follow-up. (9 cr per period; offered all periods; hrs ar) Stephans
- 5-522 ADOLESCENT AND YOUNG ADULT PSYCHIATRY (University Hospitals, Station 61)**
Student will be primary therapist (supervised) for selected patients. Therapeutic program is based on the therapeutic community; all treatment modalities are used, i.e., drugs, group therapy, psychodrama, role playing, individual therapy, and family therapy. Students will have an intensive, dynamic experience in the psychotherapy setting. (9 cr per period; offered all periods; hrs ar) Cline
- 5-607 SURVEY OF PHYSIOLOGIC TREATMENTS IN PSYCHIATRY**
(1 cr; prereq regis med; hrs ar) Staff
- 8-201 CLINICAL PSYCHIATRY**
(Cr and hrs ar) Staff
- 8-203 ADVANCED CLINICAL PSYCHIATRY**
(Cr and hrs ar) Staff
- 8-205 SPECIAL ASSIGNMENTS**
(Cr and hrs ar) Staff
- 8-206 RESEARCH**
(Cr and hrs ar) Staff
- 8-208 SURVEY OF PHYSIOLOGIC TREATMENTS IN PSYCHIATRY**
(1 cr; hrs ar) Staff
- 8-221 SEMINAR: CURRENT LITERATURE**
(1 cr; hrs ar) Staff

Child Psychiatry (ChPy)

FIRST AND SECOND TERMS

- 5-500 CHILD PSYCHIATRY (University Hospitals, Station 64)**
Assignment to the Inpatient Child Psychiatric Service at the University Hospitals. Students will participate in preliminary diagnostic evaluation and in selected instances will be assigned full inpatient responsibility with supervision for hospitalized children. (9 cr per period; offered all periods; hrs ar) Easson
- 5-602 FAMILY THERAPY**
(9 cr per period; offered all periods; hrs ar) Reed
- 8-201 CLINICAL CHILD PSYCHIATRY**
(Cr ar) Easson
- 8-202 ADVANCED CLINICAL CHILD PSYCHIATRY**
(Cr ar) Easson
- 8-203 READINGS IN CHILD PSYCHIATRY**
(Cr ar) Easson
- 8-206 RESEARCH IN CHILD PSYCHIATRY**
(Cr ar) Easson

Health Care Psychology (HCPy)

FIRST AND SECOND TERMS

- 5-611 TECHNIQUES OF EVALUATION**
(1 cr; prereq regis med; hrs ar) Westermeyer
- 8-202 SPECIAL RESEARCH TOPICS**
(Cr ar; prereq #) Staff
- 8-203 PSYCHOMETRIC CLERKSHIP**
(Cr ar) Staff
- 8-204 INTERNSHIP IN CLINICAL PSYCHOLOGY**
(2 or 4 cr; prereq PhD candidate in clinical psychology with #) Staff
- 8-226 TECHNIQUES OF EVALUATION**
(1 cr; hrs ar) Westermeyer

Radiology (Rad)

FIRST AND SECOND TERMS

Elective Courses for Third- and Fourth-Year Students

- 5-100 EXTERNSHIP: NUCLEAR MEDICINE**
(Cr and hrs ar; prereq regis med) Loken and staff
- 5-101 EXTERNSHIP: DIAGNOSTIC RADIOLOGY (University Hospitals)**
(Cr and hrs ar; prereq regis med) Gedgaudas and staff
- 5-102 EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Veterans Administration Hospital)**
(Cr and hrs ar; prereq regis med) Kieffer
- 5-103 EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Hennepin County General Hospital)**
(Cr and hrs ar; prereq regis med) Tsai
- 5-104 EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Paul-Ramsey Hospital)**
(Cr and hrs ar; prereq regis med) Bjornson
- 5-140 SPECIAL PROBLEMS: ROENTGENOLOGY**
(Cr and hrs ar; prereq regis med) Gedgaudas and staff
- 5-240 SPECIAL PROBLEMS: NUCLEAR MEDICINE**
(Cr and hrs ar; prereq regis med) Loken and staff

Required Courses for Graduate Students

- 0-121 MEDICAL ROENTGENOLOGIC CONFERENCE**
Weekly meetings with the medical staff at which all the important medical cases which have had x-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view. (No cr; 10:00-11:00 T; Hosp Todd Amph) Gedgaudas and staff
- 0-122 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 roentgenologic points of view. (No cr; 4:00-5:00 M; Rigler Library) L'Heureux
- 0-123 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 roentgenologic standpoints. (No cr; II S; Hosp Todd Amph) Amplatz

- 0-124 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 roentgenologic points of view. (No cr; VI F; Hosp Todd Amph) Peterson
- 0-215 CARDIOVASCULAR ROENTGENOLOGIC CONFERENCE**
(No cr; 12:00-1:00 T; Rigler Library) Amplatz
- 8-100 GASTROINTESTINAL ROENTGENOLOGY**
(Cr ar; prereq #) Gedgaudas and staff
- 8-101 UROLOGIC ROENTGENOLOGY**
(Cr ar; prereq #) Gedgaudas and staff
- 8-102 NEUROLOGICAL ROENTGENOLOGY**
(Cr ar; prereq #) Peterson and staff
- 8-103 CARDIOVASCULAR ROENTGENOLOGY**
(Cr ar; prereq #) Gedgaudas and staff
- 8-104 PEDIATRIC ROENTGENOLOGY**
(Cr ar; prereq #) Gedgaudas and staff
- 8-105 PULMONARY ROENTGENOLOGY**
(Cr ar; prereq #) Gedgaudas and staff
- 8-150 RESEARCH: ROENTGENOLOGY**
Problems in roentgen diagnosis. (Cr ar) Gedgaudas and staff
- 8-200 NUCLEAR MEDICINE**
(Cr ar) Loken and staff
- 8-450 RESEARCH: RADIATION BIOLOGY, NUCLEAR MEDICINE**
(Cr ar) Staff

Therapeutic Radiology

FIRST AND SECOND TERMS

- 0-321 TUMOR CLINIC CONFERENCE**
(No cr; 4:00-5:00 Th; PoH Amph)
- 5-340 SPECIAL PROBLEMS IN RADIATION THERAPY**
(Cr ar; prereq regis med)
- 5-505 EXTERNSHIP IN RADIATION THERAPY**
(Cr ar; prereq regis med) Jones, Levitt
- 5-507 ADVANCED EXTERNSHIP IN RADIATION THERAPY**
(Cr ar; prereq regis med) Jones, Levitt
- 5-508 SPECIAL PROBLEMS IN RADIATION BIOLOGY**
(Cr ar)
- 5-510 BASIC PRINCIPLES OF RADIOLOGICAL PHYSICS**
(1 cr; 3:00-4:00 F; Rigler Lib) Khan, Moore
- 5-512 DOSIMETRY OF INTERNAL AND EXTERNAL RADIATION**
(1 cr; 8:30-9:30 W; Mayo B-141) Khan, Moore
- 5-540 SPECIAL PROBLEMS IN RADIOLOGICAL PHYSICS**
(Cr ar; prereq regis med) Khan, Loken, Moore
- 8-300 RADIATION THERAPY**
(Cr ar)
- 8-310 FUNDAMENTALS OF RADIATION THERAPY**
(1 cr; 4:00-5:00 M; Mayo B-141)

- 8-350 RESEARCH IN RADIATION THERAPY**
(Cr ar)
- 8-410 SEMINAR: RADIATION BIOLOGY**
(1 cr; prereq #) Song, Buchsbaum
- 8-450 RESEARCH IN RADIATION BIOLOGY**
(Cr ar) Song, Buchsbaum
- 8-550 RESEARCH IN RADIOLOGICAL PHYSICS**
(Cr ar) Khan, Loken, Moore

Surgery (Surg)

FIRST AND SECOND TERMS

Elective Courses for Undergraduate Students

- 5-500 EXTERNSHIP IN GENERAL SURGERY (University Hospitals and Affiliated Hospitals)**
(Cr ar; prereq regis med) Najarian and staff
- A. Purple Surgery—General surgery and transplantation (U.H.) Najarian, Simons, Goodale, Dietzman
 - B. Orange Surgery—Cardiovascular and thoracic problems (U.H.) Varco, Nicoloff
 - C. White Surgery—General surgery and oncology (U.H.) McKhann, Grage, Sullivan, Sosin, Gilbertsen
 - D. Externship in Pediatric Surgery (U.H.) Leonard
 - E. Red Surgery—General surgery (U.H.) Lillehei, Delaney, Buchwald
 - F. Veterans Administration Hospital—General surgery and cardiothoracic problems, Humphrey and staff
 - G. St. Paul-Ramsey Hospital—Emergency room, VanTyn and staff
 - H. St. Paul-Ramsey Hospital—Family practice, Perry and staff
 - I. Hennepin County General Hospital—General surgery and/or emergency room, Hitchcock and staff
 - J. Mt. Sinai Hospital—General surgery, Eisenberg
- 5-523 EXTERNSHIP IN PROCTOLOGY AT VETERANS ADMINISTRATION HOSPITAL**
(4.5 cr; offered all periods except 5; prereq regis med; 3 wks) Goldberg

Required Courses for Graduate Students

- 8-200 CLINICAL SURGICAL PROBLEMS AND MANAGEMENT**
Graduate students act as house surgeons and are required to study all phases of patient care, including diagnosis, pre- and postoperative management, and operative therapy. Graded responsibility offered under supervision of staff. Fellows are permitted to operate under supervision beginning with simple procedures. When properly qualified, senior and chief residents manage entire care of some patients. Attendance at rounds, conferences, and seminars is mandatory. (5 cr) Najarian and staff
- 8-201 SURGERY-ROENTGENOLOGY-PATHOLOGY CONFERENCE**
A weekly exercise in which films of all surgical patients presenting interesting roentgen findings are reviewed (staffs of the Departments of Radiology and Surgery). (1 cr) Najarian, Sosin
- 8-202 SURGICAL RESEARCH**
Properly qualified students undertake original investigation of problems in either experimental or clinical surgery. (5 cr) Staff
- 8-203 SURGERY COMPLICATIONS AND RESEARCH CONFERENCE**
Evaluation of selected patients including postoperative courses. Current research problems are presented for discussion and critical evaluation. (1 cr) Najarian and staff
- 8-207 TRANSPLANTATION AND BONE MARROW CONFERENCE**
Current clinical and research problems are presented for interdepartmental discussion and evaluation. (1 cr) Surgery and Pathology staffs

Urology

FIRST AND SECOND TERMS

Elective Courses for Undergraduate Students

5-180 EXTERNSHIP IN UROLOGY
(Cr and hrs ar) Staff

Required Courses for Graduate Students

- 8-250 UROLOGICAL SURGERY**
Urological fellow first assists at operations in the University Hospitals and later is permitted to operate under supervision of the staff. (4 cr; hrs ar) Staff
- 8-251 CYSTOSCOPY AND UROLOGICAL DIAGNOSIS**
Urological fellow performs cystoscopies and other diagnostic procedures. (4 cr; hrs ar) Staff
- 8-252 UROLOGICAL CONFERENCE**
Problems in diagnosis and treatment are discussed. (4 cr; hrs ar) Staff
- 8-253 RESEARCH IN UROLOGY**
Problems in experimental and clinical surgery. (4 cr; hrs ar) Staff
- 8-254 UROLOGICAL SEMINAR**
(3 cr per qtr)
- 8-255 UROLOGICAL-RADIOLOGICAL CONFERENCE**
(3 cr per qtr)
- 8-256 UROLOGICAL-PATHOLOGICAL CONFERENCE**
(3 cr per qtr)

SCHOOL OF NURSING

Nursing (Nurs)

FIRST TERM

- 5-440 ADVANCED CLINICAL APPLICATION OF NURSING THEORY**
Further integration of various dimensions of adaptation into a holistic approach to patient situations. (6 cr; prereq 5-430, Psy 5-605, Phcl 1-009; I-IV MF; Mayo 125) Staff
- 5-635 COMMUNITY HEALTH NURSING**
Instruction and supervised experience in community health nursing. Family oriented, with focus on nursing assessment and intervention, community health care, and health promotion. (3 cr; prereq Δ ; lect and lab hrs ar)
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (A)**
Hospitalized children with acute or chronic illness and their families. (1-9 cr; prereq $\#$; independent study ar with inst) Pidgeon
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (B)**
Nursing assessment: assessment of patient's perception, coping processes, etc. Nursing intervention: bases for the selection of nursing treatment means. Evaluation: selection and application of criteria to determine the effectiveness of nursing intervention. Psychological stress: conceptual frames of reference; antecedent and consequent factors. Learning variables: selection, application, and evaluation of effect upon performance. Concept of health and growth. (1-9 cr; prereq $\#$; independent study ar with inst) Sime

- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (C)**
Nursing education, curriculum, motivation, creativity. (1-9 cr; prereq #; independent study ar with inst) Backlund
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (D)**
Special topics in maternal child health. (1-9 cr; prereq #; independent study ar with inst) Taylor
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (E)**
Psychiatric-mental health nursing; psychotherapeutic relationships; consultation. (1-9 cr; prereq #; independent study ar with inst) Tuberty
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (F)**
Patient teaching; curriculum evaluation. (1-9 cr; prereq #; independent study ar with inst) Redman
- 8-008 SPECIAL TOPICS IN NURSING RESEARCH**
Research in clinical nursing. A 5-week intensive course including basic research methodology with major emphasis on development of an individual research project. (6 cr; limited to 15 students; prereq Master's degree with major in nursing or #; V, VI, VII MW; PoH 4400) Martinson, Egan
- 8-509 TEACHING-LEARNING PROCESS IN CLINICAL PRACTICE**
Analysis of the teaching-learning process in nursing and beginning teaching skill through supervised practice in health care settings. (4 cr; prereq enrolled in or eligible for enrollment in Graduate School or #; II, III, TWTh; PoH 2309) Backlund, Corcoran
- 8-601 CLINICAL NURSING LEADERSHIP I**
Internal and external change in nursing and health care institutions. Seminar and clinical practice involving extension of patient assessment in various health care institutions; individual employee assessment; working with and through others to achieve patient care goals. Consultation and evaluation processes, individual counseling and groups dynamics for purpose of creating more positive approaches to care of individuals. (6 cr; limited enrollment; prereq course in organization theory plus Δ ; III, IV MTWThF plus 16 hrs per wk ar field practice; PoH 4312) Visiting professor

SECOND TERM

- 5-636 COMMUNITY HEALTH NURSING**
Instruction and supervised experience in community health nursing. Family oriented, with focus on nursing assessment and intervention, community health care and health promotion. (3 cr; prereq 5-635)
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (B)**
See First Term.
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (D)**
See First Term.
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (E)**
See First Term.
- 8-001 SPECIAL EDUCATIONAL TOPICS IN NURSING (F)**
See First Term.

COLLEGE OF PHARMACY

Clinical Pharmacy (Phar)

FIRST TERM

- 5-270 CLINICAL CONFERENCES**
Monitoring of patient drug therapy. Offered at University and affiliated hospitals with rotation to several services. (2 cr [6 cr max]; hrs ar) Kabat

5-281 OVER-THE-COUNTER PREPARATIONS

See section on 10-week courses.

SECOND TERM

5-281 OVER-THE-COUNTER PREPARATIONS

See section on 10-week courses.

5-290 CLINICAL CLERKSHIP

Supervised study of pharmaceutical services at University Hospitals or affiliated institutions, or other practice settings. (Cr ar) Anderson

Pharmaceutics (Phm)

FIRST TERM

5-610 FUNDAMENTAL PRINCIPLES, PROCESSES

Introduction to the principal laws of physical chemistry and their applications to the quantitative aspects of pharmaceutical systems. (3 cr; prereq Math 1-142, Phys 1-024, Chem 3-301, or §; I MTWThF; AH 350) Staff

5-650 DISPENSING PHARMACY

\$4 lab fee. (3 cr; prereq 5-640, MedC 5-490 or §; lect I TWThF, lab II-IV TTh; AH 104) McRae

SECOND TERM

5-620 FUNDAMENTAL PRINCIPLES AND PROCESSES

Introduction to the principal laws of physical chemistry and their applications to the quantitative aspects of pharmaceutical systems. (4 cr; I MTWThF, lab II-IV MW; AH 125) Staff

5-660 DISPENSING PHARMACY

\$4 lab fee. (3 cr; prereq 5-650, or §; lect I TWThF, lab II-IV TTh; AH 104) McRae

SCHOOL OF PUBLIC HEALTH

Public Health (PubH)

FIRST TERM

3-004 BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH

(Taught concurrently with 3-033) Introduction to scientific, socio-cultural, and attitudinal aspects of communicable and degenerative diseases, environmental and occupational health hazards, alcohol and drug problems; special emphasis on role of education in health conservation, disease control, and drug abuse. (4 cr, §old 2, §1-001, §1-002, §1-003, §3-001, §3-002, §3-033, §old 52; III-IV MTWThF; Owre 113) Greene, Schwanke

3-033 FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE

(Taught concurrently with 3-004) Lecture, discussion, and special readings on the scientific, sociocultural, and attitudinal aspects of alcohol and other drug abuse with special emphasis on the role of education. (2 cr; prereq education srs or §; III-IV MTWThF; Owre 113) Schwanke

5-005 TOPICS IN PUBLIC HEALTH

Selected readings in public health with discussion based on these readings. (Cr ar; prereq §) Staff

5-006 INTRODUCTION TO COMMUNITY HEALTH

Lectures, discussions, seminars, personalized readings on critical and current issues in community health emphasizing public health programs and controversies. (5 cr, §3-033; open to nursing students, nurses, or other health professionals; prereq courses in personal health and microbiology; I-II MTWThF; Owre 113) Greene

5-032 EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE

Basic background information on alcohol and other drugs and chemicals with emphasis on curriculum concepts, teaching methodology, materials, and referral procedures appropriate for elementary, junior, and senior high school. (3 cr, §H1h 5-400; limited to 80 students, reserved in JohH 12; prereq education srs, certified tchrs, school nurses; II MTWThF; Owre 12) Schwanke, Meads

5-040 DEATH EDUCATION IN CONTEMPORARY SOCIETY

(June 25-July 13)

Basic background information on concepts and attitudes toward death, grief, and bereavement with emphasis on instructional aspects for the elementary and secondary schools and the role of the school in suicide prevention. (3 cr, §H1h 5-402; limited to 80 students, reserved in JohH 12; prereq education sr, certified tchrs, school nurses, mortuary science majors, or §; VI-VII MTWThF; Mayo 100) Fredlund, Slocum, Fulton, Slater

5-068 COMMUNITY HEALTH EDUCATION PRACTICE**

See section on 10-week courses.

5-069 COMMUNITY HEALTH EDUCATION LABORATORY

See section on 10-week courses.

5-098 TOPICS IN PUBLIC HEALTH EDUCATION

See section on 10-week courses.

5-520 FIELD EXPERIENCE: PHYSICAL AND OCCUPATIONAL THERAPY IN COMMUNITY AGENCIES

Advisory service and planning in-service programs for nursing staff; selected experiences in local, county, and state health departments. (Cr ar; prereq §) E Anderson

5-536 THE TEAM APPROACH IN SCHOOL NURSING

Designed to deepen the school nurse's understanding of her responsibility for the health of school children in relation to community health teams, multidisciplinary pupil personnel teams, and nursing teams. Consists of lecture-discussions, student projects, films, and field trips. (3 cr; open to nurses employed in schools or to those interested in such employment; III-IV MWF; rm ar) Fredlund

5-600 FIELD COURSE IN PUBLIC HEALTH NUTRITION

Placement in an approved agency with opportunity for experience in nutritional aspects of public health programs. (Cr ar; prereq §) Stief and staff

5-601 SEMINAR: PUBLIC HEALTH NUTRITION

(Cr ar; prereq §) Stief

5-609 TOPICS IN PUBLIC HEALTH NUTRITION

(Cr ar; prereq §) Stief

8-519 DIRECTED RESEARCH

Guided study in research related to occupational or physical therapy in community health programs. (6 cr; prereq PMed 8-192 or PubH 5-510 and 8-510) E Anderson

SECOND TERM

3-775 MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES

Twelve month's program of on-campus residential (3 weeks) and off-campus independent study which includes periodic seminars and monthly classes under program preceptors; principles of management, executive role, hospital development and organization, and functions of personnel, financial control, business office, and patient care services. (15 cr; prereq 1 yr's experience as health care facility administrator and §) Weckwerth and staff

3-776 ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE HEALTH CARE FACILITY

Twelve month's program of on-campus residential (3 weeks) and off-campus independent study which includes periodic seminars and monthly classes under program preceptors; board of trustees, medical staff, nursing, hospital law, medical records, planning, community health systems, continuing health education. (15 cr; prereq 3-775 or #) Weckwerth and staff

5-068 FIELD PRACTICE IN PUBLIC HEALTH EDUCATION**

See section on 10-week courses.

5-069 COMMUNITY HEALTH EDUCATION LABORATORY

See section on 10-week courses.

5-098 TOPICS IN PUBLIC HEALTH EDUCATION

See section on 10-week courses.

5-520 FIELD EXPERIENCE: PHYSICAL AND OCCUPATIONAL THERAPY IN COMMUNITY AGENCIES

Advisory service and planning in-service programs for nursing staff; selected experiences in local, county, and state health departments. (Cr ar; prereq #) E Anderson

5-600 FIELD COURSE IN PUBLIC HEALTH NUTRITION

See First Term.

5-601 SEMINAR: PUBLIC HEALTH NUTRITION

See First Term.

5-609 TOPICS IN PUBLIC HEALTH NUTRITION

See First Term.

5-653 DENTAL HEALTH PROGRAMS

Dental health activities and problems in a community situation; observation visits and participation in public and voluntary facilities; preventive, curative, rehabilitative, and research activities of local, state, and federal agencies' problems of dental manpower. (Cr ar; prereq #) Block, Meskin, Martens, Gordon

5-654 TOPICS IN DENTAL PUBLIC HEALTH

Selected readings in dental public health with discussion based on these readings. (Cr ar; prereq #) Staff

8-002 FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES**

Section 1—Environmental health students only. Section 2—All other students majoring in public health. (Cr. ar; prereq #) Staff

Biometry (PubH)

FIRST TERM

5-450 BIOMETRY I

Basic concepts in probability; binomial, Poisson, and normal probability models; estimation and testing statistical hypotheses of parameters of probability models. (3 cr; prereq familiarity with basic concepts of calculus desirable and ¶5-451; IV MTWThF; ForH 150) Bartsch

5-451 BIOMETRY LABORATORY I

Application of concepts of probability to the development of probability models for random phenomena in the biological and medical sciences. (2 cr; prereq ¶5-450; III TThF [ForH 170] and 7 morning hrs per wk ar...afternoon hrs by special ar only; ForH 80) Jeffries

5-456 BIOMETRY CONSULTING SEMINAR

Consultant and consultee interaction; communication and formulation of the biometric problem. Role and responsibility of the biometrician. Robustness and relevance of frequently used analytical techniques. Biometry student Internship experiences. (3 cr; prereq biometry major) Boen and staff

5-470 TOPICS IN BIOMETRY

Selected readings with discussion based on these readings. (Cr ar; prereq #) Staff

8-400 SEMINAR IN BIOMETRY

(Cr ar) Staff

8-449 TOPICS IN BIOMETRY

Studies in special topics for advanced students. (Cr ar; prereq 5-450 and #) Staff

8-450 RESEARCH IN BIOMETRY

Opportunities will be offered for qualified students to pursue research work. (Cr ar) Staff

SECOND TERM**5-405 BIOMETRIC METHODS IN ENVIRONMENTAL HEALTH I**

Variation; frequency distribution; demographic techniques; probability; introduction to data analysis. (3 cr; prereq environmental health students only, others #; I MWF, Owre 111; lab II-III MWF, Mayo 1220) Das Gupta

5-406 BIOMETRIC METHODS IN ENVIRONMENTAL HEALTH II

Estimation; tests of significance, Poisson distribution; serial dilutions and most probable number; elements of bioassay; radiologic statistics. (3 cr; prereq 5-405) Bearman

5-452 BIOMETRY II

Further consideration of testing statistical hypotheses and interval estimation; χ^2 applied to frequency data; regression analysis; correlation; analysis of variance; contrasts and multiple comparison techniques. (3 cr; prereq 5-450 and ¶5-453; IV MTWThF; ForH 160) Jeffries

5-453 BIOMETRY LABORATORY II

Application of concepts of testing and estimation of the parameters of the basic probability models; application of χ^2 to goodness of fit and heterogeneity tests; application of regression to bioassay; application of analysis of variance to bioassay. (2 cr; prereq ¶5-452; III TThF [ForH 150] and 7 morning hrs per wk...afternoon hrs by special ar only; ForH 80) Jeffries

5-456 BIOMETRY CONSULTING SEMINAR

See First Term.

5-470 TOPICS IN BIOMETRY

See First Term.

8-400 SEMINAR IN BIOMETRY

See First Term.

8-449 TOPICS IN BIOMETRY

See First Term.

8-450 RESEARCH IN BIOMETRY

See First Term.

Environmental Health (PubH)**FIRST TERM****5-150 TOPICS IN ENVIRONMENTAL HEALTH**

Selected readings and discussions of problems in environmental health. (Cr ar; prereq #) Staff

5-153 INSTITUTIONAL ENVIRONMENTAL HEALTH

Sanitation and safety practices in hospitals and other institutions. (3 cr; prereq hospital administration students or #) Michaelsen

- 5-170 TOPICS IN ENVIRONMENTAL BIOLOGY**
Selected readings in environmental biology with discussion of control techniques. (Cr ar; prereq #) Staff
- 5-180 TOPICS IN AIR POLLUTION**
Selected readings in air pollution with discussion based on these readings. (Cr ar; prereq #) Staff
- 5-183 PROBLEMS OF AIR POLLUTION CONTROL**
Special supervised studies involving laboratory and field investigation procedures; pertinent literature review. (Cr ar; prereq 5-181, #) Paulus
- 5-200 TOPICS IN RADIOLOGICAL HEALTH**
Selected readings in radiological health with discussion based on these readings. (Cr ar; prereq #) Staff
- 5-210 TOPICS IN OCCUPATIONAL HEALTH**
Selected readings in occupational health with discussion based on these readings. (Cr ar; prereq #) Staff
- 5-220 TOPICS IN FOOD SANITATION**
Review of literature and practice to identify association of food sanitation problems to public health. (Cr ar; prereq #) Staff
- 5-230 TOPICS IN INSTITUTIONAL ENVIRONMENTAL HEALTH**
Review of literature and practice to identify institutional environmental health problems. (Cr ar; prereq #) Staff
- 8-150 RESEARCH: ENVIRONMENTAL HEALTH**
Opportunities will be offered for qualified students to pursue research in the public health importance of environmental stresses on the health of man. (Cr ar) Staff
- 8-170 RESEARCH: ENVIRONMENTAL BIOLOGY**
(Cr ar; prereq #) Greene
- 8-180 RESEARCH: AIR POLLUTION**
(Cr ar; prereq #) Paulus
- 8-200 RESEARCH: RADIOLOGICAL HEALTH**
(Cr ar; prereq #) Barber
- 8-208 FIELD PRACTICE IN RADIOLOGICAL HEALTH**
(Cr ar; prereq #) Barber
- 8-210 RESEARCH: OCCUPATIONAL HEALTH**
(Cr ar; prereq #) Caplan
- 8-220 RESEARCH: FOOD SANITATION**
(Cr ar; prereq #) Pflug
- 8-230 RESEARCH: INSTITUTIONAL ENVIRONMENTAL HEALTH**
(Cr ar; prereq #) Michaelsen
- 8-248 WATER QUALITY INVESTIGATION AND RESEARCH TECHNIQUES**
Field techniques and special research methods for establishing pollution baselines; recognition and appraisal of advancing eutrophication. (6 cr; prereq #) Odlaug, Parker

SECOND TERM

- 5-150 TOPICS IN ENVIRONMENTAL HEALTH**
See First Term.
- 5-151 ENVIRONMENTAL HEALTH**
Methods for promoting man's health and comfort by controlling the environment. (3 cr; prereq #) Bond and staff
- 5-170 TOPICS IN ENVIRONMENTAL BIOLOGY**
See First Term.
- 5-180 TOPICS IN AIR POLLUTION**
See First Term.

- 5-183 PROBLEMS OF AIR POLLUTION CONTROL**
See First Term. (Cr ar; prereq 5-181, §) Paulus
- 5-200 TOPICS IN RADIOLOGICAL HEALTH**
See First Term.
- 5-210 TOPICS IN OCCUPATIONAL HEALTH**
See First Term.
- 5-220 TOPICS IN FOOD SANITATION**
See First Term.
- 5-230 TOPICS IN INSTITUTIONAL ENVIRONMENTAL HEALTH**
See First Term.
- 8-150 RESEARCH: ENVIRONMENTAL HEALTH**
See First Term.
- 8-170 RESEARCH: ENVIRONMENTAL BIOLOGY**
See First Term.
- 8-180 RESEARCH: AIR POLLUTION**
See First Term.
- 8-200 RESEARCH: RADIOLOGICAL HEALTH**
See First Term.
- 8-208 FIELD PRACTICE IN RADIOLOGICAL HEALTH**
See First Term.
- 8-210 RESEARCH: OCCUPATIONAL HEALTH**
See First Term.
- 8-220 RESEARCH: FOOD SANITATION**
See First Term.
- 8-230 INSTITUTIONAL ENVIRONMENTAL HEALTH**
See First Term.

Epidemiology (PubH)

JUNE 17-JULY 7

Graduate Courses

- 5-331 FUNDAMENTALS OF BIOSTATISTICS**
Rates, probability methods, statistical inference, sampling distributions. (3 cr)
Bearman and staff
- 5-332 FUNDAMENTALS OF EPIDEMIOLOGY**
Basic epidemiologic concepts and methods of investigation of diseases. (3 cr) Terris
- 5-336 INFECTIOUS DISEASE EPIDEMIOLOGY**
Factors involved in epidemic occurrence, clinical response to infection, impact on man of zoonoses, immunologic responses, vaccine evaluation. (3 cr; prereq basic epidemiology and biostatistics) Fox
- 5-337 SEROLOGIC EPIDEMIOLOGY**
Applications of immunologic and biochemical methods to epidemiologic problems of disease. (3 cr; prereq basic epidemiology and biostatistics) Evans
- 5-346 EPIDEMIOLOGY OF CARDIOVASCULAR DISEASES**
Epidemiologic aspects of various types of cardiovascular disease with emphasis on multivariate setting of etiologies. (3 cr; prereq basic epidemiology and biostatistics and 5-357 or ¶5-357) Peacock

- 5-350 EPIDEMIOLOGIC BASIS FOR HEALTH SERVICES PLANNING AND EVALUATION**
Discussions on epidemiologic approaches to planning and criteria of evaluation. (3 cr; prereq basic epidemiology and biostatistics) Tyroler
- 5-355 GENETICS AND EPIDEMIOLOGY**
Genetic methods of evaluating families and topics in population genetics. (3 cr; prereq basic epidemiology and biostatistics) Li
- 5-357 SELECTED STATISTICAL TOPICS IN EPIDEMIOLOGY**
Rate adjustment, relative risk, measures of association, matched pair analyses, force of mortality, and estimation of survivorship. (3 cr; prereq basic epidemiology and biostatistics) McHugh
- 8-345 EPIDEMIOLOGIC BASES FOR CANCER CONTROL**
Epidemiologic background and rationale for development and application of programs for control of cancer. (2 cr; prereq basic epidemiology and biostatistics and 5-357 or ¶5-357) Schottenfeld
- 8-356 EPIDEMIOLOGIC ASPECTS OF POPULATION CHANGE**
Epidemiologic aspects and health implications of changes in population size, composition, and stability. (2 cr; basic epidemiology and biostatistics) Mosley

Hospital and Health Care Administration (PubH)

FIRST TERM

- 5-791 FINANCIAL ASPECTS OF HEALTH CARE**
(3 cr; prereq #; hrs and rm ar) Ar
- 5-792 LEGAL ISSUES IN HEALTH CARE ADMINISTRATION**
Examination of law and legal liability associated with hospitals and other health care organizations. (3 cr; prereq #) Brodahl, Keating

College of Home Economics

Undergraduate students should note courses which may be used to meet specific requirements or area requirements in the several majors.

Teachers seeking recertification may meet 9-credit requirement during first summer term in consumer-homemaking, family life, and occupational education (see also Home Economics Education, page 117).

Those concerned with housing may choose from a variety of 1- to 3-credit courses depending upon the aspects of housing of interest and time available.

Design (Dsgn)

FIRST TERM

1-531 TEXTILE DESIGN I

(July 5-20)

Orientation to sources and resources of textile media. Individual designing in textile construction techniques and/or applied media. Studio problems. (3 cr; limited to 12 students, reserved in CofH 130; 9:00-3:00 MTWThF; Hr 8 and labs) Abell

3-531 TEXTILE DESIGN II

(July 5-20)

Studio problems. Selection from printed, dyed, woven, and nonwoven textiles. (3 cr; limited to 12 students, reserved in CofH 130; 9:00-3:00 MTWThF; Hr 8 and labs) Abell

3-557 INTERIOR DESIGN RESOURCES AND MATERIALS

(July 16-20)

Study of resources and materials used in interiors and their functional and aesthetic relationship to interior design. (1 cr; prereq 1-553, TexC 3-621; 9:00-3:00 MTWThF; McNH 425, 433) Erickson

5-531 TEXTILE DESIGN III

(July 5-20)

Designing in one selected textile technique. Studio problems. Readings (3 cr; limited to 12 students, reserved in CofH 130; prereq demonstrated proficiency, #; 9:00-3:00 MTWThF, Hr 8 and labs) Abell

5-556 ENVIRONMENTAL STUDIES IN INTERIOR DESIGN

(July 9-13)

Exploration of space, color, light, and arrangement in interiors (in especially designed laboratories). Review of current research. Emphasis on research with special reference to interiors. (1 cr; for postbaccalaureate students; prereq 6 cr in housing, home furnishings, and interior design or equiv; 9:00-3:00 MTWThF; McNH 425, 433) Erickson, Esteros, Franklin

5-565 HOMES OF THE WORLD

(June 18-29)

Study of home design in selected regions of the world. (3 cr; prereq 1-551 or 1-553 or 1-563 or equiv; 9:00-3:00 MTWThF; McNH 359) Esteros

5-568 HOUSING PROBLEMS OF THE FAMILY

(July 2-7)

Urban and rural housing problems with evaluation of economic, social, and aesthetic aspects. (1 cr; prereq 1-551 or 1-553 or 3-553 or equiv; 9:00-3:00 MTWThF; McNH 359) Franklin

SECOND TERM

8-584 READINGS IN DESIGN

Independent study and review of books and periodicals. (1-3 cr; prereq #; hrs and rm ar) Esteros

8-585 PROBLEMS: DESIGN

(1-5 cr; prereq #; hrs and rm ar) Esteros

Family Social Science (FSoS)

FIRST TERM

1-001 DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE

Application of principles from behavioral sciences to dating, courtship, mate selection, engagement, mixed marriages, roles of men and women, interaction on marital spouses and marital stability. (3 cr; limited to 40 students, reserved in CofH 130)

Sec 1, II MTWThF, BioSci 6, Wild

Sec 2, IV MTWThF, BioSci 6, Russel

1-002 DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE

(See FSoS 1-001) Designed for engaged or married students; other admitted by special permission. (3 cr, §1-001; limited to 40 students, reserved in CofH 130; III MTWThF; BioSci 12) Peterson

1-025 PARENTHOOD

Examination of different concepts of family—father, mother, son, daughter, sister, brother. Their implications for parent-child interaction. Effects of parenthood on husband-wife relations. (4 cr; limited to 40 students, reserved in CofH 130; III MTWThF; BioSci 18) Thoen

5-001 HUMAN SEXUAL BEHAVIOR

Nature of sexual functioning; sexual development, ethics and attitudes, research problems. (4 cr; limited to 100 students, reserved in CofH 130; prereq 15 cr in psychology or sociology; IV-V MWF; McNH 227) Neubeck

5-200 FAMILY RELATIONSHIPS

Analysis of the family as an institution and system of relationships. Survey of current developments in study of the family. Analysis of changes in American society and their influence on family life. (5 cr; limited to 45 students, reserved in CofH 130; Psy 1-001 or equiv, Soc 1-001 or equiv; VI MTWThF; BioSci 18) Sprenkle

5-255 PUBLIC SOCIAL POLICY AND THE AMERICAN FAMILY

Analysis of how social legislation in the areas of welfare, housing, child development, health care, etc., affect and, in some cases, determine the nature, structure, and quality of the family as a social institution. (4-5 cr; prereq #; I-II MTWThF; McNH 103) Walz

5-260 HOME MANAGEMENT PRINCIPLES

A study and discussion of managerial aspects of home making; work simplification of household activities; financial records and budget making for the individual and the family. (3 cr; limited to 40 students, reserved in CofH 130; prereq AgEc 1-030; IV MTWThF; BioSci 18) Jeary

SECOND TERM

1-001 DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE

See First Term. (II MTWThF; BioSci 18) Ar

1-002 DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE

See First Term. (3 cr, §1-001; limited to 40 students, reserved in CofH 130; IV MTWThF; Arch 30) Sprenkle

8-411 INDEPENDENT STUDY AND WRITTEN REPORTS

(1-5 cr; prereq #; hrs and rm ar) Graduate staff

Food Science and Nutrition (HE)

FIRST TERM

5-312 FOOD PURCHASING

Cost-quality relationships of diverse food products as affected by technological changes. Composition and nutritive value of processed and formulated food products. Functional role of food additives. Recent legislation pertinent to labeling and grading of food products. (4 cr; limited to 40 students, reserved in CofH 130; prereq principles of economics and 15 cr in food and nutrition; I MTWThF; McNH 227) Trammell

5-392 READINGS IN NUTRITION

Survey of literature in the field; oral and written reports. (2 cr; limited to 15 students, majors only, reserved in CofH 130; prereq 5-361 and #; hrs and rm ar) Morse and staff

8-396 PROBLEMS: NUTRITION

Independent study and written reports. (1-3 cr; prereq #; hrs and rm ar) Morse and staff

SECOND TERM

5-392 READINGS IN NUTRITION

Survey of literature in the field; oral and written reports. (2 cr; limited to 15 students, majors only, reserved in CofH 130; prereq 5-361 and #; hrs and rm ar) Morse and staff

8-396 PROBLEMS: NUTRITION

(1-5 cr; prereq #; hrs and rm ar) Morse and staff

Textiles and Clothing (TexC)

FIRST TERM

3-622 HOME FURNISHINGS TEXTILES

Development and trends with reference to fiber, yarn, finish, and construction of textiles such as carpeting, draperies, curtains, and upholstery materials. (3 cr; limited to 25 students, reserved in CofH 130; prereq #; IV MTWThF; McNH 303) Franzen

5-623 CONSUMER TEXTILE PROBLEMS

Contemporary textiles, their physical characteristics in relation to end use and performance; agencies aiding consumer through development of standards; problems students have met in textile field. (3 cr; limited to 25 students, reserved in CofH 130; prereq 3-621 or equiv; V MTWThF; McNH 303) Johnson

5-662 FAMILY CLOTHING PROBLEMS

Processes of clothing consumption related to needs and value orientations of individuals, families, and households; methods of study and application to specific clothing problems. (3 cr; limited to 25 students, reserved in CofH 130; prereq 3-621, AgEc 1-030, or Econ 1-002, Soc 1-001, Psy 1-001 or #...5-661 or ¶5-661 recommended; III MTWThF; McNH 303) Williams

8-621 READINGS IN TEXTILES

Independent study; survey of literature in selected areas. (1-3 cr; prereq 5-621, 5-661 or 5-662, or #; hrs and rm ar) Grindereing

8-625 PROBLEMS: TEXTILES

Independent study and written reports. (1-5 cr; prereq #; hrs and rm ar) Grindereing

SECOND TERM

8-661 READINGS IN CLOTHING

Independent study-survey of literature in selected areas. Written reports. (1-3 cr; prereq 5-621, 5-661 or 5-662, §; hrs and rm ar) Grindereng

8-663 PROBLEMS: CLOTHING

Independent study and written reports; clothing. (1-5 cr; prereq §; hrs and rm ar) Grindereng

College of Liberal Arts

College of Liberal Arts courses seek primarily to provide knowledge and understanding of the world we live in, of the social and intellectual problems of modern life, gained by exploration of both historical and contemporary subject matter. Many courses are designed for specialized or professional interests, but almost all contribute to general education. They are open not only to CLA degree candidates but also to students enrolled in other colleges inside and outside the University. They serve students with many purposes: progress toward graduate or undergraduate degrees, personal or professional enrichment, enhancement of scholastic records, many others.

Admission to Summer Session is described on pages 9-12 of this bulletin. Information about costs, housing, and recreational opportunities may be found in this bulletin and in the *General Information Bulletin*. Summer Session registration does not of itself constitute admission to CLA or the Graduate School; students working toward degrees or wishing to attend during the regular academic year must file standard admission applications.

CLA summer courses offer wide selection from the regular curriculum. In addition, many courses from business, medical, scientific, agricultural, and other divisions of the University are open to summer students who have the necessary prerequisites. Credit, cancel-add, and other procedures in summer sometimes differ from those of the regular year.

Students are urged to bring problems or questions to the CLA advisory offices: Lower Division, 220 Johnston Hall; Upper Division, 225 Johnston; Special Learning Opportunities, 105 Johnston.

Afro-American Studies (Afro)

FIRST TERM

- 1-015 THE BLACK PROTEST FROM COLONIAL TIMES TO THE PRESENT**
A critical analysis of chronological events and history of Black protest movements. (5 cr; III-IV MTWThF; BlegH 115) Parker
- 1-102 LANGUAGE ARTS FROM A BLACK PERSPECTIVE**
Social consciousness in Black literature. (4 cr; limited to 30 students, reserved in JohH 12; II-III MTWTh; BlegH 245) Shreve
- 1-221 BEGINNING SWAHILI**
Beginning grammar and vocabulary; conversational drill. (5 cr; limited to 20 students, reserved in JohH 12; I-II MTWThF; BlegH 115) Masongo
- 1-301 THE MUSIC OF BLACKNESS**
Lectures, discussion, demonstration of Black music in America. (4 cr; limited to 30 students, reserved in JohH 12; I-II MTWTh; BlegH 260) Buckner
- 1-441 AFRO-AMERICAN HISTORY AND CULTURE**
To 1865. (4 cr; I-II MTWTh; Bleg 260)

- 5-900 SENIOR SEMINAR**
(2-4 cr; prereq jr, sr, grad; hrs and rm ar) King

SECOND TERM

- 1-036 BLACK PARTICIPATION IN AMERICAN POLITICS**
An examination of the participation of the American Black man in administrative, judicial, electoral, and confrontation politics in the United States. (4 cr; I-II MTWTh; BlegH 260) Ward
- 1-103 LANGUAGE ARTS FROM A BLACK PERSPECTIVE**
Contemporary Black social and political movements and thought. (4 cr; limited to 30 students, reserved in JohH 12; V-VI MTWTh; BlegH 260) Stanley
- 3-105 BLACK MUSIC PRIOR TO WORLD WAR I**
Musical contributions and achievements of Black Americans in the United States during the 19th and early 20th centuries. (5 cr; limited to 40 students, reserved in JohH 12; III-IV MTWTh; BlegH 205) Southall
- 5-900 SENIOR SEMINAR**
(2-4 cr; prereq jr, sr, grad; hrs and rm ar) King

American Indian Studies (AmIn)

FIRST TERM

- 3-061 AMERICAN INDIANS IN THE MODERN WORLD**
Brief review of the history of Indian-White contracts. Impact of federal policy on American Indians. Adaptation of American Indian cultures to contemporary and social conditions. (4 cr; limited to 50 students, reserved in JohH 12; prereq 1-101, 1-102 or Anth 1-001, or #; IV MTWThF; BlegH 240) Kidwell
- 3-970 DIRECTED STUDIES**
(Cr ar; prereq #) Kidwell
- 5-112 INDIANS OF THE SOUTHWEST**
Relationships between Indians and other ethnic groups in the southwestern United States and northwest Mexico from an ethnohistorical perspective. (4 cr; prereq 3-061 or #; III MTWThF; BlegH 205) Dunnigan
- 5-212 AMERICAN INDIAN CRAFTS**
Research in the traditional arts of different tribes, paralleled by a studio workshop in which each student will pursue a project in American Indian crafts. (4 cr; prereq 5-211 or #; IV MTWThF; BlegH 335) Staff

SECOND TERM

- 3-061 AMERICAN INDIANS IN THE MODERN WORLD**
See First Term. (4 cr; limited to 50 students, reserved in JohH 12; prereq 1-101, 1-102 or Anth 1-002, or #; IV MTWThF; BlegH 120) Staff
- 3-970 DIRECTED STUDIES**
(Cr ar; prereq #) Staff

American Studies (AmSt)

FIRST TERM

- 1-102 AMERICAN LIFE II**
Religious and philosophic attitudes in relation to American life and thought. (4 cr; limited to 49 students, reserved in JohH 12; I MTWThF; MainE 215) Bagnall

3-970 DIRECTED STUDIES

(1-15 cr; prereq #, Δ) Staff

8-202 INTRODUCTION TO AMERICAN STUDIES

Exposition of interdisciplinary methods and of the concepts of American studies, reading of classics in American civilization; extended exploration of a topic. (3 cr; limited to 12 students, reserved in JohH 12; prereq MA candidates and Δ; VI-VII TTh; BA 837) Chambers

8-970 INDEPENDENT READINGS IN AMERICAN CIVILIZATION

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

SECOND TERM**1-103 AMERICAN LIFE III**

Nationalism in American thought and experience. (4 cr; limited to 49 students, reserved in JohH 12; I MTWThF; MainE 215) Hayenga

3-970 DIRECTED STUDIES

See First Term.

8-970 INDEPENDENT READINGS IN AMERICAN CIVILIZATION

See First Term.

Anthropology (Anth)

FIRST TERM**1-002 INTRODUCTION TO ANTHROPOLOGY**

Origin of man and development of human cultures from earliest times to present. Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world. (5 cr; each section limited to 45 students and each recitation to 36 students, reserved in JohH 12) Spencer

Sec 1, I-II MTWTh, BlegH 130 (CCTV)

Sec 2, I-II MTWTh, Aero 211, 313

Sec 3, III-IV MTWTh, Aero 211, 313

Sec 4, III-IV MTWTh, SciCB 125

Rec 1, I-II F, ForH 30

Rec 2, I-II F, ForH 40

Rec 3, I-II F, ForH 60

Rec 4, III-IV F, ForH 30

3-211 INDIANS OF NORTH AMERICA

Aboriginal cultures of North America. Effects of culture contact. Contemporary problems of Indian reservations and communities. (5 cr; limited to 100 students, reserved in JohH 12; prereq 1-002; IV MTWThF; ForH 155) Spencer

3-970 DIRECTED STUDIES

(Cr and hrs ar; prereq #) Staff

5-112 SOCIAL ANTHROPOLOGY: KINSHIP AND MARRIAGE

Examination of systems of kinship and marriage in cross-cultural perspective; relationship to economic, religious, and political institutions; significance of kinship studies for theory and methods in social anthropology. (5 cr; limited to 50 students, reserved in JohH 12; prereq 1-502 or #; I MTWThF; ForH 120) Rew

5-158 ANTHROPOLOGICAL ANALYSIS OF AMERICAN CULTURE

Anthropological perspectives on contemporary American culture and society with emphasis on the study of values, family organization, socialization and kinship, education, and community integration. (5 cr; limited to 100 students, reserved in JohH 12; prereq 1-502 or #; II MTWThF; ForH 155) Rowe

5-181 PRIMATE AND HUMAN EVOLUTION

Origins and relationships of extinct forms of nonhuman primates and man. (5 cr; limited to 50 students, reserved in JohH 12; prereq 1-002; III MTWThF; ForH 20) Murrill

5-376 FIELD RESEARCH IN ARCHAEOLOGY

(8 cr [may be taken for cr only once]; limited to 16 students, reserved in JohH 12; prereq #) Johnson

8-508 ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY

(Cr and hrs ar; prereq #) Johnson

8-950 ADVANCED RESEARCH

(Cr and hrs ar; prereq grad, #) Staff

SECOND TERM

1-002 INTRODUCTION TO ANTHROPOLOGY

See First Term.

3-970 DIRECTED STUDIES

See First Term.

5-141 CULTURE AND PERSONALITY

Role of culture in formation of personality. Problems of individual adjustments to demands of culture. Psychological approach to culture. (5 cr; limited to 100 students, reserved in JohH 12; prereq 1-502 or #; waived for majors in public health, nursing, psychology, sociology, and social work; II MTWThF; ForH 155) Cone

5-531 PALEOANTHROPOLOGY

Survey of archaeological record of human cultural origins and developments in Pleistocene and early recent periods in Africa, Europe, and Asia. (5 cr; limited to 50 students, reserved in JohH 12; III MTWThF; ForH 15) Harrison

8-950 ADVANCED RESEARCH

See First Term.

Art History (ArH)

FIRST TERM

1-001 INTRODUCTION TO THE VISUAL ARTS

Basic problems of art. Examples from major visual arts as basis for examination of the nature of art, problems of design, materials, and techniques, presented topically rather than chronologically. (4 cr, §3-001; limited to 140 students, reserved in JohH 12; II MTWThF; Arch 25) Torbert

1-016 INTRODUCTION TO ASIAN ART

Selected major themes of Indian and Far Eastern art. (4 cr, §3-013; limited to 140 students, reserved in JohH 12; III MTWThF; Arch 25) Poor

3-011 HISTORY OF RENAISSANCE AND BAROQUE ART

The major monuments in architecture, sculpture, and painting from the early 14th century through the baroque. (4 cr, §1-011; limited to 140 students, reserved in JohH 12; IV MTWThF; Arch 25) Simon

5-464 LATER 20TH-CENTURY PAINTING

Modern painting after the mid-1920's. (5 cr, §5-435; limited to 50 students, reserved in JohH 12; prereq one American or modern art course or #; II MTWThF; Jones 207B) Simon

5-535 ART IN THE UNITED STATES

Painting and sculpture. Key works and artists from early settlement through the early 20th century. (4 cr, §3-448; limited to 50 students, reserved in JohH 12; prereq 3 cr art history or #; IV MTWThF; Jones 207B) Torbert

5-766 CHINESE PAINTING

Major works from 4th to 17th centuries. Development of the landscape tradition and literary genre of later Chinese painting. (5 cr; limited to 50 students, reserved in JohH 12; V MTWThF; Jones 207B) Poor

8-994 MUSEOLOGY I: INTRODUCTION TO MUSEUM PRINCIPLES AND PRACTICES

Intensive investigation of museum history, bibliography, organization, and current problems. Lectures and discussions supplemented by field trips to observe museum operations and to meet with museum personnel. (6 cr; limited to 15 students, reserved in JohH 12; required for candidates for MA in museology; prereq Δ ; VI-VII MTWThF; Jones 101) Simon

SECOND TERM

1-015 ART IN WESTERN CIVILIZATION

Major achievements of Western man in the arts seen in their historical and cultural setting. The crux of the course is Sir Kenneth Clark's series of 13 hour-length films entitled "Civilisation" which take the place of lectures. Strongly interdisciplinary. (4 cr; limited to 140 students, reserved in JohH 12; II-III MTW; Arch 25) Waldfoegel

3-011 HISTORY OF RENAISSANCE AND BAROQUE ART

See First Term. (4 cr, §1-011; limited to 140 students, reserved in JohH 12; IV MTWThF; Arch 25) Canedy

3-467 MODERN ART

Major directions in late 19th- and 20th-century art in all media. The influence of advertising mass media and advanced technology on the development of modern art. (4 cr; limited to 50 students, reserved in JohH 12; II MTWThF; Jones 207B) Simon

5-313 ITALIAN HIGH RENAISSANCE ARCHITECTURE, SCULPTURE, AND PAINTING

The works of Leonardo da Vinci, Michelangelo, Raphael, and Titian and of outstanding lesser artists working in Florence, Rome, Venice, and northern Italy. Emphasis on painting. (4 cr; limited to 50 students, reserved in JohH 12; prereq 3-011, grad or §; II MTWThF; Jones 207A) Canedy

5-443 LATER 19TH-CENTURY EUROPEAN PAINTING

Realism and aestheticism: Ruskinian and French realism; socialism and urbanism; avant-garde and "art for art's sake"; fin-de siècle and escapism. (5 cr, §5-432; limited to 50 students, reserved in JohH 12; prereq 3 cr art history, 19th-century history, literature or §; V MTWThF; Jones 207B) Waldfoegel

5-463 EARLY 20TH-CENTURY PAINTING

Modern painting, mainly before the mid-1920's. (5 cr, §5-433, §5-434; limited to 50 students, reserved in JohH 12; prereq one American or modern art course or §; IV MTWThF; Jones 207A) Simon

Studio Arts (Arts)

FIRST TERM

1-101 BASIC DRAWING

Introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums. (4 cr; each section limited to 25 students, reserved in JohH 12)

Sec 1, I-II MTWThF, ArtB 141, Morrison

Sec 2, III-IV MTWThF, ArtB 161, Gray

Sec 3, I-II MTWThF, ArtB 150, Feinberg

1-102 DRAWING

Work from life and nature; introduction to color and pictorial structure. (4 cr; each section limited to 25 students, reserved in JohH 12; prereq 1-101)

Sec 1, III-IV MTWThF, ArtB 150, Feinberg

Sec 2, I-II MTWThF, ArtB 140, Somberg

1-103 INTRODUCTION TO STUDIO ARTS

General introduction to visual art-making and its history. Strongly recommended for all beginning students in studio arts. (4 cr; limited to 170 students, reserved in JohH 12; I-II MTWThF; AndH 310) Hendler

1-104 COLOR

Continuing and elaborating upon drawing experiences of 1-102; serves as bridge between Lower Division drawing courses and Upper Division painting, printmaking, and other courses where color is used. (4 cr; limited to 25 students, reserved in JohH 12; prereq 1-102; III-IV MTWThF; ArtB 140) Somberg

1-301, 1-302 BASIC SCULPTURE

1-301: Beginning course. Intensive study of structure with emphasis on form and space. Construction in metal and plaster. 1-302: Integrates basic principles examined in 1-301. Natural form studied for sculptural concepts. Imaginative approach to form is encouraged. (4 cr for each; limited to 20 students, reserved in JohH 12; prereq none for 1-301, 1-301 for 1-302; I-II MTWThF; ArtB bsmt) Rose

1-510 INTAGLIO

Techniques of etching and engraving on metal, calligraphy, combined techniques, (4 cr each qtr [8 cr max]; limited to 20 students, reserved in JohH 12; I-II MTWThF; ArtB 170) Bethke

1-701 INTRODUCTION TO PHOTO MEDIUM

The photographic medium, its background and meaning today. Lectures in contemporary and historical use of photography. Problems in use of camera, printing, and enlarging. (4 cr; limited to 20 students, reserved in JohH 12; III-IV MTWThF; ArtB 131) Warkov

1-801 CERAMIC PROCESSES

Clay work by hand and forming on potter's wheel. Ceramics as creative expression, with technical considerations of clays, glazes, and kilns. Pottery and sculptural approaches. (4 cr; limited to 20 students, reserved in JohH 12; I-II MTWThF; ArtB bsmt) Hoard

3-100 WATERCOLOR

Introduction to transparent watercolor; gouache, casein, and tempera. Figure, still life, landscape, and abstract design. (4 cr each qtr [12 cr max]; limited to 25 students, reserved in JohH 12; prereq 1-101 or equiv with #; III-IV MTWThF; ArtB 160)

3-110 DRAWING

From model, still life, and nature. Principles of anatomy. (4 cr each qtr [12 cr max]; each section limited to 25 students, reserved in JohH 12; prereq 1-102)

Sec 1, I-II MTWThF, ArtB 161, Hender

Sec 2, I-II MTWThF, ArtB 160

3-120 PAINTING

Introduction to medium of oil; individual projects and instruction. (4 cr each qtr [12 cr max]; each section limited to 25 students, reserved in JohH 12; prereq 1-104 and 12 cr of 3-110 or #)

Sec 1, III-IV MTWThF, ArtB 141, Morrison

Sec 2, I-II MTWThF, ArtB 160

3-302 MIXED SCULPTURE MEDIA

Work in stone, wood, plastics, clay, and assemblage. (4 cr; limited to 20 students, reserved in JohH 12; prereq 1-302; III-IV MTWThF; ArtB bsmt) Rose

3-510 INTAGLIO

(4 cr each qtr [12 cr max]; limited to 20 students, reserved in JohH 12; prereq 1-510 or #; III-IV MTWThF; ArtB 170) Bethke

3-710 PHOTOGRAPHY II

Advanced creative problems in color development and printing. Experiments in photographic controls to illustrate limitations and capacities. Use of photography to interpret visual environment; photographer's responsibilities in such use. (4 cr per qtr [8 cr max]; limited to 20 students, reserved in JohH 12; prereq 1-701 or Jour 1-301 or #; I-II MTWThF; ArtB 131) Warkov

3-810 CERAMIC DESIGN

Emphasis on wheel throwing. Advanced design problems and introduction to glaze and clay experimentation. Development of personal expression in ceramic medium. (4 cr per qtr [8 cr max]; limited to 20 students, reserved in JohH 12; prereq 1-801 or #; III-IV MTWThF; ArtB bsmt) Hoard

3-970 DIRECTED STUDY

(1-5 cr; prereq #)

3-980 DIRECTED INSTRUCTION

Students assist in teaching a course they have already studied. (1-5 cr; prereq #) Ar

5-120 PROBLEMS IN PAINTING

(4 cr per qtr [24 cr max]; limited to 25 students, reserved in JohH 12; prereq 12 cr of 3-120 and #; I-II MTWThF; ArtB 151) Busa

5-130 ADVANCED DRAWING

Drawing in all mediums from life and from imagination. History of drawing. (4 cr per qtr [12 cr max]; limited to 25 students, reserved in JohH 12; prereq 12 cr of 3-110; III-IV MTWThF; ArtB 151) Busa

5-320 CARVING IN STONE AND WOOD

(4 cr per qtr [8 cr max]; limited to 5 students, reserved in JohH 12; prereq 3-302; III-IV MTWThF; ArtB bsmt) Rose

5-510 ADVANCED INTAGLIO

(4 cr per qtr [12 cr max]; limited to 5 students, reserved in JohH 12; prereq 3-510 or #; III-IV MTWThF; ArtB 170) Bethke

5-710 ADVANCED PROBLEMS IN PHOTOGRAPHY

(4 cr per qtr [12 cr max]; limited to 5 students, reserved in JohH 12; prereq #; III-IV MTWThF; ArtB 131) Warkov

5-720 ADVANCED PROBLEMS IN FILM

(4 cr per qtr [12 cr max]; limited to 5 students, reserved in JohH 12; prereq #; III-IV MTWThF; ArtB 131) Warkov

5-810 ADVANCED PROBLEMS

(4 cr per qtr [12 cr max]; limited to 5 students, reserved in JohH 12; prereq #; III-IV MTWThF; ArtB bsmt) Hoard

5-970 DIRECTED STUDY

(1-5 cr; prereq #)

8-101, 8-102, 8-103 ADVANCED PROBLEMS IN PAINTING

(3 cr; prereq #) Busa, Hendler, Morrison

8-104, 8-105, 8-106 ADVANCED PROBLEMS IN PAINTING

(3 cr; prereq #) Busa, Hendler, Morrison

8-107, 8-108, 8-109 ADVANCED PROBLEMS IN DRAWING

(3 cr; prereq #) Busa, Hendler, Morrison

8-304, 8-305, 8-306, 8-307, 8-308, 8-309 ADVANCED PROBLEMS IN SCULPTURE

(3 cr; prereq #) Rose

8-504, 8-505, 8-506 ADVANCED PROBLEMS IN PRINTMAKING

(3 cr; prereq 5-510) Bethke

8-701, 8-702, 8-703 FILM

(3 cr; prereq 5-710, #) Warkov

8-705, 8-706, 8-707 PHOTOGRAPHY

(3 cr; prereq 5-720, #) Warkov

8-711, 8-712, 8-713 FILM

(3 cr; prereq 8-703 or #) Warkov

8-714, 8-715, 8-716 PHOTOGRAPHY

(3 cr; prereq 8-707 or #) Warkov

8-802, 8-803, 8-804, 8-805, 8-806, 8-807 ADVANCED PROBLEMS IN CERAMICS

(3 cr each; prereq #) Hoard

SECOND TERM

1-101 BASIC DRAWING

See First Term. (4 cr; limited to 25 students, reserved in JohH 12; I-II MTWThF; ArtB 150) Myers

- 1-102 DRAWING**
See First Term. (4 cr; limited to 25 students, reserved in JohH 12; prereq 1-101; III-IV MTWThF; ArtB 140) Cowette
- 1-301, 1-302 BASIC SCULPTURE**
See First Term. (4 cr for each; limited to 20 students, reserved in JohH 12; prereq 1-301 for 1-302; I-II MTWThF; ArtB bsmt) Baldwin
- 1-520 LITHOGRAPHY**
Introduction to methods of lithography-planography. (4 cr each qtr [8 cr max]; limited to 20 students, reserved in JohH 12; prereq 1-101 or #; I-II MTWThF; ArtB 176) Priede
- 3-100 WATERCOLOR**
See First Term. (4 cr each qtr [12 cr max]; limited to 25 students, reserved in JohH 12; prereq 1-101 or equiv with #; III-IV MTWThF; ArtB 141) Myers
- 3-110 DRAWING**
See First Term. (4 cr each qtr [12 cr max]; limited to 25 students, reserved in JohH 12; prereq 1-102; I-II MTWThF; ArtB 160) Cowette
- 3-120 PAINTING**
See First Term. (4 cr each qtr [12 cr max]; limited to 25 students, reserved in JohH 12; prereq 1-104 and 12 cr of 3-110 or #; I-II MTWThF; ArtB 151) Rowan
- 3-301 DIRECT METAL SCULPTURE**
Welding and brazing. (4 cr; limited to 20 students, reserved in JohH 12; prereq 1-302; III-IV MTWThF; ArtB bsmt) Baldwin
- 3-970 DIRECTED STUDY**
See First Term.
- 3-980 DIRECTED INSTRUCTION**
See First Term.
- 5-120 PROBLEMS IN PAINTING**
(4 cr each qtr [24 cr max]; limited to 25 students, reserved in JohH 12; prereq 12 cr of 3-120 and #; III-IV MTWThF; ArtB 151) Rowan
- 5-310 DIRECT METAL SCULPTURE**
Advanced work in wood, stone, plaster, metal, and other materials of sculpture. Students work individually on projects. (4 cr for each qtr [8 cr max]; limited to 5 students, reserved in JohH 12; prereq 12 cr above 3-301; III-IV MTWThF; ArtB bsmt) Baldwin
- 5-340 EXPERIMENTAL MEDIA**
(4 cr per qtr [12 cr max]; limited to 3 students, reserved in JohH 12; prereq 8 cr 3-3xx courses; III-IV MTWThF; ArtB bsmt) Baldwin
- 5-520 ADVANCED LITHOGRAPHY**
Specialized work in color printing and planographic techniques. (4 cr each qtr [24 cr max]; limited to 20 students, reserved in JohH 12; prereq 1-520; III-IV MTWThF; ArtB 176) Priede
- 5-970 DIRECTED STUDY**
See First Term.
- 8-101, 8-102, 8-103 ADVANCED PROBLEMS IN PAINTING**
(3 cr; prereq #) Rowan
- 8-104, 8-105, 8-106 ADVANCED PROBLEMS IN PAINTING**
(3 cr; prereq #) Rowan
- 8-107, 8-108, 8-109 ADVANCED PROBLEMS IN DRAWING**
(3 cr; prereq #) Rowan
- 8-304, 8-305, 8-306, 8-307, 8-308, 8-309 ADVANCED PROBLEMS IN SCULPTURE**
(3 cr; prereq #) Baldwin
- 8-504, 8-505, 8-506 ADVANCED PROBLEMS IN PRINTMAKING**
(3 cr; prereq 5-510) Priede

8-511, 8-512, 8-513 **PRINTMAKING**
(3 cr; prereq #) Priede

Chicano Studies (Chic)

FIRST TERM

- 1-105 INTRODUCTION TO CHICANO STUDIES: THE MEXICAN AMERICAN IN TRANSITION**
A historical perspective as it appears in literature, concerned with sociological, political, psychological, cultural, and economic factors. (5 cr; II MTWThF; ForH 150) Gonzalez
- 3-507 CHICANO LITERATURE AND CULTURE**
A survey of Chicano Literature with focus on contemporary works covering drama, poetry, and prose. (3 cr; III MWF; ForH 160) De Garmo
- 3-951 THE CHICANO AND EDUCATION**
An examination of the conflicts of loyalty to ethnic peers and the move for success, and the problems encountered in the pursuit of higher education by minority students due to these conflicts. Will involve interviews with high school students, successful business and professional personnel. (4 cr; IV MWThF; ForH 160) De Garmo

Classics

Classics (Clas)††

FIRST TERM

- 1-045 GREEK AND ROMAN MYTHOLOGY**
Classical myths dealing with gods, demigods, and heroes. Attention to the myths as stories and as a basic component of the European cultural heritage, including artistic, religious, psychological, and anthropological interpretations. Distinctions between myth and legend, mythology and mythography. Special attention to the use of myths in modern literature. (3 cr, §1-042, §1-142, §5-145; IV MTWTh; FolH 107) Rochefort
- 3-083 ARISTOPHANES AND ROMAN DRAMA IN TRANSLATION (ARISTOPHANES, MENANDER, PLAUTUS, TERENCE, SENECA)**
Introductory lectures on Greek and Roman comic theater. Careful discussion of several comedies. Roman tragic drama as exemplified by a few tragedies of Seneca. (4 cr, §5-083; prereq 8 cr in English literature beyond Engl 1-003, or in foreign literature, or Δ; V MTWThF; FolH 107) Rochefort
- 5-083 ARISTOPHANES AND ROMAN DRAMA IN TRANSLATION (ARISTOPHANES, MENANDER, PLAUTUS, TERENCE, SENECA)**
Meets with Clas 3-083, but advanced independent work in addition to regular class assignments is required. (4 cr, §3-083; V MTWThF; FolH 107) Rochefort
- 5-120 FIELD RESEARCH IN ARCHAEOLOGY**
Field excavation, survey, and research in archaeological sites in Greece, Turkey, Italy, or the Mediterranean area. Intensive training in techniques of excavation and exploration as well as analysis and interpretation of archaeological materials. See section on Workshops, Institutes, and Special Programs. (3-6 cr for both terms; prereq #) McDonald
- 5-145 GREEK AND ROMAN MYTHOLOGY**
Same classwork as Clas 1-045 but with special independent reading and research assignments in consultation with the instructor. (3 cr, §1-042, §1-045, §1-142; IV MTWTh; FolH 107) Rochefort

†† No knowledge of Greek or Latin is required.

SECOND TERM

- 1-005 INTRODUCTION TO CLASSICAL CIVILIZATION: ROME (WORLD OF AUGUSTUS)**
From anarchy to Pax Romana, and consequences for Roman world. (4 cr; IV MTWTh; FolH 303)
- 1-042 GREEK AND ROMAN MYTHOLOGY**
Classical myths; stories of gods, demigods, and heroes that are a basic component of European cultural heritage; their artistic, religious, psychological, and anthropological implications. (2 cr; prereq soph; 12:15-1:30 p.m. TTh; FolH 308) Hershbell
- 3-082 GREEK TRAGEDY IN TRANSLATION (AESCHYLUS, SOPHOCLES, EURIPIDES)**
Introductory lectures on origin of European drama as distinct literary form, on characteristics of Greek tragedy, and ancient theaters and theatrical conventions. Careful discussion of selected tragedies. Major emphasis on understanding problems posed in relation to cultural patterns of the time. (4 cr, §5-082; prereq 8 cr in English literature beyond Engl 1-003, or foreign literature, or Δ; II MTWThF; FolH 209) Moritz
- 5-005 MADNESS AND DEVIANT BEHAVIOR IN ANCIENT GREECE AND ROME**
Analysis of definitions of madness in Greece and Rome and theories of its etiology; assessment of predisposing factors in Greece and Rome; examples of madness from mythology, legend, and history; cross-cultural comparison with contemporary United States. (4 cr; prereq soph, 2 cr in classics; III MTWThF; FolH 201) Erickson
- 5-082 GREEK TRAGEDY IN TRANSLATION (AESCHYLUS, SOPHOCLES, EURIPIDES)**
Meets with Class 3-082, with additional independent work required. (4 cr, §3-082; II MTWThF; FolH 209) Moritz
- 5-120 FIELD RESEARCH IN ARCHAEOLOGY**
See First Term.

Greek (Grk)

FIRST TERM

- 5-970 DIRECTED STUDY**
Course devised for the independent study program, and designed to permit the student to pursue his interests in special reading and/or study. (1-5 cr; prereq § and Δ)

Latin (Lat)

FIRST TERM

- 3-106 LATIN READINGS**
Intensive reading of selected Latin authors; development of reading proficiency in ancient Latin texts; textual criticism, secondary sources, and influence on world literature. (5 cr; prereq 1-105 or 3-052 or 1-122H or Δ; II MTWThF; FolH 305) Sonkowsky
- 3-590 LANGUAGE AND CULTURE SEMINAR**
Topics in ancient culture, intellectual and literary history, studied with the aid of knowledge of Latin language. (5 cr; prereq 10 cr in Upper Division Latin; II MTWThF, III TTh; FolH 305) Sonkowsky
- 5-970 DIRECTED STUDY**
Devised for the independent study program and designed to permit the student to pursue his interests in special reading and/or study. (1-5 cr; prereq § and Δ)
- 8-120 LATIN TEXT COURSE**
For graduate students in departments other than Classics who wish text work in Latin for a minor or related field. Students will attend Latin 3-590 if they meet the

prerequisites for this course. Supplementary work at the discretion of the instructor. (3 cr; prereq Δ ; II MTWThF, III TTh; FolH 305) Sonkowsky

SECOND TERM

3-590 LANGUAGE AND CULTURE SEMINAR

Topics in ancient culture, intellectual and literary history, studied with the aid of knowledge of Latin language. (5 cr; prereq 10 cr in Upper Division Latin; IV MTWTh, V TTh; FolH 303)

Communication (Comm)

FIRST TERM

1-002 COMMUNICATION

Deliberation, reasoning, nonlogical appeals, and ethical concerns in problem-solving and persuasive discourse. (4 cr, \S Engl 1-002 or \S Engl 1-312; limited to 28 students, reserved in JohH 12; prereq 1-001; III MTWThF; FolH 208) Jensen

Communication Disorders (CDis)

FIRST TERM

3-100 OBSERVATION, PRACTICE IN LANGUAGE DESCRIPTION

Will provide students with an opportunity to apply theoretical approaches to language to the description of the language pattern of several children. Students will be involved in the planning, execution, and interpretation of evaluation sessions. (3 cr; prereq 5-512 or 5-513 or $\#$; 1:30-3:30, WThF; available at grad level under CDis 8-520) Broen

3-101 INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY

Concepts basic to understanding normal and abnormal speech and hearing functions. Survey of selected communication problems. Strategies and systems of delivery of clinical services. (4 cr; II MTWThF; FolH 303) McDermott

5-202 SYMPOSIUM IN SPEECH SCIENCE, PATHOLOGY, AND AUDIOLOGY

Evaluation of language disorders in children. Includes evaluation of pre-language and linguistic abilities, evaluation strategies, and decision making. Critical review of major tests for measuring language and related areas. (4 cr; prereq grad major or professional paid experience beyond undergrad major or $\#$; III MTWThF; Kolth S133) Carrow

5-704 NOISE AND MAN

Temporary and permanent effects of steady, intermittent, and impulse noise on hearing and health. Annoyance and community noise. Noise measurement, reduction, and control; ear defenders and their limitations. Hearing conservation programs; preemployment testing and monitoring audiometry. (4 cr; prereq 5-301 or $\#$; I MTWThF; FolH 303) Ward

5-970 READINGS

Directed readings and preparation of reports on selected subjects. (Cr ar [may be repeated for cr]; prereq $\#$) Staff

8-509 SEMINAR: ANALYSIS OF LITERATURE IN SPEECH PATHOLOGY

Selected topics in language acquisition. Topics such as language comprehension, bilingualism, auditory memory for language, and language universals will be included. (3 cr; prereq grad major in speech pathology or $\#$; IV-V MW; Kolth S133) Carrow

8-511 SEMINAR: CURRENT ISSUES IN SPEECH PATHOLOGY

(Symposium: Delivery of Clinical Services in Minnesota—1973). A survey of systems for delivering speech and hearing services in Minnesota. Participation of consumers, funding organizations, administrators of public and private service organizations, professional training programs as well as speech pathologists and audiologists in a variety of service organizations. Current status, problems, patterns of change. (3 cr; prereq grad major in speech pathology or #; VI-VII TTh; Elth N119) McDermott

8-520 ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY

Specialized clinical practice. Evaluation and clinical management of persons presenting communication disorders. (2, 4, or 6 cr [may be repeated for cr]; prereq #) Broen, Haroldson, and staff

8-714 SELECTION AND USE OF HEARING AIDS

(June 18-August 3)

Nature and types of amplifying systems used with the hearing impaired. Electro-acoustic characteristics including gain, power, acoustic response, distortion, etc. Principles and methods of selection and usage relative to types of hearing disorders. (3 cr; prereq 5-305 or #; VI-VII MW) Chaiklin, Marth

8-720 CLINICAL METHODS AND PRACTICE IN AUDIOLOGY

Supervised internship experiences for graduate students working with communication disorders of persons with auditory impairment. (2, 4, or 6 cr [may be repeated for cr]; prereq #) Chaiklin, Marth

8-990 RESEARCH

Open to graduate students engaged in research. (Cr ar [may be repeated for cr]; prereq #) Speaks and staff

SECOND TERM

3-101 INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY

See First Term.

5-508 VOICE DISORDERS

Physical and physiological bases of normal voice production. Voice disorders (pitch, loudness, quality), their symptomatology, etiology, and clinical management. Laryngectomy and other organic disorders. (4 cr; prereq 3-101 or #; III MTWThF; FolH 303) Starr

5-970 READINGS

See First Term.

8-520 ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY

See First Term.

8-714 SELECTION AND USE OF HEARING AIDS

(June 18-August 3)

See First Term.

8-720 CLINICAL METHODS AND PRACTICE IN AUDIOLOGY

See First Term. Marth

8-990 RESEARCH

See First Term. Chaiklin, Siegel, Speaks

Criminal Justice Studies (CJS)

FIRST TERM

5-101 CRIMINAL LAW

General criminal law with particular attention to its philosophical underpinnings. The substantive law of homicide, theft, conspiracy, and attempt and the defenses of insanity, self-defense, and mistake of fact or law. (4 cr; I-II TTh; AndH 270) Samaha

5-102 CRIMINAL PROCEDURE

The processes by which persons are convicted of crime. Police discretion to arrest, the constitutional law of arrest, search and seizure, the role of the prosecutor, plea bargaining, sentencing, and postconviction relief. (4 cr; III-IV Th; AndH 270) Samaha

East Asian Languages

Chinese (Chin)

FIRST AND SECOND TERMS

1-101/1-102/1-103 INTENSIVE FIRST-YEAR CHINESE

See section on 10-week courses.

Economics (Econ)

FIRST TERM

1-001 PRINCIPLES OF MACROECONOMICS

Principles underlying economic activity and the economic institutions within which economic units function. National income, money and banking, business cycles, and international trade. (4 cr, §1-004, §1-015, §3-001; each section limited to 45 students, reserved in JohH 12; prereq 3rd qtr fr)

- Sec 1, I MTWThF, BlegH 145, Staff
- Sec 2, II MTWThF, BlegH 145, Staff
- Sec 3, III MTWThF, BlegH 340, Staff
- Sec 4, IV MTWThF, BlegH 145, Staff
- Sec 5, V MTWThF, BlegH 145, Staff

1-002 PRINCIPLES OF MICROECONOMICS

Demand and supply, competition and monopoly, and the distribution of income. (4 cr, §1-005, §1-015, §3-002; each section limited to 50 students, reserved in JohH 12; prereq 3rd qtr fr)

- Sec 1, II MTWThF, BlegH 250, Staff
- Sec 2, III MTWThF, BlegH 240, Staff

3-041 CURRENT ISSUES WORKSHOP

One or more topics of current interest will be analyzed using the tools and viewpoint of economic theory. Course will emphasize discussion rather than lectures, and active student participation. (4 cr; limited to 15 students, reserved in JohH 12; prereq 3-101 or A grade in 1-002 or §; IV MTWThF; BA 933) Staff

3-101 MICROECONOMIC THEORY

Behavior of firms and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions. (4 cr, §5-151; each section limited to 40 students, reserved in JohH 12; prereq 1-002 or §)

- Sec 1, II MTWThF, BlegH 135, Staff
- Sec 2, III MTWThF, BlegH 120, Staff

3-102 MACROECONOMIC THEORY

Determinants of national income, employment, and price level; attention given to aggregate consumption and investment. (4 cr; limited to 50 students, reserved in JohH 12; prereq 1-002 or §; IV MTWThF; BlegH 420) Staff

3-131 WELFARE ECONOMICS

Introduction to welfare economics. Economic efficiency and the conditions necessary to sustain it. Conflicts between the efficiency and income distribution goals. How market structure and public policies increase or decrease efficiency. (4 cr; limited to 45 students, reserved in JohH 12; prereq 3-101 or 3-101H or equiv; II MTWThF; BlegH 230) Staff

3-651 INDUSTRIAL ORGANIZATION AND ANTITRUST POLICY

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." (4 cr; limited to 45 students, reserved in JohH 12; prereq 3-101, 3-131 recommended or #; I MTWThF; BlegH 420) Staff

3-731 MACROECONOMIC POLICY

Problems raised by conflicts among the policy objectives of full employment, price stability, desired rate of growth, balance of payments equilibrium, desired mix of public and private sector outputs. Policy instruments: fiscal policy, monetary policy, wage-price guidelines, exchange rate adjustment. (4 cr; limited to 45 students, reserved in JohH 12; prereq 3-102; I MTWThF; BlegH 205) Staff

3-851 ELEMENTS OF PUBLIC FINANCE

Tax and expenditure policies. Impact of tax structure on the distribution of income. Evaluation of public programs. Optimal mix of public and private sector outputs. (4 cr; limited to 45 students, reserved in JohH 12; prereq 3-101, 3-131 recommended; III MTWThF; BlegH 404) Staff

3-970 DIRECTED STUDY

(Cr ar; prereq 1-002, consent of adviser, #)

5-151 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, §3-101; prereq grad or #; III MTWThF; BlegH 120) Staff

5-152 ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT

Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding. (3 cr, §3-102; prereq grad or #; IV MTWThF; BlegH 420) Staff

5-301 ECONOMIC DEVELOPMENT

Problems of economic growth in low income countries. Theory of aggregate and per capita income growth. Role of population growth, productivity increases, and capital formation. Allocation of resources between consumption and investment and among sectors. International assistance and trade. (4 cr, §5-331; limited to 25 students, reserved in JohH 12; not open to economics majors; prereq 1-002 or equiv; IV MTWThF; BlegH 245) Staff

5-331 ECONOMIC DEVELOPMENT

See Econ 5-301. (4 cr, §5-301; limited to 25 students, reserved in JohH 12; prereq 3-101, 3-102 or equiv or #; IV MTWThF; BlegH 245) Staff

5-401 INTERNATIONAL ECONOMICS

The case for free trade. Effects of tariffs; protection of infant industries; common markets. Balancing international receipts and payments, the role of exchange rate changes, international monetary reform. (4 cr, §5-431; limited to 25 students, reserved in JohH 12; not open to economics majors; prereq 1-002 or equiv; III MTWThF; BlegH 145) Staff

5-431 INTERNATIONAL ECONOMICS

See Econ 5-401. (4 cr, §5-401; limited to 25 students, reserved in JohH 12; prereq 3-101, 3-102 or equiv or #; III MTWThF; BlegH 145) Staff

5-611 ECONOMICS OF ENVIRONMENTAL CONTROL

General model of the problem. Partial models appropriate to specific cases. Prediction of rate of environmental deterioration and evaluation of its cost. Ranking of alternative superior technologies. Policies to promote discovery of superior technologies and to encourage their adoption. (4 cr; limited to 40 students, reserved in JohH 12; prereq 1-001, 1-002 or equiv; IV MTWThF; BlegH 205) Staff

5-831 COST-BENEFIT ANALYSIS

Application of economic analysis to projects, systems, and subsystems. Criteria for optimization, scope of analysis, measurement of benefits and costs, discounting, sensitivity analysis under uncertainty. Role and usefulness of analysis in decision making. Case studies from private and public sectors. (4 cr; limited to 50 students, reserved in JohH 12; prereq 3-131; II MTWThF; BlegH 420) Staff

5-970 DIRECTED STUDY

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

8-990 INDIVIDUAL GRADUATE RESEARCH

(Cr ar) Staff

SECOND TERM**1-001 PRINCIPLES OF MACROECONOMICS**

See First Term. (4 cr, §1-004, §1-005, §3-001; limited to 50 students, reserved in JohH 12; prereq 3rd qtr fr)

Sec 1, II MTWThF, BlegH 120, Staff

Sec 2, III MTWThF, BlegH 120, Staff

1-002 PRINCIPLES OF MICROECONOMICS

See First Term. (4 cr, §1-005, §3-002; each section limited to 45 students, reserved in JohH 12; prereq 3rd qtr fr)

Sec 1, I MTWThF, BlegH 420, Staff

Sec 2, II MTWThF, BlegH 420, Staff

Sec 3, III MTWThF, BlegH 420, Staff

Sec 4, IV MTWThF, BlegH 420, Staff

3-101 MICROECONOMIC THEORY

See First Term. (4 cr, §5-151; limited to 50 students, reserved in JohH 12; prereq 1-002 or \$; II MTWThF; BlegH 255) Staff

3-102 MACROECONOMIC THEORY

See First Term. (4 cr; each section limited to 40 students, reserved in JohH 12; prereq 1-002 or \$)

Sec 1, III MTWThF, BlegH 135, Staff

Sec 2, IV MTWThF, BlegH 225, Staff

3-131 WELFARE ECONOMICS

See First Term. (4 cr; limited to 40 students, reserved in JohH 12; prereq 3-101 or 3-101H or equiv; III MTWThF; BlegH 225) Staff

3-751 MONEY AND BANKING

Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve System, and monetary policy. (4 cr; limited to 45 students, reserved in JohH 12; prereq 3-102 or equiv; III MTWThF; BlegH 230) Smith

3-851 ELEMENTS OF PUBLIC FINANCE

See First Term. (4 cr; limited to 37 students, reserved in JohH 12; prereq 3-101; 3-131 recommended; II MTWThF; BlegH 335) Staff

3-970 DIRECTED STUDY

(Cr ar; prereq 1-002, consent of adviser, \$)

5-151 ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD

See First Term. (3 cr, §3-101; prereq grad or \$; II MTWThF; BlegH 225) Staff

5-152 ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT

See First Term. (3 cr, §3-102; prereq grad or \$; III MTWThF; BlegH 135) Staff

5-301 ECONOMIC DEVELOPMENT

See First Term. (4 cr, §5-331; limited to 25 students, reserved in JohH 12; not open to economics majors; prereq 1-002 or equiv; III MTWThF; BlegH 115) Staff

5-307 COMPARATIVE ECONOMIC SYSTEMS

Functions of all economic systems; the market economy, liberal socialism, centrally planned economy. Analysis of American and Soviet economies. (4 cr, §5-337; limited to 25 students, reserved in JohH 12; not available to economics majors; prereq 1-002 or equiv; IV MTWThF; BlegH 115) Smith

5-331 ECONOMIC DEVELOPMENT

See First Term. (4 cr, §5-301; limited to 25 students, reserved in JohH 12; prereq 3-101, 3-102 or equiv or \$; III MTWThF; BlegH 115) Staff

5-337 COMPARATIVE ECONOMIC SYSTEMS

See Econ 5-307. (4 cr, §5-307; limited to 25 students, reserved in JohH 12; prereq 3-102 or equiv or #; IV MTWThF; BlegH 115) Smith

5-401 INTERNATIONAL ECONOMICS

See First Term. (4 cr, §5-431; limited to 25 students, reserved in JohH 12; not open to econ majors; prereq 1-002 or equiv; II MTWThF; BlegH 115) Staff

5-431 INTERNATIONAL ECONOMICS

See First Term. (4 cr, §5-401; limited to 25 students, reserved in JohH 12; prereq 3-101, 3-102 or equiv or #; II MTWThF; BlegH 115) Staff

5-621 ECONOMICS OF URBAN PROBLEMS

Housing: space, quality, aesthetics, integration versus profit; rehabilitation and renewal. Security: economics of crime and crime prevention. Education: causes and effects of educational deprivation; quality, equality, integration. Transportation: auto, bus, rapid transit; selecting the optimal mix. City size: should it be controlled? (4 cr; limited to 30 students, reserved in JohH 12; prereq 1-002; IV MTWThF; BlegH 330) Staff

5-970 DIRECTED STUDY

See First Term.

8-990 INDIVIDUAL GRADUATE RESEARCH

(Cr ar) Staff

English (Engl)

FIRST TERM**1-001 INTRODUCTORY COMPOSITION**

(4 cr; limited to 28 students, reserved in JohH 12; prereq assignment to category 1 or 1A or 2)

Sec 1, I MTWThF, MainE 229, Mitchell

Sec 2, II MTWThF, MainE 229, Hacker

Sec 3, III MTWThF, MainE 229, Ar

1-002 INTRODUCTORY COMPOSITION

(4 cr; limited to 28 students, reserved in JohH 12; prereq assignment to category 1 or 1A or 2; II MTWThF; MainE 303) Furia

1-012 INTRODUCTION TO LITERATURE OF THE RENAISSANCE: SOME MAJOR FIGURES AND THEMES

(4 cr; limited to 35 students, reserved in JohH 12; prereq ††; I MTWThF; MainE 303) Haley

1-018 INTRODUCTION TO MODERN LITERATURE: PROSE FICTION

(4 cr; limited to 40 students, reserved in JohH 12; prereq ††; II MTWThF; MainE 302) Rosendahl

1-019 INTRODUCTION TO MODERN LITERATURE: DRAMA

(4 cr; limited to 35 students, reserved in JohH 12; prereq ††; I MTWThF MainE 302) McNally

3-241 SHAKESPEARE

Plays from Shakespeare's early and middle periods. All sections will read *A Midsummer Night's Dream*, *Hamlet*, a history play, and three or four other plays. (4 cr; limited to 35 students, reserved in JohH 12)

Sec 1, II MTWThF, MainE 340, Durham

Sec 2, III MTWThF, MainE 315, Clayton

3-242 SHAKESPEARE

Plays from the middle and late periods: *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays. (4 cr; limited to 35 students, reserved in JohH 12; IV MTWThF; MainE 302) Rosendahl

†† Completion of or exemption from Freshman English requirement.

- 5-114 EIGHTEENTH-CENTURY LITERATURE**
 Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course with emphasis on wide reading. No papers. (4 cr; III MTWThF; MainE 325) Leyasmeyer
- 5-153 TWENTIETH-CENTURY ENGLISH NOVEL**
 Selected novels by such modern authors as Conrad, Ford, Joyce, Woolf, Lawrence, Forster, Cary, and Waugh. (4 cr; III MTWThF; MainE 340) Mitchell
- 5-171 MEDIEVAL, TUDOR, AND ELIZABETHAN DRAMA**
 Mystery plays, moralities, interludes, academic and court plays; plays of Kyd, Marlowe, Lyly, Greene, and Peele. (4 cr; prereq 3-241 or 3-242; IV MTWThF; MainE 340) Durham
- 5-175 DRAMA SINCE ca. 1920**
 Survey of chief dramatists, English, American, and Continental. (4 cr; IV MTWThF; MainE 325) Leyasmeyer
- 5-253 JACOBAN AND CAROLINE POETRY**
 Readings in the nondramatic poetry of the earlier 17th century, commonly emphasizing the works of Donne and Jonson and their successors. (4 cr; II MTWThF; MainE 325) Haley
- 5-261 MILTON**
Paradise Lost, *Samson Agonistes*, minor poems, *Areopagitica*, and often, although not always, *Paradise Regained*. (4 cr; II MTWThF; MainE 320) Steinmann
- 5-411 AMERICAN LITERATURE**
 Beginnings through Hawthorne. Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course with emphasis on wide reading. (4 cr; III MTWThF; MainE 320) Ross
- 5-412 AMERICAN LITERATURE**
 Thoreau and Melville through James. Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course with emphasis on wide reading. (4 cr; IV MTWThF; MainE 320) Solotaroff
- 5-432 AMERICAN POETRY**
 Critical survey of American poetry from Stephen Crane to present; some attention to historical and intellectual backgrounds; emphasis upon major figures. (4 cr; IV MTWThF; MainE 305) Furia
- 5-452 AMERICAN NOVEL**
 History of the American novel from Henry James to the present. (4 cr; I MTWThF; MainE 305) Bales
- 5-455 AMERICAN SHORT STORY**
 Historical examination of the American short story from the 18th-century to present. (4 cr; II MTWThF; MainE 305) Solotaroff
- 5-541 EMERSON AND THOREAU**
 (4 cr; III MTWThF; MainE 305) Bales
- 5-692 FORM AND IDEA IN DRAMATIC LITERATURE**
 Comedy (classical, Renaissance, and modern), theories of comedy. Analytical reading of selected representative plays. (4 cr; prereq 3-241 and 3-242 recommended; II MTWThF; MainE 315) Hurrell
- 5-711 CLASSIC CRITICAL THEORY AND PRACTICE**
 Readings in the basic texts, with particular emphasis on Aristotle and Coleridge and attention to such authors as Plato, Horace, Longinus, Sidney, Dryden, Hume, Dr. Johnson, Arnold, and T. S. Eliot. (4 cr; IV MTWThF; MainE 315) Clayton
- 5-815 HISTORY OF ENGLISH LANGUAGE**
 Historical influences upon, and changes within, language as both popular and literary medium of communication. (4 cr; III MTWThF; MainE 303) McNally
- 5-851 STRUCTURE OF MODERN ENGLISH**
 Introduction to three English grammars: traditional, structural, and transformational, with applications in the study of social and regional variations. (4 cr; IV MTWThF; MainE 303) Steinmann

5-920 COMPUTER-AIDED STUDIES OF STYLE AND LANGUAGE

Discussion of style and language, especially those aspects of which are amenable to computational investigation. Special emphasis on constructing and testing hypotheses about style and language and on the incorporation of computational evidence into more general discussions. Possible topics include lexical statistics, syntactic and semantic analysis, metrical studies. (4 cr; III MTWThF) Hacker

8-690 STUDIES IN DRAMA: DRAMATIC THEORY

History and principles of dramatic theory from Aristotle to the 19th century, studied in relationship to issues and problems in the aesthetics of drama. Same as Th 8-157. (4 cr; IV MTWThF; FolH 304) Hurrell

SECOND TERM

1-001 INTRODUCTORY COMPOSITION

(4 cr; limited to 28 students, reserved in JohH 12; prereq assignment to category 1 or 1A or 2; I MTWThF; MainE 303) Nelson

1-002 INTRODUCTORY COMPOSITION

(4 cr; limited to 28 students, reserved in JohH 12; prereq assignment to category 1 or 1A or 2)

Sec 1, I MTWThF, MainE 302, Reed

Sec 2, II MTWThF, MainE 302, Luke

1-014 INTRODUCTION TO ROMANTIC LITERATURE: SOME MAJOR FIGURES AND THEMES

(4 cr; limited to 35 students, reserved in JohH 12; prereq ‡‡; IV MTWThF; MainE 320) Luke

1-018 INTRODUCTION TO MODERN LITERATURE: PROSE FICTION

(4 cr; limited to 35 students, reserved in JohH 12; prereq ‡‡; III MTWThF; MainE 302) Reed

3-241 SHAKESPEARE

See First Term. (4 cr; limited to 35 students, reserved in JohH 12; III MTWThF; MainE 315) Nelson

3-242 SHAKESPEARE

Plays from the middle and late periods. All sections will read *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays. (4 cr; limited to 35 students, reserved in JohH 12)

Sec 1, II MTWThF, MainE 320, Scoggins

Sec 2, III MTWThF, MainE 320, O'Brien

3-851 THE ENGLISH LANGUAGE

An informal, nontechnical examination of the English language in order to explore such basic questions as how you learned English, how your knowledge of it can be described, and what it has in common with other languages. (4 cr; II MTWThF; MainE 315) MacLeish

5-255 SEVENTEENTH-CENTURY PROSE AND POETRY

(4 cr; IV MTWThF; MainE 315) O'Brien

5-311 ROMANTIC WRITERS

A close examination of the writings of Blake and Wordsworth. (4 cr; IV MTWThF; MainE 305) Scoggins

5-363 JAMES JOYCE

Critical reading of the texts. (4 cr; III MTWThF; MainE 305) Anderson

5-413 AMERICAN LITERATURE

Crane to present. Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course with emphasis on wide reading. (4 cr; II MTWThF; MainE 305) Geffen

5-451 AMERICAN NOVEL

History of the American novel from beginning through Twain. (4 cr; III MTWThF; MainE 303) Geffen

‡‡ Completion of or exemption from Freshman English.

5-513 EARLY AMERICAN LITERATURE

Critical survey; emphasis upon principal writers and major cultural themes, from the Puritans to the mid-18th century. (4 cr; II MTWThF; MainE 303) Griffin

5-593 BLACK WRITERS OF THE UNITED STATES

Prose, poetry, and drama, with emphasis on writers of the 20th century. (4 cr; IV MTWThF; MainE 303) Anderson

5-851 STRUCTURE OF MODERN ENGLISH

See First Term. (4 cr; IV MTWThF; MainE 302) MacLeish

Foreign Study

5-960 SEMINAR FOR FOREIGN STUDY I AND II

See section on 10-week courses.

French and Italian

French (Fren)

FIRST TERM

1-101 BEGINNING FRENCH

(5 cr; limited to 25 students, reserved in JohH 12)

Sec 1, II-III MTWThF, KoltH S134

Sec 2, II-III MTWThF, KoltH S135

Sec 3, II-III MTWThF, KoltH S136

1-103 BEGINNING FRENCH

(5 cr; limited to 25 students, reserved in JohH 12; prereq 1-102 or 1-002 or 2 yrs high school French)

Sec 1, I-II MTWThF, KoltH S137

Sec 2, I-II MTWThF, KoltH S138

1-004 INTERMEDIATE FRENCH

(5 cr; limited to 25 students, reserved in JohH 12; prereq 1-103 or 1-003 or 3 yrs high school French; II-III MTWThF; KoltH S139)

3-015 FRENCH CONVERSATION AND COMPOSITION

Combines traditional conversation and composition courses. Orthoepic in approach, leading to an acceptable command of French both in pronunciation and grammar. Includes pastiche work, free composition, and translation from and into French. (5 cr; limited to 15 students; reserved in JohH 12; prereq 1-004H or 1-005)

Sec 1, II MWF, II-III TTh, FolH 108

Sec 2, III MWF, III-IV TTh, FolH 105

3-025 ADVANCED CONVERSATION

Leads to superior command of oral French, including a knowledge of phonetics as applied to spoken French. Emphasis on present-day usage. (5 cr; limited to 15 students; reserved in JohH 12; prereq 3-015)

Sec 1, II MWF, I-II TTh, FolH 103

Sec 2, III MWF, III-IV TTh, FolH 110

3-303 FRENCH DRAMA

Reading and discussion of selected texts and development of notions of convention and genre. (5 cr; prereq 3-201; I-II MWF; FolH 208) Baxter

3-269 TOPICS IN 19TH-CENTURY FRENCH LITERATURE

Reading and discussion of selected texts. Taught in French. (5 cr; prereq 3-201; III-IV MWF; FolH 108) Robinson

3-970 INDEPENDENT READINGS FOR UPPER DIVISION STUDENTS

(1-5 cr; prereq # and consent of dept chmn; hrs ar) Staff

5-335 THE NOVEL OF THE 17TH CENTURY

(5 cr; prereq 3-209 or above; IV-V TTh; FolH 204) Renaud

5-368 SHORT STORIES OF THE 19TH CENTURY

From Charles Nodier to Anatole France with particular attention to Daudet and Villiers de l'Isle Adam. (5 cr; prereq 3-209 or above; IV-V MW, FolH 204) Lock

8-970 INDEPENDENT READINGS FOR GRADUATE STUDENTS

(1-5 cr; prereq # and consent of dept chmn; hrs ar) Staff

OFFERED ONLY IN INSTITUTE AT BESANCON‡‡**3-502 FRENCH CIVILIZATION AND CULTURE**

Systematic study of development of French culture. Oral and written exercises. Taught in French. (5 cr; prereq 1-004H or 1-005)

5-012 STYLISTICS

The structural dimensions of literary works, principally as they relate to language. Examples from a variety of genres and periods. Taught in French. (5 cr; prereq 3-035 or #)

5-900 TOPICS IN FRENCH LITERATURE

The novel from Flaubert to Barrès. Study of 19th-century French social attitudes and reactions to the emergence of the industrial society as embodied in the novel. (5 cr; prereq 3-209 or above)

5-970 DIRECTED READINGS

(2 cr)

SECOND TERM**1-102 BEGINNING FRENCH**

(5 cr; limited to 25 students, reserved in JohH 12; prereq 1-101 or 1-001 or 1 yr high school French)

Sec 1, II-III MTWThF, KoltH S134

Sec 2, II-III MTWThF, KoltH S135

1-004 INTERMEDIATE FRENCH

(5 cr; limited to 25 students, reserved in JohH 12; prereq 1-103 or 1-003 or 3 yrs high school French; I-II MTWThF; KoltH S136)

1-005 INTERMEDIATE FRENCH

Development of vocabulary and ability to write and discuss short summaries based on readings in contemporary culture. (5 cr; limited to 20 students, reserved in JohH 12; prereq 1-004; II-III MTWThF; FolH 103)

3-035 ADVANCED COMPOSITION

French composition according to the traditional European method of *Thème et version*. (5 cr; limited to 20 students, reserved in JohH 12; prereq 3-015; I MWF, I-II TTh; FolH 108)

3-104 INTRODUCTION TO FRENCH LITERARY TEXTS

Variety of literary works representing principal genres are examined through stylistic analyses and literary explications. Students learn critical terminology and discuss literary problems and techniques. (5 cr; limited to 25 students, reserved in JohH 12; prereq 1-004H or 1-005 or 4 yrs high school French or #; II-III MWF; FolH 108)

3-289 TOPICS IN 20TH-CENTURY FRENCH LITERATURE

Reading and discussion of selected texts. Taught in French. (5 cr; prereq 3-201; I-II MWF; FolH 304) Bauer

3-305 THE FRENCH NOVEL

Reading and discussion of selected texts and development of notions of convention and genre. (5 cr; prereq 3-201; III-IV MWF; FolH 304) Waldauer

‡‡ See section on Special Programs.

3-970 INDEPENDENT READINGS FOR UPPER DIVISION STUDENTS

(1-5 cr; prereq § and consent of dept chmn; hrs ar) Staff

5-303 MEDIEVAL FRENCH DRAMA

The history of the medieval French theater from its origins to the Renaissance. (5 cr; prereq 5-207 or §; III-IV TTh; FolH 205) Akehurst

5-396 EXISTENTIAL NOVEL

Stress upon novelists from 1930's to present whose work reveals concern for what Malraux calls the human condition: Malraux, Céline, Sartre, Camus, Blanchot, and Beckett. (5 cr; prereq 3-209 or above; III-IV MW; FolH 205) Bauer

8-970 INDEPENDENT READINGS FOR GRADUATE STUDENTS

(1-5 cr; prereq § and consent of dept chmn; hrs ar) Staff

Italian (Ital)

FIRST TERM

1-001, 1-002, 1-003; BEGINNING ITALIAN

See section on 10-week courses.

Geography (Geog)

FIRST TERM

1-301 HUMAN GEOGRAPHY

Geography of population and principal ways of life; capacity of earth for future population. (5 cr; I-II MTWThF; AndH 250) de Souza

3-161 EUROPE

Identification and analysis of broad cultural-economic realms in Europe (excluding U.S.S.R.) with brief survey of areal organization of each realm. (4 cr; III MTWThF; BlegH 425) Rice

3-511 INTRODUCTION TO CARTOGRAPHY

Principles of map design, compilation, specification, and drafting. Map symbols. History of cartography. Projections-analysis of construction, properties, and uses. (4 cr; limited to 20 students, reserved in JohH 12; prereq 5 cr in geography or §; II MTWThF; BlegH 455) Brown

3-970 DIRECTED READINGS

Devised for independent study program and designed to permit student to pursue interests in special reading and/or study. (1-15 cr; hrs ar) de Souza

5-113 CANADA AND ALASKA

Analysis of physical and human geography. Both internal and external areal relationships. (4 cr; prereq 10 cr in geography or §; II MTWThF; AndH 230) Mather

8-330 SEMINAR: AGRICULTURAL GEOGRAPHY

(June 28-July 19)

An intensive field research seminar. Field headquarters will be at Red Wing, Minnesota. Research will be focused upon the Mississippi Corridor and the development of its natural and human resources. (6 cr; prereq §; reservations must be made by May 23; For costs, detailed information, and reservations, contact Professor Cotton Mather, Department of Geography, 414 Social Sciences Building, University of Minnesota, Minneapolis, Minnesota 55455) Mather

SECOND TERM

1-301 HUMAN GEOGRAPHY

See First Term. (5 cr; I-II MTWThF; AndH 250)

1-311 ECONOMIC GEOGRAPHY I: INTRODUCTORY

Analysis of world patterns of economic activity; appraisal of resources, production, circulation, and consumption; principles and potential of economic development. (5 cr; III-IV MTWThF; AndH 250) R Adams

3-970 DIRECTED READINGS

See First Term. (1-15 cr; hrs ar) R Adams

5-112 WESTERN UNITED STATES

Physical and human resources of western United States. (4 cr; I MTWThF; AndH 230) Mather

5-391 RURAL GEOGRAPHY

Geographic components and assemblages of rural settlement. World patterns and geographic problems of rural settlement on the American scene. (4 cr; III MTWThF; AndH 230) Mather

8-970 DIRECTED READINGS

(1-5 cr)

German (Ger)

The University Summer Session and the German Department will sponsor a special program at the Ruhr-Universität Bochum, Germany, during the second summer term. Permission of the German Department is required for registration. For more information, see section on Special Programs.

FIRST TERM

1-101 BEGINNING GERMAN

(5 cr; each section limited to 20 students, reserved in JohH 12) Staff

Sec 1, I-II MTWThF, FolH 302

Sec 2, I-II MTWThF, Jones 1

Sec 3, I-II MTWThF, Jones 11

1-103 BEGINNING GERMAN

(5 cr; each section limited to 20 students, reserved in JohH 12; prereq 1-102 or 2 yrs high school German)

Sec 1, I-II MTWThF, KoltH S132, Plummer

Sec 2, I-II MTWThF, KoltH S133, Wakefield

1-301 INTERMEDIATE GERMAN

(5 cr; limited to 25 students, reserved in JohH 12; prereq 1-003 or 1-103 or 3 yrs high school German; III-IV MTWThF; Jones 11) Wakefield

3-104 READING AND ANALYSIS OF LITERARY TEXTS

(4 cr; limited to 25 students, reserved in JohH 12; not open to students who have had 3-301 or above; prereq 1-301 or 4 yrs high school German; II MTWThF; FolH 209) Alley

3-310 STUDIES IN MODERN GERMAN AUTHORS: PETER WEISS

(4 cr; limited to 25 students, reserved in JohH 12; prereq 3-104 or #; IV MTWThF; FolH 209) Alley

3-312 GERMAN DRAMA FROM LESSING TO PRESENT: 19TH CENTURY

Reading and analysis of outstanding German dramatic works. 19th century. (4 cr; limited to 25 students, reserved in JohH 12; prereq 3-104 or #; III MTWThF; FolH 209) Menze

3-603 GERMAN LITERATURE IN TRANSLATION

Representative literary works of modern times read in translation and related to other literatures.) 4 cr; limited to 80 students, reserved in JohH 12; may be used

in fulfillment of Route II, Part B of BA foreign language requirement; not open for cr toward a German major; requires no knowledge of German; IV MTWThF; Arch 40) Plummer

5-102 THE STRUCTURE OF MODERN GERMAN

(4 cr; limited to 20 students, reserved in JohH 12; III-IV MW; FolH 302) C Wood

8-453 NINETEENTH CENTURY: NIETZSCHE

(3 cr; limited to 25 students, reserved in JohH 12; III-IV TTh; FolH 302) Taraba

8-711†† HISTORY OF THE GERMAN LANGUAGE

(3 cr; limited to 25 students, reserved in JohH 12; VI-VII MW; FolH 302) C Wood

Note—Continuing Education and Extension will offer German for Graduate Students (Ger 0-221), First Term, MTh 5:30-8:50 p.m.; and Ger 0-222, Second Term, MTh 5:30-8:50 p.m. Please address all inquiries to Continuing Education and Extension.

SECOND TERM

1-102 BEGINNING GERMAN

(5 cr; each section limited to 25 students, reserved in JohH 12; prereq 1-101 or 1 yr high school German) Staff
Sec 1, I-II MTWThF, FolH 110
Sec 2, I-II MTWThF, FolH 201

1-301 INTERMEDIATE GERMAN

(5 cr; limited to 25 students, reserved in JohH 12; prereq 1-003 or 1-103 or 3 yrs high school German; I-II MTWThF; FolH 104) Clausing

3-105 INTERPRETATION OF LITERATURE

Basic techniques of literary interpretation and familiarization with critical terminology. Oral and written interpretation by students analyzed and evaluated in class. (4 cr; limited to 25 students, reserved in JohH 12; recommended especially for German majors and advanced students; prereq 3-104 or §; II MTWThF; FolH 302) Weiss

3-501 CONTEMPORARY GERMANY

Introduction to culture and civilization of present-day Germany. (4 cr; limited to 30 students, reserved in JohH 12; prereq 1-003 or 1-103 or 3 yrs high school German; III MTWThF; FolH 209) Hirschbach

3-602 GERMAN LITERATURE IN TRANSLATION

Representative literary works of classical period read in translation and related to other literatures. (4 cr; limited to 80 students, reserved in JohH 12; may be used in fulfillment of Route II, part B of BA foreign language requirement; not open for cr toward a German major; requires no knowledge of German; IV MTWThF; FolH 308) Ramras

3-610 MODERN GERMAN AUTHORS IN TRANSLATION: FRANZ KAFKA

A study in depth of the works of Franz Kafka. (4 cr; limited to 80 students, reserved in JohH 12; may be used in fulfillment of Route II, Part B of BA foreign language requirement; not for majors or minors in German; VI MTWThF; Arch 40) Taraba

5-371 THE RADIO PLAY AS LITERARY FORM

Study of representative radio plays by such authors as Dürrenmatt, Frisch, Eich, Jens, Böll, and Grass, with special concern for unique features dictated by broadcasting medium. (4 cr; limited to 25 students, reserved in JohH 12; prereq 8 cr of literature courses at 3-000 level or above; IV-V TTh; FolH 302) Weiss

8-712†† HISTORY OF THE GERMAN LANGUAGE

(3 cr; limited to 25 students, reserved in JohH 12; IV-V MW; FolH 302) Clausing

†† To receive credit for this course, a student must complete both Ger 8-711 and 8-712.

History (Hist)

FIRST TERM

- 1-002 INTRODUCTION TO MODERN EUROPEAN HISTORY, PART II**
Revolution, liberalism, and nationalism to 1870. (4 cr, §3-002; not open to Jrs, srs; II MTWThF; BlegH 10) Thayer
- 1-052 ANCIENT CIVILIZATION, PART II**
Greek Civilization, 750 to 323 B.C. (5 cr, §3-052; IV MTWThF; BlegH 215) Kelly
- 1-101 MEDIEVAL AND RENAISSANCE HISTORY, PART I**
Early Middle Ages. (4 cr, §3-101; I MTWThF; BlegH 155) Bachrach
- 1-152 ENGLISH HISTORY, PART II**
From the 17th century to the present. (4 cr, §3-152; II MTWThF; BlegH 155) Lehmberg
- 1-302 AMERICAN HISTORY, PART II**
Modern America. (4 cr; prereq soph; IV MTWThF; AndH 370) Staff
- 1-402 SURVEY OF LATIN-AMERICAN HISTORY, PART II**
The national period. (5 cr, §3-402; IV MTWThF; AndH 330) Wagner
- 1-433 HISTORY OF AFRICA, PART III**
(4 cr, §3-433; III MTWThF; BlegH 130) Isaacman
- 1-954 WORLD MILITARY HISTORY**
Telescopes Hist 1-951, 1-952, 1-953. (5 cr, §Mil 1-014; primarily for ROTC cadets but open to others; I-II MTWThF; Armory 116A) Loehr
- 3-002 INTRODUCTION TO MODERN EUROPEAN HISTORY, PART II**
See Hist 1-002. (4 cr; II MTWThF; BlegH 10) Thayer
- 3-052 ANCIENT CIVILIZATION, PART II**
See Hist 1-052. (3 cr; IV MTWThF; BlegH 215) Kelly
- 3-101 INTRODUCTION TO MEDIEVAL AND RENAISSANCE HISTORY, PART I**
See Hist 1-101. (4 cr; I MTWThF; BlegH 155) Bachrach
- 3-152 ENGLISH HISTORY, PART II**
See Hist 1-152. (4 cr; II MTWThF; BlegH 155) Lehmberg
- 3-200 CONTEMPORARY PROBLEMS IN HISTORICAL PERSPECTIVE: REVOLUTION**
Comparative treatment of a selected contemporary problem in historical perspective. The topic for this course is revolution. (4 cr; II MTWThF; BlegH 255) Rudolph
- 3-402 SURVEY OF LATIN-AMERICAN HISTORY, PART II**
See Hist 1-402. (5 cr; IV MTWThF; AndH 330) Wagner
- 3-433 HISTORY OF AFRICA, PART III**
See Hist 1-433. (4 cr; III MTWThF; BlegH 130) Isaacman
- 3-468 TWENTIETH-CENTURY CHINA**
The People's Republic. (4 cr; II MTWThF; BlegH 404) Farmer
- 3-471 TWENTIETH-CENTURY JAPAN**
The modern transformation, 1870's to 1970's. (4 cr; III MTWThF; BlegH 155) Marshall
- MidE 3-501 ANCIENT ISRAEL, PART I**
History of Israel and development of its religion as seen against background of ancient Near East. (4 cr; II-III MTWThF; PillsH 105) Reisman
- 5-061 GREECE TO 200 B.C., PART I**
(3 cr; II MTWThF; BlegH 340) Kelly
- 5-211 FRANCE IN THE OLD REGIME**
(4 cr; III MTWThF; BlegH 420) Bamford

5-276 INTELLECTUAL AND CULTURAL HISTORY OF MODERN GREECE

Literary and cultural contributions of modern Greece in national and European contexts. (5 cr; prereq 5-274, 5-275 recommended; III MTWThF; BlegH 235) Stavrou

5-286 DIPLOMATIC HISTORY OF EUROPE IN THE 19TH AND 20TH CENTURIES, PART III
1918 to present. (4 cr; IV MTWThF; AndH 230) Kieft

5-317 AMERICAN HISTORY, 1850-1900, PART I
1850-1865. (4 cr; III MTWThF; AndH 230) Loehr

5-420 TOPICS IN LATIN-AMERICAN HISTORY
Detailed treatment of historical themes common to the entire Latin-American area. (4 cr; prereq #; limited to 15 students, reserved in JohH 12; II MTWThF; SocSci 628) Wagner

5-445 PROBLEMS IN CENTRAL AND SOUTHERN AFRICAN HISTORY, PART II
Selected problems in social history of South Asia. (4 cr; IV MTWThF; BlegH 340) Isaacman

5-458 MODERN SOUTH ASIA: SOCIAL HISTORY, PART I
Selected problems in the social history of South Asia. (4 cr; IV MTWThF; BlegH 440) Lelyveld

5-468 PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT
Introduction of Marxism to China; rise of Communist Party; restructuring Chinese society. (4 cr; II MTWThF; BlegH 404) Farmer

5-471 20TH-CENTURY JAPAN
See Hist 3-471. (5 cr; III MTWThF; BlegH 155) Marshall

5-791 EUROPEAN ECONOMIC HISTORY SINCE 1500, PART I
(3 cr; III-IV TTh; SocSci 628) Rudolph

5-951 HISTORY OF HISTORICAL THOUGHT, PART I
(4 cr; III-IV TF; SocSci 860) Pflanze

SECOND TERM

1-001 INTRODUCTION TO MODERN EUROPEAN HISTORY, PART I
Development of western European civilization to 1715. (4 cr, §3-001; not open to jrs, srs; III MTWThF; AndH 330) Noonan

1-051 ANCIENT CIVILIZATION, PART I
Near East to 500 B.C. (5 cr, §3-051; II MTWThF; BlegH 135) Jones

1-301 AMERICAN HISTORY, PART I
Colonial, early national period through sectional crisis. (4 cr; II MTWThF; BlegH 235) McCrary

1-452 ASIAN CIVILIZATIONS, PART II
The 5th through the 18th centuries. (4 cr, §3-452; VI MTWThF; BlegH 150) Taylor

3-001 INTRODUCTION TO MODERN EUROPEAN HISTORY, PART I
See Hist 1-001. (III MTWThF; AndH 330) Noonan

3-051 ANCIENT CIVILIZATION, PART I
See Hist 1-051. (3 cr; II MTWThF; BlegH 135) Jones

3-452 ASIAN CIVILIZATIONS, PART II
See Hist 1-452. (4 cr; VI MTWThF; BlegH 150) Kopf

3-483 HISTORY OF SOUTH ASIA, PART III
Introduction to the history of South Asia from social, cultural, political, and economic perspectives. (4 cr; III MTWThF; BlegH 145) Kopf

MidE 3-502 ANCIENT ISRAEL, PART I
History of Israel and development of its religion as seen against background of ancient Near East. (4 cr; II-III MTWThF; PillsH 105) Paradise

5-134 HISTORY OF EARLY RUSSIA, PART I

(4 cr; prereq #; IV MTWThF; BlegH 335) Noonan

5-372 RECENT INTELLECTUAL HISTORY OF THE UNITED STATES, PART II

(4 cr; III MTWThF; BlegH 10) Noble

5-381 MINNESOTA HISTORY WORKSHOP

(July 23-August 3)

Will involve an examination of various aspects of Minnesota history, including the region's native Americans, the role of European immigrants, the political history of the archaeology and reconstruction. (5 cr; hrs and rm ar) Loehr

5-391 HISTORY OF THE SOUTH, PART I

Slavery and the antebellum South, 1607-1861. (4 cr; IV MTWThF; BlegH 145) McCrary

Humanities (Hum)

FIRST TERM

1-001 HUMANITIES IN THE MODERN WORLD I

Old Regime, French Revolution and Napoleonic Era, neoclassicism, and romanticism. Authors: Pope, Voltaire, Rousseau, Burke, Goethe, and Tolstoy. (5 cr, §3-001, §Rheth 1-301; limited to 65 students, reserved in JohH 12; II MTWThF; Arch 45) Thomas

1-004 HUMANITIES IN THE MODERN WORLD IV

Introduction to humanities between the two world wars. Communism, fascism, Freudianism, modern art and philosophy, existentialism. Authors: Lenin, Freud, Joyce, T. S. Eliot, Kafka, and others. (5 cr, §3-004, §Rheth 3-381; limited to 65 students, reserved in JohH 12; prereq 1-001 or 1-002 or 1-003; IV MTWThF; Arch 5) Bauer

3-002 HUMANITIES IN THE MODERN WORLD II

Industrial Revolution, liberalism and socialism, individualism. Authors: Smith, Malthus, Carlyle, Marx, Ibsen, Mill, Zola, Flaubert, Tolstoy, and Dostoevsky. (5 cr, §1-002, §Rheth 1-302; limited to 65 students, reserved in JohH 12; prereq jr or sr; IV MTWThF; Arch 30) Thomas

3-005 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 new theology, the influence of Zen. Readings in Buber, Camus, Hesse, Ionesco, Genet, Bultmann, Tillich, and others. (5 cr; limited to 65 students, reserved in JohH 12; prereq 1-004 or 3-004; III-IV TTh, 1 hr ar; Arch 35) Ames

3-006 THE CREATIVE IMAGINATION IN THE 20TH CENTURY

To examine certain aspects of creativity in the 20th century through a study of major works of painters, sculptors, musicians, and writers such as Marcel Duchamp, Pablo Picasso, John Cage, and Andre Gide. The choice of artists will vary. (5 cr; limited to 65 students, reserved in JohH 12; II MTWThF; ForH 120) Bauer

3-045 RACIAL THOUGHT: A CONCEPTUAL SURVEY, 19TH AND 20TH CENTURIES

Introduces "racism" as an assemblage of historically and conceptually diverse philosophic and cultural ideologies. Selected readings include Gobineau, Disraeli, Renan, Taine, Chamberlain, Putnam, Benedict, Montague, etc. (5 cr; limited to 65 students, reserved in JohH 12; prereq jr or sr or #; I MTWThF; Arch 15) Penn

3-049 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. (5 cr; limited to 65 students, reserved in JohH 12; prereq jr or sr or #; III MTWThF; MechE 302) Penn

3-061 COUNTER-FAITHS IN CONTEMPORARY NOVELS

Selected writings of Camus, Clarke, Heinlein, Hesse, Huxley, Kazantzakis, Sartre, Skinner, Vonnegut—critically examined as embodiments of alternative faith perspectives and sensibilities which have emerged from alienation from the Western past. (5 cr; prereq 1-004 or 3-004; III MTWThF; Arch 30) Tapp

5-030 HUMANITIES PROSEMINAR

Discussion of the relationships between history, literature, and the arts; exact area of concentration to be determined by the class after a discussion of alternatives offered by the instructor. Student reports, papers. Audio-visual aids available. (3 cr; limited to 15 students, reserved in JohH 12; prereq sr; III-IV TTh, ForH 175) D'Andrea

SECOND TERM

1-001 HUMANITIES IN THE MODERN WORLD I

See First Term. (5 cr; §3-001, §Rhet 1-301; limited to 65 students, reserved in JohH 12; II MTWThF; Arch 45) Lowry

1-002 HUMANITIES IN THE MODERN WORLD II

Industrial Revolution, liberalism and socialism, individualism. Authors: Smith, Malthus, Carlyle, Marx, Ibsen, Mill, Zola, Flaubert, Tolstoy, and Dostoevsky. (5 cr, §3-002, §Rhet 1-302; limited to 65 students, reserved in JohH 12; prereq 1-001; I MTWThF; ForH 130) Bryan

1-004 HUMANITIES IN THE MODERN WORLD IV

See First Term. (5 cr, §3-004, §Rhet 3-381; limited to 65 students, reserved in JohH 12; prereq 1-001 or 1-002 or 1-003; IV MTWThF; ForH 115) Lowry

3-003 HUMANITIES IN THE MODERN WORLD III

Impact of science and theory of evolution; religion and morals in changing world. Authors: Darwin and evolutionists, Nietzsche, Kierkegaard, Chekhov, Turgenev, Mann. (5 cr, §1-003, §Rhet 1-303; limited to 65 students, reserved in JohH 12; prereq jr or sr; IV MTWThF; MechE 221) Staff

3-004 HUMANITIES IN THE MODERN WORLD IV

(See Hum 1-004) (5 cr, §1-004, §Rhet 3-381; limited to 65 students, reserved in JohH 12; prereq jr or sr; III MTWThF; ForH 130) Bryan

3-005 HUMANITIES IN THE MODERN WORLD V

See First Term. (5 cr; limited to 65 students, reserved in JohH 12; prereq 1-004 or 3-004; II MTWThF; ForH 120) Staff

3-011 GREEK HERITAGE

The Heroic Age: Homer. The Golden Age of Athens: Aeschylus, Sophocles. The philosophers: Plato, Aristotle. (5 cr, §1-011, §Rhet 3-321; prereq jr or sr; III MTWThF; ForH 120) Hershbell

Journalism and Mass Communication (Jour)

FIRST TERM

1-001 INTRODUCTION TO MASS COMMUNICATION

Nature, functions, and responsibilities of communication media and agencies from point of view of professional journalist. News, opinions, entertainment, and persuasion functions; specialized communication; aspects of advertising. (2 cr; prereq 2nd qtr fr with B avg in English, 3rd qtr fr with C avg in English or soph; II MTWTh; MurH 308) Fang

1-101 REPORTING

Fact-gathering and journalistic writing. Problems in judgment and handling of news and news features. (5 cr; limited to 20 students, reserved in JohH 12; prereq 3rd qtr fr with B avg in English or soph, 1-001...type 35 words per min; IV-V MTWThF; MurH 212) Fang

1-201 PRINCIPLES OF ADVERTISING

Theory, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, radio, television as advertising media. (4 cr; prereq soph, 1-001, C avg and ¶Comp 1-207...1-001 or ¶1-001 for Upper Division students; IV MTWThF; MurH 311) Peterman

5-182 PUBLICATION WORKSHOP

(June 19-July 6)

Intensive study of the role of high school newspaper and yearbook; analysis of content; study of design and make-up, typography, photography processes. Specially planned for secondary school publication advisers. (4 cr; not open to journalism majors; prereq jr, sr or grad or ‡; 1:00-4:30 MTWThF; MurH 308) Wilson and others

5-184 MASS MEDIA AND THE CLASSROOM

Introduction to process education with applications to mass media study. Interaction with leading media personalities; experimentation with video, sound print, and film production in developing individual and group messages; exposure to most recent materials. (6 cr; limited to 50 students, reserved in JohH 12; prereq ‡; \$75 plus \$25 special course fee; held at University of Minnesota and Roseville Public Schools) Heintz, Pearson

5-221 GRAPHIC ARTS: PROCESSES

Processes in graphic communication. Technique and production of illustration. Significant graphic arts developments. (4 cr; prereq 3-121 or 3-231 or 8 cr in Upper Division art and design; I MTWThF; MurH 308) Wilson

5-251 PSYCHOLOGY OF ADVERTISING

Psychological principles, research techniques, and applications in advertising and selling. (4 cr, \$Psy 5-751; prereq Psy 1-001; III MTWThF; SciCB 375) Peterman

5-501 COMMUNICATION AND PUBLIC OPINION I

Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation. (4 cr; prereq 15 cr in social science depts; II MTWThF; MurH 311) Carter

5-601 HISTORY OF JOURNALISM

Development of American newspapers and periodicals, from beginnings in Europe to present day; rise of radio and television; relation of communications developments to political, economic, and social trends. (4 cr; III MTWThF; MurH 308) Schuneman

5-801 INTERNATIONAL COMMUNICATION

Global telecommunications, channels, artifacts of international mass communication. Problems in free flow of information. Roles of international organizations. Mass communication in social, political, educational, economic development. (4 cr; prereq 15 cr in social science depts; IV MTWThF; MurH 308) Carter

5-971 ADVANCED PROJECTS IN JOURNALISM

(1-4 cr per qtr [may be repeated for 8 cr max]; prereq journalism major, B avg, ‡) Staff

8-601 SEMINAR: HISTORY OF MASS COMMUNICATION

Analysis of major historical literature in mass communication; development of a research project. (4 cr per qtr; prereq 5-601; IV MTWThF; MurH 206) Schuneman

8-990 SPECIAL PROBLEMS ON MASS COMMUNICATION

Individual research. (4 cr per qtr; for grad major or minor in mass communication; prereq ‡) Staff

SECOND TERM**1-011 JOURNALISTIC TECHNIQUES FOR NONMAJORS**

General view of the printed mass media. Forms of news and feature stories; basics of mass communication law. Basics of publications editing, headlines, makeup for business publications. Lecture and laboratory. (5 cr; limited to 20 students, reserved in JohH 12; prereq English composition or equiv, C avg; lect MWF IV-V, MurH 311; lab TTh IV-V, MurH 206) Sim

1-701 MASS COMMUNICATIONS LAW

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. (2 cr; prereq 1-001, ¶1-101; I MTWTh; MurH 311) Gillmor

3-021 MASS COMMUNICATIONS AND THE NEWS

The mass media in contemporary society: structure, organization, professional norms, and audience compositions. Press and broadcasting; role of media in news dissemination. (4 cr; not open to jour majors; II MTWThF; MurH 308) Sim

5-141 OPINION WRITING IN AMERICA

Oral and written analysis of major political, economic, and social developments. Persuasive communication in newspapers and magazines; columnists; commentators. (4 cr; limited to 20 students, reserved in JohH 12; prereq sr, jour major; II MTWThF; MurH 311) Gerald

5-549 PUBLIC RELATIONS

History and development of public relations practice and principles. Process and applications in a variety of institutional settings. Analysis and critique of public relations efforts in contemporary society. (4 cr; prereq 15 cr in social science depts, § for nonmajors; III MTWThF; MurH 311) Lindsay

5-721 MASS MEDIA IN A DYNAMIC SOCIETY

Economic, political, and social determinants of character and content of mass communications. Patterns of operations, effect on content, and relative social utility. Theory of mass society. (4 cr; prereq 1-201 or 3-121 for jour majors, § for others; III MTWThF; MurH 308) Gillmor

5-777 CONTEMPORARY PROBLEMS IN FREEDOM OF SPEECH AND PRESS

Anglo-American concept of freedom and responsibility, constitutional development in United States, areas of present tension. Bill of Rights and journalism today. (4 cr; prereq 15 cr in social science depts; IV MTWThF; MurH 308) Gerald

5-825 WORLD COMMUNICATION SYSTEMS

Description and analyses, divergencies and congruence in the world's mass communication systems. Putative issues raised by novel additions to the global telecommunications grid. Effects and import on near- and deep-future communications. (4 cr; prereq 15 cr in social science depts; I MTWThF; MurH 308) Lindsay

5-971 ADVANCED PROJECTS IN JOURNALISM

See First Term.

8-990 SPECIAL PROBLEMS ON MASS COMMUNICATION

See First Term.

Library School (Lib)††

FIRST TERM

5-101 INTRODUCTION TO LIBRARIES AND LIBRARIANSHIP

Librarianship as a profession; development of libraries as social agencies; principles of library administration and management. (5 cr; limited to 50 students, reserved in JohH 12; III-IV MTWTh; VH 2) McDiarmid

5-102 MEDIA CENTER ADMINISTRATION

Organization and administration at the school building level of the library as the single agency that encompasses all forms of instructional materials; philosophy

†† The graduate Library School is a professional school. Courses numbered 8-000 and above are open only to graduate students and to librarians who hold a fifth-year degree in library science. Courses numbered below 8-000 are open to anyone who has been admitted to the Graduate School or to any undergraduate in the College of Liberal Arts or the College of Education. A student who does not fall in one of the above categories must have his registration for a library science course approved by an adviser in the Library School office, 3 Walter Library.

and objectives of service; administration and organization plans, procedures, and relationships. (3 cr; limited to 50 students, reserved in JohH 12; prereq 5-101, 5-221, 5-401; III MTWThF; ForH 130) Olson

5-204 PRINT MATERIALS IN LIBRARIES

Selection, evaluation, and use of books, periodicals, and other printed sources of information and recreation for youth in school and public libraries; reading patterns of children and adolescents, and implications for selection of printed materials to meet the requirement, purposes, and abilities of different age groups. (3 cr; limited to 50 students, reserved in JohH 12; prereq 5-101, 5-221, 5-401; VII MTWThF; ForH 120)

5-221 RECORDS OF KNOWLEDGE

History and development of the records of knowledge in relation to the communication needs of society; principles of selection and collection building for libraries; services to meet clientele information needs. (4 cr; limited to 50 students, reserved in JohH 12; V-VI MTWTh; ForH 120) King

5-301 READING, LISTENING, AND VIEWING GUIDANCE FOR YOUTH IN LIBRARIES

Philosophy and objectives of library service in schools and children's departments; guidance techniques; planning library programs. Review of relevant research related to reading, viewing, and listening, and survey of professional literature from various fields pertinent to understanding children and adolescents. (3 cr; limited to 50 students, reserved in JohH 12; prereq 5-101, 5-221, 5-401; IV MTWThF; ForH 115)

5-401 ORGANIZATION OF INFORMATION I

Description and subject organization of records of knowledge and information in bibliographies; library catalogs and other systems, including machine-based systems; methods of retrieval; retrieval efficiency. (4 cr; limited to 50 students, reserved in JohH 12; I-II MTWTh; ForH 130) Brekhus

8-222 REFERENCE AND INFORMATION SERVICES

Information sources and services to meet clientele needs; user-librarian-information interface; research, evaluation, and planning for future services. (4 cr; prereq 5-101, 5-221, 5-401; II MTWThF; WaLib 4B) King

8-223 GENERAL BIBLIOGRAPHY

Major national and trade bibliographies of the world, with emphasis on those of the United States, Great Britain, France, Germany, and Russia; their use in selection and acquisition of print and nonprint materials, and in preparation of bibliographies. (4 cr; prereq 5-101, 5-221, 5-401; I MTWThF; WaLib 4B) Shove

8-241 HISTORY OF BOOKS AND PRINTING

Bookmaking in its various forms from earliest times to the present. Development of the alphabet and the manuscript book; invention and spread of printing; design of the modern book with emphasis on aesthetic and technical aspects. (4 cr; prereq 5-101, 5-221, 5-401; III MTWThF; WaLib 4B) Shove

8-411 LIBRARY MECHANIZATION AND SYSTEMS ANALYSIS

Systems analysis as applied to library operations; data representation and coding systems; application of technological developments such as microforms and computers to library operations. (4 cr; prereq 5-101, 5-221, 5-401; V MTWThF; WaLib 4B) Brekhus

8-970 INDEPENDENT STUDY IN LIBRARY SCIENCE

(Cr ar; prereq #) Staff

8-990 LIBRARY RESEARCH

Graduate students under Plan B may register for at least 3 credits in library research with the approval of the professor who will guide the research paper. (3-9 cr; prereq #) Staff

SECOND TERM

5-102 MEDIA CENTER ADMINISTRATION

See First Term. (3 cr; limited to 50 students, reserved in JohH 12; prereq 5-101, 5-221, 5-401; I MTWThF; ForH 285) Olson

5-205 MATERIALS RELATED TO THE CURRICULUM

Survey of elementary and secondary school curricula with emphasis on a multimedia approach to teaching and optimum use of school libraries by teachers; consideration of teacher and librarian relations; exploration in depth of materials in at least one curriculum area. (3 cr; limited to 50 students, reserved in JohH 12; prereq 5-101, 5-204, 5-221, 5-401; IV MTWThF; ForH 130) Olson

5-221 RECORDS OF KNOWLEDGE

See First Term. (4 cr; limited to 50 students, reserved in JohH 12; V-VI MTWTh; ForH 120) Turner

5-401 ORGANIZATION OF INFORMATION I

See First Term. (4 cr; limited to 50 students, reserved in JohH 12; II-III MTWTh; ForH 130) Simonton

8-103 PUBLIC LIBRARIES

Development of public library services with emphasis on the growth of cooperative library systems and interrelationships with all types of libraries; social change and problem solving as related to research, literature, organization, administration, and legal factors. (4 cr; prereq 5-101, 5-221, 5-401; V-VI TTh; WaLib 4) McClaskey

8-224 SUBJECT BIBLIOGRAPHY

An overview of the world of learning and the various disciplines as they have developed in the United States, and study of the bibliographic apparatus in relation to the structure of the disciplines. (4 cr; prereq 5-101, 5-221, 5-401; II MTWThF; WaLib 4B) Turner

8-233 HISTORY OF CHILDREN'S LITERATURE

Introduction to the history and study of children's literature in relation to social history with special reference to current application for library services. (4 cr; prereq 5-101, 5-221, 5-401; V-VI MW; WaLib 4B) McClaskey

8-970 INDEPENDENT STUDY IN LIBRARY SCIENCE

See First Term.

8-990 LIBRARY RESEARCH

See First Term.

Linguistics (Ling)

FIRST TERM

3-001 INTRODUCTION TO LINGUISTICS

Outline history of linguistics and current trends; fundamentals of phonology, syntax, and semantics; processes of language change; linguistics and other disciplines. (5 cr; I-II MTWThF; FolH 205; meets concurrently with 5-001) Miranda

3-301 PHONETICS

Articulatory and acoustic parameters of speech; practice in the production and recognition of sounds in languages of the world. (5 cr; IV-V MTWThF; FolH 205; meets concurrently with 5-003) Houlihan

5-001 INTRODUCTION TO LINGUISTICS

See Ling 3-001. (4 cr [no cr for ling majors]; prereq grad; I-II MTWThF; FolH 205) Miranda

5-003 APPLIED PHONETICS

See Ling 3-301. (5 cr; prereq grad; IV-V MTWThF; FolH 205) Houlihan

5-821 SOCIOLINGUISTICS

Introduction to recent research on the structure and linguistic status of such dialects as Black English and Canadian French, and its social, political, and educational implications. (4 cr; VII-VIII MWF; FolH 205) Kac

Middle Eastern Languages

Middle Eastern Studies (MidE)

FIRST TERM

3-501 ANCIENT ISRAEL

History of Israel and development of its religion. Biblical literature in the cultural, historical, and religious milieu of its origin. (4 cr, §Hist 3-501; II-III MWF; PillsH 105) Reisman

SECOND TERM

3-502 ANCIENT ISRAEL

See First Term. (4 cr, §Hist 3-502; II-III MWF; PillsH 105) Paradise

Arabic (Arab)

FIRST TERM

1-101/1-102/1-103 BEGINNING LITERARY ARABIC

See section on 10-week courses.

5-970 DIRECTED READINGS

(Cr ar; for advanced students wishing to work on special problems; prereq 5-013 or §) Staff

SECOND TERM

1-101/1-102/1-103 BEGINNING LITERARY ARABIC

See section on 10-week courses.

5-970 DIRECTED READINGS

(Cr ar; for advanced students wishing to work on special problems; prereq 5-013 or §) Staff

Hebrew (Hebr)

FIRST TERM

5-970 DIRECTED READINGS

(Cr ar; for advanced students wishing to work on special problems; prereq 3-013 or §) Reisman

SECOND TERM

5-970 DIRECTED READINGS

(Cr ar; for advanced students wishing to work on special problems; prereq 3-013 or §) Paradise

Music (Mus)

(See also Music Education under College of Education)

FIRST TERM

1-001 FUNDAMENTALS OF MUSIC

Basic musical symbols, vocabulary, rhythm, design, scale structures, intervals,

chords. Development of basic piano skills; playing simple accompaniments. (4 cr; limited to 24 students per section, reserved in JohH 12; for nonmusic majors)
Sec 1, II MTWThF, MusEd 200, Lauritzen
Sec 2, III MTWThF, MusEd 200, Lauritzen
Sec 3, V MTWThF, MusEd 200, Lauritzen

1-507 SURVEY OF MELODIC AND HARMONIC PROCEDURES

Principles of melodic and harmonic structure. (3 cr; prereq #; I MTWThF, IV TTh; ScH 3) Humphries

1-517 EAR TRAINING AND SIGHTSINGING

Development of aural skills with concentration on sightsinging, interval recognition, melodic and harmonic dedication, and vocal improvisation. (3 cr; prereq #; II MTWThF, IV MWF; ScH 3) Humphries

3-970 DIRECTED STUDIES

Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students. (1-15 cr; prereq #, Δ; hrs ar; ScH 104) Riedel, Humphries

5-551, 5-552, 5-553 COMPOSITION I

Original work in various forms. Study of a variety of techniques and styles of composition, followed by development of original approaches. (2 cr each; prereq 1-506; hrs ar; ScH 205) Argento

5-554, 5-555, 5-556 COMPOSITION II

Original works in various forms. (2 cr each; prereq 3-543, 5-553; hrs ar; ScH 205) Argento

5-602 HISTORY OF OPERA

Origins of opera; its development as a musico-dramatic form through analysis of libretto and music of representative masterpieces of the late Renaissance, baroque, classic, romantic, and contemporary periods. (3 cr; prereq 9 cr in history of music or history of art or history of theatre or European history from 1600 or #; II MTWThF; ScH 103) Argento

5-636 MUSIC IN BAROQUE ERA

Vocal, instrumental, and sacred styles of baroque era. (3 cr; prereq 1-606; V MTWThF; ScH 3) Riedel

5-701 AMERICAN MUSIC

From colonial times to present. American Indian music; sacred music in America, Puritan New England to the present time; jazz; music education; the symphony orchestra; contemporary music. (4 cr; prereq 1-606 or 8 cr in American history or American studies or #; VI MTWThF; ScH 4) Riedel

5-742 VOCAL LITERATURE

Literature and pedagogy: performance of representative songs from major and minor composers. Significant vocal techniques from major schools of singing as they relate to song performance. (4 cr; prereq 12 cr in 1-104 or 1-204 or 1-304 or #; V MTWThF; WuH 320) Sutton

8-551, 8-552, 8-553 COMPOSITION III

Original works in various forms. Emphasis on advanced work in composition. (3 cr each; prereq grads who have completed undergrad major sequence in music theory and composition incl 3-543, 5-503, 5-553, 5-563; hrs ar; ScH 205) Argento

8-990* SPECIAL PROBLEMS

(2-12 cr; prereq 5-841; hrs ar; ScH 104) Argento, Riedel

SECOND TERM

1-001 FUNDAMENTALS OF MUSIC

See First Term. (4 cr; limited to 24 students per section, reserved in JohH 12; for nonmusic majors)

Sec 1, II MTWThF, MusEd 200, Lauritzen
Sec 2, III MTWThF, MusEd 200, Lauritzen

1-508 SURVEY OF MELODIC AND HARMONIC PROCEDURES

See Mus 1-507, First Term.

1-518 EAR TRAINING AND SIGHTSINGING

See Mus 1-517, First Term.

3-541, 3-542, 3-543 COUNTERPOINT

Strict 16th-century and Bach-style counterpoint in two and three parts; writing of canons, motets, inventions, fugues. A creative course. The student learns to write musical examples by means of analysis within prescribed styles. (2 cr each; prereq 1-506; III MTWThF; ScH 103) Fetler

3-584 MUSIC: ITS MEANING AND STRUCTURE

Discussion, examination of selected works of various periods, including recent developments. Purpose, meaning, continuity, direction in music. Relationship of spontaneity and theoretical principles. (4 cr; IV MTWThF; ScH 103) Fetler

3-970 DIRECTED STUDIES

See First Term. (1-15 cr; prereq ♯, Δ; hrs ar; ScH 203) Humphries

5-029 HISTORY OF MUSICAL STYLES

Principal stylistic developments in history of Western music, 1850 to present. (4 cr; II MTWThF; ScH 4) Cardamone

5-182 BAROQUE PERFORMANCE PRACTICE

Ornamentation, phrasing, articulation, and improvisation in music of period 1550-1759. Music instruction books of the period; analysis and performance of baroque music in baroque style. (4 cr; prereq sr or grad, 1-506, 1-606 or ♯; I MTWThF; ScH 4) Laudon

5-385 CHORAL CONDUCTING

Advanced study of the art of choral conducting—hand techniques, sound control, articulation, breath control, intonation, etc. (4 cr; prereq ♯; V MTWThF; ScH 4) Lancaster

5-541, 5-542, 5-543 ADVANCED COUNTERPOINT

Practice in technique or writing three- and four-voice fugues; contrapuntal devices and problems; analysis of polyphonic works of periods from Ars Nova to the present day. (2 cr each; prereq 3-543; II MTWThF; ScH 103) Fetler

5-554, 5-555, 5-556 COMPOSITION II

See First Term. (2 cr each; prereq 3-543, 5-553; hrs ar; ScH 203) Fetler

5-637 MUSIC IN GALANT AND CLASSIC PERIODS

The transition from late baroque to galant and classical styles. (3 cr; prereq 1-606; III MTWThF; ScH 3) Laudon

5-755 CHORAL LITERATURE: LARGE FORMS

Selected sacred and secular choral compositions (large forms: mass, oratorio, magnificat, Stabat Mater, cantata) from 16th century to present. (4 cr; prereq sr or grad, 1-506 or ♯; IV MTWThF; ScH 4) Lancaster

8-551, 8-552, 8-553 COMPOSITION III

See First Term. (3 cr each; prereq grads who have completed undergrad major sequence in music theory and composition incl 3-543, 5-503, 5-553, 5-563; hrs ar; ScH 203) Fetler

8-990* SPECIAL PROBLEMS

(2-12 cr; prereq 5-841; hrs ar; ScH 104) Fetler, Laudon

Courses in Applied Music

Offerings in applied music are classified according to three modes: elective (with or without credit), applied, and performance; and four levels: Lower Division (prefix 1, or 0 for no credit), Upper Division (prefix 3), and two Graduate levels (prefixes 5 and 8). A student may not register for a course in applied music for credit until he has passed the required applied entrance

COURSES IN APPLIED MUSIC

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Instrument	Applied: Elective				Applied			Applied: Performance			Instructor	
	Non-Cr	Low Div	Up Div	Grad	Low Div	Up Div	Grad	Low Div	Up Div	Grad	First Term	Second Term
Piano	0-101	1-101	3-101	5-101	1-201	3-201	8-201	1-301	3-301	8-301	Weiser, Ivory, McNab, Bailey	Freed, Bailey
Harp	0-102	1-102	3-102	5-102	1-202	3-202	8-202	1-302	3-302	8-302	Ar	Ar
Organ	0-103	1-103	3-103	5-103	1-203	3-203	8-203	1-303	3-303	8-303	Fleischer	Fleischer
Voice	0-104	1-104	3-104	5-104	1-204	3-204	8-204	1-304	3-304	8-304	Ware, Busse, Warsaw, Wilson, Wittich	Ware, Busse, Warsaw, Wittich
Violin	0-105	1-105	3-105	5-105	1-205	3-205	8-205	1-305	3-305	8-305	Adams, Gregorian	Gregorian
Viola	0-106	1-106	3-106	5-106	1-206	3-206	8-206	1-306	3-306	8-306	Barrus, Venittelli	Barrus
Cello	0-107	1-107	3-107	5-107	1-207	3-207	8-207	1-307	3-307	8-307	Heller	Ar
Double Bass	0-108	1-108	3-108	5-108	1-208	3-208	8-208	1-308	3-308	8-308	Clute	Clute
Flute	0-109	1-109	3-109	5-109	1-209	3-209	8-209	1-309	3-309	8-309	Niosi, Opava	Niosi
Oboe	0-111	1-111	3-111	5-111	1-211	3-211	8-211	1-311	3-311	8-311	Angelucci, Capps, Holub	Angelucci, Capps
Clarinet	0-112	1-112	3-112	5-112	1-212	3-212	8-212	1-312	3-312	8-312	Haugen	Haugen
Saxophone	0-113	1-113	3-113	5-113	1-213	3-213	8-213	1-313	3-313	8-313	Haugen	Haugen
Bassoon	0-114	1-114	3-114	5-114	1-214	3-214	8-214	1-314	3-314	8-314	Miller	Miller
French Horn	0-115	1-115	3-115	5-115	1-215	3-215	8-215	1-315	3-315	8-315	Ar	Ar
Trumpet	0-116	1-116	3-116	5-116	1-216	3-216	8-216	1-316	3-316	8-316	Hasselmann, Schlueter, Volpe	Hasselmann, Schlueter
Trombone	0-117	1-117	3-117	5-117	1-217	3-217	8-217	1-317	3-317	8-317	Smith	Ar
Baritone	0-118	1-118	3-118	5-118	1-218	3-218	8-218	1-318	3-318	8-318	Ar	Ar
Tuba	0-119	1-119	3-119	5-119	1-219	3-219	8-219	1-319	3-319	8-319	Tolbert	Tolbert
Percussion	0-121	1-121	3-121	5-121	1-221	3-221	8-221	1-321	3-321	8-321	Culp, Dahlgren, Fine	Culp, Fine
Harp	0-122	1-122	3-122	5-122	1-222	3-222	8-222	1-322	3-322	8-322	Miller	Miller
Guitar	0-123	1-123	3-123	5-123	1-223	3-223	8-223	1-323	3-323	8-323	Ar	Ar
Accordion	0-124	1-124	3-124	5-124	1-224	3-224	8-224	1-324	3-324	8-324	Hane, Malmberg	Hane, Malmberg
Sitar	0-125	1-125	3-125	5-125	1-225	3-225	8-225	1-325	3-325	8-325	Ar	Ar

examination. The examining committee will determine the mode(s) for which a student may register. Students should consult with the Music Department, 105 Scott Hall, regarding the mode and level of applied music appropriate for fulfillment of specific requirements in each degree program. To register for Upper Division credit in applied music, the student must have completed 12 credits at the Lower Division level on the appropriate instrument and must pass an Upper Division qualifying examination.

Courses in applied music carry either 2 credits (minimum of 10 private half-hour lessons) or 4 credits (minimum of 10 hour lessons) per quarter. A quarterly fee of \$60 for 2 credits and \$120 for 4 credits is charged for individual lessons for all Lower Division students and nonmusic majors. Fees are reduced for junior and senior majors who have met the Lower Division requirements, including an Upper Division qualifying examination in applied music.

Natural Science (NSci)

FIRST TERM

1-004 PHYSICAL WORLD: PHYSICS

Topics from astronomy and physics selected to illustrate the methods of science and to acquaint the student with the physical universe around him. (4 cr, Sequiv courses in physics; prereq 1 yr high school algebra; II MTWThF; Ph 133; 4 lab hrs per wk) Ar

SECOND TERM

1-005 PHYSICAL WORLD: CHEMISTRY

A treatment of fundamental concepts of chemistry, the structure of matter, and the important reactions and products of our physical world. Scientific methods and principles are developed from lecture and experiments in a way which will help not only to understand our environment but provide some solutions to the problems faced in improving it. (4 cr, Sequiv courses in science dept; prereq 1 yr high school algebra...high school chemistry and NSci 1-004 recommended; II MTWThF; SciCB 325) Staff

Personal Orientation (PO)

FIRST TERM

1-001 HOW TO STUDY

Practical assistance to the student in developing efficient study habits, organizing materials, preparing for examinations, and improving the speed and comprehension of reading. (2 cr, but cr added to CLA grad requirement; limited to 30 students, reserved in JohH 12; I MTWThF; Ph 145)

SECOND TERM

1-001 HOW TO STUDY

See First Term. (2 cr, but cr added to CLA grad requirement; limited to 30 students, reserved in JohH 12; I MTWThF; Ph 157)

Philosophy (Phil)

FIRST TERM

1-001 LOGIC

Emphasis upon the application of formal techniques for evaluating arguments. (5 cr; III MTWThF; ForH 155) Dolan

1-002 INTRODUCTION TO PHILOSOPHY

Introduction to problems; principal methods and schools of philosophy; historical and contemporary views. (5 cr; II MTWThF; ForH 349) Dahl

1-003 ETHICS

Examination of problems that arise when human beings attempt to think systematically about conduct and values. (5 cr; I MTWThF; ForH 150) Hopkins

3-001 GENERAL HISTORY OF WESTERN PHILOSOPHY

Greek philosophy, pre-Socratics, Socrates, Plato, Aristotle. (5 cr; IV MTWThF; Arch 60) Dahl

3-911 PHILOSOPHY OF MODERN LITERATURE

Basic philosophical ideas in modern civilization as expressed in major works of literature. (5 cr; 1:30-3:45 TTh; ForH 30) Terrell

3-970 DIRECTED STUDIES

(1-5 cr) Staff

5-311 ETHICAL THEORY

Distinguishing characteristics of a moral judgment; examination of representative theories. (5 cr; III MTWThF; ForH 285) Mason

5-970 DIRECTED STUDIES AND RESEARCH

(1-5 cr) Staff

8-970 DIRECTED STUDY AND RESEARCH

(1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

SECOND TERM

1-001 LOGIC

See First Term. (5 cr; II MTWThF; ForH 130) Hanson

1-002 INTRODUCTION TO PHILOSOPHY

See First Term. (5 cr; III MTWThF; ForH 70) Arnaud

1-003 ETHICS

See First Term. (5 cr; IV MTWThF; ForH 285) Harper

3-003 GENERAL HISTORY OF WESTERN PHILOSOPHY

Modern philosophy from Descartes through Hume. (5 cr; III MTWThF; ForH 285) Lewis

3-970 DIRECTED STUDIES

(1-5 cr) Staff

5-760 SELECTED TOPICS IN PHILOSOPHY: SARTRE AND CAMUS

(5 cr; IV MTWThF; ForH 70) Hochberg

5-970 DIRECTED STUDIES AND RESEARCH

(1-5 cr) Staff

8-970 DIRECTED STUDY AND RESEARCH

(1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

Political Science (Pol)

FIRST TERM

1-001 AMERICAN GOVERNMENT AND POLITICS

Analysis of principles, organization, processes, functions of government, and the

interplay of political forces in United States—national, state, and local. Attention throughout to current issues. (5 cr; limited enrollment, reserved in JohH 12; IV-TWTh; AndH 250) Fogelman

1-025 WORLD POLITICS

Introduction to contemporary international relations; forms of state interaction; problems of conflict and cooperation. (4 cr; limited enrollment, reserved in JohH 12; II MTWThF; AndH 330) Riggs

1-027 URBAN POLITICS

Analysis of urban politics and issues facing American cities; emphasis on political conflicts over economic and social problems. (4 cr; limited enrollment, reserved in JohH 12; IV MTWThF; BlegH 150) Nimtz

1-051 INTRODUCTION TO POLITICAL ANALYSIS

Topics such as formation of political communities, political participation, policy making, compliance, legitimacy, political development, types of political systems; emphasis on empirical and normative problems; applications to major contemporary systems. (5 cr; limited enrollment, reserved in JohH 12; II-III TWTh; AndH 350) Wynia

5-303 THE AMERICAN DEMOCRACY

An integrated overview of the American political system, its institutions and processes. Political decision making, influence, and elites in the American society. Evaluation and critical examination of the practice and reality of democracy in the United States. (4 cr; limited enrollment, reserved in JohH 12; prereq 1-001 or 6 cr in social science or #; II MTWThF; BlegH 235) Flanigan

5-308 LEGISLATIVE PROCESS

The American Congress and state legislatures; internal organization, the committee system, party leadership, relationships with executives and administrative agencies; legislative policy making; interest group, party, and constituency influences on the legislative process. (4 cr; limited enrollment, reserved in JohH 12; prereq 1-001 or #; V MTWThF; BlegH 220) Backstrom

5-454 CHINESE GOVERNMENT AND POLITICS

Analysis of traditional Chinese society; the fragmentation of China and the rise of the Communist power; sources and nature of Communist Chinese ideology; institutional character of the Communist party system; sources of power; role of the party and functional groups; patterns of change. (4 cr; limited enrollment, reserved in JohH 12; prereq 1-051 or 12 cr in social science or #; III MTWThF; BlegH 150) Benjamin

5-659 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. (4 cr; limited enrollment, reserved in JohH 12; prereq 1-051 or 9 cr in social science or #; IV MTWThF; BlegH 10) Ball

5-884 INTERNATIONAL POLITICS I

The structure of the international system: balance of power, bipolar, and other types of international systems; theories of stability, change, conflict, and cooperation. (4 cr; limited enrollment, reserved in JohH 12; III MTWThF; BlegH 215) Hopmann

SECOND TERM

1-001 AMERICAN GOVERNMENT AND POLITICS

See First Term. (5 cr; limited enrollment, reserved in JohH 12; I-II TWTh; AndH 330) Eyestone

1-026 AMERICAN FOREIGN POLICY

Introduction to institutions and processes that determine American foreign policy. (4 cr; limited enrollment, reserved in JohH 12; IV MTWThF; AndH 330) Blue

1-031 AMERICAN PUBLIC POLICY

Analysis of several major public policy issues such as social welfare policy, educa-

tion policy, economic policy, national security policy. Emphasis upon forces molding and impact of policy choices. (4 cr; limited enrollment, reserved in JohH 12; V MTWThF; AndH 330) Aranson

5-327 LOCAL GOVERNMENT

Development of local political systems in the U.S.; relationship of government and political structures to the economic and social characteristics of communities; analysis of the role of local government in the federal system; influence on decision-making patterns in various types of communities. (4 cr; limited enrollment, reserved in JohH 12; prereq 1-001 or #; IV MTWThF; BlegH 240) Scott

5-661 PROBLEMS IN DEMOCRACY

Analysis of postulates and implications; moral foundations; democratic theory and the economic order; liberty and authority; equality; representation; spiritual order, critics of democracy. (4 cr; limited enrollment, reserved in JohH 12; prereq 1-051 or 9 cr in social science or #; II MTWThF; BlegH 145) Shaw

5-877 COMPARATIVE FOREIGN POLICY

Comparative analysis of the foreign policies of major states; national and international determinants of foreign policy behavior. (4 cr; limited enrollment, reserved in JohH 12; III MTWThF; BlegH 220) Hopmann

Psychology (Psy)

FIRST TERM

1-001 GENERAL PSYCHOLOGY

General introduction to study of human behavior. Prerequisite for all advanced courses in psychology. (5 cr; prereq soph or 3rd qtr fr with B avg; I-II MTWThF; NH 45) Wetzel

1-004/1-005† INTRODUCTORY LABORATORY PSYCHOLOGY

Experiments illustrating contemporary subject matter such as sensory psychology, psychophysics, perception, motivation, verbal behavior, animal and human learning, problem solving, and psychological measurement. (3 cr for each; each section limited to 24 students, reserved in JohH 12; prereq soph, 1-001 or ¶1-001)

Sec 1, I-III MTWThF, 150 EitH, Staff
Sec 2, IV-VI MTWThF, 160 EitH, Staff

3-031 SENSATION AND PERCEPTION

Roles of stimulus, receptor organ and brain, and of learning and motivation, in man's perception of his world. Lectures and demonstrations. (4 cr; prereq 1-001, 1-004; III MTWThF; EitH N119) Viemeister

3-201 INTRODUCTION TO SOCIAL PSYCHOLOGY

Survey of theories and research in social psychology. Includes the effects upon the individual's attitudes and behavior of other persons, mass communication, and group membership. (4 cr; prereq 1-001, 8 cr in social science; IV MTWThF; SciCB 325) Snyder

3-801 INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS

Discussion of the data of psychology and its statistical analysis. Univariate and bivariate descriptive statistics, principles of estimation and hypothesis testing. Examples from differential and experimental psychology research. (4 cr, §Soc 3-801; prereq 1-001 or equiv; II MTWThF; SciCB 325) Weiss

3-970 DIRECTED STUDIES

(1-15 cr; prereq #) Staff

3-990 PROJECT IN PSYCHOLOGY

Individual library study or empirical investigation. (Cr ar; prereq sr, #) Darley

3-990H HONORS COURSE: PROJECT IN PSYCHOLOGY

(Cr ar; prereq sr, #) Staff

5-014 HUMAN LEARNING A

Examination of major processes and variables involved in human learning; emphasis upon verbal and motor learning. Topics include: information feedback, skill ac-

quisitions, retention and long-term memory, facilitation and interference, abilities and performance prediction. (4 cr; prereq 3-011 except for students in honors sequence and grads; II MTWThF; EltH N-119) Fox

5-751 PSYCHOLOGY OF ADVERTISING

Examination of psychological principles, research techniques, and applications in advertising and selling. Analysis of relevant consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisement and commercials depend. (4 cr, §Jour 5-251; prereq 1-001; III MTWThF; SciCB 375) Peterman

8-519 PRACTICUM IN REHABILITATION COUNSELING

Counseling experience with physically and emotionally disabled clients in approved public and private rehabilitation agencies. (3 cr; prereq 8-503 or §) Counseling Psychology staff

8-520 FIELD WORK IN APPLIED PSYCHOLOGY

(Cr ar; prereq §) Counseling Psychology staff

8-614 PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT

Presentation of theory and practice in clinical application of assessment techniques. Observation, administration, scoring, and interpretation is the focus of the laboratory experience. (2 cr; prereq students in clinical psychology program, ClPy 8-206 or §; hrs and rm ar) Clinical Psychology staff

8-620 CLERKSHIP IN CLINICAL PSYCHOLOGY

Field experience in professional work in clinical settings. (Cr ar; prereq §) Clinical Psychology staff

8-630 PRACTICUM IN CLINICAL CHILD PSYCHOLOGY

Supervised experience in psychodiagnostic work with emotionally disturbed children and their families. (3 cr; prereq §) Clinical Psychology staff

8-670 INTERNSHIP IN CLINICAL PSYCHOLOGY

(2-4 cr; prereq PhD candidate in clinical psychology program) Clinical Psychology staff

8-990* RESEARCH PROBLEMS

(Cr ar) Darley

SECOND TERM

1-001 GENERAL PSYCHOLOGY

See First Term. (5 cr; prereq soph or 3rd qtr fr with B avg; I-II MTWThF; NH 45) Staff

1-004/1-005† INTRODUCTORY LABORATORY PSYCHOLOGY

See First Term. (3 cr for each; each section limited to 24 students, reserved in JohH 12; prereq soph, 1-001 or ¶1-001)

Sec 1, I-III MTWThF, EltH 150, Staff

Sec 2, IV-VI MTWThF, EltH 160, Staff

3-051 INTRODUCTION TO COGNITIVE PSYCHOLOGY

Discussion of the basic research problems and theoretical concepts in the study of cognitive factors in perception and memory. (4 cr; prereq 1-001 and 1-005 or ¶1-005; VI MTWThF; EltH N-119) McIntyre

3-101 INTRODUCTION TO PERSONALITY

An overview of the field of personality, with discussions of personality theory, of selected topics of empirical research in the field of personality, and of personality assessment. (4 cr; prereq 1-001; IV MTWThF; SciCB 325) Tellegen

3-604 INTRODUCTION TO ABNORMAL PSYCHOLOGY

Surveys the field of abnormal psychology. Stresses etiologies of behavioral disorders with some discussion of currently available treatments. (4 cr; prereq 1-001; III MTWThF; SciCB 325) Devine

3-970 DIRECTED STUDIES

(1-15 cr; prereq §) Staff

3-990 PROJECT IN PSYCHOLOGY

See First Term. (Cr ar; prereq sr, §) Darley

3-990H HONORS COURSE: PROJECT IN PSYCHOLOGY

(Cr ar; prereq sr, §) Staff

5-011 THEORIES OF LEARNING

Examination of the major theories of learning and discussion of basic issues of learning and performance in man and animals. (4 cr; prereq 1-001, 1-005 except for students in honors sequence and grad students; II MTWThF; Arch 35) Staff

5-054 PSYCHOLOGY OF LANGUAGE

An introduction to the theories and experimental evidence involved in past and present conceptions of psychology of language. (4 cr; prereq 3-011 except for students in honors sequence and grads; IV MTWThF; EltH N-119) Walsh

5-125/5-126 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. (4 cr for each; prereq 5-862, honors cand, grad, §; I-II MTWThF; Arch 30) Bouchard

8-519 PRACTICUM IN REHABILITATION COUNSELING

See First Term. (3 cr; prereq 8-503 or §) Counseling Psychology staff

8-520 FIELD WORK IN APPLIED PSYCHOLOGY

(Cr ar; prereq §) Counseling Psychology staff

8-614 PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT

See First Term. (2 cr; prereq students in clinical psychology program, ClPy 8-206 or §; hrs and rm ar) Clinical Psychology staff

8-620 CLERKSHIP IN CLINICAL PSYCHOLOGY

See First Term. (Cr ar; prereq §) Clinical Psychology staff

8-630 PRACTICUM IN CLINICAL CHILD PSYCHOLOGY

See First Term. (3 cr; prereq §) Clinical Psychology staff

8-670 INTERNSHIP IN CLINICAL PSYCHOLOGY

(2-4 cr; prereq PhD candidate in clinical psychology program) Clinical Psychology staff

8-990* RESEARCH PROBLEMS

(Cr ar) Darley

Public Affairs (PA)

FIRST TERM

5-114 WORKSHOP ON MINNESOTA GOVERNMENT

Background study through lectures, panel discussion, and seminar sessions of selected public policy issues which currently confront Minnesota's governmental units. (3 cr; prereq §; VI-VII TWTh; BlegH 335) Warp and others

5-771 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 assignments, solution of special problems, and preparation of an Internship report. (3 cr; prereq §; hrs and rm ar) Warp

SECOND TERM

5-115 WORKSHOP ON MINNESOTA GOVERNMENT

See PA 5-114, First Term.

5-781 ADMINISTRATIVE INTERNSHIP

See PA 5-771, First Term.

Religious Studies (ReIS)

FIRST TERM

3-031, 5-031 RELIGIONS OF THE 20TH-CENTURY WORLD: RELIGIONS IN SOUTH ASIA
(4 cr, §1-031, Indc 1-504; VI MTWThF; Arch 25) Tapp

Scandinavian

Swedish (Swed)

FIRST TERM

1-101/1-102/1-103 INTENSIVE BEGINNING SWEDISH
See section on 10-week courses.

SECOND TERM

1-101/1-102/1-103 INTENSIVE BEGINNING SWEDISH
See section on 10-week courses.

Scandinavian (Scan)

FIRST TERM

5-616 STRINDBERG AND THE DRAMA IN REVOLT AND TRANSITION

Strindberg as master of the naturalistic drama and as "the father of modernity" in European and American theater (all readings in English for nonmajors). (4 cr; II MTWThF; FolH 104) Askeland

5-633 THE SCANDINAVIAN NOVEL FROM WORLD WAR I TO 1950

Trends in the Scandinavian novel since World War I (all readings in English for nonmajors). (4 cr; III MTWThF; FolH 99) Askeland

Slavic and East European Languages

Russian (Russ)

FIRST AND SECOND TERMS

1-101/1-102/1-103 BEGINNING INTENSIVE RUSSIAN
See section on 10-week courses.

1-104/1-105/1-106 INTERMEDIATE INTENSIVE RUSSIAN
See section on 10-week courses.

Social Science (SSci)

FIRST TERM

3-981 SOCIETIES OF THE FUTURE

Application of disciplinary analysis to the problems of specialization and generalization of human understanding, with emphasis upon the future of formal and

informal social systems. Aspects of the anticipated impacts of long-range social trends (such as computer-controlled education systems, political, economic, social, and moral structural changes). Interaction of the social sciences, business, and humanities and arts with basic facets of long-range social development. Long-range alternatives pertaining to human societies remain open to examination. (4 cr; III MTWThF; Owre III) Harkins

SECOND TERM

3-981 SOCIETIES OF THE FUTURE

See First Term. (4 cr; III MTWThF; Owre III) Harkins

Social Work (SW)

FIRST TERM

3-001 AMERICAN SOCIAL WELFARE

Analysis of American social welfare as a basic set of social institutions and movements toward the same; private and public services are included. (5 cr; limited to 50 students, reserved in JohH 12; I-II MTWThF; BlegH 150) Wiebler

3-005 INTRODUCTION TO SOCIAL WORK PROCESSES

Analysis of the nature of social work processes through study of development of social work theory and its implementation in fields of practice. (5 cr; limited to 40 students, reserved in JohH 12; I-II MTWThF; BlegH 430) Brusseau

5-010 SPECIAL TOPIC (Section 1): THE AMERICAN ADOLESCENT IN THE NOVEL AND IN SOCIAL SCIENCE LITERATURE, 1946-1972

(3 cr; limited to 35 students, reserved in JohH 12; III MTWThF; BlegH 350) Wiebler

8-010 FIELD INSTRUCTION IN SOCIAL WORK

Field practice in social work under supervision. (Cr and hrs ar; prereq admission as a grad student in social work, 8-100 and #) Cohn and staff

8-990 SPECIAL STUDIES IN SOCIAL WORK

Selected projects previously approved by instructor. (Cr and hrs ar; open only to social work students in 2nd grad yr) Staff

SECOND TERM

3-005 INTRODUCTION TO SOCIAL WORK PROCESSES

See First Term. (5 cr; limited to 25 students, reserved in JohH 12; VI-VII MTWThF; BlegH 340) Galaway

3-010 FIELD EXPERIENCE

Direct experience under supervision in social services. (1-6 cr; prereq 3-001 and 3-005; hrs ar) Carlson, Galaway

5-010 SPECIAL TOPIC (Section 1): HUMAN SEXUALITY AND SOCIAL WORK

Exploration of a variety of human sexuality problems and issues as they relate to social work practice. Focus will include human behavior, social environment and social policy material as well as practice issues. (3 cr; limited to 20 students, reserved in JohH 12; III MTWThF; BlegH 335) Carlson

5-010 SPECIAL TOPIC (Section 2): CHILD WELFARE SERVICE

Examination of specialized services developed to meet the needs of children. Focus will be both descriptive and analytical; examples of issues include parental vs. children's rights, organization of services, role of the state in re children, etc. (3 cr; limited to 35 students, reserved in JohH 12; IV MTWThF, IV-V W; BlegH 340) Galaway

8-010 FIELD INSTRUCTION IN SOCIAL WORK

See First Term.

8-990 SPECIAL STUDIES IN SOCIAL WORK

See First Term.

Sociology (Soc)

FIRST TERM

1-001 INTRODUCTION TO SOCIOLOGY

A survey of the main substantive fields of sociology for nonprospective sociology majors. Illustrative material drawn from current social problems areas. (4 cr; I MTWThF; AndH 370) Ar

1-002 AMERICAN COMMUNITY

Sociological analysis of modern American society. Topics include distribution of population, urban-rural differences, social factors in business systems, occupational groups, determination of social status, and minority group adjustment. (4 cr; II MTWThF; AndH 370) Cooperman

1-505 PRINCIPLES OF SOCIOLOGY

(Course required of majors, to be taken in sophomore year; integrated with Soc 1-506) Focuses upon basic concepts and variables used in analysis of individual-to-group relationships and the organization and structure of social groups. (5 cr; prereq soph and prospective major or major in sociology...1-001 and ¶3-801 recommended; 4 hrs lect, 1 hr lab; labs will be assigned first day of class; lect III MTWTh; AndH 370) Ar

3-801 SOCIOLOGICAL METHODS I: DESCRIPTIVE STATISTICS

Descriptive statistics as utilized in analysis of sociological data, measures of central tendency, deviation, correlation and regression graphs, simple treatment of three and four variables, probability. \$4 lab fee. (4 cr; prereq some beginning algebra recommended; 3 hrs lect, two 1½-hr labs required; labs will be assigned first day of class; lab enrollment limited to 20 students; lect II MWF; AndH 270) McTavish

3-802 SOCIOLOGICAL METHODS II: STATISTICAL INFERENCE

Inferential statistics including a review of probability, tests of hypotheses about means and proportions for one and two samples, confidence limits, analysis of variance, nonparametric tests. Focus on utilizing statistical reasoning in reaching substantive conclusions in analysis of sociological data. \$4 lab fee. (4 cr; prereq 3-801; 3 hrs lect, two 1½-hr labs required; labs will be assigned first day of class; lab enrollment limited to 20 students; lect III MWF; AndH 270) Ar

5-201 INTRODUCTION TO SOCIAL PSYCHOLOGY

Research and theory regarding relation of individual 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. (4 cr; prereq 1-001 or 1-505, 1-506 or ¶; III MTWThF; AndH 250) Burt

5-501 THE FAMILY

Evolution of family development of unity or disunity, roles of the several members of family, methods of investigation of family. (4 cr; prereq 1-001 or 1-505, 1-506 or ¶; VI MTWThF; AndH 330) Johnson

5-405 SOCIAL STRATIFICATION AND MOBILITY

Analysis of form and content of hierarchical arrangements. Relationship of hierarchical arrangements to problems of social order and individual behavior. (4 cr; prereq 1-001 or 1-505, 1-506 or ¶; V MTWThF; BlegH 235) Ar

5-411 FORMAL ORGANIZATIONS

Sources, types, and consequences of variations in organizational structures and functions. Varying organizational arrangements as they affect and are affected by changes in input and output. Bureaucracy and its impact from a comparative perspective. (4 cr; prereq 1-001 or 1-505, 1-506 and 15 cr in sociology, psychology, political science, or economics; III MTWThF; BlegH 105) Reynolds

5-601 URBAN SOCIOLOGY

The study of cities, urban ecology; urban institutions and urban way of life. (4 cr; prereq 1-001 or 1-505, 1-506 or ¶; IV MTWThF; AndH 350) Cooperman

5-711 ELEMENTS OF SOCIOLOGICAL ANALYSIS

An examination and analysis of the premises upon which social theories are developed. Examination and analysis of the construction of social theory. (4 cr; prereq 9 cr in sociology; II MTWThF; AndH 350) Reynolds

SECOND TERM

1-001 INTRODUCTION TO SOCIOLOGY

See First Term. (4 cr; II MTWThF; and AndH 270) Ar

1-002 AMERICAN COMMUNITY

See First Term. (4 cr; I MTWThF; AndH 270) Ar

1-506 PRINCIPLES OF SOCIOLOGY II

Continuation of Soc 1-505. \$4 lab fee. (5 cr; prereq 1-505; II MTWTh, lab ar; AndH 230) Rozelle

3-101 ELEMENTS OF CRIMINOLOGY

See First Term. (4 cr; prereq 1-001 or 1-505, 1-506 or #; VI MTWThF; AndH 250) Ar

5-201 INTRODUCTION TO SOCIAL PSYCHOLOGY

See First Term. (4 cr; prereq 1-001 or 1-505, or 1-506 or #; IV MTWThF; AndH 230) Ar

5-401 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. (4 cr; I MTWThF; AndH 270) Hraba

5-551 WORLD POPULATION PROBLEMS

Population policy, both historical and present day, in Europe, Asia, and other selected areas but with special emphasis on United States. Some discussion is given to field of population and power politics. (4 cr; prereq 1-001 or 1-505, 1-506 or #; VII MTWThF; AndH 330) Ar

5-951 MINORITY GROUP RELATIONS

Systems of ethnic stratification, with focus upon race relations in American society. (4 cr; III MTWThF; AndH 250) Hraba

5-953 SOCIOLOGY OF EDUCATION

Advanced studies in social aspects of education including school as socialization process, social structure of education, role of school in social change, and others. Emphasis on theory and empirical research. (3 cr, \$HEd 5-190; prereq 1-001 or 1-505, 1-506 or #; IV MTWThF) Weidman

See also course offering included in Workshops, Institutes and Special programs section under College of Liberal Arts.

Spanish and Portuguese

Portuguese (Port)

FIRST TERM

1-101/1-102/1-103 BEGINNING PORTUGUESE

See section on 10-week courses.

SECOND TERM

1-101/1-102/1-103 BEGINNING PORTUGUESE

See section on 10-week courses.

Spanish (Span)

FIRST TERM

- 1-101 BEGINNING SPANISH**
(5 cr; I-II MTWThF; FolH 102)
- 1-102 BEGINNING SPANISH**
(5 cr; prereq 1-101 or 1 yr high school Spanish; I-II MTWThF; FolH 109)
- 1-103 BEGINNING SPANISH**
(5 cr; prereq 1-102 or 2 yrs high school Spanish; III-IV MTWThF; FolH 109)
- 1-104 INTERMEDIATE SPANISH**
(4 cr; prereq 1-103 or 3 yrs high school Spanish; 9:05-10:30 MTWThF; NH 107)
- 1-105 INTERMEDIATE SPANISH**
(4 cr; prereq 1-104 or 4 yrs high school Spanish; 9:05-10:30 MTWThF; NH 209)
- 1-502 CULTURE, CIVILIZATION OF MIDDLE AMERICA, THE CARIBBEAN**
(4 cr [not to be used for Spanish or Portuguese major cr]; 10:40-12:05 MTWThF; NH 209) Grimes
- 3-001 SPANISH PRONUNCIATION**
(2 cr; prereq 1-105 or ‡; III MWF; FolH 304) Mantini
- 3-014 SPANISH CONVERSATION AND COMPOSITION**
(5 cr; prereq 1-105 or equiv; III-IV MTWThF; Jones 10) Suris
- 3-104 INTRODUCTION TO SPANISH AND SPANISH-AMERICAN LITERARY TEXTS**
(4 cr; prereq 1-105 or ‡; IV MTWThF; FolH 103) Woodhouse
- 3-211 SURVEY OF SPANISH LITERATURE: POEMA DEL CID TO CELESTINA**
(4 cr; limited to 36 students, reserved in JohH 12; prereq 3-104; IV MTWThF; FolH 305) Jones
- 3-253 SURVEY OF LITERATURE OF SPANISH AMERICA**
(4 cr; reserved course, limited to 36 students, reserved in JohH 12; prereq 3-104; II MTWThF; FolH 110) Floripe
- 3-512 LATIN-AMERICAN CIVILIZATION AND CULTURE**
(5 cr; prereq 3-014; I-II MTWThF; FolH 201) Schoenbach
- 3-721 ORIGINS AND HISTORY OF SPANISH AND PORTUGUESE**
(4 cr; prereq 3-014 or Port 3-014; III MTWThF; FolH 306) Mantini
- 5-011 SPANISH STYLISTICS**
(4 cr; prereq 3-021 or equiv; II MTWThF; FolH 207) Grimes
- 5-552 LATIN-AMERICAN LITERATURE: ESSAY, SHORT STORY, DRAMA**
(4 cr; prereq 3-211, 3-212, 3-213 or 3-253; III MTWThF; FolH 207) Vidal
- 5-584 CONTEMPORARY LATIN-AMERICAN NOVEL**
(4 cr; prereq 3-253 or ‡; V MTWThF; FolH 207) Vidal
- 5-970 DIRECTED READINGS FOR UPPER DIVISION STUDENTS**
(1-5 cr; prereq ‡ and consent of dept chm; hrs ar) Staff
- 8-101 LITERARY CRITICISM AND RESEARCH METHODS**
(4 cr; IV MTWThF; FolH 208) Zahareas
- 8-970 DIRECTED READINGS IN ROMANCE LANGUAGES**
(Cr ar; prereq Δ; hrs ar) Staff

SPECIAL TERM

- 3-021** ADVANCED SPANISH COMPOSITION AND CONVERSATION**
Compositions and conversions based on the experiences the students encounter in Spain. Students will give talks and papers on everyday topics dealing with Spanish life. Offered in Barcelona, Spain, from June 25 to July 27. See section on Workshops, Institutes, and Special Programs. (5 cr) Narváez

3-502 CULTURE AND CIVILIZATION OF MODERN SPAIN**

A discussion of social changes in Spain from 1939 to 1973. Offered in Barcelona, Spain, from June 25 to July 27. See section on Workshops, Institutes, and Special Programs. (3 cr) Narváez

5-711 STRUCTURE OF MODERN SPANISH: PHONOLOGY**

An analysis of the sounds of the Spanish language. Dialect differences. All students will participate in field work. Offered in Barcelona, Spain, from June 25 to July 27. See section on Workshops, Institutes, and Special Programs. (4 cr) Narváez

5-712STRUCTURE OF MODERN SPANISH: MORPHOLOGY**

May be taken by graduate students for independent study. Offered in Barcelona, Spain, from June 25 to July 27. See section on Workshops, Institutes, and Special Programs. (4 cr) Narváez

5-713 STRUCTURE OF MODERN SPANISH: SYNTAX**

May be taken by graduate students for independent study. Offered in Barcelona, Spain, from June 25 to July 27. See section on Workshops, Institutes, and Special Programs. (4 cr) Narváez

8-701 HISTORY OF SPANISH LANGUAGE**

May be taken by graduate students for independent study. Offered in Barcelona, Spain, from June 25 to July 27. See section on Workshops, Institutes, and Special Programs. (4 cr) Narváez

Note—Continuing Education and Extension will offer Spanish for Graduate students (Span 0-221). Please address all inquiries to Continuing Education and Extension.

SECOND TERM**1-102 BEGINNING SPANISH**

(5 cr; prereq 1-101 or 1 yr high school Spanish; I-II MTWThF; FolH 102)

1-103 BEGINNING SPANISH

(5 cr; prereq 1-102 or 2 yrs high school Spanish; I-II MTWThF; FolH 109)

1-104 INTERMEDIATE SPANISH

(4 cr; prereq 1-103 or 3 yrs high school Spanish; 10:40-12:05 MTWThF; FolH 208)

1-105 INTERMEDIATE SPANISH

(4 cr; prereq 1-104 or 4 yrs high school Spanish; 9:05-10:30 MTWThF; FolH 208)

3-021 ADVANCED SPANISH COMPOSITION AND CONVERSATION

(5 cr; prereq 3-014; III-IV MTWThF; FolH 110)

5-583 SPANISH-AMERICAN NOVEL AND SHORT STORY

(4 cr; prereq 3-211, 3-212, 3-213 or 3-253; II MTWThF; FolH 207) Vidal

5-712 STRUCTURE OF MODERN SPANISH: MORPHOLOGY

(4 cr; prereq 3-021 or # or §3-021; IV MTWThF; FolH 207) Narváez

5-970 DIRECTED READINGS FOR UPPER DIVISION STUDENTS

See First Term.

8-950 SEMINAR: LATIN-AMERICAN LITERATURE: NARRATIVE OF BORGES

(4 cr; III MTWThF; FolH 207) Vidal

8-970 DIRECTED READINGS IN ROMANCE LANGUAGES

See First Term.

Speech-Communication (Spch)

For special department activities see High School Forensics Workshop.

FIRST TERM**1-101 FUNDAMENTALS OF SPEECH**

Development of basic understanding of speech processes. Examines nature of

speech and speech skills; provides opportunities for individual speaking and evaluation. (4 cr; limited to 22 students, reserved in JohH 12)

Sec 1, I MTWThF, FolH 307

Sec 2, III MTWThF, FolH 307

Sec 3, IV MTWThF, FolH 307

1-102 COMMUNICATION IN THE MODERN WORLD: INTERPERSONAL COMMUNICATION

Description of structure of acts of communication and of factors influencing the occurrence, form, and effects of such acts. Analysis of the relationship of communication forms to social structures. (4 cr; II MTWThF; FolH 308) Shapiro

3-201 INTRODUCTION TO BROADCASTING PRODUCTION

Fundamentals of practice and theory. Emphasis on projects and exercises in performance and scripting; introduction to studio equipment and procedures. (4 cr; limited to 16 students, reserved in JohH 12; prereq 1-101)

Sec 1, I MTWThF, T&TC Studio B, T&TC 616

Sec 2, II MTWThF, T&TC Studio B, T&TC 616, Goldstein

3-203 RADIO PRODUCTION

An introduction to radio production. Equipment and staff organization; program design and presentation. Directed experience in organization, writing, production, direction, and performance of radio news, music, dramatic, and documentary programs. (4 cr; limited to 15 students, reserved in JohH 12; prereq 3-201; IV MTWThF; MurH 302) Boyd

3-211 DETERMINANTS OF BROADCAST PROGRAMMING

Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. "Problem" areas in programming. (4 cr; III MTWThF; FolH 205) Browne

3-402 LANGUAGE, COMMUNICATION, AND RHETORIC IN CONTEMPORARY BLACK AMERICA

Study of the communicative experiences of Black Americans emphasizing language acquisition, modes of persuasion, and stylistic elaboration. Experiences will be studied in the formal and informal contexts in which they appear. (4 cr; prereq 1-101 or 1-102 or Afro 1-101 or 1-102; IV MTWThF; FolH 201) Bond

3-615 ARGUMENTATION

The role of reasoned discourse in social and governmental affairs. Logical methods of persuasion. (4 cr; prereq 1-101 or 1-105 or §; I MTWThF; FolH 306) Scott

3-641 DISCUSSION AND CONFERENCE METHODS

Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings. (4 cr; limited to 25 students, reserved in JohH 12; prereq 1-101 or 1-105 or §; II MTWThF; FolH 306) Jensen

3-970 DIRECTED STUDY IN SPEECH-COMMUNICATION

Intended for students desiring to work on individual study projects in speech-communication. Consultation with an instructor who agrees to supervise the project is vital. (Cr ar; prereq §) Staff

3-980 DIRECTED INSTRUCTION

Directed study through teaching others. Students will work with an instructor in planning and teaching an undergraduate course. (1-4 cr [may be repeated for cr once]) Staff

5-404 SPEECH AND LANGUAGE IN HUMAN BEHAVIOR

Basic orientation on place of speech and language in human behavior. Individual projects and collateral reading. (4 cr, §SeEd 5-404; limited to 20 students, reserved in JohH 12; prereq 1-102, 3-401 or grad; III MTWThF; FolH 103) Piché

5-411 SMALL GROUP COMMUNICATION

Study of communication and dynamics within the small, task-oriented group. Group cohesiveness, leadership, role structure, information processing, and decision making. (4 cr; S-N only; limited to 25 students, reserved in JohH 12; prereq 3-641 or §; V MTWThF; FolH 306) Bormann

5-441 COMMUNICATION IN HUMAN ORGANIZATIONS

Analysis of functions of communication in organizational settings. Study of organizational structure and dynamics and their effect upon communication process. Collateral readings and individual projects. (4 cr; prereq 1-102 or 3-401, 3-641 or 5-411, or grad; IV MTWThF; FolH 306) Shapiro

5-970 READINGS IN SPEECH

Directed reading and preparation of reports on selected subjects. (Cr ar; prereq 9 cr in upper division speech and #) Staff

8-101 INTRODUCTION TO RESEARCH

Graduate research in speech; selection of topics and methods of investigation. (3 cr; required of all grad majors in speech; prereq 1-101, Psy 1-002; VI MTWThF; FolH 306) Bormann

8-203 SEMINAR: RADIO AND TELEVISION RESEARCH

Research literature and studies. Execution of individual research projects. (3 cr; prereq 8-201 or #; I-II TTh; FolH 304) Browne

8-613 SEMINAR IN RHETORIC

History and critical study of rhetorical theory. Examination of research in rhetoric. (3 cr; prereq 5-611 or #; VI-VII M, Th [1st meeting on T]; FolH 406) Scott

8-990 RESEARCH

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

SECOND TERM

1-101 FUNDAMENTALS OF SPEECH

See First Term. (4 cr; limited to 22 students, reserved in JohH 12)

Sec 1, I MTWThF, FolH 306

Sec 2, II MTWThF, FolH 306

1-102 COMMUNICATION IN THE MODERN WORLD: INTERPERSONAL COMMUNICATION

See First Term. (4 cr; III MTWThF; FolH 308) L Hayes

3-201 INTRODUCTION TO BROADCASTING PRODUCTION

See First Term. (4 cr; limited to 16 students, reserved in JohH 12; prereq 1-101; V MTWThF; T&TC Studio B, T&TC 616) Bart

3-204 TELEVISION PRODUCTION

Introduction to the problems of production. Equipment and staff organization; interrelationships with program design. Exercises in production. (4 cr; limited to 15 students, reserved in JohH 12 prereq 3-201; VI MTWThF; T&TC Studio C, T&TC 616) Bart

3-401 THE PROCESS OF INTERPERSONAL COMMUNICATION

Basic orientation on the place of speech and language in human behavior; discussion and nature and function of the communication process. (4 cr; prereq 1-101 or 1-105 or #, Psy 1-001; II MTWThF; FolH 308) L Hayes

3-605 PUBLIC SPEAKING

The principles of preparing and presenting public speeches; directed practice in public speaking; consideration of the function of public speaking in contemporary life. (4 cr; limited to 20 students, reserved in JohH 12; prereq 1-101; III MTWThF; FolH 307) J Hayes

3-641 DISCUSSION AND CONFERENCE METHODS

See First Term. (4 cr; limited to 25 students, reserved in JohH 12; prereq 1-101 or 1-105 or #; IV MTWThF; FolH 307)

3-970 DIRECTED STUDY IN SPEECH-COMMUNICATION

See First Term. (Cr ar; prereq #) Staff

3-980 DIRECTED INSTRUCTION

See First Term. (1-4 cr [may be repeated for cr once]) Staff

5-411 SMALL GROUP COMMUNICATION

See First Term. (4 cr; S-N only; limited to 25 students, reserved in JohH 12; prereq 3-641 or #; IV MTWThF; Fol 306) J Hayes

5-431 THE PROCESS OF PERSUASION

Theories of modern motivational communication. Analysis of the process of social control through persuasive speech. (4 cr; prereq 1-101 or 1-105, Psy 1-001, 10 cr in social science or §; III MTWThF; FolH 406) Howell

5-970 READING IN SPEECH

See First Term. (Cr ar; prereq 9 cr in upper division speech and §) Staff

8-451 SEMINAR: FACE-TO-FACE INTERCULTURAL COMMUNICATION

Defines and investigates factors influencing face-to-face communication in varied cultures, concentrating upon task-oriented communication between North Americans and nationals in the host country. Concerned with both verbal (linguistic) and nonverbal (nonlinguistic) dimensions of communication. (3 cr; prereq, if U.S. citizen, Anth 5-101 or similar course in cultural anthropology or §; 5-451 rec; VII-VIII TTh; FolH 306) Howell

8-990 RESEARCH

See First Term. (Cr ar) Staff

Statistics (Stat)

FIRST TERM

1-051 INTRODUCTION TO IDEAS OF STATISTICS

Presentation and analysis of data. Probabilistic models for inference. Types of inference and decision procedures. Emphasis on concepts rather than computation. (4 cr; prereq high school higher algebra; II MTWThF and III WF; VH 203) Ar

5-121 THEORY OF STATISTICS

Random variables and probability distribution, moments, central limit theorem, sampling, estimation. (4 cr, §5-131/5-132/5-133; prereq Math 1-231 or equiv; III TTh and IV MTWThF; VH 203) Ar

SECOND TERM

3-091 INTRODUCTION TO PROBABILITY AND STATISTICS

Elementary probability and probability distributions, sampling and elements of statistical inference. More mathematical treatment than Stat 1-051. (4 cr [no cr if taken after 5-121 or 5-131]; prereq differential and integral calculus; II MTWThF and III WF; VH 203) Ar

5-071 STATISTICAL APPLICATION OF MATRIX ALGEBRA

Specific matrix operations with vector realizations, presuming no prior knowledge. Uses in analysis of variance and multivariate methods. Correlation structures, characteristic vectors, quadratic forms. (3 cr; prereq 5-021 or §, ¶Math 3-142 or §; III MTWThF; NorH 308) Ar

5-122 THEORY OF STATISTICS

Confidence intervals, testing hypotheses, regression, ANOVA, sequential and non-parametric methods. (4 cr, §5-131/5-132/5-133; prereq Math 1-231 or equiv; III TTh and IV MTWThF; VH 203) Ar

Theatre Arts (Th)

FIRST TERM

1-101 INTRODUCTION TO THEATRE ARTS

History and theory of plays and playwrights. (4 cr; limited to 500 students, reserved in JohH 12; II-III TWTh; ScH 108) Ballet

- 1-326 BEGINNING ACTING: TECHNIQUE**
 Fundamentals of body movement, rhythms, and acting technique. Individual and group performances. (4 cr; limited to 20 students, reserved in JohH 12; prereq 1-321; 11:15-12:45 MTWThF; WeH 302) Moulton
- 1-502 MAKE-UP FOR THE ACTOR**
 Theory and practice in the art of stage make-up. (2 cr; limited to 15 students, reserved in JohH 12; prereq 1-504 or ¶1-504; 12:20-1:50 MTWThF; ScH 23) Ar
- 1-504 ELEMENTS OF TECHNICAL THEATRE**
 The practice of the arts and crafts of the theatre; scenery and particularly construction and painting, stage operation, theatre lighting, costuming. (4 cr; limited to 30 students, reserved in JohH 12; prereq 1-101 or ¶1-101; II-III MF; ScH 108; lab ar) Seifert
- 3-311 VOICE PRODUCTION FOR THE THEATRE**
 Physical exercises designed to free the human voice from unnecessary inhibitions and tensions. Work on prose, poetry, and drama. Vocal exercises with piano. (2 cr; limited to 20 students, reserved in JohH 12; prereq 1-321 or ¶1-321; I-II TTh; ShH 115) Corrigan
- 3-326 THEATRE DANCE**
 To acquaint actors with specific dance techniques and the practice and performance of dances in the theatre. (2 cr; limited to 20 students, reserved in JohH 12; prereq 1-326 or §; III MTWThF; WeH 302) Moulton
- 3-513 TECHNICAL THEATRE PRODUCTION I**
 Theory and practice of design and execution of stage scenery and properties. (4 cr; limited to 40 students, reserved in JohH 12; prereq 1-504; IV-V MTThF; ScH 108; lab ar) Josal, Miller
- 3-980 DIRECTED INSTRUCTION**
 (1-3 cr [5 cr max]); prereq course in which teaching will be done and Δ) Staff
- 5-100 THEATRE PRACTICUM**
 Arranged individual creative projects in production of a play, meeting approval of faculty committee in one or more of these areas: playwriting, directing, acting, and design. (2-6 cr; prereq Δ, permission of theatre practicum committee) Josal and staff
- 5-131 CREATIVE DRAMA**
 Principles and methods of developing original dramatizations with children. Observation of children's classes in creative dramatics. Readings, projects, term papers. (4 cr; prereq 1-101 or ¶1-101 or elementary education major or §...1-321 recommended; IV-V MTWThF, FoH 308; IV-V TTh, ShH 115) Graham
- 5-181 CONTEMPORARY BLACK THEATRE**
 A contemplation of the extraordinary revolution of Black consciousness manifesting itself on the American stage. A study of productions of Black plays; the playwrights and the forces that brought them into being. (4 cr; prereq 1-101 or Afro 1-045 or Afro 3-055 or AmSt 1-101 or Engl 5-175, or §; II-III MWF; ScH 19) Bond
- 5-519 SOUND FOR THE THEATRE**
 Theory and technique of producing and amplifying sound for the theatre. (2 cr; prereq written permission only; IV-V W; ScH 108; lab ar) Seifert
- 5-711 STAGE DIRECTION**
 Theory of direction: concept and analysis. Exercises in blocking and production of short scenes. (4 cr, §3-708, §3-711; prereq 1-321; II-III MTThF; ShAn 128) Frost
- 5-714 PRODUCING IMPROVISATIONAL THEATRE FOR SECONDARY SCHOOL**
 (Six weeks: June 19-July 27)
 Class experiences by college students simultaneously with high school students in theatrical improvisation, including training in beginning theatre games, styles of improvisation, sound and motion, characterization and plot structure all organically unified. (4 cr; limited to 20 students, reserved in JohH 12; prereq tchg exper or secondary education major or §; lab VI-IX MTWThF; ShAn 128; 2-hr discussion section ar) Steblay

5-716 STAGE MANAGEMENT FOR THE THEATRE

Stage management as a specialized area of theatre with emphasis on the theory and technique of rehearsal and performance, organization and management in educational, repertory, and regional theatre. (4 cr; prereq written permission only; IV-V W; ScH 19) Miller

5-803 ORAL INTERPRETATION OF DRAMA

Study of selected plays. Solo and group readings. (4 cr; limited to 25 students, reserved in JohH 12; prereq 3-801 or grad; III-IV MTWThF; FolH 303) Congdon

5-970 DIRECTED READINGS

Directed reading and preparation of reports on selected subjects. (2-6 cr; prereq 9 cr in theatre, § and Δ) Staff

8-157 DRAMATIC THEORY

History and principles of dramatic theory from Aristotle to the 19th century, studied in relationship to issues and problems in the aesthetics of drama. (4 cr, §Engl 8-690; prereq 5-171, 5-172, 5-173 or §, 9 cr dramatic literature; IV MTWThF; FolH 304) Hurrell

8-311 VOICE PRODUCTION FOR THE THEATRE

Physical exercises designed to free the human voice from unnecessary inhibitions and tensions. Work on prose, poetry, and drama. Vocal exercises with piano. (3 cr; limited to 20 students, reserved in JohH 12; prereq grad and theatre major; I-II MWF; ShH 115) Corrigan

8-540 SEMINAR: SCENE DESIGN

Research in specialized areas in scene design; projects and reports. (3 cr; prereq 3-513, 5-514 or §; II-III TTh; WeH 306) Josal

8-990 RESEARCH

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

SECOND TERM**1-328 MIME AND THE ACTOR**

The basic techniques and the domain of *mime* discovered and explored through class participation. (2 cr; limited to 22 students, reserved in JohH 12; prereq 1-321; I-II TWTh; ScH 108) Dezseran

1-502 MAKE-UP FOR THE ACTOR

See First Term.

1-504 ELEMENTS OF TECHNICAL THEATRE

See First Term. (4 cr; limited to 30 students, reserved in JohH 12; prereq 1-101 or ¶1-101; I-II MF; ScH 108; lab ar) Selfert

3-312 VOICE PRODUCTION FOR THE THEATRE

See Th 3-311, First Term.

3-515 TECHNICAL THEATRE PRODUCTION II

Theory and practice of design and execution of stage costuming and stage lighting. (4 cr; prereq 1-504; III-IV MTThF; ScH 108; lab ar) Montgomery, Phillips

3-801 ORAL INTERPRETATION OF FICTION

Study of selected short stories. Solo and group readings. (4 cr; limited to 25 students, reserved in JohH 12; prereq 1-101 or Spch 1-101 or §, jr; II-III MTWThF; FolH 305) Thompson

3-980 DIRECTED INSTRUCTION

See First Term.

5-100 THEATRE PRACTICUM

See First Term. (2-6 cr; prereq Δ, permission of theatre practicum committee) Adey and staff

5-178 THEATRE BACKGROUNDS

Selective examination of plays as part of the living theatre. Chronological, comparative study of development of theatrical elements in the drama: 19th, 20th century. (4 cr; prereq sr with §, grad, 1-101 or equiv, 9 upper div cr in English, speech, classics or modern language; III-IV MTWTh; WeH 306) Bogusch

5-330 DIRECTED PROJECTS IN ACTING

Students will prepare roles in scenes directed by students in Direction Seminar as laboratory demonstration of direction techniques. (1-3 cr; prereq jr, sr, 3-321 or grad theatre major, ¶8-711, 8-712, 8-713 not permitted; III-IV TTh; ShAn 128) Adey

5-519 SOUND FOR THE THEATRE

See First Term. (2 cr; prereq written permission only; III-IV W; ScH 108; lab ar) Seifert

5-712 STAGE DIRECTION

Theory of rehearsal and production problems and direction of two one-act plays. (4 cr, §3-709; limited to 20 students, reserved in JohH 12; prereq 3-708 or 3-711 or 5-711; III-IV MW; ShAn 128) Adey

5-716 STAGE MANAGEMENT FOR THE THEATRE

See First Term. (4 cr; prereq written permission only; III-IV W; ScH 19) Montgomery

5-718 THEATRE MANAGEMENT AND PROMOTION

Theory and practice in ticket office procedures, house management, publicity, and promotion; special problem in college, community, children's, and professional theatre. (4 cr; limited to 15 students, reserved in JohH 12; prereq 1-504 or ¶1-504 or §; VI-VII MTWTh; ScH 19) Loppnow

5-970 DIRECTED READINGS

See First Term.

8-101 INTRODUCTION TO RESEARCH

Graduate research in theatre arts; selection of topics and methods of investigation. (3 cr; required of all majors in theatre arts; prereq theatre major or §; II MTWThF; WeH 306) Bogusch

8-312 VOICE PRODUCTION FOR THE THEATRE

See First Term.

8-711 SEMINAR: STAGE DIRECTION

Great plays and their potentials for meaningful and effective production in the modern theatre. (3 cr; limited to 20 students, reserved in JohH 12; prereq 5-712 or equiv or §; III-IV TTh; ShAn 128) Adey

8-803 SEMINAR: ORAL INTERPRETATION OF LITERATURE

Problems of silent and oral reading. Speech in relation to language and types of literature. (3 cr; prereq 5-813; VI MTWThF; FolH 305) Thompson

8-990 RESEARCH

See First Term.

The following course is offered by the College of Education:

SeEd 5-325 IMPROVISATIONAL THEATRE TECHNIQUES IN THE HIGH SCHOOL CLASSROOM

Two-week workshop. (See page 111 for description) Wright

Military Science

The Army Reserve Officer's Training Corps (ROTC) summer program is designed to permit University students to enroll in ROTC on a trial basis and to qualify for enrollment during the regular academic year. There is no military obligation incurred.

Military Science (Mil)

FIRST TERM

1-014 WORLD MILITARY HISTORY

Provides the student with basic concepts of military history to include principles of war, military definitions, and relationship of geography, economics, diplomacy, and technology to military history—from antiquity to Vietnam. (5 cr, SHist 1-014; limited to 50 students, reserved in Armory 116A; prereq Δ , leadership laboratory††; I-II MTWThF; Armory 116) Buckingham

SECOND TERM

1-024 FOUNDATIONS OF NATIONAL POWER

Introduction to contemporary international relations; analysis of the basic factors involved in a nation's capacity for developing power; examination of the varying levels of military force available to implement policy. (5 cr; limited to 50 students, reserved in Armory 116A; prereq Δ , leadership laboratory ††; I-II MTWThF; Armory 116) Goularte

†† Leadership Laboratory is taught concurrently to all cadets during the summer terms. The laboratory is designed so that the individual student can demonstrate his progressive ability in individual and group drill. Progressive and extensive practice in voice and command, unit formations, exercise of command, bearing and posture is emphasized. Assists in identification and development of individual traits and qualities of character.

Institute of Technology

SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

Architecture (Arch)

FIRST TERM

1-021 ARCHITECTURAL THEORY AND HISTORY

An introduction to architecture, the philosophy and principles of architecture as an art, a survey of the development of architecture from the ancient periods until the present time. (4 cr; 1-021 is prereq to all architectural history; II MTWThF; rm ar) Winterowd

1-023 HISTORY OF ENVIRONMENTAL DEVELOPMENT: PLANNING

Introduction to urban planning. Survey course dealing with rise and history of cities as centers of civilization. Collaboration among various disciplines for creating better urban environment and improving the quality of human life in cities. (4 cr, §LA 1-023; prereq 1-021; 5 lect hrs per wk) Iskander

5-055 AMERICAN ARCHITECTURE AND THE 19TH CENTURY

The history of pre-Columbian and colonial architecture in American and European architecture through the early 19th century. (4 cr; prereq 1-021 or §; IV MTWThF; rm ar) Winterowd

FIRST AND SECOND TERMS

3-082/3-083† ARCHITECTURAL DESIGN I

See section on 10-week courses.

3-091/3-092/3-093† ARCHITECTURAL DESIGN II

See section on 10-week courses.

5-111/5-112/5-113† ARCHITECTURAL DESIGN III

See section on 10-week courses.

5-121/5-122† ARCHITECTURAL DESIGN IV

See section on 10-week courses.

SECOND TERM

1-021 ARCHITECTURAL THEORY AND HISTORY

See First Term. (4 cr; 1-021 is prereq to all architectural history; II MTWThF; Arch 130) Winterowd

5-056 MODERN ARCHITECTURE

The history of architecture in America and Europe from the late 19th century until the present time. (4 cr; prereq 1-021 or §; IV MTWThF; Arch 130) Winterowd

SCHOOL OF CHEMISTRY

Chemistry (Chem)

FIRST TERM

1-004 GENERAL PRINCIPLES OF CHEMISTRY

Introduction to chemistry from the standpoint of atomic structure; periodic prop-

erties of elements and compounds derivable from structural considerations; laws governing behavior of matter, theories of solutions, acids, bases, and equilibrium. \$4 lab fee. (5 cr; 1-004/1-005†, §1-014 or §1-031/1-032; limited enrollment, reserved in CofH 130 for Ag, For, HE...MainE 105 for IT...and JohH 12 for others; primarily for nonchemistry majors; prereq predicted mathematics GPA 1.90 on ACT, Math 0-009 or college course in algebra, 4 yrs high school mathematics and high school chemistry recommended; 5 lect, 3 rec, and 9 lab hrs per wk; lect I MTWThF, SciCB 375; rec V MWF, lab VI-VIII MWF, SmithH ar) Staff

1-006 PRINCIPLES OF SOLUTION CHEMISTRY

Lecture and laboratory work related to chemistry of selected cations and anions. Detection and behavior of these ions; heterogeneous and homogeneous equilibria systems. Attention to oxidation-reduction systematics; complex ion formation as it relates to aqueous solution chemistry; and general metal ion chemical phenomena interrelated with structure. \$4 lab fee. (4 cr; limited enrollment, reserved in CofH 130 for Ag, For, HE...MainE 105 for IT...and JohH 12 for others; prereq 1-005 or 1-032; 5 lect and 12 lab hrs per wk; lect II MTWThF, SciCB 375; lab V-VIII MWF, SmithH ar) Staff

3-100 QUANTITATIVE ANALYSIS

(Lecture) Survey of modern quantitative methods of analysis. (3 cr, 3-100, 3-101†; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; for non-chemistry majors; prereq 1-005; V-VI MWF; SmithH 325) Staff

3-101 QUANTITATIVE ANALYSIS

(Laboratory) Survey of modern quantitative methods of analysis including elementary physicochemical procedures. \$4 lab fee. (2 cr; limited enrollment, reserved in MainE 105 for IT, and JohH 12 for others; prereq 3-100 or ¶3-100; I-III MTWThF; SmithH 310) Staff

3-102 INTRODUCTION TO ANALYTICAL CHEMISTRY

Equilibria involved in analytical processes. Properties and formation of precipitates. Methods of separation. Introduction to electrochemical methods. \$4 lab fee. (4 cr; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; for physics majors; prereq 1-005; 3 lect and 4 lab hrs per wk; lect, rec, quiz V-VI MWF, SmithH 325; lab I-III any 2 days of wk, SmithH 310) Staff

3-301 ELEMENTARY ORGANIC CHEMISTRY

Important classes of organic compounds, both aliphatic and aromatic, together with heterocyclic compounds. Laboratory work includes preparation of typical substances. \$4 lab fee. (5 cr; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; prereq 1-005 or 1-032 or equiv; 5 lect, 2 lab conf, 2 quiz, and 9 lab hrs per wk; lect I MTWThF, SmithH 100; rec II TTh, SmithH 100; lab II-IV MWF, SmithH 349, KoltH 398; lab conf III TTh, SmithH 100) Staff

3-304 ELEMENTARY ORGANIC CHEMISTRY LABORATORY

Reactions of typical functional groups and introduction to methods of organic qualitative analysis. \$4 lab fee. (4 cr; limited enrollment, reserved in MainE 105 for IT and in JohH 12 for others; prereq 3-303 or 3-201; 16 lab and 4 lect or conf hrs per wk; lab VI-IX MTWThF, KoltH 335 and 365; lab conf II MTWTh, SmithH 315) Staff

3-499 SENIOR THESIS

Written final senior thesis report is required. (Cr ar; prereq §, 4th yr) Staff

5-302 ADVANCED ORGANIC CHEMISTRY LABORATORY WORK

Selected laboratory synthetic problems, which may include original work. Considerable individual instruction. \$4 lab fee. (2-5 cr; prereq 3-304; 12-30 lab hrs ar) Staff

5-365 ORGANIC QUALITATIVE ANALYSIS

Reactions of typical functional groups and introduction to methods of organic qualitative analysis. \$4 lab fee. ((4 cr, §3-304; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; prereq 3-303; 16 lab and 4 lect or conf hrs per wk; lab VI-IX MTWThF, KoltH 355 and 365; lab conf II MTWTh, SmithH 315) Staff

5-520 ELEMENTARY PHYSICAL CHEMISTRY

Brief general survey. Chemical thermodynamics. (3 cr; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; prereq 1 yr college chemistry, Phys 1-291 or ¶Phys 1-291 and ¶1-295 or 1-106 with §, Math 3-211 or 3-411 with §; lect I-II MWF; SmithH 111) Staff

8-990 RESEARCH IN CHEMISTRY

(Cr and hrs ar; prereq Δ) Staff

8-991 SPECIAL TOPICS

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

SECOND TERM**1-005 GENERAL PRINCIPLES OF CHEMISTRY**

See Chem 1-004, First Term. \$4 lab fee. (Lect I MTWThF, SciCB 325; rec V MWF, lab VI-VIII MWF, SmithH ar) Staff

1-005 NATURAL SCIENCE—STRUCTURE AND PROPERTIES

See Natural Science under College of Liberal Arts, page 194.

3-302 ELEMENTARY ORGANIC CHEMISTRY

See Chem 3-301, First Term.

3-499 SENIOR THESIS

See First Term.

5-120 PHYSICAL-CHEMICAL METHODS OF ANALYSIS

(Laboratory) Quantitative application of electrochemical, optical, and other physical techniques. (4 cr; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; prereq 5-501; V-VI MWF; SmithH 325) Staff

5-121 PHYSICAL-CHEMICAL METHODS OF ANALYSIS

(Laboratory) Quantitative application of electrochemical, optical, and other physical techniques. \$4 lab fee. (4 cr; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; prereq 5-120; I-III MTWThF; SmithH 310) Staff

5-521 ELEMENTARY PHYSICAL CHEMISTRY

Brief general survey. Kinetics, statistical mechanics, and molecular structure. (3 cr; limited enrollment, reserved in MainE 105 for IT and JohH 12 for others; prereq 1 yr college chemistry, Phys 1-291 and 1-295 or ¶Phys 1-291 and ¶Phys 1-295 or 1-106 with #, Math 3-211 or 3-411 with #; lect I-II MWF; SmithH 111) Staff

5-701 INORGANIC CHEMISTRY I

Atomic structure, structure and bonding in covalent molecules and ionic crystals, thermochemistry of chemical bonding. Applications to chemistry of nontransition elements. (4 cr; prereq 5-501, 5-502, #; II MTWThF or ar; SmithH 315) Staff

8-102 PHYSICOCHEMICAL METHODS OF ANALYSIS

\$4 lab fee. (4 cr; prereq 8-101; I-III MTWThF; SmithH 310) Staff

8-704 ADVANCED INORGANIC CHEMISTRY II

Reactions and properties of the nontransitional elements, including the rare gases and their compounds. (4 cr; prereq 8-703, #; II MTWThF or ar; SmithH 315)

8-990 RESEARCH IN CHEMISTRY

See First Term.

8-991 SPECIAL TOPICS

See First Term.

COMPUTER, INFORMATION, AND CONTROL SCIENCE (CICS)

FIRST TERM**1-105 FUNDAMENTALS OF ALGORITHMS AND LANGUAGES I**

First course in required basic sequence for CICS majors. Algorithms, their properties and representation. Elementary concepts in linguistics: syntax, semantics, ambiguities. FORTRAN as a language; applications of FORTRAN to different

algorithms, e.g., iteration and recursion, sequential and binary searching, numerical methods. \$4 lab fee. (4 cr; prereq 1-100 or equiv programming knowledge or §...Math 1-231 or Math 1-331 or Math 1-621 or §; informal lab; III MTWThF; MainE 136) Nicholson

3-101 A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING

FORTRAN computer language with extensions; applications; programming techniques. Brings students to advanced level competence in FORTRAN programming. Integral nonscheduled lab. \$4 lab fee. (4 cr; intended for non-CICS majors; prereq Math 1-231 or Math 1-331 or Math 1-621 or §; IV MTWThF; Arch 50) Ibarra

3-107 INTRODUCTION TO ASSEMBLY LANGUAGE PROGRAMMING.

Number bases and representation. Analysis of a simple computer: machine language instructions, addressing, indexing. Assembly language coding: floating point arithmetic, looping, testing, character manipulation, logical operations; subroutine linkage and transfer. Students will write assembly language programs. (4 cr [qualified students may receive grad cr by registering for 5-199]; prereq 1-101 or 1-105 or 3-101 or §; informal lab; III-IV MW, IV F; MainE 206) Franta

5-301 NUMERICAL ANALYSIS

General concept of iteration formulas. Solution of equations. Newton's method. Linear systems. Finite differences. Interpolation. Numerical differentiation and integration. Introduction to initial value problems. \$4 lab fee. (4 cr, §Math 5-472; prereq Math 3-221 or Math 3-142 and Math 3-211, or §; III-IV TTh, III F; Arch 20) Brown

SECOND TERM

1-106 FUNDAMENTALS OF ALGORITHMS AND LANGUAGES II

Algorithms for nonnumerical data types. Tree structures, lists, strings, simulations, sorting, hashing, elementary graph theory, game playing. Languages for string processing and symbol manipulation; SNOBOL. Language translation. Students will write FORTRAN and SNOBOL programs in several of the above areas. \$4 lab fee. (4 cr; prereq 1-105 or §; informal lab; III MTWThF; Arch 45) Hanson

3-101 A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING

See First Term. (4 cr; prereq Math 1-231 or Math 1-331 or Math 1-621 or §; IV MTWThF; Arch 50) Maly

5-101 STRUCTURE AND PROGRAMMING OF SOFTWARE SYSTEMS I

Subroutine coding conventions; argument transfer; interrupts and traps; macros; I/O equipment and operations; buffers; conditional assembly and program segmentation. Students will write assembly language programs for an existing, modern computer. \$4 lab fee. (4 cr; prereq 3-107 or §; informal lab; III-IV MW, IV F; Arch 60) Boyd

5-302 NUMERICAL ANALYSIS

General theory of linear approximations. Norms. Error estimates. Convergence rates. Least squares. Orthogonal polynomials. Chebychev interpolation theory. Gaussian quadrature. Further solutions of equations. Multipoint iteration formulas. Starting values. Iterative schemes for linear algebra. Conditioning. Jacobi's method. Differential equations. Initial value problems. Systems of equations. Runge-Kutta. Stability. \$4 lab fee. (4 cr, §Math 5-473; prereq 5-301, Math 5-601 or §; III-IV TTh, III F; Arch 20) Leavitt

SCHOOL OF EARTH SCIENCES

Geology and Geophysics (Geo)

FIRST TERM

1-001 PHYSICAL GEOLOGY

A first course in geology; introduction to scientific method and nature of the earth; main features of the physical world, and processes that have formed them. \$4

lab fee. (5 cr; limited to 78 students, reserved in MainE 105 for IT and JohH 12 for others; lect II MTWThF; PillsH 110) Chase

- Lab 1, III-IV MWF, ForH 180
- Lab 2, VI-VII MWF, ForH 180
- Lab 3, III-IV MWF, ForH 185

1-008 GEOLOGY AND MAN

An introductory course concerned with man in his physical environment; geological hazards (e.g., earthquakes); the nature and use of natural resources; geological aspects of pollution, recreation, and land use; the effect of the composition of rocks and soils on nutrition and disease. An introduction to the broad nature of earth science. Lectures, laboratories, and field trips. \$4 lab fee. (4 cr, §1-007; lect IV MTWThF, PillsH 110; lab VI-VII TWTh, ForH 85) Sloan

3-099 PROBLEMS IN GEOLOGY AND GEOPHYSICS

Individual research or problem selected on the basis of individual interests and background. (1-6 cr; prereq \neq and Δ) Sloan, Chase, Hall

5-051 PHYSICAL GEOLOGY FOR TEACHERS

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 formed them. \$4 lab fee. (4 cr, §1-001, §1-111; limited to 12 students, reserved in MainE 105 for IT and JohH 12 for others; only for students holding degrees in education; prereq 1 term college chemistry or physics; lect II MTWThF, seminar V TTh; PillsH 110) Chase

- Lab 1, III-IV MWF, ForH 180
- Lab 2, VI-VII MWF, ForH 180
- Lab 3, III-IV MWF, ForH 185

5-110 FIELD GEOLOGY

Measurement of stratigraphic sections; study of fossils and igneous, sedimentary, and metamorphic rocks. Geological surveying on aerial photographs and topographic maps. Preparation of geologic maps and cross sections. Study of structural and geomorphic features and geologic settling of mineral deposits. \$4 lab fee. (9 cr; limited to students majoring in geology, geophysics, and geo-engineering; prereq 3-103 and \neq) Staff

SECOND TERM

1-002 HISTORICAL GEOLOGY

Evolution of earth from its origin to present; special attention to succession of physical and biological events of the past 600 million years. \$4 lab fee (4 cr; limited to 60 students, reserved in MainE 105 for IT and JohH 12 for others; lect II MTWThF; PillsH 110) Sloan

- Lab 1, III-IV MWF, ForH 85
- Lab 2, VI-VII MWF, ForH 85

3-099 PROBLEMS IN GEOLOGY AND GEOPHYSICS

See First Term.

3-401 INTRODUCTORY MINERALOGY

Introduction to crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Study of minerals in natural rock systems. \$4 lab fee (5 cr; prereq 1-001 or 1-111 or \neq , 1 term college chemistry, Math 1-441; lect III MTWThF, PillsH 110; lab VI-VIII MTWTh, PillsH 100) Hall

5-004 MINERALOGY

Introduction to crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Study of minerals in natural rock systems. \$4 lab fee. (4 cr, §3-401; not open to geology, geophysics, and geological, mineral, or metallurgical engineering majors; open to agriculture and forestry students and post-grad students in education; prereq 1-001 or 1-111 or \neq , 1 term college chemistry, Math 1-441; lect III MTWThF, PillsH 110; seminar V TTh, PillsH 125; lab VI-VII MTWTh, PillsH 100) Hall

5-052 HISTORICAL GEOLOGY FOR TEACHERS

Introduction to the origin of the earth, the physical evolution of its crust through geological time, and biological changes that occurred during its history. \$4 lab fee.

(4 cr, §1-002, §3-112; limited to 12 students, reserved in MainE 105 for IT and JohH for others; open only to students holding degrees in education; prereq 1-001 or 1-111 or 5-051 or §; lect II MTWThF, seminar V TTh, PillsH 110; lab III-IV MWF, ForH 85) Sloan

ENGINEERING

Aerospace Engineering and Mechanics (AEM)

FIRST TERM

1-015 STATICS

Vector algebra. Principles of statics. Application of the equations of equilibrium to the analysis of simple structures and machines. Statically determinate beams. Cables. Nature and influence of friction. (4 cr; prereq Math 1-231; I-II MWF, II TTh; AE 21)

3-036 DYNAMICS

Review of particle dynamics. Mechanical systems and the rigid-body model. Equilibrium. Kinematics and dynamics of plane systems. Technical applications. (4 cr; prereq Math 3-221; III-IV MWF, III TTh; AE 21)

5-001** AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY TEACHERS

(June 18-29)

Lectures, film reviews, construction and demonstration of classroom aids, involvement with the NASA Spacemobile, flight experience, and field trips cover such topics as satellites and probes, model rocketry including a launch, man in space, principles of flight, conventional aircraft, space age education tools. Activities include flight experience and visits to local aerospace facility and major aerospace installation in the country. (4 cr for 2 wks; prereq approval of application for admission; 1:00-5:30 MTWThF; rm ar) Kaldahl and staff

5-840, 5-841, 5-842 INDUSTRIAL ASSIGNMENT

See section on 10-week courses.

SECOND TERM

3-016 DEFORMABLE BODY MECHANICS

Principles of statics; equilibrium conditions. Uniaxial loading and deformation. Stress and strain at a point. Material behavior; linear elasticity. Torsion. Bending of beams of symmetrical section. (4 cr; prereq Math 3-221; III-IV MWF, III TTh; AE 21)

3-036 DYNAMICS

See First Term. (4 cr; prereq Math 3-221; I-II MWF, II TTh; AE 21)

5-840, 5-841, 5-842 INDUSTRIAL ASSIGNMENT

See section on 10-week courses.

Civil and Mineral Engineering (CE)

FIRST TERM

3-200 INTRODUCTION TO TRANSPORTATION ENGINEERING

The application of the physical laws of motion and energy as they relate to calculations of resistances to motion, power, and energy requirements, acceleration-deceleration limits and capacity of various modes of transportation. Introduction, engineering economics with particular emphasis on costs of transportation systems. (4 cr; prereq Phys 1-271 or equiv; I-II MTWThF; Ex 177) Huber

3-605 INTRODUCTION TO STRUCTURAL ANALYSIS

Principles of structure mechanics; forces and deformations in one-dimensional structural elements; elementary design considerations. (4 cr; prereq AEM 1-015; III-IV MTWThF; Ex 193) Goodman

8-510 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) Johnson

SECOND TERM

3-100 SURVEYING

The theory, analysis, and execution of control surveys to determine the horizontal and vertical position of points in mapping, engineering projects, cadastral surveys, and for construction layout. Elements of map construction and use. Field problems in surveying instruments. (4 cr; prereq Math 1-211 or equiv; lect III TWThF, Ex 193; rec IV TTh, Ex 193; lab VI-IX TTh, Ex 265) Johnson

Electrical Engineering (EE)

FIRST TERM

1-510 ELEMENTS OF ELECTRICAL ENGINEERING

Physical principles underlying the modeling of circuit elements. Kirchhoff's laws and related circuit theorems. Volt-ampere characteristics of two- and three-terminal devices. Superposition principle, network equivalence, nodal and mesh analysis of linear circuits. Graphical methods applied to nonlinear circuits. Time-domain analysis of first-order RL and RC circuits. Step and impulse responses. (5 cr; each section limited to 14 students, reserved in MainE 105; prereq Phys 1-291, Math 3-221 or Math 3-066; I-II MTWThF; Arch 30) Staff

Lab 1, V-VII MW, EE 121

Lab 2, III-V TTh, EE 121

3-000 CIRCUITS

Analysis of linear, passive circuits; natural and forced response. Steady-state ac analysis; resonance. (4 cr, §1-500; each section limited to 14 students, reserved in MainE 105; not for EE majors; prereq Phys 1-291, Math 3-201 or ¶Math 3-201; lect I-II MWF; Arch 10) Staff

Lab 1, IV-V MW, EE 118

Lab 2, VI-VII MW, EE 118

Lab 3, I-II TTh, EE 118

3-051 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; prereq 3-050; I-II MTWThF; Arch 55) Staff

3-100 ELECTROMAGNETIC FIELDS I

Electrostatic, magnetostatic, and electromagnetic field theory based upon the fundamental experimental laws and leading to application of Maxwell's equations. (4 cr; prereq Phys 1-230 or 1-291, Math 3-231 or ¶Math 3-231 with §; III-IV MTWThF; Arch 55) Staff

3-401 JUNIOR ELECTRICAL ENGINEERING LABORATORY

Experimental study of electronic circuits. (2 cr; each section limited to 12 students, reserved in MainE 105; prereq 3-400, ¶3-051) Staff

Lab 1, V-VIII MW, EE 216

Lab 2, V-VIII MW, EE 205

5-100 ELECTROMAGNETIC FIELDS III

Applications of Maxwell's equations. Transmission lines, wave propagation, antennas, and radiation. (4 cr; prereq 3-101; III-IV MTWThF; MainE 212) Staff

5-101 ELECTROMAGNETIC FIELDS LABORATORY

(1 cr; each section limited to 12 students, reserved in MainE 105; prereq 3-402, ¶5-100) Staff

Lab 1, V-VIII M, EE 204

Lab 2, V-VIII T, EE 204

SECOND TERM

3-001 ELECTRONICS

Network theorems, two-ports, active device models; vacuum diodes, semiconductors; amplifiers, nonlinear devices; logic circuits. (4 cr; each section limited to 14 students, reserved in MainE 105; not for EE majors; prereq 1-501 or 3-000; lect I-II MWF; Arch 40) Staff

Lab 1, I-II TTh, EE 118

Lab 2, IV-V TTh, EE 118

3-010 CIRCUITS, SIGNALS, AND SYSTEMS I

Modeling of lumped-parameter networks. Second-order circuits. Sinusoidal steady-state analysis. Two-port networks. (4 cr; prereq 1-510; I-II MTWThF; Arch 60) Staff

3-050 ELECTRONICS I

Introduction to physical principles of electronic devices; electrical properties of metals, insulators, and semiconductors. Semiconductor, vacuum, and gaseous devices; modeling. (4 cr; prereq 1-510 or ¶, Phys 1-291; III-IV MTWThF; Arch 55) Staff

3-400 JUNIOR ELECTRICAL ENGINEERING LABORATORY

Experimental study of electronic circuits, electromagnetic fields, and linear systems. (2 cr; each section limited to 12 students, reserved in MainE 105; prereq 1-501, ¶3-050) Staff

Lab 1, V-VIII TTh, EE 216

Lab 2, V-VIII TTh, EE 205

3-402 JUNIOR ELECTRICAL ENGINEERING LABORATORY

Experimental study of electromagnetic fields and linear systems. (2 cr; each section limited to 12 students, reserved in MainE 105; prereq 3-101, 3-401, 5-000 or ¶5-000, ¶5-050) Staff

Lab 1, V-VIII MW, EE 216

Lab 2, V-VIII MW, EE 205

5-000 LINEAR SYSTEM ANALYSIS

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. (4 cr; prereq 1-501, Math 3-061; III-IV MTWThF; Arch 15) Staff

5-050 NONLINEAR ELECTRONIC CIRCUITS

Nonregenerative switching circuits, diode and transistor logic circuits, multivibrators, oscillators. (4 cr; prereq 3-051, 5-000 or ¶; I-II MTWThF; Arch 55) Staff

Mechanical Engineering

Industrial Engineering/Operations Research (IEOR)

FIRST TERM

5-030 QUALITY CONTROL AND RELIABILITY

History of quality control, quality policies and objectives, economics of quality, design for system effectiveness, reliability and maintainability, statistical aids to reliability, quality specifications, inspection, acceptance sampling, vendor relations, process control, motivation for quality, quality assurance, and quality control engineering. Background in calculus (Math 1-231) and probability and statistics (ME 3-900) essential; background in industrial engineering (IEOR 5-000) recommended. (4 cr; limited to 30 students, reserved in MainE 105; lect IV MTWThF, VI TTh, 1 hr ar; ME 108) Arora

SECOND TERM

5-000 INTRODUCTION TO INDUSTRIAL ENGINEERING ANALYSIS

Scientific management, mathematical models, methods engineering, work measurement, worker satisfaction and participation, wage payment plans, breakeven analysis, incremental costs, the time value of money and the present value concept; cost quality and inventory control; production scheduling, plant locations, and layout; linear programming, PERT, and the systems approach to management problems. Background in calculus (Math 1-231) essential; background in probability and statistics (ME 3-900) recommended. (4 cr; limited to 30 students, reserved in MainE 105; lect I MTWThF, II TTh, 1 hr ar; ME 108) Arora

5-040 INTRODUCTION TO OPERATIONS RESEARCH

Linear programming, algebra and geometry of linear models, simplex method, sensitivity testing, and duality; network models, network algorithms, and dynamic models. Background in calculus (Math 1-231) essential; background in industrial engineering (IEOR 5-000) recommended. (4 cr; limited to 30 students, reserved in MainE 105; lect III MF, V MTWThF, 1 hr ar; ME 108) White

Mechanical Engineering (ME)

FIRST TERM

3-201 MECHANICAL ENGINEERING SYSTEMS ANALYSIS

Modeling and analytic description of mechanical systems. Properties of linear models with emphasis on automatic computation solution. Necessary background includes differential equations (Math 3-221 or equivalent). (4 cr; limited to 30 students, reserved in MainE 105; lect V MTWThF, rec VII-VIII TTh; ME 102) Frohrib

3-205 ENGINEERING SYSTEMS DESIGN

Application of fundamental concepts to the design of typical mechanical components. Engineering approach to the analysis and synthesis of machines and systems. Specification of materials in engineering design. Optimum design criteria. Necessary preparation includes engineering system dynamics and kinematics (3-201, 3-203). (4 cr; limited to 30 students, reserved in MainE 105; lect III MTWThF, ME 108; rec VII-VIII MW, ME 321) Kleinhenz

3-301 THERMODYNAMICS

Properties, equations of state, processes, and cycles for various thermodynamic systems. Development of first and second laws of thermodynamics, correlating heat, work and mass transfer. Equilibrium, irreversibility and mixtures. Necessary preparation: introductory thermodynamics and basic calculus (Chem 1-014 or Phys 1-281, Math 3-221 or equivalent). (4 cr; limited to 30 students, reserved in MainE 105; lect III TWTh, IV MTWThF; ME 102) Murphy

3-740 INDUSTRIAL ASSIGNMENT

See section on 10-week courses.

5-460 INTERNAL COMBUSTION ENGINES

Principles of power production, fuel consumption, and emissions of gasoline and Diesel engines; fuel-air cycle analysis, combustion flames, knock phenomena, air flow and volumetric efficiency, mixture requirements, ignition requirements and performance. Necessary preparation: content of basic thermodynamics (ME 3-301 or equivalent). (4 cr; limited to 30 students, reserved in MainE 105; lect V MTWThF, VI MWF; ME 108) Kittelson

5-612 ENVIRONMENTAL ENGINEERING

Basic principles of engineering assessment and control of emissions to air and water, noise measurement and control, and control, handling, and disposal of solid waste. (4 cr; limited to 30 upper div students, reserved in MainE 105; lect I MTWThF, II MWF; ME 108) Whitby

SECOND TERM

3-303 APPLIED THERMODYNAMICS

Application of laws of thermodynamics to chemically reacting systems and engineering systems. Analysis of vapor cycles, gas engine cycles, propulsion systems,

refrigeration and air-water vapor mixtures. Basic thermodynamics (ME 3-301 or equivalent) essential. (4 cr, §3-305; limited to 30 students, reserved in MainE 105; lect III TWTh, IV MTWThF; ME 108) Murphy

3-740 INDUSTRIAL ASSIGNMENT

See section on 10-week courses.

5-260 ENGINEERING MATERIALS AND PROCESSING

Introduction to materials and processing including physical and metallurgical properties, consolidation, etc. Materials processing including machining, welding, and deformation processes. Necessary preparation includes physics (Phys 1-291), chemistry (Chem 1-004) and first-year calculus. (4 cr; limited to 20 students, reserved in MainE 105; lect VI MTWThF, ME 108; lab VII-IX TTh, ME 70) Holtby

SCHOOL OF MATHEMATICS (Math)

FIRST TERM

0-009 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; Arch 10) Ar

1-005 FOUNDATIONS OF ARITHMETIC

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, or Δ ; III MTWThF; Arch 40) Ar

1-008 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 1-201, even to students with high school trigonometry]; prereq plane geometry and high school algebra, ¶1-111 allowed; II MTWThF; Arch 35) Ar

1-111 COLLEGE ALGEBRA AND ANALYTICAL GEOMETRY

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 in standard position, logarithms. (5 cr, §1-131, §1-141, §1-201, §1-210, §1-411, §1-441; 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 qtrs of mathematics should take Math 1-201 if they qualify; prereq 0-009 or high school higher algebra and satisfactory mathematics placement score; III-IV MTWThF; GH 202) Ar

1-141 ALGEBRA, PROBABILITY, AND PRE-CALCULUS

Inequalities, elementary set theory, functions, analytic geometry, linear systems and programming, combinations, permutations, probability. (5 cr, §1-131, §1-111, §1-201, §1-411; for students in pre-business administration, pre-pharmacy and others requiring college algebra; prereq high school higher algebra and satisfactory mathematics placement score)

Sec 1, I-II MTWThF, Aero 215, Ar

Sec 2, III-IV MTWThF, Aero 215, Ar

1-142 INTRODUCTION TO CALCULUS

(A short course in calculus for students in pre-business administration, pre-pharmacy and others requiring a minimal amount of calculus [students who plan to take several quarters of mathematics should register for the sequence 1-211, 1-221, 1-231]). Derivatives, integrals, differential equations, maxima and minima, introduction to partial differentiation, applications. (5 cr, §1-211, §1-442; prereq 1-111 or 1-131 or 1-141 or 1-201 or mathematics placement score)

Sec 1, I-II MTWThF, Aero 225, Ar

Sec 2, III-IV MTWThF, Aero 225, Ar

1-201 PRE-CALCULUS

Inequalities, analytical geometry, complex numbers, binomial theorem, mathematical induction, functions and graphs, and trigonometric, exponential, and logarithmic functions. (5 cr, §1-411, §1-141; for students who intend to take a calculus sequence but lack preparation; prereq 0-009 or high school higher algebra and 1-008 or high school trigonometry; III-IV MTWThF; VH 1) Ar

1-211 ANALYSIS I

(Course description covers sequence 1-211, 1-221, 1-231) Review of high school algebra; analytic geometry, calculus of functions of one variable, applications. (5 cr, §1-111, §1-141, §1-210, §1-411, §1-441; prereq 1-201 or high school higher algebra, trigonometry, geometry, and mathematics placement score)

Sec 1, I-II MTWThF, VH 206, Ar

Sec 2, III-IV MTWThF, VH 206, Ar

1-221 ANALYSIS II

(See Math 1-211 for course description) (5 cr, §1-142, §1-220, §1-421, §1-442; prereq 1-211 or equiv)

Sec 1, I-II MTWThF, VH 211, Ar

Sec 2, III-IV MTWThF, VH 211, Ar

1-231 ANALYSIS III

(See Math 1-211 for course description) (5 cr, §1-230, §1-431, §1-443; prereq 1-221)

Sec 1, I-II MTWThF, VH 20, Ar

Sec 2, III-IV MTWThF, VH 20, Ar

3-066 ELEMENTARY DIFFERENTIAL EQUATIONS

An elementary course concerned mainly with the techniques of problem solving. First- and second-order equations, linear equations of higher order. (4 cr, §3-221, §5-512, §5-521; prereq 1-231 or 1-431 or equiv; III MTWThF, IV MW; VH 301) Ar

3-161 SYNTHETIC METRIC GEOMETRY

Euclidean geometry including ruler and compass constructions and theorems on triangle and circle not studied in high school course in plane geometry. (4 cr; prereq 1-211 or 1-421; IV TTh, V MTWThF; VH 207) Ar

3-211 ANALYSIS IV

Partial differentiation, chain rule, implicit functions, applications. Multiple integrals in two and three dimensions. Infinite series, power series. (5 cr, §1-240, §1-444, §3-411, §3-521; prereq 1-231; I-II MTWThF; VH 1) Ar

3-221 INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS

Vectors, systems of linear equations, matrices, determinants, bases, eigenvalues. Linear differential equations and systems with constant coefficients, initial value problem and general solution, variation of parameters for inhomogeneous equations. (5 cr, §1-250, §3-142, §3-511; prereq 1-231 or equiv; III-IV MTWThF; Arch 45) Ar

3-231 VECTOR ANALYSIS

Scalar and vector products, derivatives, geometry of space curves, del operator, line and surface integrals, divergence and Stokes' theorem, transformation of coordinates, dyadics, applications. Mostly a technique course, intended mainly for students whose interests are not theoretical but who wish to learn the relevant mathematical facts and methods. (4 cr, §1-260, §5-601/5-602; prereq 3-211 or equiv; I MWF, II MTWThF; VH 364) Ar

3-581 FOUNDATIONS OF ARITHMETIC

Sets, relations, order. Real number system. Continuous functions. (4 cr; prereq 3-211 or 3-411; I MW, II MTWThF; VH 207) Ar

3-675 INTRODUCTORY MATHEMATICS

Designed to prepare the sophomore mathematics major for the theoretical courses he will encounter during his junior and senior years. (4 cr, §3-531; prereq 1-231 or 1-431, or 1-443; III MTWThF, IV MW; VH 207) Ar

5-151 ELEMENTARY SET THEORY

Basic properties of operations on sets, cardinal numbers, simply ordered sets, well-ordered sets, ordinal numbers, axiom of choice, axiomatics. (4 cr; prereq 1-240 or 1-444...3-211 or 3-411; III MTWThF, IV WF; VH 364) Ar

5-242 MATRIX THEORY WITH APPLICATIONS

System of linear equations, finite dimensional linear spaces, bases, linear transformations, matrices, determinants, eigenvalues, reduction to canonical forms, quadratic and bilinear forms, applications. Gives greater emphasis to theoretical questions than 3-142; students interested in a technique course should take 3-142. (4 cr, §5-211, §5-283 and 5-284; prereq 3-221 or 3-142 or 3-511; IV TTh, V MTWThF; VH 16) Ar

5-341 INTRODUCTION TO TOPOLOGY

Set theory: axiom of choice, Zorn's Lemma. Metric spaces: completeness, compactness, continuity. Basic point set topology: countability and separation axioms, Urysohn's Lemma, compactness, connectedness, product spaces. (4 cr; prereq 3-675, and 3-211 or 3-411 or 3-521; I WF, II MTWThF; VH 16) Ar

5-568 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. (4 cr; prereq 5-602 or equiv; I MW, II MTWThF; VH 301) Ar

5-601 ADVANCED CALCULUS

Differentiation of functions of several variables; vector algebra; curves in three dimensions; directional derivative and gradient; inverse transformation and implicit function theorems; change of variables in multiple integrals. (4 cr; prereq 3-211 or 3-411 or equiv; III MTWThF, IV MW; VH 16) Ar

5-612 INTRODUCTION TO ANALYSIS

Theory of real numbers; elements of point set theory; limits; differentiation; multi-variable analysis. (4 cr; primarily for students planning to take grad work with a major in mathematics as preparation for grad courses in analysis; prereq 3-675 with 3-521 or 3-211 with 3-221 or 3-411 with 3-142; IV TTh, V MTWThF; VH 364) Ar

SECOND TERM**0-009 PREPARATORY MATHEMATICS**

See First Term. (0 cr; I-II MTWThF; VH 209) Ar

1-006 FOUNDATIONS OF ARITHMETIC

Includes topics from the following: Definitions of rational and irrational numbers, definitions of addition, subtraction, multiplication, and division of fractions; methods for operations on rational and real numbers; the real number line and inequalities, topics from geometry and congruences. (3 cr; prereq 1-005; III MTWThF; Arch 50) Ar

1-008 TRIGONOMETRY

See First Term. (3 cr [open for cr if taken before 1-201, even to students with high school trigonometry]; prereq plane geometry and high school algebra, ¶1-111; II MTWThF; VH 20) Ar

1-141 ALGEBRA, PROBABILITY, AND PRE-CALCULUS

See First Term. (5 cr, §1-131, §1-111, §1-201, §1-411; prereq high school higher algebra and satisfactory mathematics placement score; I-II MTWThF; VH 1) Ar

1-142 INTRODUCTION TO CALCULUS

See First Term. (5 cr, §1-211, §1-442; prereq 1-111 or 1-131 or 1-141 or 1-201 or math placement score)

Sec 1, I-II MTWThF, Aero 225, Ar

Sec 2, III-IV MTWThF, Aero 225, Ar

1-201 PRE-CALCULUS

See First Term. (5 cr, §1-411, §1-141; prereq 0-009 or high school higher algebra and 1-008 or high school trigonometry; III-IV MTWThF; VH 206) Ar

1-211 ANALYSIS I

See First Term. (5 cr, §1-111, §1-141, §1-210, §1-411, §1-441; prereq 1-201 or high school higher algebra, trigonometry, geometry, and mathematics placement score; III-IV MTWThF; VH 209) Ar

1-221 ANALYSIS II

See First Term. (5 cr, §1-142, §1-220, §1-421, §1-442; prereq 1-211 or equiv; III-IV MTWThF; VH 1) Ar

- 1-231 ANALYSIS III**
See First Term. (5 cr, §1-230, §1-431, §1-443; prereq 1-221; III-IV MTWThF; VH 20) Ar
- 3-142 LINEAR ALGEBRA**
Vectors, system of linear equations, matrices, determinants, eigenvalues, applications. Emphasizes techniques but does include some proofs of theorems. (4 cr, §3-221, §3-511; prereq 2 qtrs calculus; IV TTh, V MTWThF; VH 301) Ar
- 3-211 ANALYSIS IV**
See First Term. (5 cr, §1-240, §1-444, §3-411, §3-521; prereq 1-231; III-IV MTWThF; VH 211) Ar
- 3-221 INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS**
See First Term. (5 cr, §1-250, §3-142, §3-511; prereq 1-231 or equiv; I-II MTWThF; VH 211) Ar
- 3-231 VECTOR ANALYSIS**
See First Term. (4 cr, §1-260, §5-601/5-602; prereq 3-211 or equiv; III MTWThF, IV MWF; VH 364) Ar
- 5-209 THEORY OF NUMBERS**
Elementary properties of integers; prime and composite numbers; Euclid's algorithm; congruences; theorems of Fermat and Wilson; primitive roots; indices; Diophantine equations. (4 cr; prereq 1-240 or 3-211 or 3-411; III MTWThF, IV MW; VH 301) Ar
- 5-243 LINEAR ALGEBRA WITH APPLICATIONS**
See Math 5-242, First Term. (4 cr, §5-211, §5-283, §5-284; prereq 5-242 IV TTh, V MTWThF; VH 16) Ar
- 5-342 INTRODUCTION TO TOPOLOGY**
See Math 5-341, First Term. (4 cr; prereq 5-341; I WF, II MTWThF; VH 16) Ar
- 5-359 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. (4 cr; prereq 3-211 or 3-411; I TTh, II MTWThF; VH 207) Ar
- 5-602 ADVANCED CALCULUS**
Line and surface integrals; Stokes' theorem; convergence of infinite series; orthogonal functions; uniform convergence; integration and differentiation of series. (4 cr; prereq 5-601; III MTWThF, IV MW; VH 16) Ar
- 5-613 INTRODUCTION TO ANALYSIS**
See Math 5-612, First Term. (4 cr; prereq 5-612; IV TTh, V MTWThF; VH 207) Ar
- 5-679 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. (4 cr, §5-681; prereq 3-211 or 3-411 or 3-521; III MTWThF, IV MW; VH 207) Ar

SCHOOL OF PHYSICS AND ASTRONOMY

Astronomy (Ast)

SECOND TERM

1-008 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, §1-011; II MTWThF and 1 clear evening per wk for observations with telescope; Ph 166) Kaufmanis

1-009 STARS AND GALAXIES

Discussion of constellations, properties and motions of stars, and the structure of the sidereal universe. Nonmathematical course. (3 cr, §1-011; may be taken concurrently with 1-008; III MTWTh and 2 clear evenings per wk for observation; Ph 166) Kaufmanis

Natural Science (NSci)

FIRST TERM**1-004 PHYSICAL WORLD; PHYSICS**

See Natural Science under College of Liberal Arts, page 194.

Physics (Phys)

FIRST TERM**1-031 GENERAL PHYSICS**

Demonstration lectures, problem sessions, and laboratory exercises on topics in physics. Applications of physics will be discussed. Topics include mechanics, random processes, gases and fluids, electric circuits, feedback and control, waves, light, optical instruments, atoms and spectra, nuclei, and radioactivity. (5 cr; limited to 64 students, reserved in MainE 105 for IT, JohH 12 for others; primarily for students interested in those topics useful in various technical areas; prereq high school algebra and plane geometry; I MTWThF, II MWF and two 2-hr labs per wk ar; Ph 170) Ar

1-271 GENERAL PHYSICS

See section on 10-week courses.

1-275 PHYSICS LABORATORY

See section on 10-week courses.

1-281 GENERAL PHYSICS

See section on 10-week courses.

1-285 PHYSICS LABORATORY

See section on 10-week courses.

1-291 GENERAL PHYSICS

See section on 10-week courses.

1-295 PHYSICS LABORATORY

See section on 10-week courses.

SECOND TERM**1-032 GENERAL PHYSICS**

See Phys 1-031, First Term.

1-271 GENERAL PHYSICS

See section on 10-week courses.

1-275 PHYSICS LABORATORY

See section on 10-week courses.

1-281 GENERAL PHYSICS

See section on 10-week courses.

1-285 PHYSICS LABORATORY

See section on 10-week courses.

1-291 GENERAL PHYSICS

See section on 10-week courses.

1-295 PHYSICS LABORATORY

See section on 10-week courses.

University College

The intercollegiate program draws upon the entire University for its courses. It has no fixed curriculum. Its purpose is to provide flexibility in the educational program of the undergraduate who finds none of the standard curricula of the other schools and colleges suited to his interests or particular objectives. Such a student may arrange a study program including suitable amounts of work in two or more schools or colleges to fit his individual needs. Upon completing this approved program, he is granted either a B.A. or a B.S. degree. An applicant for admission should be at least a third-quarter sophomore who has completed at least 1 full quarter, or its equivalent, at the University of Minnesota.

University College also makes available to students regularly enrolled in every undergraduate college in the University an opportunity for off-campus independent study. A student may earn from 3 to 15 degree credits by registering for independent study projects under UC 3-075. The student designs his own project and works with an appropriate faculty member who supervises and evaluates the project.

A second opportunity for involvement in interdisciplinary educational experiences is available through the Living-Learning Center (1425 University Avenue S.E.). The center is a service unit of University College designed to assist students, faculty, and community persons, individually or as small groups, to develop and carry out off-campus field study projects.

Three undergraduate experimental programs are offered by the college. Experimental College (1507 University Avenue S.E.) is based on the "community of learners" concept, allowing students maximum responsibility for designing their own educational and governmental structures.

University Without Walls (331 Nolte Center) serves students with barriers to their use of the University. The UWW staff assists students in defining educational goals, then assists, when necessary, in locating University and other appropriate resources for reaching those goals.

The Students' College on the Duluth Campus gives students the opportunity to create, implement, and manage human services programs on the UMD campus and in the city of Duluth.

Information about University College is available from University College Office, 105 Walter Library, University of Minnesota, Minneapolis, Minnesota 55455.

College of Veterinary Medicine

All classes scheduled by arrangement.

Veterinary Anatomy (VAna)

FIRST TERM

8-261 MORPHOLOGY OF ANIMAL CELLS, INTERCELLULAR SUBSTANCES
(3 cr; prereq 5-263, §) Weber and staff

FIRST AND SECOND TERMS

5-791* TOPICS IN ORGANOLOGY

Lecture and laboratory presentation regarding selected organ systems of domestic and laboratory animals. (1-5 cr [regis for more than 1 term permitted]; prereq 8-261 or equiv, §) Weber, Fletcher, Czarnecki, Vanden Berge, Heath, Hammer, Mackey

8-201, 8-202 COMPARATIVE VETERINARY NEUROLOGY

Correlated studies of the central nervous system of domestic animals. Emphasis on relating neuroanatomy to neurophysiology. (4 cr each; prereq 5-201, §) Fletcher.

8-203 EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY

Principles, methods, and laboratory exercises in investigating the central nervous system of domestic animals. (3 cr; prereq 8-202, §) Fletcher

8-331, 8-332, 8-333 RESEARCH PROPOSITION IN MORPHOLOGY

Each student defines an unsolved morphologic problem, hypothesizes a solution, and proposes an experimental approach to test the hypothesis. Written and oral presentation of proposition are evaluated by departmental graduate faculty. (2 cr per qtr; prereq §)

SECOND TERM

8-280 HISTOLOGICAL, ULTRAHISTOLOGICAL TECHNIQUES
(3 cr; prereq 5-263, §) Heath

Veterinary Medicine (VM)

FIRST TERM

5-510, 5-511 CLINICS

Medical, obstetrical, radiological, surgical, and laboratory examination of diseases of animals. (6 cr each; prereq sr VM, 5-502; I-X MTWThF; VetC) Staff

8-220* ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES

Detailed examination, discussion, treatment, and prevention of animal disease problems. (Cr ar; prereq 5-203, 5-303) Sorensen, Mather, Johnson, Larson, Anderson, Farnsworth, Geiatt, Osborne

SECOND TERM

5-510, 5-511 CLINICS

See First Term.

8-220* ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES
See First Term.

Veterinary Microbiology and Public Health (VMic)

FIRST AND SECOND TERMS

5-320 COMPARATIVE MEDICINE AND PUBLIC HEALTH

Man's relationship to biologic environment, interrelationship of animal and human health, occurrence of animal diseases, ecology of zoonoses, food production and hygiene, laboratory animal medicine. (2 cr; prereq PubH 5-002 or #) Anderson, Diesch, Libby

5-410 PROBLEMS IN VETERINARY BACTERIOLOGY AND PUBLIC HEALTH

(Cr ar; prereq 5-103 or equiv, #) Pomeroy, Anderson, Lindorfer, Loken, Diesch, Libby, Shope, Hilgren, Maheswaran

8-205 ADVANCED VETERINARY BACTERIOLOGY

Special topics, techniques, collateral reading, and conferences. (Cr ar; prereq #) Pomeroy, Anderson, Lindorfer, Loken, Diesch, Shope, Hilgren, Maheswaran

8-210 ADVANCED POULTRY DISEASES

Investigations of specific infectious disease problems of poultry. (Cr ar; prereq 5-331, #) Pomeroy, Higbee, Nelson, Barnes

Veterinary Pathology and Parasitology (VPaP)

FIRST AND SECOND TERMS

5-401x VETERINARY NECROPSIES

Necropsy techniques, examination of tissue sections, and preparation of records. (1-5 cr; prereq 5-203 or equiv) Staff

5-402x SURGICAL PATHOLOGY

Preparation and interpretation of surgical and necropsy specimens. (3 cr; prereq 5-401, #) Barnes and staff

5-404x DIAGNOSTIC PATHOLOGY

Interpretation of history, necropsy findings, laboratory findings, and histopathology in the diagnosis of animal diseases. (5 cr; prereq 5-401, #) Barnes and staff

8-803x PROBLEMS IN VETERINARY PARASITOLOGY

(Cr ar; prereq 5-102 or equiv, #) Griffiths

8-807x PROBLEMS IN VETERINARY PATHOLOGY

(Cr ar; prereq #) Perman, Stevens

8-808x PROBLEMS IN VETERINARY CLINICAL PATHOLOGY.

(Cr ar; prereq #) Perman, Stevens

Veterinary Physiology and Pharmacology (VPP)

FIRST AND SECOND TERMS

8-830 RESEARCH IN ANIMAL PHYSIOLOGY

(Same as AnSc 8-830) Individual research under faculty direction. Topics to be determined by consultation; may be a specialized aspect of a thesis problem or an independent problem of mutual interest to graduate student and adviser. (Cr and hrs ar; prereq #) Staff

8-920 PROBLEMS IN VETERINARY PHARMACOLOGY
(Cr ar; prereq 5-660 or equiv, #) Staff

Veterinary Surgery and Radiology (VSR)

FIRST AND SECOND TERMS

8-121 ADVANCED SMALL ANIMAL SURGERY

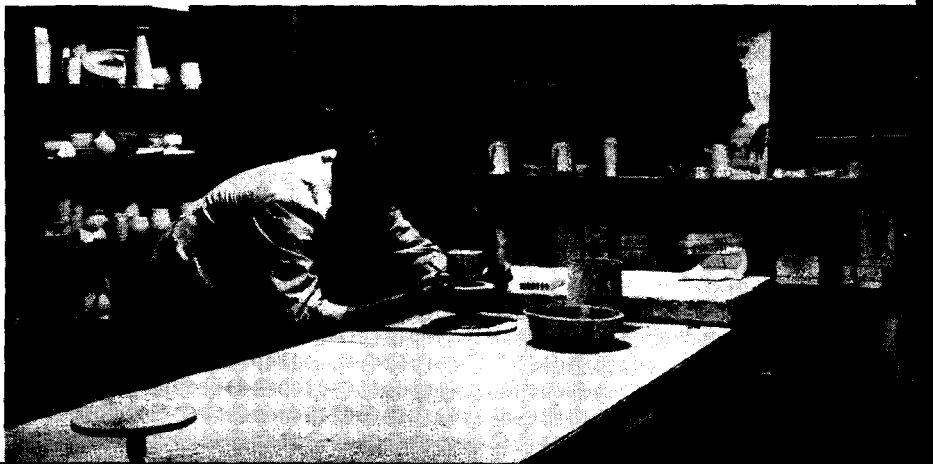
Surgery of the various systems in small animals with preoperative and post-operative evaluation and treatment. (Cr ar; prereq 5-011 or equiv, #) Brasmer, Wallace

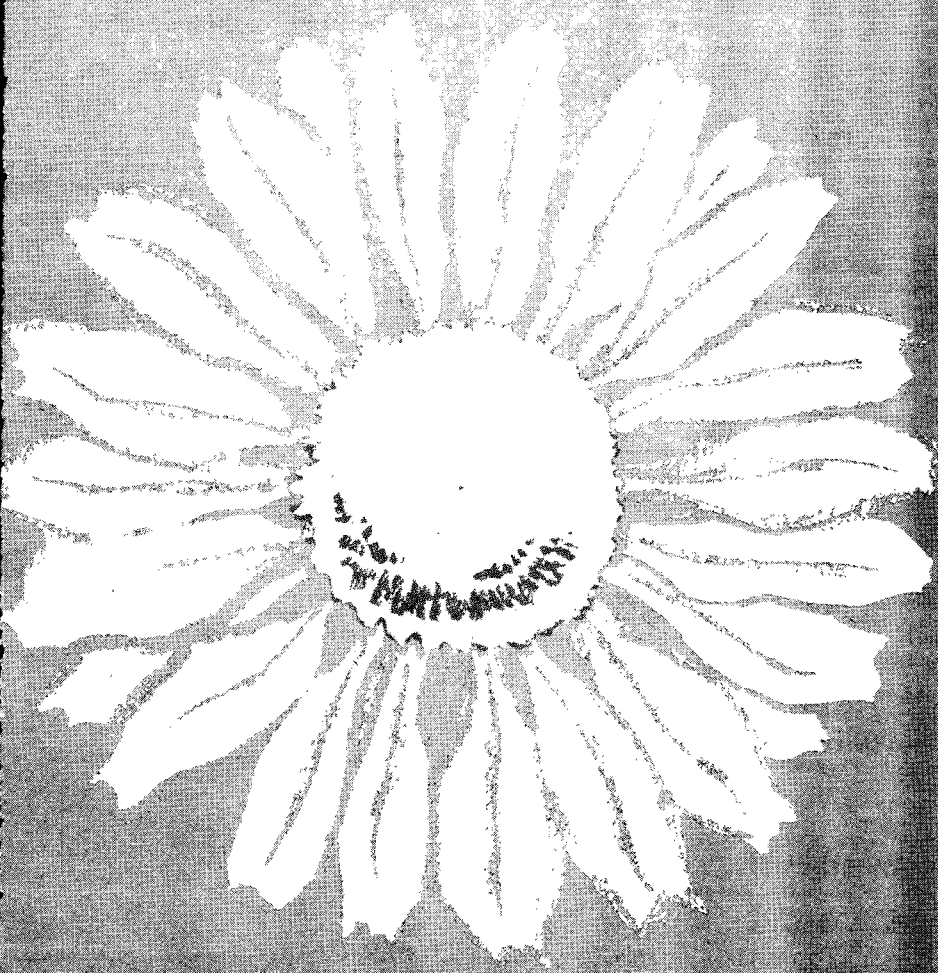
8-221 ADVANCED LARGE ANIMAL SURGERY

Surgery of the various systems in large animals with preoperative and post-operative evaluation and treatment. (Cr ar; prereq 5-021 or equiv, #) Arnold, Myers

8-401 ADVANCED VETERINARY RADIOLOGY

Lecture and laboratory. Radiological diagnostic procedures and interpretation as applied to veterinary medicine. (2 cr; prereq 5-401 or equiv, #) Hanlon





10-Week Courses

10-Week Courses

GROUP A

Students should register for both terms at the same time and must enter in the First Term. In some instances (†) the entire sequence must be completed before credit is granted. For other courses (††) students must satisfactorily complete the Second Term before credit is granted for First Term.

Aerospace Engineering and Mechanics (AEM)

5-840 INDUSTRIAL ASSIGNMENT

Engineering intern industrial laboratory. A formal technical report, covering the work during the industrial assignment, is required. (2 cr for both terms; prereq regis in engineering intern program)

5-841 INDUSTRIAL ASSIGNMENT

See AEM 5-840. (2 cr for both terms; prereq regis in engineering intern program)

5-842 INDUSTRIAL ASSIGNMENT

See AEM 5-840. (2 cr for both terms; prereq regis in engineering intern program)

Anesthesiology (Anes)

Elective Courses

5-181 EXTERNSHIP IN CLINICAL PRACTICE OF ANESTHESIOLOGY

Fundamentals of clinical anesthesia with emphasis on airway and ventilatory management, resuscitation, evaluation of the unconscious patient, choice of agents and techniques, practice administration of general and regional anesthesia, pre- and postanesthetic management. (9 cr; primarily for Family Practice and Surgery Tracks, although open to others in limited number; University Hospitals) Van Bergen and staff

5-182 EXTERNSHIP IN RESPIRATORY PROBLEMS

Two weeks' fundamentals of airway and ventilation management in anesthetized patients; 4 weeks management of clinical respiratory problems, Respiratory Ward and Pulmonary Function Testing Laboratory. (9 cr; primarily for Family Practice, Medical, and Surgical Tracks; University Hospitals) Van Bergen and staff

5-183 EXTERNSHIP IN PEDIATRIC ANESTHESIOLOGY

Two weeks' fundamentals of airway and ventilation management in anesthetized adult; 4 weeks devoted to anesthetic management of pediatric surgical patients. (9 cr; primarily for Pediatric and Surgical Tracks; University Hospitals) Van Bergen and staff

5-184 EXTERNSHIP IN OBSTETRIC ANESTHESIOLOGY

Two weeks' fundamentals of airway and ventilation management in adults anesthetized for general surgery; 4 weeks devoted to anesthetic management of Ob-Gyn- patients. (9 cr; primarily for those interested in Obstetrics in Family Practice or Medical Specialties Tracks; University Hospitals) Van Bergen and staff

5-185 EXTERNSHIP IN ANESTHESIOLOGY FOR SURGICAL SPECIALTIES

Two weeks' fundamentals of airway and ventilation management in adults anesthetized for general surgery; 4 weeks devoted to anesthetic management of patients on services of student's special interest. (9 cr; primarily for Surgical Track students with specialty preference; University Hospitals) Van Bergen and staff

Required Courses for Graduate Students**8-265 GENERAL ANESTHESIA**

Instruction and experience in general anesthesia (12 cr) Van Bergen and staff

8-266 REGIONAL ANESTHESIA

Observation, instruction, and administration of all types of local, regional, and spinal anesthesia. (4 cr) Van Bergen and staff

8-267 PRE- AND POSTANESTHETIC EVALUATION

Selection of proper anesthetic agent and technique, premedication, and observation of recovery from anesthesia. (2 cr; VIII MTWThF; PoH 1108) Van Bergen and staff

8-268 SEMINAR: ANESTHESIOLOGY

Review of literature, report of case problems, and discussion of research work in progress within the department (2 cr; PoH 1108) Van Bergen and staff

8-269 RESEARCH IN ANESTHESIA

Anesthesia problems in experimental laboratory or in hospital. (Cr and hrs ar) Van Bergen and staff

Architecture (Arch)

3-082†† ARCHITECTURAL DESIGN I

Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making. (6 cr for both terms; students cannot register for next design sequence [3-083] until spring qtr; prereq 3-081; VI-X MTWThF; Arch 210)

3-083†† ARCHITECTURAL DESIGN I

See Arch 3-082. (6 cr for both terms; prereq 3-082; VI-X MTWThF; Arch 210)

3-091†† ARCHITECTURAL DESIGN II

Architectural problems with emphasis on development of structure as an integral part of design; site planning. (6 cr for both terms; prereq 3-083; VI-X MTWThF; Arch 210)

3-092†† ARCHITECTURAL DESIGN II

See Arch 3-091. (6 cr for both terms; prereq 3-091; VI-X MTWThF; Arch 210)

3-093†† ARCHITECTURAL DESIGN II

See Arch 3-091. (6 cr for both terms; prereq 3-092; VI-X MTWThF; Arch 210)

5-111†† 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. (6 cr for both terms; prereq 3-093; VI-X MTWThF; Arch 210)

5-112†† ARCHITECTURAL DESIGN

See Arch 5-111. (6 cr for both terms; prereq 5-111; VI-X MTWThF; Arch 210)

5-113†† ARCHITECTURAL DESIGN

See Arch 5-111. (6 cr for both terms; prereq 5-112; VI-X MTWThF; Arch 210)

5-121†† 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 for both terms; prereq 5-113, CE 3-062; VI-X MTWThF; Arch 210)

5-122†† ARCHITECTURAL DESIGN

See Arch 5-121. (9 cr for both terms; prereq 5-121; VI-X MTWThF; Arch 210)

Educational Administration (EdAd)

5-130 ADMINISTRATOR DEVELOPMENT SEMINAR (Parts I and II)

June 18-August 10

Assessment and development of skills required of the administrator in the area of planning, decision making, and human relations; introduction to contemporary issues in educational administration; initial course for students pursuing professional certification programs. Participants will be acquainted in polling community opinions on educational issues confronting schools in urban areas. Preapplication is required and inquiries concerning applications, requirements, and procedures should be addressed to Professor Gary F. Alkire or Professor Thomas L. Jackson, Division of Educational Administration, 225 Health Services Building, University of Minnesota, St. Paul, Minnesota 55101; in first term (5-week duration, June 18-July 20) participants will register concurrently for 3 cr in EdAd 5-130 (Part I) and 3 cr in EdAd 5-139 in the same numbered section; in second term (3-week duration, July 23-August 10) students will register for 6 credits in EdAd 5-130 (Part II) in the appropriate section. (3-9 cr [9 cr max]; each section limited to 25 students, reserved in Bu 206)

Sec 1, II-VIII MTWThF, EntFW 490, Jackson, Morris

Sec 2, II-VIII MTWThF, HrSci 310, Mueller, Hendrix, Alkire

Educational Psychology

Psychological Foundations (PsyF)

5-342 EXPERIMENTAL PSYCHOLOGY OF SCHOOL LEARNING (Parts I and II)

History, models, and theories; research methods of educational psychology; conditioning, learning, and cognition; collection and analysis of data in the laboratory setting. \$4-lab fee. (5 cr total for both parts, 55-140; limited to 35 students, reserved in Bu 206; III MWF; Arch 35) Ar

8-112 STATISTICAL METHODS (Parts I and II)

Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems. (3 cr total for both parts; prereq 8-111; II MWF; Jones 10) MacEachern

Foreign Study (FS)

5-960 SEMINAR FOR FOREIGN STUDY I AND II

Directed field study (SPAN program) in Peru, Hungary, and Libya investigating current economic, political, educational, cultural, and religious patterns of life. Each student will study the country carefully before embarking and write a comprehensive report of his findings upon returning. (12 cr for both terms; prereq approval before December 1972 by a faculty selection committee [grad students must also have approval of adviser] Stavrou, administrative official; Campbell, Kheim, Selim

Mechanical Engineering (ME)

3-740 INDUSTRIAL ASSIGNMENT

Engineering intern curriculum: industry laboratory assignment (work quarter). Grades based on formal written report written by the student covering his work during industrial assignment. (2 cr per qtr [course may be taken for cr more than once]; prereq regis in intern program)

Neurology (Neur)

5-120 SELECTED PROBLEMS IN NEUROLOGY

Special neurology problems as arranged with staff. (9 cr) Baker and staff

5-510 EXTERNSHIPS IN NEUROLOGY

Supervised clinical experience emphasizing common neurological problems. (9 cr; prereq regis med; I M; Station 50, University Hospitals, first day only) Baker and staff

5-540 NEUROCHEMISTRY RESEARCH AT UNIVERSITY HOSPITALS

Laboratory research experience with current problems. (18 cr; prereq regis med; DieIH 697) Berry, Cohen, Lin

5-541 PEDIATRIC NEUROLOGY-NEUROCHEMISTRY

Inpatient and outpatient experience combined with laboratory studies of diseases of developing brain or muscle diseases. (Cr ar; prereq regis med; Mayo B-571) Swaiman

5-544 CLINICAL ELECTROENCEPHALOGRAPHY AT UNIVERSITY HOSPITALS

EEG interpretation and correlation with clinical picture. (9 cr; prereq regis med; Mayo B-296) Torres, Zeese

5-545 ELECTROMYOGRAPHY AT UNIVERSITY HOSPITALS

Principles of electromyography and muscle biopsy and examination of patients with neuromuscular diseases. (9 cr; prereq regis med; Mayo B-564) Kennedy

5-550 NEUROPATHOLOGY AT UNIVERSITY HOSPITALS

Intensive didactic and practical neuropathology course consisting of lectures, case studies, and study of gross microscopic specimens. (4.5 cr; DieIH K-107) Sung, Matri

5-560 GENETICS AT VETERANS ADMINISTRATION HOSPITAL

Inheritance of neurological diseases, genetic techniques, illustrative diseases. (9 cr; Neurology Service) Alter

5-565 PATHOLOGICAL AND BIOCHEMICAL CORRELATES OF NEUROLOGY

Study of scientific bases of selected neurological disease processes. (9 cr; prereq regis med; Neurology Service) Stadlan, Vatassery

5-570 IMMUNOLOGY AT VETERANS ADMINISTRATION HOSPITAL

Review of latest data in immune mechanisms and practical training in laboratory techniques. (9 cr; prereq regis med; rm 230, bldg 1) Ansari

8-200 CLINICAL NEUROLOGY

(Cr ar) Baker and staff

8-201 CLINICAL PEDIATRIC NEUROLOGY

(Cr ar) Swaiman and staff

8-202 RESEARCH

(Cr ar) Baker and staff

8-203 APPLIED ELECTROENCEPHALOGRAPHY

(Cr ar) Torres

8-204 APPLIED ELECTROMYOGRAPHY

(Cr ar) Kennedy

- 8-205 APPLIED NEUROPATHOLOGY**
(Cr ar) Sung
- 8-236 RESEARCH: NEUROPATHOLOGY**
(Cr ar) Sung
- 8-705 NEUROLOGICAL-NEUROSURGICAL CONFERENCE**
(1 cr, §Rad 5-163, §Surg 8-318) Baker, Peterson

Pathology (Path)

- 5-112 DIAGNOSIS OF TUMORS**
(Cr ar; prereq Phase D or equiv; 8:00 MTThF; JacH 178) Hebbel

Physics (Phys)

- 1-271 GENERAL PHYSICS**
Mechanics. (4 cr for both terms; limited to 198 students, reserved in MainE 105 for IT and JohH 12 for others; prereq Math 1-221 or ¶Math 1-221 or Math 1-321 or ¶Math 1-321 or Math 1-621 or ¶Math 1-621; may be taken with or without lab 1-275; I MTWThF; Ph 166) Ar
- 1-275 PHYSICS LABORATORY**
Laboratory exercises in mechanics. (1 cr for both terms; S-N only; limited to 48 students, reserved in MainE 105 for IT and JohH 12 for others; prereq 1-271 or ¶1-271; 2 lab hrs per wk; rm ar) Ar
- 1-281 GENERAL PHYSICS**
Heat and electricity. (4 cr for both terms; limited to 158 students, reserved in MainE 105 for IT and JohH 12 for others; prereq 1-271, Math 1-231 or ¶Math 1-231 or Math 1-331 or ¶Math 1-331 or Math 1-621 or ¶Math 1-621; may be taken with or without lab 1-285; III MTWThF; Ph 170) Ar
- 1-285 PHYSICS LABORATORY**
Laboratory exercises in heat and electricity. (1 cr for both terms; S-N only; limited to 48 students, reserved in MainE 105 for IT and JohH 12 for others; prereq 1-281 or ¶1-281; 2 lab hrs per wk; rm ar) Ar
- 1-291 GENERAL PHYSICS**
Magnetism and optics. (4 cr for both terms; limited to 164 students, reserved in MainE 105 for IT and JohH 12 for others; prereq 1-281; may be taken with or without lab 1-295; III MTWThF; Ph 133) Ar
- 1-295 PHYSICS LABORATORY**
Laboratory exercises in magnetism and optics. (1 cr for both terms; S-N only; limited to 48 students, reserved in MainE 105 for IT and JohH 12 for others; prereq 1-291 or ¶1-291; 2 lab hrs per wk; rm ar) Ar

Public Health (PubH)

- 5-068** COMMUNITY HEALTH EDUCATION PRACTICE**
Approximately 10 weeks of supervised community health education experience. (10 cr; prereq 5-063 and §) Craig, Veninga
- 5-069 COMMUNITY HEALTH EDUCATION LABORATORY**
Offers experience as health educator in selected community health agencies. (6 cr; prereq §) Craig, Veninga

5-098 TOPICS IN PUBLIC HEALTH EDUCATION

Selected readings in public health education with discussion based on these readings. (Cr ar; prereq #) Craig

GROUP B

The following courses are concentrated programs of study extending over the entire 10 weeks of the Summer Session. They permit students to earn 15 hours of credit the equivalent of a full year's sequence in language. Students must register in both terms of the Summer Session. Students enrolled in one of these sequences may not enroll in other courses in the Summer Session.

Arabic (Arab)

1-101/1-102/1-103† BEGINNING LITERARY ARABIC

Fundamentals of the Arabic language, based on an audio-lingual method; aural comprehension, correct pronunciation, and practical reading knowledge. Basic grammar of Arabic. Each 5-week term is equivalent to 1½ quarters of the regular first-year sequence. (15 cr for both terms; I-III MTWThF; Jones 5) Farah, Koury, Mustafa

Chinese (Chin)

1-101/1-102/1-103† INTENSIVE FIRST-YEAR CHINESE

Five hours with linguist, 15 hours with drillmasters, extra hours of assigned laboratory work. (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; FolH 98) Mather and staff

Italian (Ital)

1-001, 1-002, 1-003 BEGINNING ITALIAN

A course with speaking objectives based on an audio-lingual approach. Students will learn to understand and express fundamental ideas, to write in Italian anything they can say, and to master the fundamental structures of the language. (15 cr for both terms; course covers 1 yr's work in 10 wks [15 cr]; students who do not fully satisfy the objectives of the course may, upon consent of the instructor, be granted 10 cr for satisfactory completion of Ital 1-001, 1-002 in a modified two-session course; II-IV MTWThF; FolH 203)

Portuguese (Port)

1-101/1-102/1-103 BEGINNING PORTUGUESE

(15 cr for both terms; II-III MTWThF; FolH 204)

Russian (Russ)

1-101/1-102/1-103† BEGINNING INTENSIVE RUSSIAN

Covers the same material as the regular first-year sequence, Russ 1-101/1-102/1-103. (15 cr for both terms; I-III MTWThF; FolH 107) Sjoberg, Polakiewicz

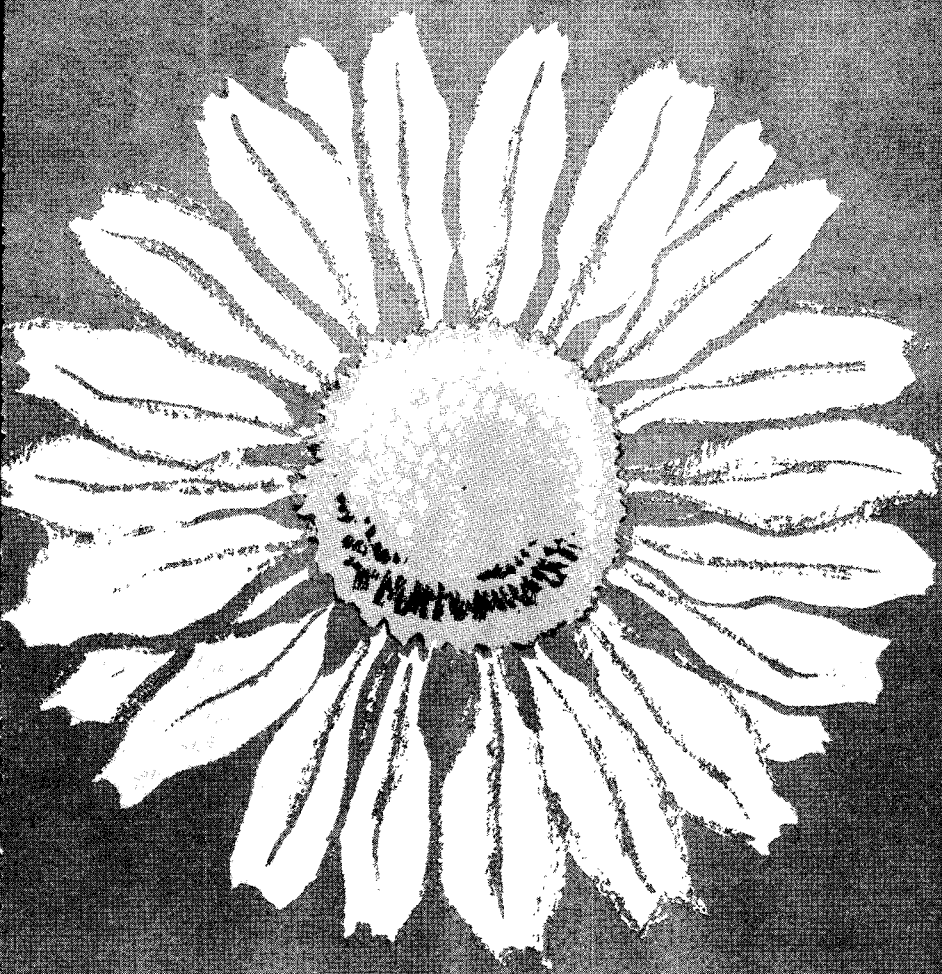
1-104/1-105/1-106† INTERMEDIATE INTENSIVE RUSSIAN

Covers the same material as the regular second-year sequence, Russ 1-104/1-105/1-106. (15 cr for both terms; I-II MTWThF; FolH 105) Donchenko, Prokopov

Swedish (Swed)

1-101/1-102/1-103† INTENSIVE BEGINNING SWEDISH

(15 qtr cr for both terms [10 sem cr]; I-IV MTWThF; FolH 202) Lundquist



Coordinate Campuses

University of Minnesota, Duluth

The Duluth Campus is an exciting location for Summer Session study. Situated on a 244-acre site overlooking Lake Superior, the campus enjoys ideal summer temperatures, perfect for the student who wants to study and relax in comfort.

UMD, located near the center of Duluth, is but a short drive from parks, golf courses, swimming beaches, the famous Skyline Drive, Duluth's new Arena-Auditorium, and the Duluth International Harbor.

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 both the individual student and entire families. Bridge and golf lessons, family swimming, concerts, lectures, theatrical productions, group discussions, dances, harbor and historical tours, films, a steak cookout, sailing on Lake Superior, and a wilderness canoe trip are a few of the regularly scheduled activities.

More than 300 courses are scheduled for the Summer Session terms at the undergraduate and graduate levels. Students may earn credits for 50 majors in 32 academic fields toward the degrees of associate in arts, associate in vocational teacher education, bachelor of arts, bachelor of science, bachelor of accounting, or bachelor of business administration, in 13 areas of concentration for the master of arts and master of science degrees, plus the master of social work and master of education degrees, and the specialist certificate in educational administration.

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, 305 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

GRADUATE PROGRAM

The Graduate School offers, on the Duluth Campus, a master of arts degree with majors in art, education (elementary-secondary), educational administration, educational psychology (counseling), English, history, and speech pathology. These studies are designed to serve elementary school teachers and principals, and secondary school teachers, principals, and counselors. In addition, majors in English, history, and speech pathology are available. They provide advanced work for individuals now in teaching or those interested in progressing toward a general degree in the discipline. Students may complete all course work at Duluth.

Master of science degree programs are offered in biology, botany, biochemistry, chemistry (analytical, inorganic, organic, or physical), geology, physics, and zoology. These programs are for secondary and college teachers and those planning additional graduate study or careers in these fields. The specialist certificate in educational administration may be obtained with emphasis in either elementary, secondary, or general school administration. The program is under the jurisdiction of the dean of the Graduate School and is similar to parallel programs on the Twin Cities Campus. A complete description of graduate requirements and courses is given in the 1972-74 *University of Minnesota, Duluth Bulletin*, which may be obtained by writing to the UMD News Service, 301 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

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 Graduate School Office, 403 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812. Information concerning selection of courses and other degree requirements can also be obtained from the Graduate School assistant dean.

Applications for admission must be submitted *complete in every detail*—two official transcripts from each college attended, and the credentials examination fee and test results, if required—at least 4 weeks prior to the opening of the quarter or summer term in which the applicant 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.)

Students previously admitted to the Graduate School who have not registered within the last 2 years in the Graduate School must apply for readmission. Students who have completed a degree program must apply for readmission to the Graduate School. Individuals enrolled in graduate programs at other universities may be granted transient graduate status but an application for same must be completed prior to the start of the class. Forms may be obtained from the Graduate School office.

Students in Continuing Education and Extension course or workshop graduate level programs must meet Graduate School or transient graduate status requirements before graduate level recognition will be given their participation.

Master's Degree in Art

A graduate major, emphasizing studio work, is offered leading to the master of arts degree in art. The program is designated primarily for public school art teachers, but others may be admitted when the program seems particularly adaptable to the educational purposes of the student. Both art history and art education are available as related fields. Inquiries concerning the specific program should be directed to: Department of Art, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Biology, Botany, Zoology

Plan A for the M.S. is available during the academic year in both botany and zoology; Plan B is available only in biology. In addition to course work, Plan A requires a research problem and a thesis. Botany majors may minor in zoology, and zoology majors may minor in botany. With either major, other minors such as chemistry, geology, and physics are also available.

The Plan B biology program is directed toward enrichment of the subject-matter area for high school biology teachers, as well as for others who might desire a broader base of course work in the life sciences rather than the research experience required by the Plan A approach. Biology majors may use any of the following as related fields: chemistry, education, geology, and physics.

Master's Degree in Chemistry

Programs in chemistry are offered under both Plan A and Plan B. For Plan A, thesis research is available in analytical, inorganic, organic, or physical chemistry or biochemistry. For Plan B, 45 credits in approved courses are required, with Plan B papers required in three courses.

The programs are 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, and for those who desire advanced training for a career in industry. Summer work at the Duluth Campus during both terms will involve the research phase of the M.S. degree.

Master's Degree in Education

This program, available to elementary and secondary teachers, permits a student to major in courses from the following areas: Education (Educ), Elementary Education (ElEd) and Secondary Education (SeEd).

The work in related fields may include areas such as Educational Administration (EdAd), Psychological Foundations (PsyF), Psychological Applications (PsyA), Special Education (SpEd), Physical Education (PE), Industrial Education (Ind), Home Economics Education (HEEd), as well as courses in subjects which are ordinarily taught in the schools.

Inquiries should be addressed to: Director of Graduate Study in Education, Department of Elementary Education, or Director of Graduate Study, Department of Secondary Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Educational Administration

A master of arts degree with a major in educational administration is available to students desiring this program. A wide variety of courses is

offered during the summer. Inquiries should be addressed to: Director of Graduate Study in Educational Administration, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Specialist Program in Educational Administration

Advanced graduate programs leading to the specialist certificate in school administration have been developed for elementary and secondary school principals and superintendents. New courses, workshops, and seminars have been introduced, several of which are available this summer. An announcement describing these programs will be sent upon request to: Director of Graduate Study in Educational Administration, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Educational Psychology

A complete Master's degree program in school guidance and counseling is available on the Duluth Campus. Courses in psychological foundations and psychological applications as well as other 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 Graduate Study in Educational Psychology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in English

Two programs lead to a master of arts degree in English. One offers a broad study of literature and a second emphasizes preparation for teaching, particularly in the junior college. The Master's program is suitable both for secondary school English teachers and for students preparing for doctoral studies. Courses carrying graduate credit are offered in all academic quarters and in both summer terms. Requirements for the degree can be completed in 5 or 6 regular terms or in 3 or 4 summers. Inquiries concerning the details of the program should be directed to: Department of English, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Geology

Plans A and B for the M.S. are offered in geology. Although no graduate level courses for the Master's degree program, other than graduate research, are offered in this field during the 1973 Summer Session, students interested

in beginning their course work in the fall of 1973 are reminded that the application deadline is August 24. Details concerning prerequisites for the geology M.S. degree may be obtained from: Director of Graduate Study in Geology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

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.

Master's Degree in Physics

The M.S. in physics is a Plan A program requiring a research thesis. Current departmental research interests include atmospheric physics, atomic and molecular physics, Lake Superior water research, solid-state physics, and theoretical particle physics. Summer work on the Duluth Campus involves the research phase of the degree work.

Master's Degree in Speech Pathology

A graduate major on Plan B is offered leading to the master of arts degree in speech pathology. Summer Session offerings are designed to integrate academic, research, and clinical endeavors. Additional correspondence may be addressed to the Department of Speech Pathology and Audiology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Social Work Program

The University of Minnesota, Duluth School of Social Work, established in the spring of 1971, has the objective of preparing students for careers in regional and national social development. Emphasis is placed on community organization/development, social policy formulation and analysis, management, program coordination and evaluation, and regional planning. A master of social work degree program commences in June of each year. Specific information may be obtained from: School of Social Work, University of Minnesota, Duluth, Duluth, Minnesota 55812.

MASTER OF EDUCATION DEGREE

This new UMD professional graduate degree program is designed specifically to meet the needs of classroom teachers. It is performance-based; each student's program is tailored to his specific goals; research and development on the job is emphasized. Programs can have almost any mix of work in spe-

cific disciplines, learning, curriculum, educational technology, and similar areas. For more information, write to: Director, Master of Education Degree Program, University of Minnesota, Duluth, Duluth, Minnesota 55812.

MEDICAL SCHOOL SUMMER COURSES

The School of Medicine—Duluth, established in 1969, is designed initially as a 2-year basic sciences medical school curriculum. Program orientation is toward production of broadly based general or family practice physicians.

The first class of 24 students was accepted for matriculation in September of 1972. A number of Medical School summer courses are open to public admission.

SPECIAL EDUCATION

Learning Disabilities (SLBP)—A program leading to endorsement as a certificated SLBP teacher is conducted on the Duluth Campus. The program consists of course work and practicums during single 5-week terms over successive summers as well as of supervised field experiences during the academic year. Enrollments in certain courses will be limited. Students must obtain formal admission to the program prior to enrollment in course work. Due to anticipated heavy demands, persons planning to apply should communicate their interests as early as possible. For information, write Department of Special Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Mental Retardation (EMR)—Undergraduate students and experienced teachers may obtain certification as special class teachers for the mentally retarded by successful completion of an approved program of studies. For information about admission to the program and program requirements, write Department of Special Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

SPEECH AND HEARING CLINIC

Opportunity is provided for observation at the annual clinic for children with speech and hearing disorders, held June 18 to July 25. 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.

ENVIRONMENTAL GEOLOGY OF MINNESOTA

Geol 5-020 is a First Term course, designed for elementary and secondary science teachers who have had little background in geology and would find a knowledge of the geology of Minnesota valuable in their teaching. Enroll-

ment will be limited to 30 students so that the numerous field trips can be investigative in nature. Further information can be obtained from Department of Geology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

SPECIAL COURSES IN FRENCH AND GERMAN

Beginning French and German—Ten-week courses will be offered to provide the student with basic proficiency in the chosen language with special emphasis on the spoken language. The classes 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 (Fr or Ger 1-101/1-102/1-103). Credit for the First Term will not be granted without completion of the Second Term. A student should not take any other courses.

Intermediate French and German—Ten-week courses will be offered which provide a grammar review, further development of the spoken language, and special emphasis on the development of reading skills. The class will meet five times a week, 1½ hours a day. Upon completion of the course, the student will have earned 9 credits. This is equivalent to the regular second-year sequence (Fr or Ger 1-201/1-202/1-203). A student should plan to attend both summer terms.

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.

WORKSHOPS

Workshop in Advanced Crafts

This is a workshop designed to provide an intensive studio experience in one or more of the crafts, i.e., jewelry, casting, gem cutting, weaving, textiles, leather, and mosaics.

The workshop (Art 5-373) will be given for 6 credits during First Term, from 9 a.m. to 1 p.m. (plus outside assignments); prerequisite is Art 1-500. The instructor will be Rudolph Schauer.

Workshop in Advanced Painting

The 25th annual workshop in advanced painting will be conducted by a nationally recognized painter. Previous instructors have included Charles Burchfield, Max Weber, Philip Evergood, Yasuo Kuniowski, and Morris Kanter.

Again, this painting workshop will be offered during the Second Term. Enrollment will be limited, and interested students should write to: Art Department, University of Minnesota, Duluth, Duluth, Minnesota 55812.

SUMMER THEATRE

This Mini Summer Stock program provides participants a concentrated experience in all aspects of theatre. Rehearsal, production, and performance activities may occupy their interest 7 days each week of the first summer term. Ten credit hours in theatre courses are offered through program participation. Small scholarships are available to selected experienced actors and technicians expected to provide leadership for the company.

OPEN-ENDED PROGRAMS FOR SECONDARY TEACHERS

Teachers looking for an opportunity to explore unique developments in the field of education as well as participate in more conventional learning experiences are encouraged to enroll in the Department of Secondary Education Programs Approach to Summer School. Students will be given a wide range of alternatives to reaching specific course goals. Educational opportunities both on and off the campus will be available and students are encouraged to submit their own proposals for ways to meet their personal goals. For further information contact: Professor John Verrill, Department of Secondary Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

COACHING CERTIFICATE IN GIRLS' INTERSCHOLASTIC SPORTS

Courses designed to help persons coaching interscholastic sports for girls fulfill the legislated requirement (EDU 345a, effective September 1975) of a valid coaching certificate will be offered both summer terms at the University of Minnesota, Duluth through the Physical Education Department.

CONTINUING EDUCATION AND EXTENSION PROGRAMS

A number of short-term Duluth Continuing Education and Extension Center programs will be offered on the University of Minnesota, Duluth Campus during the Summer Session time period, e.g., a Foreign Language Workshop: Development of Materials and Short Courses for Individualized Instruction (Educ 5-192) 9 credits, Birkmaier; and A Workshop in Reading for English Teachers (Educ 5-400) 3 credits, Stensland.

Several additional Continuing Education and Extension credit and non-credit programs are planned for the summer period. For information and brochure contact: Director of Continuing Education and Extension, 431 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Accommodations during the programs should be secured by participants through the Housing Office, University of Minnesota, Duluth.

University of Minnesota, Morris

The rich, well-diversified agricultural area of west central Minnesota is the site of the University of Minnesota, Morris. Morris is a small city (population 5,300) with a number of parks, playgrounds, and tennis courts in the community, and located near some of Minnesota's finest resort and fishing areas. The Pomme de Terre City Park has a picnic area, swimming beach and a pavilion, and the Pomme de Terre Golf Club has a nine-hole course with new clubhouse and swimming pool. A lighted baseball park is located in a 25-acre municipal recreation area.

The UMM campus occupies 45 acres adjacent to Morris and the cultural and recreational facilities of the community are available to the students. The University also has a wide variety of recreational facilities and cultural activities geared for the summer students.

A separate Summer Session bulletin about the University of Minnesota, Morris, including the summer course listings is available. For further information and a copy of this bulletin write to UMM Summer Session, 104 Education Building, University of Minnesota, Morris, Morris, Minnesota 56267.

LIBERAL ARTS CURRICULUM

As a 4-year liberal arts college of the University of Minnesota, UMM shares in the instruction, research, and service purposes of the entire University system and provides a program in the liberal disciplines fundamental to each of these purposes. Students may participate in the program in one of three ways:

1. A 4-year curriculum in liberal education leading to the bachelor of arts degree.
2. A 4-year curriculum which combines liberal education with teacher preparation and leads to the bachelor of arts degree and certification as an elementary or secondary school teacher.
3. A 1-, 2-, 3-, or 4-year curriculum in liberal education meeting the pre-professional liberal arts requirements of the professional schools of the University of Minnesota or of other institutions.

The summer offerings at Morris are limited, but courses from each of the four divisions are given which cover several subject areas.

SPECIAL SUMMER PROGRAMS

A workshop on the specific "social problems" faced by such ethnic groups as Blacks, Indians, Chicanos, Orientals, and "marginal" white ethnic

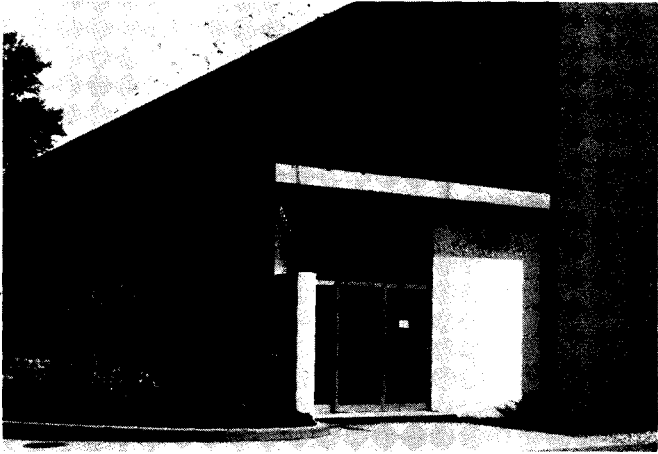
communities within the American society will be offered from July 23 to August 3. The course is listed as Soc 1-101 and is offered for 3 credits.

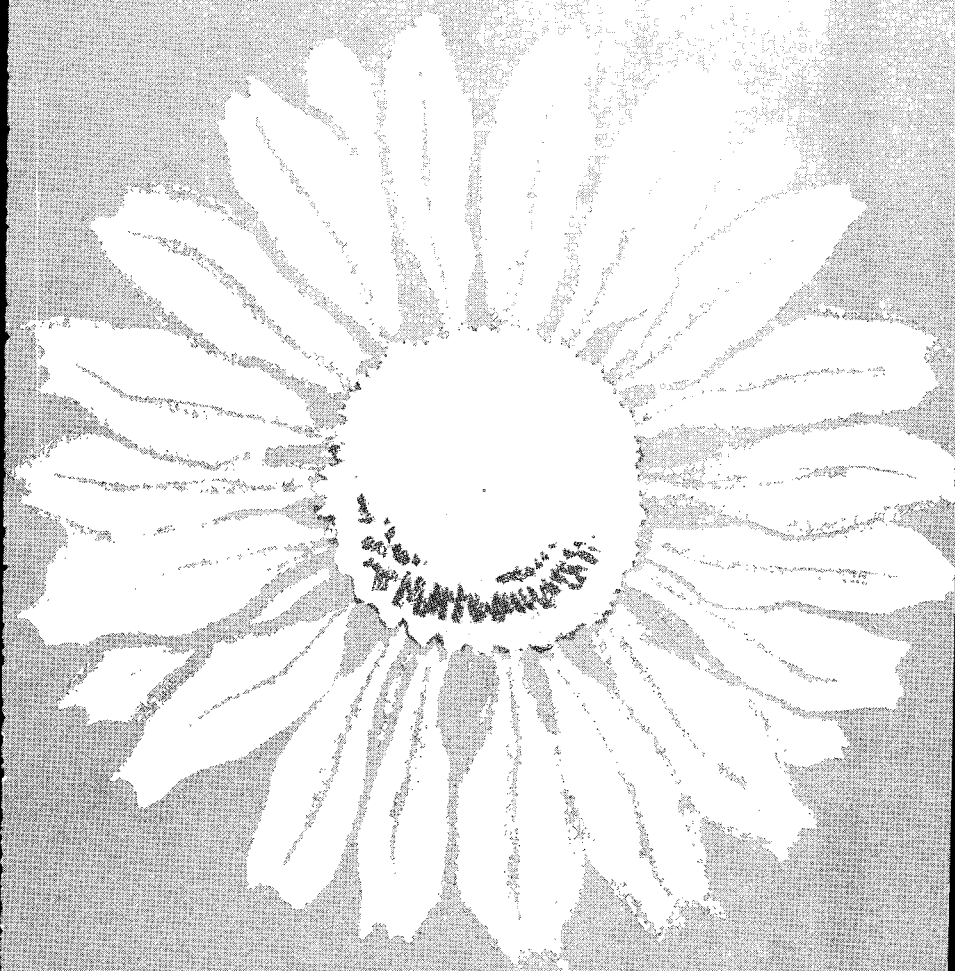
Biology and Man's Future is the title of another 3-credit workshop offered from July 23 to August 3. The focus of the workshop will be on biological factors which influence man's future, such as population, applied genetics, biochemical control of behavior, food supply, environmental change, biological aspects of ethics and morals, and space biology.

SUMMER IN MEXICO

A 10-week language and culture program in Cuernavaca, Mexico, will run concurrently with the Summer Session. Designed to afford all students the opportunity to pursue a 15-credit course of studies within a Mexican cultural setting, an important aspect of the program will be a series of cultural excursions to historical, archaeological, and other sites in and around the city. Programs are available in both Spanish and English.

First preference will be given to those students who have completed their applications and submitted a \$50 commitment fee by April 1, 1973. Further information and application forms are available from the Coordinator, UMM Summer Program in Mexico, Division of Humanities, University of Minnesota, Morris, Morris, Minnesota 56267.





*Maps and
Abbreviation Codes*

BUILDING ABBREVIATIONS

MINNEAPOLIS

East Bank

Aero, Aeronautical Engineering Building
Annex, Music Annex (321½ 14th Ave SE)
AH, Appleby Hall
Arch, Architecture Building
Armory, Armory Building

BFAB, Bierman Field Athletic Building
Bo, Botany Building
BoG, Botany Greenhouse
Bu, Burton Hall

CD, Child Development Building
CenH, Centennial Hall
CH, Cooke Hall
ChE, Chemical Engineering Building
ChRC, Children's Rehabilitation Center
ChStor, Chemical Storehouse (2812 Fairmount St SE)
CMU, Coffman Memorial Union
ComH, Comstock Hall

DiehIH, Diehl Hall

EconRes, Economics Research Building
EdH, Eddy Hall
ElectE, Electrical Engineering Building
ElIH, Elliott Hall
Ex, Experimental Engineering Building

FieldHse, University Field House
FolH, Folwell Hall
ForH, Ford Hall
FraH, Fraser Hall
FronH, Frontier Hall
FStor, Food Stores (2904 Fairmount St SE)

GenStor, General Storehouse (2901 Talmadge Ave SE)

HL, St. Anthony Falls Hydraulic Laboratory (Mississippi River at 3rd Ave SE)
HolB, Holman Building
HP, Heating Plant
HS, Health Service Building

InvW, Inventory Warehouse (2005 4th St SE)

JacH, Jackson Hall
JOAd, Jackson-Owre Addition
JohH, Johnston Hall
Jones, Jones Hall

KlaCt, Klaeber Court
KolIH, Koltoff Hall (Smith Hall Annex)

LinL, Linac Laboratory
LyonL, Lyon Laboratories

MacPhC, MacPhail Center for Performing Arts (1128 LaSalle Ave)

MainE, Main Engineering Building
MasonH, Masonic Memorial Hospital
Mayo, Mayo Memorial Building
MDH, Minnesota Department of Health
MechE, Mechanical Engineering Building
MinMet, Mines and Metallurgy Building
MirdH, Millard Hall
MMA, Mayo Memorial Auditorium
MNH, Bell Museum of Natural History
MorH, Morrill Hall
MRRC, Mineral Resources Research Center
MUHi, Marshall-University High School (1313 5th St SE)
MurH, Murphy Hall
MusEd, Music Education

NCCE, Nolte Center for Continuing Education
NGW, Norris Gymnasium for Women
NH, Nicholson Hall
NMA, Northrop Memorial Auditorium

Owre, Owre Hall

P&GA, Printing and Graphic Arts (2818 Como Ave SE)

PB, Poucher Building
PeikG, Peik Hall Gymnasium
PeikH, Peik Hall
Ph, Tate Laboratory of Physics
PIH, Pioneer Hall
PillsH, Pillsbury Hall
PoH, Powell Hall
PoIDB, Police Department Building
Pt, Pattee Hall

RampA, Parking Ramp (Washington Ave at Union St)

RampB, Parking Ramp (South of Coffman Union)

SaH, Sanford Hall
ScH, Scott Hall
SciCB, Science Classroom Building
SHAn, Shops Annex
ShH, Shevlin Hall
SmithH, Smith Hall
SpSci, Space Science Center
Stad, Stadium

TandAc, Tandem Accelerator Building (830 E River Flats)

TerH, Territorial Hall
TNM, Temporary North of Mines
TNCE, Temporary, North Court of Engineering
TSCE, Temporary, South Court of Engineering
TSF, Temporary, South of Folwell

UPress, University Press Building

VCHH, Variety Club Heart Hospital

VFWCRC, VFW Cancer Research Center
VH, Vincent Hall

WaLib, Walter Library
WeH, Wesbrook Hall
WmsA, Williams Arena
WuH, Wulling Hall

Z, Zoology Building

WEST BANK

AndH, Anderson Hall
ArtB, Art Building
AudCB, Auditorium Classroom Building

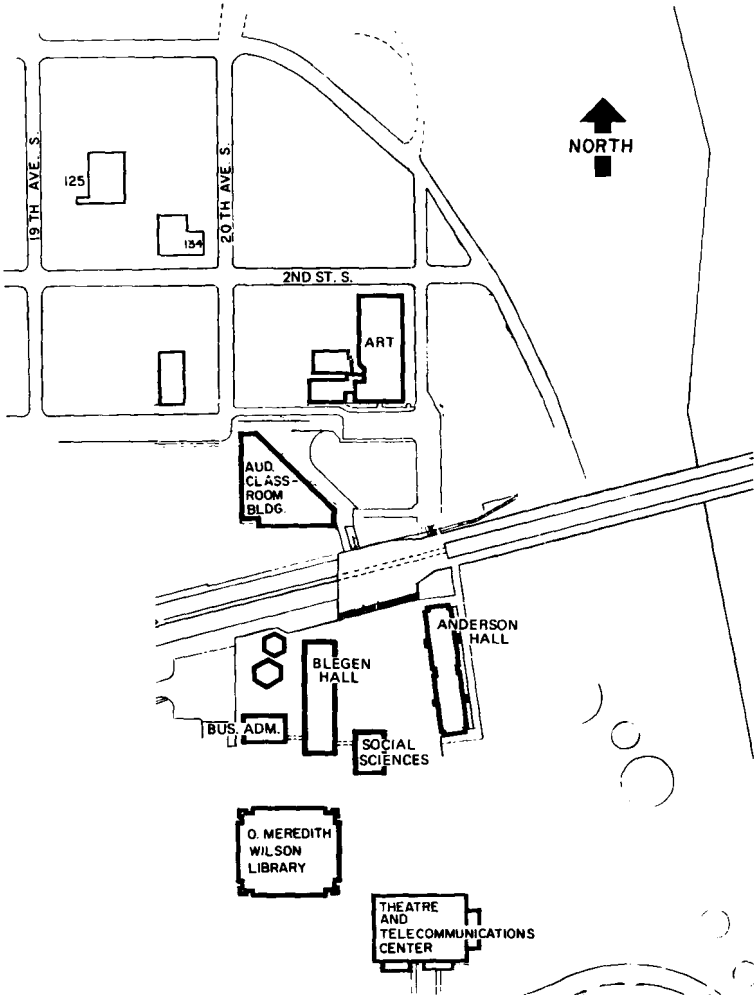
BA, Business Administration Building
BlegH, Blegen Hall
Burs, Bursar's Office

MdbH, Middlebrook Hall

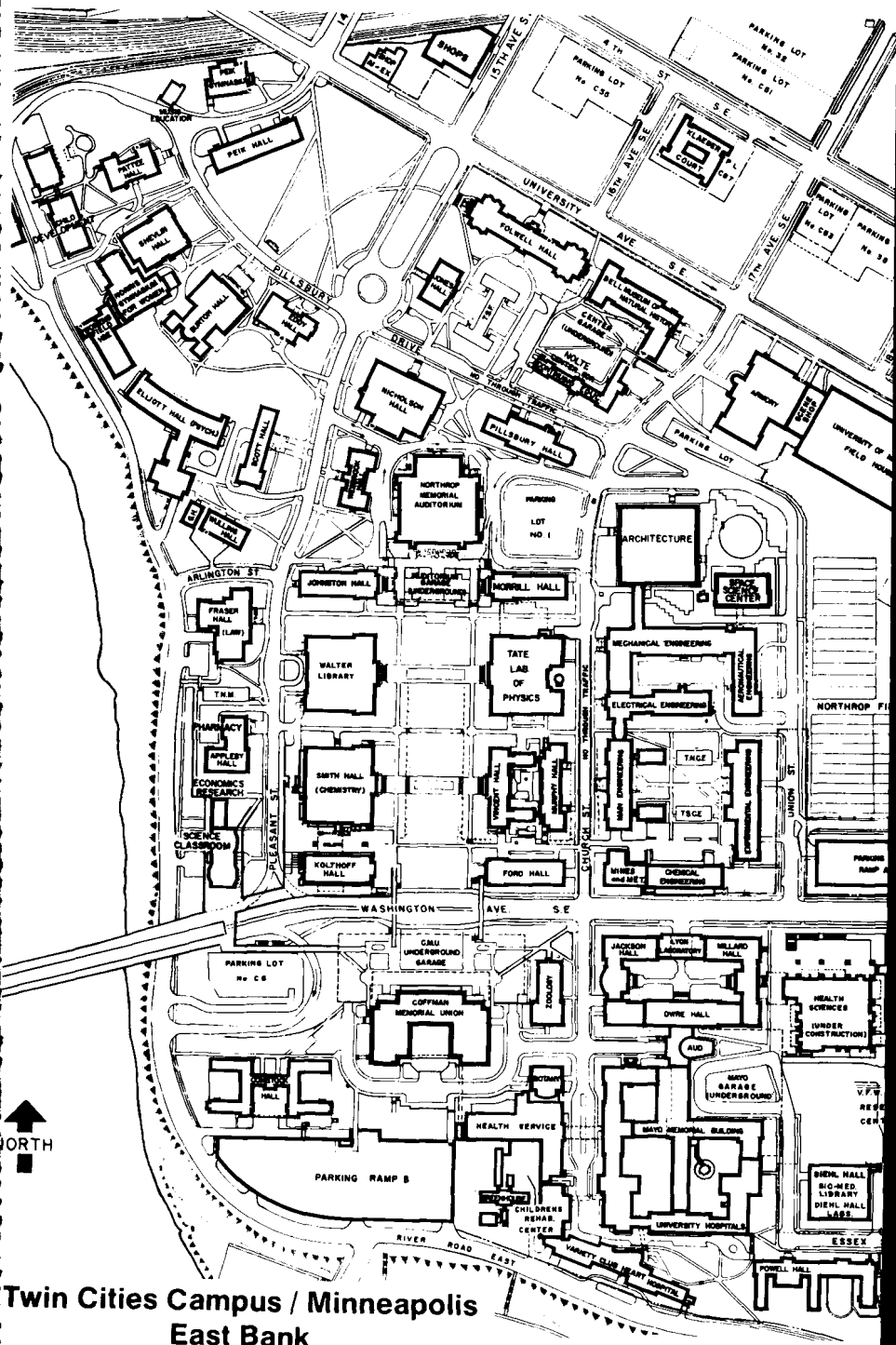
OMWL, O. Meredith Wilson Library

SBkSt, Smith Bookstore
SocSci, Social Sciences Building

T&TC, Theatre and Telecommunications
Center



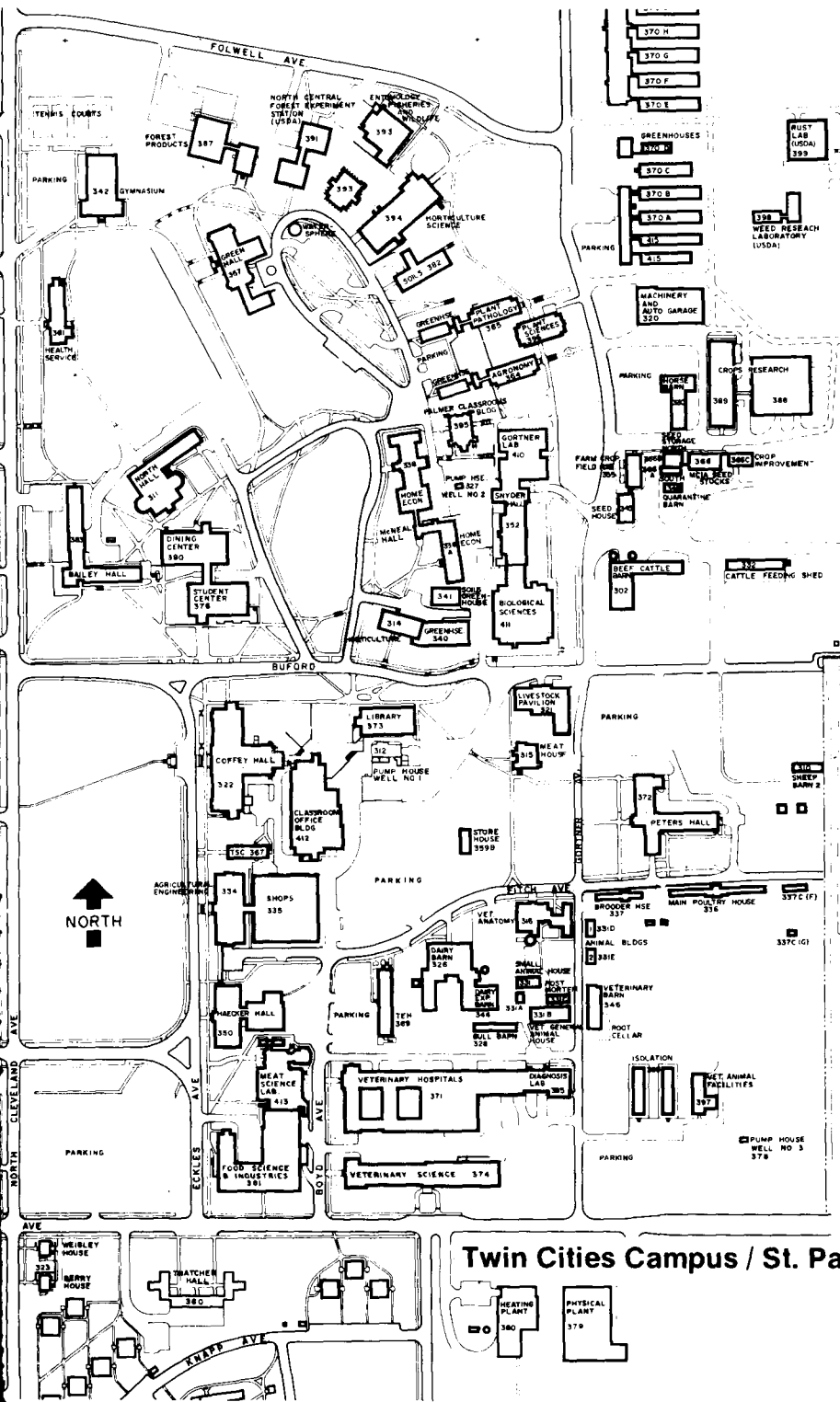
**Twin Cities Campus / Minneapolis
West Bank**



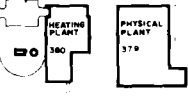
Twin Cities Campus / Minneapolis East Bank

ST. PAUL

- AdmServ, Administrative Services Building (2610 University Ave)
AgEng, Agricultural Engineering Building
AgLib, Agriculture Library
Agr, Agronomy Building
AgrSH, Agronomy Seed House
- BaH, Bailey Hall
BB, Bull Barn
BCB, Beef Cattle Barn
BeH, Berry House (1304 Cleveland Ave N)
BFH, Botany Field House
BioSci, Biological Sciences Center
- CI, Crop Improvement Building
CISS, Crop Improvement Seed Stocks Building
CofH, Coffey Hall
CrRes, Crops Research Building
CSPers, Civil Service Personnel (2651 University Ave)
- DCB, Dairy Cattle Barn
DinC, Dining Center
- EntFW, Entomology, Fisheries, and Wildlife Building
- FCFH, Farm Crops Field House
FP, Forest Products Building
FSI, Food Science and Industries Building
- GCH, Golf Clubhouse
GCSS, Golf Course Shops and Storage
GH, Green Hall
GorL, Gortner Laboratory of Biochemistry
Gym, Gymnasium
- HB, Horse Barn
HckrH, Haecker Hall
HortS, Horticultural Sciences Building (new)
HP, Heating Plant
Hr, Horticulture Building (old)
- HrG, Horticulture Greenhouse
HS, Health Service Building (StP)
- LsPav, Livestock Pavilion
- McNH, McNeal Hall
MS, Machinery Shop
MSh, Meat Shop
- NCFor, North Central Forest Experiment Station
NorH, North Hall
NWGH, Northwest Greenhouses
- PalmC, Palmer Classroom Building
PetH, Peters Hall
PG, Poultry Group
PhysPl, Physical Plant Building
PISci, Plant Sciences Building
PM, Post-Mortem
PP, Plant Pathology Building
PPFL, Plant Pathology Field Laboratory
- RustL, Rust Laboratory (USDA)
- SB, Swine Barn
ShB, Sheep Barn
SheepR, Sheep Research
SnH, Snyder Hall
So, Soils Building
StCen, Student Center
- TEH, Temporary, East of Haecker
TH, Thatcher Hall
TSC, Temporary, South of Coffey Hall
- VB, Veterinary Barn
VetA, Veterinary Anatomy Building
VetDL, Veterinary Diagnostic Laboratories
VetH, Veterinary Hospitals
VetIB, Veterinary Isolation Building
VetS, Veterinary Science Building
- WeiH, Weigley House
WRL, Weed Research Laboratory



Twin Cities Campus / St. Paul



DEPARTMENTAL ABBREVIATIONS

Following is the list of abbreviated departmental prefixes used in conjunction with course numbers:

- Acct, Accounting
AdPy, Adult Psychiatry
AEM, Aerospace Engineering and Mechanics
Afro, Afro-American Studies
AgEc, Agricultural and Applied Economics
AgEd, Agricultural Education
AgEn, Agricultural Engineering Technology
Agro, Agronomy and Plant Genetics
Akka, Akkadian
AmIn, American Indian Studies
AmSt, American Studies
Anat, Anatomy
Anes, Anesthesiology
AnSc, Animal Science
Anth, Anthropology
Arab, Arabic
Arch, Architecture
ArEd, Art Education
ArtH, Art History
ArtS, Art Studio
Ast, Astronomy
- BA, Business Administration
Ben, Bengali
BFin, Business Finance
BioC, Biochemistry (Agricultural)
Biol, Biology
BLaw, Business Law
Bot, Botany
BsEd, Business Education
- CDis, Communication Disorders
CDS, Cross-Disciplinary Studies
CE, Civil and Mineral Engineering
Chem, Chemistry
ChEn, Chemical Engineering
Chic, Chicano Studies
ChPy, Child Psychiatry
Chin, Chinese
CICS, Computer, Information, and Control Sciences
CJS, Criminal Justice Studies
Clas, Classics
CLit, Comparative Literature
CIPh, Classical Philology
Comm, Communication
CPsy, Child Psychology
CSPP, Counseling and Student Personnel Psychology
- Dan, Danish
DE, Distributive Education
Derm, Dermatology
Dsgn, Design
- EE, Electrical Engineering
EG, Engineering Graphics
Elem, Elementary Education
Engl, English
Ent, Entomology
- FBio, Forest Biology
Fin, Finnish
For, Forestry
ForP, Forest Products
FPCH, Family Practice and Community Health
FRD, Forest Resources Development
Fren, French
FS, Foreign Study
FScI, Food Science and Industries
FSoS, Family Social Science
FW, Fisheries and Wildlife
- GC, General College
GCB, Genetics and Cell Biology
Geo, Geology and Geophysics
Geog, Geography
GeoE, Geo-Engineering
Ger, German
Grk, Greek
- HE, Food Science Nutrition
Hebr, Hebrew
HED, History and Philosophy of Education
HEEd, Home Economics Education
Hist, History
HCPy, Health Care Psychology
Hlth, School Health Education
HMed, History of Medicine
Hndi, Hindi
Hort, Horticultural Science
Hum, Humanities
- ID, Interdepartment Studies
IEOR, Industrial Engineering, Operations Research
Ind, Industrial Education
Indc, Indic
InMd, Interdisciplinary Medicine
Ins, Risk Management and Insurance
IntR, International Relations
IR, Industrial Relations
IT, Institute of Technology
Ital, Italian
- Jour, Journalism and Mass Communication
Jpn, Japanese
- EBB, Ecology and Behavioral Biology
Econ, Economics
Educ, Higher Education and Teacher Education
EdAd, Educational Administration
- LA, Landscape Architecture
LAS, Latin-American Studies
Lat, Latin
Lib, Library School
Ling, Linguistics

LMed, Laboratory Medicine
 Mar, Marathi
 Math, Mathematics
 MatS, Metallurgy and Materials Science
 MdBc, Biochemistry (Medical)
 MdGk, Modern Greek
 ME, Mechanical Engineering
 Med, Medicine
 MedC, Medicinal Chemistry
 MedT, Medical Technology
 Mgmt, Management
 MicB, Microbiology
 MidE, Middle Eastern Studies
 MinE, Mining Engineering
 MIS, Management Information Systems
 Mktg, Marketing
 Mort, Mortuary Science
 MthE, Mathematics Education
 MuEd, Music Education
 Mus, Music

 Nav, Naval Science
 Neur, Neurology
 Nor, Norwegian
 NSci, Natural Science
 NSu, Neurosurgery
 Nurs, Nursing
 Nutr, Nutrition

 OAM, Operations Analysis and Management
 Obst, Obstetrics and Gynecology
 Opth, Ophthalmology
 OrSu, Orthopedic Surgery
 Otol, Otolaryngology

 PA, Public Affairs
 Path, Pathology
 PE, Physical Education
 Ped, Pediatrics
 Pers, Persian
 Phar, Clinical Pharmacy
 Phcg, Pharmacognosy
 Phcl, Pharmacology
 Phil, Philosophy
 Plsh, Polish
 Phsl, Physiology
 Phys, Physics
 Phm, Pharmaceutics
 PIPa, Plant Pathology
 PIPh, Plant Physiology
 PMed, Physical Medicine and Rehabilitation
 PO, Personal Orientation

 Pol, Political Science
 Port, Portuguese
 Psy, Psychology
 PsyF, Psychological Foundations
 PubH, Public Health (including Biometry)

 QA, Quantitative Analysis

 Rad, Radiology
 RCD, Resource and Community Development (in College of Agriculture)
 Rec, Recreation and Park Administration
 RelS, Religious Studies
 Rhet, Rhetoric
 ROTC, Reserve Officers Training Corp
 Russ, Russian

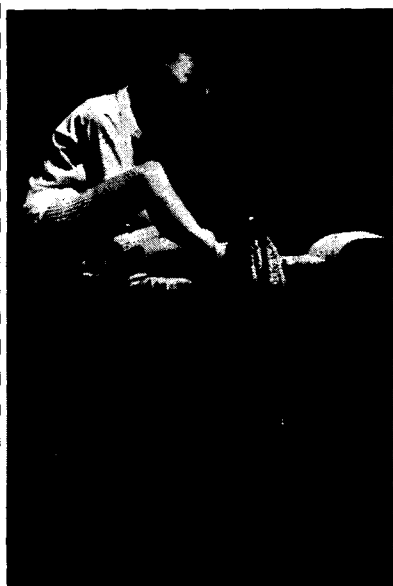
 Scan, Scandinavian
 SchP, School Psychology
 SeEd, Secondary Education
 Serb, Serbo-Croatian
 Skt, Sanskrit
 Slav, Slavic
 Soc, Sociology
 Soil, Soil Science
 Span, Spanish
 Spch, Speech-Communication
 SpEd, Special Education
 Stat, Statistics
 Surg, Surgery
 SW, Social Work
 Swed, Swedish

 TexC, Textiles and Clothing
 Th, Theatre Arts
 Tran, Transportation
 Turk, Turkish

 Urdu, Urdu
 Urol, Urology

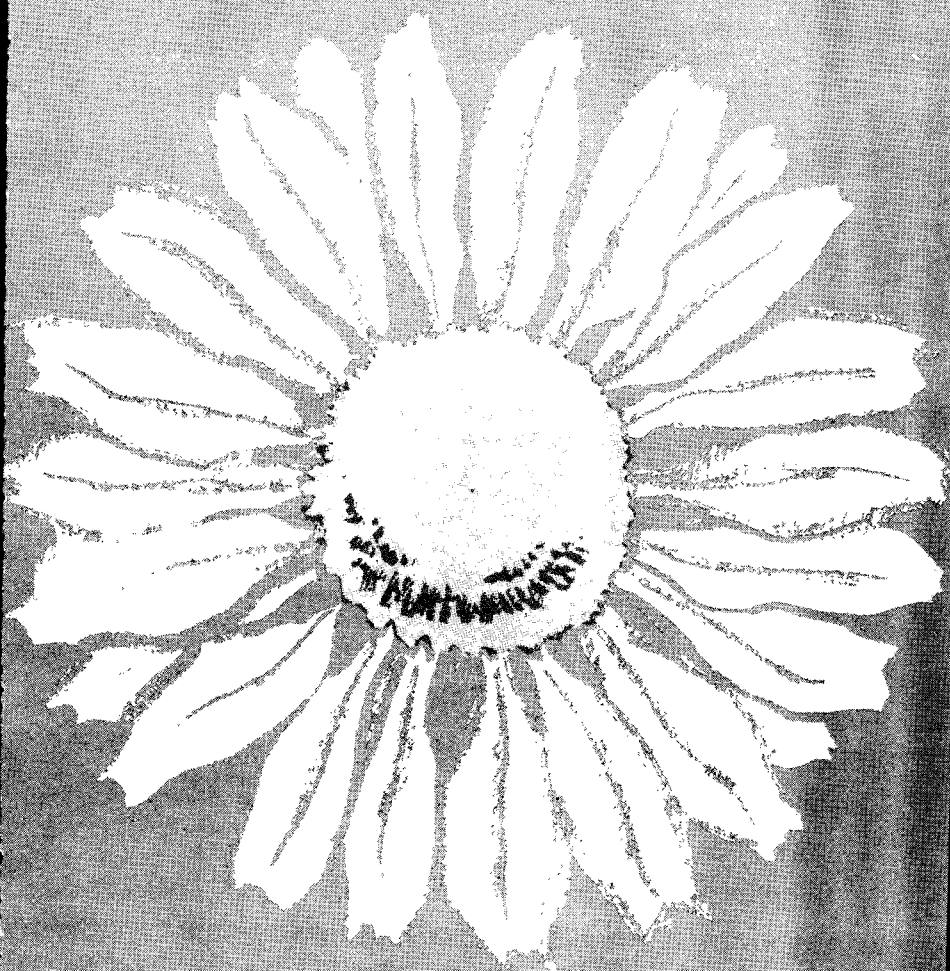
 VAna, Veterinary Anatomy
 VM, Veterinary Medicine
 VMic, Veterinary Microbiology and Public Health
 VObs, Veterinary Obstetrics
 VPaP, Veterinary Pathology and Parasitology
 VPP, Veterinary Physiology and Pharmacology
 VSR, Veterinary Surgery and Radiology

 Zool, Zoology









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INSTRUCTIONS

Who should file a Statement of Intent to Register?

- Students with previous college work who do not plan to obtain a degree from the University of Minnesota and who are not in a dropped status from their previous college (see page 10).
- Persons 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 (see page 10).
- High School graduates under 24 years of age without previous college work (must have approval of Office of Admissions and Records (see page 12).

Who should not file a Statement of Intent to Register?

- Students who expect to obtain a degree from the University of Minnesota. This includes degree candidates in the undergraduate colleges (see page 9) and all students admitted to the Graduate School (see pages 11-12).

- Students in attendance on the Twin Cities Campus during Spring Quarter 1973.

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, 6 Morrill Hall.

If you are in doubt about your status, contact the Admissions Office, Room 6, Morrill Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Fill in form completely (please print) except for boxes in bold outline. Incomplete forms will not be processed. Do not send in more than one form. **DO NOT USE NICKNAMES.**

Do not use this form to request other information.

Filing of this Statement of Intent to Register does not imply any obligation on the part of the student.

Return the form to Office of Admissions and Records, 105 Morrill Hall, University of Minnesota, Minneapolis, Minnesota 55455. If you plan to register during the advance registration period, the Intent to Register **must** be received by May 1. If you plan to register on June 18, the Intent to Register **must** be received by May 18. Failure to submit an Intent to Register or failure to receive a Confirmation of Intent to Register does not prevent qualified students from registering. Additional copies of this form may be obtained upon request.

No registrations accepted by mail.

**DO NOT FILE INTENT CARD IF YOU ARE ATTENDING
SECOND SUMMER TERM ONLY**

Appl. No.	STATEMENT OF INTENT TO REGISTER	FILE NO.
	SUMMER 1973	A-82

Name ↓ LAST	FIRST	MAIDEN	MIDDLE
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Current Address ↓ STREET	CITY
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COUNTY	STATE	ZIP	S	C	Date of Birth	MO	DAY	YEAR
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High School or attended: College	NAME	CITY	STATE
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Plan on	1	Minnesota Resident	1	Sex: Male	_____
Summer Term	2	Non-Resident	2	Sex: Female	_____

NA	PR	Have you ever been registered in University of Minnesota day classes, including summer?	Yes _____	No _____	When _____	Last College _____
2	3					(Inc. Duluth, St. Paul, Morris, Crookston)

College of the U of M in which you plan to register _____	
Do you expect to earn a degree in the University of Minnesota? Yes _____	No _____
If yes Where _____	College _____
Are you in a "dropped" status from any college? Yes _____	If yes Where _____
No _____	When _____
Are you eligible to return to last college attended? Yes _____	U.S. Social Security No. _____
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