



Lake Itasca

Field Biology
Program
Bulletin

1993

UNIVERSITY OF MINNESOTA

Summer Session

Itasca State Park...where the Mississippi River begins

UNIVERSITY OF MINNESOTA

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Some student information—name, address, electronic (E-mail) address, telephone number, dates of enrollment and enrollment status (full-time, part-time, not enrolled, withdrawn and date of withdrawal), major, adviser, college and class, academic awards and honors received, and in the event of your graduation the degree received—are matters of public record or directory information. University officials and department may provide this information in answer to inquires without requiring authorization from you. You may prevent release of public information outside the University only during your terms of enrollment. To do so, you must notify the records office on your campus.

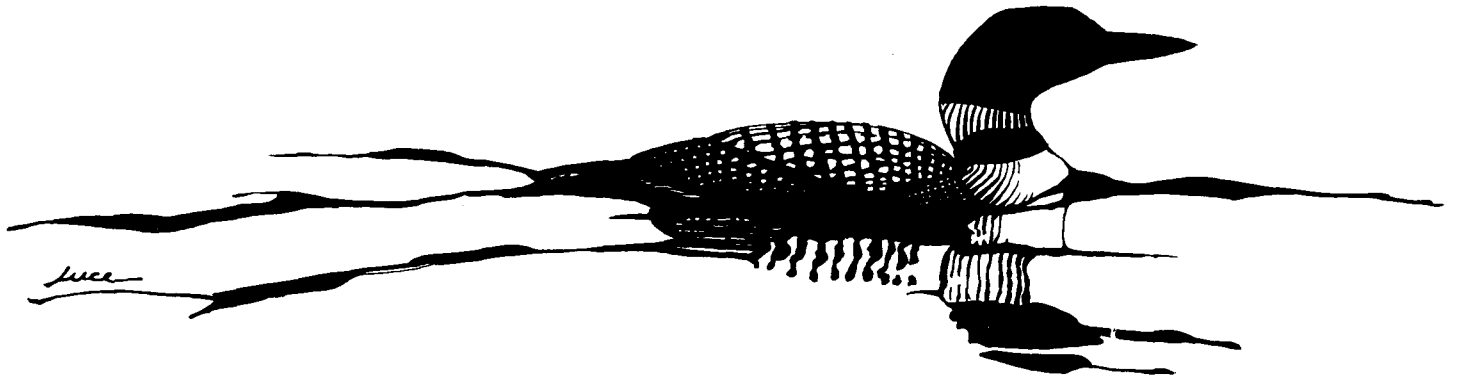
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Postal Statement

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Lake Itasca Biology Program

FIRST TERM

JUNE 15-JULY 20, 1993

SECOND TERM

JULY 22-AUGUST 25, 1993

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RESEARCH AND ACADEMIC OPPORTUNITIES

The Itasca Habitats

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

Itasca Park—an ecological area of national renown—embraces 50 square miles of protected forests traversed by a fine system of roads and trails. Within this area are located many lakes of different types, providing unusual field opportunities for work in limnology, phycology, aquatic insects, fungi, and in related subjects. 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 more than a half century, and many have never been cut. Here truly, is an excellent array of virgin timber stands and communities developing into climax types.

Forty miles to the west, a dramatic 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.

This meeting of the three great plant regions of the eastern United States provides opportunities for study not only of varied ecosystems but also of a singular range of fauna and flora with southern, northern, and western origins. Opportunities to observe birds 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 behavioral and ecological problems for study. Fish and other aquatic life are plentiful and provide an excellent source for special studies.

Course work and research

Undergraduate students will benefit from study of biological systems in this unique ecological laboratory where species and processes are observed in their natural setting. The exposure to the variety of habitats and ecosystems available at Itasca, the opportunity to take courses and to study under the direction of senior faculty of the University of Minnesota and visiting faculty from other universities, and the opportunity to interact with undergraduate peers and with graduate students and researchers adds to the learning experience.

Graduate students at all stages of study find in the Itasca field biology station a unique and protected environment able to provide the basic materials for study and research. The variety of courses available in both terms allows the student to choose an entire summer of intensive work in a particular field of interest or to select a course from one of the two terms of summer study. Graduate students who elect to devote themselves to research problems will find well-equipped and maintained laboratories.

Teachers and professional biologists can pursue advanced study or can use summer field study as a time for professional renewal and enhancement. Short courses allow for flexibility and in-depth study of a specialized topic at Itasca.

Independent investigators may pursue research in various fields of terrestrial and freshwater biology during any season. To initiate research projects and to use the excellent laboratories, an application must be made to the Resident Biologist.

Instructional facilities

Twelve well-equipped laboratories are located in six buildings. Much of the instruction takes place in the field, where many varied habitats are within walking distance of the station.

A fine herbarium of the region and collections of insects, birds, small mammals, algae, and fish are available for study. Four complete sets of aerial photos of the park, made in 1938, 1951, 1959, and 1966, are maintained at the station along with stereoscopic equipment.

A freshwater algal culture collection consisting of about 60 species found within Itasca State Park is available for students and researchers.

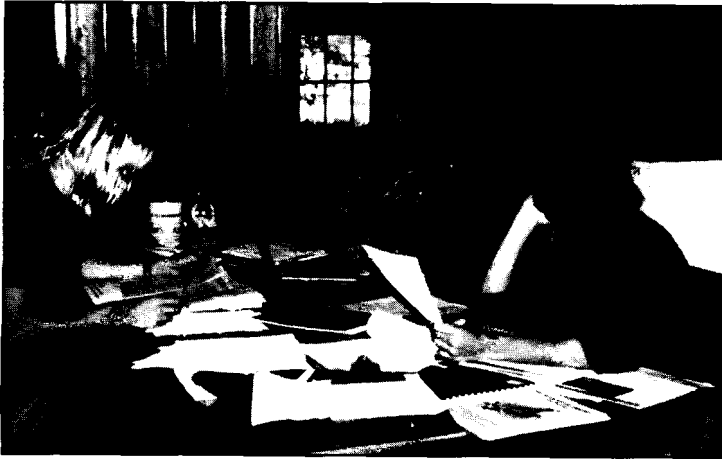
The station equipment includes necessary compound and dissecting microscopes, collecting apparatus, various types of nets, boats, and other accessories for instruction and research.

The library is stocked with important journals and books basic to field work, and offers ample room for study. Other journals and books are available from the University Libraries.

Advanced students and research workers needing laboratory space and special equipment should make prior arrangements with the Resident Biologist, University of Minnesota Forestry and Biological Station, HCO5, Box 6, Lake Itasca, MN 56460. An application to conduct research on the station and a research permit must be completed and research fees paid before initiating research projects.

A branch of the University Bookstores is maintained at the station to make books and student supplies readily available. All texts should be purchased at Itasca.





ADMISSION AND REGISTRATION

Admission

Courses are open to all qualified graduate and undergraduate students and to others with continuing education objectives. The general rules for admission of graduate and undergraduates to the summer session apply to the Itasca Biology Program. Please read the admission and registration instructions on this page and pages 5 and 6.

Visiting (summer-only) students—

Students with previous college work who wish to attend only the summer session may do so without filing an application for admission to the University, provided they are in good standing and are not degree candidates.

Graduate Students—Any student who holds a bachelor's degree and plans to use credits earned in summer session toward a graduate degree or expects to receive graduate credit for such work should apply for admission directly to the Graduate School. The application must be submitted complete in every detail—one official transcript from each college attended, the application fee (if required), and any required test results—at least four weeks prior to the opening of the summer term in which the student expects to register.

A student currently enrolled in a graduate program at another accredited college or university in the United States may request permission to register in the Graduate School of the University of Minnesota as a transient graduate student by completing Graduate School form 57. No application fee or supporting materials are required for the transient student form. Permission to register as a transient student will be granted, to the applicant who qualifies, for one summer session (terms I and/or II) or one academic-year quarter, and will not extend beyond that single session or quarter.

Requests for Graduate School application forms, including transient student forms, and all correspondence related to Graduate School admission should be directed to the Graduate School, University of Minnesota, 307 Johnston Hall, 101 Pleasant Street S.E., Minneapolis, MN 55455.

Scholarships and research stipends

Both scholarship awards and graduate student research stipends are available for qualified students in the summer, as follows:

Scholarships

Alexander P. Anderson and Lydia Anderson Fellowships, at \$350 each, are available only to persons holding a degree from the University of Minnesota. For information and applications write to the Graduate School Fellowship Office, University of Minnesota, 422 Johnston Hall, Minneapolis, MN 55455.

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, 307 Johnston Hall, Minneapolis, MN 55455.

Itasca Director's Scholarship, at \$350, has been established by the Biological Sciences Alumni Society (BSAS) to be made available to an outstanding undergraduate student from the University of Minnesota, Twin Cities campus, registering and fulfilling coursework at Itasca.

Inquiries should be directed to Professor Donald B. Siniff, program director, Itasca Biology Program, University of Minnesota,

100 Ecology Building, 1987 Upper Buford Circle, St. Paul, MN 55108. Inquiries should be made as early as possible: the deadline for application is April 15.

Research stipends

A number of research stipends of several hundred dollars each are available for graduate students or qualified persons other than faculty members. Almost any scientific study relating to field biology is considered, provided that the research is carried out at the Lake Itasca Forestry and Biological Station. Expenditures may include transportation costs, supplies, and other research costs, but not salaries for assistants.

Applications are judged competitively on the basis of the scientific merit of proposals and the individual's qualifications. Applicants from within and outside the University are given equal consideration. Applications, including documentation of academic background and training, a description of proposed research, a realistic budget projection, and a supporting letter (preferably from the student's adviser), should be sent directly to Professor Donald B. Siniff, program director, Itasca Biology Program, University of Minnesota, 100 Ecology Building, 1987 Upper Buford Circle, St. Paul, MN 55108. The deadline for application is April 15.

Student loan information

Students who are enrolled in a University of Minnesota degree or certificate program during the academic year may be eligible for financial aid to help pay for the costs of their Itasca sessions. The necessary forms may be obtained from the Office of Student Financial Aid in 210 Fraser Hall on the Minneapolis campus, or 172 Coffey Hall in St. Paul. Visiting students who are regularly enrolled in other institutions should arrange for student loans through their home institutions.

Employment opportunities

A limited number of jobs (library, office, shops, etc.) are available to students on a competitive basis. Students must carry at least 6 credits to be eligible for employment. Interested persons should request an application form from Professor Donald B. Siniff, program director, Itasca Biology

Program, University of Minnesota, 100 Ecology Building, 1987 Upper Buford Circle, St. Paul, MN 55108. Only University of Minnesota students may apply for graduate teaching assistant positions and College Work-Study Program jobs. Employment in area resorts and in the Park is sometimes available.

Registration

Registration for a course taught at the Itasca Station is a two-step process. First you register for a course; second you complete your registration by paying your tuition and fees. Since both housing facilities and class sizes are limited, early application is recommended. Although you can register at the Itasca Station on Monday, June 14, for the first term, and Wednesday, July 21, for the second term, a place in the class or in housing cannot be guaranteed. It is best to register before arriving at the station.

Step 1. Complete the registration form on page 23 and send it to the Itasca Biology Program, University of Minnesota, 100 Ecology Building, 1987 Upper Buford Circle, St. Paul, MN 55108, or deliver it personally to the office. Students may register for 3-10 credits per term. Mail registration must be received by June 11, 1993 for Term I. After June 11, mail registration for Term II should be sent to the Itasca Biology Program, Lake Itasca Forestry and Biological Station, HCO5, Box 6, Lake Itasca, MN 56460, in order to insure registration before classes begin. In person registration will be held at Itasca on June 14 and July 21 (see above).



Step 2. A fee statement will be mailed to registered students showing the classes in which they are enrolled. Tuition and fees can be mailed to, or paid in person, at the Bursar's office in 145 Williamson Hall, or paid in person at the Cashier's office in 107 Coffey Hall.

Registration at Itasca

Scheduled times for registration are as follows:

Term I-June 14

9:00-11:30 a.m.

1:30-4:00 p.m.

Term II-July 21

9:00-11:30 a.m.

1:30-4:00 p.m.

It is important that all students be at the station on June 14 (Term I) and July 21 (Term II) for a general meeting at 8 p.m. in the Assembly Hall (building 53).

Changes in registration and cancellations

Changes in registration must be approved by the program director and are strongly discouraged after registration day. Because late cancellations often create vacancies in classes that someone else wants, students who know they are going to cancel should notify the program director by May 24. Students who want to cancel after the session has begun must receive permission from their instructor.

TUITION, FEES, AND OTHER COSTS

Tuition. Tuition and all fees are payable by the due date indicated on the fee statement. An additional charge is assessed for both late registration and late payment. Tuition is assessed on a per-credit basis relating to the student's status during the summer.

Visiting, summer-only, non-degree seeking, or adult special students will be charged tuition at the per-credit rate of \$77.00, regardless of resident status. Academic year students registered at the University during the previous year and with resident status will be charged a per-credit rate of \$72.00. Non-resident students enrolled in a degree program at the University of Minnesota will be charged a per-credit rate of \$212.50.

Graduate Students registering through the Graduate School pay Itasca Biology Program tuition at the rate of \$163.50 per credit for residents and \$327.00 per credit for non-residents.

Student Services and Lab Fee. All students pay a lab fee of \$10 per term, and those who take three or more credits pay a student services fee of \$32.70 per term.

Room and Board. There is a service charge of \$70 per week for room and board. This fee is payable at Itasca at the beginning of each term.

Transportation Costs. University vehicles are available for class field trips. Students using them are charged a fee to cover actual costs. Costs usually range from less than \$1 to \$30. Most courses use University vehicles for long or frequent field trips.

Tuition, fees, and other costs are subject to final approval by the Board of Regents and may change without notice.

MAP LEGEND

- High Type
- All Weather
- Intermediate Type
- Maintained Gravel Road
- Not Maintained
- Dirt Road
- Foot Trail
- Trail Number
- All Weather Gravel Road

TRAILS

SELF GUIDING NATURE TRAILS

No. Trail Name Length M. Location

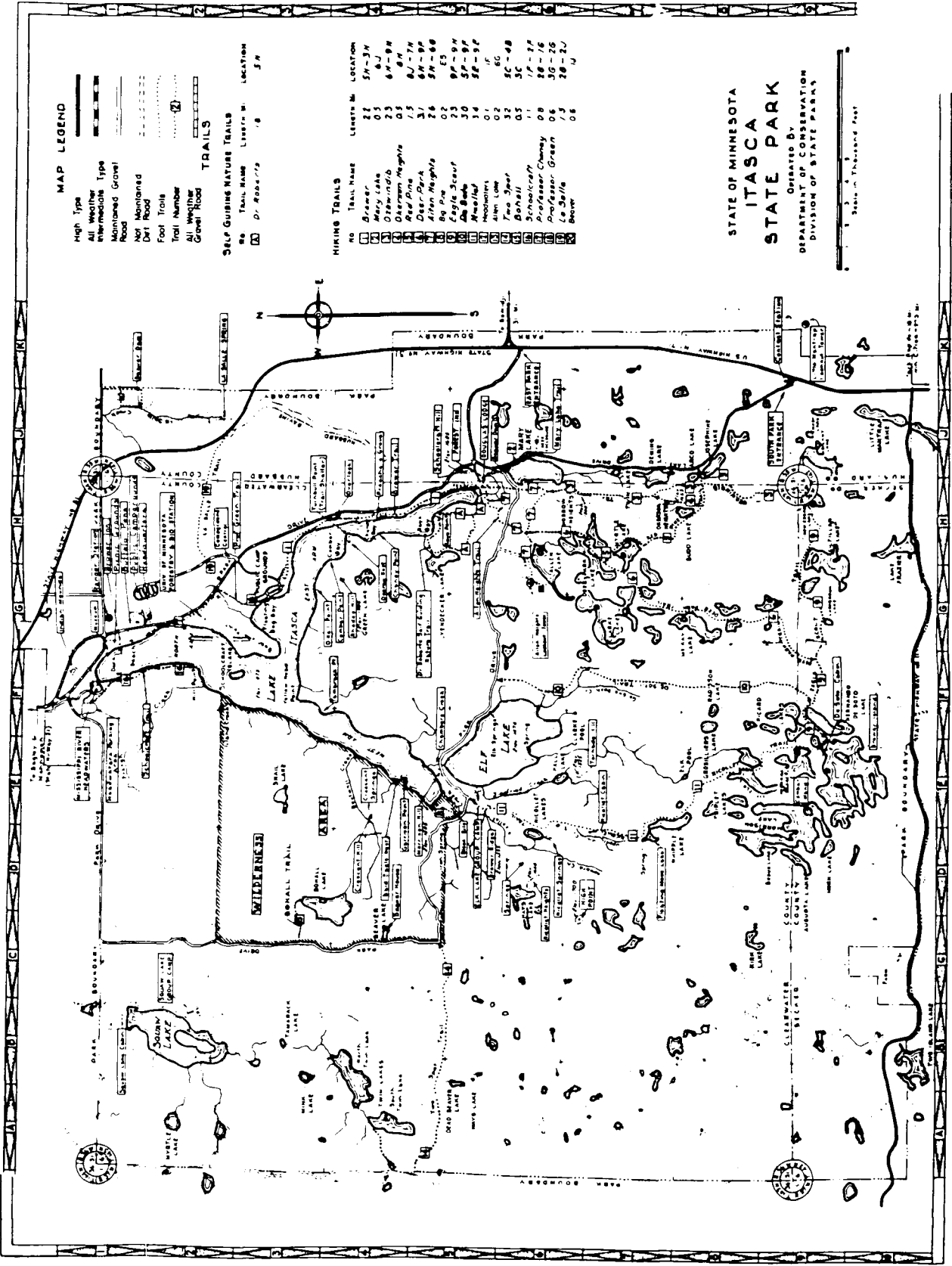
1 Dr. Roberts 1.8 37

HIKING TRAILS

No.	Trail Name	Length M.	Location
22	Brainer	22	57-24
23	Mary Lake	0.5	61
24	Olemy Lake	0.5	61
25	Olemy Lake	0.5	61
26	Red Pine	1.5	64-74
27	Red Pine	1.5	64-74
28	Deer Park	3.1	64-74
29	Deer Park	3.1	64-74
30	Allen Heights	2.6	54-64
31	Allen Heights	2.6	54-64
32	By the	0.2	63
33	Eagle Scout	2.3	94-94
34	Abraham	3.0	54-54
35	Abraham	3.0	54-54
36	Abraham	3.0	54-54
37	Abraham	3.0	54-54
38	Abraham	3.0	54-54
39	Abraham	3.0	54-54
40	Abraham	3.0	54-54
41	Abraham	3.0	54-54
42	Abraham	3.0	54-54
43	Abraham	3.0	54-54
44	Abraham	3.0	54-54
45	Abraham	3.0	54-54
46	Abraham	3.0	54-54
47	Abraham	3.0	54-54
48	Abraham	3.0	54-54
49	Abraham	3.0	54-54
50	Abraham	3.0	54-54
51	Abraham	3.0	54-54
52	Abraham	3.0	54-54
53	Abraham	3.0	54-54
54	Abraham	3.0	54-54
55	Abraham	3.0	54-54
56	Abraham	3.0	54-54
57	Abraham	3.0	54-54
58	Abraham	3.0	54-54
59	Abraham	3.0	54-54
60	Abraham	3.0	54-54

STATE OF MINNESOTA
ITASCA STATE PARK

OPERATED BY
 DEPARTMENT OF CONSERVATION
 DIVISION OF STATE PARKS



LIVING ARRANGEMENTS

Transportation

Students depending on public transportation to travel to the Itasca station may take a bus to Bemidji; Northwest Airlines offers daily service between the Twin Cities and Bemidji. Students are met upon arrival if they make *prior arrangements* with the program director. Before June 11 you may telephone or write the Itasca Program office. After June 11 you may telephone the Itasca office (218) 266-3302 or write to the University of Minnesota Forestry and Biological Station, HCO5, Box 6, Lake Itasca, MN 56460. State Highway 200 and U.S. Highway 71 provide easy access by car into the park.

Cabins

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

these groups of cabins. Camping space is very limited at the station. However, early applicants will be given priority if space becomes available.

Family accommodations

Students who wish to bring their spouses and children may find accommodations off campus in one of the many resorts in the vicinity. A list of addresses of these facilities is furnished upon request.



Accommodations for visitors

There are very limited facilities for guests on the station; these facilities may be reserved in advance at the Itasca office. It is also possible that you may have to make arrangements for guests at a local resort. Meals for your guests can be arranged in advance at the Itasca office. Please inform your guests of park regulations.

Meals

The dining hall is managed by University Food Services. Meals are served in an attractive dining hall located on the lakeshore. Important: All persons housed in student cabins must use the dining hall facility.

Personal needs

Students must provide their own bed linen, towels, and blankets. Essential personal equipment includes serviceable clothing (sweaters, sweatshirts, and shoes or boots for fieldwork), a warm jacket, rain gear, a swimming suit, a flashlight, notebooks, pocket field manuals, and a calculator.

Books

A branch of the University Bookstores is maintained at the station to make books and student supplies available. All texts should be purchased at Itasca.

Health Service

Medications for *minor problems* (e.g., colds) are kept in the Itasca Program office. For more severe illnesses, you will be taken to Park Rapids for emergency service. Park Rapids outpatient emergency charges that are not collectible from your insurance (excluding take-home drugs and supplies) will be paid by your health service fee up to a maximum of \$100 per visit. If you are taking fewer than three credits and elected not to pay the health service fee, all medical services are your responsibility. In addition, everyone living at the station is required to have hospitalization insurance whether obtained through or outside the University. (See information about University-sponsored hospital insurance on page 23.)

Mail

Mail for students should be addressed to:
University of Minnesota Forestry and
Biological Station, HCO5, Box 6, Lake
Itasca, MN 56460.

Recreation

Recreational opportunities in the park, such as swimming, fishing, canoeing, biking and hiking, are excellent. Volleyball, softball, soccer, and horseshoe equipment is available at the station. Evening social events may be planned by the students. Weekly evening lectures by staff members or visiting scientists are scheduled.

Guidelines

Campus regulations are kept at a minimum. Students are expected to keep their own quarters clean and orderly. Students may bring their own cars, but garages and repair services are not provided. Weekend absences and extended field trips should be reported in advance.

Domestic pets are not allowed at the station.

Off campus and within park boundaries Minnesota State Park regulations govern. The state park entry sticker (\$18 for both Minnesota residents and nonresidents) must be purchased for private cars at the park entrance.



COURSE OFFERINGS FOR 1993

TERM I • TUESDAY, JUNE 15-TUESDAY, JULY 20

All classes meet from 8:00 a.m. to 5:00 p.m.

Biol 1806. General Zoology, June 15-July 20, Tuesday/Friday

(591970) 5 cr; limited to 20 students; prereq general biology; Megard
Survey of animal phyla: structure, function, behavior, adaptation, and evolutionary relationships.

Biol 5816. Field Biology Photography, June 15-July 20, Wednesday/Saturday

(085431) 3 cr; limited to 20 students; prereq course in beginning biology, department permission; A-F only; Rubbelke

Field photography techniques for documentation of insects, vertebrates, aquatic organisms, and habitats of the Itasca area. Emphasis on general photographic principles and applied advanced techniques using flash, reversed lenses, and infra-red photoelectric tripping devices. On-site processing of color slides and black and white films. No previous processing experience required. Students will be charged for the darkroom supplies that they use, which often amount to \$75.

Biol 5850. Special Topics in Biology.

Sec 1, Measurements of Plant Environments, July 1-19, Monday/Thursday

(186335) 3 cr; limited to 20 students; prereq course in ecology, department permission; A/F only; Forseth

A field course designed to introduce students to techniques for the measurement of plant microclimate, leaf radiant energy balance, water relations, and photosynthetic gas exchange. Emphasis will be on plant response to the environment in the field, with special attention devoted to plant physiological and ecological responses to currently projected global climate changes caused by human activity (i.e., increasing atmospheric CO₂ concentration, changes in ambient temperature, and increased periods of water stress).

Biol 5890. Research Problems at Itasca.

(885303) cr ar; prereq permission of instructor and department; staff
Undergraduate and graduate students develop a short-term research project in most of the departments offering courses at Itasca during Term I and Term II.

EEB 5834. Field Ornithology, June 15-July 20, Monday/Thursday

(189373) 5 cr; limited to 15 students; prereq course in general biology including study of zoology, department permission; Kaufmann

Emphasis on the breeding season, biology, and behavioral ecology of birds in the Itasca Park region. Field trips to a variety of habitats to learn bird identification and to observe and practice techniques for conducting field studies. Laboratory sessions investigate family distinctions and species identification. Individual field projects. Classes often begin at 5:00 a.m. with a break during the day.

EEB 5839. Field Studies in Mammalogy, June 15-July 20, Tuesday/Friday

(091973) 5 cr; limited to 20 students, prereq college level course in biology which includes study of animals, or instructor permission, department permission; A/F only; Christian
A field course emphasizing techniques in study of small mammals. Lectures and field projects will emphasize identification distributions, community interactions, ecophysiology, and population ecology.

Ent 5920. Special Lectures in Entomology—Aquatic Insects, June 15-July 3, Wednesday/Saturday

(891506) 3 cr, limited to 20 students, prereq introductory biology; Holzenthal
Taxonomy and natural history of aquatic insects of the Lake Itasca area, including their importance in aquatic ecology, water resource management, recreation, and conservation. Morning lectures are followed by afternoon field trips to standing and running water habitats in

Lake Itasca State Park. Emphasis is on field methods and family-level identification. An insect collection is required.

NSc 5100. Introductory Neurobiology Laboratory at Itasca, June 15-July 2

(089219) 5 cr; limited to 10-12 students; prereq advanced undergraduate (junior or senior) in biological or physical sciences; introductory biology and chemistry, instructor permission; A/F only; Dr. Richard Poppele, Director, and Neuroscience faculty.

This course is designed for biological or physical sciences undergraduate students with an interest in the neurosciences. A major objective of the course is to provide an introduction to concepts in cellular neurosciences in a laboratory environment. Emphasis will be placed on understanding the basis of membrane properties, including ionic and molecular mechanisms of resting potentials, action potentials, and synaptic potentials. Students will work with state-of-the-art equipment and contemporary techniques to examine the experimental evidence for these concepts. This is a three-week, full time, intensive course. Financial aid will be available.

PBio 5801. Plains and Boreal Flora, June 15-July 20, Wednesday/Saturday

(390903) 5 cr; limited to 20 students; prereq course in taxonomy, departmental permission; Vanderpool

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.

PIPa 5102. Ecology of Fungi, July 1-19, Monday/Thursday

(690275) 3 cr; prereq 5 credits botany or permission of the instructor; A/F only; Menge
Emphasis on ecological studies and identification of fungi. Lectures include topics on fungal symbioses, morphology, coevolution, and applicable ecological theory. Student teams will determine species richness in an aquatic, grassland, and forest habitat.

TERM II• THURSDAY, JULY 22-WEDNESDAY, AUGUST 25

Biol 3812. Plant Biology, July 22-August 25, Tuesday/Friday

(289789) 5 cr; limited to 20 students; prereq general courses in biology and chemistry; Biesboer
Plant diversity and evolution; structure and function of the plant cell and of the whole organism; growth and development of plants. This course satisfies the plant biology requirement for University of Minnesota majors.

Biol 5841. Ecology, July 22-August 25, Monday/Thursday

(288609) 5 cr; limited to 20 students; prereq course in calculus, course in plant biology and/or animal biology, department permission; A/F only; Siniff, and staff

Growth, structure, and evolution of populations. Pairwise biotic interactions between species and their effect on the diversity and structure of natural communities. Nutrient dynamics, function, productivity, and temporal stability of ecosystems.

Biol 5850. Special Topics in Biology

Sec 2, Behavior/Telemetry, July 22-August 11, Wednesday/Saturday

(491962) 3 cr; limited to 20 students, prereq department permission; A/F only; Siniff/Tester, and staff

Use of radio-telemetry to study animal behavior, especially movements and the use of space. Basic features of radiotransmission, transmitters, and receivers relevant to bio-telemetry; safe and humane methods for capture and immobilization of animals for radio-tagging; techniques for attachment of transmitters, locating radio-tagged animals; use of maps and positioning systems, processing data from radio-fixes; telemetry of further behavioral and physiological information.

Sec 3, Ecology of Amphibians and Reptiles, July 22-August 11, Wednesday/Saturday
(291963) 3 cr; limited to 20 students; A/F only; Lang

The life histories of the various species of amphibians and reptiles in the Itasca area will be studied. The close proximity of three major biomes to the Itasca station allows for field trips to consider ecological and morphological differences among closely related species. Study of such differences will provide the major focus of this course.

Sec 4, Landscape Ecology, July 22-August 25, Monday/Thursday

(992002) 5 cr; limited to 20 students; A/F only; Glenn

This course considers some of the general principles of this emerging field, such as landscape structure and function, biotic diversity, landscape stability and change, with reference to the habitats in the Itasca area. Relationship of these principles to management problems will be considered. Research projects will be carried out as class exercises and GIS computer programs will be used to aid research when appropriate.

Biol 5890. Research Problems at Itasca.

(485367) See Term I.

EEB 5817. Vertebrate Ecology, July 22-August 25, Tuesday/Friday.

(089379) 5 cr; limited to 15 students; prereq course in ecology, departmental permission; Tester
Field studies on vertebrate populations and their relationships to local environments; habitat analysis and ecological research methods. Students working individually or in teams investigate behavioral and ecological aspects of selected vertebrates. This is a research-oriented course supplemented with lectures and field trips.

EEB 5852. Ecological Genetics, July 22-August 25, Monday/Thursday

(891974) 5 cr; limited to 15 students, prereq college level course in general biology or genetics or instructor permission; A/F only; Staff

Introduction to basic population and quantitative genetics; variation in natural populations; electrophoretic analysis of field samples; reconstructing phylogeny; genetic studies of population structure, and introduction to mitochondrial DNA analysis.

NSc 5550. Itasca Cell and Molecular Neurobiology Laboratory, July 26-August 27.

(185565) 6 cr; limited to 10-12 students; prereq enrolled in Neuroscience Graduate Program or consent of Neuroscience Program; S/N only; hrs ar; team taught by Dr. Richard Poppele and Neuroscience faculty

Intensive laboratory course introducing cellular and molecular research techniques and topics in contemporary neuroscience. Topics covered include electrophysiological studies of neuronal properties, neuropharmacological assays of transmitter action, and immunohistochemical identification of transmitters. Concepts and techniques studied in the context of a number of preparations including the neuromuscular junction, *in vitro* invertebrate nervous system, the hippocampal slice, retina, and the nervous system of the gut. Course is designed for entering or first year graduate students in the neurosciences or closely related fields.

Condensed schedule of courses

TERM I					
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Ornithology Ecol of Fungi Plant Env	Mammalogy Zoology	Photography Plains & Boreal Aquatic Ent	Ornithology Ecol of Fungi Plant Env	Mammalogy Zoology	Photography Plains & Boreal Aquatic Ent
Biol 5890 (arranged) NSc 5100 (arranged)					
TERM II					
MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Landscape Ecol Ecol Genetics Ecology	Plant Biol Vert Ecol	Telemetry Amph & Rep	Landscape Ecol Ecol Genetics Ecology	Plant Biol Vert Ecol	Telemetry Amph & Rep
Biol 5890 (arranged) NSc 5550 (arranged)					

ITASCA BIOLOGY PROGRAM FACULTY

David D. Biesboer, Associate Professor, University of Minnesota, has research interests in the area of anatomy and physiology of angiosperms with an emphasis on secondary metabolism in plant tissue cultures, and in the biology and control of the noxious weed, leafy spurge. (Biol 3812)

Donald P. Christian, Professor, University of Minnesota, Duluth, is interested in population of biology and environmental physiology of mammals. His research activities have emphasized laboratory and field studies of the physiology and ecology of water metabolism in desert mammals and mineral balance in herbivore mammals. (EEB 5839)

Irwin Forseth, Associate Professor, University of Maryland, has research interests in plant physiological ecology, with an emphasis on plant water relations, photosynthetic response to the environment and leaf radiant energy balance. Current research is centered on an understanding of the physiological mechanisms and ecological ramifications of heliotropic leaf movements. (Biol 5850)

Susan M. Glenn, Oklahoma Natural Heritage Inventory, University of Oklahoma, has research interests that include spatial and temporal variation in plant communities and conservation biology of plant and animal assemblages. Her current assignment with the National Park Service involves developing protocols for biological inventory and monitoring on park lands. (Biol 5850)

Ralph W. Holzenthal, Associate Professor, University of Minnesota, is interested in the taxonomy and systematics of Trichoptera. He is currently working on the systematics of the caddisflies of Costa Rica. (Ent 5920)

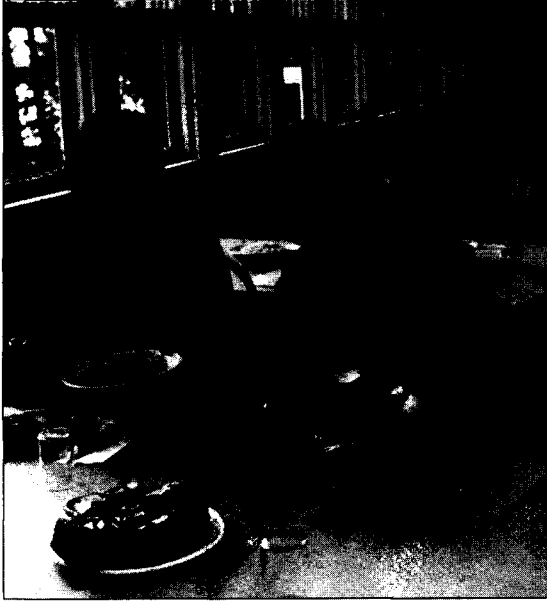
Gerald W. Kaufmann, Professor, Loras College, has research interests in avian behavior, particularly the rail family. He is currently active in migration behavior of the American coot. (EEB 5834)

Jeffrey W. Lang, Associate Professor, University of North Dakota, has research interests focused on the energetics, ecology, and evolution of thermoregulation in reptiles, including the overwintering ecology of snakes, the reproductive behaviors of egg-tending lizards (Eumeces), and the distribution and ecology of Minnesota herpetofauna. (Biol 5850)

Robert O. Megard, Professor, University of Minnesota, studies plankton and the optical properties of lakes and oceans. He has recently been using sonar to study zooplankton in the Great Lakes. (Biol 1806)

John A. Menge, Professor, University of California-Riverside, is primarily concerned with the ecology of soilborne microorganisms. His laboratory studies include the biology and control of fungal diseases of citrus and the biology and utilization of vesicular-arbuscular mycorrhizal fungi. (PIPa 5102)





Dr. Richard Poppele, Professor, University of Minnesota, has research interests in the area of sensorimotor integration in the vertebrate nervous system. (NSc 5100 and 5550)

Donald L. Rubbelke, St. Cloud, Minnesota, is currently interested in developing and applying new methods in biological photography. (Biol 5816)

Donald B. Siniff, Professor, University of Minnesota, is interested in vertebrate ecology, with special interest in population ecology of large mammals. (Biol 5841, 5850)

John R. Tester, Professor, University of Minnesota, is interested in behavioral and population ecology of terrestrial vertebrates. Recent research has emphasized habitat selection and activity rhythms. (EEB 5817, 5850)

Staria S. Vanderpool, Assistant Research Professor and Director, Institute for Ecological Studies, University of North Dakota, has research interests that include experimental and biosystematic studies of the North American representatives of the Capparaceae and evolution of desert annual plant species. Her current research includes

an investigation of the variable germination response of *Cleome lutea* under laboratory conditions and the implications for intraspecific differentiation. Also, she has an active research program in northern Great Plains floristic inventory, sensitive plant biology, and conservation biology. (PBio 5801)

ITASCA BIOLOGY PROGRAM STAFF

Donald B. Siniff, Program Director
 Dorothy K. Bromenshenkel, Secretary
 Thomas English, Librarian
 Jon Ross, Resident Biologist
 Daniel Traun, Resident Manager

RECENT RESEARCH PUBLICATIONS

- Alberts, J.D. 1989. Success of the Aspen blotch miner, *Phyllonorycter salicifoliella*, on three host-tree species. M.S. Thesis. U. of N.D.
- Albrecht, D.J. 1991. Function of song in chipping sparrows (*Spizella passerina*). M.S. Thesis. U. of N.D.
- Almendinger, J.C. 1985. The late-holocene development of jack pine forests on outwash plains, north-central Minnesota. Ph.D. Thesis. U. of M.
- Anderson, R.Y., W.F. Dean, J.P. Bradbury, and D. Love. 1985. Meromictic lakes and varved lake sediments in North America. U.S. Geological Survey Bull. 1607. 19 p.
- Angermeier, P.L., and I.J. Schlosser. 1988. Species-area relationships for stream fishes. *Ecology* 70 (5): 1450-1462.
- Banerjee, S.K., and D.R. Sprowl. 1985. High-resolution paleomagnetic record of geomagnetic field fluctuations from the varved sediments of Elk Lake. *Minnesota Geology* 13:531-533.
- Biedenweg, D.W. 1983. The use of plant/pollinator mutualisms by the crab spider (*Misumena vatia* Clerck). Ph.D. Thesis. Wa. State U.
- Boucherle, M.M. 1982. An ecological history of Elk Lake, Clearwater Co., Minnesota, based on Cladocera remains. Ph. D. Thesis. In. U.
- Bradbury, J.D. 1988. A climatic-limnologic model of diatom succession for paleolimnological interpretation of varved sediments at Elk Lake, Minnesota. *J. Paleolimnology*, 1:115-131.
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- Collins, S.L., F.C. James, and P.G. Risser. 1982. Habitat relationships of wood warblers (Parulidae) in northern central Minnesota. *Oikos* 39 (1) :50-58.



- Colwell, M., C. Gratto, L.W. Oring, and A.J. Fivizzani. 1988. Effects of blood sampling on shorebirds: injuries, return rates, and clutch desertions. *Condor* 90:942-945.
- Colwell, M., and L.W. Oring. 1989. Extra-pair mating in the spotted sandpiper: a female mate acquisition tactic. *Anim. Behav.* 38:675-684.
- Czarnecki, D.B. 1987. The freshwater diatom culture collection at Loras College, Dubuque, Iowa. *Notulae Naturae of the Acad. Nat. Sci. of Phila.* 465:1-16.
- Czarnecki, D.B., and M.J. Ross. 1988. The Itasca Park Algal Culture Collection at Loras College. *J.Mn. Acad. Sci.* 53(2):27-32.
- Dewhurst, S.M. 1987. Collection and analysis of high-resolution spectral data of forest canopies. M.S. Thesis. U of M.
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Itasca Biology Program Registration Form 23

Student Information

Name (last, first, middle)	Soc. Sec. No.	Univ. of Minn. I.D. No.
Current Street Address	Home phone	
City	State	Zip code
Work phone		
Permanent Street Address		
City	State	Zip code
Have you ever registered in University of Minnesota day classes, including summer? yes no		
If yes, write quarter, year, and college: Quarter _____ Year _____ College _____ Degree held _____		
Current student status (check one)		
Grad _____ Adult Special _____ Freshman _____ Sophomore _____ Junior _____ Senior _____ Independent investigator _____		
Student status by summer 1993		College or university you now attend
If you are a University of Minnesota student, write college and year in which you were last enrolled: College _____ Year 19 _____ Birthdate _____		Reserve for me a student cabin ____ yes ____ no Handicapped housing needed? ____ yes ____ no

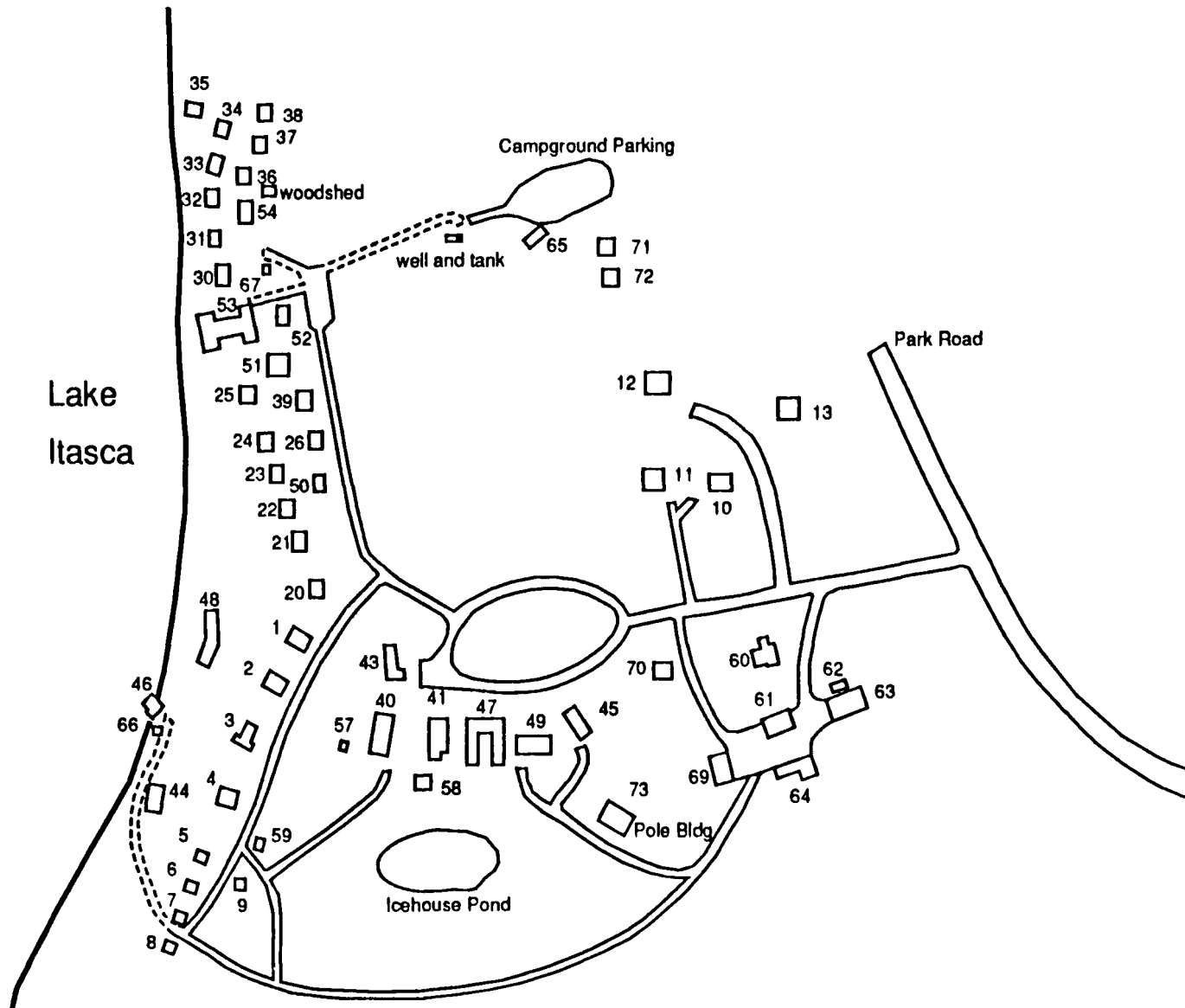
Course Request Form

Schedule only one course per day				
	Call Number	Credits	Department	Course Number
Term I June 15-July 20				
Term II July 22-August 25				

Hospitalization Insurance

Student Hospitalization Insurance University of Minnesota	
Summer Term I _____	Summer Term II _____
Name (last, first, middle)	U of Minn. I.D. Number
<p>If you are taking three or more credits, you will automatically be charged for University-sponsored hospitalization insurance unless you check below. Fill in the name of your insurance company and policy number, and sign the bottom of this form.</p> <p>_____ I am adequately covered by the hospitalization insurance indicated below. (If you do not provide complete information you will be charged for insurance. You may receive a full refund by returning to the Registration Center with your insurance information by the end of the first week of classes.)</p> <p style="text-align: center;">Name of insurance company or HMO Policy Number</p>	
<p>_____ Although I am taking fewer than three credits, I would like to purchase University-sponsored hospitalization insurance. I understand that I will also be charged the student service fee.</p>	
Signature _____	Date _____

MAP OF ITASCA FORESTRY AND BIOLOGICAL STATION



- 1 Cottage (faculty)
- 2 Cottage (faculty)
- 3 Director's Cabin
- 4 Cottage (faculty)
- 5 Cottage (faculty)
- 6 Cottage (faculty)
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- 37 Cottage Men
- 38 Cottage Men
- 39 Cottage Women
- 40 Laboratory
- 41 Laboratory
- 43 Administration
- 44 Laboratory
- 45 Classroom Laboratory
- 46 Boathouse
- 47 Research Laboratory
- 48 Library and Laboratory
- 49 Laboratory-Teaching Research
- 50 Women's Bathhouse
- 51 Infirmary
- 52 Cook's Cottage
- 53 Assembly and Dining Hall
- 54 Men's Bath House
- 57 Pump House (well)
- 58 Toilets
- 59 Faculty Wash House
- 60 Resident Manager's House
- 61 Workshop
- 62 Woodshed
- 63 Warehouse
- 64 Warehouse
- 65 Campground Bath House
- 66 Gas Storage
- 67 Rubbish and Fish House
- 69 Garage and Maintenance Building
- 70 Resident Biologist
- 71 Research Cabin
- 72 Research Cabin
- 73 Pole Building

Summer Session
University of Minnesota
135 Johnston Hall
101 Pleasant Street S.E.
Minneapolis, MN 55455-0432

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Summer Session

Continuing Education and Extension

UNIVERSITY OF MINNESOTA

Lake Itasca

Field Biology
Program
Bulletin

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First Term:
June 15 - July 20

UNIVERSITY OF MINNESOTA

1993 Summer Session

Twin Cities Campus Bulletin

Second Term:
July 22 - August 25

Special programs
and workshops
Beginning June 15



*Continuing Education
and Extension*

UNIVERSITY OF MINNESOTA

Twin Cities Campus

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Minneapolis, MN 55455

Office hours

8:00 a.m.- 4:30 p.m.
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will be open until 6:00 p.m. on
Mondays).

Access to Student Educational Records

In accordance with regents' policy on access to student records, information about you generally may not be released to a third party without your permission (exceptions under the law include state and federal education and financial aid institutions). The regents' policy also permits you to review your educational records and to challenge the contents of those records.

Some student information—name, address, electronic (E-mail) address, telephone number, dates of enrollment and enrollment status (full-time, part-time, not enrolled, withdrawn and date of withdrawal), major, adviser, college and class, academic awards and honors received, and in the event of your graduation the degree received—are matters of public record or directory information. University officials and departments may provide this information in answer to inquires without requiring authorization from you. You may prevent release of public information outside the University only during your terms of enrollment. To do so, you must notify the records office on your campus.

The regents' policy, including a directory of student records, is available for review in 150 Williamson Hall, Minneapolis, and at the records office on other campuses of the University. Questions may be directed to the Office of the Registrar, 150 Williamson Hall (612/625-5333).

**For Summer Session
information and bulletins, please
call (612) 624-3555**

Equal Opportunity

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. In adhering to this policy, the University abides by the Minnesota Human Rights Act, Minnesota Statute Ch. 363; by the Federal Civil Rights Act, 42 U.S.C. 20000e; by the requirements of Title IX of the Education Amendments of 1972; by Sections 503 and 504 of the Rehabilitation Act of 1973; by Executive Order 11246, as amended; by 38 U.S.C. 2012, the Vietnam Era Veterans Readjustment Assistance Act of 1972, as amended; and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Patricia A. Mullen, Director, Office of Equal Opportunity and Affirmative Action, University of Minnesota, 419 Morrill Hall, 100 Church Street S.E., Minneapolis, MN 55455 (612/624-9547).

Bulletin Use

The contents of this bulletin and other Summer Session bulletins, publications, or announcements are subject to change without notice. The Summer Session office can provide current information about possible changes.

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Gary Welter, an illustrator from St. Paul.**

W E L C O M E

**1993
SUMMER
SESSION
UNIVERSITY
OF MINNESOTA
TWIN CITIES**

First Term

June 15 - July 20

Second Term

July 22 - August 25

Contents

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Tuition & Fees 17
Campus Services & Resources 24
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Maps of the Campus 139
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*Join us
for a great
summer at
the U of M.
No better
time...
No better
place!*





W E L C O M E

The University of Minnesota-Twin Cities conducts one of the largest and most comprehensive Summer Sessions in the nation.

*The University
of Minnesota
Summer Session.*

*We are
expecting you!*

How you can benefit by taking classes in the summer —

Each summer, students and visitors from throughout the world take advantage of the University's outstanding curriculum, faculty and facilities. Regular courses, normally taught during five, seven or ten-week sessions, are complemented by Evening Extension classes, institutes, workshops and short courses, conferences, speakers, films, outdoor concerts, theatre productions on the Minnesota Centennial Showboat, campus recreational activities, and hundreds of special programs — all of which give the summer campus a vibrancy unlike that found at any other time of year.

- You can make up credits.
- Summer classes can help you stay on schedule to graduate or even accelerate progress toward your degree. Most students take one or two courses, but a maximum of 10 credits per 5-week term is allowable.
- Fewer courses "close" in the summer, making it easier to enroll in classes that are hard to get into during the fall, winter or spring quarters.
- By taking fewer concurrent classes, you can better focus your attention and have more control over your study time.
- Summer classes are usually smaller and less formal, affording more opportunity for interaction.
- Most classes meet only in the morning, leaving afternoons free for study, recreation or employment.
- If you're a commuter, the traffic near campus is less congested and parking is easier to find.
- The inviting landscape, warm weather, and relaxed change of pace draw students outdoors. Whether you prefer the lively and festive atmosphere of the mall, or quiet places in the shade, you'll find the campus itself to be especially pleasant in the summer.

CALENDAR

1993 SUMMER SESSION

REGISTRATION

	Term I (5 weeks)	Term II (5 weeks)	7 week courses	10 week courses
Registration begins for academic year students	May 13	May 13	May 13	May 13
Registration begins for summer-only students	May 21	May 21	May 21	May 21
Last day to register without incurring a late fee	First day of class			
Instructor's approval is required to register or add a class after this date	June 17	July 26	June 21	June 21
Instructor's approval plus Scholastic Committee approval is required to register or add a class after this date	June 21	July 28	June 28	June 28
Last day to cancel a class without notation on transcript	June 21	July 28	June 28	June 28
Scholastic Committee approval is required to cancel a class after this date	July 6	August 11	July 28	July 28

SESSION DATES

Term begins	June 15	July 22	June 15	June 15
Holiday. University closed.	July 5		July 5	July 5
Term ends	July 20	August 25	August 4	August 25

FEE PAYMENTS AND REFUNDS

Billing date	June 23	July 30	June 23	June 23
Payment due date	July 14	August 18	July 14	July 14
Refunds	See schedule on p. 22			

GRADING SYSTEM

Last day to change your grading system	June 21	July 28	June 28	June 28
--	---------	---------	---------	---------

See pp. 4 - 23 in the Registration section for more information about the deadlines and dates listed above.

May 1993						
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July 1993						
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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					
August 1993						
S	M	T	W	T	F	S
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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

R E G I S T R A T I O N

WHO MAY REGISTER

The University of Minnesota Summer Session welcomes many kinds of students —

- **Currently enrolled University of Minnesota students.**
- **Students admitted to the University of Minnesota for fall quarter.**
- **Visiting students from other colleges and universities.**
- **High school students.** High school students must have completed the 10th grade and rank in the top 20 percent of their class.
- **Professionals continuing their education.**
- **Adults of any age seeking cultural and intellectual growth.** Anyone who is at least a high school graduate can enroll in the Summer Session.



Admission

You do not need to apply for formal admission in order to simply take summer classes. If you are interested in admission to a degree program, you should contact: University of Minnesota, Office of Admissions, 240 Williamson Hall, Minneapolis, MN 55455; telephone 612/625-2008. (If specifically interested in admission to the Graduate School, contact: University of Minnesota, Graduate School Admissions, 306 Johnston Hall, Minneapolis, MN 55455; telephone 612/625-9364.)

Graduate students who are currently enrolled elsewhere in an accredited U.S. graduate school and who want to study this summer at the University of Minnesota, must apply for transient student status if they wish to earn graduate credit as a summer-only student. See p. 12 for more information.

Student Classification

For purposes of registration, Summer Session students at the University of Minnesota are classified as **Academic Year students** or as **Summer-only students**. There are some variations in registration procedures depending upon your classification and your college.

Academic Year Students

You are considered to be an academic year student if you have ever been officially admitted to a degree program on the Twin Cities campus of the University of Minnesota and if you registered at least once in the program to which you were admitted. This includes **current students, former students and graduates** — even if it has been many years since you took your coursework. Students at the

University of Minnesota Twin Cities campus with adult special status are also considered academic year students for registration purposes.

Summer-only Students

Summer visitors who have never registered for any course in a degree program at the University of Minnesota Twin Cities campus are considered summer-only students. This includes students newly admitted for fall 1993, high school students (you must have completed the 10th grade and rank in the top 20 percent of your class), students from other colleges/universities taking summer courses, and University of Minnesota Extension students. Students enrolled at other University of Minnesota campuses, excluding the Twin Cities, are also considered summer-only students for registration purposes.

WHEN TO REGISTER

If you are an academic year student, you may register for either or both summer terms beginning May 13. If you are a summer-only student you may register starting May 21. Registration continues through the first day of class. After the first day, a late registration fee is assessed and you may need the instructor's permission to enter the course.

HOW TO REGISTER

Procedures for Academic Year Students

Summer Session registration begins May 13. You may use the Registration Center in 202 Fraser Hall on the Minneapolis campus or in 130 Coffey Hall on the St. Paul campus. The same

registration procedures and registration forms apply to the summer as during the fall, winter and spring quarters, except there is no alphabetical queue for summer. Although registration is on a first-come, first-served basis, it generally isn't necessary to register on the first or second day of registration unless you are trying for high demand courses that fill quickly. Courses planned for summer 1993 that closed very quickly last summer are: Biol 3011, Comp 3014, EE 3004, 3402, 5450, ME 3702, 5260, Psy 1005, and Span 1102, 1106.

Because fall registration begins May 18, you may, if you wish, register for both summer and fall during your spot in the fall registration queue.

As an academic year student you always register through the college in which you are admitted. You cannot "switch" colleges for the summer or register as a summer-only student through another college.

Special Instructions

See pp. 10 for special registration instructions pertaining to the—

- College of Liberal Arts
- College of Education
- Carlson School of Management
- Graduate School
and for—
- New international students

Procedures for Summer-only Students

Your College of Registration

When you take courses at the University you must register through a particular college. This is your college of registration. Typically, the college through which you register is the one offering the course, but registration is possible through the College of Liberal Arts (CLA) for many courses that are not offered by CLA. These courses include architecture, astronomy, biology, chemistry, child psychology, computer science, geology, management (1000-level only), mathematics, physical education (activity courses only), physics, physiology, plant biology and public health (3001 and 3004 only). If you have questions about which college to choose, call the Academic Advising office in the Counseling Department of Continuing Education and Extension 612/625-2500, or the Summer Session Office at 612/624-3555.

Advising

Each college has an advising office ready to help you if you need it. See p. 24. You may also receive help from the academic advising office of the Counseling Department, Continuing Education and Extension, located in 314 Nolte Center, 612/625-2500.

Registration for summer-only students is a three step process:

1. Complete a Course Request form, Hospitalization Insurance form, and a Request for Summer-only Status form. Use a separate Course Request form for each summer term. These forms are found in the center tear-out section of this bulletin and are also

Important Note for Visiting Students about Transferring Credits

Visiting summer-only students who normally attend other colleges and universities, and who wish to transfer University of Minnesota coursework back to their home institutions, should be aware that the decision to accept transfer credit rests entirely with the home institution. You are advised to check with your home institution before registering. Credits offered by the University of Minnesota are Quarter credits. As a general rule for transfer purposes, 1 Semester credit = 1.5 Quarter credits; 1 Quarter credit = .67 Semester credit.

available at the Fraser Hall and Coffey Hall Registration Centers or from the Summer Session Office.

2. Go to the advising office of your college of enrollment for program approval. Exception: You do not need college approval if you register through the Institute of Technology or College of Liberal Arts unless you are newly admitted for fall 1993 or are a high school student. If you a high school student, see p. 15 for special registration instructions. If you are newly admitted to the College of Liberal Arts, contact an advisor in B-18 Johnston Hall, 612/624-9585 before registering.

3. Beginning May 21, go to a Registration Center to register. Bring your completed forms. On the Minneapolis campus (East Bank) the Registration Center is in 202 Fraser Hall. On the St. Paul campus it is in 130 Coffey Hall. You will be given a printout showing your registration and fees. Check it carefully — you are responsible for the accuracy of your registration.

R E G I S T R A T I O N

Mail Registration Option for Summer-only Students

Summer-only students who plan to register through the College of Liberal Arts or the College of Education have the option to register by mail. Some exceptions and restrictions apply. You cannot register by mail if you are a high school student who has not yet graduated from high school, or for courses that have special registration restrictions. In-person registration is recommended for courses that fill quickly and for high school students who have graduated and are entering college in the fall.

If you have questions about the mail registration option, call the Summer Session Office, 612/624-3555.

College of Liberal Arts

Mail registration is not available to academic year students in the College of Liberal Arts. Mail registration is not possible for courses that require a Registration Override Permit (courses where a Φ or Δ or \square appear in the prerequisite statement) or for 8000-level courses. Mail registration requests are processed beginning on May 21, 1993, the first day for summer-only registration. Registration forms must be received in the Summer Session office by June 4, 1993.

College of Education

Mail registration is available for students registering in the College of Education as previously registered M.Ed., postbaccalaureate, adult special, and summer-only students. Registration in the Graduate School or in 8000-level courses is not possible by mail. Mail-in registrations will be processed beginning May 13 and must be received by the Education Student Affairs Office no later than June 4, 1993.

General approvals for registration are no longer required in education; however, you must obtain any overrides that are defined in the prerequisite statements of courses (i.e., \square college approval, Δ department approval, or Φ instructor approval) and submit them with your registration.

To register by mail:

1. Complete the Course Request form, Request for Summer-only Status form, and the Hospitalization Insurance form—entering all information requested according to the example. Please use a separate Course Request form for each term. Any incomplete or inaccurate registration materials will be returned to you and you will have to register in person unless your registration can be mailed again before the mail registration deadline. The deadline is June 4. Materials received after June 4 cannot be processed by mail and will be returned so that you may register in person.

2. Mail the completed forms to the address found on the back of the insert (please check the appropriate box for Liberal Arts or Education).

3. Do not send payment with your registration materials. You will receive a fee statement and confirmation of your registration in the mail. If you have not received your fee statement by June 10, please call 612/625-5815 (Education mail registration) or 612/624-3555 (Liberal Arts mail registration). A billing statement will be mailed to you AFTER the start of each session. Fees are due for Term I on July 14 and for Term II on August 18.

4. The Student Services Fee is charged to all students registering for three or more credits per term. A partial exemption from the Health Service Fee is not available. If you have further questions about the Health Service Fee, please contact Boynton Health Service, Room W220, 612/624-1471.

5. Important: If you decide not to attend your class, you must officially cancel by submitting a properly approved Course Request form. For information on cancellations and refunds, consult page xx in this bulletin or call 612/625-5815 (Education mail registration) or 612/624-3555 (Liberal Arts mail registration).

You will not be asked to pay your tuition at this time. You will be mailed a billing statement which contains charges for tuition, special fees (if any), the student services fee if you register for three or more credits, and hospitalization insurance if you have no private coverage. Full information about costs and payment procedures is found on p. 21.

Special Instructions

See pp. 10 for special registration instructions pertaining to the—

- College of Liberal Arts
- College of Education
- Carlson School of Management
- Graduate School
and for—
- High school students
- New international students

MORE ABOUT REGISTRATION

Course Numbering System

1000-level courses are introductory courses intended for freshmen, sophomores, juniors and seniors. 3000-level courses are intended for sophomores, juniors and seniors. 5000-level courses are intended for juniors, seniors and graduate students. Sophomores should not register for 5000-level courses, nor freshmen for 3000- or 5000-level courses, without first consulting their college advising office.

Registrations in 8000-level courses are intended for graduate students only. Exceptions must be approved by the department offering the course.

Handwritten signature or initials

Credit Load Limit

The maximum credit load (except in the Graduate School) is 10 credits per 5-week term. Registration for more than 10 credits per term requires approval of the scholastic committee of your college. The 15-credit, intensive language sequences are spread over both terms and do not require approval. If you are registered in the Graduate School, your maximum credit limit is 11 credits per 5-week term.

Late Registration

You should register no later than the first day of class. After the third day of class you must have instructor permission to register and after the fifth day, approval of your college Scholastic Committee is required. Late fees are also assessed. If you register after the first day of class a fee of \$10 is charged. If you register after the first week of class the fee is increased to \$20. Refer to the Calendar on p. 3 for exact 1993 dates.

Limited Enrollment

Any course that carries an R before the course number is a limited enrollment course.

How to Find Out if a Course is Open or Closed

The Section Status Reports located outside of 101 Fraser Hall, B18 and 16 Johnston, 4 Mechanical Engineering, 170 Anderson Hall, and 130 Coffey Hall can tell you if a course with limited enrollment (R before the course number) is open or closed. If a course is not on the report, it has no limit on enrollment.

Gaining Admission to a Closed Course

It may be possible to gain admission to a closed course. Go first to the department offering the course, where you may be put on a waiting list or be referred to the instructor for permission to register. Attend the first class meeting if you are on a waiting list or need the instructor's permission, to see if more students will be admitted. To register in a closed course your instructor must approve your entrance by signing a Registration Override Permit. This permit is then submitted to the registration center along with your Course Request form.

Holds

If you have a hold on your record, you may not register until that hold is cleared with the office imposing the hold. A hold may be imposed for financial indebtedness to the University (e.g., for unpaid library fines, unpaid tuition or fees, or delinquent health service payments) or for disciplinary or scholastic reasons. For more information, check with your college office or call or visit a Student Relations staff member in the Office of the Registrar, 150 Williamson Hall (612/625-5333) or 130 Coffey Hall (612/624-3731).

Registration Override Permits

A Registration Override Permit with appropriate signatures must be returned with your Course Request form in the following instances:

- If there is a # or s or n in your course description (i.e., you need the consent of the instructor, department or college), or

- If you do not meet course requirements as described in the course listing. Handwritten notes are not accepted. Obtain Registration Override Permit forms from the appropriate instructor, department or college.

Required Approvals

Registration for more than 10 credits per term requires approval of the Scholastic Committee of your college of registration (except for 15-credit, intensive-language sequences). Credits for 7- and 10-week courses are counted toward term limits by applying half of the credits to each term.

Independent study, extra credit, directed study, directed research, and directed instruction require the approval of the instructor, department, and college. Obtain a special permission slip for independent and directed study from the department, get approval of the instructor and department, and bring the form to your college office for approval.

Registrations in 8000-level courses through colleges other than the Graduate School must be approved by the department offering the course.

5000-level courses are intended for juniors, seniors, and graduate students. 3000-level courses are intended for sophomores, juniors, and seniors. To prevent inappropriate registrations, sophomores should not register for 5000-level courses, nor freshmen for 3000- or 5000-level courses, without first consulting their college advising offices.

R E G I S T R A T I O N

Changing Your Registration

Use the Course Request form to make all changes in your registration, including additions, cancellations and changes in grading system. Changes are not official until you have completed this procedure:

1. Check the box indicating cancel/add and note the number of credits you will have after this change. If you are canceling all courses, check the Complete Cancellation box.
2. Obtain instructor, adviser, and/or college office approval if required.
3. Turn in your Course Request form at your registration center, where you will receive a revised fee statement.

Exact dates applicable to the Summer Session are presented on p. 3 of this Bulletin, including dates for courses taught in seven weeks.

Cancellation of a course after the first week of a 5-week term will result in a grade of "W" on your record. A 7- or 10-week course may be cancelled without a W on your record through the tenth day of the term. (Note: if you cancel all courses during the first week of the term, W will not appear

on your transcript; however, a notation of your cancellation will appear.)

You should contact your college office for information about committee requirements and procedures when Scholastic Committee approval is required.

You must pay for every course for which you register unless you officially cancel. Cancellations are effective the day you officially cancel (by taking a completed Course Request form to your registration center), not on the date you stopped attending class. **Remember: cancellations must be made in person at your registration center—cancellations by mail are not allowed.**

If you fail to cancel any course for which you have registered but not paid, you will receive billing statements for your tuition and fees, including late payment fees. Unless you make full payment, a hold will be placed on your record.

Note: if you are a summer-only student who registered by mail and cannot get to campus to cancel, call 612/624-3555.

Tuition Charges and Refunds for Course Additions and Cancellations

Full tuition is charged on a per-credit basis for all changes in registration that increase your credit load. No additional tuition is charged when any course addition is balanced at the same time by a course cancellation equal to the number of credits being added. Refunds are issued on a per-credit basis according to the refund rate that applies to the date of cancellation. A refund schedule is presented on page 22.

Mandatory Attendance on the First Day of Class

You must attend the first class meeting of every course in which you are registered unless you obtain the instructor's approval for your intended absence before the first meeting. Without this prior approval, you may lose your place in class to another student. If you wish to remain in a course from which you have been absent the first day without prior approval, contact your instructor as soon as possible. Instructors have the right to deny you admission if the course is full. You must officially cancel any course to which you are denied admission.

Approvals required for cancel/adds

A new University-wide policy governing all cancel/adds has been put into effect.

Five-week courses	Ten-week courses	Required to Cancel	Required to Add
Days 1-3	Week 1	Nothing required	Nothing required
Days 4-5	Week 2	Nothing required	Instructor approval
Weeks 2-3	Weeks 3-6	Nothing required	Approval of instructor and college Scholastic Committee
Weeks 4-5	Weeks 7-10	Approval of college Scholastic Committee	Approval of instructor and college Scholastic Committee

Auditing Courses

Most colleges permit auditing in their courses. As an auditor, you enroll in, pay tuition and fees for, and attend classes but do not complete assignments or take examinations. You receive no credit for the course, but it will be placed on your transcript with the symbol V (Visitor) to indicate your special registration status. Although you do not receive credit, the credit value for the course counts in determining the credit total for the student services fee.

Colleges may have additional requirements for you to meet before you register as an auditor. It may be necessary to have approval from your instructor and/or special scholastic committees. **Colleges generally do not allow you to repeat an audited course for credit.** For further information, check with the college offering the course.

To register as an auditor once you have received any necessary approval, write a "V" in the "Grade Option" column of the Course Request form.

Auditing through the Senior Citizen Education Program

If you are 62 or older and a Minnesota resident, you may audit courses free of charge or take courses for credit at \$6 per credit whenever space is available after the first day of class. Under this plan, you will not pay the student services fee, but must pay any required laboratory or materials fees.

Registration for the Senior Citizen Education Program is on the second day of class (June 16 for first term and July 23 for second term). Attend the first day of class, however, to see if space is available and to receive

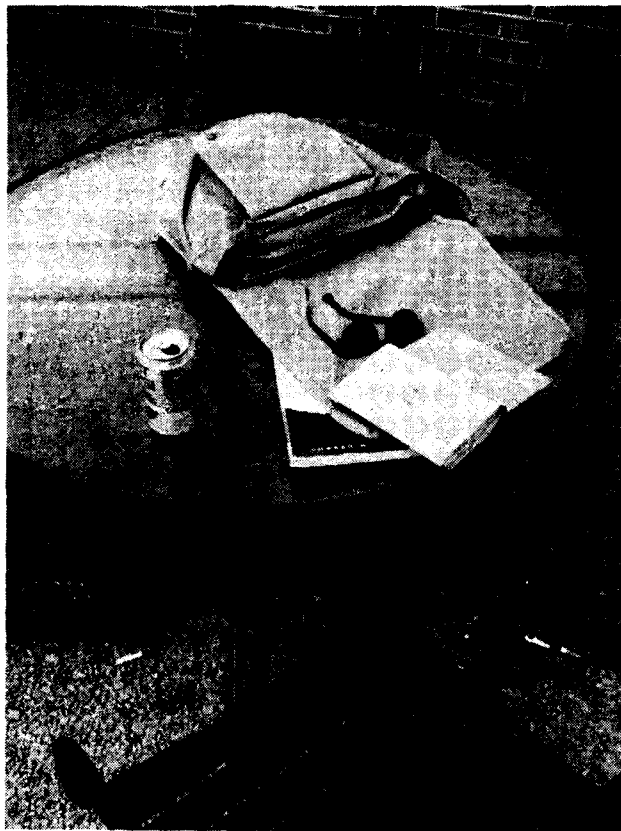
information about class procedures. To register, go to 202 Fraser Hall (150 Williamson Hall for those with mobility impairments) or 130 Coffey Hall with your registration forms and identification to verify age and Minnesota residency. Call 612/625-5333 for more information.

Grading Options and Policies

There are two grading systems at the University of Minnesota, Twin Cities campus; *A-B-C-D-F* and *S-N*. The *S* represents satisfactory work based on standards announced by the instructor and may vary from course to course. The *N* stands for no credit and is assigned when minimum course standards are not met (i.e., when the student does not earn an *S*). Ask in your college office about restrictions on the use of *S-N* credits.

A grade of "I" (Incomplete) is assigned when, in the instructor's opinion, there is a reasonable expectation that the student can complete successfully any missed work in the course. An *I* that is not made up by the end of the student's next summer term or quarter becomes either an *F* or *N*, depending on the grading system under which the course was taken.

If either *A-F only* (for *A-B-C-D-F*) or *S-N only* is printed after the prerequisite statement for a course, you must register for that grading system (leave the grade option column blank on your Course Request form). If no grading system is listed, you may usually register for either *A-F* or *S-N* grading by marking your choice on the Course Request form. Colleges may restrict the use of *S-N* grading because of degree requirements. There may also



be a limit on the number of *S-N* credits per term. Check with your college office for complete information.

You may change your designated grading option through the first week of classes for 5-week courses (Monday, June 21 for first term; Wednesday, July 28 for second term) and through the second week of classes for 7- and 10-week courses (Monday, June 28). For short term courses, check with your college office for deadlines. To change your grading option, bring a completed Course Request form to the registration center (202 Fraser or 130 Coffey Hall).

R E G I S T R A T I O N

Final Exams

Final exams are scheduled during the regular meeting time of the course, usually on the last day of the course. If you miss the final exam in a course, you will receive a grade of I only when there is a reasonable expectation that you can successfully complete the work of the course. Instructors should announce both course requirements and make-up policies on the first day of class.

Make-up exams are given according to the policies of the college offering the course. Instructors generally provide make-up examinations for students who have acceptable excuses (e.g., verifiable medical difficulties) for missing the final. To avoid any misunderstanding, contact your instructor in advance if you must miss an exam.

Receiving Your Grades

Grades will be mailed to you approximately two – three weeks after the end of each term. Be sure to update your address when you register. If you will be moving or will not be on campus through the summer, you should submit an address change to 150 Williamson Hall or 130 Coffey Hall. Most instructors will accept a self-addressed, stamped postcard which they will return to you once grades have been assigned. Grades are also available on both your transcript and unofficial record approximately two – three weeks after the end of the course.

Transcripts

Official transcripts are certified and signed by the University Registrar. There are two types of service for obtaining official transcripts: regular service and rush service. Regular service is available for \$3 a copy and processing takes about two or three workdays. After processing, your copies will be mailed to the places you have specified. Rush service on your official transcript request is available at \$9 a copy. Rush service guarantees your transcript will be issued to you in person or put in the mail on the same day it is requested. You must have a picture ID (student ID card, driver's license, state ID card, or current passport) to receive over-the-counter rush service. Prepaid courier service may also be requested for both regular and rush service. Visit the transcript service (150 Williamson Hall, Minneapolis, or 130 Coffey Hall, St. Paul) for more information, or call 612/625-5333.

Official transcripts can also be requested by mail or dropped off at the locations below. Because these requests must be in writing with your original signature, no phone or FAX requests are accepted. Requests should include your full name, your student ID number (Social Security number for summer-only students), name of the University of Minnesota, Twin Cities college through which you registered, dates of enrollment, and complete address(es) to which to send the transcript(s).

Students who take courses in Minneapolis units should send their requests to the Certifications Unit, 150 Williamson Hall, 231 Pillsbury Drive Southeast, Minneapolis, MN 55455.

Students who take courses in St. Paul units should send their requests to the Office of Admissions and Records, 130 Coffey Hall, 1420 Eckles Avenue, St. Paul, MN 55108. If your last registration in Extension was 1989 or earlier, you must request your Extension record at the Certifications Unit in Minneapolis. Your request must include a check or money order payable to the University of Minnesota for \$3 or \$9 per transcript or the same amount in transcript vouchers from the Bursar.

You may pick up an *unofficial* copy of your record by presenting a picture ID at the transcript service counter in 150 Williamson Hall or at 130 Coffey Hall. There is no charge for an unofficial copy of your record; there is, however, a limit of one copy per day. Students are advised that disciplinary action will be taken if academic records are forged or altered.

SPECIAL INSTRUCTIONS FOR COLLEGE OF LIBERAL ARTS STUDENTS

Advising for summer-only students is available in B18 Johnston Hall between 8 a.m. and 4 p.m. from May 21 through August 25. Advisers can assist you with your concerns regarding registration, course work and choosing a major.

Exceptions to **registration deadlines** listed may be approved only by petition to the CLA Scholastic Committee. Such petitions are not routinely approved. If circumstances prevent you from meeting a deadline, you must contact your college office (B18 Johnston Hall for summer-only students) before the deadline.

Important for All Students:

It bears repeating: Attend the first meeting of class unless you notify the instructor in advance of an unavoidable absence. If you miss the first class meeting you may lose your place to another student. If you decide not to attend your class, you must officially cancel by submitting a properly approved Course Request form. You must pay for every course for which you register unless you officially cancel.

Honors students should check the honors course listings in 115 Johnston Hall.

Holds. CLA holds, including adviser signature and scholastic holds, are waived for the summer session. Other holds are enforced.

Courses not listed in the CLA Bulletin may not be applicable towards a CLA degree. Consult your college advising office before registering for courses not listed in the CLA Bulletin.

S-N registration. The number of S-N credits that can be applied to a CLA degree is limited. See the CLA Bulletin for details. Courses in departmental majors may be taken S-N only if the department has approved such a policy. Otherwise, S-N registration is allowed in all courses listed in the CLA Bulletin.

SPECIAL INSTRUCTIONS FOR COLLEGE OF EDUCATION STUDENTS

Previously registered students (and admitted to a degree or licensure program offered by the College of Education, or admitted as an Adult Special in the College) are no longer required to obtain general registration approvals except for those approvals that are defined in the prerequisite statements of courses (instructor, department and college approvals that require override permits).

Summer-only students in the College of Education must obtain college approval on their Course Request form from the Education Student Affairs Office (ESAO), 7A Wulling Hall.

SPECIAL INSTRUCTIONS FOR CARLSON SCHOOL OF MANAGEMENT STUDENTS

Summer-only Registration

You should register as a Carlson School of Management summer-only student if you are registering for any 3000-level Carlson School courses or if the Carlson School is the college in which you will be taking the majority of your summer credits. If you register as a summer-only student in the Carlson School, you must complete a Carlson School summer-only form in 290 Humphrey Center in addition to the Request for Summer-only Status form and Course Request form.



Summer-only Students with 90 or More Credits

You may register for open 3000- and 5000- level Carlson School of Management courses if you have completed or have in progress 90 or more quarter credits (60 or more semester credits) and can provide a current transcript that shows a cumulative grade point average of 2.8 or higher. Bring your transcript to 290 Humphrey Center and ask for a registration override permit(s).

Summer-only Students with Fewer than 90 Credits

If you have fewer than 90 quarter credits (60 semester credits), you can register for 1000-level Carlson School of Management courses through either the Carlson School or the College of Liberal Arts. (If you register through the College of Liberal Arts, you must obtain a Registration Override Permit in 290 Humphrey Center or B18 Johnston Hall for every 1000-level Carlson School course you take.)

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There are no grade point average requirements for registration in 1000-level courses; you must, however, meet all prerequisite requirements. You may not register for 3000-level Carlson School courses.

Degree Students in the Carlson School

Students enrolled in Carlson School undergraduate degree programs may register for 3000- and 5000-level Carlson School courses without an override. See the section on Accounting courses for exceptions.

Students in Approved Units

If you are a student in an approved unit with 90 or more credits and your GPA is 2.8 or higher, you may register for all 3000- and 5000-level general management courses (excluding practicum, honors and special sections). You may register for these courses by going directly to your registration center. Your college office can provide you with a detailed list of general management courses.

Approved units include the following major programs; College of Agriculture— agricultural business, food science, horticulture, nutrition; College of Education- business studies, marketing education, recreation, park, and leisure studies; College of Human Ecology—all majors; College of Liberal Arts— journalism (professional track), international relations (commerce and political economy tracks), urban studies; College of Natural Resources — fisheries and wildlife, forest resources (management and administration emphasis), forest products marketing, production management, urban forestry; Institute of Technology — actuarial science, computer science, mechanical engineering (EIP and IE emphasis) and all I.T. students admitted to the I.T. Business minor program.

BIS and ICP majors should consult their program offices for information.

Other Academic Year Students

Any non-Carlson School of Management student with 90 or more credits and a cumulative GPA of 2.8 or higher may register for open 3000- and 5000-level Carlson School courses by bringing a current transcript to 290 Humphrey Center to receive a registration override permit.

Accounting Courses

Acct 1050 is available to all students who have completed 40 or more credits. Acct 3001 is available to all Carlson School students and students in approved units (see previous list). Students registering for Acct 3101 must have received either an A or B in Acct 1050 (or Acct 1024 and 1025) or

have passed the Acct 3101 pretest. Check with 290 Humphrey Center for details (612/624-3313).

Other students enrolled in CSOM undergraduate degree programs must complete an accounting request form in 290 Humphrey Center to obtain permission to register for 3000- and 5000-level accounting courses.

SPECIAL INSTRUCTIONS FOR GRADUATE SCHOOL STUDENTS

Transient Graduate Students or Summer-only Students

If you are currently enrolled in an accredited U.S. graduate school and wish to earn graduate credit at the University of Minnesota this summer, you may want to apply for transient graduate student status. Your decision will depend in large part on the requirements of your home school and the level of the course you want to take. Transient status is necessary if your home school requires that your work appear on a transcript as a graduate school course. You will also need transient status if you plan to register for any 8000-level course. In both cases you should register through the Graduate School and will pay Graduate School tuition rates.

Check first with your home institution to see if your proposed registration (both the level of the course and the course content) will be acceptable in your graduate program. If so, then apply for transient status by filling out Graduate School Form 57. To request Form 57, write to the Graduate School, 307 Johnston Hall, University

of Minnesota, 101 Pleasant Street S.E., Minneapolis, MN 55455. Be sure to allow at least three weeks for the approval process. No application fee or supporting materials are required. Permission to register as a transient student, if granted, will be for one summer (both terms) or one academic quarter and will not extend beyond that single summer or quarter.

If you decide you do not need transient status, you may register for 1000-, 3000-, and 5000-level courses by registering as a summer-only student through the college offering the course.

Academic Year Students

Follow these steps:

New students — If you are registering for the first time in the Graduate School, obtain your registration materials in 309 Johnston Hall.

Active students — To register, you must clear any Graduate School holds.

Inactive students — If you have not registered in the Graduate School at least once in the last two years, you must be readmitted before you will be allowed to register. Contact the Graduate School Admissions Office, 306 Johnston Hall (612/625-8060).

Maximum Credits

The maximum credit load for each summer term is 11.

Grading Option

Two grading systems, A-B-C-D-F and S-N, are used in the Graduate School. You must designate your grading option for each course at registration. However, if either A-F only or S-N only is printed after the prerequisite statement for a course, you must register for that grading option. All changes, including to or from auditor status, must be made at a registration center using a Course Request form.

Thesis Credits

All students are required to register for thesis credits before receiving a Plan A master's or a professional master of engineering degree (at least 16 credits of 8777 required) or a Ph.D., Ed.D., or D.M.A. degree (at least 36 credits of 8888 required). Doctoral students may not register for thesis credits until the quarter after they have passed their preliminary oral examinations.

Tuition for thesis credits is assessed the same way course credits are assessed, with both resident and nonresident rates. If you have any questions about registering for thesis credits, including which course designator to use, contact your director of graduate studies or the Graduate School, 316 Johnston Hall (612/625-3490).

Doctoral Residency Requirement

Doctoral students are required to complete a residency requirement of 7 quarters full-time registration. Full-time registration during the academic year is defined as 7 or more credits per quarter.

All credits taken in the Graduate School may be used to fulfill the residency requirement. During the academic year, part-time students (registering for 1-6 credits) will accumulate 0.1 quarter residency for each credit taken. Credits for registrations in first and second terms of the summer session will be added together. For 7 or more total credits, 1.0 quarter of residency will be granted for each credit taken.

Residency may not be earned for credits accepted for transfer to a doctoral degree program, nor can

HOLD	ACTION
MAST PROG	Take signed master's program to 316 Johnston Hall.
DOCT PROG	Take signed doctoral program to 316 Johnston Hall.
SPEC PROG	Take signed special program to 316 Johnston Hall.
THESIS	Take signed thesis title to 316 Johnston Hall.
BACH DEGREE	Take official bachelor's transcript showing degree awarded to 316 Johnston Hall.
GPA	Take letter releasing hold from major field director of graduate studies to 316 Johnston Hall.
INCOMPLETE	Take letter releasing hold from major field
DEAN'S HOLD	Go to 316 Johnston Hall for instructions.

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residency be earned using master's degrees from other institutions or from other college of the University.

Some students who were first registered in the Graduate School before fall 1984 may be exempted from the residency requirement. For more information, contact 316 Johnston Hall (612/625-3490).

Tuition Benefits for Graduate Assistants

In the summer the tuition waiver structure is more complex than it is in the academic year. Contact your department payroll officer in late spring to determine what a given appointment will produce in tuition waivers. These benefits are for tuition only and do not cover the student services fee or course fees.

REMEMBER: Tuition benefits never appear automatically on the registration system for the summer terms. You must obtain the proper forms from your work department and stop by the Graduate Assistant Office (GAO), 416 Johnston Hall, preferably *before* you register, in order to receive your tuition benefit. If you have a regular percentage appointment, obtain a copy of your payroll document (PAF) and a Tuition Benefit Information Form filled out by your department. If you have an hourly or miscellaneous percentage appointment, obtain in addition to the PAF and the Tuition Benefit Information Form a letter from your work department informing the GAO of the number of hours you are expected to work during the summer. More information on tuition benefit eligibility and procedures is available from your work department or the GAO, 416 Johnston Hall, 612/626-1310.

You should be aware of two policies that affect you. In a policy that began July 1, 1992, students who worked any number of hours on an assistantship fall, winter, or spring quarters should have been registered in quarters in which they held assistantships. You do not need to register for summer to hold assistantships, however, if you are a new graduate student or if you have an adequate registration during the preceding spring quarter. You *must* register for at least one summer term if you do not meet either one of these two conditions. Audit (V) registration by itself is not sufficient to hold an assistantship; any audit registration must be accompanied by at least one credit of registration for a grade (either A-F or S-N) or at least one thesis credit.

Doctoral Oral Examinations

You must schedule your preliminary and final oral exams *at least one week in advance*. You may schedule your exams by going to 316 Johnston Hall or by calling 625-5367 for a preliminary oral exam or 612/625-5833 for a final oral exam. These exams should not be scheduled from the beginning of second term of summer session to the beginning of fall quarter unless members of the assigned committee can be assembled without substitution. If you are not active (registered in the Graduate School at least once in the last two years), you may not schedule your examination. Contact the Graduate School Admissions Office, 306 Johnston Hall (612/625-8060), regarding readmission.

Graduation

Graduate School degrees are awarded monthly. To graduate at the end of any given month you must:

1. *Submit your Graduate School Application for Degree form* in 150 Williamson Hall or 130 Coffey Hall on or before the first workday of the month. When you submit your application, you must also pay your \$25 graduation fee.

2. *Complete all other requirements* by the last workday of the month.

Graduating before the end of the quarter may affect your eligibility for student loans, housing, etc. Check with the appropriate office if you have questions on eligibility.

Plan A master's, professional master of engineering, and doctoral students receive an Application for Degree form plus detailed graduation instructions when they register their thesis or project titles in the Graduate School, 316 Johnston Hall. Plan B and specialist students receive Application for Degree forms and graduation instructions when they pick up their Final Examination Report forms from the Graduate School, 316 Johnston Hall. Students must be active (registered in the Graduate School at least once in the last two years) and have approved program or thesis proposal forms on file at the Graduate School before Applications for Degree and other graduation forms can be released.

SPECIAL INSTRUCTIONS FOR HIGH SCHOOL STUDENTS

Qualified high school students have several summer opportunities at the University of Minnesota.

Special programs

Some special programs, such as the Summer Honors College, are designed exclusively for high school students (see page 50 for special programs for high school students).

Regular Summer Session Courses

To qualify for summer-only admission to regular summer session courses, you must have completed the 10th grade and rank in the top 20 percent of your class. You must bring an official copy of your high school transcript, demonstrating a strong academic background and appropriate preparation for the course(s) selected. You are also encouraged to present, whenever possible, a letter of recommendation from a high school teacher or counselor. This letter of recommendation is required if your transcript does not indicate your high school rank.

As a general rule, introductory (1000-level) courses are open to high school students. In exceptional cases, intermediate (3000-level) or advanced (5000-level) courses might also be taken.

For Registration Approval

If you want to take 1000-level courses in the Institute of Technology, the College of Biological Sciences, or the College of Liberal Arts, make an appointment with an adviser in the Advanced High School Student

Services Office in 201 Wesbrook Hall (612/626-1666).

For 3000-level or 5000-level courses in the College of Biological Sciences or the Institute of Technology, or any course in the colleges of Agriculture, Home Economics, Natural Resources, or the General College, go to the office of the college offering the course. These college offices are listed on the inside of the back cover. If you are given college approval, you may register by following the instructions for summer-only students on pages xxx.

Post-Secondary Enrollment Options Act (PSEO)

The state options act which allows high school juniors and seniors to attend college tuition-free is not in effect during the summer.

Questions?

High school students who have advising questions related to summer course choice, transfer of credits, and/or utilization of PSEO for the upcoming year should talk to an adviser in the Advanced High School Student Services Office at 201 Wesbrook Hall, 77 Pleasant St. S.E., Minneapolis, MN 55455, 612/626-1666.

SPECIAL INSTRUCTIONS FOR NEW INTERNATIONAL STUDENTS

If you hold a non-immigrant visa of any type, have been formally admitted to the University of Minnesota, and are registering for the first time, three holds have been placed on your record: AI (Immigration Service document



check), ME (Health clearance), and AZ (English proficiency). Please read the paragraphs below carefully.

NOTE: If you are registering for classes but you have not been formally admitted to the University of Minnesota, you may register directly as a summer-only student. The following information does not pertain to you.

Document Check and General Information (AI Hold)

Go to the Office of International Education (OIE), 20 Nicholson Hall. You will be asked to provide evidence of your immigration status. You must bring your passport and immigration service documents (I-94 form, pages 3-4 of your I-20AB, and/or IAP-66). Sponsored students must also provide documentation of their financial support. If you are a permanent resident, you must present documented evidence of your status.



credits per term or are away from campus for the summer or an academic quarter. See Required Charges for Health Service and Hospitalization , page 21.

English Proficiency (AZ Hold)

If you have not provided enough information about your English proficiency, an AZ hold may be placed on your record. This hold can be removed only by the Minnesota English Center (MEC), 102 Klæber Court. To find out if you have an AZ hold, check with the MEC directly or ask at OIE during your document check. An AZ hold needs to be removed by the MEC even if English is your native language or you scored 550 or higher on your TOEFL exam. If English is not your first language and you achieved less than 550 on the TOEFL exam, or if the TOEFL exam was waived at the time of your admission, you may be required to take the Minnesota English Language Proficiency test. Register for this test at the MEC office as soon as possible because results are not available for 7 to 10 days. You will be required to pay a \$25 testing fee for the MELP test. You will be given information about requirements for English classes during your visit to the MEC. You can also call the MEC office, 612/624-1503, for more information.

Health Clearance (ME Hold)

If you are not a citizen of the United States and if you are registering for the first time at the University, you must have a health clearance in order to register. You will be provided with a health clearance form once you have taken a tuberculin skin test or have shown proof that you have been tested within the last year and are free of tuberculosis. You should report to the information desk at Boynton Health Service, 410 Church Street, Minneapolis, several days before you plan to register. You will need to return 48 hours after you have taken the tuberculin test to have the test read and to obtain your health clearance form. Tuberculin tests for

international students often indicate that students have been exposed to tuberculosis (positive test) but not necessarily that they have contracted the disease. If your test is positive, you will be allowed to register; however, you will be required to have a chest x-ray and to return for the results.

Mandatory Health/Hospitalization Insurance

All international students must carry hospitalization insurance for themselves and their dependents. Insurance coverage must be continuous from the date of arrival in the U.S. through the final date of departure from the U.S. This means that international students must show proof of insurance coverage even if they are registered for less than three

T U I T I O N & F E E S

1993 Summer Session Tuition¹

Nonresident rates apply to all nonresidents except summer-only students who register in undergraduate programs. Be sure, however, to read the section immediately preceding this rate schedule because some students who are classified as "summer-only" students for purposes of registration, pay "academic-year" rates, and vice versa. Unless otherwise noted, tuition rates are listed per credit.

<u>Program</u>	<u>Resident</u>	<u>Nonresident</u>
Undergraduate Programs		
Academic year lower division students	\$66.00	\$194.50
Academic year upper division students	\$72.00	\$212.50
(NOTE: Pharmacy B.S. seniors pay \$43.00 resident, \$80.00 nonresident)		
Visiting summer-only and Adult Special students ²	\$77.00	\$77.00
Graduate Programs		
Departmental Masters (Agriculture, Education, Public Health)	\$94.00	\$188.00
Graduate School	\$163.50	\$327.00
M.B.A. Day	\$192.00	\$293.00
M.B.A. Evening	\$192.00	\$192.00
Professional Degree Programs		
Dentistry		
per credit	\$ 204.00	\$ 305.50
12 or more credits	\$2,445.00	\$3,667.50
Law	\$251.50	\$251.50
Medicine		
1-5 credits	\$ 806.50	\$1,612.50
6-10 credits	\$1,612.50	\$3,225.00
11-15 credits	\$2,419.00	\$4,837.50
16 credits or more	\$3,225.00	\$6,450.00
Pharmacy		
Pharm.D.	\$107.00	\$214.00
Veterinary Medicine		
per credit	\$ 189.00	\$ 283.00
12 credits or more	\$2,265.00	\$3,397.50

¹ This tuition and fee schedule is subject to final approval by the Board of Regents and may change without notice.

² This rate applies only to undergraduate colleges.

YOUR TUITION

The tuition you pay in the Summer Session depends upon your student status and the kind of program you are enrolled in.

You pay the **Academic-year Undergraduate** rate if any of the following applies to you:

- You have been officially admitted to a degree program at the University of Minnesota at any time in the past and registered at least once in that program;
- You are a new student who has been officially admitted to the University for summer or fall 1993;
- You are a graduate of the University of Minnesota; or
- You are an admitted student at another campus of the University of Minnesota (Duluth, Morris, Crookston).

You pay the **Lower Division** rate through the summer term in which you register for your 90th credit; the **Upper Division** rate applies thereafter.

You pay the **Summer-only Undergraduate** rate if:

- You have never been admitted to a degree program on any campus of the University of Minnesota;
- You were admitted in the past but never registered in that program;
- You have taken courses at the University but only as an evening Extension student and have not been admitted to a degree program;
- You are a high school student who has not been admitted as a first year student to the University of Minnesota;

T U I T I O N & F E E S



- You are presently classified as an **Adult Special** student, or were classified as such during your last attendance at any campus of the University of Minnesota.

You pay the **Resident** rate if:

- You fall into the Summer-only category as outlined above, or
- You have maintained a permanent home in Minnesota for at least one calendar year for purposes other than obtaining an education, and have been classified as a Minnesota resident by the University of Minnesota, or
- You receive a tuition reciprocity benefit.

TUITION RECIPROCITY

If you now receive tuition reciprocity, and come to the Twin Cities campus for the summer from another University of Minnesota campus or other Minnesota system, you need to notify your home state that you have switched campuses or systems for the summer. If you are a current University of Minnesota student who receives reciprocity, you may continue to receive it for the 1993 Summer Session and following academic year. If you are entering the University of Minnesota for the first time during Summer Session, you need to apply for the reciprocity benefit using the 1992-93 application form for your home state. If you have just been admitted to the University and your first enrollment is for Summer Session, and reciprocity has been granted, you need not reapply for the following academic year. For information and application forms, check with your home state reciprocity office.

Minnesota Higher Education Coordinating Board 400 Capitol Square Building 550 Cedar Street St. Paul, MN 55101 612/296-3974

State of Wisconsin Higher Education Aids Board P.O. Box 7885 Madison, WI 53707 608/266-2578

South Dakota Board of Regents Reciprocity Program Box 2201 Brookings, SD 57007 605/688-4497

North Dakota Board of Higher Education State Capitol Building 600 E. Boulevard Avenue Bismarck, ND 58505-0154 701/224-2962

You can also obtain application forms and information in 240 Williamson Hall (phone 612/625-6330).

FEES

LATE FEES are assessed for both late registration and late payment.

Late Registration

No registration will be accepted after June 15 (first term) or July 22 (second term) without payment of the late registration fee as follows:

\$10 June 16-21 or July 23-28
\$20 Thereafter

Exception: If you take a course that begins after June 15 for first term or July 22 for second term, you may register for that course through the first day it meets without incurring a late registration fee.

Late Payment

A fee of \$15 is charged if your tuition and fees are not paid in full by the due date on each billing statement. See Making Payment, on page 21 for more information or call Student Accounts Receivable at 612/625-8500.

Student Services Fee

If you register for three or more credits in a term, you must pay a \$65.41 student services fee for that term in addition to tuition. If you only register for a 3-5 credit course, and that course is seven to ten weeks in length, you will be assessed a student services fee for Term I only. If health coverage is needed during Term II, you should make advance arrangements with Boynton Health Service. The student services fee is generally waived for courses held outside the nine-county metro area (Hennepin, Ramsey, Dakota, Washington, Anoka, Carver, Wright, Scott, and Chisago). If your course is held on another campus of the University, however, you pay the student services fee of that campus. A special rate of \$32.70 is assessed for the Itasca Biology Session and the Itasca Forestry Session.

The summer student services fee supports the following programs:

Advocate Service, Student	\$.08
Africana Student Cultural Center	\$.09
Asian American Student Cultural Center	\$.05
Board of Student Publications	\$.02
Boynton Health Service	\$30.35
Campus Union Facilities	\$3.04
Child Care Consortium	\$.22
Emergency Loan Fund, Student	\$.11
Financial Auditing for Student Organizations	\$.31
International Study and Travel Center	\$.58
LaRaza Student Cultural Center	\$.09
Minnesota International Student Association	\$.23
Minneapolis Student Union	\$8.96
Minnesota Daily	\$1.13
Ombuds Service, Student	\$.21
Recreational Sports - Facilities	\$2.50
Recreational Sports - Operations	\$7.00
St. Paul Student Center	\$4.29
Summer Cultural Programs	\$3.30
University Student Legal Service	\$2.50
WMMR Radio	\$.35
Total	\$65.41

Course Fees¹

All fees are per term unless otherwise indicated. Students taking the following courses will pay course fees as follows:

Composition and Communication
\$230²—0011

Design
\$8—1641, 1642, 3611, 3643, 5644, 5645, 5646—Materials fee for studio courses.
\$35—1331, 3331, 5331—Materials and dyes.

Ecology and Behavioral Biology
\$15—5014, 5016, 5132, 5134
Transportation fee

Field Studies Health Service Fee
\$30.35 per summer term—required of students on University field studies such as anthropology, geology, etc. (covers outpatient medical care for emergency illness at nearest facility on approval of the person in charge of the group. Eligible charges that are not collectible from a students' insurance carrier will be paid by Boynton Health Service up to a maximum of \$100 per visit).

Forest Products
\$50—ForP 3300 Wood Industries Tour

General College
\$230²—0401, 0402, 0419, 0611, 0615, 0616, 0617, 0618, 0621, 0623, 0625, 0631, 0641, 0643. Preparatory Mathematics and Composition

Itasca Biological Station
\$10—Laboratory fee
\$5 per week minimum—Research fee (researchers must also pay the laboratory fee)

Landscape Architecture
\$35—5073, 5107

Mathematics
\$264²—1008

Music, Applied

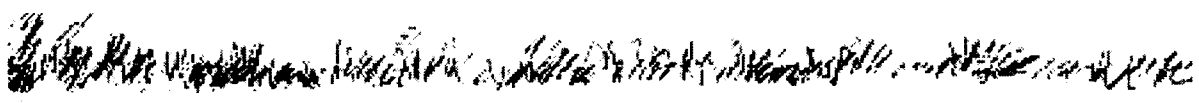
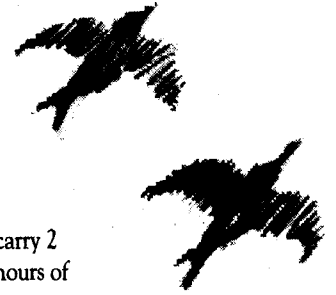
Courses in applied music carry 2 credits (minimum of five hours of private lessons) per summer term. Music majors who have passed the entrance exam: \$0 per 2 credits M.M. and D.M.A. students at the 83xx level: \$0 per 2 credits. Majors taking extra credits (beyond requirement) or taking lessons on a second instrument: \$45 per 2 credits. Non-majors, elective credit: \$115 (0-2 credits)

Plant Biology
\$20—1009 Transportation fee

Rhetoric
\$40 (Computer-assisted instruction sections only)

Soil Science
\$6—3220 Field Course
\$19—3520, 5510 Transportation fee

Studio Arts³
Materials fees:
\$5—1101, 1102, 1404, 5190
\$20—1702, 3720
\$25—1701, 3710, 5710, 5790
\$30—3430, 5430, 8360
\$35—1510, 1520, 1530, 1540, 3306, 5360
\$40—3510, 3520, 3530, 3540, 3550, 5510, 5520, 5530, 5540, 5550, 5590
\$45—3830
\$50—1301, 1302, 1811, 1812, 3301, 3302, 3303, 3304, 3305, 3307, 5310, 5320, 5330, 5340, 5350, 5370, 8310, 8320, 8330, 8340, 8350, 8370
\$55—5830
\$60—1802, 3810, 5390
\$66—5890
\$70—5810
\$80—3820, 5821
\$95—5820
\$225—8810



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Arranged (amount adjusted to individual needs of students or particular class project)—3420, 3970, 3980, 5420, 5970, all other 8000-level courses

Special Fees¹

Credit by Special Examination

\$30—Check with your college office for further information.

Deposit Cards

\$40—Chemistry cards

\$5—Art cards

Deposit cards may be purchased from the bursar. Materials, breakage, or

equipment use will be charged against the card; any balance will be refunded at the end of the course.

Diploma, Overseas Mailing

\$5—for sending a diploma air mail to address outside the United States, Canada, or Mexico. (Fee optional)

Diploma Replacement Fee

\$15

Facility Fees

Student registered in the following courses must pay the amount indicated to the appropriate facility operator for the use of the facility and/or equipment:

\$15—PE 1048, 1148

\$18—PE 1034

\$23—PE 1035

\$25—PE 1205

\$60—AnSc 1601

\$75—PE 1057, 1157, 1257

Graduate and Professional Student Assembly (GAPSA)

\$.50 per term—Assessed to students in most professional schools and students in the Graduate School.

Graduation Fee (each degree)

\$25—includes diploma

International Student Aid Fee

\$2 per term required of all students who hold nonimmigrant visas. Nonrefundable.

Minnesota Public Interest Research Group (MPIRG)

\$1.25 (refusable/refundable)—assessed with student services fee. MPIRG is a nonprofit, nonpartisan, student-run organization. A statewide advocacy group, MPIRG gives students the opportunity to speak out on public issues and work for social change. The fee supports a professional staff for lobbying, litigation, organizing, and

research. You may decline to pay the fee prior to registration by initialing the MPIRG section on the Course Request form or may obtain a refund at a location and date that will be announced in the student newspaper, Minnesota Daily.

Minnesota Student Association (MSA)

\$.53 per term—Assessed to all undergraduates, departmental masters, and students in pharmacy.

Music Practice Rooms

Rooms with upright or grand piano, harp, harpsichord, organ, or percussion as well as rooms with no instrument will be available for rental by the term. Check in 100 Ferguson Hall for rental information and rates.

Recreational Sports Locker Rentals

\$1 per day; \$15 per one or both summer terms for towel and locker at University Recreation Center, Norris Hall, and St. Paul Gym.

Speech and Hearing Clinic

Students, staff, and faculty are not charged for clinical services provided in the Speech and Hearing Clinic.

¹ Fees are subject to change without notice

² In lieu of tuition

³ Materials fees—assessed at the time of registration. Arranged fees are collected by the department.

Required Charges for Health Service and Hospitalization Insurance

Outpatient care at Boynton Health Service is automatically provided to all students during the term in which they are assessed the student services fee (students taking three credits or more per term). All such students **must** also have hospitalization insurance. If you do not have hospitalization insurance, University-sponsored insurance must be purchased at the following cost: per term (5-week coverage) \$51; second term plus interim coverage until the beginning of fall quarter (9-week coverage) \$102; both terms plus interim coverage (14-weeks coverage) \$153. See pp. 25 for more information about health services and mandatory hospitalization insurance, including care for which there is a charge.

MAKING PAYMENT

Paying Your Fees

You must pay all tuition and fees in full by the due date on your billing statement. There is no installment payment plan for Summer Session. A \$15 late payment fee is assessed if your tuition and fees are not paid in full by the due date on each billing statement. For all questions about fee payment, call Student Accounts Receivable, 612/625-8500.

Student Accounts Receivable Billing System for Tuition and Fees

With this billing system, every student will have an account at Student Accounts Receivable and will receive a bill for tuition and fees at the beginning of each term. Each time you register for, cancel, or add courses, your tuition and fees will be charged to your account. This account, unlike individual fee statements, will reflect your total charges for tuition and fees.

You will receive fee statements when you register, but they will not carry payment due dates. Your tuition due dates will be on your billing statement.

You will be assessed billing charges for the current term if you have a previous balance outstanding. Any payments that you make will always be applied to the oldest charge on your account. It is your responsibility to report any change in address to the University.

When you register, verify that the address printed on your course confirmation form is correct. (You may report an address change to Student Accounts Receivable by calling 612/625-8500.) If you do not receive any billing statement, you must obtain a payment voucher on or before the payment due dates (July 14 for first term and August 18 for second term). Payment vouchers are available at Student Accounts Receivable, 20 Fraser Hall in Minneapolis (Bursar's departmental window, 145 Williamson Hall, for students with mobility impairments) or 107 Coffey Hall in St. Paul. If you want to pay your balance before you receive your billing statement, go to Student Accounts Receivable where a payment voucher will be prepared for you.

When to Pay

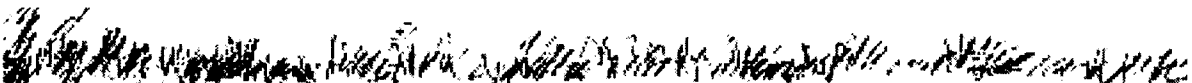
The billing statement for first term will be sent on June 23 and will have a due date of July 14; for second term the billing statement will be sent on July 30 and will have a due date of August 18. A \$15 late payment fee is assessed for each bill that is not paid in full by the due date, including a final summer bill sent on August 30 with a due date of September 15.

Where to Pay

Pay your tuition and fees at the Bursar's Office (145 Williamson Hall on the east bank, 101A Anderson Hall on the west bank in Minneapolis, and 107 Coffey Hall in St. Paul). Your billing statement (or fee statement) and a check or money order may also be dropped in any of the fee deposit boxes on campus: in the Fraser and Coffey Hall registration centers, both concourses in Williamson Hall; Anderson Hall; Minneapolis Student Union Service Center; and all dorms. Payments are picked up at 8 a.m. and are credited to the previous day. The receipted statement may be picked up after five workdays at 145 Williamson Hall or 107 Coffey Hall. Your receipted statement will be mailed to you if you enclose a self-addressed stamped envelope.

Mailing Your Payment

Your billing statement (or fee statement) and a check or money order may be mailed, using the envelope enclosed with your billing statement, to the Bursar's Office, P.O. Box 88, Minneapolis, MN 55440-0088. Write your student ID number on your check or money order and enclose all copies of your statement. (If you are paying with your fee



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statement, do not remove the student copy before sending in the payment but do remove the lower portion — your course confirmation form.) Your mailed payment must be received by the billing statement due date, or you will be billed for additional charges on the following statement. If you want your receipted statement returned to you by mail, you must enclose a self-addressed, stamped envelope. If you do not include this return envelope, you can pick up your receipted copy after five workdays at the Bursar's Office in Minneapolis (145 Williamson Hall).

Collection Procedures and Costs

Past due accounts may be subject to handling charges and collection procedures. Collection can include court action or referral to outside collection agencies. You are responsible for any and all costs necessary for the collection of any amount not paid when due.

REFUNDS

Refunds for tuition and fees are issued on a per-credit basis according to the refund rate that applies to the effective date of cancellation. Cancellations are

effective the day you officially cancel—not on the date you stopped attending classes. If you stop attending class for any reason, cancel immediately by taking a completed Course Request form to your registration center. To receive a refund, you must cancel within the time periods outlined in the box below.

In a limited number of circumstances (e.g., active military duty, scholastic drop), retroactive cancellation may be possible. If authorized within one calendar year after the end of the term, you may also be entitled to a tuition refund. Check with the Student Relations staff in 150 Williamson Hall (612/625-5333) or 130 Coffey Hall for details.

FINANCIAL ASSISTANCE

Financial Aid

Eligibility for summer 1993 financial aid is based on your 1992-93 ACT Family Financial Statement (FFS). If you have not previously submitted a FFS for 1992-93, you must submit one to ACT by May 1, 1993, to be eligible for summer aid. Applicants in the Minnesota Part-Time Student Grant Program (MPTSG) are exceptions (see below for more information).

In addition to the FFS, you must submit a Summer Financial Aid Application if you are interested in MPTSG, PELL Grant, or College Work-Study (CWS). These applications will be available in 210 Fraser Hall on or around March 31. For information on these programs or other financial aid procedures, visit or write the Office of Student Financial Aid, 210 Fraser Hall, 106 Pleasant Street S.E., Minneapolis, MN 55455 or 197 Coffey Hall, 1420 Eckles Avenue, St. Paul, MN 55108.

NOTE: If, for any reason, you do not receive financial aid, you are still responsible for paying your tuition and fees.

Scholarship and Grant Programs

Minnesota Part-Time Student Grant

These grants are available to undergraduates enrolled for 3-5 credits for the entire summer in day school, Extension classes, Continuing Education for Women, or Independent Study (correspondence). You must complete a separate application available from Continuing Education and Extension (CEE) Counseling, 314 Nolte Center, 315 Pillsbury Drive S.E.,

Length of course	100% refund	75% refund	50% refund	No refund after
1-2 weeks	day 1	day 2	day 3	3 days
3-4 weeks	days 1-2	days 3-4	days 5-6	6 days
5 weeks	days 1-4	days 5-6	days 7-8	8 days
6-10 weeks	1st week	2nd week	3rd week	3 weeks

NOTE: For 6-10 week courses, the first week of class is considered to end on Monday, June 21, 1993.

Minneapolis, MN 55455, 612/625-4334. Eligibility requirements are: U.S. citizen or permanent resident, Minnesota resident, no prior bachelor's degree, enrollment in undergraduate courses applicable to a degree or certificate program, maintenance of satisfactory academic progress, and demonstration of financial need. Contact CEE Counseling for more information.

Federal Pell Grant

You will be considered for a Pell Grant if you are an undergraduate admitted to a University of Minnesota degree or certificate program who did not attend one or more quarters of the 1992-93 school year, or who took fewer than 12 credits in one or more quarters in 1992-93. You must register for at least 6 credits during the summer to qualify. Students must turn in their Student Aid Reports (SARs) by their last day of eligible enrollment or June 30, 1993, whichever is earlier. Completion of the 1992-93 FFS or the Application for Federal Student Aid is required.

Minnesota State Grant

You may be eligible if you are an undergraduate who did not attend one or more quarters of the 1992-93 school year, or who took less than 12 credits in one or more quarters in 1992-93. You must register for at least 6 credits during the summer to be eligible for a state grant. Students will be notified when checks are available. Completion of the 1992-93 FFS is required.

Summer Employment

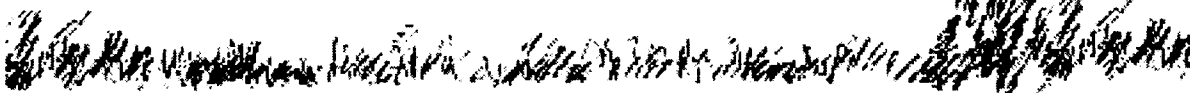
You are eligible for summer employment by the University if you were registered for at least 6 undergraduate or 3 graduate credits in a degree program during spring quarter and are returning to school in the fall, or are registered for a minimum number of credits during the summer. For more information, contact the Student Employment Center, 120 Fraser Hall, 612/624-5554.

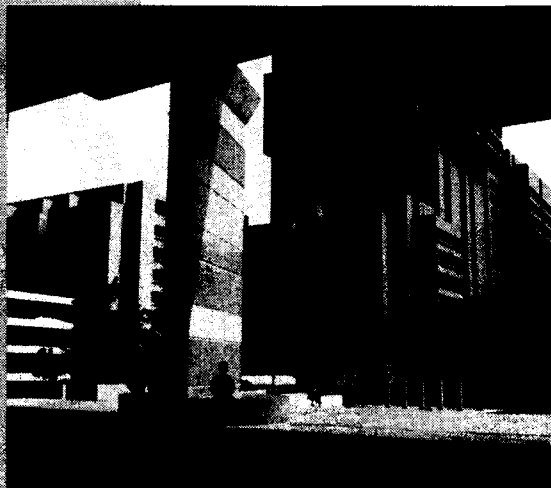
Summer Loan Programs

To be considered for summer 1993 loans, your financial aid file must be complete by July 11, 1993. If you already received a Stafford Student Loan for 1992-93, you may be eligible for a second summer Stafford loan. SLS, PLUS, SELF, HEAL, Law Access Loan, and Law Student Loan programs are also available for summer 1993. All loans require at least half-time registration in a degree or certificate program. Summer loans may reduce your fall/winter/spring eligibility. Complete information on specific eligibility criteria and other terms of these private lender loans is available in the Student Loans Brochure included with your financial aid packet. Forms for these loans are available at 210 Fraser Hall and 197 Coffey Hall.

Regent's Scholarships

University staff members employed during the summer session are entitled to the same tuition privileges in the summer as during the academic year. Check with the Human Resources Development Division for limitations.





It's a
"full service"
campus
in the
summer.

ADVISING

Students with questions about what to study and which courses to take can make use of either the Counseling Department in Continuing Education and Extension, or the college offices.

Counseling Department of Continuing Education and Extension (CEE)

Available to all summer students—

- Counseling—Professional counseling services in career and educational planning.
- Advising—Academic advising to help students select programs of study, determine prerequisites and academic standing, evaluate transcripts, choose courses and handle other academic matters.
- Financial Aid—Assistance for students seeking information about grants, scholarships, loans and work-study for part-time or full-time study.

314 Nolte Center, 612/625-2500

College Advising Offices

For help in planning your academic program, choosing a major and discussing scholastic concerns. All colleges provide these services. Consult the Directory on the inside back cover for addresses and phone numbers of colleges not listed below.

College of Liberal Arts

For pre-majors and summer-only students:

B18 Johnston Hall, 612/624-9585

College of Education

The Education Student Affairs Office provides help with program planning and registration, counseling, admissions, licensure and placement services.

40 Wulling Hall, 612/625-6501

BOOKSTORES

Textbooks, trade and reference books, general supplies, campus wear and gifts, cap and gown rental and sales.

Minnesota Book Center, 290 Williamson Hall (East Bank), 612/625-6510

H. D. Smith Bookstore, 100 Anderson Hall (West Bank), 612/625-3000

Books Underground, 7 Student Center (St. Paul), 612/624-9200

Health Sciences Bookstore, 2-554 Moos Tower (East Bank), 612/625-8600

BUS SERVICE

Inter-campus buses

Service (Route 13) between the Minneapolis and St. Paul campuses and between the East and West Banks is available free of charge unless one

enters or exits at stops located off campus. Complete information about bus service, including park-and-ride lots, is available at the information desk in each student union, the housing office in Comstock Hall and University Transit Services at 2818 Como Ave. S.E., Minneapolis 55414. Or call 612/625-9000.

Route 52 Commuter and City Bus Service

A semi-express bus system, known as the Route 52 Commuter Bus Service, consists of 12 routes directly serving the University's Minneapolis campus from various residential areas of the Twin Cities. Call 612/625-9000 for more information.

CHILD CARE

University Child Care Center

Care for infants and toddlers as well as preschool children. Fees for care are charged on a sliding scale based on family income and age of child. There is a waiting list.

1818 4th Street South, Minneapolis, 612/627-4014

M-F 7:15 a.m. – 5:30 p.m.

COMPUTER SERVICES

Extensive computer facilities, networks and services are available to University students. Call Help Line Information, 612/625-1555, for a referral to the kind of facility or service you need.

COUNSELING

University Counseling Services

Available to all students and covering a wide range of concerns including career choice, educational planning, academic and learning skills improvement, interpersonal relationships, women's issues and personal development. Counseling and testing information is confidential.

109 Eddy Hall, 612/624-3323
190 Coffey Hall (St. Paul), 612/625-3115
16 Johnston Hall (disabled students)
612/624-4037

Crisis Counselor

308-310 Boynton Health Service,
612/625-8475

Mental Health Clinic

N400 Boynton Health Service,
612/624-1444

DISABILITY SERVICES

Office for Students with Disabilities

Promotes program and physical access. Provides direct assistance in information, referral, advocacy, support and academic accommodations for all enrolled and prospective students as well as faculty and staff. Assists in obtaining services from other University and community resources. Educational specialists are available for assistance.

16 Johnston Hall, 612/624-4037
(Voice or TDD)

ESCORT SERVICE

Campus Escort Service, 8 p.m. - 1 a.m. seven days a week, 612/624-9255 or 612/624-WALK

FINANCIAL AID

Student Financial Aid Office

210 Fraser Hall, 612/624-1665

Counseling Dept., Continuing Education and Extension

314 Nolte Center, 612/625-2500

HEALTH AND MEDICAL SERVICES

Boynton Health Service

All students who take 3 or more credits per summer term are assessed the student services fee. By paying the fee, you are eligible to receive most nonhospital medical services at Boynton Health Service on the Minneapolis campus at no cost, and others at reduced cost. If you pay the student services fee for both terms, you are eligible for benefits until the first day of Welcome Week in the fall. If you do not pay the student services fee, you may purchase outpatient health coverage—through Boynton's Extended Coverage Benefits plan—at the cashier's window, second floor, Boynton Health Service. Spouses of students may also buy the Extended Coverage Benefits plan if both the student and the spouse are covered by University-sponsored hospitalization insurance. Students who do not pay the student services fee or purchase extended coverage (and spouses of

students) may use the Health Service on a fee-for-service basis.

Boynton Health Service is open from 8 a.m.-5 p.m., Monday through Friday.

Prepaid medical care at Boynton includes general outpatient services, internal medicine, orthopaedics, chest clinic, women's clinic, eye exams, and laboratory procedures. Partial fees are charged for certain services, such as routine physical exams, annual dental exams, and some specialty care.

Charges for mental health counseling, x-rays, and minor surgical procedures must be submitted by you to your hospitalization insurance company; your student services fee will cover the costs that your hospitalization insurance does not. Students without hospitalization insurance are responsible for full payment of these charges. Full fees are charged for prescription medications, eye glasses and contacts, and most dental care. Boynton general info: 625-8400; medical info: 612/625-7900.

Emergency Care at University Hospital

During the hours that Boynton is closed, emergency medical care is available in the emergency department of University Hospital. Charges for after-hours care in the emergency department are only partially covered by your student services fee.

Specifically, Boynton will pay 50 percent of any eligible charges that cannot be collected from your insurance. You are responsible for the remainder of the bill or for the entire bill if you do not have insurance. Visits to other emergency rooms are not covered by the student services fee. Follow-up care after an emergency

must be obtained at Boynton to be covered. U Hospital emergency: 612/626-2700.

Hospitalization Insurance

The Board of Regents requires all students taking 3 or more credits per summer term to carry hospitalization insurance. If you already have insurance, fill in the name of your insurance company and your policy number on the Hospitalization Insurance form found on the tear-out insert in this bulletin and bring the form with you when you register. Otherwise you will automatically be charged for University-sponsored hospitalization insurance. International students must carry hospitalization insurance for themselves and their dependents. Insurance coverage must be continuous from the date of arrival in the U.S. through the date of departure from the U.S.

If you are registered for only one summer term, you can still purchase insurance covering both terms and the interim. In fact, even if you do not take any summer courses, you can purchase insurance for the summer as long as you were enrolled in the University-sponsored hospitalization insurance program during spring quarter. It is important to maintain insurance coverage through the summer so that you are protected in case of a summer accident or illness.

You may purchase University-sponsored hospitalization insurance when you register or at the cashier's window, second floor, Boynton Health Service. Insurance must be purchased before the end of the first week of classes for each term. The costs for

coverage are:

- for one term (5-week coverage) \$51;
- second term plus interim coverage until the beginning of fall quarter (9-week coverage) \$102;
- both terms plus interim coverage (14-week coverage) \$153.

For more information, contact the Student Insurance Office at Boynton, room W228 (612/624-0627).

Immunization Clearance

State of Minnesota law requires all students born after December 31, 1956, to provide documentation of immunization for measles, mumps, rubella, tetanus, and diphtheria the first time they register for more than one class. This documentation must be entered on a Student Immunization Record Form and must include the month and year each immunization was given. Forms are available at your registration center and at Boynton Health Service. Begin now to check your medical or high school immunization records. (The law allows for some exceptions based on documented medical or conscientious exemptions.) All students are legally required to provide information on immunizations or exemptions; students who fail to provide the required information cannot remain enrolled.

International Students

If you hold an immigrant visa, have been formally admitted to the University of Minnesota, and are registering for the first time, an ME (health clearance) hold has been placed on your record. To clear the hold you must show proof of tuberculosis testing before registering for classes. To get a Tuberculin

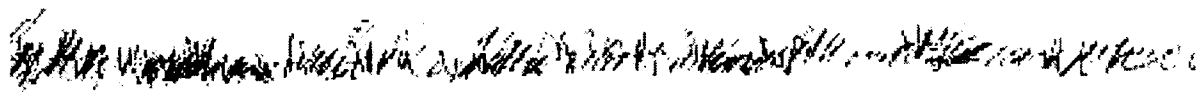
Screening Record sent to you, call 625-1430, or stop at the Boynton Health Service Immunization Clinic with your written proof of tuberculosis testing.

Further Information

For detailed information about health coverage, contact the cashier's window, second floor, Boynton Health Service (612/624-1471). General information and a copy of the Boynton brochure may be obtained by calling 612/625-8400.

Graduate Assistant Health Care Plan

Comprehensive health insurance through Group Health, Inc., is available to graduate and professional students who meet certain eligibility requirements. The University will pay 50-100 percent of the cost of this coverage, the exact percentage depending on the details of a student's eligibility. Students will be billed for any portion of the premium they owe. To receive this coverage, students must apply for it by the enrollment deadline (June 30 for most students). Boynton Health Service is a Group Health provider clinic for graduate students enrolled in the plan. A student's spouse and children may also be enrolled (at the student's expense) in a separate plan with similar benefits and clinic locations. To apply, or for more information, contact the Graduate Assistant Insurance Office, 411 Johnston Hall, 612/625-4346.



HIGH SCHOOL STUDENT SERVICES

Office of Advanced High School Student Services (Continuing Education and Extension Counseling)

Advising and assistance for all high school students registered in the Summer Session. 201 Wesbook Hall, 612/626-1666

HOUSING

Minneapolis Campus

Housing is available for 1993 Summer Session students in two residence halls on the Minneapolis campus, Middlebrook and Comstock Hall. Middlebrook is a coeducational, air-conditioned residence on the West Bank. Nearly all rooms are doubles (very limited number of singles). Comstock Hall is a coeducational, air-conditioned residence on the East Bank. Both single and double rooms are available at Comstock.

A seven-day per week (21 meals) food service program is part of the Summer Session contract. Nutritious, well-balanced meals are planned, prepared and served under the supervision of food specialists in dining areas located within the halls. All meals are served on an all-you-can-eat basis (except for some special menu items).

St. Paul Campus

A limited number of spaces for Summer Session students is available in Bailey Hall. Bailey accommodations are in air-conditioned double rooms. It has not been determined at this time if a food service will be offered as part of application contracts for Bailey.

Application for Housing

Application forms will be sent upon request. They are contained in an informational brochure that provides detailed information about policies, procedures and specific halls. The summer housing contract is not available until early April each year. Prior to April, all applicants requesting the contract are placed on a mailing list and the contract is sent when available.

Guest Housing

Short-term residence hall accommodations for visitors with University-related business or activities are available on a limited basis.

Off-Campus Housing

Off-campus housing in private residences is maintained by the Division of Off-Campus Housing. During the past several years, over 8,000 rental units have been listed. Listings are available in Comstock Hall East and, during the summer months, in 190 Coffey Hall on the St. Paul campus.

Housing Services Office

Comstock Hall East, 612/624-2994

LEGAL AID

Civil Practice Clinic

190 Law, 612/625-5515

University Student Legal Service

Includes notary service. 160 West Bank Union, 612/624-1001



LIBRARIES

The University of Minnesota-Twin Cities Libraries, with a collection of more than four million cataloged volumes, ranks among the largest in American university library collections. In addition to books and periodicals, the libraries have substantial holdings of archives, audiovisuals, government documents, manuscripts, maps, microforms, scores and other material. The core collections are located in more than 19 separate locations, directly supporting the curriculum and serving as the foundation for research.

Humanities and Social Sciences Collections

Wilson Library, West Bank

Collections in American studies, anthropology, area studies, art, business, economics, film, geography, history, language, literature, philosophy, political science, religion, sociology and women's studies.

Walter Library, East Bank

Collections in education, library science and psychology.

St. Paul Central Library, St. Paul
Collections in agriculture and applied economics, applied statistics, design, home economics, housing and apparel, family social sciences, rural sociology, textiles and vocational/technical education.

Related Subject Collections (Humanities)

In Wilson Library:
Ames Library of South Asia (S-10)
East Asian Library (S-75)
Government Publications Library (409)
Map Library (S-76)
Middle East Library (S-30)

Music Library
70 Ferguson Hall

Journalism Library
121 Murphy Hall

Architecture Library
160 Arch Building

Law Library

Law Center, West Bank

Science Collections

Bio-Medical Library (Diehl Hall)
Collections in allied health, dentistry, medicine, mortuary science, nursing, pharmacy and public health.

Science & Engineering Library
located in Walter Library
Collections in chemistry, engineering, geology and physics.

St. Paul Central Library (St. Paul)
Collections in agriculture, food science and nutrition, biotechnology and biological science.

Related Subject Collections

(call 612/625-5000 for locations)

- Biochemistry Library
- Entomology, Fisheries & Wildlife Library
- Forestry Library
- Mathematics Library
- Natural History Library
- Plant Pathology Library
- Veterinary Medicine Library

Archives and Special Collections

(call 612/625-5000 for locations)

- Andersen Horticultural Library
- Charles Babbage Institute Archives
- James Ford Bell Natural History Library
- Children's Literature Research Collections (Kerlan)
- Manuscripts Divisions
- Social Welfare History Archives
- Special Collections and Rare Books Division
- University Archives
- Wangenstein Historical Collection (medical)

LUMINA

(Libraries of the University of Minnesota Integrated Network Access)

Serves as the major access point for the University Libraries' collections. To connect to LUMINA, call 612/626-2206. For hardware or software problems, call 612/626-2272.

LUMINA is accessible from any of more than 70 public terminals available throughout the University Libraries; access is also possible from the Academic Computer Services and Systems laboratories located throughout the Twin Cities campus.

Specialized Services

Includes library instruction, computer-literature searching, inter-library borrowing and photocopying. Circulation information is available from any library circulation unit. Library hours are available by calling 612/624-4552.

MINORITY STUDENT SERVICES

Martin Luther King Program

Specifically designed to serve the needs of minority students enrolled in CLA

19 Johnston Hall, 612/625-2300

Minority and Special Student Affairs, Office for (OMSSA)

Provides minority and special students with a wide range of support services including counseling, tutoring and cultural programs. See also the OMSSA Summer Institute, p. x.

Room 310, 1901 University Ave. S.E. (Mpls), 612/625-9556

OMSSA Learning Resource Centers:

- African American
323 Walter Library, 612/625-1363
- American Indian
125 Fraser Hall, 612/624-2555
- Asian/Pacific American
306 Walter Library, 612/624-2317
- Chicano/Latino
332 Walter Library, 612/625-6013

Project Technology Power

Assists African-American, American Indian and Chicano/Latino students in engineering and the sciences with counseling, career and educational planning, registration and tutorial services. Call 612/626-0219.

MUSEUMS AND GALLERIES

Art Museum

The University Art Museum is closed during the 1993 Summer Session in preparation for its move to a new building. Watch for the Weisman Art Museum, designed by Frank Gehry, scheduled for opening in November.

Bell Museum of Natural History

The Bell Museum of Natural History, located at 17th and University Ave. S.E., provides exhibits and educational programs for the University community and the public. Special emphasis is on Minnesota wildlife. Includes an excellent bookstore. Summer hours: 9 a.m. – 5 p.m. T-F; 10 a.m. – 5 p.m. Sat.; noon – 5 p.m. Sun. No admission charge for registered University of Minnesota students. Call 612/624-1852.

Art Galleries

Call for current exhibit information.

- Goldstein Gallery, 241 McNeal Hall, St. Paul Campus, 624-7434, 624-9700.
- Larson Gallery, St. Paul Student Center, 625-0214.
- Coffman Gallery, third floor, Minneapolis Student Union, 625-7666.

- Katherine E. Nash Gallery, lower concourse, Willey Hall, West Bank, 612/624-7530.

PARKING

Parking is available at various facilities on and near the campus. Hourly rate facilities and meters are a good choice for visitors or anyone needing short term parking. Daily rate facilities (which charge a daily, set fee that you pay when you enter) are the best choice for students needing more than short term parking. All daily rate facilities accept coupons that may be purchased at several campus locations. For more information—including maps, parking for disabled persons, and economical carpool parking, call Parking Services at 612/625-6566 or 612/626-PARK.

RECREATIONAL SPORTS

Indoor and outdoor facilities for swimming, running, weight-lifting, golf, tennis and many other activities are available through an open recreation program. Fitness programs, such as aerobic dance classes, are also offered — usually at reduced rates for students.

101 Cooke Hall, 612/625-6800
104 St. Paul Gymnasium,
612/625-8283

REGISTRATION AND PAYMENT

Bursar's Office

For paying tuition and fees, cashing refund vouchers and checks (with restrictions on amount and ID/fee statement required plus fee of \$.25 per check), purchasing deposit cards and student ID card authorizations.

145 Williamson Hall (East Bank),
612/625-7535
101a Anderson Hall (West Bank),
612/625-1383
107 Coffey Hall, St. Paul,
612/625-8108

M-F 8:00 a.m. – 3:30 p.m.

Registration Centers

For turning in registration materials and obtaining fee statements.

Minneapolis campus 202 Fraser Hall

M 9:00 a.m. – 5:30 p.m.,
T-F 8:00 a.m. – 4:00 p.m.
(June 15 & July 22: 8:00 a.m. – 5:30 p.m.)

St. Paul campus 130 Coffey Hall, St. Paul, 612/624-3731

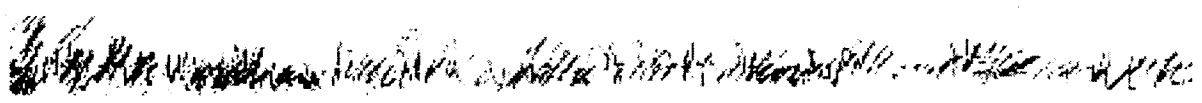
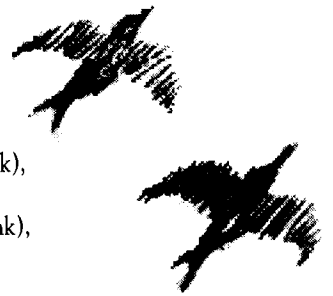
M 9:00 a.m. – 4:00 p.m.,
T-F 8:00 a.m. – 4:00 p.m.

Office of the Registrar

150 Williamson Hall, 612/625-5333

M 9:00 a.m. – 5:30 p.m.;
T-F 8:00 a.m. -4:00 p.m. (June 15 &
July 22 8:00 a.m. – 5:30 p.m.)

Student Contact Area
(first floor Williamson Hall):
For registration services for students with disabilities. For assistance with individual student record problems and questions; for certifications; for turning in applications for degree forms and address changes. For transcript services and for unofficial copies of students records (limit one copy per day plus fee for official transcripts). For obtaining bulletins.



Student Accounts Receivable

For obtaining refunds and fee payment verifications, payroll deduction information, receiving assistance with student billing problems, questions. Picture ID required for service.

20 Fraser Hall, 612/625-8500
107 Coffey Hall, St. Paul, 612/625-8102
M-F 8:00-3:30

STUDENT UNIONS

All Twin Cities campus students, through payment of the student services fee, become members of the University of Minnesota Student Union —providing intellectual, cultural, social and recreational services, programs and activities for the University community.

Minneapolis Student Union

Features a wide variety of lounge, meeting, and study areas, including rental spaces for groups. Service and information counters sell magazines, newspapers, candy and assorted sundries, MTC bus passes, movie discount tickets, an parking coupons. Art Craft studio; rental lockers; ballroom; bowling, billiards and pingpong; barber and beauty salon; copy center; postal services; ATM services. Cultural and international centers. Recreational, cultural, and educational programs. Numerous eat-in and take-out food services.

- Coffman Memorial Union (East Bank); Office: 220 Coffman, 612/625-7666
- West Bank Union, Office: 130 WBU Skyway, 612/624-5200

St. Paul Student Center

Lounges, meeting rooms, galleries, bowling, billiards, pingpong and a ballroom. Recreational, cultural, and educational programs. The information booth sells snacks, candy, MTC bus passes and movie and entertainment discount tickets. ATM services. Other features include: the Terrace Cafe, serving breakfast, lunch and snacks with indoor and outdoor seating; Books Underground, the St. Paul campus bookstore; the Outdoor Store, which sells and rents outdoor gear, canoes, tents and camping equipment; Copies on Campus offering copies and self-service word processing. Call 612/625-7200 for hours and information.

SUMMER ENTERTAINMENT

Music

Big bands, jazz, upbeat classics — all kinds of music and entertainment events — make the Summer at Northrop Festival a campus highlight each year. Events run from mid June through August. Most are free and performed outdoors on the Northrop Plaza during the noon hour so you can enjoy them during lunch. This lively festival is presented by the Summer Session office.

Watch for schedules of the Summer at Northrop events. Calendars are available during the first week's events on the Northrop Mall or may be picked up in June at the Northrop Ticket Office, 105 Northrop Auditorium.

In addition to free events, the Summer at Northrop Festival occasionally presents special concerts and performances by renowned artists. Call the Northrop Ticket Office at 612/624-2345 for more information.

Theatre

During the summer months of June through August, University Theatre offers theatre productions aboard the Minnesota Centennial Showboat. The Showboat is a real sternwheel paddleboat moored on the Mississippi River. Audiences enjoy lighthearted musical entertainment or melodramas aboard the air-conditioned Showboat. Call 612/625-4001 for regular ticket information and reservations. A limited quantity of free tickets are available to students registered in Summer Session. Call 612/624-3555 for information about complimentary tickets.

Student Union Programs

The Minneapolis Student Union and the St. Paul Student Center offer a wide variety of free recreational and cultural entertainment throughout the summer — films, music, speakers and special events.

Film

Outstanding films from around the world are shown on campus by the University Film Society. Nightly plus weekend matinees. For information call 612/627-4430.

SUMMER SESSION OFFICE

For general information, help or referral on all summer session concerns. 135 Johnston Hall, 612/624-3555

VETERANS SERVICES

Veterans Assistance Office

For certifications and related help. 150 Williamson Hall, 612/625-8076
190 Coffey Hall, St. Paul, 612/625-5284

SPECIAL PROGRAMS

Some things that make the summer special

AEROSPACE ENGINEERING WORKSHOPS FOR TEACHERS

Institute of Technology

Two Introductory Workshops

July 6 - 16 and July 19 - 30

The introductory workshop for elementary and secondary school teachers (AEM 5001) will be held twice, July 6-July 16, and again July 19-July 30. Offered in cooperation with the National Aeronautics and Space Administration (Lewis Center), Civil Air Patrol Liaison Personnel (U.S. Air Force), Minnesota Department of Aeronautics, and Department of Aerospace Engineering and Mechanics of the University of Minnesota, the workshop is designed to provide information about aviation and the space sciences that can be used to create new courses or enhance existing classroom programs.

Advanced Workshop

June 21 - July 2

An advanced aerospace workshop for secondary teachers will be held June 21-July 2. This new workshop has been developed for secondary math and science school teachers, building upon AEM 5001. This course is based on a continuing teaching and research program of the Department of Aerospace Engineering and Mechanics and the NASA/Universities Space Research Association Advanced

Design Program. During the academic year, senior AEM undergraduate students worked with the NASA Marshall Space Flight Center engineers on a lunar transportation system design project. This project is introduced to workshop students to familiarize them with contemporary NASA design tools and the methodology used to teach design to a class of students. Additional projects directed specifically at secondary students will be presented and the course will provide a variety of teaching tools and materials to stimulate secondary student interest in math, science and the space program.

Workshop registration. You must be an in-service teacher (any field) to enroll in the introductory workshop and an in-service math, science or aerospace teacher to enroll in the advanced workshop. Enrollment in either is limited to 30 per course. To register, you must obtain a registration information packet by calling 612/625-8000 or writing to the Department of Aerospace Engineering and Mechanics, University of Minnesota, 107 Akerman Hall, 110 Union Street S.E., Minneapolis, MN 55455. You must also obtain a Registration Override Permit from the Department of Aerospace Engineering and Mechanics. This permit grants you a place in the course. To receive the permit, your request must be accompanied by written verification of your current in-service teaching status on school district letterhead. If approved, you will be issued a dated permit. You then register in the usual manner. If you do not register by the designated expiration date on the Override Permit, you will lose your place in the course.

Practicing administrators/counselors or non-in-service teachers can send in a written request to the Aerospace Workshop Instructor for course enrollment consideration (c/o Department of Aerospace Engineering and Mechanics, address above). Such requests should state your purpose for taking the course.

Enrollment requirements are strictly enforced. Neither the department nor the course instructor will give written permission for registration in this class once the limit is reached and the class closes. **These courses fill up quickly.** You must attend the entire first class session or your space in this class will be forfeited. See the listing under Aerospace Engineering and Mechanics for a description of the course content on this page.

Join people

from all over

the world on

campus this

summer.



EDUCATION COURSES OF SPECIAL NOTE

College of Education

Refer to department listings for full descriptions.

Business and Marketing Education

Business Observation (BME 5361), Term I, provides an update on a wide range of contemporary strategies used by business organizations to become competitive in the global marketplace. The course is designed around business-based seminars conducted by representatives of leading Minnesota organizations. You critique these strategies and propose solutions to the problems raised.

Special Topics in Technical Updating: MSDOS and Windows (BME 5390). August 3-7. Advanced MSDOS functions for disks, files and directories. Explore the many features of Microsoft Windows 3.0 for IBM and compatible hardware.

Educational Policy and Administration

Leadership Development Seminar. Applicants for admission to degree programs in educational administration/leadership are encouraged to participate in this Term II seminar dealing with assessment and counseling, skill development, and contemporary issues. Accompanies your registration in EdPA 5130 and EdPA 5139 (see course listings for registration requirements). Advance application is required. Address inquiries to the Department of Educational Policy and Administration, 275 Peik Hall, University of Minnesota, 159 Pillsbury Drive S.E., Minneapolis, MN 55455.

Special Topics. Special topics courses for the 1993 Summer Session include:

- **Outcome-Based Education** (EdPA 5128, 3 credits, Term I, and EdPA 5099, 3 credits, Term II);
- **Facilitating School Change** (EdPA 5128, 3 credits, Term II);
- **Minorities in Higher Education** (EdPA 5142, 3 credits, Term I);
- **Nonformal Education in International Perspective** (EdPA 5128, 3 credits, Term I).

Educational Psychology

Educational Measurement in the Classroom (EPsy 5220). July 26-30. Rationales for classroom tests, techniques for writing and scoring items, methods for analyzing results, and procedures for combining varied assessment data for purposes of grade assignment. Morning large group sessions and afternoon small group activities. James S. Terwilliger.

Integrative Life Planning: New Career Development Approaches for a Changing Workforce (EPsy 5400, Sec. 1). June 21-25. Designed for educators (teams of teachers, counselors, and administrators encouraged), academic advisers, human resource development personnel, trainers, career specialists, youth workers, and other human services staff, this intensive one week renewal workshop focuses on new approaches to career development programs and career counseling in education, industrial, and community settings. Based on an "Integrative Life Planning" framework. Sunny Hansen.

Psychology of Student Learning (EPsy 5114). Offered both terms—during Term I for four days: June 15,

17, 22 and 24, and during Term II as a three-week workshop, July 23-Aug. 16. Psychological methods and principles; models of the learner; topics in development, creativity, intelligence, and motivation; implications for teaching and curriculum design in preschool, elementary, and secondary education; professional training with children and adolescents. Jay Samuels (Term I), Paul van den Broek (Term II).

Psychology of Adult Learning (EPsy 5115). July 26-August 16. Psychological methods and principles in human learning with emphasis on the adult learner. Motivation, creativity, achievement, intelligence and implications for teaching and curriculum design in higher education, continuing education, and professional training. Robert Tennyson.

Kinesiology

Competitive Sport for Children and Youth (Kin 5375). Cognitive, behavioral, and biological factors having important implications for competitive sport participants from early childhood through high school age. Emphasis is placed on translating sport science research into practical implications for youth sport coaches, teachers, and administrators. Diane Wiese-Bjornstal.

Exercise for Special Populations (Kin 5385). Current information about physical activity opportunities and limitations of people with special needs such as the elderly, obese, or visually impaired; persons with diabetes, cancer, or spinal-cord injuries; or women and children. Much of the information will be presented by guest speakers who have expertise in one of the focus areas. Allen Burton.

The Achievement-Based Curriculum (ABC) Model (Kin 5720, sec. 1). July 1-July 20. A workshop in which you will learn about the Achievement-Based Curriculum (ABC) Model as an outcome-based approach suitable for physical education. Although standard ABC model training procedures will be followed in this special topics course, a careful critique of the model will be encouraged. Format will include lecture, discussion, and practical activities. Allen Burton.

Technology Applications in Sport and Physical Education (Kin 5720, sec. 1: Aug. 5-18; sec 2: June 29-July 10). Explore computer and video technology applications in sport and physical education including materials development and evaluation of equipment, software, and new applications. Lela June Stoner.

Integrating Sport Science Into the Curriculum: Math/Science (Kin 5720, sec. 2). Concepts in sport and exercise science to develop curriculum credentials which can be used in a cross disciplinary fashion by physical education, math, and science teachers. You will focus on the development of in-class projects and the application of technology. Ava Walker and Michael Wade.

Coaching of Individual, Dual, or Team Sports: Soccer (Kin 5740). July 22-Aug. 4. A participation, demonstration, and lecture course appropriate for coaches and teachers of soccer. The instruction level assumes you have a basic knowledge of soccer fundamentals and includes analyses of skills game strategies, and techniques of coaching. March Krotee.

Human Factors and Safety Issues (Kin 5720, sec 2). July 22-Aug. 18.

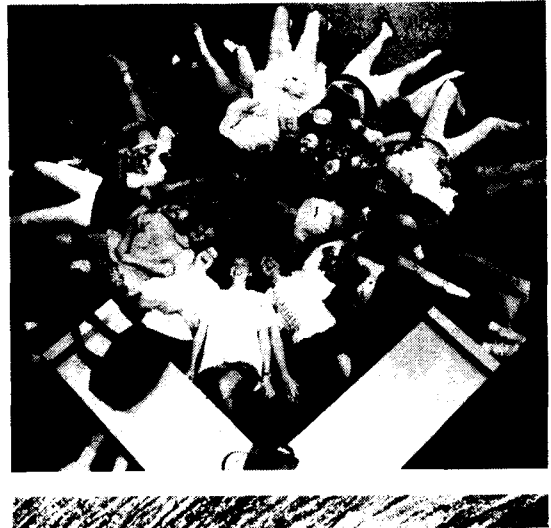
Application of rapidly evolving human factors research critical to answering questions about safety and complex transportation systems. Drawing on a wide spectrum of traditional disciplines you will focus on theoretical and practical solutions. Students from civil engineering, computer science, psychology, and cognitive science, as well as kinesiology students, can benefit from this course. You will be encouraged to pursue empirical work in the simulation facilities of the Human Factors Research Laboratory. Peter Hancock.

Vocational Education

Effective Management of Diversity in Education and Work Settings (VoEd 5100). June 15-18. Specific methods for improving assessment, training, on-the-job and interagency communications, organization transformation, and evaluation in school and work settings—with special focus on diversity issues. For educators and business and industry representatives.

Youth Apprenticeship and Tech Prep (VoEd 5100). June 15-25. Youth apprenticeship, "tech prep," and school-based enterprises as important strategies for integrating academic and vocational curriculum and for improving the process of adolescent transition from school to work.

Special Needs Program Improvement (VoEd 5101). June 22-30. Integrated strategies for improving programs and services for special needs youth and adults. Topics include: inservice staff development and improvement efforts; alternative models; school-based activities; managing communications and personnel relations; leadership style.



Integration of Vocational and Academic Education (VoEd 5101). June 15-25. Key concepts, the latest research, and current practice around the country regarding integration of academic and vocational education at the secondary school level.

Home Economics Education

Parent and Family Education: Home and School Collaboration (HEEd 5406). June 21-July 2. Models for collaboration and strategies for developing and strengthening significant partnerships between families and schools.

Home Visits as an Educational Strategy (HEEd 5406). July 8, 9, 16. The history, theory, technique, and practice of home visits as a means to educate individuals in a family context. Especially important for parent educators, early childhood educators, elementary and secondary teachers, nutrition educators, and other family educators.

Effective Parent Education for Diverse Populations (HEEd 5406). July 12-16. Roles and responsibilities of European-American, middle class parent educators in relation to families from other backgrounds. You will critique standard assumptions and practices and will develop program strategies for more effective education.

Industrial Education

Industrial Education Workshop: Structured OJT (Ind 5306). July 22-August 17. Techniques for developing and delivering structured (planned) on-the-job training (OJT). Includes visits to actual work sites. For trainers and supervisors in business and industry, as well as technical college instructors who wish to work with students individually.

Occupational Experience (Ind 5000). Offered Term I and II. This course is an occupational internship and you may register for one or both sessions. For trainers, supervisors, instructors, vocational counselors and people preparing for management in business and industry. High school and technical college teachers can receive work experience licensure credit on the basis of two hours of credit for each hour worked.

Industrial Course Construction (Ind 5330). June 15 and arranged. This course is taught as a distance delivery course focused on the development of performance-based instruction for education and/or industry. You attend class the first day and then work independently on an instructional program of your choice using a computerized tutorial.

THE MINNESOTA MBA PROGRAMS

Carlson School of Management

The Carlson School of Management offers both a full time Advanced Placement MBA for students with a business undergraduate background and the Carlson MBA, designed for students with no or limited business coursework.

For further details about the MBA programs, admission requirements, and application deadlines, contact the Curtis L. Carlson Graduate School of Management, 295 Hubert H. Humphrey Center, University of Minnesota, 271 19th Avenue South, Minneapolis, MN 55455, 612/625-5555.

EXTENSION SUMMER PROGRAMS

Continuing Education and Extension

Evening Extension Classes

Many evening classes, originating in the standard curricula of most academic departments, are offered during the same dates as Summer Session. Also offered are several special and noncredit programs. Watch for the Summer Evening Extension Classes bulletin, available in April. For more information contact Extension Classes, 101 Westbrook Hall, 77 Pleasant St. S.E., Minneapolis, MN 55455; or call 612/625-3333.

Independent Study

When you cannot attend classes on campus, you can select from more than 450 correspondence or media-assisted courses. For more information contact Independent Study, 45 Westbrook

Hall, 77 Pleasant St. S.E., Minneapolis, MN 55455; or call 612/624-0000.

Noncredit programs for professionals

Noncredit educational programs for a wide variety of professional groups—conferences, symposia, short courses—are offered throughout the summer by the department of Professional Development and Conference Services (PDCS), which plans and conducts such programs in collaboration with the academic units of the University. For more information contact PDCS, 131 Nolte Center, 315 Pillsbury Drive S.E., Minneapolis, MN 55455; or call 612/625-6616.

THEATRE

College of Liberal Arts

Of special interest to high school teachers as well as regular University students.

Show Biz: Staging and Performing Musical Theatre (Th 5940). Term I. An intensive fundamental course in Music-theatre performance, staging and choreography. Includes audition techniques and contact with professional guest artists. Taught by two music-theatre professionals with extensive experience in the Twin Cities and Hollywood. John Command, principal instructor.

Art, Entertainment and Popular Culture in the Victorian United States (Th 5950). July 27 – August 12. An interdisciplinary examination of the different art forms of an era that became fixtures of American society and how each had a tremendous impact on the American consciousness. Lee Adey.



ULPAN HEBREW LANGUAGE COURSE

College of Liberal Arts

June 11 – August 21

The Ulpan is a unique approach to teaching Hebrew. Developed in Israel at a time when a large adult immigrant population needed to acquire a working knowledge of Hebrew rapidly, the Ulpan was designed to create teaching techniques and instructional materials. The practical goal was to enable adults of widely differing educational experiences and abilities, as well as diverse linguistic backgrounds, to quickly make a linguistic and cultural adjustment to a new environment.

The Ulpan Hebrew language course offered this summer will extend over both terms and run June 11 through August 21. It will provide intensive study of the language as well as learning experiences in Israeli culture. The program is designed for individuals who have not previously studied Hebrew. You will spend 15 hours per week in class during the 10 weeks. In addition to normal class sessions, special learning activities that involve natural and spontaneous use of Hebrew will include games and sports activities, Israeli folk dancing and singing, meeting with delegates of Israeli students from Rishon le'Tzion, and sessions with Israeli artists, musicians, and other professionals.

For further information, write Classical and Near Eastern Studies, 331 Folwell Hall, University of Minnesota, 9 Pleasant St. S.E., Minneapolis, MN 55455, or call 612/625-5353.

THE CHASE LECTURE

Creative Writing for and by Children

College of Education

June 22

The fourteenth annual Chase Lecture will be presented this year on Tuesday, June 22, at 3:30 p.m. in Coffman Memorial Union. This year's guest lecturer is Ted Rand, an illustrator from Mercy Island, Washington, who is also one of several guest lecturers in the creative writing course (Elem 5318). Other guest lecturers include Marion Dane Bauer, Barbara Juster Esbenson, Audrey Osofsky, and Lynn Lacy. Questions about the course or the Chase Lecture may be directed to Department of Curriculum and Instruction, 125 Peik Hall, University of Minnesota, 159 Pillsbury Drive S.E., Minneapolis, MN 55455, 612/625-6372.

16th Annual

CHILDREN'S LITERATURE SUMMER FORUM

University Libraries

Watch for details of this Summer Session tradition, organized by the Kerlan Collection/Children's Literature Research Collection. A series of ten public presentations by renowned authors, illustrators and teachers of children's books. For more information call 612/624-4576.

GEOLOGY FIELD STUDY

Institute of Technology

June 10 – July 19

Fieldwork in geologic mapping (Geo 5111) will be conducted June 10-July 19 in the Sawatch Mountains near Gunnison, Colorado. The course is restricted to geology, geophysics or geo-engineering majors who have satisfactorily completed the core sequence of Geo 1111 (or 1001), 3102, 3112, 3401, 5201, 5501, and 5651. A major paper is required. Instructor's permission is required for registration.



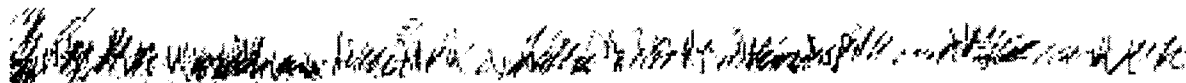
MINNESOTA HISTORY WORKSHOP

College of Liberal Arts and the Minnesota Historical Society

July 26-August 6

This annual summer workshop is a two-week, 5-credit course for history teachers and graduate students. This year's topic explores the impact of railroads and the railway industry on agriculture and family life in the Red River Valley. See p. x for more information.

Individual research in primary sources, activity modeling, guest lectures, two field trips, and ongoing discussions make up the curriculum. Students work in teams. All research in the MHS resource collections is directed toward the goal of creating a unit of study or a classroom activity. Each student also keeps a daily record of responses to the overall workshop experience in a personal journal. Grades are based equally on the project and the journal. Residential facilities will be available for out-of-town students. For further information on course content or the residential options, call Phil Fitzpatrick, 612/296-1055.



SUMMER INSTITUTE FOR TEACHERS

College of Liberal Arts and Summer Session

The Institute for 1993 includes several exciting new offerings, in addition to courses that have been a part of past Institutes. The everchanging world and classroom create the impetus for us to come together and explore emerging issues, important changes and new ideas that you can bring back to your classroom. Each course is designed to be timely, informative and stimulating. Most are interdisciplinary and all are in a convenient one or two week format. You will have the unique opportunity to learn, plan, design curriculum, and share ideas with other teachers from throughout the state and with faculty from the University.

For registration materials, costs and additional information about each course of the Summer Institute for Teachers, please contact the Summer Session office, 612/624-3555. Enrollment in all courses is limited. Early registration is advised.

Enjoying Children's Literature

A Summer Symposium

June 17 – 18

This symposium is the first of what we hope will become an annual feature of the Summer Institute for Teachers.

Children's Literature in the Classroom: Native American

Authors 0 – 1 credit. Symposium: June 17, 1:00 – 4:30 p.m. and June 18, 9:00 a.m. – noon; Workshop: June 18, 1:30 – 4:30 p.m. Children's literature by and about Native Americans. You will

address such topics as accuracy and authenticity, problems of illustration, appropriate reflection of culture, and the incorporation of Native American literature into curricula. Guests will include authors Virginia Driving Hawk Sneve (*Jimmy Yellow Hawk, High Elk's Treasure*) and Tom King (*A Coyote Columbus Story*), as well as other scholars, educators, and publishers. A separate half-day workshop (available for credit) will introduce you to the texts and manuscripts of the University Library's Kerlan Collection, particularly its Native American works. Target audience: professionals who work with children—elementary and middle school teachers, pre-school and day care personnel, librarians and media center specialists.

You may register for the Symposium only (without credit at a cost of \$35) OR register for the Symposium plus the 1 credit workshop (cost \$112). To register for the Symposium only contact Professional Development and Conference Services at 612/625-6616. If you want to register for credit, contact the Summer Session at 612/624-3555 or 612/624-9898. The workshop component is Amln 5920, sec. 6.

Sponsored cooperatively by the American Indian Studies department of the College of Liberal Arts, the Kerlan Collection of Children's Literature, Summer Session and the department of Professional Development and Conference Services, Continuing Education and Extension.



Exploring Diversity

June 21 – July 2

Explore diversity issues by taking one of these five special courses. While primary attention will be on content, you will also look at ways to incorporate these new ideas and materials into your classroom.

Intercultural Studies in Literature (Engl 5920). 4 credits. 9:00 a.m. – noon. Charles Sugnet, department of English.

This course involves you in conversation about how best to present fiction from various cultures to American students. Novels, produced in the United States and abroad, that relate to American minority culture are studied. Texts are chosen from works such as: *Things Fall Apart* (African) by Chinua Achebe; *Sula* (African American) by Toni Morrison; *Love Medicine* (American Indian) by Louise Erdrich; *House on Mango Street* (Chicano) by Sandra Cisneros; *The Woman Warrior* (Chinese American) by Maxine Hong Kingston; *Annie John* (Caribbean) by Jamaica Kincaid; *The Middle Man and Other Stories* ("new" American immigrants—India, Iran, Korea) by Bharati Mukherjee; and selected Hmong texts. Target audience: secondary teachers of English and humanities.

Harlem Renaissance: African-American Art and Culture in the 1920s (Afro 5597/Engl 5597). 4 credits. 9:30 a.m. – noon. John Wright, department of English.

If, as popular myth would have it, the 1920s was the decade of flappers, cabarets, and the Lost Generation, it was also the decade of the New Negro, the Jazz Age, and Marcus Garvey's Black Legions. You will examine the explosion of new urban black popular culture: the blues and Broadway shows, painting and sculpture, vernacular dance and Black cinema, along with literature, figures like Duke Ellington, and the host of other writers and artists who celebrated and critiqued it all. This seminar is designed to assist you in developing new multicultural, interdisciplinary curricula. Target audience: secondary teachers of literature, humanities and history.

The Flowering Tree: Traditional and Contemporary American Indian Literature and Culture (AmIn 5960). 4 credits. 9:30 a.m. – noon. Carol Miller, departments of American Studies and American Indian Studies.

This course integrates the cultural and aesthetic qualities of texts such as *Black Elk Speaks* and *Night Flying Woman* by Ignatia Broker, *Ojibway Ceremonies* by Basil Johnston, *The Way to Rainy Mountain* by Scott Momaday, *Storyteller* by Leslie Silko, and by Louise Erdrich to illustrate the reflowering and connectedness of traditional Native expression within contemporary American Indian literature. These works also serve as models for discussion of the opportunities and challenges multicultural curricula engender in the classroom, especially in terms of diverse, and often problematic, student response. Target audience: all teachers.

(Dis)abling Images in Literature, Film, and the Media (AmSt 5920). 4 credits. 9:30 a.m. – noon. Terry Collins,

General College, and Susan Kroeger, Office for Students with Disabilities.

Why did Tiny Tim have a mobility impairment? Why did Quasimodo, the "Hunchback of Notre Dame," have a disfiguring birth defect? Why did Dr. Strangelove use a wheelchair and have a neurologically uncontrolled arm? Why was the Joker in *Batman* disfigured? Why is Captain Hook's prosthesis so "evil"? In this course you will look seriously at how "disability" has been viewed culturally in the past, and how images in our literature and film arts have reflected and compounded bigotry against people with disabilities. You'll also work with recent materials that point to changes in self-definition among people with disabilities and, perhaps, in popular consciousness. Target audience: all teachers.

Asian-American Literature: Questions of Identity (Engl 5910). 4 credits. 9:30 a.m. – noon. David Mura, author and guest instructor, department of English.

This course examines a wide variety of Asian-American literature—fiction, poetry, drama, and non-fiction—with particular attention to the recent outpouring of new works by Asian-American writers. A key theme will be the difficulties and contradictions involved in formulating an Asian-American identity. Attention will be paid to the historical and cultural background of the literature and to exploring the relationship between Asian-American literature and the work of other writers of color. Target audience: all teachers.

Curriculum Laboratory (SeEd 5351). 1 credit. 1:15 – 3:15 p.m., June 23, 24, 26, 30. Rick Beach, department of curriculum and instruction, College of Education.



The Exploring Diversity courses will be augmented this year with optional afternoon lab sessions, enabling you to earn an additional credit. During these four sessions, you will work with new educational technology, discuss learning styles and experiment with incorporating multimedia into your individual or group course projects. Target audience: all teachers (concurrent registration in one of the other Exploring Diversity courses is required).



Expanding the Classroom

Leave the confines of a University classroom behind and investigate other resources for learning. This summer's offerings allow you to experience the city, dig near Little Falls or enjoy the comfort and beauty of Minnesota's new History Center.

Investigate the City Two courses will be offered that introduce the cities of Minneapolis and St. Paul as a classroom. You will learn to "see" the city and its issues as a laboratory with vast resources instead of an obstacle to learning.

June 21 – July 2 and July 26 – August 6

Summer City Institute I (Geog 5900, sec. 5). 4 credits. June 21 – July 2, 9:30 a.m. – noon. Judith Martin, department of geography and director, urban studies.

For seven decades most Americans

have lived in urban or suburban environments. Typically we take these surroundings very much for granted, seldom questioning how or why a particular place came to be as it now is. This course raises a variety of questions about contemporary issues, using the Twin Cities as an object of learning and a laboratory. The focus will be quite broad; the objective will be to understand the learning possibilities inherent in the urban environments which we use daily without a second thought. You will work on a project (which may have classroom applicability, but need not be a set of lesson plans). Target audience: all teachers.

Summer City Institute II (Geog 5900, sec. 6). 4 credits. July 26 – August 6, 9:30 a.m. – noon. Judith Martin, department of geography and director, urban studies.

Building on the base of understanding developed in the first session (or for those who just want more in-depth exposure), this course tackles some especially challenging urban issues, and makes fairly extensive use of fieldwork, site visits, and guest speakers. Among the topics that might be addressed: the political and economic evolution of our urban landscapes; the challenges and opportunities offered by increased diversity in cities; the aesthetic and economic role of arts and culture in cities; the challenges of urban environmental issues; and the dilemmas that cities face in addressing such problems as poverty and housing needs. Efforts will be made to tailor the course to the particular interests of participants. You will work on a project which addresses one urban issue in depth. Target audience: all teachers

(registration in the first course is recommended but not required).

Minnesota History Workshop For more than twenty years, the University's department of history and the Summer Session have cooperated with the Minnesota Historical Society to offer a workshop for teachers on some aspect of Minnesota history. Each summer the workshop focuses on a different topic.

July 26 – August 6

Minnesota History Workshop: Railroads and the Red River Valley (Hist 5381). 5 credits. July 26 – August 6, 9:00 a.m. – 4:30 p.m. Taught at the Minnesota History Center, 345 Kellogg Blvd., St. Paul. Phil Fitzpatrick, Minnesota Historical Society.

This summer's topic examines the impact of the railroad industry on farming, settlement, and rural life in the Red River Valley in the late 19th and early 20th centuries. Major players in the industry — Hill, Farley, Kittson, Cooke, Moorhead and others — will be highlighted. Major events like the grasshopper plagues of the late 1800s and the growth of the sugar industry will form the background for studying individual, family and community histories. Use of the Minnesota Historical Society Research Center will enable you to use primary sources to dig deeply into this area's past, and build curriculum units or activities that can be used immediately in your classroom. An optional weekend field trip to the Fargo-Moorhead area is planned. Target audience: all teachers. Residential facilities will be available for out-of-town students. For further information on course content or the residential options, call Phil Fitzpatrick, 612/296-1055.

Minnesota Archaeology

Here is your opportunity to learn more about how history is "discovered."

Offered in cooperation with the Institute for Minnesota Archaeology.

June 21 - 24

Archaeology in the Classroom: A Workshop for Teachers (AnSt 5100).

1 credit. June 21 - 24. Little Falls, Minnesota.

This workshop gives you the opportunity to gain a broad, general background in the field of archaeology. Held in Little Falls near an on-going archaeological site, you will gain hands-on experience examining this culturally rich area of Minnesota while developing ways to introduce archaeological concepts into your existing curriculum units. Target audience: all teachers.

Envisioning Change

Writing for Teaching: Inspiring Writing and Creative Thinking in the Classroom (EngW 5210). 4 credits.

June 28 - July 12, 9:30 a.m. - noon.

Chris Anson, department of composition and communication.

Have you considered just how powerful a tool writing can be? Do you use writing as a learning activity in your classroom? Are you and/or your students afraid of writing? This course will introduce you to a whole series of activities focusing on writing. Whether you are a beginning, casual or serious writer you will have the chance to experiment with the craft. You will learn to apply new ideas by trying them first. The goal will be for you to USE writing to think about teaching, and along the way to think about how you can use writing IN your own teaching. Target audience: all teachers.

Questions of Justice: Teaching for and About Human Rights (Elem 5101/ SeEd 5153 /Pol 5710). 3 credits.

June 21 - 26, MTWThFS 9 a.m. - noon and MWTh 1 - 4 p.m. Patricia Avery, department of curriculum and instruction, College of Education, and John Sullivan, department of political science, College of Liberal Arts.

A course providing opportunities for teachers to explore the relationships between human rights issues and education. You will examine the historical, political and legal dimensions of such human rights issues as hunger, racism and repression in local and global contexts; examine instructional materials, models and methods; and develop lessons focusing on a particular issue. Target audience: all teachers interested in incorporating human rights issues into their curriculum.

OMSSA SUMMER INSTITUTE

Office for Minority and Special Student Affairs

The OMSSA Summer Institute is an intensive head-start program designed to help students of color develop college-level skills in English and mathematics, if needed, so that they can pursue their studies at the University of Minnesota. The Institute runs for seven weeks from late June through early August. All participants receive a full stipend to cover tuition, fees and living expenses. Call the Learning Resources Center listed on p. 28 for more information.

Four Week Session, June 21 - July 16

GC 1578 - Introduction to Microcomputers and Word Processing

Seven Week Session, June 21 - August 6

Afro 1025 - Black Americans

Amln 5422 - Change & Development in Indian Communities

Comp 0011 - Preparation for Writing Practice (ESL)

Comp 1101 - Writing Practice I

GC 0611 - Mathematics Skills Review

GC 0621 - Elementary Algebra

GC 0625 - Algebra Review

GC 0631 - Intermediate Algebra

GC 0643 - Basic Mathematics:

Programmed Study

GC 1051 - Introduction to College

Reading and Writing (ESL)

GC 1221 - Minnesota History

GC 1235 - United States: Law in Society

GC 1421 - Writing Laboratory: Personal Writing

Math 1111 - College Algebra and Analytic Geometry

Math 1201 - Pre-Calculus

Math 1251 - Calculus I



LAKE ITASCA FORESTRY AND BIOLOGICAL STATION

Opportunities for Summer Research and Field Study

The Station

The University of Minnesota's Itasca Forestry and Biological Station is located on the east shore of Lake Itasca in Itasca State Park—just a mile from the headwaters of the Mississippi River and about 20 miles north of Park Rapids in northwestern Minnesota. Itasca Park's old growth forest and numerous lakes have helped make it one of the nation's outstanding field stations.

Facilities include heated, comfortable cabins, a large assembly hall, a dining hall, a reference library, 12 labs in six academic buildings, and varied research, classroom and study areas. Much of the instruction takes place in the field; many varied habitats are within walking distance of the station. Boats and canoes are available for classes and personal use. The setting lends itself to establishing good, long lasting friendships.

The Itasca Habitats

Itasca Park—an ecological area of national renown—embraces 50 square miles of protected forests traversed by a fine system of roads and trails. Prairie, boreal forests, northern hardwood forests, numerous lakes, bogs and wetlands and diverse wildlife habitats all coexist in different areas of the park. An abundance of birds and animals afford many striking behavioral and ecological problems for study. Fish and other aquatic life are plentiful and provide an excellent

source for special studies. The many lakes of different types provide unusual field opportunities for work in limnology, phycology, aquatic insects, fungi, and in related subjects. Itasca's forests have been protected for more than a half century, and many have never been cut. There is an excellent array of virgin timber stands and communities developing into climax types.

Forty miles to the west, a dramatic 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. The forests of the park are unique. Here the northern coniferous and deciduous types of the central hardwood region meet. This meeting of the three great plant regions of the eastern United States provides opportunities for study not only of varied ecosystems but also of a singular range of fauna and flora with southern, northern, and western origins. Opportunities to observe birds during June and July are particularly outstanding.

Living Arrangements

Transportation

Students depending on public transportation to travel to the Itasca station may take a bus to Bemidji; Northwest Airlines offers daily service between the Twin Cities and Bemidji. Students are met upon arrival if they make prior arrangements with the program director. Before June 11 you may telephone or write the Itasca Program office for your college. After June 11 you may telephone the Itasca office (218) 266-3302 or write to the

University of Minnesota Forestry and Biological Station, HCO5, Box 6, Lake Itasca, MN 56460. State Highway 200 and U.S. Highway 71 provide easy access by car into the park.

Cabins

There are nine cabins for men, each accommodating eight students, and seven cabins for women, accommodating six to eight students each. Women's cabins are equipped with toilets and wash basins. A central bathhouse with laundry facilities is located near each of these groups of cabins. Camping space is very limited at the station. However, early applicants will be given priority if space becomes available.

Family accommodations

Students who wish to bring their spouses and children may find accommodations off campus in one of the many resorts in the vicinity. A list of addresses of these facilities is furnished upon request.

Accommodations for visitors

There are very limited facilities for guests on the station; these facilities may be reserved in advance at the Itasca office. It is also possible that you may have to make arrangements for guests at a local resort. Meals for your guests can be arranged in advance at the Itasca office. Please inform your guests of park regulations.

Meals

The dining hall is managed by University Food Services. Meals are served in an attractive dining hall located on the lakeshore. *All persons housed in student cabins must use the dining hall facility.*

Personal needs

Students must provide their own bed linen, towels, and blankets. Essential personal equipment includes serviceable clothing (sweaters, sweatshirts, and shoes or boots for fieldwork), a warm jacket, rain gear, a swimming suit, a flashlight, notebooks, pocket field manuals, and a calculator.

Books

A branch of the University Bookstores is maintained at the station to make books and student supplies available. All texts should be purchased at Itasca.

Health service

Medications for *minor problems* (e.g., colds) are kept in the Itasca Program office. For more severe illnesses, you will be taken to Park Rapids for emergency service. Park Rapids outpatient emergency charges that are not collectible from your insurance (excluding take-home drugs and supplies) will be paid by your health service fee up to a maximum of \$100 per visit. If you are taking fewer than three credits and elected not to pay the health service fee, all medical services are your responsibility. In addition, everyone living at the station is required to have hospitalization insurance whether obtained through or outside the University. (See information about University-sponsored hospital insurance on page 26.)

Mail

Mail for students should be addressed to: University of Minnesota Forestry and Biological Station, HCO5, Box 6, Lake Itasca, MN 56460.

Recreation

Recreational opportunities in the park, such as swimming, fishing, canoeing, biking, and hiking are excellent.



Volleyball, softball, soccer, and horseshoe equipment is available at the station. Evening social events may be planned by the students. Weekly evening lectures by staff members or visiting scientists are scheduled.

Guidelines

Campus regulations are kept at a minimum. Students are expected to keep their own quarters clean and orderly. Students may bring their own cars, but garages and repair services are not provided. Weekend absences and extended field trips should be reported in advance. Domestic pets are not allowed at the station.

Park regulations

Off campus and within park boundaries Minnesota State Park regulations govern. The state park entry sticker (\$18 for both Minnesota residents and nonresidents) must be purchased for private cars at the park entrance.

ITASCA BIOLOGY SESSION

College of Biological Science

Term I — June 15 – July 20

Term II — July 22 – August 25

Admission

Courses are open to all qualified graduate and undergraduate students, including visiting summer-only students, and to others with continuing education objectives. The general rules for admission of graduate and undergraduates to the Summer Session apply to the Itasca Biology Program. Please read the admission and registration instructions on pages xx of this bulletin.

Undergraduate students will benefit from study of biological systems in this unique ecological laboratory where species and processes are observed in their natural setting. The exposure to

SPECIAL PROGRAMS

the variety of habitats and ecosystems available at Itasca, the opportunity to take courses and to study under the direction of senior faculty of the University of Minnesota and visiting faculty from other universities, and the opportunity to interact with undergraduate peers and with graduate students and researchers adds to the learning experience.

Graduate students at all stages of study find in the Itasca field biology station a unique and protected environment able to provide the basic materials for study and research. The variety of courses available in both terms allows the student to choose an entire summer of intensive work in a particular field of interest or to select a course from one of the two terms of summer study. Graduate students who elect to devote themselves to research problems will find well-equipped and maintained laboratories.

Teachers and professional biologists can pursue advanced study or can use summer field study as a time for professional renewal and enhancement. Short courses allow for flexibility and in-depth study of a specialized topic at Itasca.

Independent investigators may pursue research in various fields of terrestrial and freshwater biology during any season. To initiate research projects and to use the excellent laboratories, an application must be made to the Resident Biologist.

Biological Facilities

There are twelve well-equipped laboratories. A fine herbarium of the region and collections of insects, birds, small mammals, algae, and fish are available for study. Four complete sets of

aerial photos of the park, made in 1938, 1951, 1959, and 1966, are maintained at the station along with stereoscopic equipment. A freshwater algal culture collection consisting of about 60 species found within Itasca State Park is available for students and researchers. The station equipment includes necessary compound and dissecting microscopes, collecting apparatus, various types of nets, boats, and other accessories for instruction and research.

The library is stocked with important journals and books basic to field work, and offers ample room for study. Other journals and books are available from the University Libraries. A branch of the University Bookstores is maintained at the station to make books and student supplies readily available. All texts should be purchased at Itasca.

Advanced students and research workers needing laboratory space and special equipment should make prior arrangements with the Resident Biologist, University of Minnesota Forestry and Biological Station, HCO5, Box 6, Lake Itasca, MN 56460. An application to conduct research on the station and a research permit must be completed and research fees paid before initiating research projects.

The Program

You may register for 3 – 10 credits per term. Courses normally meet two days a week from 8:00 a.m. – 5:00 p.m.

Term I

General Zoology (Biol 1806). June 15-July 20 TF, (591970) 5 cr; limited to 20 students; prereq general biology; Megard. Survey of animal phyla; structure, function, behavior, adaptation, and

evolutionary relationships.

Field Biology Photography (Biol 5816). June 15-July 20 WS, (085431) 3 cr; limited to 20 students; prereq course in beginning biology, department permission; A-F only; Rubbelke. Field photography techniques for documentation of insects, vertebrates, aquatic organisms, and habitats of the Itasca area. Emphasis on general photographic principles and applied advanced techniques using flash, reversed lenses, and infra-red photoelectric tripping devices. On-site processing of color slides and black and white films. No previous processing experience required. Students will be charged for the darkroom supplies that they use, which often amount to \$75.

Special Topics in Biology (Biol 5850).

Sec 1, Measurements of Plant Environments. July 1-19, MTh, (186335) 3 cr; limited to 20 students; prereq course in ecology, department permission; A/F only; Forseth. A field course designed to introduce students to techniques for the measurement of plant microclimate, leaf radiant energy balance, water relations, and photosynthetic gas exchange. Emphasis will be on plant response to the environment in the field, with special attention devoted to plant physiological and ecological responses to currently projected global climate changes caused by human activity (i.e., increasing atmospheric CO₂ concentration, changes in ambient temperature, and increased periods of water stress).

Research Problems at Itasca (Biol 5890). (885303) cr cr; prereq permission of instructor and department; staff. Undergraduate and graduate students develop a short-term research project



in most of the departments offering courses at Itasca during Term I and Term II.

Field Ornithology (EEB 5834). June 15-July 20 MTh, (189373) 5 cr; limited to 15 students; prereq course in general biology including study of zoology, department permission; Kaufmann. Emphasis on the breeding season, biology, and behavioral ecology of birds in the Itasca Park region. Field trips to a variety of habitats to learn bird identification and to observe and practice techniques for conducting field studies. Laboratory sessions investigate family distinctions and species identification. Individual field projects. Classes often begin at 5:00 a.m. with a break during the day.

Field Studies in Mammalogy (EEB 5839). June 15-July 20 TF, (091973) 5 cr; limited to 20 students, prereq college level course in biology which includes study of animals, or instructor permission, department permission; A/F only; Christian. A field course emphasizing techniques in study of small mammals. Lectures and field projects will emphasize identification distributions, community interactions, ecophysiology, and population ecology.

Special Lectures in Entomology—Aquatic Insects (Ent 5920). June 15-July 3 WS, (891506) 3 cr, limited to 20 students, prereq introductory biology; Holzenthal. Taxonomy and natural history of aquatic insects of the Lake Itasca area, including their importance in aquatic ecology, water resource management, recreation, and conservation. Morning lectures are followed by afternoon field trips to standing and running water habitats in Lake Itasca State Park. Emphasis is on

field methods and family-level identification. An insect collection is required.

Introductory Neurobiology Laboratory at Itasca (NSc 5100). June 15-July 2 (089219) 5 cr; limited to 10-12 students; prereq advanced undergraduate (junior or senior) in biological or physical sciences; introductory biology and chemistry, instructor permission; A/F only; Richard Poppele, Director, and Neuroscience faculty. This course is designed for biological or physical sciences undergraduate students with an interest in the neurosciences. A major objective of the course is to provide an introduction to concepts in cellular neurosciences in a laboratory environment. Emphasis will be placed on understanding the basis of membrane properties, including ionic and molecular mechanisms of resting potentials, action potentials, and synaptic potentials. Students will work with state-of-the-art equipment and contemporary techniques to examine the experimental evidence for these concepts. This is a three-week, full time, intensive course. Financial aid will be available.

Plains and Boreal Flora (PBio 5801). June 15-July 20 WS, (390903) 5 cr; limited to 20 students; prereq course in taxonomy, departmental permission; Vanderpool. 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.

Ecology of Fungi (PIBa 5102). July 1-19 MTh, (690275) 3 cr; prereq 5 credits botany or permission of the instructor; A/F only; Menge. Emphasis on ecological studies and identification of fungi. Lectures include topics on fungal symbioses, morphology, coevolution, and applicable ecological theory. Student teams will determine species richness in an aquatic, grassland, and forest habitat.

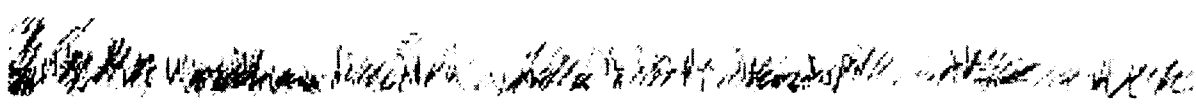
Term II

Plant Biology (Biol 3812). July 22-August 25 TF, (289789) 5 cr; limited to 20 students; prereq general courses in biology and chemistry; Biesboer. Plant diversity and evolution; structure and function of the plant cell and of the whole organism; growth and development of plants. This course satisfies the plant biology requirement for University of Minnesota majors.

Ecology (Biol 5841). July 22-August 25 MTh, (288609) 5 cr; limited to 20 students; prereq course in calculus, course in plant biology and/or animal biology, department permission; A/F only; Smiff, and staff. Growth, structure, and evolution of populations. Pairwise biotic interactions between species and their effect on the diversity and structure of natural communities. Nutrient dynamics, function, productivity, and temporal stability of ecosystems.

Special Topics in Biology (Biol 5850).

Sec 2, Behavior/Telemetry. July 22-August 11 WS, (491962) 3 cr; limited to 20 students, prereq department permission; A/F only; Siniff/Tester, and staff. Use of radio-telemetry to study animal behavior, especially movements and the use of space. Basic features of radiotransmission,



transmitters, and receivers relevant to bio-telemetry; safe and humane methods for capture and immobilization of animals for radio-tagging; techniques for attachment of transmitters, locating radio-tagged animals; use of maps and positioning systems, processing data from radio-fixes; telemetry of further behavioral and physiological information.

Sec 3, Ecology of Amphibians and Reptiles. July 22-August 11 WS, (291963) 3 cr; limited to 20 students; A/F only; Lang. The life histories of the various species of amphibians and reptiles in the Itasca area will be studied. The close proximity of three major biomes to the Itasca station allows for field trips to consider ecological and morphological differences among closely related species. Study of such differences will provide the major focus of this course.

Sec 4, Landscape Ecology. July 22-August 25 MTh, (992002) 5 cr; limited to 20 students; A/F only; Glenn. This course considers some of the general principles of this emerging field, such as landscape structure and function, biotic diversity, landscape stability and change, with reference to the habitats in the Itasca area. Relationship of these principles to management problems will be considered. Research projects will be carried out as class exercises and GIS computer programs will be used to aid research when appropriate.

Research Problems at Itasca (Biol 5890). (485367) See Term I.

Vertebrate Ecology (EEB 5817). July 22-August 25 TF, (089379) 5 cr; limited to 15 students; prereq course in ecology, departmental permission; Tester. Field studies on vertebrate populations and their relationships to local

environments; habitat analysis and ecological research methods. Students working individually or in teams investigate behavioral and ecological aspects of selected vertebrates. This is a research-oriented course supplemented with lectures and field trips.

Ecological Genetics (EEB 5852). July 22-August 25 MTh, (891974) 5 cr; limited to 15 students, prereq college level course in general biology or genetics or instructor permission; A/F only; Staff. Introduction to basic population and quantitative genetics; variation in natural populations; electrophoretic analysis of field samples; reconstructing phylogeny; genetic studies of population structure, and introduction to mitochondrial DNA analysis.

Itasca Cell and Molecular Neurobiology Laboratory (NSc 5550). July 26-August 27. (185565) 6 cr; limited to 10-12 students; prereq enrolled in Neuroscience Graduate Program or consent of Neuroscience Program; S/N only; hrs ar; team taught by Richard Poppele and Neuroscience faculty. Intensive laboratory course introducing cellular and molecular research techniques and topics in contemporary neuroscience. Topics covered include electrophysiological studies of neuronal properties, neuropharmacological assays of transmitter action, and immunohistochemical identification of transmitters. Concepts and techniques studied in the context of a number of preparations including the neuromuscular junction, in vitro invertebrate nervous system, the hippocampal slice, retina, and the nervous system of the gut. Course is designed for entering or first year graduate students in the neurosciences or closely related fields.

Itasca Biology Session Faculty

David D. Biesboer, Associate Professor, University of Minnesota, has research interests in the area of anatomy and physiology of angiosperms with an emphasis on secondary metabolism in plant tissue cultures, and in the biology and control of the noxious weed, leafy spurge. (Biol 3812)

Donald P. Christian, Professor, University of Minnesota, Duluth, is interested in population of biology and environmental physiology of mammals. His research activities have emphasized laboratory and field studies of the physiology and ecology of water metabolism in desert mammals and mineral balance in herbivore mammals. (EEB 5839)

Irwin Forseth, Associate Professor, University of Maryland, has research interests in plant physiological ecology, with an emphasis on plant water relations, photosynthetic response to the environment and leaf radiant energy balance. Current research is centered on an understanding of the physiological mechanisms and ecological ramifications of heliotropic leaf movements. (Biol 5850)

Susan M. Glenn, Oklahoma Natural Heritage Inventory, University of Oklahoma, has research interests that include spatial and temporal variation in plant communities and conservation biology of plant and animal assemblages. Her current assignment with the National Park Service involves developing protocols for biological inventory and monitoring on park lands. (Biol 5850)

Ralph W. Holzenthal, Associate Professor, University of Minnesota, is interested in the taxonomy and systematics of Trichoptera. He is currently working on the systematics of the caddisflies of Costa Rica. (Ent 5920)

Gerald W. Kaufmann, Professor, Loras College, has research interests in avian behavior, particularly the rail family. He is currently active in migration behavior of the American coot. (EEB 5834)

Jeffrey W. Lang, Associate Professor, University of North Dakota, has research interests focused on the energetics, ecology, and evolution of thermoregulation in reptiles, including the overwintering ecology of snakes, the reproductive behaviors of egg-tending lizards (*Eumeces*), and the distribution and ecology of Minnesota herpetofauna. (Biol 5850)

Robert O. Megard, Professor, University of Minnesota, studies plankton and the optical properties of lakes and oceans. He has recently been using sonar to study zooplankton in the Great Lakes. (Biol 1806)

John A. Menge, Professor, University of California-Riverside, is primarily concerned with the ecology of soil-borne microorganisms. His laboratory studies include the biology and control of fungal diseases of citrus and the biology and utilization of vesicular-arbuscular mycorrhizal fungi. (PIPa 5102)

Richard Poppele, Professor, University of Minnesota, has research interests in the area of sensorimotor integration in the vertebrate nervous system. (NSC 5100 and 5550)

Donald L. Rubbelke, St. Cloud, Minnesota, is currently interested in developing and applying new methods in biological photography. (Biol 5816)

Donald B. Siniff, Professor, University of Minnesota, is interested in vertebrate ecology, with special interest in population ecology of large mammals. (Biol 5841, 5850)

John R. Tester, Professor, University of Minnesota, is interested in behavioral and population ecology of terrestrial vertebrates. Recent research has emphasized habitat selection and activity rhythms. (EEB 5817, 5850)

Starla S. Vanderpool, Assistant Research Professor and Director, Institute for Ecological Studies, University of North Dakota, has research interests that include experimental and biosystematic studies of the North American representatives of the Capparaceae and evolution of desert annual plant species. Her current research includes an investigation of the variable germination response of *Cleome lutea* under laboratory conditions and the implications for intraspecific differentiation. Also, she has an active research program in northern Great Plains floristic inventory, sensitive plant biology, and conservation biology. (PBio 5801)

Financial Assistance

Scholarships and research stipends

Both scholarship awards and graduate student research stipends are available for qualified students in the summer. These are detailed in the special Itasca Biological Session Bulletin for 1993, available from the Summer Session office or from Professor Donald B. Siniff, program director, Itasca Biology Program, University of Minnesota, 100 Ecology Building, 1987 Upper Buford Circle, St. Paul, MN 55108. Inquiries should be made as early as possible: the deadline for application is April 15.

Student loans

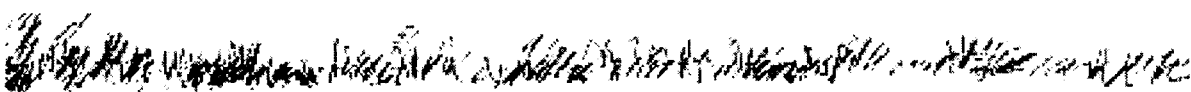
Students who are enrolled in a University of Minnesota degree or certificate program during the academic year may be eligible for financial aid to help pay for the costs of their Itasca sessions. The necessary forms may be obtained from the Office of Student Financial Aid in 210 Fraser Hall on the Minneapolis campus, or 172 Coffey Hall in St. Paul. Visiting students who are regularly enrolled in other institutions should arrange for student loans through their home institutions.

Employment opportunities


A limited number of jobs (library, office, shops, etc.) are available to students on a competitive basis. Students must carry at least 6 credits to be eligible for employment. Interested persons should request an application form from Professor Donald B. Siniff, program director, Itasca Biology Program, University of Minnesota, 100 Ecology Building, 1987 Upper Buford Circle, St. Paul, MN 55108. Only University of Minnesota students may apply for graduate teaching assistant positions and College Work-Study Program jobs. Employment in area resorts and in the Park is sometimes available.

Registration

A special registration form is used for the Itasca Biology Session which is found in the 1993 Lake Itasca Field Biology Program bulletin. Since both housing facilities and class sizes are limited, early application is recommended. Although you can register at the Itasca Station on Monday, June 14, for the first term, and Wednesday, July 21, for the second term, a place in the class or in housing cannot be guaranteed. You



SPECIAL PROGRAMS



may register by bringing your form to the Itasca Field Biology Program office or by mail. Mail registration must be received by June 11, 1993 for Term I. After June 11, mail registration for Term II should be sent to the Itasca Biology Program, Lake Itasca Forestry and Biological Station, HCO5, Box 6, Lake Itasca, MN 56460, in order to insure registration before classes begin. In person registration will be held at Itasca on June 14 and July 21, but it is best to register before arriving. For forms and complete information about registration, consult the 1993 Itasca Field Biology bulletin. To obtain your bulletin contact the Summer Session office, University of Minnesota, 135 Johnston Hall, 101 Pleasant Ave. S.E., Minneapolis, MN 55455; 612/624-3555, or the Itasca Biology Program office, University of Minnesota, 100 Ecology Building, 1987 Upper Buford Circle, St. Paul, MN 55108.

It is important that all students be at the station on June 14 (Term I) and July 21 (Term II) for a general introductory meeting at 8 p.m. in the Assembly Hall (building 53).

Changes in registration and cancellations

Changes in registration must be approved by the program director and are strongly discouraged after registration day. Because late cancellations often create vacancies in classes that someone else wants, students who know they are going to cancel should notify the program director by May 24. Students who want to cancel after the session has begun must receive permission from their instructor.

Tuition, Fees and Other Costs

Tuition

Tuition and all fees are payable by the due date indicated on the fee statement. An additional charge is assessed for both late registration and late payment. Tuition is assessed on a per-credit basis according to your student classification. Consult the tuition schedule on page 17.

Student services and lab fee

All students pay a lab fee of \$10 per term, and those who take three or more credits pay a student services fee of \$32.70 per term.

Room and board

There is a service charge of \$70 per week for room and board. This fee is payable at Itasca at the beginning of each term.

Transportation costs

University vehicles are available for class field trips. Students using them are charged a fee to cover actual costs. Costs usually range from less than \$1 to \$30. Most courses use University vehicles for long or frequent field trips.

Hospitalization insurance

If you are not already covered by hospitalization insurance you must purchase coverage. The cost is \$51 per term. See p. 21 for more information.

Itasca Biology Program

Donald B. Siniff, Program Director
Dorothy K. Bromenshenkel, Secretary
Thomas English, Librarian
Jon Ross, Resident Biologist
Daniel Traun, Resident Manager

ITASCA FORESTRY SESSION

College of Natural Resources

August 25 - September 18

The Itasca Forestry Session combines some of the best summer activities with learning in a setting of great beauty. At Itasca, you can enjoy nature, earn college credit in a superb field environment, and prepare for a career as well.

Admission

Courses are open to all qualified graduate and undergraduate students, and to others with continuing education objectives. The general rules for admission of graduate and undergraduate students to the Summer Session apply to the Itasca Forestry Session. Please read the registration instructions as they refer to your particular situation on page 4-6.

The Program

With an emphasis on field study, 80 percent of your time will be spent in the forests and on the waters of Itasca Park and surrounding areas. Depending upon your interests, major and academic status, you may select one of three program options: Forestry, Fisheries and Wildlife, or a Graduate Student Practicum.

Forest Resources

This offering is open to all qualified students and is required for students in the Forest Resources, Urban Forestry and Renewable Resource Science curricula. Students enrolled in the Natural Resources and Environmental Studies major may use this session to satisfy the NRES 3050 requirement. Prerequisites are 40 credits with at

least a "C" average or better. Students learn the ecological principles behind the practice of forest resource management. With help from faculty, they master the technical skills such as using compasses and reading maps, sampling forest vegetation and identifying important forest plants. A full day is spent visiting special areas such as the Chippewa National Forest. Students also learn how management balances wildlife, outdoor recreation, water, and timber while maintaining the forest ecosystems. Three courses make up this area of study:

- **Minnesota Plants (FR 3100).**
2 credits. Identification of forest plants as related to habitat.
- **Field Forest Ecosystems (FR 3101).**
3 credits. Field examination of forest succession, silvical characteristics, tree classification, stand structure and regeneration ecology. NRES students will have a section on aquatic ecology.
- **Field Forest Measurements (FR 3201).** 1 credit. An introduction to land survey, tree and stand measurement and basic forest sampling techniques.

Fisheries and Wildlife

This offering is required of Fisheries and Wildlife majors. Students in this area of study must have completed the following courses with a grade of "C" or better: Biol 1009, 1103, 1106 and FW 3052. Students develop confidence and skills in fisheries and wildlife field work. They are provided with experiences in planning field projects or research, introduced to skills of data collection and keeping a daily journal, learn a variety of fisheries and wildlife techniques, introduced to

the scientific method and learn basic field skills such as map reading, water safety, boat handling and equipment operation. Two courses comprise this area of study.

- **Fisheries and Wildlife Field Techniques (FW 3600).** 5 credits. An introduction to various field techniques and skills, planning and implementing field projects, data collection and analysis using microcomputers, written reports and a field journal.
- **Important Plants in Fisheries and Wildlife Habitats (FR 3106).** 1 credit. Identification and discussion of important plants and their relationship to fish and wildlife species.

Graduate student practicum

Graduate students may enroll in undergraduate courses. They may alternatively enroll in **FR 5160: Practicum in Forest Biology and Measurements**, which covers plant identification, plant dynamics, land survey, and tree measurement. Some fisheries and wildlife subject matter may also be incorporated into this offering.

Itasca Forestry Session Faculty

Thomas Burk, Associate Professor, University of Minnesota, is interested in development of forest growth and yield modeling methodologies.

Velis Kurmis, Professor Emeritus, University of Minnesota, has studied the ecology of Itasca forests for 30 years and is the leading authority on this subject.

Harold Scholten, Professor, University of Minnesota, is interested in trees in prairie settings.

David Smith, Assistant Professor, University of Minnesota, is interested in endangered wildlife species and conservation biology.

Philip Splett, Instructor, University of Minnesota, is interested in plant identification and relationship between forest plants and wildlife.

Edward Sucoff, Professor, University of Minnesota, is interested in ecological physiology and vegetation management of parks.

How to Register

Permission from the College of Natural Resources is required to register for the Itasca Forestry Session. If you wish to attend, please contact the College of Natural Resources, Office for Student Affairs by Friday, April 16, 1993, and request registration materials and details about the Itasca Session. For additional information, please contact Marni Lucas, University of Minnesota, Room 135 Natural Resources Administration Building, 2003 Upper Buford Circle, St. Paul, MN 55108, (612)624-6768.

Tuition, Fees and Other Costs

(paid at St. Paul, 107 Coffey Hall)

Tuition

Tuition and all fees are payable on the date indicated on the fee statement. An additional charge is assessed for both late registration and late payment. Tuition is assessed on a per-credit basis according to your student classification. Please consult the tuition schedule on page 17.

Student services fee

All students who take 3 or more credits pay a student services fee of \$32.70.



SPECIAL PROGRAMS

Meals and cabin

(Paid at Itasca; subject to minor change) \$223.00.

Hospitalization insurance

If you are not already covered by hospitalization insurance you must purchase coverage. The cost of coverage for the August 25-September 18 term is \$47.00.

Equipment

A list of required texts and equipment is available from the College of Natural Resources, 135 Natural Resources Building.

Itasca Forestry Session

Edward Sucoff, Program Director
Daniel Traun, Resident Manager
SEE ALSO: For high school students — The Itasca Field Biology Enrichment Program, p. 50.

"SUMMER IN THE CITY" 1993

General College

Experience short courses (two-three weeks) that combine the richness of a teaching college with first-hand knowledge of the Twin Cities. Open to all students.

Behavior Problems of Children (GC 1284). July 6-21. *Sander Latts*. Visits agencies such as the Wilder Child Guidance Clinic, Early Childhood Center, PACER, and St. Joseph's Home for Children.

Business & Society: Field Experience (GC 1557). July 6-21. *Shari Peterson*.

Field trips to local businesses involved in marketing, manufacturing, finance and international business.

Ecological Evaluation of Environmental Problems (GC 1112). July 23-August

7. *Jay Hatch*. Visit the Black Dog Wildlife Preserve, the Pig's Eye Heron Rookery, the Minneapolis Water Treatment Facility, Prairie Island Nuclear Plant, the Minnesota PCA and other environmental facilities.

General Arts (GC 1311). June 16-July 2. *Del Adamson*. Visit galleries, museums, theaters, Minneapolis Sculpture Garden, and other places where art is found.

Cultural Anthropology (GC 1285). June 16-July 2. *Fred Johnson*. This course will focus on cultural groups based on ethnicity, class and deviance located in the Twin Cities area.

Minnesota History (GC 1221). June 15 - July 2. *Thomas Buckley*. An introductory course on the people, resources, institutions, and traditions that make Minnesota a unique part of American history. The class will meet at several Twin Cities historic sites including Fort Snelling, St. Anthony Falls, the James J. Hill House and the new Minnesota History Center.

STUDY ABROAD PROGRAMS

The Global Campus

Continuing Education and Extension

The most frequently chosen study abroad programs are those offered by the Global Campus. Each program combines academic study with a cross-cultural learning experience in a foreign environment.

The Global Campus study abroad programs vary in length, focus and discipline and include traditional intensive and integrated language programs, academic field study and

theme programs for non-language majors. Call (612) 626-3379 for more information.

Chinese in Tianjin

A language program with courses in Mandarin Chinese language at the second year, third year and advanced levels. 15 credits. Located at Nankai University, Tianjin, China. June 15 - August 20. Cost: the program fee is \$2,995 and includes tuition, room and board in the foreign student dormitory, meals, fees, field trips and excursions. Estimated airfare of \$1,000 - \$1,360 and any other travel and personal expenditures are additional. Eligibility: one year college-level Chinese or the equivalent is required. Application deadline: March 15. Application fee \$35.

Polish in Lublin

A language program with first year Polish language instruction (1101, 1102, 1103), including instruction on contemporary Polish culture. 15 credits. Located at Marie Curie-Sklodowska University, Lublin, Poland. June 15 - August 8. Cost: the program fee is \$2,350 and includes tuition, fees, excursions, housing in a university dormitory and meals. Airfare, any independent travel and personal expenditures are additional. Eligibility: minimum 2.5 GPA and two letters of recommendation. No Polish language background required. Application deadline: April 1. Application fee \$35.

International Program in Toledo, Spain

A theme program offering courses in anthropology and archaeology, art history, culture, economics, geography, history, interdisciplinary studies, linguistics, literature, political science

and Spanish language. 9 – 14 credits. Located at San Juan de la Penitencia, Toledo, Spain. June 15 to July 27. Cost: the program fee is \$2,880 and includes tuition, fees, room and board, one-day excursions and medical insurance. Personal expenditures and air fare are additional. Eligibility: the Summer Session requires one year of college-level Spanish or the equivalent. Application deadline: April 15. Application fee \$35.

Summer Program for Teachers of Spanish

A language/theme program with courses specifically designed for Spanish teachers of grades K-12, foreign language education, ESL, bilingual education, as well as college language instructors and graduate students. May fulfill graduate level credits for recertification. The program's common theme of contemporary Spanish society and culture is divided into four areas of study: culture and society, language development, language and culture, classroom applications and independent research. 9 – 13-1/2 quarter credits (6-9 semester credits). Located at Universidad Complutense, Madrid, Spain. July 1 – August 4. Cost: the total program cost is \$4000, cost to recipients of the King Juan Carlos Fellowship is \$2200 and includes tuition, fees, complete room and board, medical insurance and excursions. Personal expenditures and air fare are additional. Eligibility: placement in Language Development and Independent Research courses is dependent on participant's Spanish proficiency level according to ACTFL guidelines. Application deadline: April 1. Application fee \$50.

Archaeological Fieldwork in Greece
Field Study. The following courses are offered: ArtH 5120 and Clas 5120: Field Research in Archaeology. Strongly recommended to prepare for this program is the Practicum in Field Techniques (CICv 3340 or Clas 5340) offered spring term on campus. 4 – 8 credits. Located in Western Peloponnesos; Kyparissia, Messene and Pylos, Greece. Mid-June to Mid-September, three-four weeks at each site. Cost: 1992 was \$600 and includes up to 8 credits, study abroad, housing, meals and fees. Air fare and all personal expenditures are additional. Eligibility: preference given to students registered in spring quarter practicum. Application deadline: To insure full consideration, applications must be received by March 15. Contact: Department of Classical and Near Eastern Studies, 612/625-5353.

SPAN (Student Project for Amity Among Nations)

College of Liberal Arts

SPAN is a consortium of 19 Minnesota colleges and universities that sends students to countries around the globe each summer to undertake individual research. Students apply a full year in advance and begin their preparation during the academic year prior to their summer project. Twelve credits are awarded at the completion of the research project. For information about the 1994 program, come to the SPAN office in 107 Nicholson Hall or call 612/626-1083. During the summer of 1993 participants students will study in Germany, Greece, Scotland, and Sri Lanka.



SUMMER LANGUAGE INSTRUCTION

College of Liberal Arts

Instruction in 13 languages will be offered this summer. Ten-week "intensive" courses enable you to take the equivalent of one year of language (15 credits) in one summer.

AMERICAN INDIAN (AmIn)

Term I
1031 Beginning Dakota
3024 Intermediate Ojibwe

CHINESE (Chn)

Term I
1011,2,3 Beginning Modern Chinese (10-week intensive)

DUTCH (Dtch)

Term I
1101,2,3 Beginning Dutch (10-week intensive)

FRENCH (Fren)

Term I
1101 Beginning French
1102 Beginning French
1103 Beginning French
1101,2,3 Beginning French (10-week intensive)
1104 Intermediate French
1106 Intermediate French
1104,5,6 Intermediate French (10-

SPECIAL PROGRAMS

week intensive)

3015 French Composition and Conversation
3016 Advanced French Composition and Conversation

Term II

1102 Beginning French
1103 Beginning French
1105 Intermediate French
3016 Advanced French Composition and Conversation

GERMAN (Ger)

Term I

1101 Beginning German
1101,2,3 Beginning German (10-week intensive)

1104 Intermediate German

1105 Intermediate German

3011 Conversation and Composition

Term II

1102 Beginning German
1106 Intermediate German
3012 Conversation and Composition

HEBREW (Hebr)

Term I

1101,2,3 Beginning Hebrew (10-week intensive)

ITALIAN (Ital)

Term I

1104 Intermediate Italian
1101,2,3 Beginning Italian (10-week intensive)

Term II

1105 Intermediate Italian

JAPANESE (Jpn)

Term I

1011,2,3 Beginning Japanese (10-week intensive)

LATIN (Lat)

Term I

3001 Beginning Latin (5-week intensive)

PORTUGUESE (Port)

Term I

1001,2,3 Beginning Portuguese (10-week intensive)

RUSSIAN (Russ)

Term I

1101,2,3 Beginning Russian (10-week intensive)

1104,5,6 Intermediate Russian (10-week intensive)

SPANISH (Span)

Term I

1101 Beginning Spanish
1102 Beginning Spanish
1103 Beginning Spanish
1101,2,3 Beginning Spanish
1104 Intermediate Spanish
1105 Intermediate Spanish
1106 Intermediate Spanish
1104,5,6 Intermediate Spanish (10-week intensive)

Term II

1102 Beginning Spanish
1103 Beginning Spanish
1104 Intermediate Spanish
1105 Intermediate Spanish
1106 Intermediate Spanish
3002 Reading for Speed and Comprehension

SWEDISH (Swed)

Term I

1101,2,3 Beginning Swedish (10-week intensive)

PROGRAMS FOR HIGH SCHOOL STUDENTS

Each summer, the University of Minnesota presents opportunities for high school students who want to explore challenging subjects within a college setting. What is best about these summer programs? The answers are as diverse as the students who attend. Former participants said they liked just about everything: the intellectual stimulation of the courses; the fun of living in a residence hall and experiencing college life; meeting new friends; and getting to know their professors.

Summer Honors College Twin Cities Campus College of Liberal Arts

June 15 – July 2

Summer Honors College offers high ability high school students a chance to briefly experience the intellectual, cultural, and social environment of a university campus.

You live in a residence hall and study with some of the finest University faculty, selecting two of the many specially designed 2 credit courses. Sample course titles for this year include: "Practical Problem Solving through Fantasy"; "What is a Number?"; "Quarks and Quasars-20th Century Physics"; "The United States in the 1950s", and "New Asian-American Authors." The program includes visits to local entertainment and cultural attractions. Cost : \$500

Eligibility: You must have completed your sophomore or junior year of high school and rank in the upper 20 percent of your class.

For more information and to register, contact Carol Ann Dickinson, Summer Session, 135 Johnston Hall, University of Minnesota, Minneapolis, MN 55455; 612/624-3555.

Itasca Field Biology Enrichment Program

**Lake Itasca Forestry and
Biological Station
College of Biological Sciences**

June 16 – July 1

The Itasca Field Biology Enrichment Program is a residential program held at the University of Minnesota's Forestry and Biological Station in Itasca State Park. You live in on-site cabins during the two-week program. The goal of the

program is to introduce you to a wide range of experience in the field of biology in general, and more specifically, to involve you in the methods of science. You will gain the kind of "hands-on" experiences with plants and animals in a field setting that is possible only at an outstanding facility such as the Itasca Station. Examples of field study include mammalogy, animal behavior, forest ecology, aquatic biology, plant biology and biophotography. Cost: \$565.

Eligibility: You must have completed grades 10, 11 or 12, including a high school biology course, have an interest in science, and have a "B" average in the most currently recorded school term.

For more information and to register, contact Bill Ganzlin, University of Minnesota, College of Biological Sciences, 223 Snyder Hall, St. Paul, MN 55108; 612/624-9717.

Summer Scholars Program

Morris Campus

July 11 - July 23

The Summer Scholars Program is designed to offer high school students an intellectually challenging and socially rewarding college-level experience. You join with students from throughout the Upper Midwest for two weeks on the UMM campus to engage in stimulating dialogue, get a taste of campus life and to earn college credits. You select one of two interdisciplinary courses. "Human Reproduction and Biotechnology: Tinkering with Nature" focuses on the biological, philosophical, and historic issues associated with genetic alteration. The other course, "Growing Up American," examines through literature, history, and film the

experience of growing up in twentieth century America. Cost: \$300.

Eligibility: You must have just completed your junior year and rank in the upper 20 percent of your class. In addition, "Human Reproduction" requires one year of high school biology; "Growing Up American" requires two years of high school English and one year of US history.

For more information and to register, contact the Office of Continuing Education and Summer Session, 231 Community Services Building, University of Minnesota-Morris, Morris, MN 56267; 612/589-6450.

Other Special Programs

In addition to those cited above, the University sponsors a large number of other special programs for pre-college students. Call the Summer Session office at 612/624-3555 and ask to receive our 1993 booklet that describes these various programs.

Regular Courses

In the Summer Session, introductory, 1000-level courses are generally open to high school students who have completed the 10th grade and rank in the top 20 percent of their class. See p. x for more information about registering for regular college courses.

SOCIAL WORK

School of Social Work College of Human Ecology

Noteworthy new seminars: See department listing for full descriptions.

Term II - July 22 - August 25

Social Work Practice with Gays, Lesbians and Bisexuals (SW 5010 Sec. 1). Linda Jones.

AIDS: Biopsychosocial and Policy Aspects (SW 5010 Sec. 2). Michael Graham.

OUTCOME-BASED EDUCATION (OBE)

College of Education

Five 1-credit workshops

Readings in OBE (Workshop, EdPA, 5128). 1 credit. June 25 and June 28 - July 1, 1:30-3:30 p.m. Thoughtful discussion about readings with OBE issues. Jean King.

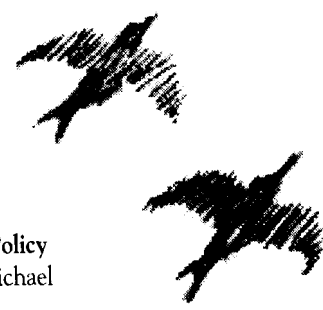
In each of the following: discussion of related OBE issues and projects you are carrying out, with fall Quarter follow-up.

Curricula and Instructional Issues Pertaining to OBE. (Curriculum and Instructional Systems Workshop, CISy 5100). 1 credit. June 25 and 28, 8:00-10:30 a.m., and Oct. 30, 8:00 a.m - 1:00 p.m. Fred Finley, Margaret DiBlasio, Harlan Hanson.

Assessment in OBE (Independent Study, EPsy 5900). 1 credit. June 25 and 28, 10:30 a.m.-1:00 p.m., and Nov. 14, 8:00 a.m.-1:00 p.m. Mark Davison.

Teaching for Critical Thinking (Special Topics in Curriculum, VoEd 5101, Sec. 1). 1 credit. June 25 and 28 10:30 a.m.-1:00 p.m. and Nov. 14, 8:00 a.m.-1:00 p.m. Ruth Thomas.

Parent Involvement in Improving Learning (Special Topics in Administration, VoEd 5102). 1 credit. June 25 and 28, 8:00 a.m.-10:30 a.m., and Nov. 7, 8:00 a.m.-1:00 p.m. Marty Rossman.



SPECIAL PROGRAMS

SHORT COURSES AND WORKSHOPS

See course listings for full descriptions

Aerospace Engineering and Mechanics

R.5001. WORKSHOP: ELEMENTARY AND SECONDARY TEACHERS—July 6-16 or July 19-30 (offered twice)

R.5002. ADVANCED AEROSPACE WORKSHOP—June 21-July 2

Agricultural Education (AgEd)

5034. PROCEDURES IN TEACHING AGRICULTURE—June 15-18, 22-25

5042. AGRICULTURAL MECHANICS—June 15-18, 22-25

American Indian Studies (AmIn)

R.5960. SUMMER INSTITUTE FOR TEACHERS

Sec 5, The Flowering Tree: Traditional and Contemporary American Indian Literature and Culture—June 21-July 2

American Studies (AmSt)

5920. SUMMER INSTITUTE FOR TEACHERS

Sec 5, June 21-July 2. (Dis)abling Images in Literature, Film, and the Media

Sec 6, June 17 and 18. Children's Literature in the Classroom: Native American Authors

Ancient Studies (AnSt)

5100. SUMMER INSTITUTE FOR TEACHERS

Sec 5, June 21-24, Archaeology in the Classroom.

Art Education (ArEd)

R.5001. ART MEDIA TECHNIQUES: Computer Use in the Art Class—June 15-28

5302. Curriculum Innovations in Art Education—June 14-25.

R.5308. THEORY AND PRACTICE OF TEACHING ART IN ELEMENTARY SCHOOLS—June 30-July 20

5389. APPLICATIONS OF AESTHETIC THEORY IN EDUCATION—July 22-August 6

Business and Marketing Education (BME)

R.5353. CURRICULUM CONSTRUCTION IN BUSINESS AND MARKETING EDUCATION—July 6-16

R.5390. SPECIAL TOPICS IN TECHNICAL UPDATING: Desktop Publishing on the Macintosh—June 21-25

R.5261. SALES TRAINING—August 16-20

R.5310. INTRODUCTION TO MICROCOMPUTER APPLICATIONS IN BUSINESS AND MARKETING EDUCATION—August 9-13

Child Psychology (CPsy)

3331. INTRODUCTION TO SOCIAL DEVELOPMENT—June 15-July 15

5303. ADOLESCENT PSYCHOLOGY—July 22-August 18

R.5334. CHILDREN AND YOUTH IN SOCIETY—July 22-August 12

Communication Disorders (CDis)

5611. AUGMENTATIVE SYSTEMS OF COMMUNICATION—June 15-25

Curriculum and Instructional Systems (CISy)

R.5100. CURRICULUM AND INSTRUCTIONAL SYSTEMS WORKSHOP: Peer Coaching—June 15-30

R.5206. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS—June 15-July 15.

R.5600. INTRODUCTION TO CURRICULUM SYSTEMS—June 15-30

R.5600. INTRODUCTION TO CURRICULUM SYSTEMS—July 22-August 6

R.8100. CURRICULUM AND INSTRUCTION CORE: CRITICAL EXAMINATION OF CURRICULAR CONTEXTS—July 22-August 6. CURRICULUM INNOVATIONS IN ART EDUCATION

Educational Policy and Administration (EdPA)

5128. WORKSHOP: EDUCATIONAL ADMINISTRATION

Sec 5, Outcome Based Education—June 25-July 1

R.5142. MINORITIES IN HIGHER EDUCATION

Sec 1, June 15-18 (189664) 0900-1600 TWThF, Normandale Community College, Turner

Sec 2, June 22-25 (491685) 0900-1600 TWThF, Peik H xx, Turner

5200. DESIGN AND MANAGEMENT OF EDUCATION SERVICES—June 28-July 9

5601. INTERNATIONAL EDUCATION: TOPICS IN CLASSROOM PRACTICES AND PROCEDURES: NONFORMAL EDUCATION IN INTERNATIONAL PERSPECTIVE—June 16-July 9.

5099. DIRECTED STUDY

Sec 1, Outcome Based Education: Workshop in Traditional Curricula and Outcomes—July 26-Aug. 11. (691698) 1 cr; 0915-1015 MWF, Peik H 25, Harkins

Sec 2, Outcome Based Education: Workshop in Transition to Consumer-Focused Outcomes—July 22-Aug. 17. (491699) 1 cr; 0915-1015 TTh, Peik H 25, Harkins

Sec 3, Outcome Based Education: Workshop in Transformation to Outcome Based Learning July 26-Aug. 4

5216. RECENT RESEARCH IN ELEMENTARY SCHOOL ADMINISTRATION—July 26-August 5

Educational Psychology (EPsy)

R.5114. PSYCHOLOGY OF STUDENT LEARNING—June 15, 17, 22, 24

R.5229. CLASSROOM ASSESSMENT METHODS—June 16-July 9

R.5612. EDUCATION OF LEARNING-DISABLED CHILDREN—June 15-30

5640. PSYCHOSOCIAL AND EDUCATIONAL ASPECTS OF DEAFNESS—July 19-23

5643. LANGUAGE FOR HEARING-IMPAIRED CHILDREN—July 6-10

5644. LANGUAGE PROGRAMMING FOR CHILDREN WITH HEARING IMPAIRMENTS—July 12-16

5648. MODES OF COMMUNICATION FOR THE HANDICAPPED—July 19-23

R.5656. EDUCATIONAL NEEDS OF STUDENTS WITH EMOTIONAL DISTURBANCES OR BEHAVIORAL DISORDERS—June 15-July 1

R.5657. EDUCATIONAL INTERVENTIONS FOR STUDENTS WITH EMOTIONAL DISTURBANCES OR BEHAVIORAL DISORDERS—July 6-20

5673. METHODS OF TEACHING VISUALLY HANDICAPPED CHILDREN—June 21-July 1

5710. CONTEMPORARY SERVICES FOR PERSONS WITH DEVELOPMENTAL DISABILITIES—July 6-20

R.5114. PSYCHOLOGY OF STUDENT LEARNING—July 23-August 16

5115. PSYCHOLOGY OF ADULT LEARNING—July 26-August 16

R.5229. CLASSROOM ASSESSMENT METHODS—August 2-23

5400. WORKSHOP: COUNSELING PSYCHOLOGY

Sec 1, Counseling and Therapy Interventions with Men—July 26-30

5608. PARENT AND PROFESSIONAL PLANNING FOR HANDICAPPED STUDENTS—July 22-August 6

5609. FAMILY-PROFESSIONAL PLANNING FOR PERSONS WITH SEVERE HANDICAPS—July 22-August 6

5676. MANAGEMENT OF LOW VISION—July 26-August 5

Elementary Education (Elem)

R.5101. SUMMER INSTITUTE FOR TEACHERS

Questions of Justice: Teaching for and About Human Rights—June 21-26

5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—June 15-30

R.5140. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS—June 15-July 15

R.5141. USING LOGO IN THE CLASSROOM—June 15-July 15

R.5145. CLASSROOM MANAGEMENT—June 15-30

5225. MULTICULTURAL GENDER-FAIR CURRICULUM—June 16-July 19

R.5318. CREATIVE WRITING FOR AND BY CHILDREN—June 15-30

5319. TEACHING SECOND LANGUAGES AND CULTURES IN ELEMENTARY SCHOOLS—June 15-28

R.5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL—June 15-30

R.5352. TEACHING GEOLOGY IN THE ELEMENTARY SCHOOLS—June 15-29

R.5361. TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL—July 6-20

R.5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION—June 15-30

R.5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 22-August 6

R.5227. TEACHING ABOUT THE NEWSPAPER IN THE CLASSROOM—July 26-August 9

R.5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOLS—July 22-August 6

R.5334. READING DIFFICULTIES—July 22-August 6

R.5338. TEACHING READING IN THE INTERMEDIATE GRADES—July 22-August 6

R.5347. WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SCIENCE—Field Biology for Elementary Science Teachers—August 4, and 15-20

R.5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES—July 22-August 6

History (Hist)

R.5381. SUMMER INSTITUTE FOR TEACHERS

Sec 5, MINNESOTA HISTORY WORKSHOP: Railroads and the Red River Valley—July 26-August 6

Home Economics Education (HEEd)

R.5320. ADULT EDUCATION IN HOME ECONOMICS—June 15-25

R.5404. INTRODUCTION TO EARLY CHILDHOOD FAMILY EDUCATION PROGRAM—June 29

R.5406. SPECIAL TOPICS IN PARENT AND FAMILY EDUCATION:

Sec 1, (789571) Home and School Collaboration—June 21-July 2

Sec 2, Home Visits as an Educational Strategy—July 8, 9, 16

Sec 3, Effective Parent Education for Diverse Populations—July 12-16

R.5407. FAMILY LIFE EDUCATION—July 6-16

R.5405. CHILD DEVELOPMENT AND PARENT EDUCATION—July 22-August 5

R.5409. GROUP METHODS FOR PARENT AND FAMILY EDUCATION—August 9-13

R.5510. ORIENTATION TO TEACHING HOME ECONOMICS—July 26-August 16

Industrial Education (Ind)

5306. INDUSTRIAL EDUCATION WORKSHOP: STRUCTURED OJT—July 22-August 17

Kinesiology (Kin)

R.5151. CURRICULUM—June 15-July 6

R.5385. EXERCISE FOR SPECIAL POPULATIONS—June 15-30

R.5720. TOPICS IN KINESIOLOGY

Sec 1, (789795) The Achievement-Based Curriculum (ABC) Model—July 1-20

Sec 2, (589796) Integrating Sport Science into the Curriculum: Math/Science—June 15-30

3143. ORGANIZATION AND MANAGEMENT OF SPORT—July 22-August 11

R.5141. NUTRITION FOR EXERCISE AND PHYSICAL PERFORMANCE—July 22-August 4

5371. SOCIOLOGY OF SPORT—July 22-August 11

SPECIAL PROGRAMS

- R.5460. FOUNDATIONS OF SPORT MANAGEMENT—July 22-August 6
R.5740. WORKSHOP: COACHING OF INDIVIDUAL, DUAL OR TEAM SPORTS: SOCCER—July 22-August 4

Mathematics Education (MthE)

- R.5083. TEACHING GEOMETRY—June 16-July 16
R.5173. LOGO IN THE MATHEMATICS CLASSROOM—June 15-July 15
R.5322. MATERIALS LABORATORY FOR SECONDARY SCHOOL MATHEMATICS INSTRUCTION—June 16-July 16
R.5101. WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS—July 23-30; August 9-13
R.5355. MATHEMATICS FOR SLOW LEARNING CHILDREN—July 23-30, Aug 9-13

Music Education (MuEd)

5613. TEACHING MUSIC LITERATURE—July 6-20
R.5666. MICROCOMPUTERS IN THE MUSIC CLASSROOM—June 15-25
5750. WORKSHOP: MUSIC EDUCATION: MUSIC AND RELATED ARTS—June 28-July 19
5606. MOVEMENT-BASED METHODS FOR MUSIC EDUCATION—July 22-August 11
R.5667. COMPUTER-BASED MUSIC INSTRUCTION—July 22-July 30
5750. WORKSHOP: MUSIC EDUCATION: Psychological Foundations of Music Education—July 22-August 13

Physics (Phys)

- R.5940. PHYSICS FOR HIGH SCHOOL TEACHERS: Experimental Foundations and Historical Perspectives—June 21-July 23
Recreation, Park, and Leisure Studies (Rec)
5460. FOUNDATIONS OF SPORT MANAGEMENT—July 22-August 6

Secondary Education (SeEd)

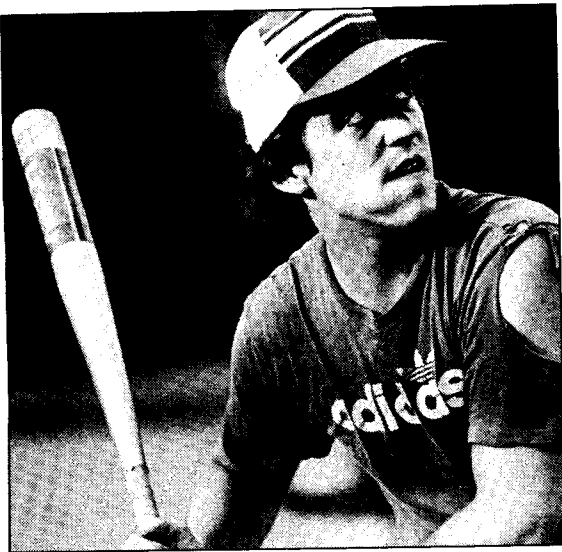
- R.5191. WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES.
Sec 1, Beyond Culture in the Classroom-Theoretical Expectations—June 22-July 13
Sec 2, Exploring the Assessment of Limited English Proficient Students—July 6-20
Sec 3, Exploring Issues of Diversity in Second Language Textbooks—July 12-16
R.5225. THE MULTICULTURAL GENDER-FAIR CURRICULUM—June 16-July 19
R.5382. SECOND LANGUAGE TESTING, ASSESSMENT, AND EVALUATION—June 15-July 6
R.5385. PLANNING AND ASSESSING SECOND LANGUAGE INSTRUCTION—June 29-July 20
R.5390. CURRENT DEVELOPMENTS IN SECONDARY SCHOOL SCIENCE TEACHING—July 6-20
R.5394. WORKSHOP: SCIENCE EDUCATION -Demonstration Techniques in Secondary Physical Sciences—June 17-July 20
R.5227. TEACHING ABOUT THE NEWSPAPER IN THE CLASSROOM—July 26-August 9
R.5344. TEACHING READING IN CONTENT AREAS—July 22-Aug 6

Social Work (SW)

- R.5010. SEMINAR: SPECIAL TOPICS.
Sec 1, Physical Assault of Women—June 15-18, 21
Sec 2, Social Work Practice: Psychopathology and Intervention—June 29,30; July 1, 2, 6
Sec 3, Issues and Interventions in Child Sexual Abuse—July 7-9, 12-13
R.5010. SEMINAR: SPECIAL TOPICS.
Sec 1, Social Work Practice and Gays, Lesbians, and Bisexuals
Sec 2, AIDS: Biopsychosocial and Policy Aspects

Vocational Education (VoEd)

5100. SPECIAL TOPICS IN INSTRUCTION.
Sec 1, Effective Management of Diversity in Educational Work Settings—June 15-18
Sec 2, Youth Apprenticeship and Tech Prep—June 15-25
5101. SPECIAL TOPICS IN CURRICULUM.
Sec 1, Special Needs Program Improvement—June 22-30
Sec 2, Integration of Vocational and Academic Education—June 15-25
R.5750. TRAINING IN INDUSTRY AND BUSINESS—June 21-July 2
R.5770. TRAINING AND DEVELOPMENT
Sec 1, Quality and Productivity Theories and Practices—July 6-16
Sec 2, Using Team Building in Business and Industry—June 21-25
R.5900. USING VOCATIONAL EDUCATION RESEARCH—June 15-23
5101. SPECIAL TOPICS IN CURRICULUM: Current Issues in Vocational Technical Education—August 17-20
5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—August 2-12
5330. COORDINATION TECHNIQUES IN COOPERATIVE EDUCATION—August 2-12
R.5760. ORGANIZATION DEVELOPMENT IN INDUSTRY AND BUSINESS—July 26-August 6.
R.5762. MANAGEMENT OF CONFLICT—July 24, 31, August 7, 14



*Summer at the
University of
Minnesota—
Truly, no
better time and
no better place.*



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No matter
what your
higher
education needs,
chances are
there's something
for you at
the "U"
this summer.
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SYMBOLS

The following symbols are used throughout the course descriptions in place of page footnotes:

† All courses preceding this symbol must be completed before credit will be granted for any quarter of the sequence.

§ Credit will not be granted if credit has already been received for the course listed after this symbol.

¶ Concurrent registration is required (or allowed) in the course listed after this symbol.

* Registration Override Permit, completed and signed by the instructor, is required for registration.

Δ Registration Override Permit, completed and signed by the department offering the course, is required for registration.

□ Registration Override Permit, completed and signed by the college offering the course, is required for registration.

* A special fee is charged. See section on Course Fees.

** Courses in which graduate students may prepare Plan B projects.

R The letter R preceding a course number indicates a course with limited enrollment. Check the Section Status Report (posted outside of 101 Fraser Hall, B18 and 16 Johnston Hall, 4 Mechanical Engineering, 170 Anderson Hall, and 130 Coffey Hall) to see if space is available in your limited enrollment courses.

Following each course title are parenthetical statements; the first indicates the call number of the course, and the second specifies credits, class

limits, prerequisites, hours and days of the week the class meets, location of the class, and course instructor.

CALL NUMBER

This six-digit number follows the title or section number for each course. You must use the course numbers and these specific call numbers when you fill out your Course Request form.

PREREQUISITES

Entrance into certain courses requires completion of (or concurrent enrollment in) other specified courses, or possession of particular qualifications or class standing.

Class standing is determined by the number of credits completed. The following breakdown may vary slightly by college: freshman, 0-45 credits; sophomore, 46-90 credits; junior, 91-135 credits; senior, 136 or more credits. Check with your college office for further information.

For questions regarding prerequisites, call the department in which the course is offered.

HOURS AND DAYS

The starting and ending times for classes are indicated in 24-hour clock time. To convert from the 24-hour clock to standard time, subtract 1200 (for example, 1615-1200=4:15p.m.)

Classes generally meet for 60 minutes, beginning and ending at the following times; 0800-0900; 0915-1015; 1030-1130; 1145-1245; 1300-1400; 1415-1515; 1530-1630.

Days of the week are abbreviated M, T, W, Th, F.

MISSING INFORMATION

When hours, days, or places of meeting are not listed, consult the instructor or department offering the course.

CANCELLATION OF COURSES OR CHANGES IN COURSES

As a matter of policy, Summer Session does not cancel courses, although sometimes circumstances make it necessary. If a course in which you have enrolled is canceled, you will be notified and given the opportunity to transfer into another course without penalty. If you do not wish to enroll in another course, you will receive a full refund for the course that was canceled. The University reserves the right to cancel, postpone, reschedule, limit enrollment, split or combine courses, and to change instructors and/or locations of courses.

Changes made after the printing of this bulletin are published in the school newspaper *Minnesota Daily*. Lists of changes are also available in the Summer Session office, 135 Johnston Hall.

A

Accounting (Acct)

625 Management/Economics. 624-6506
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11, 12.

SPECIAL TERM: SEVEN-WEEK COURSES JUNE 15-AUGUST 2

R.1050. INTRODUCTION TO FINANCIAL REPORTING. (5 cr; each section limited to 50 students; \$8050; prereq 40 cr; A-F only)
Basic concepts of measurement and valuation underlying development of financial reports for external users. Financial statement preparation, analysis of alternative valuation approaches, and interpretation of financial statement information.
Sec 1, (089625) 0800-0930 MTWTh, BlegH 240
Sec 2, (890310) 1200-1330 MTWTh, BlegH 240

R.3001. INTRODUCTION TO MANAGEMENT ACCOUNTING. (587966) (4 cr; limited to 50 students; prereq 1050; A-F only; 0800-0945 MWTh; BlegH 220)
Overview of management accounting as main information collection and analysis technology in organizations. Analysis of cost-volume-profit relationships, budgeting and analysis of variances from budgeted performance, and decentralized organizational design.

R.3101. INTERMEDIATE FINANCIAL REPORTING. (889626) (4 cr; limited to 60 students; prereq grade of B- or better in 1024/1025 or 1050; A-F only; 1000-1145 MWTh; BlegH 240)
Relationships between economic events and their representation in financial statements aimed at external users. Income determination, asset valuation, and capitalization of corporations.

R.5102. ADVANCED FINANCIAL REPORTING I. (4 cr; limited to 60 students; prereq 3101 or 5101; mgmt or grad mgmt students only; A-F only; 1000-1145 MWTh; BlegH 220)
Relationship between complex events such as defined benefit pension plans, leases, and intercorporate investments, and reflection of these events in financial statements. Introduction to business combinations, consolidated reporting.
Sec 1, (689627)
Sec 2, (490035) MBA only

R.5125. AUDITING PRINCIPLES AND PROCEDURES. (4 cr; limited to 30 students; prereq 3101 or 5101; accounting majors only; A-F only; 1730-2000 TTh; BlegH 220)
Auditor's role and function. Includes audit standards, ethics, procedures, legal responsibilities.
Sec 1, (685304)
Sec 2, (090032) MBA only

R.5135. INCOME TAX ACCOUNTING. (4 cr; limited to 40 students; prereq 1025 or 1050; A-F only; 1730-2000 MW; BlegH 130)
Introduction to principles of federal income taxation of various taxpaying entities.
Sec 1, (485305)
Sec 2, (890033) MBA only

R.5180. ADVANCED FINANCIAL REPORTING II. (4 cr; limited to 30 students; prereq 5102; mgmt or MBA students only; A-F only; 1730-2000 MW; BlegH 220)
Consolidated financial reporting with a particular focus on international business organizations. Introduction to reporting issues in government and not-for-profit entities.
Sec 1, (089141)
Sec 2, (690034) MBA only

SPECIAL TERM: TEN-WEEK COURSE JUNE 15-AUGUST 25

R.5160. FINANCIAL STATEMENT ANALYSIS. (4 cr; limited to 40 students; prereq 1050 or MBA 8030; A-F only; 1730-2100 Th; BlegH 415)
Interpretation and analysis of financial statements and schedules for investors and other users.
Sec 1, (689949)
Sec 2, (790025) (MBA student only)

Adult and Teacher Education (AdEd)

175 Peik Hall. 625-6372
(Curriculum and Instruction)
College of Education

FIRST TERM

5205. FIELD EXPERIENCE IN ADULT EDUCATION. (4-8 cr [max 8 cr]; prereq #; A-F only)
Sec 23, (689546) Williams
Sec 25, (489547) Park

5401. ADULT LEARNING AND DEVELOPMENT THROUGH THE LIFE SPAN. (289548) (3 cr; 1030-1245 TTh, PeikH 46; A-F only) Williams.
Physiological, social, and cultural bases of adult behavior; motivation, socialization, personality change as applied to education of adults.

8302. PROBLEMS: ADULT EDUCATION. (1-9 cr; prereq #)

Individual research in area of adult education.
Sec 23, (189549) Williams
Sec 25, (489550) Park

SECOND TERM

5110. THE STATUS AND ROLE OF WOMEN IN AMERICAN SOCIETY. (391680) (4 cr; 1415-1800 TTh; PeikH 225; A-F only) Park
The role of women in American history; perceptions of women in literature and art; attention to women in social studies curricula; human sexuality; male and female character—nature and/or nurture; choices of family and career.

5205. FIELD EXPERIENCE IN ADULT EDUCATION. (990315) (4-8 cr [max 8 cr]; prereq #; A-F only) Park
See First Term.

8302. PROBLEMS: ADULT EDUCATION. (790316) (1-9 cr; prereq #) Park
See First Term.

Adult Psychiatry (AdPy)

A-614 Mayo. 626-6015
Medical School

FIRST TERM

5109. EXTERNSHIP IN CLINICAL PSYCHIATRY: DULUTH HOSPITAL. (687098) (9 cr; prereq regis med) Olson

5110. CONTEMPORARY HOSPITAL PSYCHIATRY—ST. LUKE'S HOSPITAL, DULUTH. (487099) (9 cr; prereq regis med) Cowan

5500. PSYCHIATRY EXTERNSHIP. (587109) (9 cr; prereq regis med) Eckert

5512. MEDICAL-SURGICAL PSYCHIATRY: CONSULTATION-LIAISON. (491444) (9 cr; prereq 3rd or 4th yr med stu) Popkin

5514. SUBSTANCE ABUSE AND ASSOCIATED PSYCHIATRIC DISORDERS. (190143) (9 cr; prereq regis med) Halikas

5515. NEUROPSYCHOLOGY: UNIVERSITY HOSPITALS. (987124) (9 cr; prereq regis med) Meier

5516. ST. MARY'S EXTENDED CARE CENTER, ALCOHOLIC TREATMENT UNIT. (387127) (4.5-9 cr; prereq regis med) Hiers

5518. COMMUNITY PSYCHIATRY—BRAHAM, MN (187131) (9 cr; prereq regis med) Walton

5530. INDEPENDENT STUDY. (887133) (Up to 9 cr per period; prereq Δ; hrs ar) Mackenzie

Completion of individual projects or study courses in psychiatry or basic sciences.

5602. CLINICAL PSYCHOPHARMACOLOGY SEMINAR. (687134) (1 cr; prereq regis med) Abuzzahab

5924. PRACTICAL PSYCHOTHERAPY, CRISIS INTERVENTION AND EMERGENCY MANAGEMENT. (291445) (3 cr; prereq #) Mitchell

SECOND TERM

5109. EXTERNSHIP IN CLINICAL PSYCHIATRY: DULUTH HOSPITAL. (490083) (9 cr; prereq regis med) Olson

5110. CONTEMPORARY HOSPITAL PSYCHIATRY—ST. LUKE'S HOSPITAL, DULUTH. (090712) (9 cr; prereq regis med) Cowan

5500. PSYCHIATRY EXTERNSHIP. (587045) (9 cr; prereq regis med) Eckert

5512. MEDICAL-SURGICAL PSYCHIATRY: CONSULTATION-LIAISON. (891442) (9 cr; prereq 3rd or 4th yr regis med stu) Popkin

5514. SUBSTANCE ABUSE AND ASSOCIATED PSYCHIATRIC DISORDERS. (190121) (9 cr; prereq regis med) Halikas

5515. NEUROPSYCHOLOGY: UNIVERSITY HOSPITALS. (890713) (9 cr; prereq regis med) Meier

5516. ST. MARY'S EXTENDED CARE CENTER, ALCOHOLIC TREATMENT UNIT. (690714) (4.5-9 cr; prereq regis med) Hiers

5518. COMMUNITY PSYCHIATRY—BRAHAM, MN. (490715) (9 cr; prereq regis med) Walton

5530. INDEPENDENT STUDY. (088670)
See First Term.

5602. CLINICAL PSYCHOPHARMACOLOGY SEMINAR. (290716) (1 cr; prereq regis med) Abuzzahab

5924. PRACTICAL PSYCHOTHERAPY, CRISIS INTERVENTION, AND EMERGENCY MANAGEMENT. (691443) (3 cr; prereq #) Mitchell

Aerospace Engineering and Mechanics (AEM)

107 Akerman Hall. 625-8000
Institute of Technology

FIRST TERM

R.1015. STATICS. (4 cr; each rec limited to 30 students; prereq Phys 1251 or equiv, Math 1261 or equiv; IT student; A-F only; lect 0800-1015

COURSE DESCRIPTIONS

MWF; AkerH 313)

Vector algebra. Principles of statics. Application of equations of equilibrium to simple structures and machines; Statically determinate beams. Cables. Nature and influence of friction.

Rec 1, (885057) 0915-1015 TTh, AkerH 313
Rec 2, (689482) 0915-1015 TTh, Arch 60

R.3036. DYNAMICS. (4 cr; limited to 30 students; prereq 1015, Math 3261 or equiv; IT student; A-F only; lect 1030-1245 MWF; Arch 10)

Review of particle dynamics. Mechanical systems and the rigid-body model. Equilibrium. Kinematics and dynamics of plane systems. Technical applications.
Rec 1, (685058) 1030-1130 TTh, Arch 10

R.5001. WORKSHOP: ELEMENTARY AND SECONDARY TEACHERS—July 6-16 or July 19-30 (offered twice). (4 cr; each section limited to 30 students; prereq educ major; in-service teacher [documentation required], and Δ) Kaldahl, Aerospace Engineering and Mechanics faculty.

Lectures, film reviews, construction, and demonstration of classroom aids, involvement with the NASA space mobile, flight experience, and field trips cover such topics as satellites and probes, model rocketry including a launch, astronaut in space, principles of flight, conventional aircraft, space age education tools. Visits to local aerospace facility and to major aerospace installation in the country subject to availability of airlift. Prerequisites will be enforced. Special registration procedures apply (see Restrictions, p. 31). Note: Course fills up quickly.

Sec 1, (086109) 1300-1745 MTWThF; MechE 108 (July 6-16)
Sec 2, (991948) 1300-1745 MTWThF; MechE 108 (July 19-30)

R.5002. ADVANCED AEROSPACE WORKSHOP—June 21-July 2. (791482) (4 cr; limited to 30 students; prereq educ major; in-service secondary teacher in math, science or aerospace [documentation required], or 5001, or #, Δ, 1300-1745 MTWThF; MechE 108) Kaldahl, Vano, Aerospace Engineering and Mechanics faculty.

Advanced workshop for secondary math and science teachers. Uses contemporary NASA design projects to provide new teaching tools to stimulate student interest in physics and math. Prerequisites will be enforced. Special registration procedures apply (see Restrictions, p. 31). Note: Course fills up quickly.

8777. THESIS CREDITS: MASTERS. (288755) (1-16 cr [max 11 cr per summer term])

8800. SELECTED TOPICS IN MECHANICS AND MATERIALS.

(386110) (1-4 cr per qtr; prereq Δ) Topics of current interest.

8810. SELECTED TOPICS IN FLUID MECHANICS. (691068) (1-4 cr per qtr; prereq Δ) Topics of current interest.

8880. PLAN B PROJECT. (787710) (1-4 cr per qtr [max 4 cr]); prereq grad aerospace engineering or mechanics maj, Δ)

8888. THESIS CREDITS: DOCTORAL. (688915) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

5800. PROBLEMS IN MECHANICS AND MATERIALS. (285158) (1-4 cr per qtr; prereq Δ) Topics of current interest. Individual projects.

5810. PROBLEMS IN FLUID MECHANICS. (185159) (1-4 cr per qtr; prereq Δ)

5838. SUMMER ENGINEERING EMPLOYMENT. (786380) (1-4 cr per qtr; prereq completion of 3rd yr, Δ)

5840. INDUSTRIAL ASSIGNMENT. (186111) (2 cr; prereq regis in engineering intern program; Δ) Engineering intern industrial laboratory. A formal technical report, covering the work during the industrial assignment, is required.

5841. INDUSTRIAL ASSIGNMENT. (086112) (2 cr; prereq regis in engineering intern program; Δ)

5842. INDUSTRIAL ASSIGNMENT. (886113) (2 cr; prereq regis in engineering intern program; Δ)

5843. INDUSTRIAL ASSIGNMENT. (186982) (2 cr; prereq regis in engineering intern program; Δ)

SECOND TERM

R.3016. DEFORMABLE BODY MECHANICS. (4 cr; each rec limited to 30 students; prereq 1015, Math 3261 or equiv; IT student; A-F only; lect 1030-1245 MWF; Arch 10) 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.
Rec 1, (485059) 1030-1130 TTh, Arch 10
Rec 2, (889142) 1030-1130 TTh, Arch 60

8777. THESIS CREDITS: MASTERS. (188837) (1-16 cr [max 11 cr per summer term])

8800. SELECTED TOPICS IN MECHANICS AND MATERIALS.

(588678) (1-4 cr; prereq Δ) See First Term.

8810. SELECTED TOPICS IN FLUID MECHANICS. (286648) (1-4 cr per qtr; prereq Δ) See First Term.

8880. PLAN B PROJECT. (387709) (1-4 cr per qtr [max 4 cr]); prereq grad aerospace engineering and mechanics maj, Δ)

8888. THESIS CREDITS: DOCTORAL. (788971) (1-36 cr [max 11 cr per summer term])

Afro-American Studies (Afro)

808 Social Sciences Tower, 624-9847 (Afro-American and African Studies) College of Liberal Arts

FIRST TERM

R.3601. INTRODUCTION TO AFRICAN LITERATURE. (590317) (4 cr; limited to 35 students; 1015-1130 MTWTh; BlegH 255) Pike Oral and written African literature of the 19th and 20th centuries. All readings in English.

3970. DIRECTED STUDIES. (185047) (1-15 cr per term; prereq #, Δ, CLA approval)

3991-3992-3993. SENIOR PROJECT IN AFRO-AMERICAN AND AFRICAN STUDIES. (489385, 289386, 189387) (2 cr per qtr; prereq completed CLA advanced composition requirement, permission of undergrad adviser; A-F only) Continuous registration three-quarter course for writing of senior paper under the guidance of a faculty supervisor.

5597. SUMMER INSTITUTE FOR TEACHERS: HARLEM RENAISSANCE: Art and Culture in the 1920's. (691975) (4 cr; §Engl 5597; 0930-1200 MTWThF; SocSci 815) Wright See page 36 for details. Meets with Engl 5597.

5970. DIRECTED STUDIES. (185007) (1-6 cr per term; prereq #, Δ, CLA approval; qualified sr and grad students may register with # for work on tutorial basis)

SECOND TERM

R.3910. BLACKS IN STRUGGLE: THE CIVIL RIGHTS MOVEMENT. (791644) (4 cr; limited to 25 students; 1300-1500 MW; BlegH 205) Harris Explores the social and political issues of African-Americans in the 1960s.

3970. DIRECTED STUDIES. (590088) (1-15 cr; prereq #, □)

3991-3992-3993. SENIOR PROJECT

IN AFRO-AMERICAN AND AFRICAN STUDIES. (491640, 291641, 191642) (2 cr; prereq completed CLA advanced composition requirement, permission of undergraduate adviser; A-F only) Continuous registration three-quarter course for writing of senior paper under the guidance of a faculty supervisor.

5970. DIRECTED STUDIES. (790087) (1-6 cr; prereq #, □; qualified senior and graduate students may register with # for work on tutorial basis).

Agricultural and Applied Economics (AgEc)

231 Classroom/Office Building, St. Paul, 625-1222 College of Agriculture

FIRST TERM

3990. INDEPENDENT STUDY IN AGRICULTURAL AND APPLIED ECONOMICS. (791367) (cr ar; prereq #) Staff Independent study and supervised reading and research on subjects and problems not covered in regularly offered courses.

5990. SPECIAL TOPICS AND INDEPENDENT STUDY IN AGRICULTURAL AND APPLIED ECONOMICS. (387967) (Cr ar; prereq #) Staff Independent study, supervised reading, or research on agricultural economics problems not covered in regularly offered courses.

8110. MASTER'S PAPER: PLAN B PROJECT. (492027) (1-9 cr [max 9 cr]; prereq #; S-N only)

8200. ADVANCED TOPICS IN AGRICULTURAL AND APPLIED ECONOMICS. (285273) (1-9 cr; [may be repeated for cr]; hrs ar) Staff Special problems for individual work by qualified students.

8777. THESIS CREDITS: MASTERS. (188756) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488916) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3990. INDEPENDENT STUDY IN AGRICULTURAL AND APPLIED ECONOMICS. (991366) (cr ar; prereq #) Staff Independent study and supervised reading and research on subjects and problems not covered in regularly offered courses.

5990. SPECIAL TOPICS AND INDEPENDENT STUDY IN AGRICULTURAL AND APPLIED ECONOMICS. (187968)

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

8110. MASTER'S PAPER: PLAN B PROJECT. (292028) (1-9 cr [max 9 cr]; prereq #; S-N only)

8200. ADVANCED TOPICS IN AGRICULTURAL AND APPLIED ECONOMICS. (087969) (1-9 cr; [may be repeated for cr]; hrs ar) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (188840) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (588972) (1-36 cr [max 11 cr per summer term])

Agricultural Education (AgEd)

320 Vocational/Technical Building,
St. Paul. 624-2221
(Vocational and Technical Education)
College of Education

FIRST TERM

R.3001. EXPERIENTIAL LEARNING: PRODUCTION AGRICULTURE. (388424) (1-14 cr [max 14 cr]; no more than 20 cr of 3001, 3002 combined; limited to 8 students; prereq #; hrs ar; S-N only) Leske
Experiential learning in a production of agriculture business; planned, organized, monitored, and evaluated based on pre-experience diagnosis of learning prerequisite to higher-level courses in technical agriculture.

R.3002. EXPERIENTIAL LEARNING: AGRICULTURAL BUSINESS. (589135) (1-14 cr [max 14 cr]; no more than 20 cr of 3001, 3002 combined; limited to 8 students; prereq #; hrs ar; S-N only) Leske
Experiential learning in an agricultural non-farm business. Planned, organized, monitored, and evaluated based on a pre-experience diagnosis of learning required to meet competency expectations for those employed in agricultural businesses.

5034. PROCEDURES IN TEACHING AGRICULTURE—June 15-18, 22-25. (591645)(3 cr; 1300-1600 TWThF and hrs ar; VoTech R385; A-F only) Peterson
New developments in methodology; assessment of innovations and procedures; consideration of various levels of instruction.

5042. AGRICULTURAL MECHANICS—June 15-18, 22-25. (391646) (1-3 cr [max 12 cr]; 0900-1200 TWThF and hrs ar; VoTech 110) Eighth
Technical and managerial information, techniques, and materials. Designed to facilitate participant's instructional planning, resource development, and instruction. Topic to be identified

with each offering. This offering for 3 credits.

5090. INDEPENDENT STUDY. (1-3 cr; prereq sr; hrs ar; A-F only)
Topics may be chosen to permit study of areas within education or to supplement areas of inquiry not provided in the regular course structure.
Sec 21, (887617) Norenberg
Sec 22, (687618) Peterson
Sec 23, (487619) Leske
Sec 25, (887620) Persons

5095. INTEGRATING PAPER: MASTER OF EDUCATION. (3 cr; prereq MEd student in agricultural education; hrs ar; A-F only)
Preparation of a paper dealing with learning in agricultural education applied to professional responsibilities.
Sec 21, (687621) Norenberg
Sec 22, (487622) Peterson
Sec 23, (287623) Leske
Sec 25, (187624) Persons

8001. RESEARCH IN AGRICULTURAL EDUCATION. (Cr ar; prereq 15 cr in education)
Selecting problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts.
Sec 21, (987625) Norenberg
Sec 22, (787626) Peterson
Sec 23, (587627) Leske
Sec 25, (387628) Persons

8091. FIELD PROBLEMS. (3 cr; hrs ar)
Making investigations, gathering data, and formulating plans regarding agricultural education.
Sec 21, (187629) Norenberg
Sec 22, (587630) Peterson
Sec 23, (387631) Leske
Sec 25, (187632) Persons

8777. THESIS CREDITS: MASTERS. (988757) (1-16 cr [max 11 cr per summer term])

SECOND TERM

R.3001. EXPERIENTIAL LEARNING: PRODUCTION AGRICULTURE. (188425) (1-14 cr [max 14 cr]; no more than 20 cr of 3001, 3002 combined; limited to 8 students; prereq #; hrs ar; S-N only) Leske
See First Term.

R.3002. EXPERIENTIAL LEARNING: AGRICULTURAL BUSINESS. (189137) (1-14 cr [max 14 cr]; no more than 20 cr of 3001, 3002 combined; limited to 8 students; prereq #; hrs ar; S-N only) Leske
See First Term.

5090. INDEPENDENT STUDY. (1-3 cr; prereq sr; hrs ar)
See First Term.
Sec 21, (187601) Norenberg
Sec 22, (087602) Peterson
Sec 23, (887603) Leske
Sec 25, (687604) Persons

5095. INTEGRATING PAPER: MASTER OF EDUCATION. (3 cr;

prereq MEd student in agricultural education; hrs ar; A-F only)
See First Term.
Sec 21, (487605) Norenberg
Sec 22, (287606) Peterson
Sec 23, (187607) Leske
Sec 25, (987608) Persons

8001. RESEARCH IN AGRICULTURAL EDUCATION. (Cr ar; prereq 15 cr in education)
See First Term.
Sec 21, (787609) Norenberg
Sec 22, (187610) Peterson
Sec 23, (987611) Leske
Sec 25, (787612) Persons

8091. FIELD PROBLEMS. (3 cr; hrs ar)
See First Term.
Sec 21, (587613) Norenberg
Sec 22, (387614) Peterson
Sec 23, (187615) Leske
Sec 25, (087616) Persons

8777. THESIS CREDITS: MASTERS. (588843) (1-16 cr [max 11 cr per summer term])

Agricultural Engineering (AgEn)

213 Agricultural Engineering,
St. Paul. 625-7733
Institute of Technology

FIRST TERM

8777. THESIS CREDITS: MASTERS. (788758) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288917) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERM: 10-WEEK COURSE

5050. INTERN REPORTS. (688333) (2 cr; prereq 1T student, #) Chaplin
Student exposure to engineering practice through an intern program. Engineering reports on work assignments are reviewed by faculty and coordinated with industry advisers.

SECOND TERM

8777. THESIS CREDITS: MASTERS. (088846) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188974) (1-36 cr [max 11 cr per summer term])

Agronomy and Plant Genetics (Agro)

411 Borlaug Hall, St. Paul.
625-7773
College of Agriculture

FIRST TERM

1020. SPECIAL PROBLEMS. (185274)

(1-3 cr; prereq 5 cr agronomy, #) Smith, Cardwell
In-depth research or studies in agronomy. Intended for those who wish to pursue aspects of agronomy in greater depth than that offered in other courses or who wish to investigate areas not presently offered. Tutorial instruction under staff guidance.

5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS. (985275) (1-5 cr; prereq 20 cr agronomy, #) Smith, Cardwell
In-depth research or studies in agronomy. Intended for advanced students who wish to pursue aspects of agronomy in greater depth than that offered in other courses or who wish to investigate areas not presently offered. Independent study and research under staff guidance.

8010.* RESEARCH IN AGRONOMY. (785276) (Cr ar; prereq #) Staff
Problems in physiology and production of crop plants.

8330. RESEARCH IN PLANT GENETICS. (585277) (Cr ar) Staff

8340. DIRECTED STUDIES FOR THESIS RESEARCH. (591368)
For doctoral students who have not yet taken preliminary oral exam. Planning and implementation of thesis research for the quarter.

8777. THESIS CREDITS: MASTERS. (588759) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188918) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

5310. ORIENTATION TO FIELD CROP BREEDING. (089138) (1 cr; prereq 5020 or #; 0800-1000 F; BorH 306; S-N only) Stuthman
Field study of plant breeding programs and techniques.

8320. ORIENTATION TO AGRONOMY AND SOILS FIELD RESEARCH TECHNIQUES. (885348) (1 cr; S-N only; \$Soils 8320; prereq 5040 or #; 0800-1000 M; BorH 306) Cardwell
Field survey and discussion of research techniques in crop physiology, crop and soil management, and weed science programs in agronomy and soils.

SECOND TERM

1020. SPECIAL PROBLEMS. (286181) (1-3 cr; prereq 5 cr agronomy, #) Smith, Cardwell
See First Term.

5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS. (186182) (1-5 cr; prereq 20 cr agronomy, #) Smith, Cardwell
See First Term.

COURSE DESCRIPTIONS

8010. RESEARCH IN AGRONOMY. (986183) (Cr ar; prereq #) Staff
See First Term.

8330. RESEARCH IN PLANT GENETICS. (385104) (Cr ar) Staff

8340. DIRECTED STUDIES FOR THESIS RESEARCH. (391369)
See First Term.

8777. THESIS CREDITS: MASTERS. (688848) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088975) (1-36 cr [max 11 cr per summer term])

American Indian Studies (Amln)

102 Scott Hall. 624-1338
College of Liberal Arts

FIRST TERM

1031. BEGINNING DAKOTA. (391551) (5 cr; 0900-1115 MTWThF; 130 WullH) Schommer
Acquisition of speaking skills in Dakota everyday language.

3024. INTERMEDIATE OJIBWE. (191552) (5 cr; prereq 1023; 1300-1515 MTWThF; ScottH 4) Oakgrove

R.5960. SUMMER INSTITUTE FOR TEACHERS:
Sec 5. The Flowering Tree: Traditional and Contemporary American Indian Literature and Culture—June 21-July 2. (791949) (4 cr; 0930-1200 MTWThF; Law 3) Miller
See page 37 for details.

SECOND TERM

R.3026. OJIBWE CULTURE AND HISTORY. (591550) (4 cr; limited to 20 students; 1415-1515 MTWTh; ScottH 4) Oakgrove
The processes of maintenance and change in Ojibwe culture.

American Studies (AmSt)

104 Scott Hall. 624-4190
College of Liberal Arts

FIRST TERM

R.1001. AMERICAN CULTURES. (390318) (4 cr; limited to 40 students; 0915-1015 MTWThF; BlegH 105)
Interdisciplinary study of American cultures, using four sources (a related event, literary document, artifact, and place) to help students understand large cultural issues. This course focuses on the origins of the country to mid-19th century.

R.3113. AMERICAN CULTURAL DIVERSITY. (788436) (4 cr; limited to 40 students; 1030-1130 MTWThF;

BlegH 250) Kilpatrick
Patterns of American cultural expression, values, and lifestyles analyzed within the context of the dominant "normative" pattern of American life.

3970. DIRECTED STUDIES. (688350) (1-15 cr; prereq #, Δ, CLA approval) Staff

5920. SUMMER INSTITUTE FOR TEACHERS.

Sec 5, June 21-July 2. (Dis)abling Images in Literature, Film, and the Media. (090841) (4 cr; 0930-1200 MTWThF; Law 3) Collins
See page 37.

Sec 6, June 17 and 18. Children's Literature in the Classroom: Native American Authors. (192046) (1 cr; 1300-1630 June 17, 0900-1630 June 18; West Bank Union Auditorium, Kerlan Collection) Karen Nelson Hoyle
See page 36.

8777. THESIS CREDITS: MASTERS. (988760) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988919) (1-36 cr [max 11 cr per summer term])

8970. READINGS IN AMERICAN CIVILIZATION. (185579) (Cr and hrs ar) Staff

SECOND TERM

R.1003. AMERICAN CULTURES. (489628) (4 cr; limited to 40 students; 0915-1015 MTWThF; BlegH 110) Staff
Interdisciplinary study of American cultures, using four sources (a related event, literary document, artifact, and place) to help students understand large cultural issues. Focuses on the 1920s to the present.

R.3111. CREATIVE AMERICANS AND THEIR WORLDS: 1920s to the present. (289629) (4 cr; limited to 75 students; 1145-1345 TTh; EE/CSci 3115) Furia
The cultural life of Americans through study of works and lives of selected artists in several media, including painting, literature, architecture, music, and drama.

3970. DIRECTED STUDIES. (486549) (1-15 cr; prereq #, Δ, CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (888850) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (888976) (1-36 cr [max 11 cr per summer term])

8970. READINGS IN AMERICAN CIVILIZATION. (286553) (ar cr) Staff

Ancient Near Eastern Studies (ANE)

331 Folwell Hall, 625-5353
(Classical and Near Eastern Studies)
College of Liberal Arts
(See also Hebrew; Jewish Studies; Religious Studies)

SECOND TERM

1001. THE BIBLE: NARRATIVE TEXTS. (690843) (4 cr, \$3001; \$ReIS 3201; 0900-1130 MW; FolH 306) Paradise
Survey of literary and historical narrative texts from: Pentateuch, Joshua, Judges, Samuel, and Kings. Reading of extensive selections from Bible and secondary materials on literary background of texts. Meets with 3001, ReIS 3201.

3001. THE BIBLE: NARRATIVE TEXTS. (490844) (4 cr, \$1001, \$ReIS 3201; 0900-1130 MW; FolH 306) Paradise
Meets with 1001 and ReIS 3201, but requires additional work for advanced undergraduate and graduate credit.

Ancient Studies (AnSt)

215 Ford Hall. 625-3400
College of Liberal Arts

FIRST TERM

5100. SUMMER INSTITUTE FOR TEACHERS
Sec 5. June 21-24, Archaeology in the Classroom. (590916) (1 cr; prereq enrollment in AnSt or #)
See page 39.

8777. THESIS CREDITS: MASTERS. (388763) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188921) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (988855) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288979) (1-36 cr [max 11 cr per summer term])

Anesthesiology (Anes)

B515 Mayo. 624-9990
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (788761) (1-16 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

Elective Courses

5186. CLINICAL PRACTICE IN ANESTHESIA. (788209) (15 cr; prereq CRNA, regis B.S. in nurs anes, 5086, #) Palahniuk, staff

5286. DIRECTED STUDY, ANESTHESIA TOPICS/PROJECT: CLINICAL. (085185) (Cr ar; prereq CRNA, regis B.S. in nurs anes, #)

5386. EDUCATION IN NURSE ANESTHESIA. (188207) (1 cr; prereq CRNA, regis B.S. in nurs anes, #) Palahniuk, staff

SECOND TERM

8777. THESIS CREDITS: MASTERS. (688851) (1-16 cr [max 11 cr per summer term])

Animal Physiology (AnPh)

120 Peters Hall, St. Paul.
624-2722
College of Agriculture

FIRST TERM

8777. THESIS CREDITS: MASTERS. (588762) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288920) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (288853) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488978) (1-36 cr [max 11 cr per summer term])

Animal Science (AnSc)

120 Peters Hall, St. Paul.
624-2722
College of Agriculture

FIRST TERM

3306. ARTIFICIAL INSEMINATION TECHNIQUES LABORATORY. (088409) (1 cr; prereq #...3305 rec; S-N only; off-campus) Crabo
Practical insemination exercises in cows. Review of the physiology of the bovine estrus cycle and semen handling.

5710. SPECIAL PROBLEMS. (385278) (Cr ar; prereq #) Staff
Research in an area of animal science under the supervision of a staff member. Written report required.

5715. TUTORIAL. (086983) (Cr ar; prereq #)
Informally structured course to encourage study in depth of a specific discipline in animal science. Pertinent readings, centered on fundamental propositions, suggested; preparation of written essays of high quality required. Tutorials available in cryobiology, cytogenetics, genetics, meats, nutrition, and physiology.

8750. CONCEPTS AND DEVELOPMENTS IN MEAT SCIENCE AND TECHNOLOGY. (185279) (1 cr [may be repeated once for cr]; prereq #) Staff
Review and evaluation of pertinent scientific literature.

8777. THESIS CREDITS: MASTERS. (489127) (1-16 cr [max 11 cr per summer term])

8810.* RESEARCH IN ANIMAL SCIENCE. (585280) (Cr and hrs ar; prereq #) Staff
Research including experimental studies in the disciplines associated with animal production and research, with emphasis on interdisciplinary studies embracing environmental and managerial considerations.

8820.* RESEARCH IN ANIMAL GENETICS. (385281) (Cr and hrs ar; prereq #) Staff
Research in quantitative genetics, cytogenetics, and other areas related to animal breeding.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (185282) (Cr and hrs ar; prereq #) Staff
Individual research under faculty direction. Topics to be determined by consultation: may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.

8840.* RESEARCH IN ANIMAL NUTRITION. (085283) (Cr and hrs ar; prereq #) Staff
Research in selected areas of animal nutrition. Topics and species studied determined by consultation.

8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY. (885284) (Cr and hrs ar; prereq #) Staff
Individual, original research, under staff direction, on selected problems involving the chemical, biochemical, and physiological aspects of muscle and meat technology. Topic may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.

8888. THESIS CREDITS: DOCTORAL. (289128) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5710. SPECIAL PROBLEMS. (786184) (Cr ar; prereq #) Staff
See First Term.

5715. TUTORIAL. (785052) (Cr ar; prereq #)
See First Term.

8750. CONCEPTS AND DEVELOPMENTS IN MEAT SCIENCE AND TECHNOLOGY. (586185) (1 cr [may be repeated once for cr]; prereq #) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (189129) (1-16 cr [max 11 cr per summer term])

8810.* RESEARCH IN ANIMAL SCIENCE. (386186) (Cr and hrs ar; prereq #) Staff
See First Term.

8820.* RESEARCH IN ANIMAL GENETICS. (186187) (Cr and hrs ar; prereq #) Staff
See First Term.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (086188) (Cr and hrs ar; prereq #) Staff
See First Term.

8840.* RESEARCH IN ANIMAL NUTRITION. (886189) (Cr and hrs ar; prereq #) Staff
See First Term.

8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY. (186190) (Cr and hrs ar; prereq #) Staff
See First Term.

8888. THESIS CREDITS: DOCTORAL. (489130) (1-36 cr [max 11 cr per summer term]) Staff

Anthropology (Anth)

215 Ford Hall. 625-3400
College of Liberal Arts

FIRST TERM

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (387970) (5 cr, \$5102; 0915-1015 MTWThF; FordH 55) Lipset
Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world.

3201. APPROACHES IN CULTURAL ANTHROPOLOGY. (689143) (4 cr; prereq 1102 or #; 1030-1130 MTWThF; FordH 130) Goodwin-Tomar
Humanistic and scientific conceptions of culture. Interpretation and explanation. Theoretical foundations of current anthropological thought.

3970. DIRECTED STUDIES. (285581) (Cr and hrs ar; prereq #, Δ, □) Staff

5141. CULTURE AND PERSONALITY. (391484) (4 cr; prereq 1102 or 5102 or # [waived for majors in public health, nursing, psychology, sociology, and social work]; 1145-1245 MTWThF; FordH 285) Ingham
Role of culture in formation of personality. Individual adjustments to demands of culture. Psychological approach to culture.

5910. TOPICS IN ANTHROPOLOGY: ETHNOGRAPHIC FIELD RESEARCH. (190149) (6 cr; limited to 20 students; prereq 1102 and #; 1300-1500 MTW plus field work hours arranged; FordH 285) Miller
Field research on cultural diversity in the Twin Cities metro area. Research ethics, participant observation, interviewing, writing field notes, interpretation of qualitative data, research conducted in cooperation with community groups.

5970. DIRECTED READINGS. (187971) (2-4 cr; prereq #, Δ, CLA approval)
Qualified students may register for work on tutorial basis.

8211. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (087972) (3 cr; hrs ar) Staff

8777. THESIS CREDITS: MASTERS. (188764) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988922) (1-36 cr [max 11 cr per summer term])

8950. DIRECTED STUDIES. (185582) (Cr and hrs ar; prereq #) Staff

SECOND TERM

1101. HUMAN ORIGINS. (191485) (5 cr; 1030-1130 MTWThF; FordH 285)
World prehistory as investigated by anthropologists; methods and concepts used by anthropologists in studying of prehistoric human biological and cultural development.

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (687974) (5 cr, \$5102; 0915-1015 MTWThF; FordH 55) Gerlach
See First Term.

3131. RELIGION AND CULTURE. (091486) (4 cr; prereq 1102 or #; 0915-1015 MTWThF; FordH 285) Penn
Anthropological perspectives on religion. Religion in relation to social order and individual life cycle. Religion and cultural change.

3261. INDIAN CULTURE AND SOCIETY. (891487) (4 cr; 1145-1245 MTWThF; FordH 285) Goodwin-Tomar
Survey of broad South Asian civilization patterns and ethnographic contexts; theoretical issues in forming South Asian anthropology. Caste, sovereignty, and polity; person and society; kinship, marriage, and gender;

ritual; colonial discourse and transformations.

3970. DIRECTED STUDIES. (186559) (Cr and hrs ar; prereq #, Δ, □) Staff

5970. DIRECTED READINGS. (487975) (2-4 cr; prereq #, Δ, CLA approval)
See First Term.

8777. THESIS CREDITS: MASTERS. (788856) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688980) (1-36 cr [max 11 cr per summer term])

8950. DIRECTED STUDIES. (586560) (Cr and hrs ar; prereq #) Staff

Arabic (Arab)

808 Social Sciences. 624-9847
(Afro-American and African Studies)
College of Liberal Arts

FIRST TERM

R.3301. MODERN ARABIC POETRY IN TRANSLATION. (191647) (4 cr; limited to 15 students; \$MidE 3301; 1330-1530 TTh; BlegH 245) AshSareef
The free verse movement and its major trends: post-romantic, social-realist, symbolist, resistance, and prose poem. Emphasis on leading poets; al-Mala'ika, al-Sayyab, al-Bayati, Adunis, Hawi, al-Khal, al-Fayturi, Abd-al-Sabur, Darwish, Sayigh, Jabra, and al-Maghut. Poems discussed in cultural and historical context. Theoretical and critical essays. All readings in English. Meets with 5501.

R.5501. MODERN ARABIC POETRY. (091648) (4 cr; limited to 10 students; 1330-1530 TTh; BlegH 245) AshShareef
See 3301. Meets with 3301.

SECOND TERM

R.3303. ARABIC DRAMA IN TRANSLATION. (891649) (4 cr; \$MidE 3303; limited to 15 students; 1330-1530 TTh; BlegH 245) AshShareef
Emergence and development of drama as a new genre in Arabic literature under influence of European drama. Different trends studied: "theater of the mind," social realist, existentialist, absurdist, experimentalist, epic, and verse drama. Emphasis on major playwrights representing each trend: al-Hakim, Abd-al-Sabur, Diyab, Salem, Faraj, Idris, al-Maghut, al-Ani, Wannus, and al-Madani. Plays discussed in cultural and historic context. Theoretical and critical essays. All readings in English. Meets with 5503.

COURSE DESCRIPTIONS

5503. ARABIC DRAMA. (191650) (4 cr; §MidE 5503; limited to 10 students; 1330-1530 TTh; BlegH 245) AshShareef
See 3303. Meets with 3303.

Architecture (Arch)

110 Architecture. 624-7866
College of Architecture and Landscape Architecture

FIRST TERM

R.1021. HISTORY OF ARCHITECTURE. (286326) (4 cr; limited to 80 students; §LA 1021; 0915-1130 MWF; Arch 25)
Introduction to history and theory of architecture. Survey of architecture from ancient through modern periods.

R.3062. BUILDING SYSTEMS. (490780) (4 cr; limited to 25 students, prereq Arch major, 3061; 0800-1000 MW, 0915-1200 F; Arch 55) Weeks
Building systems, subsystems, and components; principles of structural theory; materials and methods used in building; new and developing technologies.

R.3311. DRAWING FOR DESIGN. (191950) (4 cr; limited to 15 students; prereq Arch 1301, Pre-Arch, Arch, BED, or LA or #; 0915-1200 MWF; Arch 30) Piotrowski
Exploration of drawing process as modes of perception, cognition and reflection. Study of representation aspects of drawing systems and conventions. Development of the understanding of space, light and order.

3970. DIRECTED STUDY. (385247) (Cr ar; prereq 3081 or Δ)

R.5961. COMPUTER-AIDED ARCHITECTURAL DESIGN. (289145) (4 cr; limited to 20 students; prereq architecture major, 3083 or #; 1030-1225 MWF; Arch 35) Peterssen
PASCAL programming as an introduction to computing; creating database for 3D modeling; selection and implementation of business microcomputers and CAD systems; hardware and software selection, trends and anticipated developments.

8777. THESIS CREDITS: MASTERS. (088765) (1-16 cr [max 11 cr per summer term])

SECOND TERM

5970. DIRECTED STUDY. (485157) (Cr ar; prereq #)

8777. THESIS CREDITS: MASTERS. (188859) (1-16 cr [max 11 cr per summer term])

Art Education (ArEd)

125 Peik Hall. 625-6372
(Curriculum and Instruction)
College of Education

FIRST TERM

R.5001. ART MEDIA TECHNIQUES: Computer Use in the Art Class—June 15-28. (691653) (1-12 cr; [max 12 cr]; limited to 20 students; 1230-1530 MTWThF; offered off-campus in Turtle Lake Elementary School, 1141 W. Cty. Rd. I, Shoreview; A-F only) Freedman-Norberg
Lectures, demonstrations, discussion, critique sessions exploring and learning various techniques and processes in creativity; handling specific media. Learning experiences using computer graphics technology. Focuses on: computer graphics in teaching art and design; social and aesthetic implications of computer graphics technology; and the development of skills using computer hardware and software to produce graphics. This 3 credit offering is for Art Education post-baccalaureate students only.

5302. CURRICULUM INNOVATIONS IN ART EDUCATION—June 14-25. (088216) (4 cr; 0800-1630 MTWThF; WullH 240 and off-campus; A-F only) DiBlasio
Study and analysis of innovations, evaluation of materials for teaching units and projects.

R.5308. THEORY AND PRACTICE OF TEACHING ART IN ELEMENTARY SCHOOLS—June 30-July 20. (491654) (4 cr; limited to 30 students; 0800-1130 MTWThF; WullH 240; A-F only) Wagner
Study of art concepts, skills, and processes appropriate for elementary school; methods of art instruction, and children's production of and responses to art. This offering is for Elementary post-baccalaureate students only.

5600. INTERNSHIP. (188434) (3-9 cr; prereq #; hrs ar; A-F only) DiBlasio
Professional assignment for degree candidates under joint supervision of departments and cooperating agency.

5605. PRACTICUM. (988435) (3-9 cr; prereq #; A-F only) DiBlasio
Independent project under direction; gathering data, developing proposals, experimenting with evaluating innovative practices.

5900. PROFESSIONAL PROBLEMS. (3 cr; prereq MEd student, #; hrs ar; A-F only)
Independent study for MEd candidates integrating learning from art education, art, and education.
Sec 21, (091651) DiBlasio
Sec 22, (291655) Freedman-Norberg

8900. PROBLEMS: ART EDUCATION. (Cr ar; prereq #; hrs ar) DiBlasio
Independent projects under staff

guidance; may include advanced studio practice or technical problems requiring experimental or library research.

Sec 21, (891652) DiBlasio
Sec 22, (191656) Freedman-Norberg

SECOND TERM

5389. APPLICATIONS OF AESTHETIC THEORY IN EDUCATION—July 22-August 6. (289551) (3 cr; 0800-1015 MTWThF; WullH 240; A-F only) DiBlasio
Contemporary theories of art, psychological and philosophical foundations. Open to teachers, supervisors, and administrators concerned with art in general education at all levels.

5600. INTERNSHIP. (991657) (3-9 cr; prereq #; hrs ar; A-F only) DiBlasio
See First Term.

5605. PRACTICUM. (791658) (3-9 cr; prereq #; A-F only; hrs ar) DiBlasio
See First Term.

5900. PROFESSIONAL PROBLEMS. (991660) (3 cr; prereq MEd student, #; hrs ar; A-F only) DiBlasio
See First Term.

8900. PROBLEMS: ART EDUCATION. (791661) (Cr ar; prereq #; hrs ar) DiBlasio
See First Term.

Art History (Arth)

108a Jones Hall. 624-4500
College of Liberal Arts

FIRST TERM

R.1016. INTRODUCTION TO ASIAN ART. (691555) (4 cr; limited to 100 students; 0900-1015 MTWTh; FolH 306) Poor
Major themes of Indian and East Asian Art.

R.3011. HISTORY OF RENAISSANCE AND BAROQUE ART. (786881) (4 cr; limited to 65 students; 1030-1145 MTWTh; JonesH 207B) Canedy
The major monuments in architecture, sculpture, and painting from the early 14th century through the baroque period.

R.3012. HISTORY OF 19TH, 20TH CENTURY ART. (191981) (4 cr; limited to 65 students; 0900-1015 MTWTh; JonesH 207B) Haxthausen

3970. DIRECTED STUDIES. (087745) (1-5 cr; prereq #, Δ, □) Staff
Guided individual reading or study.

3971. MAJOR PROJECT. (287976) (1 cr; prereq art history major, #) Staff
Completion of a research paper begun in a 5000-level project course.

R.5950. TOPICS: BEUYS, KIEFER, POLKE, AND RICHTER. (991982) (4 cr; prereq jr or sr or #; limited to 40

students; 1200-1315 MTWTh; JonesH 207B) Hawthausen

5970. DIRECTED READINGS. (585067) (1-5 cr; prereq sr, #, Δ, CLA approval) Staff
Guided individual reading or study.

8888. THESIS CREDITS: DOCTORAL. (788923) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.3303. BAROQUE AND ROCOCO PAINTING IN FRANCE. (791952) (4 cr; limited to 65 students; 1030-1145 MTWTh; JonesH 207B) Stoughton
French painting of the 17th and first half of the 18th centuries.

3970. DIRECTED STUDIES. (987690) (1-5 cr; prereq #, Δ, □) Staff
See First Term.

3971. MAJOR PROJECT. (187977) (1 cr; prereq art history major, #) Staff
See First Term.

5970. DIRECTED READINGS. (386561) (1-5 cr; prereq sr, #, Δ, CLA approval) Staff
See First Term.

8888. THESIS CREDITS: DOCTORAL. (488981) (1-36 cr [max 11 cr per summer term];

Arts, Studio (Arts)

208 Art Building. 625-8096
College of Liberal Arts

Studio Arts policy requires that all students must have written permission from the instructor to register for a class after the first class meeting.

Materials fees are assessed at the time of registration for most Studio Arts courses. The fee covers part of the cost of expendable materials, models, breakage, and special facilities. For fee amounts, see page 19.

FIRST TERM

R.1101. DRAWING I. (4 cr; each section limited to 20 students)
Introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums.
Sec 1, (985583) 0800-1015 MTWThF, ArtB 150, Roode
Sec 2, (987981) 0800-1015 MTWThF, ArtB 140, Cowette
Sec 3, (787982) 1030-1245 MTWThF, ArtB 140, Cowette

R.1301. SCULPTURE. (490150) (4 cr; limited to 20 students; 0800-1015 MTWThF; ArtB 65) Lucey
Study of structure with emphasis on form and space. Direct construction in metal.

COURSE DESCRIPTIONS

R.1302. SCULPTURE. (187596) (4 cr; limited to 20 students; 1030-1245 MTWThF; ArtB 50) Baldwin
Study of structure with emphasis on form and space. Clay, plaster, wood. Mold making and casting.

R.1520. PRINTMAKING: LITHOGRAPHY. (791370) (4 cr per term [8 cr max]); limited to 20 students; 0800-1015 MTWThF; ArtB 170) Krepps
Planographic printing processes from stones and metal plates. Image making, processing, printing, and presentation in creative context.

R.1540. PRINTMAKING: SCREEN. (591371) (4 cr per term [8 cr max]); limited to 8 students; 1030-1245 MTWThF; ArtB 170) Bethke
Traditional and contemporary screen printing media. Paper stencil, tusche and glue, cut stencil, and photo stencil techniques, and their aesthetic applications. Meets with 3540 and 5540.

R.1701. PHOTO MEDIUM. (4 cr; each section limited to 20 students)
Contemporary and historical use of photography. Use of camera, film development, and enlarging. The creative process.
Sec 1, (588065) 0800-1015 MTWThF, ArtB 120
Sec 2, (387595) 1030-1245 MTWThF, ArtB 120

R.1812. CERAMICS: WHEEL THROWING. (786251) (4 cr; limited to 20 students; 1030-1245 MTWThF; ArtB 10) Hoard
Introduction to wheel throwing techniques for individual creative expression.

R.3105. INTRODUCTION TO PAINTING. (085400) (4 cr; limited to 20 students; prereq 1101, 1102, 1401, 1404; 1030-1245 MTWThF; ArtB 151) Roode
Introduction to studio work in painting. Fundamentals of visual art making via the paint media. Emphasis on visual language: volume, texture, color, line, space, light, composition. Concepts, technique, and philosophies of painting.

R.3130. WATERCOLOR. (391372) (4 cr per term [12 cr max]); limited to 12 students; prereq 1101, 1102, 1401, 1404; 1030-1245 MTWThF; ArtB 141) Rowan
Transparent watercolor, gouache, casein, tempera. Figure, still life, landscape, abstract design. Meets with 5130.

R.3131. NATURE OF ABSTRACTION. (191373) (4 cr; limited to 20 students; prereq 1101, 1102, 1401, 1404; 0800-1015 MTWThF; ArtB 161) Rowan
Two-dimensional projects in varied media in which representational images from nature are transposed toward abstract syntheses through specific attention to visual elements.

R.3304. SCULPTURE: WOOD AND STONE. (190160) (4 cr; limited to 12 students; prereq 1301, 1302, 1401; 1030-1245 MTWThF; ArtB 50) Lucey
Wood and stone construction, assemblage, and arrangement. Meets with 5340.

R.3430. PAPER: PULP TO PLASTIC EXPRESSION. (089530) (4 cr per term [12 cr max]); limited to 10 students; prereq 1401, 1xxx level Studio Arts course; 1030-1245 MTWThF; ArtB 35) Krepps
Creative and traditional approaches in papermaking. The role of paper in the total expression of an art work and the relationship of materials and preparation that lends uniqueness to handmade papers. Papermaking as a creative involvement in both two- and three-dimensional applications. Meets with 5430.

R.3540. PRINTMAKING: SCREEN. (890162) (4 cr per term [12 cr max]); limited to 8 students; prereq 1401, 4 cr of 1540 or #; 1030-1245 MTWThF; ArtB 170) Bethke
Screen printing techniques, emphasis on color and image development. Meets with 5540.

3970. DIRECTED STUDY. (1-5 cr per term [8 cr max]); prereq 24 cr in studio arts and #, Δ, □)
Sec 1, (488379) Baldwin
Sec 2, (190152) Bethke
Sec 4, (085011) Cowette
Sec 9, (686887) Hoard
Sec 11, (186254) Krepps
Sec 13, (790154) Lucey
Sec 18, (091374) Roode
Sec 20, (191074) Rowan
Sec 21, (091164)

3980. DIRECTED INSTRUCTION. (1-5 cr per term [8 cr max]); prereq #, Δ, □)
Students assist in teaching a course they have completed.
Sec 1, (888380) Baldwin
Sec 2, (590155) Bethke
Sec 4, (885012) Cowette
Sec 9, (686890) Hoard
Sec 11, (086255) Krepps
Sec 13, (190157) Lucey
Sec 18, (891375) Roode
Sec 20, (991075) Rowan
Sec 21, (691376)

R.5130. WATERCOLOR. (491377) (4 cr per term [16 cr max]); limited to 8 students; prereq 12 cr of 3130 or #; 1030-1245 MTWThF; ArtB 141) Rowan
Advanced watercolor techniques, aesthetic directions. Individual concepts and development of sensibilities. Meets with 3130.

5190. ADVANCED ENTRY: DRAWING AND PAINTING. (4 cr per term [16 cr max]); prereq #, Δ)
Sec 4, (486261) Cowette
Sec 18, (591404) Roode
Sec 20, (391405) Rowan

R.5340. SCULPTURE: WOOD AND STONE. (090161) (4 cr per term [16

cr max]); limited to 8 students; prereq 3304; 1030-1245 MTWThF; ArtB 50) Lucey
Meets with 3304.

5390. ADVANCED ENTRY: SCULPTURE. (4 cr per term [16 cr max]); prereq #, Δ)
Sec 1, (886323) Baldwin
Sec 13, (890159) Lucey

R.5430. PAPER: PULP TO PLASTIC EXPRESSION. (889531) (4 cr per term [16 cr max]); limited to 4 students; prereq 12 cr of 3430 or #; 1030-1245 MTWThF; ArtB 35) Krepps
See 3430. Meets with 3430.

R.5540. PRINTMAKING: SCREEN. (690163) (4 cr per term [16 cr max]); limited to 5 students; prereq 12 cr of 3540 or #; 1030-1245 MTWThF; ArtB 170) Bethke
Screen processes and combined techniques. Meets with 1540 and 3540.

5590. ADVANCED ENTRY: PRINTMAKING. (4 cr per term [16 cr max]); prereq #, Δ)
Sec 2, (490164) Bethke
Sec 11, (686260) Krepps

5890. ADVANCED ENTRY: CERAMICS/GLASS. (686324) (4 cr per term [16 cr max]); prereq #, Δ) Hoard

5970. DIRECTED STUDIES. (1-5 cr per term [12 cr max]); prereq 24 cr in studio arts and #, Δ, CLA approval)
Sec 1, (688381) Baldwin
Sec 2, (290165) Bethke
Sec 4, (685013) Cowette
Sec 9, (486891) Hoard
Sec 11, (886256) Krepps
Sec 13, (190104) Lucey
Sec 18, (291378) Roode
Sec 20, (791076) Rowan

8110. DRAWING. (4 cr per term [12 cr max])
Sec 4, (886984) Cowette
Sec 18, (191379) Roode
Sec 20, (491380) Rowan

8120. PAINTING. (4 cr per term [24 cr max])
Sec 4, (686985) Cowette
Sec 18, (291381) Roode
Sec 20, (191382) Rowan

8510. PRINTMAKING. (4 cr per term [36 cr max])
Sec 2, (590169) Bethke
Sec 11, (791403) Krepps

8810. CERAMICS. (486986) (4 cr per term [24 cr max]) Hoard

SECOND TERM

R.1101. DRAWING I. (388066) (4 cr; limited to 20 students; 0800-1015 MTWThF; ArtB 160) A. Morgan
See First Term.

R.1102. DRAWING II. (186562) (4 cr; limited to 20 students; prereq 1101; 0800-1015 MTWThF; ArtB 150) Gray
Work from life and nature; color and pictorial structure.

R.1404. COLOR. (386253) (4 cr; limited to 20 students; \$1104; prereq 1101; 1030-1245 MTWThF; ArtB 141) Feinberg
Color and its visual implications.

R.1701. PHOTO MEDIUM. (4 cr; each section limited to 20 students)
See First Term.
Sec 1, (587983), 0800-1015 MTWThF, ArtB 120
Sec 2, (989388), 1030-1245 MTWThF, ArtB 120

R.1811. CERAMICS: HANDBUILDING. (185072) (4 cr; limited to 20 students; 1030-1245 MTWThF; ArtB 10) Lane
Introduction to hand-building techniques in clay for individual creative expression.

R. 3110. DRAWING. (991383) (4 cr per term [12 cr max]); limited to 12 students; prereq 1102, 1401; 1030-1245; ArtB 150) Gray
From model, still life, and nature; individual creative expression in various mediums. Meets with 5110.

R.3120. PAINTING. (386575) (4 cr per term [12 cr max]); limited to 12 students; prereq 1101, 1102, 1401, 1404, 3105, 4 cr of 3110 or # 3110; 0800-1015 MTWThF; ArtB 151) Feinberg
Media and problems in painting. Individual projects. Meets with 5120.

3970. DIRECTED STUDY. (1-5 cr per term [8 cr max]); prereq 24 cr in studio arts and #, Δ, □)
Sec 5, (087597) Feinberg
Sec 6, (791384) Gray
Sec 12, (486258) Lane
Sec 21, (591385)
Sec 22, (391386) A. Morgan

3980. DIRECTED INSTRUCTION. (1-5 cr per term [8 cr max]); prereq #, Δ, □)
See First Term.
Sec 5, (887598) Feinberg
Sec 6, (191387) Gray
Sec 12, (286259) Lane
Sec 21, (091388)
Sec 22, (890100) A. Morgan

R.5110. DRAWING. (891389) (4 cr per term [16 cr max]); limited to 8 students; prereq 12 cr of 3110 or #; 1030-1245 MTWThF; ArtB 150) Gray
Drawing in all mediums from life. Meets with 3110.

R.5120. PAINTING. (486583) (4 cr per term [16 cr max]); limited to 8 students; prereq 12 cr of 3120 or #; 0800-1015 MTWThF; ArtB 151) Feinberg
Various media. Individual problems. Meets with 3120.

5190. ADVANCED ENTRY: DRAWING AND PAINTING. (4 cr [max 16 cr]); prereq #, Δ)
Sec 5, (186321) Feinberg
Sec 6, (191390) Gray
Sec 22, (091391) A. Morgan

COURSE DESCRIPTIONS

5890. ADVANCED ENTRY: CERAMICS/GLASS. (486325) (4 cr per term [max 16 cr]; prereq #, Δ) Lane

5970. DIRECTED STUDIES. (1-5 cr per term [max 12 cr]; prereq 24 cr in studio arts and #, Δ, CLA approval) Sec 5, (687599) Feinberg Sec 6, (891392) Gray Sec 12, (586252) Lane Sec 22, (691393) A. Morgan

8110. DRAWING. (4 cr per term [max 12 cr]) Sec 5, (286987) Feinberg Sec 6, (491394) Gray Sec 22, (291395) A. Morgan

8120. PAINTING. (4 cr per term [max 24 cr]) Sec 5, (186988) Feinberg Sec 6, (191396) Gray Sec 22, (991397) A. Morgan

8810. CERAMICS. (890629) (4 cr per term [max 24 cr]) Lane

Astronomy (Ast)

356 Physics. 624-0211
Institute of Technology

FIRST TERM

R.1011. DESCRIPTIVE ASTRONOMY. (386155) (4 cr; limited to 153 students; 0915-1115 MWF; Phys 166)

Survey of the sun, moon, planets, and stars; description of the galaxy and universe to which the sun belongs.

R.1015. DESCRIPTIVE ASTRONOMY LABORATORIES. (1 cr, \$1025H; prereq high school algebra...high school trigonometry recom; each section limited to 25 students; 4 lab hrs per wk; minimum one night observation required) Sec 1, (888430) 1300-1500 MW, Phys 450 Sec 2, (688431) 0915-1115 TTh, Phys 450

8777. THESIS CREDITS: MASTERS. (888766) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (588924) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.1011. DESCRIPTIVE ASTRONOMY. (586672) (4 cr; limited to 153 students; 0915-1115 MWF; Phys 166)
See First Term.

R1015. DESCRIPTIVE ASTRONOMY LABORATORIES. (1 cr, \$1025H; prereq high school algebra...high school trigonometry recom; each section limited to 25 students; 4 lab hrs per wk; minimum one night observation required) Sec 1, (688428) 1300-1500 MW, Phys 450

Sec 2, (488429) 0915-1115 TTh, Phys 450

8777. THESIS CREDITS: MASTERS. (388861) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188983) (1-36 cr [max 11 cr per summer term])

B

Biochemistry (BioC)

140 Gortner Laboratory, St. Paul. 624-7755
College of Biological Sciences

FIRST TERM

5950. SPECIAL TOPICS. (388195) (1-5 cr; prereq #, Δ)

5970. DIRECTED STUDIES. (088183) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (888184) (Cr ar; prereq #, Δ) Staff
Laboratory or field investigation of selected areas of research.

8290. CURRENT RESEARCH TECHNIQUES. (885298) (1-3 cr; prereq grad major in biochemistry; S-N only) Graduate faculty
Research projects in biochemistry carried out in the research laboratory of an individual staff member. Will satisfy all or part of the laboratory requirements for the Ph.D. degree.

8777. THESIS CREDITS: MASTERS. (688767) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188926) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (685299) (2-5 cr; prereq #) Graduate faculty
Research problems in various fields in biochemistry represented by staff interest.

SECOND TERM

5950. SPECIAL TOPICS. (188196) (1-5 cr; prereq #, Δ)

5970. DIRECTED STUDIES. (688185) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (488186) (Cr ar; prereq #, Δ) Staff
See First Term.

8290. CURRENT RESEARCH TECHNIQUES. (186201) (1-3 cr; prereq grad major in biochemistry; S-N only) Graduate faculty
See First Term.

8777. THESIS CREDITS: MASTERS. (088863) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788985) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (986202) (2-5 cr; prereq #) Graduate faculty
See First Term.

Biochemistry, Medical (MdBc)

4-225 Millard Hall. 625-6100
Medical School

Elective Courses

FIRST TERM

5053. PROBLEMS IN BIOCHEMISTRY. (686453) (1-10 cr; may be taken one or both terms; prereq 5100 or 5753; hrs ar; biochem grad students must register S-N) Staff
Special work arranged with qualified students.

8290. CURRENT RESEARCH TECHNIQUES. (486454) (1-3 cr; prereq grad major in biochemistry, #; S-N only) Staff

8300. RESEARCH. (286455) (Cr and hrs ar) Staff

SECOND TERM

5053. PROBLEMS IN BIOCHEMISTRY. (487135) (1-10 cr; may be taken one or both terms; prereq 5100 or 5753; hrs ar; biochem grad students must register S-N) Staff
See First Term.

8290. CURRENT RESEARCH TECHNIQUES. (287136) (1-3 cr; prereq grad major in biochemistry, #; S-N only) Staff

8300. RESEARCH. (187137) (Cr and hrs ar) Staff

Biomedical Science (BMSc)

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (591399)(1-36 cr [max 11 cr per summer term])

8990. DIRECTED RESEARCH. (290960)(cr ar; prereq student enrolled in MD/PhD program)
SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (791398)(1-36 cr [max 11 cr per summer term])

8990. DIRECTED RESEARCH. (190961)(cr ar; prereq student enrolled in MD/PhD)

Biology (Biol)

223 Snyder Hall. 624-9717
College of Biological Sciences
(See also special section on Itasca Biology Program.)

FIRST TERM

R.1009. GENERAL BIOLOGY. (5 cr; \$1011; each section limited to 24 students; lect 0800-0900 MTWThF; Moost 2-650) Siems
Introduction to the principles of biology. The cell, metabolism, heredity, reproduction, ecology, and evolution.
Lab 1, (889156) 0915-1100 MTWTh, KoltH S160
Lab 2, (689157) 0915-1100 MTWTh, KoltH S167
Lab 3, (489158) 0915-1100 MTWTh, KoltH S170

R.1103. GENERAL BOTANY. (989925) (5 cr, \$3012; limited to 40 students; prereq 1009; students who plan to major in biology in CLA or any bioscience major in CBS should take 3012; lect 1300-1400 MTWThF, BioSci 70; lab 0915-1245 TTh; BioSci 176, 182) Biesboer, Koukkari
Levels of organization of plants, plant functions, plant growth and development, plant reproduction.

R. 1806. GENERAL ZOOLOGY—June 15-July 20. (591970)(5 cr; limited to 20 students; prereq general biology; 0800-1700 TTh; offered at Itasca) Megard
Survey of animal phyla; structure, functions, behavior, adaptation, and evolutionary relationships.

R.3011. ANIMAL BIOLOGY. (5 cr, \$1106; each section limited to 18 students; prereq 1009, Chem 1005; lect 1210-1330 MTWTh; ClaOff B35) Kerr
Comparison of ways different phyla have solved similar physiological problems. Laboratory includes survey of major animal groups and physiological experiments. Meets with 3111.
Lab 1, (689160) 1000-1200 MTWTh, BioSci 107
Lab 2, (489161) 1400-1600 MTWTh, BioSci 107

R.3012. PLANT BIOLOGY. (685366) (5 cr, \$1103, 3812; limited to 36 students; prereq 1009, Chem 1005; lect 0915-1030 MTWTh, BioSci 70; lab 1045-1230 MTWTh; BioSci 151) Charvat
Plant diversity and evolution; structure and function of the plant cell and of the whole organism; growth and development of plants.

3111. ANIMAL BIOLOGY. (289162) (4 cr, \$3011; prereq 1009, 1106, Chem 1005; 1210-1330 MTWTh; ClaOff B35)
Lectures covering the comparative physiology of various animal groups;

coordination, movement, support, excretion, reproduction. Meets with 3011.

5001. BIOCHEMISTRY. (385300) (4 cr, §3021, BioC 5001; prereq 1009, 12 cr organic chemistry or #: 0815-0945 MTWThF; ClaOff B35) staff Biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents, and cellular regulatory mechanisms.

5003. GENETICS. (688218) (4 cr, §GCB 3022, §GCB 5022; prereq 5001; 1125-1245 MTWThF; ClaOff B25)

Introduction to the nature of genetic information, its transmission from parents to offspring, its expression in cells and organisms, and its course in populations.

R.5041. ECOLOGY. (4 cr; each section limited to 18 students; §5841; prereq Math 1142 or 1211, Biol 1103 or 1106, or 3011 or 3012; A-F only; lect 0800-1000 MTThF; Ecology 150A) Staff

Growth, structure and evolution of populations. Pairwise biotic interactions between species and their effect on the diversity and structure of natural communities. Nutrient dynamics, function, productivity, and temporal stability of ecosystems. Rec 1, (086269) 1030-1130 TTh, Ecology 150A
Rec 2, (386270) 1145-1245 TTh, Ecology 150A

**R.5816. FIELD BIOLOGY PHOTOG-
RAPHY.** (085431) (3 cr; limited to 20 students; A-F only; prereq course in beginning biology; Δ; 0800-1700 WS; taught at Itasca) Rubbelke

Field photography techniques for documentation of insects, vertebrates, aquatic organisms, and habitats of the Itasca area. Emphasis on general photographic principles and applied advanced techniques using flash, reversed lenses, and infra-red photoelectric tripping devices. On-site processing of color slides and black and white films. No previous processing experience required.

**R.5850. SPECIAL TOPICS IN
BIOLOGY.** (prereq Δ; limited to 20 students; A-F only; taught at Itasca) **Sec 1, (186335), Measurements of Plant Environments, July 1-19;** 0800-1700 MTh, 3 cr; prereq ecology course) Forseth

A field course designed to introduce students to techniques for the measurement of plant microclimate, leaf radiant energy balance, water relations and photosynthetic gas exchange. Emphasis will be on plant response to the environment in the field, with special attention devoted to plant physiological and ecological responses to currently projected global climate changes caused by human activity (i.e., increasing atmospheric CO₂ concentration, changes in ambient temperature, and increased periods of water stress).

**5890. RESEARCH PROBLEMS AT
ITASCA IN ECOLOGY AND
BEHAVIORAL BIOLOGY; OR
FISHERIES AND WILDLIFE; OR
PLANT PATHOLOGY; OR ZOOL-
OGY.** (885303) (See Itasca Biology Program) (Cr ar; prereq #, Δ) Staff Undergraduate and graduate students develop a short-term research project in most of the departments offering courses at Itasca during Term I and Term II.

SECOND TERM

**R.3812. PLANT BIOLOGY—July 22-
August 25.** (289789) (5 cr; limited to 20 students; §1103, §3012; prereq 1009, Chem 1005; 0800-1700 TF; Special offerings of the core Plant Biology course taught at Itasca) Biesboer,

Plant diversity and evolution; structure and function of the plant cell and of the whole organism; growth and development of plants. This course satisfies the plant biology requirements for University of Minnesota majors.

R.5004. CELL BIOLOGY. (189163) (3 cr; prereq 5001; 1030-1130 MTWThF; ClaOff B25)

Structured functions of membranes, organelles, and other macromolecular aggregates found in plant, animal, and bacterial cells. Cell form and movement, intercellular communication, transport, and secretion.

**R.5841. ECOLOGY—July 22-August
25.** (288609) (5 cr; limited to 20 students; §5041; prereq Math 1142 or 1211, Biol 1103 or 1106 or 3011 or 3012, Δ; A-F only; 0800-1700 MTh; Special offering of the core ecology course, taught at Itasca) Siniff and Staff Growth, structure and evolution of populations. Pairwise biotic interactions between species and their effect on the diversity and structure of natural communities. Nutrient dynamics, function, productivity, and temporal stability of ecosystems.

5850. SPECIAL TOPICS IN BIOLOGY. (Taught at Itasca) See First Term.

**Sec 2, (491962), Behavior/Telemetry,
July 22-August 11,** 0800-1700 Wsa, 3 cr, Siniff, Tester and Staff

Use of radio-telemetry to study animal behavior, especially movements and the use of space. Basic features of radiotransmission, transmitters, and receivers relevant to biotelemetry; safe and humane methods for capture and immobilization of animals for radio-tagging; techniques for attachment of transmitters, locating radio-tagged animals; processing data from radio-fixes; telemetry for further behavioral and physiological information.

**Sec 3, (291963), Ecology of
Amphibians and Reptiles, July 22-
August 11,** 0800-1700 Wsa, 5 cr, Lang

The life histories of the various species of amphibians and reptiles in the Itasca area will be studied. The close

proximity of three major biomes to the Itasca station allows for field trips to consider ecological and morphological differences among closely related species. Study of such differences will provide the major focus of this course. **Sec 4, (992002), Landscape Ecology—
July 22-August 25,** 0800-1700 MTh; (5 cr; limited to 20 students) Glenn This course considers some of the general principles of this emerging field, such as landscape structure and functions, biotic diversity, landscape stability and change, with reference to the habitats in the Itasca area. Relationship of these principles to management problems will be considered. Research projects will be carried out as class exercises and GIS computer programs will be used to aid research when appropriate.

**5890. RESEARCH PROBLEMS AT
ITASCA IN ECOLOGY AND
BEHAVIORAL BIOLOGY; OR
FISHERIES AND WILDLIFE; OR
PLANT PATHOLOGY; OR ZOOL-
OGY.** (485367) (See page 40) (Cr ar; prereq #, Δ) Staff

**Biomedical Engineer-
ing (BMEn)**

455 Mechanical Engineering. 625-0140 (Mechanical Engineering) Institute of Technology

FIRST TERM

**8002. INTERNSHIP IN BIOMEDICAL
ENGINEERING.** (289470) (3 cr; prereq biomed engineering grad stu or Δ; S-N only)

8770. PLAN B PROJECT. (089950) (4 cr; no cr toward PhD; prereq #: A-F only)

8777. THESIS CREDITS: MASTERS. (989052) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889139) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (889951) (1-4 cr; prereq #: A-F only)

SECOND TERM

**8002. INTERNSHIP IN BIOMEDICAL
ENGINEERING.** (189471) (3 cr; prereq biomed engineering grad stu or Δ; S-N only)

8770. PLAN B PROJECT. (689952) (4 cr; no cr toward PhD; prereq #: A-F only)

8777. THESIS CREDITS: MASTERS. (189140) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789053) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (489953) (1-4 cr; prereq #: A-F only)

**Biophysical Sciences
(BPhy)**

V372 VFW Cancer Research Center. 625-8440 Medical School

FIRST TERM

8223. RESEARCH IN BIOPHYSICS. (089513) (Cr ar) Staff

8777. THESIS CREDITS: MASTERS. (688770) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (888928) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8223. RESEARCH IN BIOPHYSICS. (889514) (Cr ar) Staff

8777. THESIS CREDITS: MASTERS. (188868) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188991) (1-36 cr [max 11 cr per summer term])

**Business Administra-
tion (BA)**

290 Hubert H. Humphrey Center. 624-3313 Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11, 12.

FIRST TERM

R.3998. INDEPENDENT STUDY. (285306) (Cr ar [may be repeated for cr]; limited to 10 students; prereq □) Staff Student-initiated project and/or independent course of study. Forms and instructions available in 290 HHHctr.

8888. THESIS CREDITS: DOCTORAL. (388925) (1-36 cr [max 11 cr per summer term])

COURSE DESCRIPTIONS

SECOND TERM

R.3998. INDEPENDENT STUDY. (886208) (Cr ar [may be repeated for cr]; limited to 10 students; prereq □) Staff
See First Term.

8888. THESIS CREDITS: DOCTORAL. (988984) (1-36 cr [max 11 cr per summer term])

Business and Marketing Education (BME)

420 Vocational/Technical Education Building, St. Paul.
624-7799
(Vocational and Technical Education)
College of Education

FIRST TERM

R.5262. CUSTOMER SERVICE TRAINING. (191664) (3 cr; limited to 25 students; 1730-2030 MW; VoTech 220) Kachelmyer
Overview of customer service strategies used by successful organizations and training practices used to develop customer-oriented personnel.

R.5353. CURRICULUM CONSTRUCTION IN BUSINESS AND MARKETING EDUCATION—July 6-16. (485353) (4 cr; limited to 25 students; 0800-1205 MTWThF; VoTech R285; A-F only) Stone
Content identification, program organization, preparation of instructional objectives, guidelines for selection and development of instructional materials.

R.5359. OCCUPATIONAL EXPERIENCE. (387600) (1-18 cr; limited to 25 students; prereq #; S-N only; 1800-2000 T, June 15, and hrs ar; VoTech 420C) Schwartz
Observation and employment experiences in business offices or marketing businesses; weekly seminars on application to teaching and guidance of high school and post-high school students. Each 1-credit offering requires 85 hours of work.

R.5390. SPECIAL TOPICS IN TECHNICAL UPDATING: Desktop Publishing on the Macintosh—June 21-25. (091665) (1-6 cr; limited to 25 students; 0800-1500 MTWThF; off campus location [call 624-7799 for location details] Wicklund
Technological and procedural changes in business content. Covers all aspects of desktop publishing using Macintosh computers. In addition to techniques and applications, some time will be spent on methodologies to be used in teaching desktop publishing on the Macintosh. A variety of software packages will be reviewed. This offering for 3 credits.

5600. FIELD-BASED PROJECTS IN BUSINESS AND MARKETING EDUCATION. (1-12 cr [max 12 cr];

hrs ar; A-F only)
Individual or group work on curricular, instructional, developmental, or evaluation problems and projects applicable to local school or business situations.
Sec 22, (285354) Stone
Sec 24, (891666) McLean
Sec 25, (291669) Schwartz

5900. DIRECTED STUDY IN BUSINESS AND MARKETING EDUCATION. (1-6 cr [max 6 cr]; S-N optional; prereq Δ; hrs ar)
Opportunity for individual learning experiences not covered by regular courses.

Sec 22, (090192) Stone
Sec 24, (691667) McLean
Sec 25, (691670) Schwartz

8777. THESIS CREDITS: MASTERS. (488768) (1-16 cr [max 11 cr per summer term])

8900. PROBLEMS: BUSINESS AND MARKETING EDUCATION. (1-9 cr [max 9 cr]; prereq #; hrs ar)
Individual research.
Sec 22, (185355) Stone
Sec 24, (491668) McLean
Sec 25, (391663) Schwartz

SECOND TERM

R.5253. SUPERVISORY TRAINING. (890193) (3 cr; limited to 25 students; prereq VoEd 5340 or equiv; 1730-2030 MW; VoTech R285; A-F only) Damme
Problems, practices, programs, issues, and methodologies related to preparing trainers of supervisors in business, office, and marketing occupations.

R.5261. SALES TRAINING—August 16-20. (991674) (3 cr; limited to 25 students; 0800-1500 MTWThF; VoTech 220; A-F only) Kachelmyer
Introduction to strategies and techniques useful in developing effective sales people.

R.5310. INTRODUCTION TO MICROCOMPUTER APPLICATIONS IN BUSINESS AND MARKETING EDUCATION—August 9-13. (791675) (3 cr; limited to 25 students; 0800-1500 MTWThF; VoTech 230; A-F only) Samsudin
Instructional uses of microcomputers; representative business and marketing education applications, including word processing, databases, spreadsheets, and graphics.

5600. FIELD-BASED PROJECTS IN BUSINESS AND MARKETING EDUCATION. (1-12 cr [max 12 cr]; prereq #; hrs ar; A-F only)
Sec 22, (591676) Stone
Sec 25, (491671) Schwartz
See First Term.

5900. DIRECTED STUDY IN BUSINESS AND MARKETING EDUCATION. (1-6 cr [max 6 cr]; S-N optional; prereq Δ; hrs ar)
Sec 22, (391677) Stone

Sec 25, (291672) Schwartz
See First Term.

8777. THESIS CREDITS: MASTERS. (688865) (1-16 cr [max 11 cr per summer term])

8900. PROBLEMS: BUSINESS AND MARKETING EDUCATION. (1-9 cr [max 9 cr]; hrs ar)
Sec 22, (191678) Stone
Sec 25, (191673) Schwartz
See First Term.

Business Law (BLaw)

645 Management/Economics. 624-6506
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11, 12.

FIRST TERM

R.3058. INTRODUCTION TO LAW, THE LAW OF CONTRACTS AND SALES CONTRACTS. (185307) (4 cr, \$8158; limited to 40 students; prereq Econ 1002; 0800-0945 MTW; BlegH 420; A-F only) Andrews
Study of the origin of law, its place in and effect upon society; the history and development of law; the system of courts; and legal procedure. An extensive study of the law of contracts as the basic law affecting business transactions; law affecting the sales of goods contracts.

Business, Government, and Society (BGS)

837 Management/Economics. 624-5232
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11, 12.

FIRST TERM

R.3004. INTERNATIONAL BUSINESS. (090323) (4 cr; limited to 45 students; 0915-1130 TTh; BlegH 435)
World business with emphasis on the global economy, international concepts, global business strategies, multinational corporations and technology, personnel and operations in the host nations. Resource (including energy) questions in their global contexts: quantities, demands, distribution of resources.

C

Cell and Developmental Biology (CDB)

250 Biological Sciences.
624-3003
(Genetics and Cell Biology)
College of Biological Sciences

FIRST TERM

8777. THESIS CREDITS: MASTERS. (188773) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (888931) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (788873) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488995) (1-36 cr [max 11 cr per summer term])

Cell Biology and Neuroanatomy (CBN)

4-135 Jackson Hall. 624-1123
Medical School

FIRST TERM

3970. SPECIAL PROBLEMS. (885432) (2 cr; prereq #) Staff
Guided individual reading or study.

8156. ADVANCED ANATOMY. (585439) (1-6 cr; prereq #) Staff
Individual problems in gross anatomy, embryology, histology, or neuroanatomy.

8200. RESEARCH. (190913) (1-10 cr; prereq #) Staff
Research directed by faculty in Cell Biology and Neuroanatomy.

8777. THESIS CREDITS: MASTERS. (288772) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688929) (1-36 cr [max 11 cr per summer term])

SPECIAL TERMS: THREE-, SIX-, OR TEN-WEEK COURSES

(Register once in Term I)

5304. HEAD, NECK ANATOMY FOR MEDICAL/DENTAL RESIDENTS. (691930) (5 cr; prereq participation in a residency in the Medical School or School of Dentistry) Robertson and staff

5500. GENERAL GROSS ANATOMY. (685433) (ar cr; prereq Phase D medical student or #) Robertson

5501. THE EXTREMITIES. (485434) (ar cr; prereq Phase D medical student or #) Robertson

5502. HEAD AND NECK. (285435) (ar cr; prereq Phase D medical student or #) Robertson

5508. THE THORAX. (185436) (ar cr; prereq Phase D medical student or #) Robertson

5509. THE ABDOMEN. (985437) (ar cr; prereq Phase D medical student or #) Robertson

5510. PERINEUM, GENITAL-URINARY SYSTEM AND PELVIS. (785438) (ar cr; prereq Phase D medical student or #) Robertson

SECOND TERM

3970. SPECIAL PROBLEMS. (985440) (2 cr; prereq #) Staff
See First Term.

8156. ADVANCED ANATOMY. (785441) (1-6 cr; prereq #) Staff
See First Term.

8200. RESEARCH. (990914) (1-10 cr; prereq #) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (288870) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (888993) (1-36 cr [max 11 cr per summer term])

Center for Interfacial Engineering (CIE)

144 Shepherd Laboratories. 626-2230

TEN-WEEK COURSE: Register once in Term I.

5002. TECHNIQUES, LANGUAGE, AND CONCEPTS. (xxxxxx)(1-3 cr; prereq research appointment or #; ar, ar) Staff
Individualized learning experience that consists of modules focusing on development of interpersonal, teamwork, and communication skills and on understanding academic and industrial research cultures.

Chemical Engineering (ChEn)

151 Amundson Hall. 625-1313
(Chemical Engineering and Materials Science)
Institute of Technology

FIRST TERM

5902, 5903, 5904, 5905. SPECIAL TOPICS. (686114) (486115) (286116) (186117) (Cr ar)

8777. THESIS CREDITS: MASTERS. (988791) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (588938) (1-36 cr [max 11 cr per summer term])

8901-8902-8903. RESEARCH IN CHEMICAL ENGINEERING. (986118) (786119) (186120) (Cr ar)

SECOND TERM

5902, 5903, 5904, 5905. SPECIAL TOPICS. (186649) (486650) (286651) (186652) (Cr ar)

8777. THESIS CREDITS: MASTERS. (888881) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289002) (1-36 cr [max 11 cr per summer term])

8901-8902-8903. RESEARCH IN CHEMICAL ENGINEERING. (986653) (786654) (586655) (Cr ar)

Chemical Physics (ChPh)

139 Smith Hall. 624-6000
Institute of Technology

FIRST TERM

8777. THESIS CREDITS: MASTERS. (888797) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388942) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (188885) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589006) (1-36 cr [max 11 cr per summer term])

Chemistry (Chem)

139 Smith Hall. 624-6000
Institute of Technology

A \$40 deposit card, available at the Bursar's Office, Williamson Hall, is necessary for all lab courses.

FIRST TERM

Placement exam is required of all University of Minnesota students to be placed into either Chem 1001 or Chem 1051. Exam recommended for summer-only students for advisory purposes. Call the General Chemistry Office at (612) 624-0026 for available testing dates.

R.1001. GENERAL PRINCIPLES OF CHEMISTRY. (4 crs; Limited to 100 students; each recitation section limited to 20 students; \$1003,1008 for students not passing the chemistry placement exam; prereq high school chemistry or equiv., 2 yrs. high school mathematics required [4 yrs recommended], high school physics recommended.

Introduction to chemistry, matter and energy, atoms, molecules, chemical bonding, the mole and chemical calculations, gases, liquids, solids, solutions, chemical reactions, acids, bases and equilibrium.
Lect 0800-0930 MTWTh, SciCB 325
Sec 1, (791563) Rec 1145-1245 MW, Smith 121

Lab 1300-1600 MWF* SmithH 249
Sec 2, (591564) Rec 1145-1245 MW, KoltH S135
Lab 1300-1600 MWF* SmithH 249
Sec 3, (891568) Rec 1145-1245 MW, KoltH S137
Lab 1300-1600 MWF* SmithH 249
Sec 4, (691569) Rec 1145-1245 MW, FordH 120
Lab 1300-1600 MWF* SmithH 249
Sec 5, (091570) Rec 1145-1245 MW, FordH 130
Lab 1300-1600 MWF* SmithH 249
*Fridays are make-up labs only; all sections may attend.

R.1051. CHEMICAL PRINCIPLES I. (4 crs; limited to 100 students; each recitation section limited to 20 students; primarily for stu majoring in sci or eng; prereq 1001 or passing chemistry placement examination. 1051 is prereq for 1052.)

Atomic theory, periodic properties of elements, chemical thermodynamics, development of the use of structural concepts, geometry of molecules, bonding theory, behavior of the gaseous and liquid states, solid state and materials chemistry, dynamics, equilibrium, behavior of solutions, acids and bases, descriptive chemistry of elements and compounds.
Lect 0800-0930 MTWTh, SciCB 375;
Sec 1, (491573) Rec 1145-1245 MW, FordH 150

Lab 1300-1600 MWF* SmithH 110
Sec 2, (191575) Rec 1145-1245 MW, FordH 170
Lab 1300-1600 MWF* SmithH 110

Sec 3, (991576) Rec 1145-1245 MW, FordH 175
Lab 1300-1600 MWF* SmithH 110
Sec 4, (791577) Rec 1145-1245 MW, SmithH 231
Lab 1300-1600 MWF* SmithH 110
Sec 5, (591578) Rec 1145-1245 MW, SmithH 331
Lab 1300-1600 MWF* SmithH 110
*Fridays are make-up labs only; all sections may attend.

R.1052. CHEMICAL PRINCIPLES II. (4 crs; limited to 100 students; each recitation section limited to 20 students; prereq 1051) See 1051.
Lect 0800-0930 MTWTh, SciCB 175;
Sec 1, (391582) Rec 1145-1245 MW, AmundH 156
Lab 1300-1600 MWF* SmithH 210
Sec 2, (191583) Rec 1145-1245 MW, AmundH 158

Lab 1300-1600 MWF* SmithH 210
Sec 3, (091584) Rec 1145-1245 MW, AmundH 162
Lab 1300-1600 MWF* SmithH 210
Sec 4, (891585) Rec 1145-1245 MW, Arch 60
Lab 1300-1600 MWF* SmithH 210
Sec 5, (691586) Rec 1145-1245 MW, Arch 20
Lab 1300-1600 MWF* SmithH 210
*Fridays are make-up labs only; all sections may attend.

R.3100. QUANTITATIVE ANALYSIS LECTURE. (686100) (3 cr; limited to 60 students; 3100-3101+; for non-chemistry majors; prereq 1052; 0800-0855 MTWThF; SmithH 231)
Modern quantitative methods of analysis.

R.3101. QUANTITATIVE ANALYSIS LABORATORY. (385359) (2 cr; limited to 36 students; 3100-3101+; for non-chemistry majors; prereq 3100 or ¶ 3100; 0900-1200 MTWTh; SmithH 310)
Modern quantitative methods of analysis including elementary physicochemical procedures.

R.3301. ELEMENTARY ORGANIC CHEMISTRY I. (486101) (4 cr; limited to 150 students; \$3331; for non-chemistry majors; prereq 1052 or equiv; 0800-1015 MTWTh; SmithH 100)
Important classes of organic compounds, both aliphatic and aromatic, and heterocyclic compounds.

R.3303. ELEMENTARY ORGANIC CHEMISTRY III. (286262) (4 cr; limited to 30 students; prereq 3302, 3306 or ¶ 3306; 0800-1015 MTWTh; SmithH 111)
Basic principles of organic chemistry, with emphasis on a survey of organic reaction mechanisms, intended to coordinate the knowledge which has been acquired in the preceding two quarters of organic chemistry.

COURSE DESCRIPTIONS

R. 3305. ELEMENTARY ORGANIC CHEMISTRY LABORATORY I. (186103) (2 cr; limited to 80 students; prereq 3301 or ¶ 3301; lect 1030-1130 T, SmithH 231; lab 1145-1600 WTh, SmithH 349) See 3301.

3970. DIRECTED STUDY. (786105) (Cr ar; prereq #)
On- or off-campus learning experiences, individually arranged between a student and faculty member, in areas not covered by regular courses.

R.5520. ELEMENTARY PHYSICAL CHEMISTRY. (986104) (3 cr; limited to 50 students; prereq 1 yr college chemistry, Phys 1253 or ¶ Phys 1253, Math 3251 or equiv; 0800-1015 MWF; SmithH 331) Brief general survey. Chemical thermodynamics.

8777. THESIS CREDITS: MASTERS. (988788) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788937) (1-36 cr [max 11 cr per summer term])

R.8990. RESEARCH IN CHEMISTRY. (085560) (Cr ar; prereq chem grad stu or Δ; S-N only)

SECOND TERM

Placement exam is required of all University of Minnesota students to be placed into either Chem 1001 or Chem 1051. Exam recommended for summer-only students for advisory purposes. Call the General Chemistry Office at (612) 624-0026 for available testing dates.

R.1001. GENERAL PRINCIPLES OF CHEMISTRY. (4 cr; limited to 100 students; each recitation section limited to 20 students; §1003, § 1008, for students not passing the chemistry placement exam; prereq high school chemistry or equiv., 2 yrs high school mathematics required [4 yrs recommended], high school physics recommended). See First Term

Lect 0800-0930 MTWTh, SciCB 325 Sec 1, (291591) Rec 1145-1245 MW; FordH120

Lab 1300-1600 MWF*; SmithH 249 Sec 2, (191592) Rec 1145-1245 MW; AmundH 104

Lab 1300-1600 MWF*; SmithH 249 Sec 3, (991593) Rec 1145-1245 MW; AmundH 120

Lab 1300-1600 MWF*; SmithH 249 Sec 4, (791594) Rec 1145-1245 MW; AmundH 156

Lab 1300-1600 MWF*; SmithH 249 Sec 5, (591595) Rec 1145-1245 MW; AmundH 158

Lab 1300-1600 MWF*; SmithH 249 *Fridays are make-up labs only; all sections may attend.

R.1051. CHEMICAL PRINCIPLES I. (4 crs; limited to 100 students; each

recitation section limited to 20 students; primarily for stu majoring in sci or eng; prereq 1001 or passing chemistry placement examination. 1051 is prereq for 1052.)

See First Term.
Lect 0800-0930 MTWTh, SciCB 375 Sec 1, (191597) Rec 1145-1245 MW, AmundH 162

Lab 1300-1600 MWF* SmithH 110 Sec 2, (391596) Rec 1145-1245 MW, ApH 103

Lab 1300-1600 MWF* SmithH 110 Sec 3, (091598) Rec 1145-1245 MW, ApH 226

Lab 1300-1600 MWF* SmithH 110 Sec 4, (891599) Rec 1145-1245 MW, Arch 20

Lab 1300-1600 MWF* SmithH 110 Sec 5, (591600) Rec 1145-1245 MW, Arch 30

Lab 1300-1600 MWF* SmithH 110 *Fridays are make-up labs only; all sections may attend.

R.1052. CHEMICAL PRINCIPLES II. (4 crs; limited to 100 students; each recitation section limited to 20 students; prereq 1051)

See 1051 First Term.
Lect 0800-0930 MTWTh, SciCB 175; Sec 1, (091603) Rec 1145-1245 MW, SmithH 121

Lab 1300-1600 MWF* SmithH 210 Sec 2, (891604) Rec 1145-1245 MW SmithH 231

Lab 1300-1600 MWF* SmithH 210 Sec 3, (691605) Rec 1145-1245 MW, SmithH 331

Lab 1300-1600 MWF* SmithH 210 Sec 4, (491606) Rec 1145-1245 MW, KoltH S135

Lab 1300-1600 MWF* SmithH 210 Sec 5, (291607) Rec 1145-1245 MW, KoltH S137

Lab 1300-1600 MWF* SmithH 210 *Fridays are make-up labs only; all sections may attend.

R.3302. ELEMENTARY ORGANIC CHEMISTRY II. (986832) (4 cr; limited to 150 students; prereq 3301, 3305 or ¶ 3305; if 3305 taken concurrently, a passing grade required for 3305 to receive cr for 3302; 0800-1015 MTWTh; SmithH 100) See 3301 First Term.

R.3306. ELEMENTARY ORGANIC CHEMISTRY LABORATORY II. (886838) (2 cr; limited to 80 students; prereq 3302 or ¶ 3302, 3305; lect 1030-1130 T, SmithH 231; lab 1145-1600 WTh; SmithH 349) See 3301 First Term.

3970. DIRECTED STUDIES. (686842) (Cr ar; prereq #) See First Term.

R.5521. ELEMENTARY PHYSICAL CHEMISTRY. (286844) (3 cr; limited to 50 students; prereq 5520; 0800-1015 MWF; SmithH 331) Kinetics, bonding, and structure.

8777. THESIS CREDITS: MASTERS. (688879) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489001) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH IN CHEMISTRY. (385569) (Cr ar; prereq chem grad stu or Δ; S-N only)

Chicano Studies (Chic)

102 Scott Hall. 624-6309
College of Liberal Arts

FIRST TERM

R.3106. INTRODUCTION TO CHICANO STUDIES: MEXICO AND THE UNITED STATES. (489872) (4 cr; limited to 20 students; 0915-1015 MTWThF; ScottH 4) Rojas
Convergence of Spanish-Mexican and Anglo American societies in the Spanish borderlands. Literary, social, cultural and historical perspectives—1821 to 1960.

3970. DIRECTED STUDIES. (185038) (Cr ar; prereq #, Δ, □) Guided individual reading or study.

5970 DIRECTED STUDIES. (185212) (Cr ar; prereq #, Δ, CLA approval) Guided individual reading or study.

SECOND TERM

R.3105. INTRODUCTION TO CHICANO STUDIES: THE BEGINNINGS. (090290) (4 cr; limited to 20 students; 0915-1015 MTWThF; ScottH 4) Rojas
Convergence of Europe and America in Mesoamerica and the formation of Mexican society. Literary, social, cultural, and historical perspectives. Columbian period to 1821.

3970. DIRECTED STUDIES. (985213) (Cr ar; prereq #, Δ, □) Guided individual reading or study.

5970. DIRECTED STUDIES. (085249) (Cr ar; prereq #, Δ, CLA approval) Guided individual reading or study.

Child and Adolescent Psychiatry (CAPy)

D-697 Mayo. 626-6577
Medical School

SPECIAL TERM: JUNE—SEPTEMBER

5203. CHILD AND ADOLESCENT PSYCHIATRY FOR PSYCHOLOGY INTERNS. (787156) (1-5 cr; prereq #) Hoberman
Experience in assessment and therapeutic interventions with children, adolescents, and families in an outpatient child and adolescent psychiatric setting.

5204. DIAGNOSTIC METHODS IN CHILD AND ADOLESCENT PSYCHIATRY. (587157) (1 cr; prereq med student, #) Garfinkel

5603. INPATIENT CLINICAL CHILD PSYCHIATRY FOR PRIMARY CARE PHYSICIANS. (187159) (Cr and hrs ar; prereq med student, #) Myers
Supervised diagnostic and therapeutic experiences in an inpatient, multidisciplinary child psychiatry unit with emphasis on groups and milieu therapies.

5608. INTRODUCTION TO FAMILY THERAPY: THEORY AND PRACTICE. (587160) (3 cr; prereq MD and/or #, basic psychopath course, current supervised involvement in treatment of cases) Miner

8100. READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (187162) (1 cr; prereq MD, #) Moore, Leffert

8120. THERAPEUTIC METHODS IN CHILD AND ADOLESCENT PSYCHIATRY. (887164) (1 cr; prereq MD, #) Moore, Leffert

8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY. (687165) (3 cr; prereq MD, #) Bernstein

8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY. (987169) (1 cr; hrs ar) August
Research design, methodology, and current research projects are reviewed with faculty members and guests.

8248. RESIDENTIAL CHILD AND ADOLESCENT TREATMENT. (192029) (3 cr; prereq MD, #) Jensen

8253. CHILD AND ADOLESCENT COMMUNITY PSYCHIATRY. (492030) (2 cr; prereq MD, #) Jensen

Child Psychology (CPsy)

104 Child Development.
624-2396
College of Education

FIRST TERM

1301. INTRODUCTORY CHILD PSYCHOLOGY. (185324) (4 cr, §3309, §5301; prereq 5 cr introductory psychology; 0915-1130 MWF; ChDev 216) Mooney-McLoone
Introduction to science of child behavior; review of theories and research. Meets with 3309.

3309. INTRODUCTORY CHILD PSYCHOLOGY FOR THE SOCIAL SCIENCES. (186893) (4 cr, §1301, §5301; prereq Psy 1001; 0915-1130 MWF; ChDev 216) Mooney-McLoone
Science of child behavior; review of theory and research; designed for

majors in psychology, sociology, and related disciplines; not suggested for CPsy majors. Meets with 1301.

R.3313. PSYCHOLOGY OF ATYPICAL CHILDREN. (289632) (4 cr; limited to 30 students; \$5313; prereq 1301 or equiv; 0800-0900 MTWThF; ChDev 216) Brown
Problems of research, assessment, and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, language, intellectual, and physical deviation. Meets with 5313.

3331. INTRODUCTION TO SOCIAL DEVELOPMENT—June 15–July 15. (989634) (4 cr; \$5331; prereq 1301 or equiv; 0915-1130 TWTh; ChDev 105) Collins
Development of social relations and personality; research methodology and contrasting theoretical perspectives. Survey of findings on interpersonal relationships, the concept of self, prosocial and antisocial behavior, and acquisition of social roles.

3343. INTRODUCTION TO COGNITIVE DEVELOPMENT. (490326) (4 cr; prereq 1301 or #; 0915-1035 MTWThF; NichH 209)
Development of cognitive processes; research, methodology, and contrasting theoretical perspectives. Introduction to research and theory in developmental psychology.

3980. DIRECTED INSTRUCTION. (985325) (1-4 cr [max 4 cr]; prereq #; S-N only) Weinberg
Undergraduates serve as teaching assistants in courses they have successfully completed for credit.

R.5313. PSYCHOLOGY OF ATYPICAL CHILDREN. (189633) (4 cr; limited to 10 students; \$3313; prereq 1301 or equiv; 0800-0900 MTWThF; ChDev 216) Brown
See 3313. Meets with 3313.

5329. GENETICS, ETHOLOGY, AND DEVELOPMENT. (690325) (4 cr; prereq 1301 or equiv; 0915-1055 MTWTh; ChDev 218) Charlesworth
Survey of evolutionary theory, behavioral genetics applied to understanding of development of human behavior; formation of species-adaptive behavior and individual differences in infancy, childhood, and adolescence.

5343. COGNITIVE DEVELOPMENT. (789635) (4 cr; prereq 3343, 3308 or Psy 1005; 1050-1210 MTWThF; NichH 209) Dow
Development of cognitive processes; discussion of relevant theory, research literature, and methodology.

5970. DIRECTED STUDY. (785326) (Cr ar; prereq #) Weinberg
Independent reading.

5990. DIRECTED RESEARCH. (585327) (Cr ar; prereq #) Weinberg
Individual empirical investigation.

8777. THESIS CREDITS: MASTERS. (288805) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788954) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (385328) (Cr ar) Weinberg
Independent reading.

8990. RESEARCH PROBLEMS. (185329) (Cr ar) Weinberg
Individual empirical investigation.

SECOND TERM

R.3308. RESEARCH METHODS IN CHILD PSYCHOLOGY. (290327) (4 cr; limited to 20; prereq 1301, Psy 1004; 0835-1015 MTWTh; ChDev 105) Bales
Techniques used in the study of child development; emphasis on collection, organization, and analysis of data.

3980. DIRECTED INSTRUCTION. (186215) (1-4 cr [max 4 cr]; S-N only; prereq #) Weinberg
See First Term.

5302. INFANCY. (190328) (4 cr, \$3302; prereq 1301 or #; 1055-1215 MTWThF; ChDev 218)
Perceptual, motor, emotional, social, and cognitive development during the first two years of life; the developing infant in her or his social and physical environment.

5303. ADOLESCENT PSYCHOLOGY—July 22–August 18. (890114) (4 cr; \$3303; prereq 5 cr introductory psychology; 0915-1200 TWTh; ChDev 216) Collins
Physical, cognitive, and social development during adolescence.

R.5334. CHILDREN AND YOUTH IN SOCIETY—July 22–August 12. (891683) (4 cr., limited to 20 students; prereq 4 cr child psych; 1000-1230 TWTh, ChDev 172; field trips, 0800-1430 on July 28, August 4) Fishhaut
Child development principles relative to social policy decision making; application of theories and findings to such issues as media influences, mainstreaming, day care, child abuse, effects of peers.

5336. DEVELOPMENT AND INTERPERSONAL RELATIONS. (689790) (4 cr, \$5339; prereq 1301 or equiv, 3308 or Psy 1005, 3331 or 5331; 0915-1035 MTWThF; ChDev 218)
Processes and functions of interactions with parents and peers; analysis of theory and research on developmental changes and influences.

5970. DIRECTED STUDY. (586218) (Cr ar; prereq #) Weinberg
See First Term.

5990. DIRECTED RESEARCH. (786220) (Cr ar; prereq #) Weinberg
See First Term.

8777. THESIS CREDITS: MASTERS. (188893) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089012) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (586221) (Cr ar) Weinberg
See First Term.

8990. RESEARCH PROBLEMS. (386222) (Cr ar) Weinberg
See First Term.

Chinese (Chn)

105 Folwell Hall. 624-0007
(Institute of Languages and Literature, East Asian Studies)
College of Liberal Arts

FIRST TERM

3161. CHINESE POETRY IN ENGLISH TRANSLATION. (089236) (4 cr; 1145-1245 MTWThF; FolH 208) Zhang
Major poets examined in context of their intellectual, social, and aesthetic traditions. Knowledge of Chinese not required.

3970. DIRECTED STUDIES. (987978) (1-15 cr; prereq #, Δ, □) Staff

5970. DIRECTED STUDIES. (585117) (1-4 cr; prereq #, Δ, CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (188795) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788940) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSE
(Register once in Term I)

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. *Students must enroll for all three courses and may not enroll in other summer courses.* Prospective students should talk to an adviser before registering for intensive language courses.

1011-1012-1013. INTENSIVE BEGINNING MODERN CHINESE. (15 qtr credit for both terms, 10 hours with principal instructor, 10 hours with drillmaster; limited to 28 students; 0800-1220 MTWThF; KoltH S138) R1011, Sec 5, (486924) June 15–July 8, 5 cr; Wang
R1012, Sec 5, (286925) July 9–Aug. 2, 5 cr; Staff
R1013, Sec 5, (186926) August 3–25, 5 cr; Staff

SECOND TERM

3970. DIRECTED STUDIES. (087633) (1-15 cr; prereq #, Δ, □) Staff

5970. DIRECTED STUDIES. (887634) (1-4 cr; prereq #, Δ, CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (488883) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989004) (1-36 cr [max 11 cr per summer term])

Civil Engineering (CE)

122 Civil and Mineral Engineering. 625-5522
(Civil and Mineral Engineering) Institute of Technology

FIRST TERM

8097. CIVIL ENGINEERING RESEARCH. (988676) (4 cr; prereq #)

8777. THESIS CREDITS: MASTERS. (488785) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188935) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8097. CIVIL ENGINEERING RESEARCH. (788677) (4 cr; prereq #)

8777. THESIS CREDITS: MASTERS. (088877) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988998) (1-36 cr [max 11 cr per summer term])

Classical Civilization (ClCv)

300 Folwell Hall. 625-7565
College of Liberal Arts

FIRST TERM

3990. DIRECTED RESEARCH. (691927) (4 cr; prereq #, Δ, □)

SECOND TERM

3990. DIRECTED RESEARCH. (988693) (4 cr; prereq #, Δ, □)

Classics (Clas)

331 Folwell Hall. 625-5353
(Classical and Near Eastern Studies) College of Liberal Arts

FIRST TERM

1045. BASIC PROGRAM IN TECHNICAL TERMINOLOGY AND WORD STUDY. (887066) (3 cr; independent and optional assistance labs ar; 1530-1700 TW; FolH 240)
Study of prefixes, suffixes, and high frequency roots from Greek and Latin

COURSE DESCRIPTIONS

through computer-assisted instruction; principles of word compounding; methods and techniques of work analysis. Meets with 1048, 1141, 3046.

1048. GREEK AND LATIN TERMINOLOGY IN THE MEDICAL AND BIOLOGICAL SCIENCES. (687067) (2 cr, \$1141; prereq 1045 or ¶ 1045; independent and optional assistance labs ar; 1530-1700 TW; FolH 240) Study of roots and terms basic to the medical and biological sciences in English contexts. Meets with 1045, 1141, 3046.

1141. GREEK AND LATIN TERMINOLOGY FOR NURSING. (687635) (3 cr, \$1048; independent and optional assistance labs ar; 1530-1700 TW; FolH 240) Greek and Latin prefixes, suffixes, and roots basic to the vocabulary of nursing through computer-assisted instruction. Meets with 1045, 1048, 3046.

3046. ADVANCED ETYMOLOGY: VOCABULARY OF THE SCIENCES AND HUMANITIES. (487636) (2 cr; prereq 1045 or ¶ 1045; independent and optional assistance labs ar; 1530-1700 TW; FolH 240) Latin and Greek roots that have English derivatives; regularities of linguistic change (Grimm's law), principles of etymology, and lessons on specialized terminology in various fields, computer-assisted instruction. Meets with 1045, 1048, 1141.

3072. THE NEW TESTAMENT. (090211) (4 cr; \$5072, \$ReIS 3072; 5072; 0915-1145 TTh; FolH 419) Sellw The early Jesus movement in its social and historical setting: origins in Judaism; traditions about Jesus; Paul, his controversies and his interpreters; questions of authority, religious practice, and structure in the early communities; apocryphal literature and the emergence of a scriptural canon. Contemporary methods of New Testament study. The ancient sources as evidence for constructing critical history and as narrative structures. Meets with 5072, ReIS 3072 and 5072.

5072. THE NEW TESTAMENT. (890212) (4 cr; \$3072, \$ReIS 3072; 5072; 0915-1145 TTh; FolH 419) Sellw Requires additional work. See 3072. Meets with 3072, ReIS 3072 and 5072.

8777. THESIS CREDITS: MASTERS. (488799) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488950) (1-36 cr [max 11 cr per summer term]) Knowledge of Greek or Latin is not required.

SECOND TERM

R.1042. GREEK AND ROMAN MYTHOLOGY. (191558) (4 cr; limited to 100 students; 1145-1245 MTWThF; FolH 306) Hershbell The heroes, gods, and goddesses of ancient Greece and Rome. The stories of the myths and the stories behind the myths.

1045. BASIC PROGRAM IN TECHNICAL TERMINOLOGY AND WORD STUDY. (986927) (3 cr; independent and optional assistance labs ar; 1530-1700 TW, FolH 240) See First Term. Meets with 1048, 1141, 3046.

1048. GREEK AND LATIN TERMINOLOGY IN THE MEDICAL AND BIOLOGICAL SCIENCES. (786928) (2 cr; \$1141; prereq 1045 or ¶ 1045; independent and optional assistance labs ar; 1530-1700 TW, FolH 240) See First Term. Meets with 1045, 1141, 3046.

1141. GREEK AND LATIN TERMINOLOGY FOR NURSING. (586929) (3 cr, \$1048; independent and optional assistance labs ar; 1530-1700 TW, FolH 240) See First Term. Meets with 1045, 1048, 3046.

3012. THE WORLD OF ROME. (991559)(4 cr; \$5012; 1030-1130 MTWThF; FolH 326) Hershbell General survey of Roman civilization from its origins to reign of Constantine. Roman way of life as seen in art, history, literature, and philosophy. Etruscans and golden age of Rome under Augustus. Meets with 5012.

3046. ADVANCED ETYMOLOGY: VOCABULARY OF THE SCIENCES AND HUMANITIES. (986930) (2 cr; prereq 1045 or ¶ 1045; independent and optional assistance labs ar; 1530-1700 TW, FolH 240) See First Term. Meets with 1045, 1048, 1141.

5004. EROTICISM AND FAMILY LIFE IN THE GRAECO-ROMAN WORLD. (4 cr; 0915-1015 MTWTh; FolH 142) Erickson Analysis of Greek and Roman family life in the shaping of personality; diachronic change in modes of erotic expression; Narcissism and homosexuality; the status and roles of women; evolving views of sexual morality in the ancient world compared to present trends. Representative views taken for analysis and discussion from art and literature.

5012. THE WORLD OF ROME. (4 cr; \$3012; 1030-1130 MTWThF; FolH 326) Hershbell Requires additional work. See 3012. Meets with 3012.

8777. THESIS CREDITS: MASTERS. (588888) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189008) (1-36 cr [max 11 cr per

Clinical and Population Sciences (CAPS)

225 Veterinary Hospital, St. Paul. 625-7755
College of Veterinary Medicine

FIRST TERM

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (789828) (Cr ar; prereq 5650 or equiv or #) Diesch, Pullen, R. Robinson, others
Individual study arranged with faculty member.

5951. DIRECTED STUDIES. (589829) (1-5 cr; prereq #, Δ)
Independent, directed study in veterinary science in areas arranged by the student and a faculty member.

8193.* ADVANCES IN CLINICAL IMMUNOBIOLOGY. (989830) (Cr ar; prereq grad student or #) Molitor
Students, faculty members, and guest speakers present seminars on current research in and clinical application of immunologic procedures in the diagnosis, control, and treatment of disease processes in animals.

8194.* PROBLEMS IN DIAGNOSTIC VIROLOGY, SEROLOGY, AND IMMUNOLOGY. (789831) (Cr ar; prereq grad student or #) Ames, Molitor
Laboratory techniques of diagnostic virology, serology, and immunology. Research techniques of fluorescent antibody; determination of classes of immunoglobulins and immunostimulation of lymphocytes.

8195.* PREVENTIVE VETERINARY MEDICINE. (589832) (Cr ar) Diesch, others
Application of the principles and practice of preventive veterinary medicine in food-animal production at the herd, state, national, or international levels.

8199. PROBLEMS IN ECONOMICS OF ANIMAL HEALTH. (389833) (1-3 cr) Olson, others
Impact of animal disease on animal productivity and the return to investment in animal health by producers or the society studied using disease problems of current interest as subjects. Questions involving human health problems may be studied.

8290. ADVANCED VETERINARY MEDICINE. (189834) (Cr ar; prereq 5162, SACS 5172, #) V. Larson, Hardy, others
Discussions of the diseases of organs or systems in animals from the following etiologic group: prenatal, metabolic, toxic infectious, physical influences.

8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES. (089835) (Cr ar; prereq 5162, SACS 5172, #) V. Larson, Osborne, McKeever, Ogburn, Olson, others
Detailed examination, discussions, and treatment of cases of animal diseases.

8292. SEMINAR: VETERINARY MEDICINE. (889836) (Cr ar; prereq #) V. Larson, Osborne, others

8293. MEDICAL CONFERENCE. (689837) (Cr ar; prereq 5162, SACS 5172, #) V. Larson, Osborne, others
Medical, surgical, or obstetrical cases supported by anatomic, bacteriologic, pathologic, physiologic, pharmacologic, and radiologic evaluations whenever applicable.

8299. RESEARCH IN VETERINARY MEDICINE. (489838)(Cr ar) V. Larson, others
Research problems relating to any aspect of internal medicine or to the various systems in animals.

8390. SEMINAR: VETERINARY SURGERY. (289839) (Cr ar; prereq DVM degree or equiv) Wallace

8392. ADVANCED LARGE ANIMAL SURGERY. (689840) (Cr ar; prereq DVM degree or equiv, #) Kobluk, Trent
Surgery of various systems in large animals with preoperative and postoperative evaluation and treatment.

8393. PROBLEMS IN LARGE ANIMAL ORTHOPEDICS. (489841) (3 cr; prereq 5365, #) Kobluk, Trent

8397. LARGE ANIMAL ANESTHESIA. (289842) (Cr ar; prereq SACS 5380, #) Raffae
Special problems associated with anesthesia of large animals.

8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES. (189843) (Cr ar; prereq 5570 or #)
Discussion and laboratory practices of methods for determination of fertility status of female and male animals.

8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION. (989844) (Cr ar; prereq 5570, #) Staff
Detailed discussion and laboratory study of specific reproductive disorders.

8595. SEMINAR: VETERINARY OBSTETRICS. (789845) (1 cr; prereq #) Seguin

8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS. (589846) (3 cr; prereq grad student or #)
Examination of clinical cases and experimental animals: dealing with pharmacotherapeutics of various drugs used for food producing and companion animals.

8791. SEMINAR IN CLINICAL PHARMACOLOGY AND THERAPEUTICS. (389847) (2 cr; prereq grad student or #)
Examination of current literature and case material.

**FIRST AND SECOND TERMS:
TEN WEEK COURSE.**

5011. VETERINARY PUBLIC HEALTH (VPH) CLINIC ROTATION. (491010) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Preparation for health and socially responsible role in veterinary community medicine (rural and/or urban); preparation for federal accreditation and; introduction to public practice veterinarians.

5091. PRECEPTORSHIP. (991030) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Participation in a practice setting involving large, mixed, small equine, specialty practice, or other fields of veterinary medicine as approved by the Director of the Preceptorship Program.

5111. LARGE ANIMAL MEDICINE. (691006) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Medical diseases of horses, cattle, and small ruminants. History taking, clinical diagnosis, and patient management.

5211. LARGE ANIMAL SURGERY. (491007) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Diagnostic and therapeutic management of lameness and surgical diseases of the large animal species (equine, bovine, small ruminants) in a hospital setting.

5221. EQUINE LAMENESS. (791031) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Two-week course involving clinical, didactic, and laboratory learning.

5231. EQUINE PODIATRY. (591032) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Concepts of equine podiatry.

5511. EQUINE THERIOGENOLOGY (INTRODUCTORY). (291008) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Clinical training in equine theriogenology.

5531. DAIRY PALPATION. (091035) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Development of the technical skills for palpating the reproductive tract of cows rectally.

5721. EQUINE FIELD SERVICE ROTATION. (291042) 4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Day-to-day experiences of equine practice.

5821. MASTITIS, MILKING MACHINES, AND MILK QUALITY. (991044) (4-24 crs; prereq regis 3rd or 4th yr vet med or grad stu or #; S-N only)
Evaluation of herd mastitis problems, recommendations for solutions.

5831. RUMINANT NUTRITION. (791045) (4-24 crs; prereq regis 3rd or 4th yr vet med or grad stu or #; S-N only)
Nutrient requirements for ruminants, nutrient content of feed stuffs (primarily forages), energy utilization, nutritional disorders, formulation of adequate rations, and techniques for analyzing rations.

5841. APPLIED DAIRY NUTRITION. (591046) (4-24 crs; prereq 5831, regis 3rd or 4th yr vet med or grad stu or #; S-N only)
Providing nutritional advice, counseling, and/or assessment to a dairy farm.

5851. DAIRY RECORD ANALYSIS, EPIDEMIOLOGY AND ECONOMICS. (391047) (4-24 crs; prereq regis 3rd or 4th yr vet med or grad stu or #; S-N only)
The evaluation of a dairy herd as a whole, using biological and economic records.

5911. ADVANCED BUILDING DESIGN AND TOTAL HERD EVALUATION. (191009) (4-24 crs; prereq regis 3rd or 4th yr vet med or grad stu or #; S-N only)
Advanced housing ventilation, equipment, and building design principles utilizing the epidemiologic approach to promoting animal health. Integration of total animal health care, environmental control, and herd management into herd veterinary services.

SECOND TERM

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (189848) (Cr ar; prereq 5650 or equiv or #) Diesch, Pullen, R Robinson, others
See First Term.

5951. DIRECTED STUDIES. (089849) (1-5 cr; prereq #, Δ)
See First Term.

8193.*ADVANCES IN CLINICAL IMMUNOLOGY. (389850) (Cr ar; prereq grad student or #) Molitor
See First Term.

8194.* PROBLEMS IN DIAGNOSTIC VIROLOGY, SEROLOGY, AND IMMUNOLOGY. (189851) (Cr ar; prereq grad student or #) Ames, Molitor
See First Term.

8195.* PREVENTIVE VETERINARY MEDICINE. (089852) (Cr ar) Diesch, others
See First Term.

8199. PROBLEMS IN ECONOMICS OF ANIMAL HEALTH. (889853) (1-3 cr) Olson, others
See First Term.

8290. ADVANCED VETERINARY MEDICINE. (689854) (Cr ar; prereq 5162, SACS 5172, #) V. Larson, Hardy, others
See First Term.

8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES. (489855) (Cr ar; prereq 5162, SACS 5172, #) V. Larson, Osborne, McKeever, Ogburn, Olson, others
See First Term.

8292. SEMINAR: VETERINARY MEDICINE. (289856) (Cr ar; prereq #) V. Larson, Osborne, others

8293. MEDICAL CONFERENCE. (189857) (Cr ar; prereq 5162, SACS 5172, #) V. Larson, Osborne, others
See First Term.

8299. RESEARCH IN VETERINARY MEDICINE. (989858) (Cr ar) V. Larson, others
See First Term.

8390. SEMINAR: VETERINARY SURGERY. (789859) (Cr ar; prereq DVM degree or equiv) Wallace

8392. ADVANCED LARGE ANIMAL SURGERY. (189860) (Cr ar; prereq DVM degree or equiv, #) Kobluk, Trent
See First Term.

8393. PROBLEMS IN LARGE ANIMAL ORTHOPEDICS. (989861) (3 cr; prereq 5365, #) Kobluk, Trent

8397. LARGE ANIMAL ANESTHESIA. (789862) (Cr ar; prereq SACS 5380, #) Raffe
See First Term.

8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES. (589863) (Cr ar; prereq 5570 or #) Staff
See First Term.

8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION. (389864) (Cr ar; prereq 5570, #)
See First Term.

8595. SEMINAR: VETERINARY OBSTETRICS. (189865) (1 cr; prereq #) S. Johnston

8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS. (089866) (3 cr; prereq grad student or #)
See First Term.

8791. SEMINAR IN CLINICAL PHARMACOLOGY AND THERAPEUTICS. (889867) (2 cr; prereq grad student or #)
See First Term.

Clinical Laboratory Science (CLS)

D-242 Mayo. 625-9171
(Laboratory Medicine and Pathology) Medical School

FIRST TERM

5180. ADVANCED CHEMISTRY. (185363) (1-5 cr; prereq #) Yasmineh

8236. RESEARCH ON CLINICAL LABORATORY PROBLEMS. (385362) (1-10 cr) Hallgren

8777. THESIS CREDITS: MASTERS. (888802) (1-16 cr [max 11 cr per summer term])

**FIRST AND SECOND TERMS:
TEN WEEK COURSE**

5768. ADVANCED HEMATOLOGY. (085364) (Cr ar; prereq #) Brunning

SECOND TERM

5180. ADVANCED CHEMISTRY. (585361) (1-5 cr; Prereq #) Yasmineh

8236. RESEARCH ON CLINICAL LABORATORY PROBLEMS. (785360) (1-10 cr) Hallgren

8777. THESIS CREDITS: MASTERS. (388892) (1-16 cr [max 11 cr per summer term])

Communication Disorders (CDIs)

115 Shevlin Hall. 624-3322
College of Liberal Arts

FIRST TERM

R.3100. CLINICAL AND RESEARCH OBSERVATION. (2 cr; each section limited to 2 students; prereq Δ; S-N only)
Supervised observation of clinical procedures such as evaluation and treatment of persons with communication disorders, or of research relating to normal and disordered communication.

Sec 1, (185587) 0800-1200 W, MoosT 6296, Starr, Moller
Sec 2, (186263) 1230-1600 Th, MoosT 6296, Starr, Moller

5303. PHONETICS LABORATORY. (690194) (2 cr; 0915-1130 TTh; FoH 340) Broen
Phonetic analysis of speech, the IPA classification system and articulatory correlates of English phonemes. Laboratory transcription of isolated sounds, words, and connected speech.

5611. AUGMENTATIVE SYSTEMS OF COMMUNICATION—June 15-25. (191566) (3 cr; 1300-1600 MTWThF; BuH 125) Reichle

COURSE DESCRIPTIONS

Equipment and instructional procedures used to establish communication board and signing skills in severely handicapped populations.

5704. NOISE AND HUMANKIND—June 15-July 2. (990847) (4 cr; prereq 5301 or #; 1300-1600 MTWThF; ShevH 119H) Ward
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; pre-employment testing and monitoring audiometry.

5970. DIRECTED STUDIES. (085588) (Cr ar [may be repeated for cr]; prereq #, Δ, CLA approval) Staff
Directed readings and preparation of reports on selected subjects.

8508. SEMINAR: VOICE. (490195) (3 cr; prereq 5508 or #; 0915-1130 TTh; ShevH 119H; 1 hr per wk ar) Starr
Advanced study and independent research.

8520. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (885589) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8521. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (087986) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8720. CLINICAL EDUCATION IN AUDIOLOGY. (185590) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8721. CLINICAL EDUCATION IN AUDIOLOGY. (887987) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8777. THESIS CREDITS: MASTERS. (888783) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488933) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH. (085591) (Cr ar [may be repeated for cr]) Staff
Open to graduate students engaged in research.

SECOND TERM

5970. DIRECTED STUDIES. (686601) (Cr ar [may be repeated for cr]; prereq #, Δ, CLA approval) Staff
See First Term.

8520. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (286603) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8521. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (387984) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8720. CLINICAL EDUCATION IN AUDIOLOGY. (186604) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8721. CLINICAL EDUCATION IN AUDIOLOGY. (187985) (1-6 cr [may be repeated for cr]; prereq Communication Disorders grad stu) Staff

8777. THESIS CREDITS: MASTERS. (188876) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188997) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH. (786606) (Cr ar [may be repeated for cr]) Staff
See First Term.

Comparative Literature (CLit)

350 Folwell Hall
College of Liberal Arts
624-8099
(See also Cultural Studies and Comparative Literature.)

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (188952) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READING. (087759) (1-4 cr; prereq grad student in comparative lit, Δ)

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (389010) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READING. (785570) (1-4 cr; prereq grad student in comparative lit, Δ)

Cultural Studies and Comparative Literature (CSCL)

350 Folwell Hall, 624-8099
College of Liberal Arts
(see also Humanities)

FIRST TERM

R.1301. DISCOURSE AND SOCIETY. (691779) (4 cr; \$Hum 1301; limited to 45 students; 1030-1300 MW; FolH 340) Thomas
General introduction to modes of expression (e.g. verbal, visual, musical) through representative works. Analysis of discourse in relation to social structures, examining its role in

creating and contesting social borders, replicating cultures, and attaching differential privilege to various practices.

1921. INTRODUCTION TO FILM STUDY. (991786) (4 cr; \$ArH 1921, \$CLit 1921; 1030-1230 TTh; FolH 142) Mowitz
Fundamentals of film language and the major theories of film presented through detailed analysis of several films.

R.3458. THE BODY AND THE POLITICS OF REPRESENTATION. (091780) (4 cr; \$Hum 3458; limited to 45 students; 0800-1020 TTh; FolH 134) Leppert
Western representation of the human body, (both Western and non-Western). Renaissance to 1900. Body's appearance as site/sight for production of sociocultural difference (race, ethnicity, class, gender). Visual arts, medical treatises, courtesy books, travel literature, ethnographies, erotica.

R.3910. TOPICS IN CULTURAL STUDIES AND COMPARATIVE LITERATURE: CONTEMPORARY LITERATURE & CRITICISM: READINGS. (391775) (4 cr; limited to 20 students; prereq jr or sr or #; 1300-1545 TTh; FolH 344) Sousa
Discussion of problems in criticism and interpretation based on student reading and writing projects. Group meetings and individual consultation. Meets with 5910.

3970. DIRECTED STUDIES. (491783) (cr ar; prereq #)
Guided individual reading or study.

R.3979. ISSUES IN CULTURAL PLURALISM. (091777) (4 cr; \$CLit 3979; limited to 35 students; 1145-1245 MTWThF; FolH 218) Sarles
Critical, comparative basis for studying minority cultures in America: fabric, dynamics, strengths, tensions; how they differ, yet form a distinct culture.

5910. TOPICS IN CULTURAL STUDIES AND COMPARATIVE LITERATURE: CONTEMPORARY LITERATURE AND CRITICISM: READINGS. (491928) (4 cr; limited to 10 students; prereq jr or sr or grad stu, #; 1300-1545 TTh; FolH 344) Sousa
See 3910. Meets with 3910.

5970. DIRECTED STUDIES. (291929) (cr ar; prereq jr or sr or grad student, #)
Guided individual reading or study.

SECOND TERM

R.1302. TEXT AND CONTEXT. (591791) (4 cr; limited to 30 students; \$Hum 1302; 1030-1300 TTh; FolH 148) Staff
Ways in which social and political tensions of particular moments and local milieus find representation in specific items of discourse. Relation of

cultural discourses to the sociohistorical conditions of their emergence.

R.1303. KNOWLEDGE, PERSUASION, POWER. (191793) (4 cr; limited to 30 students; \$Hum 1301; 1030-1300 MW; FolH 148) Jha
Inquiry into the ways certain bodies of discourse come to cohere, to exercise persuasive power, and to be regarded as authoritative, while others are marginalized, ignored, or denigrated. Interrelations of center and periphery, hegemony and counterhegemony, canon and apocrypha.

R.3175. COMEDY: TEXT AND THEORY. (291798) (4 cr; limited to 70 students; \$Hum 3701; 1030-1300 TTh; Arch 50) Thomas
Interdisciplinary study of comedy and comic theory through time and across world cultures in philosophy, psychology, literature, drama, film, folk tale, play, and social convention.

R.3176. CINEMATIC DISCOURSE AND CULTURAL POLITICS. (691796) (4 cr; limited to 70 students; \$Hum 3176; prereq 1301 or Hum 1301 or ArH 1921; 0800-1030 MW; FolH 50) Mowitz
The way film texts and the social institutions of cinema both contribute to and resist the reproduction of social relations in modern Western countries. Class, race, and gender as sites of sociocultural conflict.

3970. DIRECTED STUDIES. (191799) (cr ar; prereq #)
See First Term.

5970. DIRECTED STUDIES. (891800) (cr ar; prereq jr or sr or grad student, #)

Comparative Studies in Discourse and Society (CSDS)

350 Folwell Hall, 624-8099
(See also Cultural Studies and Comparative Literature.)
College of Liberal Arts

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (088958) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDIES. (791983) (2 cr; prereq grad student or #)

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (689014) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDIES. (591984) (2 cr; prereq grad student or #)

REGISTRATION INSTRUCTIONS

Summer Session 1993 dates:

Term I: June 15 - July 20

Term II: July 22 - August 25

In-person registration begins:

Thursday, May 13, 1993

Friday, May 21, 1993

Academic year students - Bring *Course Request form* and *Student Hospitalization Insurance form* to your registration center.

Summer-only students - Bring *Course Request form*, *Request for Summer-only Status form* and the *Student Hospitalization Insurance form* to the registration center.

Important: Current and previously enrolled University of Minnesota students must register in their last Twin Cities college of enrollment unless they have been admitted to another Twin Cities, University of Minnesota college.

Mail-in registration:

Available to: Summer-only students in the *College of Liberal Arts*.
Summer-only students, Adult Specials and M.Ed. students in the *College of Education*.

Mail registration is not open to academic-year students or summer-only students registering for courses through colleges other than Liberal Arts and Education.

To register by mail, first see all instructions and restrictions in the registration section of the bulletin. Then fill out the *Course Request form*, *Request for Summer-only Status form* and *Student Hospitalization Insurance form* completely, fold in proper fashion to show the Summer Session office mailing address (please mark whether you are registering in Liberal Arts or Education) and be sure to mail your registration by June 1, 1993. Mail registrations are processed on May 21 for the College of Liberal Arts and May 13 for the College of Education in the order in which they are received.

Registration Forms:

See instructions for completing the *Course Request form* on the next page. Call 624-3555 for questions on any of the registration forms.

Registration Centers: Fraser Hall, rm 202, East Bank by Northrop Auditorium
Coffey Hall, rm 130, St Paul campus across from student center
See inside page for registration center locations.

Important phone numbers:

See back inside cover of bulletin for University offices (student, departmental and college).

Directions to campus and parking locations:

See detailed maps and directions after the course listing in the bulletin.

ID number or Social Security number _____
 Name (last, first, middle) _____

UNIVERSITY OF MINNESOTA
COURSE REQUEST

College of enrollment _____ Student mailing address _____ Telephone number _____
 Major _____ City _____ State _____ Zip Code _____

Term and year Fall Winter Spring Summer session I Summer session II 19____

Registration: number of credits _____ Cancel/add: number of credits after change _____ Complete cancellation

Note: Fill in VARIABLE CREDITS only if credits are listed as "ar cr" in the Class Schedule. Fill in GRADE OPTION if mandatory grading is not listed in the Class Schedule. To change grade option or variable credits, list course as both cancellation and addition.

COURSE(S)--First choice (original registration)				COURSE(S)--Second choice (or additions)				CANCELLATIONS	
CALL NUMBER	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NUMBER, AND SECTION	CALL NUMBER	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NUMBER, AND SECTION	CALL NUMBER	DESIGNATOR, COURSE NUMBER, AND SECTION

MPIRG (optional)
 Minnesota Public Interest Research Group is described in the Class Schedule. The MPIRG fee is \$2.50 per quarter (or \$1.25 per summer term) for those who pay the student services fee. Payment is refundable through MPIRG. If you choose NOT to pay, initial here _____

REQUIRED APPROVAL (if needed)

SIGNATURES ON THIS FORM WILL NOT BE ACCEPTED IN PLACE OF OVERRIDE PERMITS.

ID number or Social Security number _____
 Name (last, first, middle) _____

UNIVERSITY OF MINNESOTA
COURSE REQUEST

College of enrollment _____ Student mailing address _____ Telephone number _____
 Major _____ City _____ State _____ Zip Code _____

Term and year Fall Winter Spring Summer session I Summer session II 19____

Registration: number of credits _____ Cancel/add: number of credits after change _____ Complete cancellation

Note: Fill in VARIABLE CREDITS only if credits are listed as "ar cr" in the Class Schedule. Fill in GRADE OPTION if mandatory grading is not listed in the Class Schedule. To change grade option or variable credits, list course as both cancellation and addition.

COURSE(S)--First choice (original registration)				COURSE(S)--Second choice (or additions)				CANCELLATIONS	
CALL NUMBER	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NUMBER, AND SECTION	CALL NUMBER	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NUMBER, AND SECTION	CALL NUMBER	DESIGNATOR, COURSE NUMBER, AND SECTION

MPIRG (optional)
 Minnesota Public Interest Research Group is described in the Class Schedule. The MPIRG fee is \$2.50 per quarter (or \$1.25 per summer term) for those who pay the student services fee. Payment is refundable through MPIRG. If you choose NOT to pay, initial here _____

REQUIRED APPROVAL (if needed)

SIGNATURES ON THIS FORM WILL NOT BE ACCEPTED IN PLACE OF OVERRIDE PERMITS.

COMPLETING YOUR COURSE REQUEST FORM

① ID number or Social Security number: <div style="text-align: center; font-size: 1.2em;">123456</div>	UNIVERSITY OF MINNESOTA COURSE REQUEST				
Name (last, first, middle): Student, Chris H.					
② College of enrollment Liberal Arts	Student mailing address ④ 4312 Main St.	Telephone number (612) 373-4343			
③ Major Anthropology	City St. Paul	State MN	Zip Code 55112		
Term and year <input type="checkbox"/> Fall <input type="checkbox"/> Winter <input type="checkbox"/> Spring <input checked="" type="checkbox"/> Summer session I <input type="checkbox"/> Summer session II 1993					
⑥ <input checked="" type="checkbox"/> Registration: Number of credits: 4 <input type="checkbox"/> Cancel/Add: Number of credits after change <input type="checkbox"/> Complete Cancel					
Note: Fill in VARIABLE CREDITS only if credits are listed as "ar cr" in the Class Schedule. Fill in GRADE OPTION if mandatory grading is not listed in the Class Schedule. To change grade option or variable credits, list course as both cancellation and addition.					
COURSE(S) - First choice (original registration)		COURSE(S) - Second choice (or additions)		CANCELLATIONS	
CALL NUMBER	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, CRSE NUMBER, SECTION	CALL NUMBER	DESIGNATOR, CRSE NUMBER, SECTION
①	②	③	④	⑤	⑥
938747			Anth 5118	436557	Anth 5131
724412		2	Engl 5970		
SAMPLE					
MPIRG (optional) Minnesota Public Interest Research Group is described in the Class Schedule. The MPIRG fee is \$1.25 per summer term for those who pay the student services fee. Payment is refundable through MPIRG. If you choose NOT to pay, initial here-> <input type="checkbox"/>			REQUIRED APPROVAL		SIGNATURES ON THIS FORM WILL NOT BE ACCEPTED IN PLACE OF OVERRIDE PERMITS.
			⑦		⑧

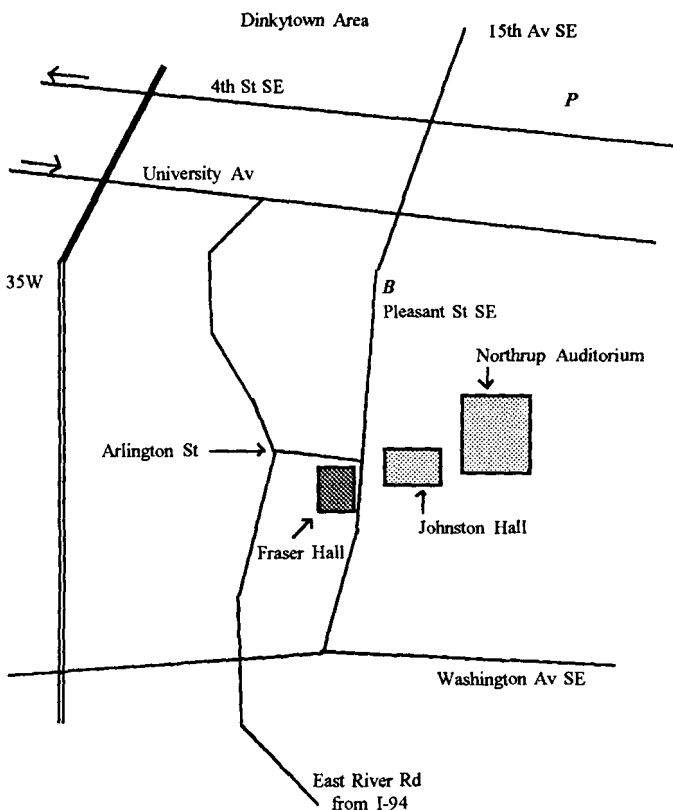
- ① Print your name and student ID number (or Social Security Number)
- ② Print the college in which you are enrolled.
- ③ Print your major.
- ④ Print your complete address and phone number.
- ⑤ Indicate the term (summer I or summer II) and year for which you are registering.
- ⑥ Check the box for registration if this is your first registration for the quarter or term and fill in the number of credits for which you are registering. If you are making changes in your original registration (cancel/adding), check the cancel/add box and fill in the number of credits you will have after completing those changes. Check the "Complete Cancel" box if you are cancelling all courses.
- ⑦ This section is for your first choice course requests:
 - ① Print the six digit call number. (The call number is to the left of each course listing or each section of a course).
 - ② Mark the grading system you are requesting, only if the course is offered for both A-F and S-N. See example above and read the paragraph on Grading Option in the registration section of this bulletin.
- ⑧ Print the number of credits only if you are registering for a variable credit course (i.e., 1-4 cr) or an arranged credit course (ar cr). See example above.
- ⑨ Print the designator (department abbreviation - e.g., Acct, Elem, Hist), course number and section number for each course.
- ⑩ This section is for your second choice course requests. Plan alternatives for all parts of the course (e.g., lecture, lab, recitation) in case your first choice requests are closed or otherwise unavailable. If you are cancel/adding, list any course additions here.
- ⑪ Provide the call number, designator, course and section numbers for any courses you are cancelling. Remember to indicate your credit total in section 6.
- ⑫ MPIRG - see instructions on form. The Minnesota Public Interest Research Group (MPIRG) is a nonprofit, nonpartisan, student-run organization funded at the Twin Cities campus by an optional term fee of \$1.25. A statewide advocacy group, MPIRG gives the students the opportunity to speak out on public issues and work for social change. The fee supports a professional staff for lobbying, litigation, organizing and research.
- ⑬ College, department, and/or adviser approval, as required.
- ⑭ Additional approval, as required.

STUDENT HOSPITALIZATION INSURANCE

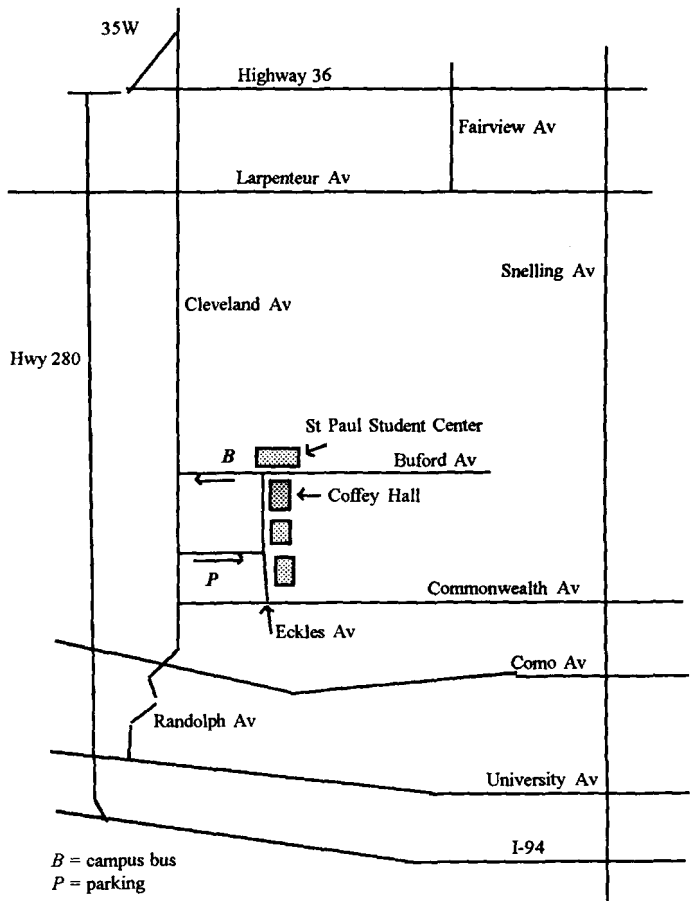
Student name (last, first, middle initial)	Student ID number
<input type="checkbox"/> Summer term I <input type="checkbox"/> Summer term II	
If you are taking 3 or more credits, you will automatically be charged for University-sponsored hospitalization insurance unless you check the first box below, fill in the name of your insurance company and policy number, and sign the bottom of this form. If you do not provide complete information, you will be charged for insurance when you register. You may receive a full refund by returning to the Registration Center with complete insurance information by the end of the first week of classes. (NOTE: If you are taking 3 or more credits and do not have hospitalization insurance, you do not have to fill out this card.)	
<input type="checkbox"/> I am adequately covered by the hospitalization insurance indicated below.	
Name of insurance company or HMO	Policy number
<input type="checkbox"/> I have applied for and am enrolled in the Graduate Assistant Health-Care Plan.	
<input type="checkbox"/> Although I am taking fewer than 3 credits, I would like to purchase University-sponsored hospitalization insurance. I understand that I will also be charged the entire student services	
Student signature	Date

A291-otr 4/92

REGISTRATION CENTER LOCATION
Minneapolis campus, Fraser Hall, rm 202



REGISTRATION CENTER LOCATION
St. Paul campus, Coffey Hall, rm 130



B = campus bus
P = parking

REQUEST FOR SUMMER-ONLY STATUS

U of M student ID number (if any)	Social Security number	Date of birth (mm/dd/yy)
Student name (last, first, middle)	Sex <input type="checkbox"/> Male <input type="checkbox"/> Female	
Current address (street, city, state, Zip Code)	Telephone number	
Permanent address if different from above (street, city, state, Zip Code)	Telephone number	
To which college are you submitting your request? (e.g., CLA, IT, Education, etc.)	Summer term/year <input type="checkbox"/> I <input type="checkbox"/> II 19__	

STUDENT STATUS. Check all that apply:

I have never attended the University of Minnesota.

*I am now in day school at the University. Campus/college: _____ Major: _____

I have applied or been admitted to the University. Campus/college: _____ Term/yr: _____

*I was previously enrolled in a day school degree program at the University. Campus/college: _____
Year: _____ Name (if different): _____

I have taken day classes only as an adult special or a summer-only student. I have taken only extension/evening classes at the University.

I am a high school student. High school: _____ Year: _____

I am now enrolled in a degree program at another college/university. College/university: _____
Major: _____

I am a college graduate. College: _____ Degree: _____ Major: _____

Current work experience. Employer: _____
Type of work: _____ Dates of employment: _____

***Important--current and previously enrolled University students:** You must register in your last Twin Cities college of enrollment unless you have been admitted to another Twin Cities college of the University.

REQUEST FOR CONFIDENTIAL INFORMATION

The University requests confidential information to update your student record. This information is used for reporting and research purposes and will help the University provide student data to University community and government agencies. Any submitted information is kept confidential in accordance with Regents' policy and state and federal law. Supplying this information is voluntary; refusal to provide it will not affect your status at the University.

Predominant ethnic background

Black (Afro-American, non-Hispanic origin): a person having origins in any of the black racial groups of Africa (excluding persons of Spanish, Portuguese, Latin American, or other Hispanic origin).

American Indian or Alaskan Native: a person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.

Asian or Pacific Islander: a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, Japan, Korea, India, the Phillipine Islands, and Samoa.

International student (foreign student): a nonresident alien (i.e., a person who is not a citizen of the United States and who is in this country on a temporary basis and does not have the right to remain indefinitely). **Note:** A resident alien, a noncitizen who has been lawfully admitted for permanent residence and holds an alien registration receipt card (form 1-551/155), is to be reported in the appropriate ethnic categories along with U.S. citizens.

Chicano: a person of Mexican-American origin who prefers to be known as Chicano rather than Hispanic.


Other Hispanic: a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race.

White, non-Hispanic: a person having origins in any of the original peoples of Europe, North Africa, or the Middle East (excluding persons of Spanish or Portuguese origin).

for college use only		for records office use only	
<input type="checkbox"/> approved for summer-only registration		initials	date
college code: _____	date: _____	college approval stamp:	

tape along this edge

fold along this line



SUMMER SESSION OFFICE
135 JOHNSTON HALL
101 Pleasant St S.E.
Minneapolis, MN 55455

MAIL REGISTRATION

_____ Liberal Arts
_____ Education

fold along this line

Composition and Communication (Comp)

306 Lind Hall, 625-2888
College of Liberal Arts
(See also Rhetoric)

FIRST TERM

R.1011. WRITING PRACTICE I. (5 cr; each section limited to 25 students; prereq assignment to category 2 or 3) Guided practice in solving writers' problems: defining purpose, organizing and developing content, analyzing audience, drafting the whole essay and its parts, and revising and editing to master fundamentals of expository structure and style. Workshops on basic skills, syntactic fluency, and editing.

Sec 1, (288044) 0800-1000 MWF, JonesH 11
Sec 2, (188045) 0915-1115 MWF, CivMinE 213

R.3011. WRITING ABOUT LITERATURE. (986264) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.; 1030-1210 MWF, LindH 303) Primary focus on presenting the active reading of literary works (poems, plays, fiction) in literary commentary and criticism, primarily for academic audiences. Use of secondary sources, and attention to various theoretical and critical approaches.

R.3012. WRITING IN THE HUMANITIES. (888489) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.; 0915-1055 MWF, LindH 302) Writing on topics where historical and multicultural perspectives are brought together in the context of these disciplines. Assignments involve integrating primary texts with critical commentary. Frequent practice in presenting primary materials through paraphrase and summary.

R.3013. WRITING FOR THE ARTS. (786265) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.; 0800-0940 MWF, LindH 315) Writing in the roles of artist, member of the audience, and critic to balance subjective responses and academic analysis. Emphasis on the importance of writing to create and maintain the arts communities through grants, reviews, and formal criticism.

R.3014. WRITING IN THE SOCIAL SCIENCES. (4 cr; each section limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.) Emphasizes writing as a way to communicate knowledge about individual and collective human behavior. Multidisciplinary perspectives on common social issues, description and analysis of quantitative data. Assignments may include

the literature review, research proposal, case study, and theoretical argument.

Sec 1, (586266) 0800-0940 MWF, LindH 303
Sec 2, (185534) 0915-1055 MWF, FordH 175
Sec 3, (188389) 0915-1055 MWF, Arch 60
Sec 4, (988662) 1030-1210 MWF, LindH 315

R.3015. WRITING ABOUT SCIENCE. (289744) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr; 1030-1210 MWF; LindH 320) Presentation of problems in science and mathematics in clear expository prose. Writing for expert and non-expert audiences. Emphasis on integrating theoretical explanations and empirical evidence.

R.3022. CRITICAL READING AND WRITING FOR MANAGEMENT. (789294) (4 cr; limited to 20 students; prereq 1011 or equiv, Mgmt or Pre-Mgmt stu with more than 60 cr; 0915-1055 MWF; FordH 40) Strategies and conventions for writing in management and related fields. Improvement of communication skills through the incorporation of narrative, descriptive, analytical, and persuasive techniques into writing on current business topics, with an emphasis on critical reading, thinking, and writing. Strategies for communicating among varied audiences in business settings.

R.3027. ADVANCED EXPOSITORY WRITING. (4 cr; each section limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.) Designed for already competent writers, this course focuses on the production of polished writing within and beyond the university setting. Teaches effective argumentation through critical reading and awareness of context and audience.
Sec 1, (987639) 0800-0940 MWF, LindH 340
Sec 2, (887732) 0915-1055 MWF, FordH 50
Sec 3, (686372) 1030-1210 MWF, LindH 325

R.3031. TECHNICAL WRITING FOR ENGINEERS. (4 cr; each section limited to 20 students; prereq fulfillment of Writing Practice requirement, jr., IT stu) Presenting technical information accurately and clearly with attention to the rhetorical and organizational contexts of the writing. Analysis of writing situations, style and form of technical reports, and collaborative written and spoken presentations.
Sec 1, (988046) 0800-0940 MWF, LindH 320
Sec 2, (585022) 0915-1055 MWF, LindH 203

R.3032. PREPROFESSIONAL WRITING FOR BUSINESS. (586882) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, School of Mgmt or BIS

stu, jr; 1030-1210 MWF, LindH 340) Writing for the wide variety of situations and audiences found in business. Form and style of business writing in collaborative and individual assignments. Assignments and practical examples tied as much as possible to students' major fields.

R.3033. WRITING FOR THE HEALTH SCIENCES. (488589) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice req, Health Science or Pre-Health Science major with more than 60 credits; 0915-1055 MWF; MechE 221) Addresses the writing needs of students from the diverse fields of the Health Sciences. Primary emphasis on practicing and achieving verbal clarity in a variety of situations ranging from precise description of a clinical procedure to balanced discussion of ethical contexts.

SECOND TERM

R.1011. WRITING PRACTICE I. (489788) (5 cr; limited to 25 students; prereq assignment to category 2 or 3; 0915-1115 MWF, LindH 302) See First Term.

R.3013. WRITING FOR THE ARTS. (591659) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.; 1030-1210 MWF, LindH 340) See First Term.

R.3014. WRITING IN THE SOCIAL SCIENCES. (4 cr; each section limited to 20 students; prereq fulfillment of Writing Practice requirement, jr) See First Term.
Sec 1, (189745) 0800-0940 MWF, LindH 325
Sec 2, (390299) 0915-1055 MWF, NichH 109
Sec 3, (190300) 1030-1210 MWF, LindH 325

R.3022. CRITICAL READING AND WRITING FOR MANAGEMENT. (990301) (4 cr; limited to 20 students; prereq 1011 or equiv, Mgmt or Pre-Mgmt stu with more than 60 cr; 1030-1210 MWF; LindH 320) See First Term.

R.3027. ADVANCED EXPOSITORY WRITING. (4 cr; each section limited to 20 students; prereq fulfillment of Writing Practice requirement, jr) See First Term.
Sec 1, (386883) 0800-0940 MWF, LindH 340
Sec 2, (386267) 0915-1055 MWF, Arch 30

R.3031. TECHNICAL WRITING FOR ENGINEERS. (4 cr; each section limited to 20 students; prereq fulfillment of Writing Practice requirement, jr, IT stu) See First Term.
Sec 1, (788047) 0800-0940 MWF, LindH 320
Sec 2, (287752) 0915-1055 MWF, Arch 45

R.3032. PREPROFESSIONAL WRITING FOR BUSINESS. (588048) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, School of Mgmt or BIS stu, jr; 0915-1055 MWF; MurH 311) See First Term.

R.3033. WRITING FOR THE HEALTH SCIENCES. (989746) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, Health Science or Pre-Health Science majors with more than 60 credits; 0800-0940 MWF, LindH 303) See First Term.

Computer Science (CSci)

4-192 Electrical Engineering & Computer Science Building.
625-4002
Institute of Technology

FIRST TERM

R.3102. INTRODUCTION TO PASCAL PROGRAMMING. (691510) (4 cr; limited to 50 students; prereq non CSci major, Math 1111 or 1201 or equiv. or #; informal lab; lec 0915-1015 M, 0915-1115 WF, EE/CSci 3115, rec 1030-1130 M, EE/CSci 3115) Pascal computer language, applications, programming techniques. Designed to bring students to advanced level competence in Pascal programming. Integral nonscheduled laboratory.

R.3113. INTRODUCTION TO PROGRAMMING IN C. (190202) (4 cr; limited to 65 students; prereq 3101 or 3102 or any programming experience and precalculus or #; 1300-1500 TTh, 1300-1400 F; EE/CSci 3111) Intensive introduction to syntax and semantics of the C language, with introduction to UNIX tools for implementing C programs. Students will write programs, use debugging aids, and build libraries.

R.3316. THE STRUCTURE OF COMPUTER PROGRAMMING I. (790199) (4 cr; limited to 50 students; prereq 1 qtr. calculus or #; §3106; lec 1030-1230 TW, 1030-1130 Th, AmundH 240; rec 1145-1245 Th, AmundH 240) Different programming paradigms as a formal way of expressing computer algorithms and data. Procedures, recursion and iteration as algorithmic development techniques. Use of abstractions and modularity. Scheme language used for illustration of ideas and lab problems.

R.3321. ALGORITHMS AND DATA STRUCTURES I. (291512) (4 cr; limited to 50 students; prereq 3311, 3316 or #; §3105, §3121; lec 1030-1230 TW, 1030-1130 Th, EE/CSci

COURSE DESCRIPTIONS

3111, rec 1145-1245 Th, EE/CSci 3111)

Fundamental data structures with some of the rudimentary computer algorithms. Implementation of data structures and their operations as abstract data types. Study of C++ with emphasis on implementation of data types and control structures.

R.3327. INTRODUCTION TO THE ORGANIZATION OF COMPUTER SYSTEMS. (290201) (4 cr; limited to 40 students; prereq 3316 or 3121 or #; §3107, 5101; lec 0800-1000 TTh, 0915-1015 F, EE/CSci 3111 rec 1030-1130 F, EE/CSci 3111)

Organization of hardware and software systems that support computer programming and program execution. Symbolic assembly language used to study the mapping of application programs and data into the underlying hardware. Ideas illustrated in assembly language programs (currently Motorola 6800). Meets with 5101.

R.5101. INTRODUCTION TO THE ORGANIZATION OF COMPUTER SYSTEMS. (991514) (4 cr; limited to 20 students; prereq non Computer Science major, 3316 or 3121 or #, §3107, 3327; lec 0800-1000 TTh, 0915-1015 F, rec 1030-1130 F, EE/CSci 3111)

See 3327. Meets with 3327.

R.5106. STRUCTURE OF HIGH LEVEL LANGUAGES. (986250) (4 cr; limited to 50 students; prereq 3322, 5102, or #; 1030-1230 TTh, 1145-1245 F; EE/CSci 3115)

Formal definition of the syntax and semantics of programming languages; semantics both by means of interpreters and by using the axiomatic approach. Concepts underlying programming languages and their realizations in a selected group of languages. Program description at compile time and execution time.

R.5301. NUMERICAL COMPUTATION. (885060) (4 cr; limited to 50 students; prereq Math 3261 or #...a knowledge of Pascal or FORTRAN is assumed; 1300-1500 TTh, 1300-1400 F; EE/CSci 3115)

Floating point arithmetic and rounding errors. Iterative methods. Numerical solution of nonlinear equations. Newton's method. Direct methods for linear systems of equations. Gauss elimination. Factorization methods. Interpolation and approximation. Numerical integration and differentiation. Introduction to numerical solution of ordinary differential equations.

8777. THESIS CREDITS: MASTERS. (988807) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388956) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.3101. AN INTRODUCTION TO COMPUTER APPLICATIONS FOR SCIENTISTS AND ENGINEERS. (391517) (4 cr; limited to 50 students; prereq 1 quarter calculus; lec 0915-1015 M, 0915-1115 WF, EE/CSci 3111, rec 1030-1130 M, EE/CSci 3111)

Algorithm development and the principles of computer programming using the Fortran language, emphasizing numerical methods for science and engineering applications. Integral open laboratory.

R.3121. SURVEY OF DATA STRUCTURES AND ALGORITHMS. (790204) (4 cr; limited to 50 students; prereq 3102 or 3113 or #; §3105, 3321; 1030-1230 TTh, EE/CSci 3111, 1030-1130 F; EE/CSci 3115)

Fundamental structures of computer science, including induction, mathematical analysis of computational complexity, and the definition and implementation of selected data structures along with their fundamental operations. Implementation of data structures in computer programs.

R.3317. THE STRUCTURE OF COMPUTER PROGRAMMING II. (390206) (4 cr; limited to 50 students; prereq 3316; lec 1300-1500 TTh, 1300-1400 M, EE/CSci 3111; rec 1415-1515 M, EE/CSci 3111)

Advanced programming paradigms. Object-oriented programming, logic programming, and pattern matching. Generic operators, local variables, and objects as ways of encapsulating different conceptual parts of a program. Scheme language is used for illustration of ideas and lab problems.

R.3322. ALGORITHMS AND DATA STRUCTURES II. (091519) (4 cr; limited to 40 students; prereq 3321 or #; §5121; lec 0915-1015 M, 0915-1115 TTh, EE/CSci 3115, rec 1030-1130 M, EE/CSci 3115)

Fundamental paradigms for algorithm design with the supporting data structures. Complexity correctness analysis, and lower bound theory. Implementation of selected algorithms and data structures using C++ language. Meets with 5121.

R.5121. ALGORITHMS AND DATA STRUCTURES II. (191521) (4 cr; limited to 20 students, prereq non CSci majors only, 3321, §3322; lec 0915-1015 M, 0915-1115 TTh, EE/CSci 3115, rec 1030-1130 M, EE/CSci 3115)

See 3322. Meets with 3322.

8777. THESIS CREDITS: MASTERS. (088894) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889013) (1-36 cr [max 11 cr per summer term])

Control Science and Dynamical Systems (CSDy)

109 Vincent Hall. 625-8883 (School of Mathematics) Institute of Technology

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (888959) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (489015) (1-36 cr [max 11 cr per summer term])

Curriculum and Instructional Systems (CISy)

125 Peik Hall. 625-6372 (Curriculum and Instruction) College of Education

FIRST TERM

R.5100. CURRICULUM AND INSTRUCTIONAL SYSTEMS WORKSHOPS:

Sec 1, Peer Coaching—June 15-30. (691684) (1-3 cr [max 9 cr]; limited to 30 students; 0915-1130 MTWThF; JonesH 4; A-F only) Anderson

Concepts and skills of peer coaching. Establishing the peer coaching relationship, planning for and making classroom observations, and providing feedback. Various forms of peer coaching and their rationale. Skills for helping colleagues become more reflective about their own teaching. This offering for 3 credits.

Sec 2, OBE Curricular and Instructional Issues—June 25 (0800-1030), June 28 (0800-1030) plus 1 Saturday in Fall Quarter. This offering for 1 credit. See section on Special Programs.

R.5151. FOUNDATIONS OF INSTRUCTIONAL SYSTEMS. (191947) (3 cr; limited to 25 students; 0800-1100 MW; PeikH 48; A-F only) Hooper

Orientation to instructional systems issues. Examination of the history, issues, and research base of instructional systems. Course is the first in a three-quarter sequence focusing on instructional systems research and methodology.

R.5206. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS—June 15-July 15. (985373) (3 cr; §Elem 5140; limited to 5 students; 0800-1100 TTh; PeikH 355; A-F only) Stochl

Uses of microcomputers to enhance instruction; applications in language

arts, mathematics, science, social studies; evaluation of available programs. Meets with Elem 5140.

R.5208. COMPUTER-BASED TOOLS FOR TEACHERS. (989164) (3 cr; prereq 5003 or 5206, or #; limited to 25 students; 0800-1100 TTh; EdHAN 62; S-N optional) Hooper

The use of microcomputers for instructional material generation, record keeping, and classroom management tasks in K-12 classrooms.

5509. DIRECTED INDIVIDUAL STUDY. (1-6 [max 6 cr]; prereq #; A-F only) Review of literature in research and theory related to issues in curricular instructional systems. Sec 23, (290330) Anderson

Sec 24, (789165) Hooper

R.5600. INTRODUCTION TO CURRICULUM SYSTEMS—June 15-30. (887973) (3 cr; limited to 30 students; 1300-1515 MTWThF; PeikH 40; A-F only) Carlson

Principles of curriculum design, forces influencing goals and curriculum planning, curricular trends and issues, traditional and emergent curricular designs, current proposals for change, and a model for curriculum planning.

8501. PROBLEMS: CURRICULUM AND INSTRUCTIONAL SYSTEMS. (190331) (Cr ar; prereq #) Hooper

Individual empirical investigation.

8700. CURRICULUM AND INSTRUCTIONAL SYSTEMS FIELD EXPERIENCE. (3-6 cr [max 6 cr]; prereq #; hrs ar) Internship experience in an educational setting; planning, implementing, and supervising curriculum or instructional change. Sec 23, (990329) Anderson

Sec 24, (589166) Hooper

SECOND TERM

R.5600. INTRODUCTION TO CURRICULUM SYSTEMS—July 22-August 6. (188652) (3 cr; limited to 30 students; 1300-1515 MTWThF; PeikH 46; A-F only) Carlson

See First Term.

R.8100. CURRICULUM AND INSTRUCTION CORE: CRITICAL EXAMINATION OF CURRICULAR CONTEXTS—July 22-August 6. (888217) (3 cr; prereq PhD student or #; limited to 25 students; 1300-1515 MTWThF; PeikH 155; A-F only) Gardner

Theoretical principles and major empirical findings in the core discipline of generic curriculum decision making; relationships among curricular processes, instructional design variables, and interactive teaching behavior.

D

Dance (Dnce)

1056 Norris Hall. 624-5060
(Theatre Arts and Dance)
College of Liberal Arts

FIRST TERM

R.1110. TOPICS IN DANCE THEORY.

Sec 1, Tap, (989956), 1 cr, limited to 15 students, 1010-1110 MW, PeikG G65

The basics of tap; working on fundamental syncopation and various rhythms.

Sec 2, Clogging, (789957), 1 cr; limited to 15 students; 0830-1000 MW, PeikG G65

The basics of clogging; working on fundamental movements and rhythms.

Sec 3, Beginning Jazz Technique, (589958), 1 cr, limited to 18 students; prereq audition, #; 0830-1000 MW, NorrisH M153

Basic technique of jazz dance for those at a high beginning/low intermediate level.

Sec 4, Beginning Ballet I, (691488), 1 cr; limited to 18 students; 1010-1140 MW, NorrisH 67

To develop an awareness of line, design, balance, body position and footwork in classical ballet.

Sec 5, Beginning Modern Technique, (491489), 2 cr, limited to 18 students; prereq audition, #; 0830-1000 TThF, NorrisH 67, Loeb

Sec 6, Contact Improv, (092055), 1 cr, limited to 18 students; 1010-1140 TTh, NorrisH M153, Loeb
Basic principles of contact improvisation. Students will learn to follow a moving point of contact, sharing weight, use of flow and momentum, grounding, falling and flying.

R.3330. TOPICS IN DANCE THEORY.

Sec 1, Intermediate Jazz Technique, (389637), 1 cr, limited to 18 students; prereq audition, #; 0830-1000 TTh, NorrisH M153A

Basic technique of jazz dance for those at a high beginning/low intermediate level. Basic skills of tap dance; working on syncopation, clarity of movement, and tone and texture.

Sec 2, Intermediate Tap, (189955), 1 cr, limited to 15 Students, 1010-1110 TTh, PeikG G65

Sec 3, Intermediate Ballet I, (992047), 1 cr, limited to 18 students; prereq audition, #; 1010-1140 TTh, NorrisH 67

Concentration on placement, alignment, increasing vocabulary and developing strength.

R.5910. TOPICS IN DANCE.

Sec 1, Choreographic and Dance Practicum in Musical Theatre, (189638), 2 cr [max 12 cr], limited to 18 students; prereq #, Δ; 1140-1310 MTTh, NorrisH M153A, Chvala

Performance of dance theatre work constructed by faculty.

Dental Hygiene (DH)

9-436 Moos Tower, 625-9121
School of Dentistry

FIRST TERM

R.3501. ADVANCED DENTAL HYGIENE CLINICAL EXPERIENCE 1. (191401) (1-6 cr; limited to 7 students; prereq 3195; S-N only)
Advanced clinical dental hygiene experience to prepare the student for private practice employment, continued education, and/or other career opportunities.

R.3502. ADVANCED DENTAL HYGIENE CLINICAL EXPERIENCE II. (291400) (1-6 cr; limited to 7 students; S/N only)
See 3501.

Dentistry (Dent)

15-209 Moos Tower. 625-9982
School of Dentistry

FIRST TERM

5009. FIXED PROSTHODONTICS: INDEPENDENT STUDY. (190216) (Cr and hrs ar)

5055. HEALTH ECOLOGY: INDEPENDENT STUDY. (990217) (Cr and hrs ar)

5070. HEALTH ECOLOGY ELECTIVE. (086417) (Cr ar) Allows highly motivated students to undertake study and receive academic credit for activities in special-interest areas.

5155. OPERATIVE DENTISTRY LABORATORY. (889464) (3 cr; 5154-5155†; prereq 5154; A-F only)
Techniques and principles of cavity preparation, manipulation of restorative materials, and instrumentation.

5158. OPERATIVE DENTISTRY: INDEPENDENT STUDY. (790218) (Cr and hrs ar)

5183. PATIENT MANAGEMENT IV. (590219) (1 cr; prereq 5182; S-N only)
Educational setting (clinic) for integration, application, and development of skills taught in Physical Evaluation I and II and Patient Management II.

5250. ORAL PATHOLOGY: INDEPENDENT STUDY. (990220) (Cr and hrs ar)

5320. ORAL SURGERY: INDEPENDENT STUDY. (790221) (Cr and hrs ar)

5335. ORAL SURGERY CLINIC ELECTIVE ROTATION. (590222) (Cr and hrs ar) Development of

examination, diagnosis, treatment planning, and clinical skills in oral surgery.

5385. ORTHODONTICS: INDEPENDENT STUDY. (390223) (Cr and hrs ar)

5420. PEDIATRIC DENTISTRY: INDEPENDENT STUDY. (190224) (Cr and hrs ar)

5460. PERIODONTOLOGY: INDEPENDENT STUDY. (090225) (Cr and hrs ar)

5553. REMOVABLE PROSTHODONTICS: INDEPENDENT STUDY. (890226) (Cr and hrs ar)

5602. BIOMATERIALS: INDEPENDENT STUDY. (690227) (Cr and hrs ar)

5630. ENDODONTICS: INDEPENDENT STUDY. (490228) (Cr and hrs ar)

5654. ORAL ANATOMY: INDEPENDENT STUDY. (290229) (Cr and hrs ar)

5680. ORAL BIOLOGY: INDEPENDENT STUDY. (589510) (ar cr)

5755. OCCLUSION: INDEPENDENT STUDY. (690230) (Cr and hrs ar; S-N only)

5785. ORAL RADIOLOGY: INDEPENDENT STUDY. (490231) (Cr and hrs ar)

5807. TREATMENT PLANNING: INDEPENDENT STUDY. (290232) (Cr and hrs ar)

5900. DENTAL CLINIC-June 21-July 30. (390688)(Cr ar; 0900-1200 MTWThF, 1315-1600 MTWThF, MoosT 8327, 9346)

5945. GERIATRIC HOSPITAL DENTISTRY. (189468) (Cr ar)
Rotations at the University of Minnesota Hospital Dental Clinic and/or the Minneapolis Veterans Administration Medical Center Dental Clinic. Management of elderly patients in acute care settings. Dental management of patients compromised by medical therapies such as radiation treatment or chemotherapy, as well as patients with acute illness.

5989. ADVANCED CLINICAL GERIATRIC DENTISTRY. (389542) (Cr ar)
Practical clinical experience in examination, diagnosis, treatment planning, and treatment of older adult patients in the dental clinic at the Amherst H. Wilder Senior Health Clinic.

5990. FIELD EXPERIENCE: ADMINISTRATION IN A MULTIDISCIPLINARY HEALTH CENTER. (389511) (2 cr)
Administration and management concerns related to the development of a dental service in a

multidisciplinary care facility for older adults. Field placement and projects at the Amherst H. Wilder Senior Health Clinic and affiliated residences.

8129. TOPICS AND PROBLEMS IN DENTAL EDUCATION. (891408)(ar cr; prereq #)
Independent study for advanced work in student learning, instructional development, curriculum planning, student testing and evaluation, and academic administration, where these areas and their interfaces are applied directly to professional dental education. Applying and extending concepts learned in 8126, 8127.

8441. SEMINARS IN TMJ AND CRANIOFACIAL PAIN. (888363) (1 cr; A-F only)
Advanced topics on theories and application of recently developed techniques of data collection, diagnostic strategies, and management for TMJ and craniofacial pain problems.

8442. ADVANCED CLINICAL TMJ AND CRANIOFACIAL PAIN. (189543) (1-4 cr; A-F only)
Interdisciplinary study of patients with TMJ and craniofacial pain using techniques of assessment currently being researched; background and clinical knowledge of the patient synthesized with current literature on management. Management program is developed, discussed with faculty, and implemented; effects of treatment and compliance are reviewed at each follow-up appointment.

8443. CURRENT LITERATURE IN TMJ AND CRANIOFACIAL PAIN. (688364) (1 cr; prereq #; A-F only)
Review of current literature in TMJ and craniofacial pain and how it relates to past literature, theories on pain, and philosophies of management.

8777. THESIS CREDITS: MASTERS. (588812) (1-16 cr [max 11 cr per summer term])

FIRST AND SECOND TERM: TEN-WEEK COURSES (Register once in Term I)

5500. EVALUATION IN OPERATIVE DENTISTRY. (990945)(1 cr; prereq Δ; S-N only)

5930. HENNEPIN COUNTY MEDICAL CENTER CLINICAL ORAL AND MAXILLOFACIAL SURGERY. (689532) (Cr ar; S-N only)
Clinical experience in oral and maxillofacial surgery including simple and surgical extraction, management of odontogenic infections, repair of oral lacerations, and dental trauma, assisting in management of maxillofacial trauma, and orthognathic procedures.

5935. HENNEPIN COUNTY MEDICAL CENTER CLINICAL HOSPITAL DENTISTRY I. (489533)

COURSE DESCRIPTIONS

(10 cr; S-N only)
Clinical dentistry practiced in the hospital setting. Dental management of medically compromised patients, general dental treatment for patients in the O.R. under general anesthesia, and general dentistry with I.V. sedation. Rotations in general anesthesia, internal medicine, and pediatric dentistry, and experience in diagnosis and management of TMJ pain.

5936. HENNEPIN COUNTY MEDICAL CENTER CLINICAL HOSPITAL DENTISTRY II. (289534) (10 cr; S-N only)
See 5935.

5937. HENNEPIN COUNTY MEDICAL CENTER CLINICAL HOSPITAL DENTISTRY III. (189535) (10 cr; S-N only)
See 5935.

5950. ADVANCED GENERAL DENTISTRY SEMINAR I. (385524) (Cr ar; S-N only)
Clinical seminars with an emphasis on treatment planning, case presentation, techniques and materials, comprehensive oral health care and maintenance, and issues in practice management. Correlated with concurrent clinical experiences.

5955. ADVANCED GENERAL DENTISTRY CLINICAL ADMINISTRATION I. (989536) (Cr ar; S-N only)
Field experience in community dental clinic practice and administration.

5960. ADVANCED GENERAL DENTISTRY CLINIC I. (789537) (Cr ar; S-N only)
Comprehensive oral health care delivered in a variety of settings, with emphasis on complex restorative care, coordinating care with dental and medical specialists, special needs patients, and advanced techniques.

5964. ADVANCED GENERAL DENTISTRY CLINIC V. (589538) (Cr ar; S-N only)
Comprehensive oral health care delivered in a variety of settings, with emphasis on complex restorative care, coordinating care with dental and medical specialists, special needs patients, and advanced techniques.

5970. GENERAL PRACTICE SEMINAR I. (185184) (Cr ar; S-N only)
A sequence of lectures, discussions, and seminars on topics, related to current dental practice. Correlated with clinical experiences.

5974. GENERAL PRACTICE CLINICAL ADMINISTRATION I. (389539) (Cr ar; S-N only)
Field experience in hospital dental clinic administration for residents.

5980. GENERAL PRACTICE CLINIC I. (789540) (Cr ar; S-N only)
A series of planned experiences in the clinical disciplines of dentistry. Emphasis on patient care.

5984. GENERAL PRACTICE CLINIC V. (589541) (Cr ar; S-N only)
A series of planned experiences in the clinical disciplines of dentistry. Emphasis on patient care.

SECOND TERM

5009. FIXED PROSTHODONTICS: INDEPENDENT STUDY. (190233) (Cr and hrs ar)

5055. HEALTH ECOLOGY: INDEPENDENT STUDY. (990234) (Cr and hrs ar)

5070. HEALTH ECOLOGY ELECTIVE. (787108) (ar cr)
See First Term.

5158. OPERATIVE DENTISTRY: INDEPENDENT STUDY. (790235) (Cr and hrs ar)

5250. ORAL PATHOLOGY: INDEPENDENT STUDY. (590236) (Cr and hrs ar)

5320. ORAL SURGERY: INDEPENDENT STUDY. (390237) (Cr and hrs ar)

5385. ORTHODONTICS: INDEPENDENT STUDY. (190238) (Cr and hrs ar)

5420. PEDIATRIC DENTISTRY: INDEPENDENT STUDY. (090239) (Cr and hrs ar)

5460. PERIODONTOLOGY: INDEPENDENT STUDY. (985051) (Cr and hrs ar)

5553. REMOVABLE PROSTHODONTICS: INDEPENDENT STUDY. (390240) (Cr and hrs ar)

5602. BIOMATERIALS: INDEPENDENT STUDY. (785049) (Cr ar)

5630. ENDODONTICS: INDEPENDENT STUDY. (190241) (Cr and hrs ar)

5654. ORAL ANATOMY: INDEPENDENT STUDY. (090242) (Cr and hrs ar)

5680. ORAL BIOLOGY: INDEPENDENT STUDY. (890243) (Cr and hrs ar)

5755. OCCLUSION: INDEPENDENT STUDY. (690244) (Cr and hrs ar; S-N only)

5785. ORAL RADIOLOGY: INDEPENDENT STUDY. (490245) (Cr and hrs ar)

5807. TREATMENT PLANNING: INDEPENDENT STUDY. (290246) (Cr and hrs ar)

5900. DENTAL CLINIC. (089575) (Cr ar)

5938. HENNEPIN COUNTY MEDICAL CENTER CLINICAL

HOSPITAL DENTISTRY IV. (889576) (5 cr; S-N only) See 5935.

5945. GERIATRIC HOSPITAL DENTISTRY. (190247) (Cr ar)
See First Term.

5950. ADVANCED GENERAL DENTISTRY SEMINAR I. (591208) (ar cr; S-N only)
See First Term.

5960. ADVANCED GENERAL DENTISTRY CLINIC I. (391209) (ar cr; S-N only)
See First Term.

5970. GENERAL PRACTICE SEMINAR I. (191205) (ar cr; S-N only)
See First Term.

5980. GENERAL PRACTICE CLINIC I. (991206) (ar cr; S-N only)
See First Term.

5989. ADVANCED CLINICAL GERIATRIC DENTISTRY. (689577) (Cr ar)
Practical clinical experience in examination, diagnosis, treatment planning, and treatment of older adult patients in the dental clinic at the Amherst H. Wilder Senior Health Clinic.

5990. FIELD EXPERIENCE: ADMINISTRATION IN A MULTIDISCIPLINARY HEALTH CENTER. (189512) (2 cr)
See First Term.

8129. TOPICS AND PROBLEMS IN DENTAL EDUCATION. (691409) (ar cr; prereq #)
See First Term.

8441. SEMINARS IN TMJ AND CRANIOFACIAL PAIN. (188370) (1 cr; prereq #; A-F only)
See First Term.

8442. ADVANCED CLINICAL TMJ AND CRANIOFACIAL PAIN. (489578) (1-4 cr; prereq #; A-F only)
See First Term.

8443. CURRENT LITERATURE IN TMJ AND CRANIOFACIAL PAIN. (988371) (1 cr; prereq #; A-F only) See First Term.

8777. THESIS CREDITS: MASTERS. (288898) (1-16 cr [max 11 cr per summer term])

Dermatology (Derm)

4240 Phillips-Wangensteen Building.
625-8625
Medical School

FIRST AND SECOND TERMS: TEN-WEEK COURSES
(Register once in Term I)

5184. SPECIAL COURSE IN DERMATOLOGY. (786458) (Cr ar)
Meighan

8225. CLINICAL DERMATOLOGY. (986460) (Cr ar) Lynch, Dahl, others

8226. CLINICAL SEMINAR. (786461) (Cr ar; 1300-1630 WF; PWB 4-272) Lynch, Dahl, others
Conference twice weekly on diagnosis and treatment of skin conditions.

8227. HISTOLOGY OF THE SKIN. (586462) (Cr ar; 1530-1630 WF; PWB 4-272) Orkin, others
Includes histopathology, histochemistry, and fluorescence microscopy.

8228. RESEARCH: DERMATOLOGY AND RELATED BASIC SCIENCES. (386463) (Cr ar) Dahl, Hordinsky

8229. ELECTRON MICROSCOPY IN DERMATOLOGY. (186464) (Cr ar) Zelickson, others

8230. FUNCTIONAL BIOLOGY OF THE SKIN. (086465) (Cr ar) Dahl, Lynch

8231. CLINICS IN DERMATOLOGY FOR NON-DERMATOLOGISTS. (886466) (Cr ar) Lynch

8232. SEMINAR: DERMATOLOGIC HISTOPATHOLOGY AND MYCOLOGY. (686467) (Cr ar) Rest

SECOND TERM

5182. PRECEPTORSHIP IN DERMATOLOGY. (288674) (Cr ar; prereq regis med stu)

Design (Dsgn)

240 McNeal Hall, St. Paul. 624-9700
(Design, Housing, and Apparel)
College of Human Ecology

FIRST TERM

3323. DESIGN PROCESS: DRAWING II. (991402) (4 cr; limited to 20 students; prereq 1323 or 1523, Appl Dsgn, AscID, Cos Dsgn, Dsgn Comm, Hsg, Int Dsgn, Ret Mdse, or TexC student, pass portfolio review, Δ; \$3523; 0800-1130 MWF, McNH 258)
Advanced problem solving in drawing with application of design elements and principles. Assignments done both in and out of studio.

R.5303. FIELD EXPERIENCE IN DESIGN COMMUNICATION. (291932) (1-4 cr; limited to 20 students; \$3584; prereq completion of at least one-half of professional sequence and plan to be submitted and approved in advance by advisor and employer, #; S-N only)
Supervised work experience relating activity in business, industry, or government to the student's area of study. Integrative paper is required. Written consent of faculty supervisor required before registration.

SECOND TERM

R.5303. FIELD EXPERIENCE IN DESIGN COMMUNICATION. (191933) (1-4 cr; limited to 20 students; \$3584; prereq completion of at least one-half of professional sequence and plan to be submitted and approved in advance by advisor and employer, #; S-N only) See First Term.

Design, Housing, and Apparel (DHA)

240 McNeal Hall, St. Paul. 624-9700
College of Home Economics

FIRST TERM

1101. INTRODUCTION TO THE DESIGNED ENVIRONMENT. (191446) (3 cr; 1000-1200 MWF; BorH 335) Guerin
Analysis of the interaction between people and the designed environment, both at the micro and macro levels.

5103. FIELD STUDY: NATIONAL/INTERNATIONAL. (391985) (1-15 cr [max 15]; prereq #)
Faculty directed field study in a national or international setting.

5170. SPECIAL TOPICS IN DESIGN, HOUSING, AND APPAREL
Sec 1. History of Visual Communication. (991447) 4 cr; 1500-1800 MW, McNH 33, Hemmis and Martinson
An analysis of visual communication concentrating on 19th and 20th centuries; including technological, cultural, and aesthetic influences on graphic design.
Sec 2. Interior Design Theory and Criticism. (991934) 3 cr, 0800-1011 MWF, McNH 216, Erickson and Guerin
Various design theories will be examined to establish a framework for criticism. Existing interior environments will be studied to explain the designer's purpose, identify the designer's problem solving process, and describe the interaction of the human and the designed environment. Field investigation will be conducted in the Twin Cities to test design theories and develop critical inquiry methods.

8777. THESIS CREDITS: MASTERS. (888816) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088961) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5103. FIELD STUDY: NATIONAL/INTERNATIONAL. (091987) (1-15 cr [max 15]; prereq #)
See First Term.

5170. SPECIAL TOPICS IN DESIGN, HOUSING, AND APPAREL: DRESS AND GENDER—Special term, August 16-30. (591449) (4 cr; 0800-1200

MTWThF, McNH 376) Eicher
Dress as a significant marker of gender identity. Historical and contemporary ethnographic case studies. Analysis of relationship between socio-cultural change and gendered dress.

8777. THESIS CREDITS: MASTERS. (888900) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889044) (1-36 cr [max 11 cr per summer term])

Dutch (Dtch)

231 Folwell Hall. 625-2080
College of Liberal Arts

FIRST AND SECOND TERM: TEN-WEEK COURSE (Register once in Term I)

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must enroll in all three courses and may not enroll in other summer courses. Prospective students should talk to an adviser before registering for intensive language courses.

R.1101-1102-1103. BEGINNING DUTCH. (15 cr for both terms; \$1110; limited to 23 students; 0900-1245 MTWThF; FolH 240) VanderSanden
Structure, listening and reading comprehension, writing, speaking.
R.1101, Sec 5, (590303) June 15-July 8, 5 cr
R.1102, Sec 5, (390304) July 9-August 2, 5 cr
R.1103, Sec 5, (190305) August 3-25, 5 cr

E

East Asian Studies (EAS)

Area Studies Programs. 624-8543
(East Asian Studies)
College of Liberal Arts

FIRST TERM

3468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (588437) (4 cr, \$Hist 3468, Hist 5468; 0915-1015 MTWThF; HHCtr 30)
Farmer
Introduction to Marxism in China, rise of Communist Party, and development of rural guerilla movement. Career of Mao Tse-tung and developments in People's Republic; the Great Leap, Cultural Revolution, Gang of Four. Meets with Hist 3468 and Hist 5468.

R. 3481. MODERN JAPANESE SOCIETY. (192037)(4 cr; limited to 35 students; prereq #; \$Soc 3481; 1000-1230 TTh; Bleg 330)Broadbent
Japanese social institutions including family, education, business and labor relations, government, and the status of women. How they differ from the West and have contributed to Japanese economic success. Meets with Soc 3481.

3970. DIRECTED STUDIES. (287640) (1-15 cr; prereq #, Δ, □) Staff

5970. DIRECTED STUDIES. (489483) (1-15 cr; prereq #, qualified sr and grad stu may reg for work on tutorial basis)
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS. (688817) (1-16 cr [max 11 cr per summer term])

SECOND TERM

3474. RISE OF MODERN JAPAN: 1853-1914. (091679) (4 cr; \$ Hist 3474, 1030-1130 MTWThF; BlegH 205) Marshall
The Meiji Revolution from Commodore Perry to eve of World War I: origins of constitutional monarchy, industrial economy, Western influence, and modern cultural change. Meets with Hist 3474.

3970. DIRECTED STUDIES. (187641) (1-15 cr; prereq #, Δ, p) Staff

5970. DIRECTED STUDIES. (489791) (1-15 cr; prereq #, qualified sr and grad stu may reg for work on tutorial basis)
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS. (488902) (1-16 cr [max 11 cr per summer term])

Ecology, Evolution, and Behavior (EEB)

109 Zoology. 625-4466
College of Biological Science (See also Itasca Biology Program in Special Program section.)

FIRST TERM

R.3001. INTRODUCTION TO ECOLOGY. (4 cr; each rec limited to 20 students; open to jrs and above but not biology majors; lect 0915-1015 MWF; BorH 365)
Basic concepts in ecology dealing with organization, development, and functioning of ecosystems; population growth and regulation. Human impact on such systems.
Rec 1, (489371) 0800-0900 TTh, Ecology 150A
Rec 2, (289372) 0915-1015 TTh, Ecology 150A

R.5834. FIELD ORNITHOLOGY—June 15-July 20. (189373) (5 cr; limited to 15 students; prereq course in general biology including study of

zoology, Δ; 0800-1700 MTh; offered at Itasca) Kaufmann
Emphasis on the breeding season, biology, and behavioral ecology of birds in the Itasca Park region. Field trips to a variety of habitats to learn bird identification and to observe and practice techniques for conducting field studies. Laboratory sessions investigate family distinctions and species identification. Individual class projects. Classes often begin at 5:00 a.m. with a break during the day.

R.5839. FIELD STUDIES IN MAMMALOLOGY—June 15-July 20. (091973) (5 cr; limited to 20 students, prereq college level course in biology which includes study of animals, or instructor permission, department permission; A/F only; 0800-1700 TF; taught at Itasca) Christian
A field course emphasizing techniques in study of small mammals. Lectures and field projects will emphasize identification distributions, community interactions, ecophysiology and population ecology.

5970. DIRECTED STUDIES. (989374) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (789375) (Cr ar; prereq #, Δ) Staff
Laboratory or field investigation of selected areas of research.

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (589376) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (389377) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189378) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.5817. VERTEBRATE ECOLOGY—July 22-August 25. (089379) (5 cr; limited to 15 students; prereq course in ecology, Δ; 0800-1700 TF; offered at Itasca) Tester
Field studies on vertebrate populations and their relationships to local environments; habitat analysis and ecological research methods. Students working individually or in teams investigate behavioral and ecological aspects of selected vertebrates. Research-oriented course supplemented with lectures and field trips.

R. 5852. ECOLOGICAL GENETICS—July 22-August 25. (891974) (5 cr; limited to 15 students; prereq college level course in general biology or genetics or instructor permission; A/F only; 0800-1700 MTh, taught at Itasca) Staff
Introduction to basic population and quantitative genetics; variation in natural populations; electrophoretic analysis of field samples; reconstructing phylogeny; genetic studies of population structure, and introduction to mitochondrial DNA analysis.

COURSE DESCRIPTIONS

5970. DIRECTED STUDIES. (389380) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (189381) (Cr ar; prereq #, Δ) Staff See First Term.

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (089382) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (889383) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689384) (1-36 cr [max 11 cr per summer term])

Economics (Econ)

1035 Management/Economics Building, 625-6353
College of Liberal Arts
(See also Public Affairs.)

FIRST TERM

R.1101. PRINCIPLES OF MICROECONOMICS. (4 cr; \$1104; each section limited to 30 students; prereq plane geometry and intermediate algebra at GC 0623 and GC 0631 level)

Demand and supply; competition and monopoly; the distribution of income. Sec 1, (388438) 0800-0900 MTWThF, BlegH 115

Sec 2, (188439) 0915-1015 MTWThF, BlegH 115

Sec 3, (588440) 1030-1130 MTWThF, BlegH 225

Sec 4, (388441) 1145-1245 MTWThF, BlegH 225

Sec 5, (188442) 1300-1400 MTWThF, BlegH 115

R.1102. PRINCIPLES OF MACROECONOMICS. (4 cr, \$1105; each section limited to 30 students; prereq 1101 or equiv, plane geometry and intermediate algebra at GC 0623 and GC 0631 level)

National income; money and banking; business cycles; international trade.

Sec 1, (088443) 0800-0900 MTWThF, BlegH 205

Sec 2, (888444) 0915-1015 MTWThF, BlegH 135

Sec 3, (688445) 1030-1130 MTWThF, BlegH 205

R.3101. MICROECONOMIC THEORY. (885592) (4 cr; \$3105; limited to 50 students; prereq 1101, 1102 or equiv, 1 qtr calculus; 1030-1130 MTWThF; BlegH 230)

Behavior of households, firms, and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions.

R.3102. MACROECONOMIC THEORY. (685593) (4 cr; limited to 35 students; prereq 3101 or equiv; 1145-1245 MTWThF; BlegH 205)

Determinants of national income, employment, and price level; aggregate consumption, investment,

and government demand; the money market; the labor market.

R.3103. WELFARE ECONOMICS. (888234) (4 cr; limited to 35 students; prereq 3101 or equiv; 1030-1130 MTWThF; BlegH 130)

Economic efficiency and the conditions necessary to sustain it. Conflicts between efficiency and income distribution goals. How market structure and public policies increase or decrease efficiency.

R.3501. LABOR ECONOMICS. (191681) (4 crs; \$5531; limited to 20 students; not open to economics majors; prereq 1101, 1102 or equiv; 0915-1015 MTWThF; BlegH 230)

Role of labor in economy; labor as a factor of production, population and the labor force; economics of labor markets; labor market institutions; theories of wages and employment; unions and collective bargaining; public policy. Meets with 5531.

R.3601. INDUSTRIAL ORGANIZATION AND ANTI-TRUST POLICY. (488446) (4 cr; \$5631; limited to 15 students, not open to economics majors; prereq 1101, 1102 or equiv; 0800-0900 MTWThF; BlegH 145)

Economic aspects of antitrust and related policies. Relations between market structure and economic efficiency and welfare. Economic origins of monopoly and other restraints on competition. Purposes and effects of antitrust and related legislation. Meets with 5631.

R.3701. MONEY AND BANKING. (285130) (4 cr, \$5701, \$5721; limited to 50 students; prereq 1101, 1102 or equiv; not open to economics majors; 1145-1245 MTWThF, BlegH 230)

Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system, and monetary policy.

R.3751. FINANCIAL ECONOMICS I. (185470) (4 cr; limited to 35 students; prereq 3101 or 3105 or equiv, 1 qtr statistics, 1 qtr calculus; 1030-1130 MTWThF; BlegH 150)

Financial decisions of firms and investors. Determination of interest rates and asset prices. The role of risk and uncertainty. Emphasis on economic models rather than the details of financial institutions.

3951. MAJOR PROJECT SEMINAR. (089639) (2 cr; prereq 3101, 3102, 3103 or equiv)

3970. DIRECTED STUDIES. (485594) (Cr ar; prereq #, Δ, □) Guided individual reading or study in areas not available in regular course offerings.

R.5301. ECONOMIC DEVELOPMENT. (285595) (4 cr, \$5331; limited to 35 students; prereq 1101, 1102 or equiv; not open to economics majors; 1145-1245 MTWThF; BlegH 145)

Economic growth in low income countries. Theory of aggregate and per

capita income growth. Population growth, productivity increases, and capital formation. Allocation of resources between consumption and investment and among sectors. International assistance and trade. Meets with 5331.

R.5331. ECONOMIC DEVELOPMENT. (185596) (4 cr, \$5301; limited to 25 students; prereq 3101, 3102 or equiv; 1145-1245 MTWThF; BlegH 145)

See 5301. Meets with 5301.

R.5401. INTERNATIONAL ECONOMICS. (985597) (4 cr, \$5431, \$5432; limited to 40 students; not open to economics majors; prereq 1101, 1102 or equiv; 1030-1130 MTWThF; BlegH 125)

Explanations of trade patterns. Commercial policy and international capital movements. Balancing international receipts and payments, the role of exchange rates, international monetary reform.

R.5431. INTERNATIONAL TRADE. (790560) (4 cr; \$5401 limited to 35 students; prereq 3101, 3102, 3103 or equiv; 0915-1015 MTWThF; BlegH 225)

Explanations of trade patterns. Commercial policy and international capital movements.

R.5531. LABOR ECONOMICS. (091682) (4 cr; \$3501; limited to 20 students; prereq 3101, 3102 or equiv; 0915-1015 MTWThF; BlegH 230)

See 3501. Meets with 3501

R.5631. INDUSTRIAL ORGANIZATION AND ANTI-TRUST POLICY. (288447) (4 cr, \$3601; limited to 35 students; prereq 3101, 3103 or equiv; 0800-0900 MTWThF; BlegH 145)

See 3601. Meets with 3601.

R.5721. MONEY AND BANKING. (785598) (4 cr, \$3701, \$5701; limited to 35 students; prereq 3101, 3102 or equiv; 0915-1015 MTWThF; BlegH 145)

Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system, and monetary policy.

R.5831. COST-BENEFIT ANALYSIS. (486941) (4 cr; limited to 35 students; prereq 3101, 3103 or equiv; 0800-0900 MTWThF; BlegH 155)

Principles for evaluation of benefits and costs of public projects or programs. Definition and measurement of benefits and costs. Rate of return and rate of discount. Treatment of market imperfections, risk, and uncertainty.

5970. DIRECTED STUDIES. (585599) (Cr ar; prereq #, Δ, CLA approval) Staff Guided individual reading or study in areas not available in regular course offerings.

8777. THESIS CREDITS: MASTERS. (688820) (1-16 cr [max 11 cr per summer term])Staff

8888. THESIS CREDITS: DOCTORAL. (888962) (1-36 cr [max 11 cr per summer term])Staff

8990. INDIVIDUAL RESEARCH. (285600) (Cr ar) Staff

SECOND TERM

R.1101. PRINCIPLES OF MICROECONOMICS. (4 cr; \$1104; each section limited to 30 students; prereq plane geometry and intermediate algebra at GC 0623 and GC 0631 level)

See First Term.
Sec 1, (988449) 0915-1015 MTWThF, BlegH 145

Sec 2, (288450) 1030-1130 MTWThF, BlegH 140

Sec 3, (188451) 1145-1245 MTWThF, BlegH 140

R.1102. PRINCIPLES OF MACROECONOMICS. (4 cr; \$1105; each section limited to 30 students; prereq 1101 or equiv, plane geometry and intermediate algebra at GC 0623 and GC 0631 level)

See First Term.
Sec 1, (988452) 0800-0900 MTWThF, BlegH 140

Sec 2, (788453) 0915-1015 MTWThF, BlegH 140

Sec 3, (588454) 1030-1130 MTWThF, BlegH 125

Sec 4, (388455) 1145-1245 MTWThF, BlegH 135

R.3101. MICROECONOMIC THEORY. (4 cr; \$3105; limited to 50 students; prereq 1101, 1102 or equiv, 1 qtr calc)

See First Term. See Special Term for Section 2.

Sec 1, (386611) 0915-1015 MTWThF, BlegH 135

R.3102. MACROECONOMIC THEORY. (686615) (4 cr; limited to 35 students; prereq 3101 or equiv; 1145-1245 MTWThF; BlegH 205)

See First Term.

R.3103. WELFARE ECONOMICS. (286617) (4 cr; limited to 35 students; prereq 3101 or equiv; 0915-1015 MTWThF; BlegH 115)

See First Term.

R.3701. MONEY AND BANKING. (186618) (4 cr, \$5701, \$5721; limited to 50 students; prereq 1101, 1102 or equiv; not open to economics majors; 0915-1015 MTWThF; BlegH 230)

See First Term.

R.3751. FINANCIAL ECONOMICS I. (189641) (4 cr; limited to 35 students; prereq 3101 or 3105 or equiv, 1 qtr statistics, 1 qtr. calculus; 1030-1130 MTWThF; BlegH 110)

See First Term.

R.3801. ELEMENTS OF PUBLIC FINANCE. (286942) (4 cr, \$5821; limited to 15 students; prereq 1101,

1102 or equiv; not open to Economics majors; 0915-1015 MTWThF; BlegH 435)

Tax and expenditure policies, primarily at federal level. Impact of tax structure on the distribution of income. Evaluation of public programs. Optimal mix of public and private sector output. Meets with 5821.

3951. MAJOR PROJECT SEMINAR. (389640) (2 cr; prereq 3101, 3102, 3103 or equiv)

3970. DIRECTED STUDIES. (986619) (Cr ar; prereq #, Δ, □) Staff See First Term.

R.5307. COMPARATIVE ECONOMIC SYSTEMS. (787643) (4 cr, §5337; limited to 35 students; prereq 1101, 1102 or equiv; not open to Economics majors; 1030-1130 MTWThF; BlegH 120)

Functions of economic systems; market economy, liberal socialism, centrally planned economy. American and Soviet economies. Meets with 5337.

R.5337. COMPARATIVE ECONOMIC SYSTEMS. (587644) (4 cr, §5307; limited to 25 students; prereq 3101, 3102 or equiv; 1030-1130 MTWThF; BlegH 120) See 5307. Meets with 5307.

R.5401. INTERNATIONAL ECONOMICS. (987642) (4 cr, §5431 §5432; limited to 40 students; not open to economics majors; prereq 1101, 1102 or equiv; 1145-1245 MTWThF; BlegH 110) See First Term.

R.5432. INTERNATIONAL FINANCE. (890565) (4 cr; limited to 35 students; prereq 3101, 3102, 3103 or equiv; 5431 or equiv recommended; 1030-1130 MTWThF; BlegH 420) Balancing international receipts and payments; the role of exchange rates; international monetary reform.

R.5821. ELEMENTS OF PUBLIC FINANCE. (186943) (4 cr, §3801; limited to 35 students; prereq 3101, 3103 or equiv; 0915-1015 MTWThF; BlegH 435) See 3801. Meets with 3801.

5970. DIRECTED STUDIES. (186621) (Cr ar; prereq #, Δ, CLA approval) Staff See First Term.

8777. THESIS CREDITS: MASTERS. (788906) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289047) (1-36 cr [max 11 cr per summer term])

8990. INDIVIDUAL RESEARCH. (986622) (Cr ar) Staff

SPECIAL TERM: AUGUST 17-SEPTEMBER 17

R.3101. MICROECONOMIC THEORY.

Sec 2, (886614) (4 cr, §3105; limited to 45 students; prereq 1101, 1102 or equiv, 1 qtr calculus, Humphrey Institute Students only; 0915-1015 MTWThF; HHHctr 30) Kudrle Microeconomics with a public policy emphasis. For incoming graduate students in public affairs. Course is a prerequisite to the school's core sequence in policy and analysis.

Education (Educ)

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (1-36 cr [max 11 cr per summer term]) Sec 1, (089561) Higher Education Sec 2, (889562) Curriculum and Instruction Sec 3, (689563) Vocational Education Sec 4, (489564) Recreation, Park, and Leisure Studies Sec 5, (289565) Social and Philosophical Foundations of Education

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (1-36 cr [max 11 cr per summer term]) Sec 1, (189566) Higher Education Sec 2, (989567) Curriculum and Instruction Sec 3, (789568) Vocational Education Sec 4, (589569) Recreation, Park, and Leisure Studies Sec 5, (989570) Social and Philosophical Foundations of Education

Educational Administration (EdAd)

275 Peik Hall. 624-1006 (Educational Policy and Administration) College of Education (See also Educational Policy and Administration.)

FIRST TERM

8777. THESIS CREDITS: MASTERS. (288822) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488964) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (588907) (1-16 cr [max 11 cr per summer term])

Educational Policy and Administration (EdPA)

275 Peik Hall. 624-1006. (Educational Policy and Administration) College of Education

FIRST TERM

R.5090. SCHOOL AND SOCIETY. (3 cr, each section limited to 45 students; prereq sr or post-BA in education or CLA music ed major or Δ; A-F only) Readings in social science and philosophy integrating views of the role of the school in a changing American society. Sec 1, (189655) 0800-0900 MTWThF, PeikH 28, Harkins Sec 2, (591029) 1030-1230 MWF, ClaOff B42, Lum

5099. DIRECTED STUDY. (Cr and hrs ar [max 9 cr]; prereq #; S-N optional) Individual or group work on topics or problems in social and philosophical foundations of education. Sec 21, (089656) Harkins Sec 22, (889657) Louis Sec 23, (689658) Turner Sec 24, (490052) King Sec 25, (990332) Lum

5128. WORKSHOP: EDUCATIONAL ADMINISTRATION. (1-6 cr) Laboratory approach provides opportunities for experienced administrators to concentrate common administrative and supervisory problems. See Special Programs section.

Sec 5, Outcome Based Education-June 25-July 1. (689661) 1 cr, 1330-1530 MTWThF, CLAOff B36, King

R.5142. MINORITIES IN HIGHER EDUCATION. (189664) (3 cr; each section limited to 20 students; A-F only) Access and equity issues related to the participation of minority populations in American institutions of higher education. Emphasis on analysis of educational status of minority students and faculty in two- and four-year colleges as presented in research literature.

Sec 1, June 15-18 (189664) 0900-1600 TWThF, Normandale Community College, Turner Sec 2, June 22-25 (491685) 0900-1600 TWThF, Arch 45, Turner

5200. DESIGN AND MANAGEMENT OF EDUCATION SERVICES. June 28-July 9. (790333) (3 cr; 0915-1200 MTWThF; S-N optional) Ammentorp Educational services offered by schools, hospitals, industries, government agencies; contemporary technology, roles, authority systems, communication networks; resource-policy relationships, evaluation, and management of activities of clients and staff members.

5201. FORMAL ORGANIZATIONS IN EDUCATION. (685349) (3 cr; 1300-1530 WF; PeikH 40; S-N optional) Anderson

Classical and current theories of organizational behavior and administration. Special topics include leadership and control, communication, conflict, the effects of educational environments, organizational design and change, and organizational effectiveness.

5202. POLITICS OF EDUCATION. (590334) (3 cr; 1300-1445 MWF; PeikH 28; S-N optional) Mazzoni Social science findings, concepts, and methods used to consider the political context of educational administration; emphasis on creation of public school policy by local and state governments; role of administrators.

5204. FINANCING ELEMENTARY AND SECONDARY SCHOOLS. (989665) (3 cr; 0800-1000 MWF; PeikH 46; S-N optional) Mueller Value assumptions and educational finance policy, economic factors, sources and characteristics of educational revenue, state and local distribution systems, federal support, urban/rural variations, institutional financing alternatives.

5215. THE ELEMENTARY SCHOOL PRINCIPALSHIP. (789666) (3 cr; 1300-1600 MW, PeikH 46; S-N optional) Alkire Problems in elementary school administration and the principal's role of leadership.

5222. INTRODUCTION TO POLICY RESEARCH. (291686) (3 cr; 0800-1015 TTh; PeikH 48; only grad students may take S-N, all other A-F) Hendrix, Mueller Critical examination of the political, philosophical, environmental and methodological issues that accompany policy research in education; particular consideration will be given to the determinants of the applicability of quantitative and qualitative methods.

5227. PUBLIC SCHOOL PERSONNEL PROGRAMS. (589667) (3 cr; 0915-1130 TTh; PeikH 28; S-N optional) Alkire Selection, assignment, evaluation, and development of school personnel; salary and conditions of service; policies of administrative, instructional, and noninstructional personnel.

5250. AMERICAN HIGHER EDUCATION. (389668) (4 cr; 0915-1145 MF; PeikH 28; S-N optional) Anderson American higher and postsecondary education in historical and contemporary perspective; special emphasis on the societal and political demands on the higher education system and consequent changes in its various forms and functions.

COURSE DESCRIPTIONS

5272. PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term, hrs ar \$8272)

For superintendents and principals qualified to make intensive studies of a school system.

- Sec 21, (191687) Alkire
- Sec 22, (991688) Hendrix
- Sec 25, (791689) Mazzoni
- Sec 26, (191690) Mueller
- Sec 31, (991691) Ammentorp
- Sec 32, (791692) Turner
- Sec 33, (591693) Louis
- Sec 34, (391694) King

5601. INTERNATIONAL EDUCATION: TOPICS IN CLASSROOM PRACTICES AND PROCEDURES: NONFORMAL EDUCATION IN INTERNATIONAL PERSPECTIVE—

June 16-July 9. (691989) (1-12 cr [max 12 cr], this offering 3 credits; 1145-1630 WF, Peik H 25; S/N optional) Paige

Educational practices in a designated country, region, or cultural group; impact of social and cultural features; organization, school structures, classroom practices, and delivery of educational services; potential for implementation in the United States. This offering will focus on nonformal education in international perspective, dealing with issues of policy analysis and formation, program implementation and constraints, and theory and practice of nonformal educational programs applied to national development.

8228. PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar; prereq #)

Selected topics on college programs, instruction, organization, and administration.

- Sec 21, (189669) Ammentorp
- Sec 22, (589670) Louis
- Sec 23, (389671) Turner
- Sec 24, (390335) Anderson

8238. SEMINAR: THEORY AND RESEARCH. July 6-20. (189672) (3 cr; prereq educational administration major or #; 1300-1515 MTWThF) Ammentorp

Research design involving thesis or field project; includes interrelatedness of formulation of conceptual framework and the analytical process; clinical and research problems.

8248. SEMINAR: METROPOLITAN SCHOOL GOVERNANCE—June 28-July 9. (091990) (3 cr; prereq 5202 or EdAd 5202 or SPFE 5202; 0915-1200 MTWThF, PeikH 33) Nathan, Sundin

Impact of metropolitanization on policy issues confronting public schools in core cities; strategies proposed for restructuring education governance emphasizing Twin Cities metropolitan area.

8261. PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (Cr and hrs ar; prereq #)

For graduate students interested in research and original work in these areas.

- Sec 21, (089673) Harkins
- Sec 22, (889674) Louis

- Sec 23, (689675) Turner
- Sec 24, (090337) King
- Sec 25, (890338) Lum

8270. PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION.

(489676) (Cr and hrs ar; prereq #) Alkire

8273. FIELD STUDY. (0-10 cr, hrs ar; prereq #)

Required for 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.

- Sec 21, (189678) Alkire
- Sec 22, (191695) Hendrix
- Sec 25, (690339) Mazzoni
- Sec 26, (989679) Mueller
- Sec 31, (189681) Ammentorp
- Sec 32, (989682) Turner
- Sec 33, (789683) Louis
- Sec 34, (589684) King

8603. SEMINAR: INTERNATIONAL DEVELOPMENT EDUCATION.

(891991) (3 cr; prereq 5603 or AdEd 5603 or Educ 5603; 0800-1015 TTh, PeikH 31) Mestenhauser
Key theoretical issues relating to education and development worldwide; formal and nonformal education.

SECOND TERM

R.5090. SCHOOL AND SOCIETY. (3 cr; each section limited to 45 students; prereq sr or post-BA in education or CLA music ed major or Δ; A-F only) See First Term

- Sec 1, (389685) 0800-0900 MTWThF, PeikH 28, Harkins
- Sec 2, (891697) 1300-1400 MTWThF, PeikH 28, Lange

5099. DIRECTED STUDY. (Cr and hrs ar, [max 9 cr] prereq #; S-N optional) See First Term.

Sec 1, Outcome Based Education: Workshop in Traditional Curricula and Outcomes—July 26-Aug. 11.

(691698) 1 cr; 0915-1015 MWF, PeikH 25, Harkins

Sec 2, Outcome Based Education: Workshop in Transition to Consumer-Focused Outcomes—July 22-Aug. 17.

(491699) 1 cr; 0915-1015 TTh, PeikH 25, Harkins

Sec 3, Outcome Based Education: Workshop in Transformation to Outcome Based Learning July 26-Aug. 4.

(191700) 1 cr; 1030-1130 MTWThF, PeikH 25, Harkins
Sec 21, (490343) Harkins
Sec 22, (090340) Louis
Sec 25, (991710) Lum

5128. WORKSHOP: EDUCATIONAL ADMINISTRATION. (189686)

See First Term.
Sec 1, Facilitating School Change July 26-August 6. (189686) 3 cr; 0915-1145 MTWThF; PeikH 46, Wahlstrom

R.5130. LEADERSHIP DEVELOPMENT SEMINAR. (089687) (3 cr;

limited to 25 students; prereq advanced application, □; 1030-1530 MTWThF; BioSci 70) Nickerson
Assessment and development of skills required of the educator in areas of planning, decision making, and human relations; introduction to contemporary issues in educational administration. Participants register concurrently for 3 credits in EdPA 5130 and EdPA 5139. Advance application required by July 15, 1993.

R.5139. LABORATORY IN DECISION MAKING. (889688) (3 cr; limited to 25 students; prereq advanced application, □; 1030-1530 MTWThF; BioSci 70) Nickerson

Contributions of recent research and theory to effective administration; analysis of administrative behavior in realistic settings and relations of administration to human behavior. Participants register concurrently for 3 credits in EdPA 5130 and EdPA 5139. Advance application required by July 15, 1993.

5212. SCHOOL BUDGETING.

(689689) (3 cr; 1300-1530 MW; PeikH 48; S/N optional) Sederberg
Concepts and skills involved in preparing financial budgets for public schools; competency in translating educational programs into budgetary systems, anticipating revenue receipts, planning expenditures, and techniques for preparing a balanced budget.

5213. FINANCIAL RESOURCE MANAGEMENT. (089690) (3 cr;

1300-1530 TTh; PeikH 48; S/N optional) Sederberg
Concepts and skills involved in the management of financial resources in public schools; performance exercises related to public school accounting systems, purchasing, the controller function, and reporting and interpreting school financial data.

5214. SCHOOL MANAGEMENT INFORMATION SYSTEMS July 26-August 18. (889691) (3 cr; 0800-1115 MW; EdHAN 64; S/N optional) Hendrix

Basic techniques required to generate, maintain, and make accessible the computer-based management information system in education.

5216. RECENT RESEARCH IN ELEMENTARY SCHOOL ADMINISTRATION July 26-August 5. (689692)

(3 cr; prereq 5215 or EdAd 5215; 1300-1600 MTWTh; PeikH 40; S-N optional) Alkire
Pertinent research literature.

5272. PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per qr, \$8272; hrs ar)

- See First Term.
- Sec 21, (091701) Alkire
- Sec 22, (891702) Hendrix
- Sec 27, (691703) Nickerson
- Sec 28, (491704) Sederberg
- Sec 31, (291705) Ammentorp
- Sec 33, (191706) Louis
- Sec 35, (991707) Wahlstrom

8219. SEMINAR: APPLIED HUMANISM AND LEADERSHIP July 26-August 6. (591712) (3 cr; prereq 5201 or #; 0915-1145 MTWThF, PeikH 31) Lum

Inter-disciplinary analysis of leadership roles as reflected in aesthetic works. Development of an understanding of the human issues of effective leadership and examination of leadership in its broader social context. Classical materials having applied value for preparation of administrators.

8228. PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar; prereq #)

- See First Term.
- Sec 21, (791708) Ammentorp
- Sec 22, (091696) Louis

8261. PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (Cr and hrs ar; prereq #)

- See First Term.
- Sec 21, (290344) Harkins
- Sec 22, (890341) Louis
- Sec 25, (391713) Lum

8270. PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION. (289694) (Cr and hrs ar; prereq #) Alkire

8271. PROBLEMS: SECONDARY SCHOOL ADMINISTRATION. (189695) (Cr and hrs ar; prereq #) Nickerson

8273. FIELD STUDY. (0-10 cr, hrs ar; prereq #)

- See First Term.
- Sec 21, (989696) Alkire
- Sec 22, (789697) Hendrix
- Sec 27, (589698) Nickerson
- Sec 28, (389699) Sederberg
- Sec 31, (591709) Ammentorp
- Sec 33, (190345) Louis
- Sec 35, (690342) Wahlstrom

Educational Psychology (EPsy)

204 Burton Hall. 624-3543
College of Education

FIRST TERM

R.5114. PSYCHOLOGY OF STUDENT LEARNING—June 15, 17, 22, 24.

(886886) (3 cr; limited to 40 students; 0900-1600 TTh; AlderH 415; A-F only) Samuels

Survey of psychological methods and principles; models of the learner; topics in development, creativity, intelligence, and motivation; implications for teaching and curriculum design in preschool, elementary, and secondary education; professional training with children and adolescents as clients.

R.5119. LEARNING AND COGNITIVE FOUNDATIONS OF EDUCATION. (4 cr; each lab limited to 25 students; prereq education student, or

CLA music ed maj or p. course in psychology recommended; lect 0800-0920 MTTh, Phys 150; A-F only) Bart Principles of development, learning, cognition, individual differences, classroom management, instructional delivery, and related topics; their applicability to instruction and the organization of curricular materials. Lab 1, (790347) 0800-0920 WF, Phys 157 Lab 2, (590348) 0800-0920 WF, Phys 143

R.5135. WORKSHOP IN HUMAN RELATIONS. (486888) (6 cr; limited to 50 students; 0800-1300 MW July 15 and 0800-1300 MTWThF July 6-16; Arch 40; S-N only) Maruyama Experientially based course including simulation activities, curriculum writing, and supervised practice in basic human relations skills, emphasizing individual, cultural, and ethnic differences and their implications for educational practice.

R.5139. INTERPERSONAL AND PERSONALITY EFFECTS ON LEARNING. (4 cr; each section limited to 50 students; prereq senior or post BA in education or CLA music education major or , at least one course in psychology; A-F only) Major theories and research on schooling as it relates to human relations, small groups, face to face relations, and individual personality and social development. Sec 1, (590351) 1030-1230 MTWTh, Phys 150, Rest Sec 2, (390352) 1030-1230 MTWTh, Phys 131

R.5151. STRUCTURING LEARNING: SOCIAL PSYCHOLOGICAL APPROACHES. (185394) (3 cr; limited to 30 students; June 16-July 1; 1300-1600 MTWTh and 1300-1500, July 16; BuH 123, and hrs ar off campus; A-F only) How to use cooperation, competition, and individualization to affect learning climate, and cognitive and affective outcomes of instruction.

R.5229. CLASSROOM ASSESSMENT METHODS—June 16-July 9. (190353) (2 cr; limited to 100 students; prereq concurrent student participation in practice teaching or some similar field experience is strongly suggested; 1300-1440 MWF; Phys 131; A-F only) Terwilliger Concepts and techniques necessary for effective diagnosis of learning problems and assessment of educational outcomes. Primary emphasis is given to constructing teacher-made assessment devices which are efficient, technically sound, and directly relevant to classroom decision-making.

R.5240. PRINCIPLES AND METHODS OF EVALUATION. (286293) (3 cr; limited to 30 students; 0800-0900 MTWThF; FolH 208; S-N optional) Introductory course in program

evaluation; theory; practical examples; purpose, roles, program descriptions, and evaluation strategies.

R.5260. INTRODUCTORY STATISTICAL METHODS. (286892) (4 cr; limited to 40 students; 0800-0900 MTWThF; EltH N119; S-N optional) Davenport Techniques for organizing and presenting data; descriptive indices of central tendency, variability, and bivariate correlation/regression; procedures for making inferences concerning means and proportions.

R.5400. WORKSHOP: COUNSELING PSYCHOLOGY. (1-6 cr [max 12 cr]) For all counselors, teachers, and administrators; aspects of intervention theory in relation to psychological principles; counseling, career development, assessment, psychological education and consultation. **Sec 1, Integrative Life Planning: New Career Development Approaches for a Changing Workforce—June 21-25.** (486292)(3 cr; limited to 25 students; 0800-1630 MTWTh, 0800-1300 F; EltH N668; S-N optional) Hansen Based on an Integrative Life Planning framework, focuses on new knowledge, skills, and resources for creating career development programs and providing career counseling for students and clients in a variety of educational, industrial, and community settings. Relates societal trends to new knowledge in the field; deals with transitions and job loss; presents holistic concept of career. Participants will develop an applied project for their own present or future work setting.

5601. EDUCATION OF EXCEPTIONAL CHILDREN. (986894) (4 cr; 1030-1200 MTWThF; BuH 125; A-F only) Deno Introduction to field of special education for classroom teachers and other school personnel.

R.5607. COLLABORATION FOR INCLUSIVE SCHOOL COMMUNITIES (191728) (3 cr; limited to 75 students; 0800-1600 MTWThF; BuH 120) York Rationale for, implications of, and strategies for including students with unique needs (e.g., disabilities) in general education classroom settings. The importance of creating a sense of community among students and adults in today's heterogeneous classrooms and school is emphasized.

R.5612. EDUCATION OF LEARNING-DISABLED CHILDREN—June 15-30. (589703) (3 cr; limited to 30 students; 1030-1130 MTWThF; PeikH 155; A-F only) Espin Analysis of considerations in design and conduct of services for learning-disabled children; approaches to education of such children.

5635. EDUCATION OF STUDENTS WITH PHYSICAL DISABILITIES. (091729) (3 cr; prereq 5601 or PsyS 5101 or #; 0900-1500 MTWThF; U of

M Morris campus; A-F only) Characteristics and abilities; methods and materials for training; observation of teaching situations involving these groups; personal consultation in addition to class hours.

5640. PSYCHOSOCIAL AND EDUCATIONAL ASPECTS OF DEAFNESS—July 19-23. (391730) (3cr; prereq #; 0830-1530 MTWThF; MN State Academy for the Deaf; A-F only) Klanssek-Kyllo 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 psychological processes on acquisition of language, speech, and speechreading skills.

5643. LANGUAGE FOR HEARING-IMPAIRED CHILDREN—July 6-10. (191731) (4 cr; prereq 5640 or PsyS 5140 or #; 0830-1530 TWThF; MN State Academy for the Deaf; A-F only) McAnally Functional language development in communicatively handicapped persons; overview of language curricula and programming strategies, pertinent research and models of instruction for use in educational environment.

5644. LANGUAGE PROGRAMMING FOR CHILDREN WITH HEARING IMPAIRMENTS—July 12-16. (091732) (3 cr; prereq #; 0830-1530 MTWThF; MN State Academy for the Deaf; A-F only) McAnally Programs and practices focusing on development of language in infants, children, and youth with hearing impairments; comparative study of language development of hearing impaired and hearing persons.

5648. MODES OF COMMUNICATION FOR THE HANDICAPPED—July 19-23. (691734) (3 cr; prereq #; 0830-1530 MTWThF; MN State Academy for the Deaf; A-F only) Rose Theoretical and applied study of selection and application of alternative communication modalities; assessment and development of modes including gestures, speech reading, cued speech, sign systems, form boards, and Bliss-symbolics.

R.5656. EDUCATIONAL NEEDS OF STUDENTS WITH EMOTIONAL DISTURBANCES OR BEHAVIORAL DISORDERS—June 15-July 1. (189171) (3 cr; limited to 40 students; students must also register for 5657; 0800-1015 MTWThF; BuH 125; A-F only) Wood Preparation for specialists: educational characteristics, educational interventions, teaching of social behavior, legal and ethical issues.

R.5657. EDUCATIONAL INTERVENTIONS FOR STUDENTS WITH EMOTIONAL DISTURBANCES OR BEHAVIORAL DISORDERS—July 6-20. (089172) (3 cr; limited to 40 students;

prereq 5656; students must also register for 5656; 0800-1015 MTWThF; BuH 125; A-F only) Wood Preparation for specialists: assessment and planning procedures, interagency cooperation, career preparation and transition for EBD students.

5673. METHODS OF TEACHING VISUALLY HANDICAPPED CHILDREN—June 21-July 1. (491735) (4 cr; prereq 5670 or PsyS 5170 or #; 0900-1500 MTWThF; Rochester CEE; A-F only) Knowlton Principles of preparation, selection, and effective use of instructional materials; adaptation of school environment; use of family, school, and community resources.

5700. ASSESSMENT AND DECISION MAKING IN SPECIAL EDUCATION. (291736) (3 cr; 0800-0900 MTWThF; FolH 116; A-F only) Deno For teachers and other educational personnel. Identifying needs of handicapped students; planning, monitoring, evaluating instructional programs; practice in use of standardized devices and development of clinical measures for handicapped students.

R.5701. PRACTICUM: SPECIAL EDUCATION. (Cr ar; prereq #; S-N only) Supervised experience in teaching or related work in schools or other agencies serving exceptional children. Sec 1, (786895), 8 cr, Wilderson; off campus, limited to 20 students Sec 2, (188398), 8 cr, off-campus, limited to 20 students Sec 11, (390853), 8 cr Sec 12, (190854), 8 cr Sec 21, (586896), 8cr, Knowlton; off-campus Sec 23, (290361), 8cr, Rose; off-campus

5702. WORKSHOP: SPECIAL EDUCATION. (cr ar; prereq #) Laboratory approach; provides opportunities for school personnel to study specific problems related to special education. **Sec 1, Improving ASL for Classroom Communication—June 21-24.** (189705) (2 cr; 0830-1300 MTWThF; MN State Academy for the Deaf, Faribault) Focus on American Sign Language form. Improving vocabulary production, and use of ASL phrase structure rules and other grammatical features needed by professionals working with children who are deaf.

5703. PRACTICUM EXPERIENCE: SPECIAL EDUCATION. (Cr and hrs ar; prereq #; off-campus; A-F only) Supervised experience in teaching or related work in schools or other agencies serving exceptional children. Sec 1, (889173) off campus Sec 2, (089706) off campus

5710. CONTEMPORARY SERVICES FOR PERSONS WITH DEVELOPMENTAL DISABILITIES—July 6-20. (889707) (3 cr; 1300-1530 MTWThF; BuH 120) Feeley

COURSE DESCRIPTIONS

Survey course focusing on the characteristics and service needs of persons with developmental disabilities using interdisciplinary approaches. Changing concepts, models of services, issues relating to promoting independence, productivity, and integration into communities.

5900. INDEPENDENT STUDY. (Cr and hrs ar [max 12 cr]; prereq #; A-F only)

Sec 1, (592049), **Assessment in OBE—** June 25 and 28, 1030-1300, and November 14, 0800-1300, Davison
Sec 21, (588339) psychological foundations, MacEachern
Sec 26, (689174) special education, Deno
Sec 27, (990363) special education, Rose
Sec 29, (386897) special education, Wood
Sec 30, (186898) special education, Knowlton
Sec 31, (189700) counseling, Hansen
Sec 35, (088328) special education
Sec 42, (289176) counseling, Skovholt
Sec 43, (689708) special education, Wilderson
Sec 44, (489709) special education, York
Sec 45, (889710) special education, Espin
Sec 46, (590365) psychological foundations, Bart
Sec 47, (390366) psychological foundations, Maruyama
Sec 48, (190367) psychological foundations, Terwilliger
Sec 49, (090368) special education, Hupp
Sec 50, (890369) special education, McEvoy
Sec 51, (991724) psychological foundations, Davenport

8260. STATISTICAL METHODS. (086899) (3 cr; prereq 5260 PsyF 5110 or Psy 3801 or equiv; 0745-0900 MTWThF; AndH 230) MacEachern Foundations of statistical theory; practice in applying theories in solution of educational and psychological problems.

8262. STATISTICAL METHODS. (786900) (3 cr; prereq 8261; 0915-1015 MTWThF; AndH 230) MacEachern

Foundations of statistical theory; practice in applying theories in solving of educational and psychological problems.

8279. PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY. (Cr and hrs ar) Recent developments in statistical science; applications to educational and psychological problems.
Sec 22, (586901) MacEachern
Sec 23, (591726) Davenport

R.8450. PSYCHOLOGICAL ASPECTS OF COUNSELING SUPERVISION— **July 16-18.** (391727) (3 cr; limited to 30 students; prereq 8410, 8504 or PsyS 8604, #; 1300-2100 F, 0915-1630 SaSu; EltH N647) Skovholt Consideration of theories; review of

relevant research; experience in development, management, and supervision of counseling practicum.

8777. THESIS CREDITS: MASTERS. (388732) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188733) (1-36 cr [max 11 cr per summer term])

8900. RESEARCH PROBLEMS. (Cr and hrs ar; prereq #)
Sec 22, (386902) psychological foundations, Davison
Sec 24, (186903) psychological foundations, Maruyama
Sec 27, (086904) psychological foundations, MacEachern
Sec 32, (189177) special education, Deno
Sec 33, (190370) special education, Rose
Sec 36, (185430) special education, Wood
Sec 38, (989701) counseling, Hansen
Sec 41, (888329) special education
Sec 42, (789179) special education, Knowlton
Sec 46, (189180) counseling, Skovholt
Sec 47, (089401) school psychology
Sec 48, (689711) special education, Wilderson
Sec 49, (489712) special education, York
Sec 50, (289713) special education, Espin
Sec 51, (890372) psychological foundations, Bart

SECOND TERM

R.5114. PSYCHOLOGY OF STUDENT LEARNING— **July 23-August 16.** (188532) (3 cr; limited to 50 students; 1500-1730 MWF, BuH 120; A-F only) P. Van den Broek Survey of psychological methods and principles; models of the learner; topics in development, creativity, intelligence, and motivation; implications for teaching and curriculum design in preschool, elementary, and secondary education; professional training with children and adolescents as clients.

5115. PSYCHOLOGY OF ADULT LEARNING— **July 26-August 16.** (086921) (4 cr; limited to 30 students; 1030-1400 MWF; BuH 123; A-F only) R Tennyson Survey of psychological methods and principles in human learning; models of adult learner, topics in motivation, creativity, achievement, intelligence; implications for teaching and curriculum design in higher education, continuing education, and professional training.

R.5119. LEARNING AND COGNITIVE FOUNDATIONS OF EDUCATION. (4 cr; each lab limited to 25 students; prereq education student, or CLA music ed maj or □; one prior

course in psychology recommended; lect 0830-0950 MTWTh; Phys 150; A-F only) R. Tennyson
See First Term.
Lab 1 (790381) 0830-0950 F, Phys 157
Lab 2 (590382) 0830-0950 F, Phys 143

R.5139. INTERPERSONAL AND PERSONALITY EFFECTS ON LEARNING. (4 cr; each section limited to 50 students; prereq senior or Post BA in education or CLA music education major or □; at least one course in psychology; A-F only) See First Term.
Sec 1, (690387) 1030-1230 MTWTh, Phys 150, Rest
Sec 2, (490388) 1030-1230 MTWTh, Phys 131

R.5220. EDUCATIONAL MEASUREMENT IN THE CLASSROOM— **July 26-30.** (986295) (4 cr; limited to 25 students; 0800-1200 MTWThF, 1300-1500 MTWThF, Fairview Community Center, 1910 W County Rd B, Roseville, MN; S-N optional) Terwilliger 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.

R.5229. CLASSROOM ASSESSMENT METHODS— **August 2-23.** (290389) (2 cr; limited to 100 students; prereq concurrent student participation in practice teaching or some similar field experience is strongly suggested; 1300-1440 MWF; Phys 131; A-F only) Terwilliger
See First Term.

R.5260. INTRODUCTORY STATISTICAL METHODS. (886905) (4 cr; limited to 40 students; 0800-0900 MTWThF, BuH 123) Davenport
See First Term.

5400. WORKSHOP: COUNSELING PSYCHOLOGY. (1-6 cr [max 12]) For all counselors, teachers, and administrators; aspects of intervention theory in relation to psychological principles; counseling, career development, assessment, psychological education and consultation.
Sec 1, Counseling and Therapy Interventions with Men — **July 26-30.** (691992) (3 cr; limited to 30 students; 0800-1630 MTWThF, EltH N668; A-F only) Skovholt Emphasis will be on broad themes in male socialization and psychology along with counseling interventions and counseling methods in working with men.

5608. PARENT AND PROFESSIONAL PLANNING FOR HANDICAPPED STUDENTS— **July 22-August 6.** (189714) (3 cr; 0800-1015 MTWThF; BuH 120; A-F only) Wilderson Study and demonstration of constructive approaches to coopera-

tive planning and implementation of education programs by parents, teachers, and others involved with children who have special needs.

5609. FAMILY-PROFESSIONAL PLANNING FOR PERSONS WITH SEVERE HANDICAPS— **July 22-August 6.** (989715) (3 cr; 0800-1015 MTWThF; BuH 125; A-F only) Interdisciplinary course examining the needs of families who have children with severe handicaps; emphasis on life cycle needs, service issues, programs of support from infancy through adult years, services from different agencies, disciplines, professional requirements, and responsibilities in serving families.

R.5615. EDUCATIONAL INTERVENTIONS FOR LEARNING DISABILITIES. (389167) (3 cr; limited to 30 students; prereq 5612; 1030-1130 MTWThF; BuH 120; A-F only) Espin Planning, implementing, evaluating academic programs for students with disabilities in written and spoken language, quantitative concepts, and cognitive skills required for learning.

5676. MANAGEMENT OF LOW VISION— **July 26-August 5.** (791739) (3 cr; prereq 5675 or #; 0900-1500 MTWThF; Rochester CEE, A-F only) Knowlton Advanced course requiring competence in evaluation and use of low vision aid; evaluating and managing cognitive, psychosocial, and physical needs of students; consideration of parent, teacher, and student counseling.

5900. INDEPENDENT STUDY. (Cr and hrs ar [max 12 cr]; prereq #; A-F only)
Sec 21, (988340) psychological foundations, MacEachern
Sec 40, (988533) special education
Sec 41, (189168) special education, Deno
Sec 44, (789716) counseling, Skovholt
Sec 46, (990394) special education, Espin
Sec 47, (790395) special education, Knowlton
Sec 50, (390397) psychological foundations, Terwilliger
Sec 51, (190398) psychological foundations, Davenport
Sec 52, (090399) psychological foundations, Tennyson,
Sec 54, (191740) special education, Wilderson

R. 8129. RESEARCH PROBLEMS: LEARNING AND COGNITION. (Cr ar; prereq #) Formulation of research designs.
Sec 1, (885396) Tennyson
Sec 2, (991738) Van den Broek

8261. STATISTICAL METHODS. (486907) (3 cr; prereq 8260; 0745-0900 MTWThF; AndH 230) MacEachern Foundations of statistical theory; practice in applying theories in solution of educational and psychological problems.

8263. DESIGN AND ANALYSIS OF EXPERIMENTS. (286908) (3 cr; prereq 8262 or PsyF 8112 or #; 0915-1015 MTWThF; AndH 230) MacEachern Functional approach to principles of efficient design in experiments and other types of observational programs; improved sampling techniques; methods of analyzing observational results.

8279. PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY. (Cr and hrs ar) See First Term.
Sec 22, (189719), MacEachern
Sec 23, (589720), Davenport

8777. THESIS CREDITS: MASTERS. (989021) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789022) (1-36 cr [max 11 cr per summer term])

8900. RESEARCH PROBLEMS. (Cr and hrs ar; prereq #)
Sec 22, (085395) psychological foundations, Tennyson
Sec 23, (186909) psychological foundations, Davison
Sec 24, (486910) psychological foundations, MacEachern
Sec 25, (790400) psychological foundations, Terwilliger
Sec 40, (788534) special education
Sec 41, (089169) special education, Deno
Sec 45, (389718) psychological foundations, Davenport
Sec 48, (589717) counseling, Skovholt
Sec 51, (590401) special education, Espin
Sec 52, (390402) special education, Knowlton
Sec 54, (991741) special education, Wilderson

Electrical Engineering (EE)

4178 Electrical Engineering/Computer Science. 625-3300
Institute of Technology

FIRST TERM

R.1400. CIRCUITS LABORATORY. (987995) (1 cr; limited to 12 students; prereq IT student, 3009 or ¶ 3009; 1300-1515 MW, EE/CSci 3160) Laboratory to accompany EE 3009 and 3060.

R.3009. LINEAR CIRCUITS I. (387998) (4 cr; limited to 90 students; prereq IT student; Math 3261, Phys 1253; 0800-1015 MTWThF; EE/CSci 3210; A-F only)
Physical principles underlying the modeling of circuit elements. Two- and three-terminal resistive elements, Kirchhoff's laws. Simple resistive circuits. Linearity in circuits. First-order circuits. Circuits in sinusoidal steady state.

5470 DIRECTED STUDY. (685061) (Cr and hrs ar; prereq Δ)

8450. SPECIAL INVESTIGATIONS. (485062) (1-4 cr; prereq #; hrs ar)

8460. PLAN B PROJECT. (285063) (4 cr; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (988824) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188966) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

R.3004. CIRCUITS AND ELECTRONICS LABORATORY. (1 cr; each section limited to 14 students; no EE majors; prereq IT student, 3003 or ¶ 3003)
Lab 1, (787996) 1030-1245 M, EE/CSci 3160
Lab 2, (587997) 0800-1015 Th EE/CSci 3160

R.3005. ELECTRONIC CIRCUITS AND SYSTEMS. (491508) (4 cr; limited to 50 students; not for EE majors; prereq 3009; 0800-0900 MTWF; EE/CSci 3230) Holte

R.3012. SYSTEM DESIGN. (686128) (4 cr; limited to 50 students; prereq upper division EE major, 3011; 1145-1245 MTWF; EE/CSci 3230; A-F only) Continuous, discrete-time systems. Feedback: stability, applications.

R.3062. ANALOG AND DIGITAL ELECTRONICS. (687652) (4 cr; limited to 65 students; prereq upper division EE, CSci, or ME major, 3061, 3351, 3401 or ¶ 3401; lect 0915-1015 MTWF; EE/CSci 3230; rec 0915-1015 Th, EE/CSci 3115, 1st 5 weeks; EE/CSci 3111, 2nd 5 weeks)
Stability and feedback amplifiers, operational amplifier structures, implementation of digital circuits with bipolar and field effect transistors; application to inverters, gates, flip-flops, logic arrays, and storage elements

R.3111. ELECTROMAGNETIC WAVES. (487653) (4 cr; limited to 50 students; prereq 3110, upper division EE major; 1030-1130 MTWF; EE/CSci 3230)
Time-varying electromagnetic fields. Propagation of electromagnetic waves. Metallic and optical waveguides.

R.3351. INTRODUCTION TO LOGIC DESIGN. (4 cr; each section limited to 12 students; prereq soph standing in IT; lect 1145-1245 MWThF; EE/CSci 3210)
Boolean algebra and logic gates. Combination logic: simplification and design examples. Sequential logic and design of synchronous, sequential logic systems. Integral laboratory.

Lab 1, (990248) 1030-1245 T, EE/CSci 2178
Lab 2, (188000) 1300-1515 W, EE/CSci 2178
Lab 3, (988001) 1300-1515 Th, EE/CSci 2178

R.3402. JUNIOR ELECTRICAL ENGINEERING LABORATORY. (2 cr; each section limited to 12 students; prereq 3401, 3062 or ¶ 3062; A-F only)
Lab 1, (986135) 1300-1745 M, EE/CSci 3146
Lab 2, (786136) 1300-1745 T, EE/CSci 3146
Lab 3, (586137) 0800-1245 Th, EE/CSci 3146

3476. INDUSTRIAL ASSIGNMENT I. (486129) (2 cr; prereq regis in co-op program)
Industrial work assignment in engineering co-op program. Grade based on formal written report covering the quarter's work assignment, but deferred until completion of EE 5478, Industrial Assignment III.

3477. INDUSTRIAL ASSIGNMENT II. (886130) (2 cr; prereq 3476)
See 3476.

R.5002. DIGITAL SIGNAL PROCESSING. (287654) (3 cr; limited to 65 students; prereq upper division elec engr maj or grad IT major, 3012 or #; 0800-0900 MWF; EE/CSci 3115)
General concepts of signal processing; discrete-time systems and digital filters.

R.5003. DIGITAL SIGNAL PROCESSING LABORATORY. (1 cr; each section limited to 12 students; prereq upper division EE maj, 3402 or ¶ 3402, 5002, or #; A-F only)
Lab 1, (388486) 0800-1015 T, EE/CSci 2170
Lab 2, (188487) 1030-1245 T, EE/CSci 2170

R.5450. SENIOR DESIGN PROJECT. (2 cr; each section limited to 5 students; prereq EE senior, 3012, 3062, 3110, 3351, 3352, 3402)
Team participation in formulation and solving of open-ended design problems. Oral and written presentations.
Sec 1, (585375) 0915-1245 Th, EE/CSci 3230
Sec 2, (385376) 0915-1245 Th, EE/CSci 3230
Sec 3, (288237) 0915-1245 Th, EE/CSci 3230

5478. INDUSTRIAL ASSIGNMENT III. (686131) (2 cr; prereq 3477, regis in co-op program; A-F only)
Industrial work assignment in engineering co-op program. Grade based on formal written report covering the quarter's work assignment.

5479. INDUSTRIAL ASSIGNMENT IV. (486132) (2 cr; prereq 5478)
See 5478.

SECOND TERM

R.1400. CIRCUITS LABORATORY. (187655) (1 cr; limited to 12 students; prereq IT student, 3009 or ¶ 3009; 1300-1515 MW; EE/CSci 3160)

R.3010. LINEAR CIRCUITS II. (188005) (4 cr; limited to 75 students; prereq IT student, at least C grade in 3009; 0800-1015 MTWThF; EE/CSci 3210; A-F only)
Energy and power in AC circuits. Transformers. Laplace transform techniques of circuit analysis. Frequency response. Two ports.

5470. DIRECTED STUDY. (285192) (Cr and hrs ar; prereq)

8450. SPECIAL INVESTIGATIONS. (585201) (1-4 cr; prereq #; hrs ar)

8460. PLAN B PROJECT. (987656) (4 cr; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (588910) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989049) (1-36 cr [max 11 cr per summer term])

Elementary Education (Elem)

125 Peik Hall. 625-6372
(Curriculum and Instruction)
College of Education

FIRST TERM

R.3300. CHILDREN'S LITERATURE. (185369) (3 cr; limited to 35 students; 0800-0900 MTWThF, Peikh 165; A-F only) Harty
Materials for children's reading in the elementary school program.

3604.¹ STUDENT TEACHING IN THE NURSERY SCHOOL. (585330) (3-6 cr; prereq approval of major adviser and director of student tchg; hrs ar; S-N only) Murphy

R.5100. ELEMENTARY SCHOOL CURRICULUM. (3 cr; prereq 3101; limited to 35 students each section; A-F only) Buggey
Selection and organization of subject matter for courses; methods, problems, and findings of research by subjects.
Sec 1, (385331) June 15-30; 0915-1130 MTWThF; ClaOff B30
Sec 2, (191804) July 6-20; 0915-1130 MTWThF; ClaOff B30

¹ Student teaching is open only to students in regular degree programs of the College of Education. Application must be made by May 1. Forms and instructions are available in 203 Burton Hall.

COURSE DESCRIPTIONS

R. 5101. SUMMER INSTITUTE FOR TEACHERS

Questions of Justice: Teaching and About Human Rights—June 21-26. (092038) (3 cr; limited to 30 students; prereq elem sch teaching exper; #; \$Pol 5710, SeEd 5153; S/N only; 0900-1200 MTWThFSa; BuH 123) Avery, Sullivan

This is the first course devoted to human rights issues that is specifically designed for teachers. It will provide opportunities for teachers to explore the relationships between human rights issues and education within local and global contexts. In discussions with human rights advocates, teachers will examine the historical, political and legal dimensions of current human rights issues, and they will develop curricula for use in their classrooms.

R.5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—June 15-30.

(485370) (3 cr; limited to 35 students; 0800-1015 MTWThF; PeikH 155; A-F only) Park

Diagnosis of pupil difficulty; development and prevention; tests as aids to teaching; following up a testing program; socioemotional problems associated with learning difficulties.

R.5140. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS—June 15-July 15.

(187980) (3 cr; limited to 25 students; \$CISy 5206; 0800-1100 TTh; PeikH 355; A-F only) Stochl
Use of microcomputers to enhance instruction; applications in language arts, mathematics, science, social studies; evaluation of available programs. Meets with CISy 5206.

R.5141. USING LOGO IN THE CLASSROOM—June 15-July 15.

(191714) (3 cr; limited to 6 students; \$ MthE 5173; prereq CIsy 5003 or equiv; 1145-1445 TTh; EdHAn 62; A-F only) Stochl
Using LOGO in the elementary and middle grades to develop skills in thinking, planning, and logic; applying fundamental mechanics and philosophy of LOGO using turtle graphics; developing classroom materials. Meets with MthE 5173.

R.5145. CLASSROOM MANAGEMENT—June 15-30.

(789182) (3 cr; limited to 40 students; \$SeEd 5145; prereq tchg or admin exper or #; 1300-1515 MTWThF; PeikH 315; A-F only) Hansen

For teachers, administrators, and support staff working in elementary school programs; focus on management of student behavior, or instruction as it relates to student behavior, and of teaching organizational tasks in the classroom.

5225. MULTICULTURAL GENDER—FAIR CURRICULUM—June 16-July 19.

(390836) (1-6 cr [max 6 cr]; limited to 15 students; 1145-1600 MW; PeikH 165; A-F only) Tedick, Walker
A 4-credit offering on planning for

development and implementation of a multicultural and gender-fair perspective in elementary and secondary classrooms. Development of individual teacher goals, exploration of professional issues, and the acquisition of resources and teaching strategies for successful exploration of new perspectives. Meets with SeEd 5225.

5300. LITERATURE FOR THE ELEMENTARY SCHOOL.

(185332) (3 cr; limited to 35 students; 1030-1130 MTWThF; PeikH 315; A-F only) Monson

Evaluative survey of books for children; research related to children's reading interests; selection of literature.

R.5318. CREATIVE WRITING FOR AND BY CHILDREN—June 15-30.

(3 cr [max 6 cr]; each section limited to 35 students; prereq 3300 or 3316 or elem tchg exper or #; S-N only)

Language arts in the elementary school for experienced teachers, supervisors, graduate students, and college instructors; emphasis on creative aspects of writing of children's literature and the children's own writing. Authors and illustrators of children's books will be involved in these 3-credit offerings. Sections will meet jointly for several sessions.

Sec 1, (085333) 1300-1515 MTWThF, FolH 116, Monson
Sec 2, 588227) 1300-1515 MTWThF, FolH 138, Phinney

5319. TEACHING SECOND LANGUAGES AND CULTURES IN ELEMENTARY SCHOOLS—June 15-28.

(286911) (3 cr; 1145-1515 MTWThF; PeikH 215; A-F only) Jorstad

Methods and materials; development of oral and written communication; consideration of alternatives in program format; preparation of materials; global awareness and cross-cultural experience; assessment of children's language; children's literature, games, songs; development of units and lessons.

R.5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL—June 15-30.

(091715) (3 cr; limited to 35 students; prereq 9cr in educ; 0915-1130 MTWThF; PeikH 225; A-F only) Watts

Objectives, materials, and teaching procedures; current practices and curricula; class and individual projects.

R.5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES.

(989598) (3 cr; limited to 15 students; prereq 5334; 0800-0900 MTWThF; PeikH 25 and off campus location to be announced; A-F only) Taylor, Smith
Relationship to psychological factors and remedial correction. Concurrent registration in 5336 required.

R.5336. CLINICAL PRACTICE IN REMEDIAL TEACHING.

(185114) (3

cr; limited to 15 students; prereq 5334 or 5107 and #; 0915-1015 MTWThF; PeikH 25 and off campus location to be announced; A-F only) Smith
Remedial tutoring of individual children who have difficulty in school learning. Students will be informed of where class will meet upon registration. Concurrent registration in 5335 required.

R.5352. TEACHING GEOLOGY IN THE ELEMENTARY SCHOOLS—June 15-29.

(891716) (3 cr; limited to 25 students; prereq admission to educ grad program or #; 1200-1530 MTWThF; PeikH 365; A-F only) Finley

Methods of teaching geology in the elementary school, including hands-on activities, demonstrations, audiovisuals, and field trips.

R.5361. TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL—July 6-20.

(489600) (3 cr; prereq 3101 or equiv; limited to 30 students; 0915-1245 MTWThF; BioSci 12; A-F only) Avery

Content and organization of social studies programs; programs of understanding, improving the learning situation, and effective use of materials.

R.5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION—June 15-30.

(589183) (3 cr; limited to 40 students; prereq tchg experience in kindergarten or primary school or #; 1530-1745 MTWThF; PeikH 155; A-F only) Hansen

Continuing needs of children in our changing culture; current practices and recent research.

5602. PRACTICUM: IMPROVEMENT OF TEACHING.

(3 cr; prereq MEd student in elem education; hrs ar; S-N only)

Sec 23, (685335) Stochl
Sec 25, (485336) Monson
Sec 27, (285337) Taylor
Sec 28, (289601) Finley
Sec 29, (189602) Avery
Sec 31, (389184) Hansen
Sec 32, (490570) Phinney
Sec 33, (691717) Watts

8916. PROBLEMS: TEACHING ENGLISH.

(Cr and hrs ar; prereq #) Sec 22, (285371) Monson
Sec 23, (290571) Phinney

8931. PROBLEMS: TEACHING READING.

(Cr and hrs ar; prereq 5331 or SeEd 5344 and #) Sec 21, (791711) Taylor
Sec 22, (491718) Watts

8976. PROBLEMS: TEACHING KINDERGARTEN.

(189185) (3 cr; prereq #; hrs ar) Hansen

8991. PROBLEMS: IMPROVEMENT OF INSTRUCTION.

(Cr and hrs ar; prereq #) Sec 23, (285340) Stochl
Sec 25, (185341) Monson
Sec 27, (985342) Taylor
Sec 28, (989603) Finley

Sec 31, 089186) Hansen
Sec 32, (190572) Phinney
Sec 33, (991805) Watts

SECOND TERM

R.5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 22-August 6.

(886404) (3 cr; limited to 35 students; 0800-1015 MTWThF; PeikH 40; A-F only) Park
See First Term.

R.5227. TEACHING ABOUT THE NEWSPAPER IN THE CLASSROOM—July 26-August 9.

(790574) (1-3 cr [max 4 cr]; \$SeEd 5227; limited to 15 students; 0915-1245 MTWThF; ClaOff B30; A-F only) Avery
The institution of the newspaper; articulation of a series of articles of useful instructional strategies, curriculum development techniques, and teaching materials. This 3-credit offering meets with SeEd 5227.

R.5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOLS—July 22-August 6.

(591807) (3 cr; limited to 35 students; prereq 3316 or elem tchg exper; 1300-1515 MTWThF; PeikH 315; A-F only) Dykstra
Improvement of instruction, study of trends in English education.

R.5334. READING DIFFICULTIES—July 22-August 6.

(686405) (3 cr; limited to 35 students; prereq 5331 or SeEd 5344; 1030-1245 MTWThF; PeikH 28; A-F only) Manning
Causes, prevention, and correction; remedial practices useful to the classroom teacher, school counselor, and reading specialist.

R.5338. TEACHING READING IN THE INTERMEDIATE GRADES—July 22-August 6.

(590575) (3 cr; limited to 35 students; prereq 3331 or elem teaching experience or #; 1030-1245 MTWThF; PeikH 155; A-F only) Graves

For teachers and specialists interested in problems of teaching reading beyond the decoding stage; comprehension strategies, basic study skills, reading in the content areas, and use of literature in the reading program.

R.5347. WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SCIENCE—Field Biology for Elementary Science Teachers—August 4, and 15-20.

(391808) (1-3 cr [max 12 cr]; limited to 25 students; prereq elem tchg exper; August 4-1300-1500 W; PeikH 365; August 15-1500-2130 Su; August 16-19-0800-2100 MTWTh; August 20-0800-1200 F; Itasca State Park Biological Station; A-F only)
Concept foundations, goals, and teaching and evaluation procedures. Using the natural environment in teaching through development of teaching procedures, ideas exchanged, materials design and

adaptation, and awareness of material sources using an interdisciplinary approach. Prior application must be made by June 15 to Field Biology Workshop Department of Curriculum and Instruction, 125 Peik Hall, 159 Pillsbury Drive SE, Minneapolis, MN 55455-0208, Attention: Naaz Babvani. Students pay for travel, food and lodging at the park. Arrangements are finalized at first session on campus. This offering for 3 credits.

R.5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES—July 22-Aug 6. (191809) (3 cr; limited to 25 students; 1145-1500 MTWThF; PeikH 385; A-F only) Experiences in the use of educational materials and media common to the teaching of modern elementary school science.

5602. PRACTICUM: IMPROVEMENT OF TEACHING. (3 cr; prereq MED student in elem education; hrs ar; S-N only) Sec 21, (486406) Jackson Sec 26, (388665) Manning Sec 29, (090578) Avery

8931. PROBLEMS: TEACHING READING. (791806) (Cr and hrs ar; prereq 5331 or SeEd 5344 and #) Manning

8991. PROBLEMS: IMPROVEMENT OF INSTRUCTION. (Cr and hrs ar; prereq #) Sec 21, (286407) Jackson Sec 26, (188666) Manning

Endodontics (Endo)

8-166 Moos Tower. 624-9900 School of Dentistry

FIRST AND SECOND TERMS: TEN-WEEK COURSE (Register once in Term I)

5299. ADVANCED CLINICAL ENDODONTICS. (889982) (Cr ar; A-F only)

5303. ADVANCED CLINICAL ENDODONTICS. (886418) (Cr ar; A-F only) Diagnosis and treatment of clinical cases. Students assigned complex cases and explore new and unique techniques.

5309. ADVANCED ENDODONTIC EMERGENCY. (689983) (1 cr; S-N only)

5313. ADVANCED ENDODONTIC EMERGENCY. (686419) (1 cr; S-N only) Each student is responsible for all emergencies in the Endodontic Clinic during an assigned 1-week period (8 hours a day).

5329. REVIEW OF CASES. (489984) (1 cr; S-N only)

5333. REVIEW OF CASES. (086420) (1 cr; S-N only) Students present cases from the previous quarter for review by endodontic faculty and graduate students.

5500. EVALUATION IN ENDODONTICS. (790946) (1 cr; S-N only)

8004. RESEARCH IN ENDODONTICS. (886421) (1 cr) Organized literature review in areas of specific interest to student, selection of this project, and completion of research and thesis.

8313. SEMINAR: ENDODONTICS. (686422) (2 cr; A-F only) Organized literature review in areas of interest to student, selection of a project, and completion of research and a thesis.

English as a Second Language (ESL)

102 Klaeber Court. 624-1503 (Linguistics) College of Liberal Arts

FIRST TERM

8777. THESIS CREDITS: MASTERS. (888735) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (589023) (1-16 cr [max 11 cr per summer term])

English Language and Literature (Engl)

207 Lind Hall. 625-3363 College of Liberal Arts

FIRST TERM

R.1005. INTRODUCTION TO LITERATURE. (885379) (4 cr; limited to 38 students; 0800-0900 MTWThF; LindH 305) Staff Understanding and enjoying literature. Readings of novels, short stories, poems, and plays.

R.1591. LITERATURE OF AMERICAN MINORITIES. (789652) (4 cr; limited to 38 students; 1145-1245 MTWThF; LindH 305) Staff Representative works by Afro-American, American Indian, Asian American, and Chicano/Chicana writers. Examination of relevant social factors.

R.1671. THE SHORT STORY. (890307) (4 cr; limited to 38 students; 0915-1015 MTWThF; LindH 215) Staff Introduction to short stories, with

some emphasis on the history and diversity of the form. Typical authors: Poe, Chekhov, Lawrence, Joyce, Kafka, Porter, Welty, Faulkner.

R.3008. TECHNIQUES OF LITERARY STUDY. (489239) (4 cr; limited to 30 students; 1145-1415 TTh; LindH 302) Anderson Training and practice in the analysis of various literary forms, with a special emphasis on poetry. Use of the argument, evidence, and documentation in literary papers; introduction to major developments in contemporary criticism.

R.3115. THE MIDDLE AGES. (291817) (4 cr; limited to 30 students; 1030-1130 MTWThF; LindH 215) MacLeish Major and representative works of the Middle Ages (650-1485). Typical readings: *Beowulf*, Chaucer, ballads, *Sir Gawain and the Green Knight*, *Everyman*.

R.3241. SHAKESPEARE. (185601) (4 cr; §3243; limited to 30 students; 0915-1055 MWF; LindH 217) Hirsch 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.

R.3242. SHAKESPEARE. (690308) (4 cr; §3243; limited to 30 students; 1145-1415 MW; MurH 311) Koelb Plays from the middle and late periods. All sections read *King Lear*, *Macbeth*, *The Tempest*, and two or three others.

R.3455. AMERICAN SHORT STORY. (889240) (4 cr; limited to 30 students; 1300-1530 TTh; MurH 311) Furia Typical authors: Irving, Poe, Hawthorne, Twain, Crane, Cather, Faulkner, Welty, Bellow.

R.3851. THE ENGLISH LANGUAGE. (689241) (4 cr; §5851; limited to 38 students; 0800-1030 WF; LindH 229) Brown The English language: its structure (phonetics, phonology, morphology, syntax, semantics) and use (pragmatics, dialect variation, and first language acquisition).

R.3960. JUNIOR-SENIOR SEMINAR. (4 cr per qtr; each section limited to 15 students; prereq English major, jr or sr; Comp 3011 or Comp 3012 or Comp 3013, Δ) Sec 1, **Classic Hollywood Cinema.** (991819) 1030-1300 MW, AmundH 120, Mowitz A study of the concept "Master narratives" in various humanistic disciplines. The industrial emergence of classical Hollywood cinema as well as the exemplary films that sought to challenge the emergent norm will be studied and clarified. Special attention will be paid throughout to the status of classical Hollywood cinema as a theoretical category within film analysis and cultural studies more broadly.

3963H. HONORS THESIS. (186934) (4 cr; prereq honors candidacy in English and consent of English honors adviser)

3970. DIRECTED STUDIES. (587725) (1-15 cr per term; prereq #, Δ, □) Guided individual reading or study.

3980. DIRECTED INSTRUCTION. (586932) (Cr ar; prereq #, Δ, □)

R.5134. 20TH-CENTURY BRITISH POETRY. (490309) (4 cr; prereq grad stu or Engl major or Δ; limited to 38 students; 0915-1145 TTh; LindH 217) Browne Major figures; historical and intellectual background; poetic theory. Typical authors: Hardy, Housman, Hopkins, Yeats, Eliot, S. Smith, Thomas, Larkin, Hughes.

R.5152. 19TH-CENTURY ENGLISH NOVEL. (589653) (4 cr; limited to 38 students; 0915-1145 TTh; LindH 229) Luke Novels by such authors as Scott, Dickens, the Brontes, Thackeray, Eliot, Hardy.

R.5210. SUMMER INSTITUTE FOR TEACHERS

Sec 5, **June 28-July 12, Writing for Teaching: Inspiring Writing and Creative Thinking in the Classroom.** (192054) (4 cr; limited to 20 students; 0930-1200 MTWThF; room arr) Anson See page 39 for details.

R.5414. CONTEMPORARY AMERICAN LITERATURE. (191821) (4 cr; limited to 38 students; 1145-1325 MWF, AmundH 124) Solotaroff A study of the important authors, intellectual currents, movements, conventions, genres, and themes since 1940.

R.5910. SUMMER INSTITUTE FOR TEACHERS

Sec 5, **June 21-July 2, Asian American Literature: Questions of Identity.** (992050) (4 cr; limited to 20 students; 0900-1200 MTWThF; room arr) Mura See page 37 for details.

5920. SUMMER INSTITUTE FOR TEACHERS

Sec 5, **June 22-July 2, Intercultural Studies in Literature.** (590897) (4 cr; 0900-1200 MTWThF; HCol Rm) Sugnet See page 36 for details.

5597. SUMMER INSTITUTE FOR TEACHERS

Sec 5, **HARLEM RENAISSANCE SEMINAR: African Art and Culture in the 1920's—June 22-July 2.** (790896) (4 cr; 0930-1200 MTWThF; SocSci 815) Wright Meets with Afro 5597. See page 36 for details.

8888. THESIS CREDITS: DOCTORAL. (988967) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT READING. (387726) (1-15 cr; prereq #, Δ)

COURSE DESCRIPTIONS

SECOND TERM

R.1005. INTRODUCTION TO LITERATURE. (085381) (4 cr; limited to 38 students; 1300-1400 MTWThF; LindH 302) Staff
See First Term.

R.1621. INTRODUCTION TO WOMEN WRITERS. (290313) (4 cr; limited to 38 students; 0800-0900 MTWThF; LindH 229) Staff
Works by several major women writers writing in English.

R.3008. TECHNIQUES OF LITERARY STUDY. (191826) (4 cr; limited to 30 students; 1030-1300 WF; LindH 217) Ross
See First Term.

R.3242. SHAKESPEARE. (091827) (4 cr; \$3243; limited to 30 students; 1145-1415 TTh; AmundH 124) Sugnet
See First Term

R.3252. THE KING JAMES BIBLE AS LITERATURE. (891828) (4 cr; limited to 38 students; 0800-1030 TTh, LindH 229) Haley
Narrative art and poetry in Old and New Testaments. Prophet, Apocrypha, and New Testament.

R.3455. AMERICAN SHORT STORY. (190899) (4 cr; limited to 38 students; 0915-1055 MWF; LindH 229)Geffen
Typical authors: Irving, Poe, Hawthorne, Twain, Crane, Jewett, Cather, Faulkner, Welty, Bellow, Oates.

R.3671. THE NOVEL. (891831) (4 crs; limited to 38 students; 0915-1145 TTh, LindH 229) Weinsheimer
The novel as a literary form. Readings of selected works of fiction from the 18th century to the present.

R.3851. THE ENGLISH LANGUAGE. (088488) (4 cr; limited to 38 students; \$5851; 0915-1145 MW; LindH 215) Anson
See First Term.

3960. JUNIOR-SENIOR SEMINAR. (4 cr per qtr; each section limited to 15 students; prereq English major, jr or sr; Comp 3011, 3012 or 3013)
Sec 2, Language and Society. (491993) (1030-1300 TTh, LindH 303) Escure
This seminar explores the social life of language, and in particular the social variables which determine linguistic differences.

3961. SENIOR PAPER. (689238) (1 cr; prereq Engl maj, sr, 3960 or ¶ 3960 or 3960H or ¶ 3960H or 3931-3932 or ¶ 3931-3932 or EngW 3960 or ¶ EngW 3960, Δ; S-N only)

3963H. HONORS THESIS. (086935) (4 cr; prereq honors candidacy in English and consent of English honors adviser)

3970. DIRECTED STUDIES. (187727) (1-15 cr per term; prereq #, Δ, ')
Guided individual reading or study.

3980. DIRECTED INSTRUCTION. (386933) (Cr ar; prereq #, Δ, ')

R.5940. FIGURES IN ENGLISH AND NORTH AMERICAN LITERATURE. (091830) (4 cr; limited to 38 students; 1145-1415 MW, AmundH 124) Roth

8888. THESIS CREDITS: DOCTORAL. (289050) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT READING. (087728) (1-15 cr; prereq #, Δ)

Entomology (Ent)

219 Hodson Hall, St. Paul. 624-3278
College of Agriculture

FIRST TERM

5910. SPECIAL PROBLEMS IN ENTOMOLOGY. (588213) (Cr ar; prereq #) Staff
Individual field, laboratory, or library studies in various areas of entomology.

5920. SPECIAL LECTURES IN ENTOMOLOGY: AQUATIC INSECTS—June 15-July 3. (891506) (3 cr; \$5360; limited to 20 students; prereq introductory biology; offered at Itasca; 0800-1700 WS; taught at Itasca) Holzenthal
Taxonomy and natural history of aquatic insects of the Lake Itasca area, including their importance in aquatic ecology, water resource management, recreation, and conservation. Morning lectures are followed by afternoon field trips to standing and running water habitats in Lake Itasca State Park. Emphasis is on field methods and family level identification. An insect collection is required.

8500.* RESEARCH IN ENTOMOLOGY. (685285) (Cr ar; prereq #; S-N only) Staff

8777. THESIS CREDITS: MASTERS. (388827) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788968) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5910. SPECIAL PROBLEMS IN ENTOMOLOGY. (388214) (Cr ar; prereq #) Staff
See First Term.

8500.* RESEARCH IN ENTOMOLOGY. (086191) (Cr ar; prereq #; S-N only) Staff

8777. THESIS CREDITS: MASTERS. (188912) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189051) (1-36 cr [max 11 cr per summer term])

F

Family Practice and Community Health (FPCH)

6-240 Phillips-Wangensteen Building.
624-2622
Medical School

SPECIAL TERM: JULY 1-SEPTEMBER 26

Required Courses

8201. CLINICAL FAMILY MEDICINE. (486468) (Cr ar; hrs ar) Ciriacy, staff

8207. SEMINAR: COMMON DISEASES SEEN IN FAMILY PRACTICE. (986474) (1 cr; hrs ar) Ciriacy, staff

8208. FAMILY MEDICINE CONFERENCES. (286469) (1 cr; hrs ar) Ciriacy, staff

8209. FAMILY MEDICINE X-RAY CONFERENCE. (786475) (1 cr; hrs ar) Ciriacy, staff

8210. FAMILY MEDICINE GRAND ROUNDS. (686470) (0-1 cr; hrs ar) Asp, staff

8212. CLINICAL PSYCHIATRY ROUNDS. (486471) (1 cr; prereq 1st yr resident in family practice; hrs ar) Kelly, staff

Elective Courses

5955. DIRECTED STUDY. (185467) (1-15 cr; prereq #; hrs ar) Coleman

5960. BASIC RESEARCH METHODS SEMINAR AND PRACTICUM. (187994) (4 cr; hrs ar) Kelly, staff

5967. INTRODUCTION TO HEALTH DATA SYSTEMS. (587711) (ar cr; prereq completion of first yr residency in family practice and community health or #) Staff

5968. COMPUTERS IN THEORY AND PRACTICE. (185377) (Cr ar) Gepner

8205. MEDICAL RECORDS SYSTEMS. (085378) (2 cr; hrs ar) Ciriacy, Kelly

8223. INTRODUCTION TO GERONTOLOGY, GERIATRIC MEDICINE. (087731) (2 cr; prereq 2nd yr FPCH resident or #; 1300-1630 Th; 0830-1600 F; Ebenezer Society) Keenan

8253. RESEARCH PROBLEMS. (586476) (Cr ar; hrs ar) Kelly, staff

Family Social Science (FSoS)

290 McNeal Hall. 625-1900
College of Human Ecology

FIRST TERM

3260. FAMILY RESOURCE MANAGEMENT. (190272) (4 cr; prereq AgEc 1101, Psy 1001, Soc 1001...Anth 1002, Pol 1001 rec; 0900-1130 MW; McNH 198) Rettig
Development of a theoretical systems framework to analyze behavior in families with emphasis on managerial aspects of behavior; goal setting, planning, and implementing resources.

5200. FAMILY RELATIONSHIPS. (991450) (5 cr; prereq Psy 1001, Soc 1001; 1300-1530 TTh; McNH 33) Olson
The family as an institution and system of relationships. Current developments in study of the family. Changes in American society and their influence on family life.

5202. SOCIAL PSYCHOLOGY OF CLOSE RELATIONSHIPS. (791451) (4 cr; prereq Psy 1001, introductory sociology or #; 1300-1530 MW; McNH 197) Boss

Introduction to social psychology theory and research concerning marriages, families, and other close relationships. Symbolic interaction theory, conflict theory, communication theory and social cognition.

5230. INDEPENDENT STUDY IN FAMILY SOCIAL SCIENCE. (985339) (1-5 cr [max 16 cr]) Staff

R.5500. RACIAL AND ETHNIC DIVERSITY IN FAMILIES. (291994) (4 cr; prereq 5200; 0900-1130 TTh; McNH 198) Brewer
Overview of family issues of various American racial and ethnic populations. Combines a study of research and case studies with individual projects to develop and enrich understanding of cultural diversity.

8222. INTERNSHIP IN TEACHING COLLEGE LEVEL FAMILY COURSES II. (390044) (2-6 cr; prereq 8221)

8223. INTERNSHIP IN TEACHING COLLEGE LEVEL FAMILY COURSES III. (190045) (2-6 cr; prereq 8222)

8230. DIRECTED STUDY IN FAMILY SOCIAL SCIENCE. (389721) (1-7 cr; prereq #) Staff

8270. PRACTICUM: FAMILY RESEARCH. (591452) (1-5 crs; prereq #)arr
Supervised family research.

COURSE DESCRIPTIONS

8777. THESIS CREDITS: MASTERS. (788792) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388794) (1-36 cr [max 11 cr per summer term])

**FIRST AND SECOND TERM:
TEN-WEEK COURSE**
(Register once in Term I)

5249. FIELDWORK: DIRECTED COMMUNITY WORK EXPERIENCE. (888458) (5-15 cr; prereq 5231, human relationships maj, #: 1145-1315 M; McNH 375; S-N only) Goodman

8553. INTERNSHIP IN MARITAL AND FAMILY THERAPY III. (889416) (7 cr; 8551-8552-8553+; prereq 8552, #: A-F only)
Participation in actual marital and family therapy clinical practice in approved community setting with on-site supervision (one to one) plus on-campus supervision (group setting with fellow interns).

SECOND TERM

R.1001. DYNAMICS OF FAMILY RELATIONSHIPS. (191995) (4 cr; limited to 50 students; 0900-1130 MW; McNH 197)
Application of behavioral sciences to mate selection, interaction in marriage and other committed relationships, sex roles, and maintaining and ending relationships.

1025. PARENTHOOD. (991996) (4 cr; 1300-1530 TTh; McNH 197)
Examination of differing concepts of family roles-father, mother, son, daughter, sister, brother. Their implications for parent-child and sibling interaction. Effects of parenthood on husband-wife relations.

3600. FAMILY ISSUES ACROSS THE LIFESPAN. (391453) (5 cr; prereq Psy 1001, Soc 1001; 0845-1200 MW; McNH 198) Detzner
Major family theories serve as frameworks to analyze selected problems confronting families throughout the lifespan.

5220. FAMILY ECONOMICS. (791997) (4 cr; prereq 3260 or #: 1300-1530 TTh; McNH 198) Gage
Variations in family income, saving, spending, and decision making related to socioeconomic factors. Conceptual development and research on economic problems of families.

5230. INDEPENDENT STUDY IN FAMILY SOCIAL SCIENCE. (686517) (1-5 cr [max 16 cr]) Staff

8222. INTERNSHIP IN TEACHING COLLEGE LEVEL FAMILY COURSES II. (090046) (2-6 cr; prereq 8221)

8223. INTERNSHIP IN TEACHING COLLEGE LEVEL COURSES III. (890047) (2-6 cr; prereq 8222)

8230. DIRECTED STUDY IN FAMILY SOCIAL SCIENCE. (089723) (1-7 cr; prereq #) Staff

8270. PRACTICUM: FAMILY RESEARCH. (191454) (1-5 crs; prereq #) arr
Supervised family research

8319. ETHICAL AND LEGAL ISSUES IN MARITAL AND FAMILY THERAPY. (091455) (4 cr; prereq 8214, 8215, or #: 0915-1145 TTh; McNH 278) Maddock
Major issues - ranging from general social issues (e.g., feminism), to legal concerns (e.g., reporting laws), to specific client situations (e.g., sexual exploitation by therapists) - explored from a systemic perspective.

8777. THESIS CREDITS: MASTERS. (489032) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289033) (1-36 cr [max 11 cr per summer term])

Finance (BFin)

737 Management/Economics Building. 624-2888
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on page xxx.

FIRST TERM

R.3000. FINANCE FUNDAMENTALS. (985308) (4 cr, \$MBA 8040; limited to 50 students; prereq Acct 1050 or Acct 1025; 0915-1045 MTWTh; BlegH 215; A-F only) Arthur
A comprehensive, analytical introduction to the principal concepts in finance. A survey of financial markets, valuation theory, financial management decisions concerning uses and sources of funds (i.e., capital budgeting).

R.3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS. (785309) (4 cr, \$8300; limited to 40 students; prereq 3000; 1430-1630 TWF; BlegH 205)
Introduction to financial decision procedures for a variety of financial markets. Among the topics covered: banks and other financial intermediaries, risk-return relationships of various marketable securities, analytical techniques of portfolio management in changing financial markets.

**FIRST AND SECOND TERM:
TEN-WEEK COURSE**
(Register once in Term I)

R.8200. FINANCIAL MARKETS AND INTEREST RATES. (988550) (4 cr; limited to 20 students; prereq MBA 8040 or #, grad mgmt student or Grad Sch Mgmt approval; 1730-2100 M; BlegH 415) Runkle

Survey of world financial markets. Among the topics covered: the term structure of interest rates, the interest rate-exchange rate and interest rate-inflation rate relationships, and the use of financial futures.

SPECIAL TERM: EIGHT WEEK COURSE
July 7 - August 25

R.8150. THEORY OF FINANCE. (290487) (4 cr; limited to 20 students; prereq MBA 8040 or #, grad mgmt/IR student or Grad Sch Mgmt approval; 1730-2100 W and 0900-1200 July 17 and August 7; BlegH 415; A-F only) Alexander
Rigorous introduction to modern theory of finance. Discussion of capital budgeting, capital structure, dividend policy, asset pricing, application of option pricing to corporate finance, and efficiency of financial markets.

SECOND TERM

R.3000. FINANCE FUNDAMENTALS. (686209) (4 cr, \$MBA 8040; limited to 50 students; prereq Acct 1050 or Acct 1025, 0915-1045 MTWTh; BlegH 105; A-F only)
See First Term.

Fisheries and Wildlife (FW)

200 Hodson Hall, St. Paul. 624-3600
College of Natural Resources
(See also Itasca Biology Program, and Itasca Forestry Session)

FIRST TERM

5393. SPECIAL PROBLEMS IN FISHERIES BIOLOGY. (485286) (Cr ar; prereq #) Staff
Individual field, library, and laboratory research in various lines of fisheries biology.

5398. SPECIAL PROBLEMS IN WILDLIFE BIOLOGY. (285287) (Cr ar; prereq #) Staff
Individual field, library, and laboratory research in various areas of wildlife biology.

8364.* RESEARCH IN FISHERIES BIOLOGY. (185288) (Cr ar; prereq fisheries grad) Staff

8377.* RESEARCH IN WILDLIFE BIOLOGY. (985289) (Cr ar; prereq wildlife grad) Staff

8777. THESIS CREDITS: MASTERS. (088796) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688798) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3600. FISHERIES AND WILDLIFE FIELD TECHNIQUES-August 25-September 18. (188241) (5 cr; prereq 3052, Δ; offered at Itasca; A-F only)
Introduction to field techniques and skills; planning and implementing field projects; data collection and analysis using microcomputers; written reports and field journal. (Additional \$10 lab fee.)

5393. SPECIAL PROBLEMS IN FISHERIES BIOLOGY. (886192) (Cr ar; prereq #) Staff
See First Term.

5398. SPECIAL PROBLEMS IN WILDLIFE BIOLOGY. (686193) (Cr ar; prereq #) Staff
See First Term.

8364.* RESEARCH IN FISHERIES BIOLOGY. (486194) (Cr ar; prereq fisheries grad) Staff

8377.* RESEARCH IN WILDLIFE BIOLOGY. (286195) (Cr ar; prereq wildlife grad) Staff

8777. THESIS CREDITS: MASTERS. (189034) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989035) (1-36 cr [max 11 cr per summer term])

Fluid Mechanics (FMe)

125 Mechanical Engineering. 625-0705
Institute of Technology

FIRST TERM

8777. THESIS CREDITS: MASTERS. (388777) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088779) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (089026) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889027) (1-36 cr [max 11 cr per summer term])

COURSE DESCRIPTIONS

Food Science and Nutrition (FScN)

225 Food Science and Nutrition, St. Paul. 624-1290
Colleges of Agriculture and Human Ecology

FIRST TERM

R.1612. PRINCIPLES OF NUTRITION. (4 cr; limited to 100 students; prereq HS Chem and Biol; 0800-1000 MTW; FScN 15) Hanson

Fundamental concepts: human nutritional requirements, function of nutrients, nature of deficiencies. Vegetarianism, weight loss, fad diets, activity, obesity, cancer, heart disease, food processing safety, world food problems.

Rec 1. (591998) 0800-0940 Th, FScN 15.

Rec 2. (391999) 0800-0940 Th, FScN 23.

Rec 3. (292000) 1000-1140 Th, FScN 15.

Rec 4. (192001) 1000-1140 Th, FScN 23.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (285290) (1-5 cr [may be repeated for cr]; prereq Δ ; hrs ar) Staff
Individual laboratory or library research in some area related to food science or nutrition.

R.5404. CURRENT ISSUES IN FOOD AND NUTRITION- June 28-July 12. (989181) (3 cr; limited to 25 students; prereq 15 cr in food science, nutrition or #; 0900-1130 MTWThF; ABLMS 222) Levine

Evaluation of popular and scientific literature as it deals with nutrition, food additives, food safety, food fads, health foods, environmental contamination, the consumer movement, naturally occurring food toxicants, processed foods, synthetic foods, organically grown foods.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (185291) (1-5 cr; prereq Δ ; hrs ar) Staff
Independent study and written reports.

8621. INDEPENDENT STUDY: NUTRITION. (985292) (1-9 cr; prereq #; hrs ar) Staff
Independent study and written reports.

8777. THESIS CREDITS: MASTERS. (188787) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188790) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (186196) (1-5 cr [may be repeated for cr]; prereq Δ ; hrs ar) Staff
See First Term.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (986197) (1-5 cr; prereq Δ ; hrs ar) Staff
See First Term.

8403. ADVANCED TOPICS IN FOOD SCIENCE. (288240) (3 cr; prereq #; 0800-1100 MTW; ABLMS 222)
Review of recent research in food science.

8621. INDEPENDENT STUDY: NUTRITION. (786198) (1-9 cr; prereq #; hrs ar) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (889030) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689031) (1-36 cr [max 11 cr per summer term])

Foreign Studies Management (FSMg)

290 Hubert H. Humphrey Center.
624-3313
Carlson School of Management

FIRST TERM

3460. INSTITUTE OF EUROPEAN STUDIES PROGRAM IN VIENNA, AUSTRIA. (688462) (1-54 cr; prereq Δ)

3490. INSTITUTE OF EUROPEAN STUDIES PROGRAM AT THE UNIVERSITY OF SINGAPORE. (488463) (1-45 cr; prereq Δ)

3590. INSTITUTE OF EUROPEAN STUDIES INTERNATIONAL BUSINESS MANAGEMENT PROGRAM IN DIJON. (690292) (1-24 cr; prereq Δ)

3620. COUNCIL ON INTERNATIONAL EDUCATIONAL EXCHANGE JAPANESE BUSINESS AND SOCIETY PROGRAM. (589927) (1-24 cr; prereq Δ)

3680. COUNCIL ON INTERNATIONAL EDUCATIONAL EXCHANGE BUSINESS AND SOCIETY PROGRAM IN SEVILLE, SPAIN. (389928) (1-26 cr; prereq Δ)

3820. DENMARK'S INTERNATIONAL BUSINESS STUDIES PROGRAM IN COPENHAGEN. (288464) (1-36 cr; prereq Δ)

Foreign Study (FoSt)

260 Social Sciences. 624-4525
College of Liberal Arts

FIRST TERM

0010. STUDY ABROAD. (687716) (prereq Δ ; S-N only) This no-credit registration allows students to maintain their status at the University while studying abroad.

FIRST AND SECOND TERMS: TEN-WEEK COURSE (Register once in Term I)

3000. STUDY ABROAD. (290294) (1-15 cr; prereq Δ) Temporary registration used by students who are studying abroad for post-return transfer credit or credit by exam and who are eligible for student financial aid or loan deferments.

3060. CIEE SUMMER MOSCOW BUSINESS AND SOCIETY PROGRAM. (792051) (1-12 cr)

3270. CIC AUSTRALIAN INTERNSHIP PROGRAM. (592052) (1-24 cr)

3280. CIC SUMMER PROGRAM IN GUANAJUATO, MEXICO. (190295) (1-15 cr; prereq Δ)
Seven-week summer language and area studies program in Guanajuato, Mexico, sponsored by the Committee on Institutional Cooperation. Instruction entirely in Spanish by University of Guanajuato faculty. Advanced Spanish, Mexican and Latin American studies courses in history, civilization/culture, literature.

3290. CIC SUMMER FRENCH PROGRAM IN QUEBEC. (990296) (1-10 cr; prereq Δ)
Six-week intensive summer French language program at Laval University, Quebec City, Canada. Language courses at any of seven levels, supplemented at upper levels by Quebec studies courses taught in French. One year college French or equivalent required.

3420. IES PROGRAM IN LONDON. (988466) (1-54 cr; prereq Δ)
Six-week summer program at the Institute of European Studies in London. Students choose two courses from the following: London Life in British Literature, Introduction to Comparative Law, and History of London. Some parliamentary internship placements may be available.

3430. IES PROGRAM IN NANTES, FRANCE. (790297) (1-54 cr; prereq Δ)
Six-week summer program entirely in French at the Institute of European Studies in Nantes. Students choose two courses from the following: Advanced French, Modern France, and French 19th and 20th Century Art.

3440. IES PROGRAM IN PARIS. (788467) (1-54 cr; prereq Δ)
Six-week summer program at the Institute of European Studies in Paris. Two tracks based on language-level are available. The first track requires one year of French, and offers Intermediate French and an area studies course taught in English. The second track requires two years of French, and offers Advanced French, Business French, and area studies courses taught in French.

3450. IES PROGRAM IN MADRID. (588468) (1-54 cr; prereq Δ)
Six-week summer program at the Institute of European Studies in Madrid. Two tracks based on language-level are available. The first track requires one year of Spanish, and offers Intermediate Spanish and an area studies course taught in English. The second track requires two years of Spanish, and offers Advanced Spanish and area studies courses taught in Spanish.

3460. IES PROGRAM IN VIENNA. (388469) (1-54 cr; prereq Δ)
Six-week summer program at the Institute of European Studies in Vienna. Beginning German is offered; intermediate and/or advanced German courses are available pending enrollment. Area studies courses in art history, music history, and Eastern European studies are offered in English.

3730. CIEE TROPICAL BIOLOGY PROGRAM IN COSTA RICA. (590298) (1-10 cr; prereq Δ)
Summer program in tropical biology, under the auspices of the Council on International Educational Exchange. Based at the Monteverde Institute, located in a cloud forest in northwestern Costa Rica. Courses in tropical biology (taught in English), Spanish language instruction, and a field research project.

3820. DENMARK'S INTERNATIONAL STUDY PROGRAM. (089544) (1-54 cr; prereq Δ) Summer program offering two curricula in Copenhagen, Denmark. The first is a ten-week program in architecture and design. The second is a six-week program entitled "Europe in Transition," which offers interdisciplinary courses in East-West studies. Both curricula offer Danish language courses.

SECOND TERM

0010. STUDY ABROAD. (487717) (prereq Δ ; S-N only) See First Term.

Foreign Study SPAN (FSP)

107 Nicholson Hall. 626-1083
College of Liberal Arts

FIRST TERM

5960. PREPARATORY SEMINAR FOR SPAN OVERSEAS RESEARCH. (6 cr; prereq approval before Nov 1992 by a faculty selection committee; A-F only)
Intensive study of culture and society to be visited, intercultural communication training, and development of the research project. Usually meets on Saturdays. Credit for 5960 not granted until completion of 5970.
Sec 1 (488351) Germany, Hirschbach
Sec 2 (389959) Greece, Stavrou

COURSE DESCRIPTIONS

Sec 3 (789960) Scotland, Piorkowski
Sec 4 (589961) Sri Lanka, Gunaratne

SECOND TERM

5970. PREPARATORY SEMINAR FOR SPAN OVERSEAS RESEARCH. (6 cr; prereq satisfactory completion of first term; A-F only)
Summer directed field study in Germany, Greece, Scotland, or Sri Lanka under the guidance of a SPAN faculty adviser accompanying each country group. Each student writes a comprehensive research paper upon return.

Sec 1 (188327) Germany, Hirschbach
Sec 2 (389962) Greece, Stavrou
Sec 3 (189963) Scotland, Piorkowski
Sec 4 (089964) Sri Lanka, Gunaratne

Forest Products (ForP)

203 Kaufert Laboratory, St. Paul. 624-9219
College of Natural Resources

FIRST TERM

8300.* RESEARCH PROBLEMS. (886502) (Cr ar) Staff

8301.* RESEARCH PROBLEMS. (686503) (Cr ar) Staff

8302.* RESEARCH PROBLEMS. (486504) (Cr ar) Staff

FIRST AND SECOND TERM: TEN-WEEK COURSES

(Register once in Term I)

3301. INDUSTRIAL INTERNSHIP. (386995) (2 cr; prereq FP cooperative education student; A-F only)
Evaluation based on formal report written by student at end of each quarter of work assignment.

5401. SENIOR TOPICS. (887035) (prereq sr, #) (Cr ar)

SECOND TERM

8300.* RESEARCH PROBLEMS. (386477) (Cr ar) Staff

8301.* RESEARCH PROBLEMS. (186478) (Cr ar) Staff

8302.* RESEARCH PROBLEMS. (086479) (Cr ar) Staff

Forest Resources (FR)

115 Green Hall, St. Paul. 624-3400
College of Natural Resources (See also Itasca Forestry Session).

FIRST TERM

3225. DIRECTED STUDY EXPERIENCE. (186327) (1-5 cr; prereq #)

5225. DIRECTED STUDY EXPERIENCE. (989987) (1-5 cr; prereq #)

8100.* RESEARCH PROBLEMS: SILVICULTURE. (286505) (Cr ar) Puettmann, Nichols

8101.* RESEARCH PROBLEMS: FOREST-TREE PHYSIOLOGY. (186506) (Cr ar) Sucoff, Reich

8102.* PROBLEMS: FOREST-TREE GENETICS. (986507) (Cr ar) Mohn, Furnier, Li

8103.* RESEARCH PROBLEMS: FOREST HYDROLOGY. (786508) (Cr ar) Brooks, Perry

8104.* RESEARCH PROBLEMS: FOREST ECOLOGY. (792003) (1-18 cr; A-F only) Reich, Grigal, Sucoff

8105. ADVANCED FIELD SILVICULTURE. (086515) (3 cr; prereq 5101, #; offered at Cloquet Forestry Center) Staff

Selected current silvicultural problems and research. Plant-soil relationships with particular reference to forest soils. Methods of forest soil investigations in the field and in the laboratory.

8112. RESEARCH PROBLEMS: PHYSIOLOGICAL ECOLOGY. (892056) (cr ar) Reich, Sucoff

8200.* RESEARCH PROBLEMS: FOREST MANAGEMENT. (586509) (Cr ar) Rose, Blinn, Hoganson

8201.* RESEARCH PROBLEMS: FOREST ECONOMICS. (986510) (Cr ar) Ellefson, Gregersen, Rose, Blinn

8202.* RESEARCH PROBLEMS: FOREST BIOMETRY. (786511) (Cr ar) Ek, Burk

8203.* RESEARCH PROBLEMS: FOREST RECREATION. (586512) (Cr ar) Anderson, Lime

8204.* RESEARCH PROBLEMS: FOREST POLICY. (386513) (Cr ar) Ellefson, Gregersen, Baughman

8205.* RESEARCH PROBLEMS: REMOTE SENSING. (186514) (Cr ar) Bauer, Queen

SECOND TERM

3225. DIRECTED STUDY EXPERIENCE. (187758) (1-5 cr)

5225. DIRECTED STUDY EXPERIENCE. (789988) (1-5 cr)

8100.* RESEARCH PROBLEMS: SILVICULTURE. (386480) (Cr ar) Puettmann, Nichols

8101.* RESEARCH PROBLEMS: FOREST-TREE PHYSIOLOGY. (186481) (Cr ar) Sucoff

8102.* RESEARCH PROBLEMS: FOREST-TREE GENETICS. (086482) (Cr ar) Mohn, Furnier

8103.* RESEARCH PROBLEMS: FOREST HYDROLOGY. (886483) (Cr ar) Brooks, Perry

8104.* RESEARCH PROBLEMS: FOREST ECOLOGY. (592004)(cr ar) Reich, Grigal, Sucoff

8112. RESEARCH PROBLEMS: PHYSIOLOGICAL ECOLOGY. (692057)(cr ar) Reich, Sucoff

8200.* RESEARCH PROBLEMS: FOREST MANAGEMENT. (686484) (Cr ar) Rose, Blinn, Hoganson

8201.* RESEARCH PROBLEMS: FOREST ECONOMICS. (486485) (Cr ar) Ellefson, Gregersen, Rose, Blinn

8202.* RESEARCH PROBLEMS: FOREST BIOMETRY. (286486) (Cr ar) Ek, Burk

8203.* RESEARCH PROBLEMS: FOREST RECREATION. (186487) (Cr ar) Anderson, Lime

8204.* RESEARCH PROBLEMS: FOREST POLICY. (986488) (Cr ar) Ellefson, Gregersen, Baughman

8205.* RESEARCH PROBLEMS: REMOTE SENSING. (786489) (Cr ar) Bauer, Queen

SPECIAL TERM OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION-AUGUST 25-SEPTEMBER 18

R.3100. MINNESOTA PLANTS. (2 cr; each section limited to 15 students; prereq Biol 1103, Δ; offered at Itasca) Identification of forest plants as related to habitat.
Sec 1, (186490) Staff
Sec 2, (986491) Staff
Sec 3, (786492) Staff
Sec 4, (586493) Staff

R.3101. NORTHERN FOREST ECOSYSTEMS. (3 cr; each section limited to 15 students; prereq Chem 1001 or 1051, Δ; offered at Itasca) Field examination of succession, silvical characteristics, tree classification, stand structure, and regeneration ecology.
Sec 1, (386494) Sucoff, staff
Sec 2, (186495) Sucoff, staff
Sec 3, (086496) Sucoff, staff
Sec 4, (886497) Sucoff, staff

R.3106. IMPORTANT PLANTS IN FISHERIES AND WILDLIFE HABITATS. (1 cr; each section limited to 16 students; prereq ¶FW 3600 or #; offered at Itasca; A-F only) Field identification and discussion of important plants and their relationship to fish and wildlife species.
Sec 1, (689398) Splett
Sec 2, (090273) Staff

R.3201. FIELD FOREST MEASUREMENTS. (1 cr; each section limited to 15 students; prereq Math 1008, Δ;

offered at Itasca) Introduction to land survey, tree and stand measurement, and basic forest sampling techniques.
Sec 1, (686498) Burk
Sec 2, (486499) Burk
Sec 3, (186500) Burk
Sec 4, (086501) Burk

R.5160. PRACTICUM IN FOREST BIOLOGY AND MEASUREMENTS. (986989) (3 cr; limited to 15 students; prereq graduate student; offered at Itasca) Sucoff, Burk
Plant identification, plant dynamics, tree measurement.

Forestry (Fors)

235 Natural Resources Administration Building
St. Paul. 624-2774
College of Natural Resources

FIRST TERM

8777. THESIS CREDITS: MASTERS. (589054) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389055) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189056) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089057) (1-36 cr [max 11 cr per summer term])

French (Fren)

260 Folwell Hall. 624-4308
(French and Italian)
College of Liberal Arts

FIRST TERM

R.1101. BEGINNING FRENCH. (785603) (5 cr; limited to 20 students; 0915-1130 MTWThF, FolH 114)

R.1102. BEGINNING FRENCH. (585604) (5 cr; limited to 20 students; prereq 1101 or equiv; degree credit granted only according to Entrance Standard; 0800-1015 MTWThF; EE/CSci 2260)

R.1103. BEGINNING FRENCH. (385605) (5 cr; limited to 20 students; prereq 1102 or Entrance Standard proficiency test; 0800-1015 MTWThF; AmundH 156)

R.1104. INTERMEDIATE FRENCH. (185606) (5 cr; limited to 20 students; prereq 1103 or 3 yrs high school French; 1030-1245 MTWThF; FolH 148) R.

R.1106. INTERMEDIATE FRENCH. (585389) (5 cr; limited to 20 students; prereq 1105; 1030-1245 MTWThF; FordH 60)

COURSE DESCRIPTIONS

R.3015. FRENCH COMPOSITION AND CONVERSATION. (085607) (4 cr; limited to 18 students; prereq 1106; 0915-1130 MWF; FolH 344) Robinson
Emphasis on writing, development of communication skills. Based on a consolidation of grammar.

R.3101. INTRODUCTION TO FRENCH LITERARY TEXTS: POETRY. (190359) (4 cr; limited to 25 students; prereq 3016 or equiv; 0915-1130 MWF; AmundH 162)
Approaches to literary analysis and techniques examined through critical reading. Aims beyond, but focuses on, poetry.

R.3259. TOPICS IN 18TH-CENTURY FRENCH LITERATURE. (190362) (4 cr; limited to 25 students; prereq 3101, 3103; 0915-1130 MWF; FolH 326)
Selected texts. Taught in French.

3970. DIRECTED READINGS. (885608) (1-5 cr; prereq undergrad, #, Δ, □)

5710. THE FRENCH LANGUAGE: YESTERDAY, TODAY, AND TOMORROW. (392005) (5 cr; limited to 20 students; prereq 3016; 0915-1215 MWF; FolH 138) Wieland
Designed primarily for teachers of French who would like to further develop their knowledge of the French language and its development, and improve their own linguistic proficiency.

8777. THESIS CREDITS: MASTERS. (088782) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688784) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (685609) (1-5 cr; hrs ar) Staff

FIRST AND SECOND TERMS: TEN-WEEK COURSE

(Register once in Term I)
A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must enroll for all three courses and may not enroll in other summer courses. Prospective students should talk to an adviser before registering for intensive language courses.

R.1101-1102-1103. BEGINNING FRENCH. (15 cr for both terms; limited to 20 students; 0915-1245 MTWThF; KoltH S140)
R.1101, Sec 5, (085610) June 15-July 8, 5 cr
R.1102, Sec 5, (885611) July 9-August 3, 5 cr
R.1103, Sec 5, (685612) August 4-25, 5 cr

R.1104-1105-1106. INTERMEDIATE FRENCH. (15 cr for both terms; limited to 20 students; 0915-1245 MTWThF; FolH 104)

R.1104, (189753) Sec 5, June 15-July 8, 5 cr, Wieland
R.1105, (089754) Sec 5, July 9-August 3, 5 cr
R.1106, (889755) Sec 5, August 4-25, 5 cr

SECOND TERM

R.1102. BEGINNING FRENCH. (186626) (5 cr; limited to 20 students; prereq 1101 or equiv; degree credit granted only according to Entrance Standard; 0915-1130 MTWThF; FolH 114)

R.1103. BEGINNING FRENCH. (086627) (5 cr; limited to 20 students; prereq 1102 or Entrance Standard proficiency test; 0800-1015 MTWThF; FolH 138)

R.1105. INTERMEDIATE FRENCH. (886628) (5 cr; limited to 20 students; prereq 1104; 0915-1130 MTWThF; AmundH 156)

R.3016. ADVANCED FRENCH COMPOSITION AND CONVERSATION. (686629) (4 cr; limited to 18 students; prereq 3015 or #; 0915-1130 MWF; FolH 234)

R.3602. LITERATURE IN ENGLISH TRANSLATION. (791580) (4 crs [does not count toward French major]; limited to 60 students; 0915-1130 MWF; FolH 208)
Representative works from the 19th and 20th centuries; movements, genres, themes. Taught in English.

3970. DIRECTED READINGS. (086630) (1-5 cr; prereq undergrad, #, Δ, □) Staff

8777. THESIS CREDITS: MASTERS. (689028) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489029) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (886631) (1-5 cr; hrs ar) Staff

French and Italian (FrIt)

260 Folwell Hall. 624-4308
(French and Italian) College of Liberal Arts

SECOND TERM

R.3608. NEW WAVE CINEMAS. (190782) (4 cr; limited to 60 students; does not count toward French major; knowledge of French and Italian helpful but not necessary; 1145-1400 MWF; FolH 208) Conley
Film work of directors recasting classical traditions of Europe and America. Filmic theories of the Western, B-genre; political cinema; Godard, Resnais, Rivette, Pasolini, Antonioni, Bertolucci. Course varies in structure.

G

General College (GC)

109 Appleby. 625-6663

The General College summer program offerings enable students to refine and further develop their study skills; to strengthen their academic record; and to prepare for transfer to degree programs. Courses are offered in mathematics, science, the social sciences, literature, speech, and writing. Students interested in planning a Summer Program are encouraged to call 625-3339 to make an academic planning appointment.

FIRST TERM

1086. HIGHER EDUCATION SURVIVAL SEMINAR. (491105) (1 cr; Upward Bound Students ONLY; hours and days arranged) Macias-Howard
Designed to increase student academic achievement at the University. Emphasis on academic coping skills (e.g., study behavior, test-taking, time management, communication skills) and career exploration. Personal issues that may interfere with student progress discussed. Information about University/community resources presented.

R.1132. BIOLOGICAL SCIENCE: THE HUMAN BODY. (188482) (4 cr; limited to 40 students; 0800-1015 MTWThF; SciCB 125) Dearden
Problems of physical, mental, and social health related to anatomy, physiology, and needs of the human organism. In studying the heart, for example, instructor shows what it is, how it works, its importance to overall functioning of the body, what can go wrong with it, and what is known about keeping it on the job. Films, televised dissections, and demonstrations supplement lectures.

1138. BIOLOGICAL SCIENCE SPECIAL TOPICS. (891134) (1 cr; Upward Bound Students ONLY; 1325-1425 MTWTh; KaufL 302)
Previous or concurrent enrollment in GC 1132.) Dearden
A group project in human anatomy and physiology.

R.1166. PHYSICAL SCIENCE: PRINCIPLES OF CHEMISTRY. (691801) (4 cr; limited to 40 students; 1030-1245 MTWThF; SciCB 125) Schwabacher
Fundamental principles and laws of chemistry, stressing theory development, application, roots in experience. Problem-solving techniques. Classification of matter, elements, atomic and molecular structure, compounds and chemical bonding, chemical reactions and stoichiometry, gas laws. No separate weekly laboratory.

R.1235. UNITED STATES: LAW IN SOCIETY. (189302) (4 cr; limited to 15 students; 0800-1015 MTWThF; ApH 322) Hower
The role of law in our changing society; legal aspects of current topics. Courts and court systems, corrections, police-community relations, environmental problems, domestic problems, wills and probate, and insurance. When possible on individual or group basis, students visit conciliation, municipal, or district courts, prisons, workhouses, jails, juvenile detention centers, or similar institutions.

R.1421. WRITING LABORATORY: BASIC WRITING. (587692) (4 cr; limited to 18 students; 1030-1245 MTWThF; ApH 227) Sirc
Students write on various topics in response to reading and discussion. Personal help with writing problems. Emphasis on clear and effective written expression. Requires use of microcomputer; uses IBM PC.

R.1456. FUNCTIONS AND PROBLEMS OF LOGIC. (689305) (4 cr; limited to 30 students; 1030-1245 MTWThF; ApH 226) Zanon
Introduction to logical thinking. Application of critical analysis and techniques of precise reasoning to various types of discourse and argument, development of systematic thinking by learning about complexities of language, differences between good and bad evidence, and methods of deductive and inductive reasoning.

R.1513. SMALL BUSINESS OPERATIONS. (491802) (4 cr; limited to 30 students; 1030-1245 MTWThF; ApH 303) Kroll
Students evaluate opportunities to start a small business or to purchase an existing one. Topics include financing the business; marketing products; administering key resources; organizing, controlling, and writing the business plan. Designed for people who plan to own or operate a small business in a marketing-related area.

FIRST TERM: SHORT COURSES

Summer in the City

R.1221. MINNESOTA HISTORY-June 15-July 2. (589300) (4 cr; limited to 15 students; 0900-1200 MTWThF; ApH 209) Buckley
An introductory course on the people, resources, institutions, and traditions that make Minnesota a unique part of American history. The class will meet at several Twin Cities historic sites including Fort Snelling, St. Anthony Falls, the James J. Hill House, and the new Minnesota History Center.

R.1284. BEHAVIOR PROBLEMS OF CHILDREN-July 6-20. (389752) (4 cr; limited to 25 students; 0840-1200 MTWThF; ApH 103) Latts
Study of children and adolescents displaying maladaptive and

inappropriate behaviors, the causes of these behavior patterns, and what can be done to prevent and treat these behavior problems. Includes the hostile, aggressive child; passive, withdrawn child; school-phobic child; and juvenile delinquent. In addition to meeting on campus, class sessions will be held at Twin Cities agencies that deal with the behavior problems of children, such as Wilder Child Guidance Clinic, Early Childhood Center, an in-patient children's psychiatric ward, St. Joseph's Home for Children, PACER, and the juvenile court system.

R.1285. CULTURAL ANTHROPOLOGY-June 15 -July 2. (089303) (4 cr; limited to 25 students; 0855-1200 MTWThF; ApH 103) F. Johnson Human culture viewed as integrated system of learned and shared knowledge that guides behavior of all members of given society. Attempt to develop generalizations about influence of culture on human behavior by analyzing and comparing ways of life in wide range of cultures. Power of culture to shape personality and power of individuals to alter cultures.

R.1311. ART: GENERAL ARTS-June 15-July 2. (889304) (4 cr; limited to 25 students; \$3311; 0900-1200 MTWThF; ApH 302; frequent off-campus field trips and gallery visits) Adamson Examines representative works of art from genres of painting, sculpture, architecture, literature, and music to discover how and why art is created. Intensive two-week sections takes advantage of the rich art resources of the Twin Cities. Visits to the major museums, the Minneapolis Sculpture Garden, galleries, architectural sites, and other institutions.

R.1557. BUSINESS AND SOCIETY: FIELD EXPERIENCE-July 6-20. (190269) (4 cr; limited to 15 students; 0845-1200 MTWThF; ApH 325) S. Peterson Career exploration in a business field. Business concepts studied in class, followed by field trips to local businesses ranging from large corporations to small, individually owned enterprises. Field trips include experiences both in business per se (manufacturing, marketing, management, finance) and also in the arts, sciences, and society in general (attending concerts, plays, and exhibits while learning about marketing in the arts).

FIRST AND SECOND TERM: SEVEN-WEEK COURSES

R.0621. ELEMENTARY ALGEBRA-June 21-August 6. (088586) (No cr; limited to 30 students; \$0617, 1435; prereq GC math level C or 0611 or 1434; 0830-1000 MTWThF; ApH 117) T. Wyberg Topics include signed numbers, variables, expressions, equations,

inequalities, exponents, polynomials, factoring, rational expressions, Cartesian graphing, systems of equations, radicals, and word problems.

R.0625. INTERMEDIATE ALGEBRA, PART I-June 21-August 6. (888590) (No cr; limited to 30 students; prereq GC math level D or 0621 with grade of C or better or 0617; 0830-1015 MTWThF; ApH 226) Johnson, A. For students with adequate background in elementary algebra. Sets, real numbers, linear equations, linear inequalities, absolute value equations and inequalities, exponents, polynomials, systems of equations, word problems, rational expressions, roots and radicals, complex numbers.

R.0631. INTERMEDIATE ALGEBRA, PART II-June 21-August 6. (688591) (No cr; limited to 30 students; prereq GC math level E or 0625 or 1445; 0830-1015 MTWThF; ApH 303) Giese Basic knowledge of linear equations and inequalities, exponents, factoring, rational expressions, roots, radicals, complex numbers, and graphing assumed. Topics include quadratic equations, matrix solutions to systems of equations, general inequalities, conic sections, functions, logarithmic and exponential functions. Introduction to sequences, series, and binomial theorem.

R.0643. BASIC MATHEMATICS: PROGRAMMED STUDY-June 21-August 6. (788680) (No cr; limited to 20 students; prereq GC math level B or C or 0611 or 0641, #; may be repeated as needed; 0830-1015 MTWThF; ApH 11 [offered through Mathematics Learning and Assessment Center]) S. Anderson With aid of instructor, topics selected from following: whole numbers, fractions, decimals, percents, signed numbers, formulas, simple graphs, ratio and proportion, sets, properties, equations, inequalities, rectangular graphs, polynomials, factoring, rational expressions, radicals.

SECOND TERM: SHORT COURSE

Summer in the City

R.1112. ECOLOGICAL EVALUATION OF ENVIRONMENTAL PROBLEMS-August 9-25. (589751) (4 cr; limited to 20 students; 0800-1200 MTWThF; ApH 303; one all day field trip planned; additional fee for transportation) Hatch Visit the Black Dog Wildlife Preserve, the Pig's Eye Heron Rookery, the Minneapolis Water Treatment Facility, Prairie Island Nuclear Plant, the Minnesota PCA and other environmental facilities.

SECOND TERM

R.1233. UNITED STATES: GOVERNMENT AND POLITICS. (291803)(4 cr;

limited to 30 students; 0800-1015 MTWThF; ApH 103) Pringle Major institutions of American national government and politics examined in context of their recent social-historical development. Becoming a well-informed and active citizen is encouraged through participant-observer field assignment and required reading of daily newspaper.

R.1375. FILM AND SOCIETY. (291073) (4 cr; limited to 25 students; 1030-1245 MTWThF; ApH 302) Yahnke Films as mediums for social and cultural expression. Problems of individuals' values or identities in conflict with societal demands or constraints (e.g., racism, sexism, urban living, family living, aging, politics, education, sexual mores, adolescence). Multicultural perspectives. Much analytical writing.

R.1422. WRITING LABORATORY: COMMUNICATING IN SOCIETY. (886516) (4 cr; prereq 1421; limited to 18 students; 1030-1245 MTWThF; ApH 204) Adamson Primarily through expository writing, but also through reading and discussion, students analyze how people communicate in society, how they perceive events and ideas, how they think and write about them. Extensive writing practice requires use of microcomputer; use IBM PC.

Genetics (Gene)

250 Biological Sciences, St. Paul. 624-3003 (Genetics and Cell Biology) College of Biological Sciences

FIRST TERM

8777. THESIS CREDITS: MASTERS. (188800) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088801) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (789036) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589037) (1-36 cr [max 11 cr per summer term])

Genetics and Cell Biology (GCB)

250 Biological Sciences, St. Paul. 624-3003 College of Biological Sciences

FIRST TERM

5970. DIRECTED STUDIES. (688008) (Cr ar; prereq #, Δ) Staff Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature.

5990. DIRECTED RESEARCH. (488009) (Cr ar; prereq #, Δ) Staff Laboratory or field investigation of selected areas of research.

8970. DIRECTED STUDIES. (185301) (Cr ar; prereq #) Staff

8990. RESEARCH. (085302) (Cr ar; prereq #; S-N only) Staff

SECOND TERM

3022. GENETICS. (990265) (4 cr, \$3022, \$Biol 5003; not intended for biology majors; prereq Biol 1009; 1000-1120 MTWThF; ClaOff B35) Mechanisms of heredity, their implications for biological populations, and applications to practical problems. Meets with 5022.

5022. GENETICS. (790266) (3 cr, \$3022, \$Biol 5003; not open to grad students in genetics; 1000-1120 MTWThF; ClaOff B35) See 3022. Meets with 3022.

5970. DIRECTED STUDIES. (888010) (Cr ar; prereq #, Δ) Staff See First Term.

5990. DIRECTED RESEARCH. (688011) (Cr ar; prereq #, Δ) Staff See First Term.

8970. DIRECTED STUDIES. (786203) (Cr ar; prereq #) Staff

8990. RESEARCH. (586204) (Cr ar; prereq #; S-N only) Staff

COURSE DESCRIPTIONS

Geo-Engineering (GeoE)

122 Civil and Mineral Engineering Building, 625-5522
(Civil and Mineral Engineering)
Institute of Technology

FIRST TERM

5660. SPECIAL GEO-ENGINEERING PROBLEMS. (388391) (2 cr; prereq IT sr or #; A-F only)
Literature survey, research work, or design study in geo-engineering problems.

8777. THESIS CREDITS: MASTERS. (188806) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788808) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5660. SPECIAL GEO-ENGINEERING PROBLEMS. (989522) (2 cr; prereq IT sr or #; A-F only)

8612. GEO-ENGINEERING RESEARCH PROBLEMS. (589524) (1 cr; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (589040) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389041) (1-36 cr [max 11 cr per summer term])

Geography (Geog)

414 Social Sciences, 625-6080
College of Liberal Arts

FIRST TERM

1301. HUMAN GEOGRAPHY. (289719) (5 cr; 0915-1100 MWF; BlegH 330) Miller
Geography of population and principal ways of life; capacity of earth for future population.

3101. GEOGRAPHY OF UNITED STATES AND CANADA. (691720) (4 cr; 1030-1130 MTWThF; HHCtr 25) Hart
Interaction of the aspirations and abilities of different groups of people with the complexities of the natural environment to produce regional differentiation of the United States and Canada.

3121. LATIN AMERICA. (889724) (4 cr; \$LAS 3121; 0915-1145 TTh; BlegH 415) Weil
Physical and human geography of Latin America. Meets with LAS 3121

3211. EAST ASIA. (491721) (4cr; \$ 5211; 0915-1055 MWF, BlegH 415) Hsu
Physical and human geography of China, Korea, and Japan; population pressure, economic development, and international relations. Meets with 5211, Eas 3211.

3940. DIRECTED FIELD STUDY. (687733) (2-4 cr; prereq #; A-F only) Staff
Guided individual field study.

3970. DIRECTED READINGS. (985616) (1-15 cr per qtr; prereq #, Δ, □) Staff

5211. EAST ASIA. (291722)(4 cr, \$3211; 0915-1055 MWF, BlegH 415) Hsu
Aspects of East Asian life. The effects, within a traditional context, of population growth and modern technology on the transformation of society and reorganization of space. Meets with 3211, EAS 3211

R.5701. FIELD RESEARCH—June 14-July 2. (088457) (4 cr; limited to 12 students; prereq 12 cr in geography, #) J. Adams
Exploration of selected metro regions of USA and Canada, with attention to (1) downtown redevelopment; (2) racial and ethnic transformation of neighborhoods; (3) growth of suburban employment centers; and (4) environmental impact of metro expansion. Open to (first priority) seniors in geography working on senior projects and satisfying fieldwork requirement; graduate students in geography (second priority); and others (on space available basis). Students registering for this course should take Geog 5872: Metropolitan Analysis I-Population and Housing, spring 1993. Permission of instructor, Professor John S. Adams, is required.

R.5900. SUMMER INSTITUTE FOR TEACHERS: TOPICS IN GEOGRAPHY Sec 5, June 21-July 2, City Institute I. (190868) (4 cr; prereq sr or grad stu; 0930-1200 MTWThF; Rarig 616) Martin
See page 38 for details.

8777. THESIS CREDITS: MASTERS. (588809) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988810) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (785617) (1-5 cr) Staff

SECOND TERM

3181. RUSSIA AND ENVIRONS. (790493)(4 cr, \$5181; 0915-1100 MTWTh; BlegH 335) Adams
Physical and human geography of republics of the former USSR. Imprint of central planning and state socialism on regional economies, city systems, and internal structures of cities. Economic and cultural linkages among regions and republics. Conflicts rooted in religion, ethnicity, and tradition. Contact with neighboring states and regions. Physical environmental problems.

3940. DIRECTED FIELD STUDY. (487734) (2-4 cr; prereq #; A-F only) Staff
See First Term.

3970. DIRECTED READINGS. (886632) (1-15 cr per qtr; prereq #, Δ, □) Staff

5411. MEDICAL GEOGRAPHY. (791725)(4 cr; 0915-1145 TTh; BlegH 415) Weil
Concepts and methods in medical geography: the distribution and diffusion of disease; the impact of environmental, population, and social change on health; the distribution, accessibility, and use of health practitioners and facilities.

R. 5900. SUMMER INSTITUTE FOR TEACHERS: TOPICS IN GEOGRAPHY Sec 5, July 26-August 6, City Institute II. (392053)(4 cr; limited to 20 students; prereq sr or grad stu; 0930-1200 MTWThF; room ar)Martin
See page 38 for details.

8777. THESIS CREDITS: MASTERS. (189042) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089043) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (486633) (1-5 cr) Staff

Geology and Geophysics (Geo)

106 Pillsbury, 624-1333
Institute of Technology

FIRST TERM

R.1001. THE DYNAMIC EARTH: AN INTRODUCTION TO GEOLOGY. (985356) (4 cr; limited to 90 students; 0915-1015 MTWThF; PillsH 110)
A nonmathematical survey of the earth; its internal and external structure; earthquakes and volcanoes, glaciers; mountain building and destruction, continent formation, seafloor spreading; resources for our future. Meets with 5051 lecture.

R.1021. INTRODUCTION TO GEOLOGY LAB: GEOLOGY OF MINNESOTA. (1 cr; each lab limited to 25 students; prereq 1001 or 1001 or #; a 2 hr lab) Staff
Ten laboratory exercises based on the geology of Minnesota. Introduction to the bedrock, glacial history, topography, mineral resources, and environmental geology of the state through the use of appropriate minerals, rocks, topographic and geologic maps. Meets with 5051 labs. Lab 1, (785357) 1030-1245 MW, FordH 185
Lab 2, (585358) 1300-1515 MW, FordH 185

3990. PROBLEMS IN GEOLOGY AND GEOPHYSICS. (887701) (1-6 cr; prereq #, Δ)
Research or problem selected on the basis of individual interests and background.

R.5051. PHYSICAL GEOLOGY FOR TEACHERS. (4 cr, \$1001, \$1111; each section limited to 4 students; only for students holding degrees in education; prereq 1 term college chemistry or physics; lect 0915-1015 MTWThF; seminar 1145-1245 TTh; PillsH 110)
Scientific methods and nature of the earth. Main features of the physical world and of the processes that have formed them. Meets with 1001 lecture, 1021 labs.
Lab 1, (485112) 1030-1245 MW, FordH 185
Lab 2, (285113) 1300-1515 MW, FordH 185

R.5111. FIELD GEOLOGY—June 14-July 23. (5-9 cr; section 1 limited to 40 students, section 2 limited to 20 students; limited to students majoring in geology, geophysics, or geoenvironment; prereq 5201, #) Staff
Geologic mapping on topographic maps and aerial photos, field identification of igneous, sedimentary, and metamorphic rocks, measurement of stratigraphic sections, study of structural and geomorphic features. Major report required after completion of field work.
Sec 1, (687702) (9 cr)
Sec 2, (886936) (5 cr; prereq grad student; ar)

8777. THESIS CREDITS: MASTERS. (688803) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488804) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3990. PROBLEMS IN GEOLOGY AND GEOPHYSICS. (186402) (1-6 cr; prereq #, Δ)
See First Term.

8777. THESIS CREDITS: MASTERS. (389038) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189039) (1-36 cr [max 11 cr per summer term])

German (Ger)

231 Folwell Hall. 625-2080
College of Liberal Arts

FIRST TERM

R.1101. BEGINNING GERMAN. (585618) (5 cr; limited to 20 students; \$1000; 0800-1015 MTWThF; AmundH 104)
Listening and reading comprehension, writing, speaking.

R.1104. INTERMEDIATE GERMAN. (985065) (5 cr; limited to 25 students; prereq 1103 or 10 cr of 1110 or Entrance Standard proficiency test; 0915-1130 MTWThF; FordH 349)
See 1101.

R.1105. INTERMEDIATE GERMAN. (190376) (5 cr; limited to 25 students; prereq 1104 ; 0915-1130 MTWThF; Arch 20)
See 1101.

R.1106. INTERMEDIATE GERMAN. (785391) (5 cr; limited to 25 students; prereq 1105 ; 0915-1130 MTWThF; CivMinE 212)
See 1101 First Term

R.3011. CONVERSATION AND COMPOSITION. (386947) (4 cr; limited to 20 students; prereq 1106 and the graduation proficiency test; 0800-1015 MTWTh; FolH 426)
Spoken German; composition; development of vocabulary; grammar review.

R.3104. READING AND ANALYSIS OF PROSE. (089768) (4 cr; limited to 20 students; prereq 1106 or the graduation proficiency test; 1030-1145 MTWTh; AmundH 104) Teraoka
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.

R.3610. GERMAN AUTHORS IN TRANSLATION: FRIEDRICH NIETZSCHE. (585392) (4 cr [max 12 cr]); [does not count toward German major or minor]; limited to 30 students; may be used toward fulfillment of Route II, Part B of former BA foreign language requirement; knowledge of German not required; 1030-1130 MTWThF; FolH 134)
Taraba

Lectures and discussions; works to be read include *Thus Spoke Zarathustra*, *Beyond Good and Evil*, *On the Genealogy of Morals*, *Ecce Homo*, and *The Antichrist*.

8777. THESIS CREDITS: MASTERS. (788811) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388813) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must enroll in all three courses and may not enroll in other summer courses. Prospective students should talk to an adviser before registering for intensive language courses.

R.1101-1102-1103. BEGINNING GERMAN. (15 cr for both terms \$1000, \$1110; limited to 23 students; 0915-1245 MTWThF; FolH 116)
Listening and reading comprehension, writing, speaking.

R.1101, Sec 5, (385619) June 15-July 8, 5 cr
R.1102, Sec 5, (785620) July 9-August 2, 5 cr
R.1103, Sec 5, (585621) August 3-25, 5 cr

SECOND TERM

R.1102. BEGINNING GERMAN. (286634) (5 cr, \$1110; limited to 23 students; prereq 1101 or 1000; 0800-1015 MTWThF, Arch 60)
See 1101 First Term.

R.1105. INTERMEDIATE GERMAN. (588230) (5 cr; limited to 25 students; prereq 1104 ; 0915-1130 MTWThF; Arch 20)
See 1101 First Term.

R.1106. INTERMEDIATE GERMAN. (490374) (5 cr; limited to 25 students; prereq 1105 ; 0915-1130 MTWThF; AmundH 104)
See 1101 First Term.

R.3105. READING AND ANALYSIS OF DRAMA AND POETRY. (188490) (4 cr; limited to 20 students; prereq 1106 or graduation proficiency test; 0900-1015 MTWTh; KoltH S137)
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.

R.3510. TOPICS IN GERMAN STUDIES: CULTURAL AND SOCIAL ISSUES OF GERMANY SINCE UNIFICATION. (891733) (4 cr;

limited to 25 students; prereq 1106 or the graduation proficiency test; 1030-1130 MTWThF; FolH 214) Weiss
Germany, 2 1/2 years after unification: What are the persistent problems; what are the changes? Is a new German culture developing? How much of the past is being preserved?

R.3610. GERMAN TOPICS IN TRANSLATION: LITERATURE OF THE GERMAN DEMOCRATIC REPUBLIC AND REUNIFICATION. (188585) (4 cr [max 12 cr]); [does not count toward German major or minor]; limited to 30 students; may be used toward fulfillment of Route II, Part B of former BA foreign language requirement; knowledge of German not required; 0915-1015 MTWThF; FolH 214)
Bischof
Examination of both unique and universal aspects of literature of the GDR, particularly in light of recent political events.

8777. THESIS CREDITS: MASTERS. (689045) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489046) (1-36 cr [max 11 cr per summer term])

Germanic Philology (GPh)

304 Walter Library. 626-0805
(Center for Medieval Studies)

FIRST TERM

8777. THESIS CREDITS: MASTERS. (188814) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088815) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (889058) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689059) (1-36 cr [max 11 cr per summer term])

Greek (Grk)

331 Folwell Hall. 625-5353
(Classical and Near Eastern Studies)
College of Liberal Arts

FIRST TERM

8777. THESIS CREDITS: MASTERS. (488818) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288819) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (089060) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889061) (1-36 cr [max 11 cr per summer term])

H

Health Informatics (HInf)

Box 511 Mayo. 625-8440
(Laboratory Medicine and Pathology)
Medical School

FIRST TERM

R.5446. BIOCOMPUTING CONSULTING SEMINAR. (488365) (3 cr; prereq HInf major, 5432, PubH 5452 or #; limited to 10 students)
Overview of new computer and communications hardware and software for health science applications. Group work on client projects illustrates roles and responsibilities involved in analyzing requirements of health science clients, specifying and designing computer and data-base interfaces, and coordinating system life cycle process.

R.5470. TOPICS IN HEALTH INFORMATICS. (288366) (cr ar; prereq #; limited to 10 students)
Selected readings and/or projects.

R.8449. ADVANCED READINGS IN HEALTH INFORMATICS. (188367) (1-3 cr; prereq 5432, PubH 5434, #; limited to 10 students) Staff
Discussion of methodology and results.

R.8450. RESEARCH IN HEALTH INFORMATICS. (988368) (cr ar; prereq #; limited to 10 students) Staff

8777. THESIS CREDITS: MASTERS. (588826) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188828) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.5446. BIOCOMPUTING CONSULTING SEMINAR. (788372) (3 cr; prereq HInf major, 5432, PubH 5454 or #; limited to 10 students)
See First term.

COURSE DESCRIPTIONS

R.5470. TOPICS IN HEALTH INFORMATICS. (588373) (cr ar; prereq #; limited to 10 students) See First term.

R.8449. ADVANCED READINGS IN HEALTH INFORMATICS. (388374) (1-3 cr; prereq 5432, PubH 5434, #; limited to 10 students) Staff See First term.

R.8450. RESEARCH IN HEALTH INFORMATICS. (188375) (cr ar; prereq #; limited to 10 students) Staff See First term.

8777. THESIS CREDITS: MASTERS. (489063) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289064) (1-36 cr [max 11 cr per summer term])

Health Science Units (HSU)

W64 Centennial Hall. 624-7102
Health Sciences

FIRST TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (988211) (2cr, \$SAHP 5210) McKennell
Programmed learning course covering current and traditional usage; language of health care delivery. Call 612/624-2442 for more information.

SECOND TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (788212) (2 cr, \$SAHP 5210) McKennell
Programmed learning course covering current and traditional usage; language of health care delivery. Call 612/624-2442 for more information.

Hebrew (Hebr)

331 Folwell Hall, 625-5353
(Classical and Near Eastern Studies)
College of Liberal Arts
(See also Jewish Studies; ANE)

FIRST TERM

3980. DIRECTED INSTRUCTION. (785486) (1-5 cr; prereq #, Δ, □)
Observation and discussion of language classes. Gradually increased participation of student in preparation and presentation of instructional materials to an elementary class. Evaluation of materials, teaching techniques. Seminars on problems of language teaching.

5970. DIRECTED READINGS. (385717) (Cr ar; for advanced students wishing to work on special problems; prereq 3013, #, Δ, CLA approval)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

(Register once in Term I)

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must enroll in all three courses and may not enroll in other summer courses. Prospective students should talk to an adviser before registering for intensive language courses.

R.1101-1102-1103. BEGINNING HEBREW (ULPAN). (15 cr for both terms; each section limited to 30 students; 0915-1245 MTWThF; FolH 312) Shendar (First 5 weeks) Dworsky (Second 5 weeks)

Specially designed summer program combining language study with learning experiences in culture and group activities that stimulate active use of the language. Introduction to speaking, reading, and listening comprehension of modern Hebrew. May serve as a basis for biblical study. See page 35.

Sec 5, (986328) June 15-July 8, 5 cr
Sec 5, (786329) July 9-August 2, 5 cr
Sec 5, (186330) August 3-25, 5 cr

SECOND TERM

3980. DIRECTED INSTRUCTION. (585487) (1-5 cr; prereq #, Δ, □)
See First Term.

5970. DIRECTED READINGS. (686646) (Cr ar; for advanced students wishing to work on special problems; prereq 3013, #, Δ, CLA approval)

History (Hist)

614 Social Sciences. 624-2800
College of Liberal Arts

FIRST TERM

1002. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (886922) (4 cr, \$1002H, \$3002; not open to jrs, srs; 1030-1130 MTWThF; BlegH 115) Thayer
Revolution, liberalism, and nationalism to 1870. Meets with 1002H and 3002.

1002H. HONORS COURSE: INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (086322) (4 cr, \$1002, \$3002; not open to jrs, srs; prereq #; 1030-1130 MTWThF; BlegH 115) Thayer
See 1002. Meets with 1002 and 3002.

1053. ANCIENT CIVILIZATION. (891750) (4 cr; \$3053; 0915-1015 MTWThF; BlegH 245) Kelly.
History and civilization of the ancient world, 146 B.C. to A.D.337. Meets with 3053.

1101. INTRODUCTION TO MEDIEVAL HISTORY. (088460) (4 cr; \$3101; 0800-0900 MTWThF; HHHctr 30) Bachrach

Europe from the decline of Rome to the early Renaissance politics, institutions, society, economy, and culture of the Middle Ages. Meets with 3101.

1302. AMERICAN HISTORY. (691751) (5 cr; \$1302H; 0915-1130 MW; BlegH 155) Berman
Modern America from 1880 to the present. Meets with 1302H.

1302H. HONORS COURSE: AMERICAN HISTORY. (491752) (5 cr; \$1302; prereq #; 0915-1130; MW; BlegH 155) Berman
See 1302. Meets with 1302.

3002. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (686923) (4 cr, \$1002, \$1002H; 1030-1130 MTWThF; BlegH 115) Thayer
See 1002. Meets with 1002 and 1002H.

3053. ANCIENT CIVILIZATION. (291753) (4 cr; 0915-1015 MTWThF; BlegH 245) Kelly
See 1053. Meets with 1053.

3101. INTRODUCTION TO MEDIEVAL HISTORY. (191737)(4 cr; 0800-0900 MTWThF; HHH Ctr 30) Bachrach
See 1101. Meets with 1101.

3403. SURVEY OF LATIN AMERICAN HISTORY: 1929 TO THE PRESENT. (191754) (4 cr; 1145-1245 MTWThF; BlegH 115) Staff
Contradictions of modern societies: economic expansion dependency, population growth and the social crisis, democratic and authoritarian politics. Meets with LAS 3403.

3422. THE WORLD AND THE WEST. (690860) (4 cr; 0800-0900 MTWThF; BlegH 260) Kopf
Modern world of Renaissance, nationalism, modernization, and countermodernization, 1850 to present.

3432. HISTORY OF AFRICA: 1800 TO PRESENT. (290568) (4 cr; 0800-0900 MTWThF; BlegH 350) Staff

3468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (188465) (4 cr, \$5468, \$EAS 3468; 0915-1015 MTWThF; HHHctr 30) Farmer
Introduction of Marxism to China, rise of Communist Party, and development of a rural guerilla movement. The career of Mao Tse-tung and developments in the People's Republic. The Great Leap, Cultural Revolution, Gang of Four. Meets with Hist 5468 and EAS 3468.

3505. SURVEY OF THE MIDDLE EAST. (489726) (4 cr, MELC 5505;

1145-1245 MTWThF; BlegH 105) Tesdell
Lands and peoples of the Middle East, historical evolution of Middle East civilizations and societies, status of Middle East countries in world affairs. Meets with MELC 3505, MELC 5505.

3633. HISTORY OF GERMANY: EMPIRE TO HITLER, 1848-1945. (991755) (4 cr; 0915-1015 MTWThF; BlegH 205) Rudolph
Unification, political and economic development, growth of socialism, World War I and revolution, the Weimar years, the Nazi seizure of power.

3637. RUSSIAN HISTORY FROM PETER THE GREAT TO THE PRESENT. (489970) (4 cr; \$5133; 1030-1130 MTWThF; HHHctr 30) Stravrou
A survey of Russian history since Peter the Great.

3721. EUROPE IN THE ERA OF WORLD WAR I. (791756) (4cr; 0915-1130 TTh; BlegH 155) Munholland
Political, social and diplomatic background of Europe on eve of World War I; origins of conflict; impact of war and revolution on European society; the peace settlement.

3823. UNITED STATES IN THE 20TH CENTURY; 1960 TO THE PRESENT. (591757) (4 cr; 1030-1130 MTWThF; BlegH 105) Spear
The conflicts of the 1960s; the New Frontier and Great Society; the black struggle for freedom; the Vietnam War, the new left and counterculture; the women's movement and gay liberation; Watergate and the uncertainties of the 1970s; the Reagan counterrevolution.

3883. HISTORY OF AMERICAN FOREIGN RELATIONS. (391758) (4 cr; 1030-1130 MTWThF; AndH 330) Brauer
American foreign relations during the Cold War, 1941 to present.

3970. DIRECTED STUDIES. (385622) (1-15 cr; prereq #, Δ, college approval)
Guided individual reading or study. Open to qualified students for 1 or more quarters.

3990. DIRECTED RESEARCH. (185623) (1-15 cr; prereq #, Δ, college approval)
Qualified students, with consent of instructor, work on a tutorial basis.

5286. DIPLOMATIC HISTORY OF EUROPE, 1945 TO PRESENT. (091746) (4 cr; 0915-1015 MTWThF; BlegH 260) Kieft
The Cold War.

5468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (689210) (4 cr, \$3468, \$EAS 3468; 0915-1015 MTWThF; HHHctr 30) Farmer

See 3468. Meets with 3468 and EAS 3468.

5871. INTELLECTUAL HISTORY OF UNITED STATES IN 19TH AND 20TH CENTURIES. (190569) (4 cr; 1145-1245 MTWThF; BlegH 125) Noble
Writings of current scholars of American culture that express paradigmatic conflicts in the study of ideas and values.

5970. DIRECTED STUDIES. (085624) (1-15 cr; prereq #, Δ, CLA approval)
Qualified senior and graduate students may register for work on tutorial basis. Guided individual reading or study.

5990. DIRECTED RESEARCH. (885625) (1-15 cr; prereq #, Δ, CLA approval)
Qualified senior and graduate students may register for work on tutorial basis.

8777. THESIS CREDITS: MASTERS. (388830) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088832) (1-36 cr [max 11 cr per summer term])

SECOND TERM

1001. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (988242) (4 cr, §1001H, §3001; not open to jrs, srs; 0915-1015 MTWThF; BlegH 155) Staff
Western European civilization to 1715. Meets with 1001H and 3001.

1001H. HONORS COURSE: INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (388357) (4 cr, §1001, §3001; not open to jrs, srs; prereq #; 0915-1015 MTWThF; BlegH 155) Staff
See 1001. Meets with 1001 and 3001.

1051. ANCIENT CIVILIZATION. (791790) (4 cr; 0915-1015 MTWThF; BlegH 205) Evans, J.
History and civilization of the ancient world to 500 B.C. Meets with 3051.

1301. AMERICAN HISTORY. (391792) (5 cr; 1145-1245 MTWThF; BlegH 105) Staff
Colonial era and early national period from the Revolution through Civil War and Reconstruction. Meets with 1301H.

1301H. HONORS COURSE: AMERICAN HISTORY. (091794) (5 cr; §1301; prereq #; 1145-1245 MTWThF; BlegH 105) Staff
See 1301.

3001. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (788243) (4 cr, §1001, 1001H; 0915-1015 MTWThF; BlegH 155) Staff
See 1001. Meets with 1001, 1001H.

3051. ANCIENT CIVILIZATION. (491797) (4 cr; 0915-1015 MTWThF; BlegH 205) Evans, J.
See 1051. Meets with 1051

3401. SURVEY OF LATIN AMERICAN HISTORY: COLONIAL PERIOD TO THE PRESENT. (091763) (4 cr; 1030-1130 MTWThF; BlegH 115) Schwartz
Pre-Hispanic and colonial period to 1800, with emphasis on social, cultural, and economic aspects. Meets with LAS 3401

3431. HISTORY OF AFRICA TO 1800. (191776) (4 cr; 1145-1245 MTWThF; BlegH 245) Staff
Socioeconomic, political, and cultural development in pre-colonial Africa; emphasis on slave trade, Islamic revolution, and European commercial penetration.

3474. RISE OF MODERN JAPAN: 1853-1914. (891778) (4 cr; 1030-1130 MTWThF; BlegH 205) Marshall.
The Meiji Revolution from Commodore Perry to eve of World War I: origins of constitutional monarchy, industrial economy, Western influence, and modern cultural change. Meets with EAS 3474.

3621. RENAISSANCE ITALY: 1200-1530. (891781) (4 cr; 0800-0900 MTWThF; BlegH 350) Tracy.
Politics and culture in the city-states from Dante to Machiavelli.

3822. UNITED STATES IN THE 20TH CENTURY: 1932-1960. (291784) (4 cr; 0915-1015 MTWThF; BlegH 350) Staff.
The Great Depression and the New Deal; the challenge of fascism and the coming of World War II, the origins of the Cold War; the great Red scares; the politics and culture of the Eisenhower era; the origins of the civil rights movement.

3844. AMERICAN ECONOMIC HISTORY, COLONIAL PERIOD TO CIVIL WAR. (591788) (4 cr; 0800-0900 MTWThF; BlegH 255) Green.
Economic development, regional specialization, and early industrialization. Slavery and southern development. The role of railroads and government policies. Economic impact of the Civil War.

3970. DIRECTED STUDIES. (586641) (1-15 cr; prereq #, Δ, college approval)
See First Term.

3990. DIRECTED RESEARCH. (386642) (1-15 cr; prereq #, Δ, college approval)
See First Term.

R.5381. SUMMER INSTITUTE FOR TEACHERS
Sec 5, MINNESOTA HISTORY WORKSHOP: Railroads and the Red River Valley-July 26-August 6. (985471) (5 cr; students repeating workshop register for 5970, sec. 2; limited to 50 students. Held in the

new History Center in St. Paul)
The impact of railroads and the railway industry on agriculture and family life in the Red River Valley. Designed for upper elementary and secondary teachers, the Minnesota History Workshop is a two-week introduction to state and local history and to the collections of the Minnesota Historical Society.

5970. DIRECTED STUDIES. (prereq #, Δ, CLA approval)
Sec 1, (585070) (1-15 cr)
See First Term.
Sec 2, (785472) (1-15 cr; for students who are repeating Hist 5381, Minnesota History Workshop, July 26-August 6)

5990. DIRECTED RESEARCH. (186643) (1-15 cr; prereq #, Δ, CLA approval)
See First Term.

8777. THESIS CREDITS: MASTERS. (189065) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989066) (1-36 cr [max 11 cr per summer term])

History of Medicine (HMed)

510 Diehl Hall. 624-4416
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (888833) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688834) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (789067) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589068) (1-36 cr [max 11 cr per summer term])

History of Science and Technology (HSci)

342 Physics. 624-7069
College of Liberal Arts

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (988841) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (591189) (1-16 cr)

8888. THESIS CREDITS: DOCTORAL. (589071) (1-36 cr [max 11 cr per summer term])

Home Economics Education (HEEd)

325 Vocational/Technical Building, St. Paul. 624-3010
(Vocational and Technical Education) College of Education

FIRST TERM

R.5320. ADULT EDUCATION IN HOME ECONOMICS-June 15-25. (186277) (3 cr; limited to 25 students; 0900-1200 MTWThF; VoTech R380; A-F only) Ernst
Planning a community program; teaching procedures; special problems.

R.5404. INTRODUCTION TO EARLY CHILDHOOD FAMILY EDUCATION PROGRAM-June 29. (188473) (1 cr; limited to 25 students; 0800-1700 T; VoTech R380; A-F only) Cooke
Concept and philosophy of such programs as a basis for program implementation.

R.5406. SPECIAL TOPICS IN PARENT AND FAMILY EDUCATION: (1-6 cr; S-N option)
Study of issues and current literature focused on emerging topics relevant to parent and family education.
Sec 1, (789571) Home and School Collaboration-June 21-July 2. (limited to 25 students; 1300-1600 MTWThF; VoTech R380) Rossman
Focuses on how family, school and community collaboratively can support an individual student's success in school. Models for collaboration and strategies for developing and strengthening significant partnerships between families and schools will be examined. Teachers, outreach liaisons and administrators in early childhood education programs, K-12 schools, and parent education programs will find the course helpful in developing collaboration between home and school. This offering for 3 credits.
Sec 2, Home Visits as an Educational Strategy-July 8, 9, 16. (591743) 1230-1530 ThF; VoTech R370, Ball
The history, theory, technique, and practice of home visits as an educational strategy to educate individuals in a family context. The course is especially important for parent educators, early childhood educators, elementary and secondary teachers, nutrition educators, and other family educators. This offering for 1 credit.

COURSE DESCRIPTIONS

Sec 3, Effective Parent Education for Diverse Populations-July 12-16.

(391744) 0830-1215 MWF; VoTech R380, Lovrien
Roles and responsibilities of European-American, middle class parent educators in relation to families from a variety of backgrounds will be examined. Students will critique standard assumptions and practices and will develop practical program strategies for more effective education. This offering for 2 credits.

R.5407. FAMILY LIFE EDUCATION-

July 6-16. (486180) (1-4 cr [max 12 cr]; limited to 25 students; 1300-1600 MTWThF; VoTech R380; A-F only) Rossmann
Objectives, content, curriculum development, methods, materials, and evaluation approaches for teaching diverse groups of youth and adults family life concepts including current research in communication, relationships, sexuality, self-esteem, and decision making. This offering for 3 credits.

5900. READINGS: HOME ECONOMICS EDUCATION.

(1-3 cr [max 12 cr]; prereq #; hrs ar; A-F only)
Independent study under tutorial guidance.
Sec 22, (488219) Rossmann

5920. DIRECTED STUDIES.

(1-6 cr; prereq #; hrs ar; S-N optional)
Opportunity for individualized learning experience not covered by regular courses.
Sec 22, (888220) Rossmann

8777. THESIS CREDITS: MASTERS.

(488821) (1-16 cr [max 11 cr per summer term])

8900. PROBLEMS: HOME ECONOMICS EDUCATION.

(1-9 cr; prereq 8300, #; hrs ar)
Independent study of current educational problems.
Sec 22, (688221) Rossmann

SECOND TERM

R.5405. CHILD DEVELOPMENT AND PARENT EDUCATION-July 22-August 5.

(488477) (1-4 cr [max 12 cr]; limited to 25 students; 0830-1205 MTThF; VoTech R390; A-F only) Laird
Objectives, content, curriculum organization, teaching methods, materials, and evaluation approaches for teaching youth and adults about social, cultural, psychological, economic, and technical aspects of child development, parenting, and parent-child interaction. This offering for 4 credits.

R.5409. GROUP METHODS FOR PARENT AND FAMILY EDUCATION-

August 9-13. (791742) (2 cr; limited to 25 students; 1230-1615 MWF; VoTech R380; A-F only) Bowman
Methods and theories applied to development of skills for leading parent and family education groups.

R.5510. ORIENTATION TO TEACHING HOME ECONOMICS-July 26-August 16.

(889206) (3 cr; limited to 20 students; prereq Post BA student in HEEd or #; 1300-1545 MWF; VoTech R380; A-F only) Thomas
Critical analysis of home economics and the teaching of home economics; identification of practical problems encountered by families; development of a personal orientation towards becoming a home economics teacher.

5900. READINGS: HOME ECONOMICS EDUCATION.

(1-3 cr [max 12 cr]; prereq #; hrs ar; A-F only)
See First Term.
Sec 24, (288335) Thomas

5920. DIRECTED STUDIES.

(1-6 cr; prereq #; S-N optional) See First Term.
Sec 24, (188336) Thomas

8777. THESIS CREDITS: MASTERS.

(689062) (1-16 cr [max 11 cr per summer term])

8900. PROBLEMS: HOME ECONOMICS EDUCATION.

(1-9 cr; prereq 8300, #; hrs ar)
See First Term.
Sec 24, (988337) Thomas

Honors Seminar (HSem)

115 Johnston Hall. 624-5522
(Honors Program)
College of Liberal Arts

FIRST TERM

R.3010. THE CHANGING NATURE OF REVOLUTIONARY CHANGE.

(889545) (4 cr; limited to 15 students; prereq jr or sr, reg CLA Honors div; 1030-1230 MWF; BlegH 245) Raymond Duvall
Analysis of influential theories of why revolutions occur and application of these theories to recent revolutions to see the fit between theory and actual events.

Horticultural Science (Hort)

305 Alderman Hall, St. Paul. 624-4242
College of Agriculture

FIRST TERM

3097. HORTICULTURAL PRACTICUM.

(387029) (4 cr; prereq upper division horticulture emphasis or sequence, Δ)
Approved field, laboratory, or greenhouse experiences in application of horticultural information and practices.

5000. PROFESSIONAL EXPERIENCE PROGRAM.

(589491) (4 cr; prereq #; free elective for Hort undergrads, not for grad; Extension regis only; S-N only)

Professional experience in horticulture firms or government agencies through supervised practical work evaluation of reports, and consultations with faculty advisers and employers.

5091. DIRECTED STUDIES.

(387032) (2-6 cr; prereq 8 cr upper division hort course, Δ)
Opportunities for in-depth exploration of concepts, technology, materials, or programs in specific area to expand professional competency and self-confidence. Planning, organizing, implementing, and evaluating knowledge obtained from formal education and experience.

8051. ADVANCED PROBLEMS IN HORTICULTURAL CROP BREEDING.

(685206) (3-9 cr; prereq #)

8052. ADVANCED PROBLEMS IN PHYSIOLOGY OF HORTICULTURAL CROPS.

(187705) (3-9 cr; prereq #)

8090. GRADUATE HORTICULTURAL RESEARCH.

(xxxxxx) (1-18 cr)
Directed Studies in Horticulture.

8777. THESIS CREDITS: MASTERS.

(488835) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL.

(988838) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3097. HORTICULTURAL PRACTICUM.

(787044) (4 cr; prereq upper division horticulture emphasis or sequence, Δ)
See First Term.

5091. DIRECTED STUDIES.

(187042) (2-6 cr; prereq 8 cr upper division hort course, Δ)
See First Term.

8007. EXTENSION HORTICULTURE PRACTICUM.

(385250) (1-5 cr, max 6 cr; prereq 12 grad cr)

8051. ADVANCED PROBLEMS IN HORTICULTURAL CROP BREEDING.

(485207) (3-9 cr; prereq #)

8052. ADVANCED PROBLEMS IN PHYSIOLOGY OF HORTICULTURAL CROPS.

(987706) (3-9 cr; prereq #)

8090. GRADUATE HORTICULTURAL RESEARCH.

(xxxxxx) (1-18 cr)
Directed studies in Horticulture.

8777. THESIS CREDITS: MASTERS.

(389069) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL.

(789070) (1-36 cr [max 11 cr per summer term])

Housing (Hsg)

240 McNeal Hall, St. Paul. 624-9700
(Design, Housing and Apparel)
College of Home Economics

FIRST TERM

5403. INTERNSHIP IN HOUSING.

(185386) (3 cr; prereq 3470 or 3870, completion of half of professional sequence, #; S-N only) Franklin
International, intercultural, or other directed work in a community that offers a variety of housing experiences.

5480. DIRECTED STUDY IN HOUSING.

(886533) (1-4 cr [max 4]; prereq #) Goetz
Independent study in housing.

8480. DIRECTED STUDY IN HOUSING.

(985387) (1-4 cr [max 8]; prereq #; A-F only) Goetz
Independent study in housing.

SECOND TERM

5403. INTERNSHIP IN HOUSING.

(785388) (3 cr; prereq 3470 or 3870, completion of half of professional sequence, #; S-N only) Franklin
See First Term.

5480. DIRECTED STUDY IN HOUSING.

(989634) (1-4 cr [max 4]; prereq #) Goetz
See First Term.

8480. DIRECTED STUDY IN HOUSING.

(691958) (1-4 cr [max 8]; prereq #; A-F only) Goetz
See First Term.

Humanities (Hum)

314 Ford Hall. 624-5553
College of Liberal Arts

FIRST TERM

R.1003. HUMANITIES IN THE MODERN WORLD III.

(390478) (4 cr, SRhet 1303; limited to 70 students; 0800-1020 TTh; FordH 155) Tapp
Impact of science, especially evolution theory, on religious and humanistic thought; roots of existentialism; disorientation in modern culture; impressionism. Integrative study of works by creative figures such as Kierkegaard, Darwin, Nietzsche, Chekhov, Joyce, Mann, Manet, Monet, Renoir, Degas, Wagner, Debussy, Mahler.

R.1004 HUMANITIES IN THE MODERN WORLD IV.

(990445) (4 cr; limited to 70 students; 1030-1300 MW; FordH 155) Kliger
The Western world 1945-1970. Existentialism, "the absurd"; searches for identity, commitment; religious trends; influence of oriental spiritual traditions. Integrative study of works by such creative figures as Camus, Sartre, Ionesco, Bultmann, Watts, Pollock, Warhol, Stockhausen, Cage, LeCorbusier, Fellini.

I

Industrial Education (Ind)

425 Vocational/Technical Building, St. Paul 624-3004
(Vocational and Technical Education) College of Education

FIRST TERM

3200. TECHNICAL DEVELOPMENT: ADVANCED. (189591) (1-6 cr; max 33 cr; prereq Ind 1000, 1001, #; hrs ar; A-F only) Lewis
Individualized advanced technical development in areas of construction, graphic communication, manufacturing, power and energy, and transportation.

5000. OCCUPATIONAL EXPERIENCE. (089592) (1-5 cr, max 15 cr; prereq #; hrs ar; A-F only) Lewis
Structured and supervised employment in industry. Credits allowed will be derived from a ratio of 100 clock hours of supervised work experience to each credit given to the student.

5200. TECHNICAL DEVELOPMENT: SPECIALIZED. (889593) (1-9 cr, max 24 cr; prereq #; hrs ar; A-F only) Lewis
Integration of specialized technical instruction in advanced and emerging areas into courses in industrial education.

R.5330. INDUSTRIAL COURSE CONSTRUCTION—June 15 and ar. (785374) (3 cr; limited to 22 students; prereq education or grad student; 0915-1215, 1330-1630 T; VoTech 135; (addnl hrs ar) A-F only) Pucel
Principles and techniques; experience in planning, organizing, and building a teaching guide. (Students who will be doing their work outside the 9 county metro area must obtain a letter from 210 VoTech Bldg in order to waive the student services fee for this course.)

5344. FACILITIES AND MANAGEMENT—June 15-July 8. (191745) (3 cr; prereq 1300 or 5330 or #; 1630-1955 TTh; VoTech R280; A-F only) Eighth
Planning, evaluation, and management of industrial education shop and laboratory facilities.

5900. SCHOOL-BASED PROJECT IN INDUSTRIAL EDUCATION. (1-6 cr [max 12 cr]; prereq 5305, 5325, MEd students only; hrs ar; S-N optional)
Independent or team project designed to study, improve, evaluate, or develop curriculum or instructional materials to improve quality of instruction.
Sec 22, (490407) Lewis
Sec 25, (187002) Pucel

5901. INDEPENDENT STUDY. (1-6 cr; prereq Δ; hrs ar; A-F only)
Independent inquiry into topics to permit in-depth study of areas in education or supplementation of areas not covered in regular course structure.
Sec 22, (490410) Lewis
Sec 25, (288223) Pucel

8777. THESIS CREDITS: MASTERS. (488849) (1-16 cr [max 11 cr per summer term])

8900. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
Individual conferences.
Sec 22, (190412) Lewis
Sec 25, (087003) Pucel

8901. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
Individual conferences.
Sec 22, (790414) Lewis
Sec 25, (887004) Pucel

SECOND TERM

5000. OCCUPATIONAL EXPERIENCE. (891747) (1-5 cr [max 15 cr]; prereq #; hrs ar; A-F only) Pucel
See First Term.

5305. CRITICAL ISSUES IN INDUSTRIAL EDUCATION—July 26-August 18. (691748) (3 cr; prereq educ or grad student; 1630-1955 MW; VoTech R280; A-F only) Lewis
Identification, analysis, and discussion of major current problems in the field.

5306. INDUSTRIAL EDUCATION WORKSHOP: STRUCTURED OJT—July 22-Aug. 17. (491749)(1-6 cr; prereq tchg exper, #; 1630-1955 TTh; VoTech R280; A-F only)
This course will present techniques for developing and delivering structure on-the-job training (OJT). Structured OJT is planned versus unplanned informal OJT. Students will visit a number of businesses and industries and will speak with those practicing structured OJT. They will develop and present sample OJT activities. The course will address needs of trainers and supervisors in business and industry, as well as technical college instructors who wish to work with students individually. This offering for 3 credits.

5900. SCHOOL-BASED PROJECT IN INDUSTRIAL EDUCATION. (1-6 cr [max 12 cr]; S-N optional; prereq 5305, 5325, MEd students only; hrs ar)
See First Term.
Sec 22, (590415) Lewis
Sec 25, (689207) Pucel

5901. INDEPENDENT STUDY. (1-6 cr; prereq Δ; hrs ar; A-F only)
See First Term.
Sec 22, (390416) Lewis
Sec 25, (489595) Pucel

8777. THESIS CREDITS: MASTERS. (089074) (1-16 cr [max 11 cr per summer term])

8900. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
See First Term.
Sec 22, (190417) Lewis
Sec 25, (489208) Pucel

8901. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
See First Term.
Sec 22, (890419) Lewis
Sec 25, (289209) Pucel

INDUSTRIAL EDUCATION WORKSHOP: STRUCTURED OJT (Ind 5306) offered July 22-August 17.
This three-credit course will present techniques for developing and delivering structure on-the-job training (OJT). Structured OJT is planned versus unplanned informal OJT. Students will visit a number of businesses and industries and will speak with those practicing structured OJT. They will develop and present sample OJT activities. The course will address needs of trainers and supervisors in business and industry, as well as technical college instructors who wish to work with students individually.

OCCUPATIONAL EXPERIENCE. (Ind 5000) offered both first and second terms. This course is an occupational internship. Students may register for one or both sessions. Students will develop individual occupational experience plans with the instructor for groups wishing to participate in planned occupational experience, including trainers, supervisors, instructors, vocational counselors and people preparing for management in business and industry. High school and technical college instructors can receive work experience licensure credit on the basis of two hours of credit for each hour worked.

INDUSTRIAL COURSE CONSTRUCTION (Ind 5330) offered for 3 credits, June 15 and arranged. This course will be taught as a distance delivery course focused on the development of performance-based instruction for education and/or industry. Students will attend class the first day and then work independently on an instructional program of their choice using a computerized tutorial.

Industrial Engineering/Operations Research (IEOR)

125 Mechanical Engineering, 625-0705
(Mechanical Engineering) Institute of Technology

FIRST TERM

R.3000. INTRODUCTION TO INDUSTRIAL ENGINEERING ANALYSIS. (885382) (4 cr; limited to 40 students; prereq IT student, Math 1252; 0800-1000 MWThF 3 lect and 1 rec hrs per wk; MechE 102)
Scientific management, mathematical models, methods engineering, worker satisfaction and participation, wage payment plans, break-even analysis, incremental costs, the time value of money and the present value concept; cost quality in inventory control; production scheduling, plant locations, and layout; linear programming, PERT, and the systems approach to management problems.

R.5040. INTRODUCTION TO OPERATIONS RESEARCH. (186134) (4 cr; limited to 30 students; prereq Math 1241; IT or grad . . . IEOR.3000 recommended; 1145-1345 MWThF; MechE 102)
Linear programming, algebra and geometry of linear models, simplex method, sensitivity testing, and duality; network models, network algorithms, and dynamic models.

R.8410. INDUSTRIAL ENGINEERING RESEARCH. (286228) (3-5 cr; limited to 10 students; hrs ar; prereq #)

R.8411. INDUSTRIAL ENGINEERING RESEARCH. (186229) (3-5 cr; limited to 10 students; hrs ar; prereq 8410)

R.8412. INDUSTRIAL ENGINEERING RESEARCH. (486230) (3-5 cr; limited to 10 students; hrs ar; prereq 8411)

8777. THESIS CREDITS: MASTERS. (388844) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (888847) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES
(Register once in Term I)

R.5180. APPLIED INDUSTRIAL ENGINEERING. (286133) (3-5 cr [1-2 cr term paper option]; limited to 20 students; prereq [3000, 5010, 5020, 5030 and 5040], Δ)
Industrial engineering surveys and programs. Case problems, studies in local plants.

R.5198H. INDUSTRIAL ENGINEERING UPPER DIVISION HONOR THESIS I. (891490) (limited to 5 students)

COURSE DESCRIPTIONS

R.5199H. INDUSTRIAL ENGINEERING UPPER DIVISION HONOR THESIS II. (691491) (limited to 5 students)

SECOND TERM

R.5020. ENGINEERING COST ACCOUNTING, ANALYSIS AND CONTROL. (788338) (4-5 cr; limited to 30 students; prereq 3000; IT student or grad... ME 3900 recommended; 0800-1000 MWThF, MechE 102) Barnett

Basic accounting concepts, financial statements, analysis and control of current assets such as cash, receivables, and inventory; income tax planning, cost analysis, standard cost for product costing, time value of money, quantification of risk and uncertainty, utility theory, cost of capital and capital structure, capital budgeting under capital rationing, management decisions, and investment decisions.

R.5050. ENGINEERING ECONOMIC ANALYSIS. (685383) (4 cr; limited to 30 students; prereq IT student or grad, 3000 or #; 1145-1345 MWThF; EE/CSci 2260)

Fundamental principles and techniques of economic analysis of engineering projects including economic measures of effectiveness, time value of money, cost estimation, depreciation, taxes, breakeven, replacement and investment analysis.

R.8410. INDUSTRIAL ENGINEERING RESEARCH. (286231) (3-5 cr; limited to 10 students; hrs ar; prereq #)

R.8411. INDUSTRIAL ENGINEERING RESEARCH. (186232) (3-5 cr; limited to 10 students; hrs ar; prereq 8410)

R.8412. INDUSTRIAL ENGINEERING RESEARCH. (986233) (3-5 cr; limited to 10 students; hrs ar; prereq 8411)

8777. THESIS CREDITS: MASTERS. (389072) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189073) (1-36 cr [max 11 cr per summer term])

Industrial Relations (IR)

537 Management/Economics Building, 624-2500
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11, 12.

FIRST TERM

R.8003. STAFFING, TRAINING AND DEVELOPMENT. (689191) (4 cr; limited to 15 students; prereq 8002 or

and IR grad student or Δ; 1730-2100 TTh; BlegH 260; IR grad maj must reg A-F)

Introduction to staffing processes (recruitment, selection, promotion, demotion, transfer, dismissal, layoff, retirement) and training development theory and techniques as mechanisms for influencing individual and organizational outcomes, such as performance, satisfaction, and climate.

R.8005. COMPENSATION AND REWARD THEORY AND PROGRAMS. (391839) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or Δ; 1730-2100 TTh; BlegH 145; IR grad maj must reg A-F) Introduction to compensation and reward programs in employing organizations. Concepts, models, and theories of organizational and employee behavior in the design and implementation of pay programs. Job evaluation, salary surveys, pay structures, salary increase programs, variable compensation, benefit programs, executive compensation, skill-based pay, and laws and regulations.

R.8006. INTRODUCTION TO LABOR MARKET ANALYSIS. (190031) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or Δ; 1730-2100 MW; BlegH 145; IR grad maj must reg A-F)

Labor Supply and Demand Analysis, and its international dimensions; determination of wages, employment and unemployment; accumulation of human capital and investment in education and training; government regulation in the areas of discrimination and workplace safety; role of unions in wage determination.

8777. THESIS CREDITS: MASTERS. (889965) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488852) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.3002. PERSONNEL AND INDUSTRIAL RELATIONS. (086210) (4 cr; limited to 45 students; prereq 90 cr completed or in progress, Econ 1101, 1102, Psy 1001; 0800-0945 MTWTh; BlegH 120; A-F only)

An introduction to the human resource management function in organizations. The labor market, recruitment, selection, training, compensation, and labor relations. The changing nature of the world of work, emerging legal issues, discrimination in pay and employment, comparable worth, work performance and its assessment, and the effects of technological change on jobs and employment. Lecture presentations, discussion, case studies, and simulation exercises.

R.8004. DESIGN AND MANAGEMENT OF ORGANIZATIONS FOR A CHANGING WORLD. (591841) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or Δ; 1730-2100 MW; BlegH 435; IR grad major must register A-F)

Introduction to micro through macro organizational issues at the individual, dyadic, group, organizational, and environmental levels, and their implications for organizational design, control, coordination, and development.

R.8007. COLLECTIVE BARGAINING: PRIVATE AND PUBLIC SECTORS. (388245) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or Δ; 1730-2100 TTh; BlegH 145; IR grad major must register A-F) Introduction to collective bargaining. Evolution of U.S. trade unions and public policy, bargaining environment and structure, goals and negotiations, contract administration and results. International comparisons, labor-management cooperation, and newly emerging issues.

R.8023. EMPLOYEE TRAINING: CREATING A LEARNING ORGANIZATION. (489189) (4 cr; limited to 15 students; prereq 8003 or # and IR grad student or Δ; 1730-2100 MW; HHHCtr 60; IR grad major must register A-F)

Theory, research, and practice related to the design and implementation of employee training programs. Includes instructional design, training techniques, transfer of training, and program evaluation and costing. Covers the role of employees, unions, and firm policies and practices in the training process.

8777. THESIS CREDITS: MASTERS. (889075) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689076) (1-36 cr [max 11 cr per summer term])

Information and Decision Sciences (IDSc)

395 Humphrey Center, 624-8030
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11, 12.

FIRST TERM

8990. READINGS IN INFORMATION AND DECISION SCIENCES. (189199) (Cr ar; prereq PhD student and #; A-F only)

8995. GRADUATE RESEARCH IN INFORMATION AND DECISION SCIENCES. (989200) (Cr. ar; MIS 8995; prereq PhD student and #; A-F only)

FIRST AND SECOND TERMS: 10-WEEK COURSES

(Register once in Term I)

R.1010. FUNDAMENTALS OF INFORMATION DEVELOPMENT AND USE. (4 cr; SSci 1010; prereq 30 cr; Math 1111 or ¶ Math1111; limited to 45 students; Lect 0900-1015 MW; BlegH 130; Lab 1, (789196) 0800-0900 Th; BlegH 90; A-F only)

Meeting information needs of managers. Sources of data, data collection methods, data organization, and presentation. Descriptive statistical analysis methods. Introduction to probability and random variables. Lab instruction to provide intermediate skill development in word processing and spreadsheet analysis on personal computers. Students are expected to have a basic understanding of word processing (Word Perfect) and spreadsheet analysis (Lotus) before registering for this course.

R.8101. MIS: THE MANAGEMENT OF INFORMATION TECHNOLOGY IN ORGANIZATIONS. (589197) (4 cr; limited to 15 students; prereq MBA 8025 or #; 1730-2100 Th; HHHCtr 20; A-F only)

The role of information in organizations. Strategic uses of information technology. Planning and evaluation of information systems. The politics of information and information systems. Roles and perspectives of top management, functional management, and MIS management.

SECOND TERM

8990. READINGS IN INFORMATION AND DECISION SCIENCES. (289193) (Cr ar; prereq PhD student and #; A-F only)

8995. GRADUATE RESEARCH IN INFORMATION AND DECISION SCIENCES. (189194) (Cr ar; prereq PhD student and #; A-F only)

Interdepartmental Study (ID)

220 Johnston Hall, 624-7577
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (685626) (1-15 cr; prereq consult with Office for Special Learning Opportunities, JohH 220, □) Individual projects, readings, and research in areas that cross departmental lines.

SECOND TERM

3970. DIRECTED STUDIES. (185131) (1-15 cr; prereq consult with Office for Special Learning Opportunities, JohH 220, □) See First Term.

**Interdisciplinary
Medicine (InMd)**

Box 33 UMHC. 625-3622
Medical School

Contact college office for information
regarding summer courses.

**International Rela-
tions (IntR)**

214 Social Sciences. 624-9007
College of Liberal Arts

FIRST TERM

**3960. FIELD STUDIES/INTERNSHIP
IN INTERNATIONAL STUDIES.**

(986913) (1-8 cr [8 cr max for
international relations majors]; prereq
Δ) Staff

Internship with government/
community/international organization
or field study in international relations.
Activities must have an international
focus.

3970. DIRECTED STUDIES. (985180)
(1-15 cr; prereq #, Δ, □) Staff
Guided individual reading or study.

R.3981. MAJOR PROJECT SEMINAR.
(090869) (4 cr; limited to 15 students;
prereq non-honors, IntR major, sr, or
#; 0915-1130 MW; HHHctr 20; A-F
only) Brauer

**3990H. HONORS COURSE:
SUPERVISED RESEARCH PAPER.**
(285385) (1-5 cr; +3990H; prereq sr
honors candidate in international
relations, Δ)

SECOND TERM

**R.3900. TOPICS IN INTERNATIONAL
RELATIONS: SUSTAINABLE
DEVELOPMENT: THE NEXUS
BETWEEN DEVELOPMENT AND THE
ENVIRONMENT.** (891845) (4 cr;
limited to 40 students; prereq 12 cr in
social sciences; 0915-1130 TTh;
BlegH 330) Knudson

**3960. FIELD STUDIES/INTERNSHIP
IN INTERNATIONAL STUDIES.**
(185386) (1-8 cr [8 cr max for
international relations majors]; prereq
Δ) Staff
See First Term.

3970. DIRECTED STUDIES. (985387)
(1-15 cr; prereq #, Δ, □) Staff
See First Term.

**3990H. HONORS COURSE:
SUPERVISED RESEARCH PAPER.**
(785388) (1-5 cr; prereq sr honors
candidate in international relations, Δ)

Italian (Ital)

260 Folwell Hall. 624-4308
(French and Italian)
College of Liberal Arts

FIRST TERM

R.1104. INTERMEDIATE ITALIAN.
(189597) (5 cr; limited to 20 students;
prereq 1103; 1030-1245 MTWThF;
FolH 50)
Consolidation of basic structures and
development of oral fluency through
readings and discussions.

3970. DIRECTED READINGS.
(185010) (1-5 cr; prereq undergrad, #,
Δ, □) Staff
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS.
(188854) (1-16 cr [max 11 cr per
summer term])

**FIRST AND SECOND TERMS:
TEN-WEEK COURSE**

(Register once in Term I)

A concentrated program of study
permitting students to earn 15 hours of
credit, the equivalent of a full year's
sequence in language. Students must
enroll for all three courses and may
not enroll in other summer courses.
Prospective students should talk to an
adviser before registering for intensive
language courses.

**R.1101-1102-1103. BEGINNING
ITALIAN.** (15 cr for both terms; each
section limited to 20 students; 0915-
1245 MTWThF; sec 5, KoltH 5136)
A course with speaking objectives
based on an audiolingual approach.
Students learn to understand and
express fundamental structures of the
language. Includes audiovisual aids.
R.1101, Sec 5, (485613) June 15-July
8, 5 cr
R.1102, Sec 5, (285614) July 9-August
3, 5 cr
R.1103, Sec 5, (185615) August 4-25,
5 cr

SECOND TERM

R.1105. INTERMEDIATE ITALIAN.
(289596) (5 cr; limited to 20 students;
prereq 1104; 1030-1245 MTWThF;
FolH 138)
Literary and cultural readings, leading
to introductory knowledge of Italian
literature and civilization.

8777. THESIS CREDITS: MASTERS.
(289078) (1-16 cr [max 11 cr per
summer term])

J

Japanese (Jpn)

105 Folwell Hall. 624-0007
(East Asian Studies)
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (785164)
(1-15 cr; prereq #, Δ, □) Staff

**5970. DIRECTED STUDIES IN
JAPANESE.** (985244) (1-15 cr; prereq
#, Δ, CLA approval) Staff

8777. THESIS CREDITS: MASTERS.
(588860) (1-16 cr [max 11 cr per
summer term])

8888. THESIS CREDITS: DOCTORAL.
(188862) (1-36 cr [max 11 cr per
summer term])

**FIRST AND SECOND TERMS:
TEN-WEEK COURSES**

(Register once in Term I)

A concentrated program of study
permitting students to earn 15 hours of
credit, the equivalent of a full year's
sequence in language. Students must
enroll for all three courses and may
not enroll in other summer courses.
Prospective students should talk to an
adviser before registering for these
courses.

**R.1011-1012-1013. BEGINNING
JAPANESE.** (15 credits for both terms;
limited to 20 students per recitation
section; daily lecture, recitation and
labs with English and Japanese
speaking instructors; 0800-1220
MTWThF; Arch 15)
R.1011, Sec 5, (189221) June 15-July
8, 5 cr, Staff
R.1012, Sec 5, (889223) July 9-August
2, 5 cr, Staff
R.1013, Sec 5, (489225) August 3-25,
5 cr, Staff

**R.3021-3022-3023. INTERMEDIATE
JAPANESE.** (15 credits for both terms;
limited to 20 students per recitation
section; daily lecture, recitation and
labs with English and Japanese
speaking instructor; 0800-1220
MTWThF; AmundH 116)
R.3021, Sec 5 (291610) June 15-July
8, 5 cr, Staff
R.3022, Sec 5 (191611) July 9-August
2, 5 cr, Staff
R.3023, Sec 5 (991612) August 3-25,
5 cr, Staff

SECOND TERM

3970. DIRECTED STUDIES. (585182)
(1-15 cr; prereq #, Δ, □) Staff

**5970. DIRECTED STUDIES IN
JAPANESE.** (185265) (1-15 cr; prereq
#, Δ, CLA approval) Staff

8777. THESIS CREDITS: MASTERS.
(789084) (1-16 cr [max 11 cr per
summer term])

8888. THESIS CREDITS: DOCTORAL.
(089091) (1-36 cr [max 11 cr per
summer term])

Jewish Studies (JwSt)

331 Folwell Hall. 625-5353
College of Liberal Arts
(Classical and Near Eastern Studies)
(See also Ancient Near
Eastern; Hebrew; Religious Studies)

SECOND TERM

**1034. INTRODUCTION TO
JUDAISM.** (791613) (4 cr, \$3034,
\$ReIS 1034, \$ReIS 3034; 1300-1530
MW; FolH 134) Paradise
Concepts, movements, and institutions
in the development of classical
Judaism, as manifested in the literature
and festivals of the Jewish people from
Second Commonwealth times to the
present. Meets with 3034 and ReIS
1034 and 3034.

**3034. INTRODUCTION TO
JUDAISM.** (591614) (4 cr, \$1034,
\$ReIS 1034, \$ReIS 3034; 1300-1530
MW; FolH 134) Paradise
Additional written assignments and
reading. See 1034. Meets with 1034
and ReIS 1034 and 3034.

5970. DIRECTED READINGS.
(391615) (1-12 cr [max 12 cr]; prereq
#, Δ, CLA approval)
Guided individual reading or study.

**Journalism and Mass
Communication
(Jour)**

111 Murphy Hall. 625-9824
College of Liberal Arts

Preregistration is required for courses
marked with a delta(Δ): Jour 3003,
3008, and 3101. Students must meet
all prerequisites. Further info about
preregistration is available from the
Undergraduate Studies Center, 15
Murphy Hall, 612/625-0120. For
5000-level courses, inquire about
graduate credit at the time of
registration, or by calling 612/625-
4054.

FIRST TERM

**R.1001. INTRODUCTION TO MASS
COMMUNICATION.** (091469) (4 cr;
limited to 180 students; 1145-1245
MTWThF; MurH 105; A-F only)
Nature, functions, and responsibilities
of communication media and
agencies from professional point of
view. News, opinion, entertainment,
and persuasion functions; current
trends. Specialized communication;
aspects of advertising.

COURSE DESCRIPTIONS

R.3003 PRODUCING MASS MEDIA MESSAG (192006) (4 cr; limited to 16 students; §1003; prereq formal pre-jour program filed, 1001, freshman composition or exemption, Δ; 0915-1115 MTWTh; MurH 212, 311; A-F only)

Examination and analysis of mass media messages; practice, under instruction, in writing factual and persuasive messages. Emphasis on message attributes, style, structure, formula, constraints, techniques, and conventions. Applications to news, advertising, documentary and interpretive writing for print, film, and video. Typed assignments required.

R.3008. MASS COMMUNICATION PROCESSES AND STRUCTURE. (389606) (4 cr; limited to 72 students; prereq jour major or minor status, 3004 or §3004; Δ; 1030-1130 MTWThF; MurH 308; A-F only) Chang
Analysis of a variety of communication theories and major structural aspects of mass communication systems as they affect mass communication processes.

R.3776. MASS COMMUNICATION LAW. (391470) (4 cr; limited to 72 students; jour majors must have course approved on program plan; pre-jour majors should not enroll in course; 1145-1245 MTWThF; MurH 308; A-F only)

Brief historical background, First Amendment rights, basic law of defamation, free press and fair trial, access to news, access to the press, privacy, contempt, obscenity, the regulation of broadcasting and advertising, antitrust controls, legal and ethical rules affecting journalistic practice.

3970. PROJECTS IN JOURNALISM. (485160) (1-4 cr per term [max 8 cr]; prereq jour major or minor status, 3004, #, Δ, □; A-F only) Staff
Independent study; projects.

3980. DIRECTED INSTRUCTION. (690874) (1-2 cr [2 cr max]; prereq jour major status, adviser approval; one professional course for prof. majors; one adviser approved course for mass comm majors; Δ; S-N only) Staff

Internship at the graduate or undergraduate level supervised by the student's academic sponsor and by the communications medium at which the student is working.

R.5251. PSYCHOLOGY OF ADVERTISING. (390464) (4 cr; limited to 180 students; prereq Psy 1001; jour majors must have course approved on program plan; pre-jour majors should not enroll in course; 0945-1130 TThF; MurH 105; A-F only) Faber
Psychological principles, research techniques, and applications in advertising and selling. Consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.

R.5501. COMMUNICATION AND PUBLIC OPINION I. (190465) (4 cr; limited to 72 students; prereq 16 crs in social science depts; jour majors must have course approved on program plan; pre-jour majors should not enroll in course; 1300-1400 MTWThF; MurH 308; A-F only) Chang
Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation.

R.5611. DEVELOPMENT OF AMERICAN BROADCASTING. (191471) (4 cr; limited to 72 students; jour majors must have course approved on program plan; pre-jour majors should not enroll in course; 0915-1015 MTWThF; MurH 308; A-F only) Fang
Historical and economic development of radio and television in the United States; government regulation, industry self-regulation, forms of social control; issues in contemporary broadcasting; the journalist as broadcaster.

5970. ADVANCED PROJECTS IN JOURNALISM. (485627) (1-4 cr per term [max 8 cr]; prereq jour major or minor status, 3004, B avg, #, Δ, □; A-F only) Staff
Independent study; projects.

5970H. HONORS COURSE: ADVANCED PROJECTS IN JOURNALISM. (289419) (1-4 cr per term [max 8 cr]; prereq jour major or minor status, 3004, B avg, regis honors div, #, Δ, □; A-F only) Staff
Independent study; project

8777. THESIS CREDITS: MASTERS. (588857) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388858) (1-36 cr [max 11 cr per summer term])

8970. ADVANCED PROJECTS IN MASS COMMUNICATION. (285628) (1-4 cr [max 8 cr]; prereq grad major or minor in mass comm, #, Δ; A-F only) Staff
Individual research.

SECOND TERM

R.3101. REPORTING. (889609) (4 cr; limited to 16 students; prereq jour maj status, 3004; pass 40 wpm keyboarding test with 6 or fewer errors; Δ; 0915-1215 MTWTh; MurH 212; A-F only)
Fact gathering and journalistic writing. Problems in judgment and handling of news and news features.

R.3201. PRINCIPLES OF ADVERTISING. (091472) (4 cr; limited to 180 students; jour majors must have course approved on program plan; pre-jour majors should not enroll in course; 1030-1130 MTWThF; MurH 105; A-F only)

Theory, principles, and functions of advertising; its roles in economic, social, and marketing structure. Newspapers, magazines, radio, and television as advertising media.

3970. PROJECTS IN JOURNALISM. (285161) (1-4 cr per term [max 8 cr]; prereq jour major or minor status 3004, #, Δ, □; A-F only) Staff
See First Term.

3980. DIRECTED INSTRUCTION. (890906) (1-2 cr [2 cr max]; prereq jour major status, adviser approval; one professional course for prof. majors; one adviser approved course for mass comm majors; Δ; S-N only) Staff
See First Term.

R.5721. MASS MEDIA AND U.S. SOCIETY. (891473) (4 cr; limited to 72 students; prereq 16 crs in social science depts; jour majors must have course approved on program plan; pre-jour majors should not enroll in course; 0915-1015 MTWThF; MurH 308; A-F only) Ward
Economic, political, and social determinants of character and content of mass communications in America. Impact, structure, functioning of mass media. Problems, prospects, and criticism. Professionalism, technology, reform.

R.5741. MINORITIES AND MASS MEDIA. (090466) (4 cr; limited to 72 students; jour majors must have course approved on program plan; pre-jour majors should not enroll in course; 1030-1130 MTWThF; MurH 308; A-F only) Johnson
Analysis of relationships between mass media and communities of color in the United States. Focusing on issues of content and control.

5970. ADVANCED PROJECTS IN JOURNALISM. (086644) (1-4 cr per term [max 8 cr]; prereq jour major or minor status, 3004, B avg, #, Δ, □; A-F only) Staff
See First Term.

5970H. HONORS COURSE: ADVANCED PROJECTS IN JOURNALISM. (288688) (1-4 cr per term [max 8 cr]; prereq jour major or minor status, 3004, B avg, regis honors div, #, Δ, □; A-F only) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (489080) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289081) (1-36 cr [max 11 cr per summer term])

8970. ADVANCED PROJECTS IN MASS COMMUNICATION. (886645) (1-4 cr [max 8 cr]; prereq grad major or minor in mass comm, #, Δ; A-F only) Staff
See First Term.

K

Kinesiology (Kin)

224 Cooke Hall. 625-1007
(School of Kinesiology and Leisure Studies)
College of Education

Courses are offered at the undergraduate and graduate levels for progress in Kinesiology and for Physical Education Licensure (PEL). Courses which apply to State of Minnesota licensure in physical education teaching, adapted physical education, and/or athletic coaching are designated as Physical Education Licensure.

Courses applicable toward requirements in various programs that are offered this summer include the following:

1. Kinesiology-3110, 3111, 3115, 3625, 5141, 5371, 5460, 5720, 5860, 5980, 5981, 5983, 8777, 8888, 8981.
2. Adapted Physical Education Licensure-5120, 5720.
3. State of Minnesota Coaching Licensure-3110, 3111, 3115, 3143, 5740.
4. Post Baccalaureate Teaching Licensure-5521, 5522, 5720. Elementary School Majors-Kin 3327 is offered to accommodate elementary education majors and classroom teachers.

FIRST TERM

3110. HUMAN ANATOMY. (289792) (3 cr; 0800-0900 MTWThF; CookeH 214; A-F only; Physical Education Licensure) Serfass
Emphasizes bones, nerves, and muscles and their significance in physical education.

R.3327. TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL. (189793) (3 cr; prereq elem education major; limited to 35 students; 0800-0900 MTWThF; NorrisH 3, M 151; A-F only; Physical Education Licensure) Wiese-Bjornstal
Overview of the elementary school physical education program; primarily a laboratory course, with participation in representative physical education activities for children; opportunities for observation of children, microteaching, skill analysis, and group discussion.

3900. DIRECTED STUDY. (1-12 cr [max 12cr]; prereq Δ; A-F only)
Self-directed study preceeded by classroom study and possession of basic competence.
Sec 21, (691829) Serfass
Sec 23, (491833) Burton
Sec 24, (291834) Wiese-Bjornstal
Sec 25, (791837) Wade

R. 5151. CURRICULUM—June 15-July 6. (591838) (3 cr; limited to 20 students; 1300-1500 MTWThF; CookeH 214) Bayless
For students without previous experience in curriculum; objectives, content, organization, evaluation, and trends.

R. 5375. COMPETITIVE SPORT FOR CHILDREN AND YOUTH. (191835) (3 cr; limited to 30 students; 1030-1130 MTWThF; CookeH 215) Wiese-Bjornstal
Cognitive, behavioral, and biological factors having important implications for competitive sport participants from early childhood through high school.

R. 5385. EXERCISE FOR SPECIAL POPULATIONS—June 15-30. (991836) (3 cr; limited to 30 students; 1145-1340 MTWThF; CookeH 215) Burton
This course is designed to provide current information pertaining to the physical activity opportunities and limitations for persons with special needs.

5521. PEDAGOGY I: ELEMENTARY PHYSICAL EDUCATION I. (589992) (6 cr; prereq stu in Post BA teacher preparation prog; 0915-1115 MTWThF; NorrisH 3, M151; A-F only; Physical Education Licensure) Lindow
The planning, structuring, communicating, class management, and evaluating role of the contemporary K-middle school physical educator in diverse settings.

R. 5720. TOPICS IN KINESIOLOGY. (1-12 cr [max 12 cr]; prereq #; A-F only)
Sec 1, (789795) The Achievement-Based Curriculum (ABC) Model—July 1-20. 3 cr, limited to 25 students; 1400-1605 MTWThF, CookeH 215, Physical Education Licensure, Burton
Sec 2, (589796) Integrating Sport Science into the Curriculum: Math/Science—June 15-30. 3 cr; limited to 30 students; 1145-1340 MTWThF, CookeH 206, Walker, Wade

5860. LEGAL ASPECTS OF SPORT AND PHYSICAL ACTIVITY. (190563) (4 cr; \$Rec 5860 prereq Kin 3143 or Rec 3550 or Rec 5460; 0915-1115 MWF; CookeH 206) Schultz
A survey of a variety of legal considerations in sport and physical activity programs in schools, colleges, and the private sector. Contracts, legal liability, and civil rights involving sports participants, coaches, and administrators. Meets with Rec 5860.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #; A-F only) Focus on teaching of physical education.
Sec 21, (389797) Serfass
Sec 23, (089799) Burton
Sec 24, (990556) Wiese-Bjornstal
Sec 25, (789800) Wade

5983. READINGS: KINESIOLOGY. (Cr ar [max 9 cr]; prereq education or graduate student; A-F only)
Sec 21, (589801) Serfass

Sec 23, (189803) Burton
Sec 24, (790557) Wiese-Bjornstal
Sec 25, (089804) Wade

8777. THESIS CREDITS: MASTERS. (689868) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489869) (1-36 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (Cr and hrs ar; prereq 8980 or #; S-N only) Individual problems.
Sec 21, (889805) Serfass
Sec 23, (489807) Burton
Sec 24, (590558) Wiese-Bjornstal
Sec 25, (289808) Wade

SECOND TERM

3111. MECHANICS OF MOVEMENT—July 22-August 18. (189809) (3 cr; prereq CBN 1027, 0800-0915 MTWThF; NorrisH 3; A-F only; Physical Education Licensure) Kernozek
Structure of the body; principles and mechanics of bodily movements.

R.3115. PHYSIOLOGICAL APPLICATION TO SPORTS—July 22-August 18. (489810) (3 cr, limited to 40 students; prereq Phsl 3051 or #; 0930-1045 MTWThF; CookeH 214; A-F only; Physical Education Licensure) Ekstrom
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, pre-game meals, and ergogenic aids in athletics.

3143. ORGANIZATION AND MANAGEMENT OF SPORT—July 22-August 11. (289811) (3 cr; prereq 2 cr coaching course; 0915-1045 MTWThF; CookeH 215; A-F only; Physical Education Licensure) Pickert
Principles, policies, and procedures involved in the coaching of interscholastic sports.

3625. SUPERVISED PRACTICAL EXPERIENCE. (591855) (1-12 cr [max 12 cr]; prereq Δ; S-N only) Stoner.
On-the-job experience under a specialist in the practical area of study.

3900. DIRECTED STUDY. (1-12 cr [max 12 cr]; prereq □, A-F only). Self-directed study preceeded by classroom study and possession of basic competence.
Sec 21, (291851) Serfass
Sec 22, (391856) Hancock
Sec 23, (191857) Kane
Sec 24, (091858) Krotee
Sec 25, (891859) Stoner
Sec 26, (191860) Wade

R.5141. NUTRITION FOR EXERCISE AND PHYSICAL PERFORMANCE—July 22-August 4. (189812) (3 cr; \$HEEd 5412; limited to 30 students; prereq 3115 or FScn 1612 or equiv; 1300-

1530 MTWThF; CookeH 214) Serfass
Application of basic nutritional principles to active populations, current issues related to dietary modifications for the possible improvement of physical performance, and strategies for educating clientele about nutrition and physical performance.

5371. SOCIOLOGY OF SPORT—July 22-August 11. (690566) (4 cr; \$Soc 5371; \$PE 5371; 0800-1015 MTWThF; A-F only; CookeH 400) Krotee
Sport within and among societies and nations; social organizations; socioeconomic development, contemporary structure, personnel, fans; relationship to other institutions; economy, education, family, government, religion; social differentiation; status, ethnicity, sex, age; careers; ethical and social problems; honesty and violence.

R.5460. FOUNDATIONS OF SPORT MANAGEMENT—July 22-August 6. (989813) (3 cr; \$REC 5460; limited to 30 students; prereq Recreation or Kin/PE major or #; 0915-1130 MTWThF; CookeH 206; A-F only) Kane
Introduction to the fundamental principles of sport management and fitness. Meets with Rec 5460.

5522. PEDAGOGY II: SECONDARY PHYSICAL EDUCATION. (389993) (6 cr; prereq stu in post BA prog; 0915-1115 MTWThF; CookeH 325, 400, Fieldhouse; A-F only; Physical Education Licensure) Spletzer
The planning, structure, communicating, class management, and evaluating role of the contemporary middle school -12th grade physical educator in diverse settings.

R.5720. TOPICS IN KINESIOLOGY. (1-12 cr [max 12 cr]; each section limited to 30 students; prereq #; A-F only)
Sec 1, Technology Applications in Sport and Physical Education—August 5-18. (789814) 3 cr, limited to 30 students; 1300-1700 MTWThF, CookeH 215, Stoner
Sec 2, Human Factors and Safety Issues—July 22-August 18. (490567) 3 cr; limited to 30 students; 1000-1115 MTWThF, Norris 3, Hancock

R. 5740. WORKSHOP: COACHING OF INDIVIDUAL, DUAL OR TEAM SPORTS: SOCCER—July 22-August 4. (091861) (1-12 cr [max 12 cr]; limited to 30 students; 1030-1300 MTWThF; CookeH 400; A-F only; Physical Education Licensure) Krotee
This offering for 3 credits.

5980. RESEARCH METHODOLOGY—July 22-August 18. (589815) (3 cr; prereq education or grad student; 1300-1415 MTWThF; CookeH 206; A-F only) Kane
Methods and design for research in health, physical education, and recreation.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #; A-F only) See First Term.
Sec 21, (092007) Serfass
Sec 22, (189817) Hancock
Sec 23, (089818) Kane
Sec 24, (889819) Krotee
Sec 25, (891862) Stoner
Sec 26, (491864) Wade

5983. READINGS: KINESIOLOGY. (Cr ar [max 9 cr]; prereq education or graduate student; A-F only) See First Term.
Sec 21, (892008) Serfass
Sec 22, (089821) Hancock
Sec 23, (889822) Kane
Sec 24, (689823) Krotee
Sec 25, (691863) Stoner
Sec 26, (291865) Wade

8777. THESIS CREDITS: MASTERS. (889870) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689871) (1-36 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (Cr and hrs ar; prereq 8980 or #; S-N only) See First Term.
Sec 21, (692009) Serfass
Sec 22, (289825) Hancock
Sec 23, (189826) Kane
Sec 24, (989827) Krotee
Sec 25, (191866) Stoner
Sec 26, (991867) Wade

L

Laboratory Medicine and Pathology (LaMP)

3-155 Jackson Hall. 625-1488 (Laboratory Medicine and Pathology) Medical School

Courses for Medical and Undergraduate Students

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

5125. CHRONOBIOLOGY. (486521) (Cr ar; prereq 3rd or 4th yr medical student, #) Halberg

5141. PROBLEMS IN EXPERIMENTAL PATHOLOGY. (286522) (Cr ar; prereq 3rd or 4th yr medical student, #) Staff

5152. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING: (Veterans Administration Hospital). (786525) (Cr ar; prereq 3rd or 4th yr medical student) Posalaky

COURSE DESCRIPTIONS

5158. CARDIAC PATHOLOGY (United Hospital). (386527) (Cr ar; prereq 3rd or 4th yr medical student, #) Titus, Edwards

5192. LABORATORY MEDICINE FOR PRIMARY CARE (Virginia). (386530) (Cr ar; prereq 4th yr medical student, #) Knabe

5193. CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital). (186531) (Cr ar; prereq #) Eilers

5194. COMPUTER APPLICATIONS IN MEDICINE. (487961) (Cr ar; prereq #) Ellis

5195. COMPUTER APPLICATIONS IN MEDICAL RESEARCH. (287962) (Cr ar; prereq #) Ellis

5203. CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank). (086532) (Cr ar; prereq #) Polesky

5210. SURGICAL PATHOLOGY FOR POST-MDs. (888251) (1-10 cr; prereq regis med fellow spec, #; S-N only)

5211. AUTOPSIES FOR POST-MDs. (688252) (1-10 cr; prereq regis med fellow spec, #; S-N only)

5212. ADVANCED NEUROPATHOLOGY FOR POST-MDs. (488253) (1-5 cr; prereq regis med fellow spec, #) Sung

5213. LABORATORY MEDICINE FOR POST-MDs. (288254) (1-10 cr; prereq regis med fellow spec, #; S-N only)

SPECIAL TERMS: SIX-WEEK COURSES

5113. SURGICAL PATHOLOGY: UNIVERSITY HOSPITALS. (486518) (ar cr; prereq 3rd or 4th yr medical student) Snover

5114. SURGICAL PATHOLOGY (Hennepin County Medical Center). (286519) (ar cr; prereq 3rd or 4th yr medical student) Anderson

5115. SURGICAL PATHOLOGY (Veterans Administration Hospital). (686520) (ar cr; prereq 3rd or 4th yr medical student) Ewing

5119. FORENSIC PATHOLOGY-Medical Examiners' Office, Hennepin County Medical Center. (588681) (ar cr; prereq 3rd or 4th yr medical student) Peterson
The function of a medical examiner's office in determining the cause and manner of types of death.

5141. PROBLEMS IN EXPERIMENTAL PATHOLOGY. (286522) (Cr ar; prereq 3rd or 4th year medical student, #) Staff

5150. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING: (University Hospitals). (186523) (ar cr; prereq 3rd or 4th year medical student) Burke

5151. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING (Hennepin County Medical Center). (986524) (ar cr; prereq 3rd or 4th yr medical student) Anderson, Strom

5153. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING (St. Paul-Ramsey Medical Center). (586526) (ar cr; prereq 3rd or 4th yr medical student) Posalaky

5181. LABORATORY AND CLINICAL HEMATOLOGY. (186528) (9 cr; prereq #) Brunning

5184. IMMUNOHEMATOLOGY IN BLOOD BANKING. (086529) (ar cr; prereq #) McCullough

5186. LABORATORY MEDICINE IN A COMMUNITY HOSPITAL. (285046) (9 cr; prereq 4th yr medical student, #) Bandt

Landscape Architecture (LA)

205 North Hall, St. Paul. 625-8285
College of Architecture and Landscape Architecture

FIRST TERM

5132. DIRECTED STUDIES IN LANDSCAPE ARCHITECTURE DESIGN. (485210) (1-6 cr; prereq third yr landscape architecture student, Δ; A-F only) Nassauer

5140. INTERDISCIPLINARY STUDIES IN LANDSCAPE ARCHITECTURE. (585442) (2-6 cr [max 18 cr]; prereq #; A-F only) Staff

8500. LANDSCAPE ARCHITECTURE RESEARCH PROJECT. (189977) (1-6 cr; prereq 8283 or #; A-F only) Pitt

8777. THESIS CREDITS: MASTERS. (888864) (1-16 cr [max 11 cr per summer term])

SECOND TERM

5140. INTERDISCIPLINARY STUDIES IN LANDSCAPE ARCHITECTURE. (886919) (2-6 cr [max 18 cr]; prereq #; A-F only) Staff

8500. LANDSCAPE ARCHITECTURE RESEARCH PROJECT. (089978) (1-6 cr; prereq 8283 or #; A-F only) Pitt

8777. THESIS CREDITS: MASTERS. (889092) (1-16 cr [max 11 cr per summer term])

Latin American Studies (LAS)

232a Social Science. 626-8181
(Area Studies Programs)
College of Liberal Arts

FIRST TERM

3121. LATIN AMERICA. (690485) (4 cr; §Geog 3121; 0915-1145 TTh; BlegH 415) Weil
Meets with Geog 3121.

3403. SURVEY OF LATIN AMERICAN HISTORY: 1929 TO PRESENT. (491847) (4 cr; §Hist 3403; 1145-1245 MTWThF; BlegH 115) Staff
Contradictions of modern societies; economic expansion, dependency, population growth and the social crisis, democratic and authoritarian politics. Meets with Hist 3403.

3970. DIRECTED STUDIES. (691846) (1-15 cr; prereq #, Δ) staff
Guided individual reading or study. Open to qualified students for one or more quarters.

SECOND TERM

3401. SURVEY OF LATIN AMERICAN HISTORY: COLONIAL PERIOD TO 1800. (191849) (4 cr; § Hist 3401; 1030-1130 MTWThF; BlegH 115) Schwartz
The pre-Hispanic and colonial period to 1800, with emphasis on social, cultural, and economic aspects. Meets with Hist 3401

3970. DIRECTED STUDIES. (291848) (1-15 cr; prereq #, Δ) arr. staff
See first Term.

Latin (Lat)

331 Folwell Hall. 625-5353
(Classical and Near Eastern Studies)
College of Liberal Arts

FIRST TERM

3001. BEGINNING LATIN: INTENSIVE. (385586) (10 cr, §1101-1102; 0915-1245 MTWThF; FolH 234) Sheets
Grammar, syntax, composition, and reading.

8777. THESIS CREDITS: MASTERS. (288867) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988869) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3002. LATIN READINGS. (985390) (5 cr, §1103; continuation of 3001 for 3rd quarter of beg Latin; 1030-1130 MTWThF; FolH 142) Erickson
Reading of selected Latin authors, development of reading proficiency.

8777. THESIS CREDITS: MASTERS. (189096) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789098) (1-36 cr [max 11 cr per summer term])

Law School (Law)

285 Law. 625-1000

Law School Calendar

June 1— First day of summer session classes
July 28— Last day of summer session classes
July 30-August 2— Final Examination Period for summer session

Admission and Registration
Students must have completed one year at an approved law school and submit a letter of good standing from a dean of an approved law school. The tuition is \$251.33 per credit*. Students not currently enrolled in the University of Minnesota Law School must submit a nonrefundable application fee. Last day to register without a late fee is May 28, 1993. Information is available in the college office, 290 Law Building, 229 19th Avenue South, University of Minnesota, Minneapolis, MN 55455 or call 612/625-5005
*Tuition is subject to change.

SPECIAL TERM: EIGHT WEEK COURSES, June 1-August 2

5109. CREDITORS' REMEDIES/ SECURED TRANSACTIONS. (890923) (4 cr; prereq □ ; 0745-0915 MTWTh; Law 50, 65) Nickles
Attachment, garnishment execution, supplementary proceedings, creditors' bills, judicial sales, fraudulent conveyance, and exemptions, all matters of almost daily concern to practicing lawyers. Legal problems of personal property security in retail installment buying and in financing commercial business.

5219. EVIDENCE. (386236) (4 cr; prereq □ ; 1025-1155 MTWTh; Law 50, 65) Marshall
Study of relevance, admission and exclusion of evidence, direct and cross-examination, judicial notice, hearsay, expert testimony, burdens of proof and presumptions, privileged communications.

5600. PROFESSIONAL RESPONSIBILITIES. (987723) (2 cr; prereq □ ; 0925-1015 MTWTh; Law 40, 55) Cound
Lawyer's responsibilities to clients, the profession, the administration of justice and society; content and role of formal standards of professional ethics.

5604. FAMILY LAW. (092010) (4 cr; 1205-1335 MTWTh; Law 50, 65) Younger

A study of the law governing de jure and de facto families including marriage, divorce, and relations of family members to one another and to the state. Tax component will also be taught.

5618. TRIAL PRACTICE. (690924) (3 cr; prereq □; 1730-2030 T; Law 170) Simon

This course focuses on the development of trial skills. Each week students prepare for and perform trial skills exercises in class and also in small groups; their small-group performances are videotaped. Students review and critique their videotapes using critique forms and study guides that direct them toward specific areas of their performance that they should be trying to develop and improve. All students perform a complete part of a trial. Students will try three trials over the course of the semester. There is no final, day long trial.

Linguistics (Ling)

142 Klaeber Court. 624-3528 (Linguistics)
College of Liberal Arts

FIRST TERM

3001. INTRODUCTION TO LINGUISTICS. (185629) (5 cr, §5001; 1300-1515 MWF, 1300-1400 TTh; FolH 234)

Survey of phonetics, phonology, morphology, syntax, semantics, and historical-comparative linguistics; language learning and the psychology of language; linguistic universals; language in society. Meets with 5001.

3970. DIRECTED STUDIES. (187033) (1-5 cr; prereq linguistics major, #, Δ, □)

Guided individual reading or study.

5001. INTRODUCTION TO LINGUISTICS. (485630) (5 cr, §3001; prereq grad standing or #; 1300-1515 MWF, 1300-1400 TTh; FolH 234)
See 3001. Meets with 3001.

5731. A CONTRASTIVE APPROACH TO MODERN ENGLISH. (188255) (4 cr; prereq 3001 or 5001 or #; does not fulfill degree requirements for majors in Ling or ESL; 1530-1745 MWF; FolH 114)

Linguistic structures of standard English and contrastive analysis of these structures with those of another language. Implications for learning English as a second language.

5970. DIRECTED STUDIES. (988256) (1-5 cr; prereq Ling or ESL major, #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (188871) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988872) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5732. A CONTRASTIVE APPROACH TO MODERN ENGLISH. (588258) (4 cr; prereq 5731; does not fulfill degree requirements for majors in Ling or ESL; 1300-1515 MWF; FolH 234)
See 5731, First Term.

5970. DIRECTED STUDIES. (388259) (1-5 cr; prereq Ling or ESL major, #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (189101) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989102) (1-36 cr [max 11 cr per summer term])

Logistics Management (LM)

1235 Management/Economics Building. 624-5055
Carlson School of Management
Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11,12.

FIRST TERM

R.3000. INTRODUCTION TO LOGISTICS MANAGEMENT. (491850) (4 cr; limited to 35 students; prereq Econ 1101 or equiv; 0915-1115 MWF; BlegH 335; A-F only)
Management of the flow of physical products (physical supply and physical distribution) of the firm, and the linkages between the process of controlling the physical flow of products and the major functions of the firm, i.e., finance, marketing, and operations. Logistic topics and analysis of the impact of logistics decisions on other functional areas.

8990. READINGS IN LOGISTICS MANAGEMENT. (186237) (Cr ar; prereq consent of advisor, #, Grad School of Mgmt approval; A-F only)

8995. GRADUATE RESEARCH IN LOGISTICS MANAGEMENT. (086238) (Cr ar; prereq Grad School of Mgmt approval; A-F only)

SECOND TERM

8990. READINGS IN LOGISTICS MANAGEMENT. (886239) (Cr ar; prereq consent of advisor, #, Grad School of Mgmt approval; A-F only)

8995. GRADUATE RESEARCH IN LOGISTICS MANAGEMENT. (186240) (Cr ar; prereq Grad School of Mgmt approval; A-F only)

M

Management (Mgmt)

837 Management/Economics Building. 624-5232
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11,12.

FIRST TERM

R.3001. FUNDAMENTALS OF MANAGEMENT. (585313) (4 cr, §8001; limited to 40 students; 0915-1130 MW, BlegH 435; A-F only)
Concepts, theory, research, and operational problems. The principal functional areas of management. Factors and relationships necessary to achieve organizational objectives: establishment of goals, policies, procedures; the planning process; control systems; organizational structure and behavior; leadership.

8990. READINGS IN MANAGEMENT THEORY AND ADMINISTRATION. (385314) (Cr ar; prereq 2nd yr grad stu, consent of advisor and #, Grad Sch Mgmt approval, requisite introductory courses) Staff
Readings involve intensive research into a particular subject and normally require preparation of a major term paper.

8995. RESEARCH IN MANAGEMENT THEORY AND ADMINISTRATION. (185315) (Cr ar; prereq consent of advisor, Grad Sch Mgmt approval, #, 2nd-yr grad student and requisite introductory courses) Staff
Special research projects on a specific problem completed in cooperation with a business firm.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

(Register once in Term I)

R.8006. PSYCHOLOGY IN MANAGEMENT. (189414) (4 cr; limited to 20 students; §3002; prereq grad mgmt student or Grad Sch Mgmt approval; 1730-2100 T; BlegH 435)
Concepts, theories, and empirical research relevant to diagnosis, prediction, and control of human behavior in complex organizations. Models and techniques for analyzing group processes, leadership styles, and organizational structure, change, and environment. Students prepare papers based on their own research or on secondary analysis of existing literature.

SECOND TERM

R.3001. FUNDAMENTALS OF MANAGEMENT. (686212) (4 cr, §8001; limited to 45 students; 0915-1130 MW; BlegH 330; A-F only)
See First Term.

R.3004. BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION. (390478) (5 cr; limited to 35 students; prereq sr and completion of business core or equiv of final core course; 1030-1245 MTW; BlegH 435; A-F only)
Identifying and analyzing problems, establishing corporate or divisional goals, and designing realistic programs of action. Usually the viewpoint of the general line manager (department, division, or executive level) is taken. Case analysis and discussion, small group work, and occasional presentations made to the class.

8990. READINGS IN MANAGEMENT THEORY AND ADMINISTRATION. (486213) (Cr ar; prereq consent of advisor, Grad Sch Mgmt approval, and #, 2nd-yr grad student and requisite introductory courses) Staff
See First Term.

8995. RESEARCH IN MANAGEMENT THEORY AND ADMINISTRATION. (286214) (Cr ar; prereq consent of advisor and #, Grad Sch Mgmt approval, 2nd-yr grad student and requisite introductory courses) Staff
See First Term.

Marketing (Mktg)

1235 Management/Economics Building. 624-5055
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11,12.

FIRST TERM

R.3000. PRINCIPLES OF MARKETING. (085316) (4 cr; limited to 35 students; prereq Econ 1101 or equiv; 0915-1115 MWF; BlegH 340; A-F only)
Basic policy and strategy issues in marketing and the environmental factors that affect these issues. Legal, behavioral, ethical, competitive, economic, and technological factors as they affect product, pricing, promotion, and marketing channel decisions.

R.3010. BUYER BEHAVIOR AND MARKETING ANALYSIS. (190482) (4 cr; limited to 35 students; prereq 3000 and OMS 1020 or equiv; 0915-1115 MWF; HHHctr 35)
Identifying and applying secondary and primary data to solve marketing problems. Emphasis on consumer and organizational buyer behavior. Topics include survey and experimental research techniques, market segmentation, data analysis, behavior

COURSE DESCRIPTIONS

concepts and processes, consumer and organizational decision-making models, and managerial applications of these models.

8990. READINGS IN MARKETING. (885317) (Cr ar; prereq MBA core courses, or MBA 8045 and Δ ...and consent of adviser, #, and Grad Sch Mgmt approval)
Readings useful to the student's program and objectives that are not available in regular course offerings.

8995. GRADUATE RESEARCH IN MARKETING. (685318) (Cr ar; prereq MBA core courses, or MBA 8045, Δ , consent of adviser, #, Grad Sch Mgmt approval)
Individual research on an approved topic that is appropriate to the student's program and objectives.

FIRST AND SECOND TERMS: TEN-WEEK COURSE
(Register once in Term I)

R.8051. MARKETING RESEARCH. (090483) (4 cr; limited to 10 students; prereq MBA core courses or MBA 8045 and Δ , Grad Mgmt student or Grad Sch Mgmt approval; 1730-2100 M; HHHctr 35)
Survey, observational, and experimental techniques used in marketing research. Application of these techniques to selected marketing problems. Class project involves utilizing one or more of these techniques to study an actual marketing problem.

R.8078. MARKETING COMMUNICATIONS. (988483) (4 cr; limited to 20 students; prereq either MBA core courses, or MBA 8045, grad Mgmt student or Grad School Mgmt approval; 1730-2100 T; BlegH 425)
The communication function as a facet of marketing strategy; integrating advertising, public relations, sales promotion, and other elements into the communications mix; design and evaluation of marketing communications; selection of media; advertiser-agency relationships.

SECOND TERM

R.3020. MARKETING OPERATIONS MANAGEMENT. (986216) (4 cr; limited to 35 students; prereq 3010; 0915-1115 MWF; BlegH 340)
Development of marketing plans, primarily for manufacturing organizations. Analytical methods for developing and appraising marketing programs, factors important in shaping marketing plans. Planning for selling, communication, distribution, pricing, product development, and marketing research activities.

8990. READINGS IN MARKETING. (786217) (Cr ar; prereq MBA core courses, or MBA 8045, Δ consent of adviser, #, Grad Sch Mgmt approval)
See First Term.

8995. GRADUATE RESEARCH IN MARKETING. (386219) (Cr ar; prereq MBA core courses or MBA 8045, Δ consent of adviser, #, Grad Sch Mgmt approval)
See First Term.

Master of Business Administration (MBA)

295 Hubert H. Humphrey Center.
624-0006
Carlson School of Management

FIRST TERM

R.5100. MANAGEMENT TOPICS-June 15-July 20. (688588) (Cr ar; limited to 10 students; prereq #) Lyon, France

FIRST AND SECOND TERMS: TEN-WEEK COURSES
(Register once in Term I)

R.8005. COMPUTER ACCESS AND PROGRAMMING FOR BUSINESS ANALYSIS. (485319) (1 cr; MBA students only; limited to 55 students; 1300-1500 M, BlegH 425; S-N only)
Computer access and use information necessary for MBA courses. Covers introduction to computer terminology and computing at Minnesota, plus programming in BASIC.

R.8015. HUMAN RESOURCES MANAGEMENT. (885320) (4 cr; MBA students only; limited to 55 students; 1000-1145 TTh; BlegH 425)
A systematic approach to major phases of human resource management in organizations including knowledge bases and theories; problems; constraints; opportunities; program controls, evaluations and costs; and results of effective and efficient human resource management. Emphasis is that of the generalist, not that of specialist personnel or industrial relations professionals.

R.8020. BUSINESS STATISTICS: DATA SOURCES, PRESENTATION, AND ANALYSIS. (188580) (4 cr; MBA students only; limited to 30 students; 1730-2100 W; BlegH 425; A-F only)
A managerial view of the Statistical Problem Solving process and the most frequently encountered statistical methods; descriptive statistics for summarizing data; analysis of survey data; regression analysis; material covered using statistical software and computer-stored data sets.

R.8025. DECISION SCIENCES AND INFORMATION SYSTEMS. (685321) (4 cr; MBA students only; limited to 55 students; 1000-1145 MW; BlegH 425; A-F only)
Systems analysis, probability, and decision analysis applied to managerial problems under conditions of uncertainty. Formulation and interpretation of mathematical models. Role of information systems in

decision making. Principles of implementation of decision science models and information system.

R.8030. FINANCIAL ACCOUNTING. (288495) (4 cr; MBA students only; limited to 15 students; 1730-2100 T; BlegH 140; A-F only)
Understanding, interpreting, and analyzing financial statements of business enterprises.

R.8035. MANAGERIAL ACCOUNTING. (188496) (4 cr; MBA students only; limited to 55 students; 0800-0945 MW; BlegH 425; A-F only)
Use of accounting data in management decisions; accounting systems to generate accounting data, including study of planning and control; transfer pricing, performance evaluation, cost behavior, cost allocation, and standard costs.

R.8040. FINANCIAL MANAGEMENT. (485322) (4 cr; MBA students only; limited to 55 students; 1300-1445 TTh; BlegH 425; A-F only) Hess
Analytical introduction to the theory and practice of finance. Applies the basic financial concepts of risk, return, and valuation to the decisions that a person in a small business or a corporate financial officer must make about the sources and uses of funds during times of changing financial markets.

R.8045. MARKETING MANAGEMENT. (889271) (4 cr; MBA students only; limited to 20 students; 1730-2100 Th; BlegH 425; A-F only)
Managing the marketing function; marketing planning, strategy, and management concepts. Identification of marketing problems and opportunities; construction, evaluation, and management of a marketing plan.

R.8050. OPERATIONS MANAGEMENT. (285323) (4 cr; MBA students only or #; limited to 55 students; 1300-1600 W; BlegH 425; A-F only)
The operations function in different types of organizations and its relationship to business decision. Topics include: operations strategy, process management, JIT, scheduling, inventory control, and quality improvement.

Materials Science (MatS)

151 Amundson Hall. 625-1313
(Chemical Engineering and Materials Science)
Institute of Technology

FIRST TERM

R.3400. MECHANICAL PROPERTIES OF MATERIALS. (986121) (4 cr; prereq 2nd-year IT student; limited to 150 students; 0800-0955 MWF; AmundH 875) Sivertsen
Structure and properties of metals, alloys, and polymers; heat treatment; alloy selection and metal processing.

5481, 5482, 5483. SPECIAL PROBLEMS IN PHYSICAL METALLURGY AND MATERIALS SCIENCE. (786122)(586123)(386124) (Cr ar; prereq sr)

8480, 8481, 8482. SELECTED TOPICS IN MATERIALS SCIENCE AND ENGINEERING. (186125) (086126) (886127) (Cr ar)

8777. THESIS CREDITS: MASTERS. (888878) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (888880) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5481, 5482, 5483. SPECIAL PROBLEMS IN PHYSICAL METALLURGY AND MATERIALS SCIENCE. (386656) (186657) (086658) (Cr ar; prereq sr)

8480, 8481, 8482. SELECTED TOPICS IN MATERIALS SCIENCE AND ENGINEERING. (886659) (186660) (086661) (Cr ar)

8777. THESIS CREDITS: MASTERS. (389105) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189106) (1-36 cr [max 11 cr per summer term])

Mathematics (Math)

127 Vincent Hall. 625-7575
Institute of Technology
(See also General College)

FIRST TERM

R.1005. INTRODUCTION TO ELEMENTARY MATHEMATICS. (186142) (4 cr; limited to 30 students; prereq pre-elem educ stu, 1111 or equiv; May not be applied toward any CLA degree; 1145-1245 MTTh, 1030-1245 WF; VinH 209) Harper
For pre-elementary education students. Elementary computer programming (BASIC), progressions, financial mathematics, counting problems, and other selected topics.

R.1008. TRIGONOMETRY. (086143) (4 cr, \$1201; limited to 35 students; prereq plane geometry, 2 yrs high school algebra or ¶ 1111, grade of C or better in GC 0631; 0915-1015 MWF, 0915-1130 TTh; VinH 209)
Analytic trigonometry, identities, equations, and properties of trigonometry functions; right and oblique triangles.

R.1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY. (5 cr, \$1201; each section limited to 40 students; prereq plane geometry, 2 yrs high school algebra or plane geometry, grade of C or better in GC 0631; may be used to replace 1031)

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.

Sec 1, (886144) 0800-1015 MTWThF, VinH 20

Sec 2, (686145) 0915-1130 MTWThF, VinH 313

Sec 3, (889285) 1030-1245 MTWThF, VinH 1

R.1131. FINITE MATHEMATICS. (486146) (5 cr; limited to 40 students; prereq 31/2 yrs high school math or grade of C or better in 1111 or 1181, pre-bus or soc and behav sci students; 1030-1245 MTWThF; VinH 6)
For students in pre-business administration and the social and behavioral sciences. Elementary computer programming, financial math, probability, linear algebra, linear programming, Markov chains.

R.1142. SHORT CALCULUS. (5 cr, \$1211, \$1411H; each section limited to 40 students; prereq 31/2 yrs of high school math or grade of C or better in 1111 or 1181 or 1201)

For students requiring a minimal amount of calculus. Derivatives, integrals, differential equations, maxima and minima, partial differentiation, applications.
Sec 1, (286147) 0800-1015 MTWThF, VinH 364
Sec 2, (186148) 1030-1245 MTWThF, VinH 364

R.1201. PRE-CALCULUS. (986149) (5 cr, \$1008, \$1111; limited to 30 students; prereq 4 yrs high school math including trigonometry; may be used to replace 1151; 0800-1015 MTWThF; VinH 314)

For students who need a quick review of high school higher algebra and trigonometry before taking a calculus sequence. Inequalities, analytical geometry, complex numbers, binomial theorem, mathematical induction, functions and graphs, and trigonometric, exponential, and logarithmic functions.

R.1211. CALCULUS I. (286150) (5 cr, \$1142, \$1411H; limited to 40 students; prereq 4 yrs high school math including trigonometry . . . or grade of C or better in 1201 or 1008, 1111 or equiv may be used to replace 1251; 0915-1130 MTWThF; VinH 2)
Analytic geometry and calculus of functions of one variable, applications.

R.1211. CALCULUS II. (186151) (5 cr, \$1421H; prereq grade of C or better in 1211; may be used to replace 1252; limited to 40 students; 1030-1245 MTWThF; VinH 314)
See 1211.

R.1241. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS I. (489757) (5 cr; limited to 35 students; \$3142, \$3212, \$3221H, \$3511; prereq

grade C or better in 1221 or equiv; may be used to replace 1261; 0800-1015 MTWThF; VinH 301)
Linear algebra, geometry, and linear transformations in two-three-and more generally n-dimensional space; curves; limits and continuity in the multi-variable setting.

R.1251. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS I. (890663) (4 cr; \$1451H, 1211, 1411H; limited to 40 students; prereq 4 yrs high school math including trig, or C grade or better in 1201 or 1008, 1111, or equiv; 1030-1245 MTWTh, 1030-1130 F; VinH 20)
Calculus of functions of one-variable and related geometry and applications.

R.1252. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS II. (690664) (4 cr; \$1452H, \$1221, \$1421H; limited to 40 students; prereq C grade or better in 1251; 0800-1015 MTWTh, 0915-1015 F; VinH 16)

R.1261. THE ALGEBRA AND GEOMETRY OF EUCLIDEAN SPACE. (490813) (4 cr; \$1241, \$1553H, \$3142, 3551H; limited to 40 students; prereq 1251 or 1211; 1030-1245 MTWTh; 1030-1130 F; ScicB 175)
Vectors and their operations, matrices and matrix algebra, linear algebraic equations, Gaussian elimination, determinants and their applications, linear transformations, subspaces, quadratic functions, rigid motions, and orthogonal matrices.

R.3142. LINEAR ALGEBRA. (986152) (5 cr, \$1241, \$1261; limited to 40 students; prereq 1252 or 1221; 0915-1130 MTWThF; KoltH S137)
Vectors, systems of linear equations, matrices, determinants, eigenvalues, applications. Techniques and some proofs of theorems.

R.3251. MULTIVARIABLE DIFFERENTIAL CALCULUS. (491492) (4 cr; \$3211, \$3311, \$3521H, \$3552H; limited to 30 students; 1030-1245 MTWTh, 1030-1130 F; VinH 113)
Differentiation of parametric curves. Partial differentiation and the derivation as a local linear approximation. The chain rule. Applications to max-min problems with attention to boundaries and constraints and including Lagrange multipliers. Taylor's theorem (multivariable) and the second derivative test.

R.3311. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS II. (289758) (5 cr; \$3211, \$3521H; limited to 35 students; prereq grade of C or better in 1241; may be used to replace 3251; 0800-1015 MTWThF; Arch 35)
Differentiation, extreme values, and integration of functions of several variables.

R.3321. DIFFERENTIAL EQUATIONS AND GENERAL VECTOR SPACES. (489760) (5 cr; limited to 40 students; \$3066, \$3212, \$3213, \$3221,

\$3511H; prereq grade of C or better in 1241; may be used to replace 3261; 1030-1245 MTWThF; VinH 16)
Vector spaces, especially vector spaces of functions; linear transformations and eigenvalues; first order differential equations; linear differential equations and linear differential systems. It is recommended that multivariable calculus should be taken before this course.

R.3331. INFINITE SEQUENCES AND SERIES: VECTOR INTEGRAL CALCULUS. (289761) (5 cr; limited to 35 students; \$1231, \$3212, \$3541H; prereq grade C or better in 3311, 3321; may be used to replace 3262; 0800-1015 MTWThF; VinH 113)
Convergence issues and calculational techniques for infinite sequences and series; line and surface integrals, the divergence theorem and the theorems of Green and Stokes. Recommended that 3321 should be taken before this course.

R.5083. FUNDAMENTALS OF GEOMETRY. (291493) (4 cr; limited to 30 students; prereq 3511H or 3212 or [3211, 3142] or [3211, 3221] or equiv; not intended for math majors or minors; 0915-1015 MWF; 0915-1130 TTh; VinH 206; A-F only)
Designed primarily for prospective secondary teachers. Non-Euclidean geometry including attention to the axiomatic approach; some topics involving three or more dimensions; some use of transformations; possibly other topics. Includes proofs by contradiction.

R.5242. LINEAR ALGEBRA WITH APPLICATIONS. (786153) (4 cr; \$5232-5233, \$5264, \$5284; limited to 40 students; prereq 3521H or 3142 or equiv or #: 0915-1015 MWF, 0915-1130 TTh; VinH 211)
Systems of linear equations, finite dimensional linear spaces, bases, linear transformations, matrices, determinants, eigenvalues, reduction to canonical forms, quadratic and bilinear forms, applications.

R.5245. INTRODUCTION TO MODERN ALGEBRA I. (290666) (4 cr; \$5282; limited to 40 students; prereq three 32xx math courses or equiv or #: limited to 40 students; 0915-1015 MWF, 0915-1130 TTh; VinH 207)
Algebra at a more concrete level than 5282-5283; 5284. Group theory, including normal subgroups, homomorphism; automorphism, theories of Langrange and Cayley. Ring theory including ideals, integral domains, Euclidean rings, polynomial rings and fields. Abstract approach to vector spaces, and their linear transformations, their structure.

R.5457. METHODS OF APPLIED MATHEMATICS. (586154) (4 cr; limited to 35 students; prereq [3252, 3261] or equiv . . . 3262 rec; 0915-1015 MWF, 0915-1130 TTh; VinH 311)
Modern analytic tools used in applications of mathematics; emphasis

on technique. Linear algebra, ordinary and partial differential equations, calculus of variations, Fourier series, complex variables, optimization, numerical methods.

R.5567. FOURIER SERIES AND BOUNDARY VALUE PROBLEMS. (688025) (4 cr, \$5571; limited to 30 students; prereq [3252, 3261] or equiv . . . 3262 rec; 1145-1245 MTTh, 1030-1245 WF; VinH 207)
Partial differential equations of the theoretical physics. Fourier Series, orthogonal systems, Sturm-Liouville systems, solution of boundary value problems by separation of variables, applications.

R.5606. ADVANCED CALCULUS: A RIGOROUS APPROACH. (288514) (4 cr; limited to 35 students; \$5612; prereq 3252 or equiv, # 3262; 1145-1245 MTTh, 1030-1245 WF; VinH 211)
Basic analysis course at a more concrete level than 5612-5613-5614. Foundations of analysis: completeness of the line, limits, convergence, continuity, integration. Series of functions. Analysis is on the line and in Euclidean space. Other topics of the instructor's choice.

R.5900. TUTORIAL COURSE IN ADVANCED MATHEMATICS. (488382) (Cr ar; limited to 10 students; prereq #)

8777. THESIS CREDITS: MASTERS. (588874) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388875) (1-36 cr [max 11 cr per summer term])

8990. READING AND RESEARCH. (687036) (Cr ar)

SECOND TERM

R.1008. TRIGONOMETRY. (886662) (4 cr, \$1201; limited to 30 students; prereq plane geometry, 2 yrs high school algebra or # 1111, grade of C or better in GC 0631; 0915-1015 MWF, 0915-1130 TTh, VinH 364)
See First Term.

R.1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY. (5 cr, \$1201; each section limited to 40 students; prereq plane geometry, 2 yrs high school algebra or plane geometry, grade of C or better in GC 0631; may be used to replace 1031)
See First Term.
Sec 1, (686663) 0800-1015 MTWThF, VinH 113
Sec 2, (486664) 1030-1245 MTWThF, VinH 6

R.1142. SHORT CALCULUS. (5 cr, \$1211, \$1411H; each section limited to 40 students; prereq 31/2 yrs high school math or grade of C or better in 1111 or 1181 or 1201)
See First Term.

COURSE DESCRIPTIONS

Sec 1, (286665) 0800-1015 MTWThF, VinH 209
 Sec 2, (186666) 1030-1245 MTWThF, VinH 209

R.1201. PRE-CALCULUS. (986667) (5 cr, \$1008, \$1111; limited to 30 students; prereq 4 yrs high school math including trigonometry; may be used to replace 1151; 1030-1245 MTWThF; VinH 301)
 See First Term.

R.1211. CALCULUS I. (786668) (5 cr, \$1142, \$1411H; limited to 40 students; prereq 4 yrs high school math including trigonometry or grade of C or better in 1201 or 1191) [1008 and 1111]; may be used to replace 1251; 1030-1245 MTWThF; Arch 35)
 See First Term.

R.1221. CALCULUS II. (586669) (5 cr, \$1421H; prereq grade of C or better in 1211; limited to 50 students; may be used to replace 1252; 0915-1130 MTWThF; AmundH B75)
 See 1211 First Term.

R.1241. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS I. (189762) (5 cr; each section limited to 35 students; \$3142, \$3212, \$3221, \$3511H; prereq grade C or better in 1221 or equiv; may be used to replace 1261; 1030-1245 MTWThF; VinH 313)
 See First Term

R.1251. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS I. (190667) (4 cr; \$1451H, \$1211, \$1411H; limited to 40 students; prereq 4 yrs high schl math incl trig, or C grade or better in 1201 or 1008, 1111, or equiv; 0800-1015 MTWTh, 0915-1015 F; VinH 2)
 See First Term.

R.1252. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS II. (990668) (4 cr; \$1452H, \$1221, \$1421H; limited to 40 students; prereq C grade or better in 1251; 1030-1245 MTWTh; 1030-1130 F; VinH 16)
 See 1251 First Term.

R.1261. THE ALGEBRA AND GEOMETRY OF EUCLIDEAN SPACE. (290814) (4 cr; \$1241, \$1553H, \$3142, \$3551H; limited to 40 students; prereq 1251 or 1211; 1030-1245 MTWTh; VinH 16, 1030-1130 F; VinH 12)
 See First Term.

R.3252. MULTIVARIABLE INTEGRAL CALCULUS. (191494) (4 cr; \$3311/3331 or \$3211/3331, \$3521H, \$3552H; limited to 30 students; prereq 3251 or 3251 or equiv; 1030-1245 MTWTh; 1030-1130 F; VinH 113)
 Double and triple integrals. Charge of variable procedures with emphasis on polar and spherical coordinates. Mass and centroid. Integration on curves and surfaces. Vector fields and the theorems of Green, Gauss, and Stokes.

R.3311. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS II.

(989763) (5 cr; each section limited to 35 students; \$3211H, \$3521H; prereq grade C or better in 1241 or equiv; may be used to replace 3251; 0800-1015 MTWThF, VinH 314)
 See First Term.

R.3321. DIFFERENTIAL EQUATIONS AND GENERAL VECTOR SPACES. (5 cr; each section limited to 35 students; \$3066, \$3212, \$3213, \$3221, \$3253H; prereq grade of C or better in 1241; may be used to replace 3261)
 See First Term.

Sec 1, (589765) 0800-1015 MTWThF, VinH 20
 Sec 2, (389766) 1030-1245 MTWThF, VinH 20

R.3331. INFINITE SEQUENCES AND SERIES; VECTOR INTEGRAL CALCULUS. (189767) (5 cr; limited to 35 students; \$1231, \$3212, \$3541H; prereq grade of C or better in 3311, may be used to replace 3262; 1030-1245 MTWThF; VinH 314)
 See First Term.

R.5243. LINEAR ALGEBRA WITH APPLICATIONS. (986670) (4 cr; limited to 30 students; prereq 5242; 0915-1015 MWF, 0915-1130 TTh; VinH 207)
 See 5242 First Term.

R.5246. INTRODUCTION TO MODERN ALGEBRA II. (790669) (4 cr; \$5283; limited to 40 students; prereq 5245; 0915-1015 MWF; 0915-1130 TTh; VinH 211)
 See 5245 First Term.

R.5458. METHODS OF APPLIED MATHEMATICS. (786671) (4 cr; limited to 35 students; prereq 5457; 0915-1015 MWF, 0915-1130 TTh; VinH 311)
 See 5457 First Term.

R.5607. ADVANCED CALCULUS: A RIGOROUS APPROACH. (488513) (4 cr; \$5613; limited to 35 students; prereq 5606; 1145-1245 MTTh, 1030-1245 WF; VinH 207)
 See 5606 First Term.

R.5679. PROBABILITY. (985079) (4 cr, \$5681 \$Stat 5131; limited to 35 students; prereq 3252 or equiv; 1145-1245 MTTh, 1030-1245 WF; VinH 211)
 Elementary principles of probability, total and compound probability, expectation, repeated trials, and topics from the following: Stirling's formula, the probability integral, geometrical probability, probability of causes, Bayes' theorem, errors of observation, principle of least squares.

R.5900. TUTORIAL COURSE IN ADVANCED MATHEMATICS. (288383) (Cr ar; limited to 10 students; prereq #)

8777. THESIS CREDITS: MASTERS. (789103) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589104) (1-36 cr [max 11 cr per summer term])

8990. READING AND RESEARCH. (487765) (Cr ar)

Mathematics Education (MthE)

125 Peik Hall. 625-6372
 (Curriculum and Instruction)
 College of Education

FIRST TERM

R.5083. TEACHING GEOMETRY - June 16-July 16. (191812) (3 cr; limited to 24 students; prereq math educ major or minor, Math 5083 or ¶ Math 5083; 1030-1245 MWF; PeikH 375; A-F only) House

R.5173. LOGO IN THE MATHEMATICS CLASSROOM—June 15-July 15. (091813) (3 cr; limited to 18 students; prereq CIsy 5003 or equiv, math educ or grad student or #; 1145-1445 TTh; PeikH 355; A-F only) Stochl

R.5322. MATERIALS LABORATORY FOR SECONDARY SCHOOL MATHEMATICS INSTRUCTION—June 16-July 16. (891814) (3cr; limited to 24 students; prereq 5312 or #; 1300-1515 MWF; PeikH 375; A-F only) House

5680. PRACTICUM IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; prereq #; A-F only)
 Supervised experience in teaching or related work in school.
 Sec 21, (190546) Stochl
 Sec 23, (090547) House

5980. DIRECTED STUDIES. (3-9 cr [max 9 cr]; prereq #; A-F only)
 Survey of recent literature; design and preparation of reports on special problems.
 Sec 21, (085073) Stochl
 Sec 23, (885074) House

8680. INTERNSHIP: MATHEMATICS EDUCATION. (Cr ar)
 Participation in supervision, instruction, curriculum development, or research to gain inservice experience in a leadership role; includes a seminar; related project; required for the specialist certificate in mathematics education.
 Sec 21, (691815) Stochl
 Sec 23, (491816) House

8980. PROBLEMS: MATHEMATICS EDUCATION. (Cr ar; prereq 8500 or 8570)
 Sec 21, (585344) Stochl
 Sec 23, (385345) House

SECOND TERM

R.5101. WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS—July 23-30; August 9-13. (986278) (1-12 cr [max 12 cr]; limited to 24 students; prereq #; not open to mathematics education majors; 0800-1015 MTWThF; PeikH 375; A-F only) Jackson
 Modern trends, methods, and

materials used to convey mathematical ideas. This offering for 3 credits.

R.5355. MATHEMATICS FOR SLOW LEARNING CHILDREN—July 23-30, Aug 9-13. (191818) (3 cr; limited to 24 students; prereq 5311 or Elem 3391 or #; 1145-1400 MTWThF; PeikH 375; A-F only) Jackson
 Units of instruction emphasizing mathematical concepts essential for vocational competence; experimental materials and methods designed to improve performance of low achievers.

5680. PRACTICUM IN MATHEMATICS EDUCATION. (788016) (3-9 cr [max 9 cr]; prereq #; A-F only) Jackson

5980. DIRECTED STUDIES. (588017) (3-9 cr [max 9 cr]; prereq #; A-F only) Jackson

8680. INTERNSHIP: MATHEMATICS EDUCATION. (388018) (Cr ar) Jackson

8980. PROBLEMS: MATHEMATICS EDUCATION. (188019) (Cr ar; prereq 8500 or 8570) Jackson

Mechanical Engineering (ME)

125 Mechanical Engineering. 625-0705
 (Mechanical Engineering)
 Institute of Technology

FIRST TERM

R.3201. MECHANICAL ENGINEERING SYSTEMS ANALYSIS. (386138) (4 cr, \$AEM 3401; limited to 45 students; prereq AEM 3036, mech engr or aerosp engr maj; 1300-1500 TWThF; MechE 212)
 Determination of response of engineering systems utilizing transfer function representation. Analogies between engineering systems based upon transfer function equivalence.

R.3301. THERMODYNAMICS. (586140) (4 cr; limited to 50 students; prereq 1T or ForP stu, Chem 1014 or Chem 1052 or Phys 1252, Math 3261 or equiv; 1030-1230 MTWThF; MechE 212)
 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.

R.3702. BASIC MEASUREMENTS LABORATORY II. (2 cr; each section limited to 16 students; prereq mech engr upper div, 3701; lect 0915-1015 MW; MechE 212)
 Treatment of experimental data, analysis and study of experimental systems via the computer. Static and dynamic characteristics of measurement systems. Fundamental principles of measurement and calibration.

Measurement of temperature, pressure, vacuum, humidity, density, viscosity, heating values, speed, power, force, stress-strain, and radioactivity.
Lab 1, (388021) 1030-1230 MW, MechE 370
Lab 2, (188022) 1415-1615 TTh, MechE 370

R.8770. MECHANICAL ENGINEERING RESEARCH. (385202) (Cr and hrs ar; limited to 10 students; prereq Δ)

R.8771. MECHANICAL ENGINEERING RESEARCH. (387693) (Cr and hrs ar; limited to 10 students; prereq 8770, Δ)

R.8772. MECHANICAL ENGINEERING RESEARCH. (185203) (Cr and hrs ar; limited to 10 students; prereq 8771, Δ)

8777. THESIS CREDITS: MASTERS. (688882) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288884) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

R.3741. INDUSTRIAL ASSIGNMENT. (186139) (2 cr per qtr; limited to 90 students; prereq regis in intern program) Marple
Industrial work assignment in engineering intern program. Evaluation based on formal written report accomplished by student covering the work assignment.

R.3742. INDUSTRIAL ASSIGNMENT. (088023) (2 cr; limited to 90 students; prereq 3741) Marple
See 3741.

R.3743. INDUSTRIAL ASSIGNMENT. (385183) (2 cr; limited to 90 students; prereq 3742) Marple
See 3741.

R.5190. ADVANCED ENGINEERING PROBLEMS. (386141) (2-4 cr; limited to 20 students; open to upper division students; prereq submission of approved deptl permission form)
Special investigations in various fields of mechanical engineering and related areas including an independent study project.

R.5198H. MECHANICAL ENGINEERING UPPER DIVISION HONOR THESIS I. (991495) (4 cr; limited to 5 students)

R. 5199H. MECHANICAL ENGINEERING UPPER DIVISION HONOR THESIS II. (690051) (4 cr; limited to 2 students)

R.5460. INTERNAL COMBUSTION ENGINES. (689739) (4 cr; limited to 30 students; prereq IT student or grad, 3301; 1030-1130 TWThF; MechE

321) Murphy
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.

R.5741. INDUSTRIAL ASSIGNMENT AND DESIGN PROJECT. (185064) (4 cr; limited to 80 students; 5741-5742+; prereq 3742) Marple
Solution of system design problems that require the development of criteria, the evaluation of alternatives, and generation of a preliminary design. Final report emphasizes design communication and describes the design decision process, analysis, and final recommendations.

R.5742. INDUSTRIAL ASSIGNMENT AND DESIGN PROJECT. (888024) (4 cr; limited to 80 students; 5741-5742+; prereq 5741) Marple
See 5741.

SECOND TERM

R.3205. ENGINEERING SYSTEMS DESIGN. (988497) (4 cr; limited to 45 students; prereq mech engr upper div, AEM 3016; 1100-1300 TWThF; MechE 212)
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.

R.3303. APPLIED THERMODYNAMICS. (786850) (4 cr, \$3305; limited to 30 students; prereq ME or aerosp upper div, 3301 or equiv; 1310-1510 MTWThF; MechE 212)
Application of laws of thermodynamics to chemically reacting systems and engineering systems. Vapor cycles, gas engine cycles, propulsion systems, refrigeration, and air-water vapor mixtures.

R.5260. ENGINEERING MATERIALS AND PROCESSING. (4 cr; each section limited to 12 students; prereq mech engr upper div, 3020, Phys 1253, Chem 1052, AEM 3016, MatS 3400, safety glasses required; lect 0915-1050 MWF; MechE 212)
Introduction to materials and processing including physical and metallurgical properties, consolidation. Material processing including machining, welding, and deformation processes.
Lab 1, (186853) 1100-1255 MW, MechE 70
Lab 2, (086854) 0800-0955 TTh, MechE 70
Lab 3, (985261) 1030-1225 TTh, MechE 70
Lab 4, (088393) 1415-1610 TTh, MechE 70

R.5342. HEAT TRANSFER. (486857) (4 cr; limited to 50 students; prereq IT

upper div or grad or ForP stu, 3301 and CE 3400 or AEM 3200; 1310-1510 MTWThF; MechE 102)
Steady and unsteady conduction of heat. Convection heat transfer in boundary layer and duct flows; forced and free convection; condensation and boiling; heat exchangers. Heat transfer by thermal radiation; radiative properties of black bodies and real surfaces.

R.8770. MECHANICAL ENGINEERING RESEARCH. (485241) (Cr and hrs ar; limited to 10 students; prereq Δ)

R.8771. MECHANICAL ENGINEERING RESEARCH. (285242) (Cr and hrs ar; limited to 10 students; prereq 8770, Δ)

R.8772. MECHANICAL ENGINEERING RESEARCH. (185243) (Cr and hrs ar; limited to 10 students; prereq 8771, Δ)

8777. THESIS CREDITS: MASTERS. (089107) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889108) (1-36 cr [max 11 cr per summer term])

Medical Technology (MedT)

15-170 Phillips-Wangenstein Building, 625-9490
Medical School

FIRST TERM

5082. APPLIED CLINICAL CHEMISTRY. (788503) (4 cr; prereq 5113; S-N only)
Application of basic methods and techniques in chemistry in the clinical laboratory.

5084. APPLIED CLINICAL VIROLOGY. (088507) (1 cr; prereq 5100, 5102; S-N only)
Application of basic methods and techniques in the virology laboratory.

5085. APPLIED CLINICAL HEMATOLOGY. (588504) (4 cr; prereq 5077, 5078, 5765, or CLS 5765; S-N only)
Application of basic methods and techniques in hematology in the clinical laboratory, morphology of blood cells, application of techniques in hemostasis.

5086. APPLIED CLINICAL IMMUNOHEMATOLOGY. (388505) (4 cr; prereq 5064, 5065; S-N only)
Application of basic methods and techniques in serology and immunology in the clinical laboratory. Blood grouping and cross-matching for transfusions.

5088. APPLIED DIAGNOSTIC MICROBIOLOGY. (188506) (4 cr;

prereq 5100, 5102; S-N only)
Identification of bacteria by macroscopic and microscopic techniques. Correlation with clinical cases. Identification of parasites and fungi.

5089. SPECIALTY ROTATION. (391081) (1 cr; prereq completion of med tech preclin prof crses, 5064, 5065, 5078, 5100, 5102, 5113, 5765; S-N only)

One-week clinical rotation in a specialty laboratory such as immunophenotyping, cytogenetics, pulmonary function, surgical pathology, EKG, advanced virology or advanced coagulation

5090. SPECIAL LABORATORY METHODS. (886533) (2 cr; prereq #)
Special assignment on an individual basis in a special area of experience within the clinical laboratory; field experience.

5120. SEMINAR. (786377) (1-3 cr)

SECOND TERM

5082. APPLIED CLINICAL CHEMISTRY. (788498) (4 cr; prereq 5113; S-N only)
See First Term.

5084. APPLIED CLINICAL VIROLOGY. (988502) (1 cr; prereq 5100, 5102; S-N only)
See First Term.

5085. APPLIED CLINICAL HEMATOLOGY. (588499) (4 cr; prereq 5077, 5078, 5765, CLS 5765; S-N only)
See First Term.

5086. APPLIED CLINICAL IMMUNOHEMATOLOGY. (288500) (4 cr; prereq 5064, 5065; S-N only)
See First Term.

5088. APPLIED DIAGNOSTIC MICROBIOLOGY. (188501) (4 cr; prereq 5100, 5102; S-N only)
See First Term.

5089. SPECIALTY ROTATION. (191082) (1 cr; prereq completion of med tech preclin prof crses, 5064, 5065, 5078, 5100, 5102, 5113, 5765; S-N only)
See First Term.

5090. SPECIAL LABORATORY METHODS. (787139) (2 cr; prereq #)
See First Term.

5120. SEMINAR. (889612) (1-3 cr)

Medicinal Chemistry (MedC)

8-101 Health Sciences Unit F. 624-9919
College of Pharmacy

FIRST TERM

8777. THESIS CREDITS: MASTERS.

COURSE DESCRIPTIONS

(988886) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788887) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (689109) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089110) (1-36 cr [max 11 cr per summer term])

Medicinal Chemistry, Undergraduate (MChm)

Pharmacy Student Affairs Office, 5-110 Health Sciences Unit F. 624-9490
College of Pharmacy

FIRST TERM

5970. DIRECTED STUDIES. (989214) (1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (789215) (Cr ar; prereq #)

SECOND TERM

5970. DIRECTED STUDIES. (589216) (1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (389217) (Cr ar; prereq #)

Medicine (Med)

14-110A Phillips-Wangensteen Building. 625-9975
Medical School

Elective Courses for Graduate Students

8201. CLINICAL MEDICINE. (086563) (Cr and hrs ar) Ferris, staff

8202. CLINICAL CONFERENCE. (886564) (1 cr; hrs ar) Ferris, staff

8203. CLINICAL RADIOLOGY CONFERENCE. (686565) (1 cr; hrs ar) Ferris, staff

8204. PATHOLOGY CONFERENCE. (486566) (1 cr; hrs ar) Ferris, staff

SECOND TERM

8201. CLINICAL MEDICINE. (191938) (cr and hrs ar) Ferris, staff

8202. CLINICAL CONFERENCE. (091939) (1 cr; hrs ar) Ferris, staff

8203. CLINICAL RADIOLOGY CONFERENCE. (391940) (1 cr; hrs ar) Ferris, staff

8204. PATHOLOGY CONFERENCE. (488284) (1 cr; hrs ar) Ferris, staff

Medieval Studies (MeSt)

304 Walter Library. 626-0805
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (189390) (1-5 cr; prereq #)
Guided individual reading or study in some area of medieval studies.

5970. DIRECTED STUDIES. (989391) (1-5 cr; prereq #)
Qualified senior and graduate students may register for work on a tutorial basis; guided individual reading or study.

SECOND TERM

3970. DIRECTED STUDIES. (189218) (1-5 cr; prereq #)
See First Term.

5970. DIRECTED STUDIES. (388682) (1-5 cr; prereq #)
See First Term.

Microbial Engineering (MicE)

240 Gortner Laboratory. 624-6774
College of Biological Sciences

FIRST TERM

8777. THESIS CREDITS: MASTERS. (588891) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (489113) (1-16 cr [max 11 cr per summer term])

Microbiology (MicB)

1460 Mayo. 624-6190
Medical School

FIRST TERM

5970. DIRECTED STUDIES. (488026) (Cr ar; prereq #, Δ) Rogers, staff

5990. DIRECTED RESEARCH. (288027) (Cr ar; prereq #, Δ) Rogers, staff

8777. THESIS CREDITS: MASTERS. (388889) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788890) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH IN MICROBIOLOGY. (686582) (Cr and hrs ar; prereq

microbiol grad stu or #) Schlievert, staff
Graduate students with the requisite preliminary training may elect research project outside their thesis work.

SECOND TERM

5970. DIRECTED STUDIES. (188028) (Cr ar; prereq #, Δ) Rogers, staff

5990. DIRECTED RESEARCH. (988029) (Cr ar; prereq #, Δ) Rogers, staff

8777. THESIS CREDITS: MASTERS. (889111) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689112) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH IN MICROBIOLOGY. (987141) (Cr and hrs ar; prereq microbiol grad stu or #) Schlievert, staff
See First Term.

Middle Eastern Languages and Cultures (MELC)

Institute of Languages and Literature
105 Folwell Hall. 624-3331
College of Liberal Arts

FIRST TERM

3505. SURVEY OF THE MIDDLE EAST. (590494) (4 cr; \$5505, Hist 3505; 1145-1245 MTWThF; BlegH 105) Tesdell
Cultural, religious, and scholarly achievements of Middle Eastern peoples from pre-Islamic times to the present. Meets with 5505, Hist 3505.

5505. SURVEY OF THE MIDDLE EAST. (390495) (4 cr; \$3505, Hist 3505; 1145-1245 MTWThF; BlegH 105) Tesdell
See 3505.

SECOND TERM

1536. THE RELIGION OF ISLAM. (589958)(4 cr; \$ReIs 1036; 1000-1230 TTh; FolH 234) Tesdell
The rise of Islam in historical context; the role of Muhammad, Koran, traditions; fundamentals and observances of the faith; sectarian movements; the spread of Islam into Asia and Africa; Bahai and Black Muslim component; Reformist movements and change, Activism and Revivalism in Muslim world today. Meets with 3036, ReIs 1036, 3036, and SoAs 3036.

3036. THE RELIGION OF ISLAM. (891666) (4 cr; \$5036, ReIs 1036, 3036, 5036; 1000-1230 TTh; FolH 234) Tesdell
See 1536.

Middle Eastern Studies (MidE)

232A Social Sciences. 624-8543
(Area Studies Programs.)
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (091407) (1-15 cr; prereq #, Δ) Staff

SECOND TERM

3970. DIRECTED STUDIES. (191406) (1-15 cr; prereq #, Δ) Staff

Military Science (Mil)

108 Armory. 624-7300

FIRST TERM

3970. DIRECTED STUDIES. (085235) (1-3 cr; prereq #, Δ; hrs ar; A-F only)

SECOND TERM

3970. DIRECTED STUDIES. (587594) (1-3 cr; prereq #, Δ; hrs ar; A-F only)

Mortuary Science (Mort)

A275 Mayo. 624-6464

FIRST TERM

3080. FUNERAL SERVICE PRACTICUM. (287220) (8 cr; prereq have completed all requirements for graduation with the exception of 3080, Δ; S-N only) Kroshus, Mathews, Stroud
Practical experience in a funeral home as assigned by the program.

3090. INDEPENDENT STUDY. (985468) (1-3 cr; prereq regis in mortuary science) Staff

SECOND TERM

3080. FUNERAL SERVICE PRACTICUM. (186271) (7 cr; prereq have completed all requirements for graduation with the exception of 3080, Δ; S-N only) Kroshus, Mathews, Stroud
See First Term.

3090. INDEPENDENT STUDY. (785469) (1-3 cr; prereq regis in mortuary science) Staff

Museum Studies (MSt)

10 Church Street S.E. 624-6380

FIRST TERM

8016. INTERNSHIP. (591192)(1-6 cr; prereq 8010, permission of Director) Murdock

SECOND TERM

8016. INTERNSHIP.(591192)(1-6 cr; prereq 8010, permission of Director) Murdock

Music (Mus)

100 Ferguson Hall. 624-5740 (School of Music) College of Liberal Arts

FIRST TERM

R.1001. FUNDAMENTALS OF MUSIC. (489614) (4 cr; limited to 126 students; §1003, 1004; prereq non-music majors; #; 0915-1130 MWF; FergH 225) Anderson
Investigation of music notation and fundamental concepts underlying musical structure. Intervals, clefs, chords, scales, cadences, harmonic analysis, rhythm and meter. Emphasis on active participation: playing the piano, singing, clapping rhythms, aural perception. Weekly laboratory assignments in vocal and piano performance.

1021. INTRODUCTION TO MUSIC. (491430) (5cr; §3021; prereq non-music majors; 1300-1515 MWF; FergH 225) Baldwin.
Music in the repertory of our culture—forms and styles from 17th to 20th centuries. Aural analyses, relationships of large units of musical form.

R.1051. PIANO CLASS FOR NON-MUSIC MAJORS. (2 cr; each section limited to 16 students)
For non-music majors with little or no keyboard background. Functional skills such as reading, harmonizing, playing by ear, and improvising; basic technique and elementary repertoire. Sec 1 (289615) 0915-1045 TTh, FergH 259
Sec 2 (789926) 1300-1430 TTh, FergH 259

3741. VOCAL REPERTOIRE SURVEY. (291431)(2 cr; prereq upper div music major or #; 0915-1015 MWF; FergH 107; A-F only) Herzberg
Survey of major vocal solo and chamber works from Classical through contemporary era. 3741: Classic through late-Romantic.

3970. DIRECTED STUDIES. (285631) (1-15 cr; prereq #, Δ, □; hrs ar; FergH 100) Staff

Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students.

3995. MAJOR PROJECT. (191003)(2 cr; prereq sr, #, Δ; A-F only)

5330. CONCERTO GROSSO ENSEMBLE. (990380) (1 cr; prereq #; arr; A-F only) Kim
Study and performance of string orchestra and small chamber orchestra literature.

5375. VOCAL PEDAGOGY I. (390383) (4 cr; prereq upper div voice major or #; 1300-1515 MTTh; FergH 90) Ware
Basics of vocal production; anatomy and physiology of the vocal mechanism. Overview of teaching the child, adolescent, and maturing/aging voice; methods and techniques for both individual and group voice instruction. Observation and participation in class voice as assistant to instructor.

5385. CHORAL CONDUCTING. (191429) (4 cr; prereq #; must register concurrently with 5490; 0915-1015 MTWThF; FergH 90) Lancaster
Choral conducting—hand techniques, sound control, articulation, breath control, intonation.

5399. PERFORMANCE IN CONDUCTING. (889481) (4 cr; prereq 5388 or 5385, #; hrs ar) Lancaster
Preparation and conducting, with documentation of an ensemble program.

5490. CHAMBER SINGERS. (086272) (1 cr; prereq audition; 1030-1130 MTWThF; FergH 90) Lancaster
Mixed chorus of 16 to 20 voices. Performances each term.

5532. ANALYSIS OF 20TH-CENTURY MUSIC. (191432) (3 cr; prereq 3532; 1145-1400 TTh; FergH 149; A-F only) Cherlin
Introduction to analysis of 20th-century music.

R.5950. TOPICS IN MUSIC
Sec 1. Text and Language—A Singer's Tools for Interpretation—June 15-18, 21. (190927) (2 cr; prereq #; limited to 12 students; 1730-2000 June 15, 16, 17, 18 and 21; FergH 225) Maurice
Understanding the text; using language effectively in communicating the meaning of the text; and discovering how the musical setting defines the interpretation of the text. **Sec 2. Opera in Europe-1600-1800.** (890239) (3 cr; prereq 12 undergraduate credits in music history; 5531 or equiv, # for undergrads; 1415-1630 MTTh; FergH 149) Freeman

5970. DIRECTED STUDIES. (886385) (1-5 cr; prereq #, Δ, CLA approval; A-F only)

8777. THESIS CREDITS: MASTERS. (888895) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688896) (1-36 cr [max 11 cr per summer term])

8990.* SPECIAL PROBLEMS. (185632) (2-12 cr; prereq Δ; hrs ar; FergH 100) Staff

8999. RECITAL CREDITS: DOCTORAL. (590379) (6 cr [max 12 cr per quarter]; prereq DMA student; S-N only)
Registration for these credits coincides with the performance of a DMA recital, during the matriculation for the degree, for a total of 30 credits.

SECOND TERM

R.1001. FUNDAMENTALS OF MUSIC. (689613) (4 cr; limited to 35 students; §1003, 1004; prereq non-music majors; 1300-1515 MTTh, FergH 105) Damschroder
See First Term.

3970. DIRECTED STUDIES. (689497) (1-15 cr; prereq #, Δ, □; hrs ar) Staff

3995. MAJOR PROJECT. (089480)(2 cr; prereq sr, #, Δ; A-F only)

5757. HISTORY OF THE SYMPHONY. (791434)(4 cr; prereq 3606, 3532; 0915-1130 TWTh; FergH 149; A-F only) Jackson
The symphony from its beginnings to the present. Critical examination of representative compositions, readings from relevant primary and secondary source materials. 5757: Pergolesi to Liszt.

5804. FOLK AND TRADITIONAL MUSIC : CROSS-CULTURAL SURVEY. (591435) (4 cr; 1300-1515 MTTh; FergH 225) Kagan
Music of the peoples of the world in topical and geographic format. Comparative study of musical styles, behavior, and concepts in varied societies and cultures. Field recordings and filmed performances.

5970. DIRECTED STUDIES. (088331) (1-5 cr; prereq #, Δ, CLA approval; A-F only)

8555. MUSIC THEORY PEDAGOGY—July 26-August 8. (391436) (4 cr; prereq undergrad degree in music or #; 1030-1245 and 1300-1515 MTWThF; FergH 123) Lubet
Comparative study of different approaches to teaching music theory; available literature (harmony, ear-training/sightsinging, counterpoint, composition, orchestration, form and analysis texts and anthologies); specific pedagogical problems.

8777. THESIS CREDITS: MASTERS. (289114) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189115) (1-36 cr [max 11 cr per summer term])

8990.* SPECIAL PROBLEMS. (888332) (2-12 cr; prereq Δ; hrs ar; FergH 100) Staff

8999. RECITAL CREDITS: DOCTORAL. (690390) (6 cr [max 12 cr per quarter]; prereq DMA student; S-N only)
See First Term.

Music Education (MuEd)

100 Ferguson Hall. 624-0191 College of Liberal Arts

FIRST TERM

R.3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL. (085347) (4 cr; prereq Mus 1001, elementary educ major; limited to 30 students; 1030-1130 MTWThF; FergH 107; A-F only) Borg, McCoy
For non-music majors; methods and materials in teaching singing, rhythm, music reading, creativity, classroom instruments, fundamentals, appreciation in K-6.

5112. RESEARCH IN MUSIC EDUCATION: TECHNIQUES. (191437) (3 cr; 0800-0900 MTWTh; FergH 157) Haack
Methods and techniques employed in investigating and reporting music education problems; review of significant research.

5613. TEACHING MUSIC LITERATURE—July 6-20. (091438)(3 cr; prereq #; 1300-1515 MTWThF; FergH 107; A-F only) Borg
Principles, methods, and materials for teaching music history (appreciation) in grades K-12.

R.5666. MICROCOMPUTERS IN THE MUSIC CLASSROOM—June 15-25. (891439) (3 cr; limited to 12 students; 1300-1515 MTWThF; FergH 113; A-F only) Schultz
Using the microcomputer to enhance instruction in music; materials for theory, ear training, composition, electronic music; developing a database for music libraries, instrument inventories, budgets.

5750. WORKSHOP: MUSIC EDUCATION: MUSIC AND RELATED ARTS—June 28-July 19. (490424) (2 cr; 1030-1215 MWF; FergH 157) Haack

5831. MUSIC FOR EXCEPTIONAL CHILDREN. (191440) (3 cr; prereq #; 0915-1130 TTh; FergH 151; A-F only) Furman
Trends; methods and materials for functional program of singing, playing, rhythm, listening, and creative activities for mentally and physically handicapped and gifted pupils.

COURSE DESCRIPTIONS

APPLIED MUSIC (MusA) COURSES

NOTE: Call numbers for courses in applied music will be posted outside 100 Ferguson Hall and must be listed on your course request form. Do not call the music office for these numbers.

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Minor	Transfer Student
Fee	\$115	///	///	///	\$45	\$45	\$45	\$45	///
Baritone	1118, 3118, 5118	1218, 3218, 8218	1318, 3318, 8318	1418, 3418, 8418	1518, 3518, 8518	1618, 3618, 8618	1718, 3718, 8718	3818	1918
Bassoon	1114, 3114, 5114	1214, 3214, 8214	1314, 3314, 8314	1414, 3414, 8414	1514, 3514, 8514	1614, 3614, 8614	1714, 3714, 8714	3814	1914
Cello	1107, 3107, 5107	1207, 3107, 8107	1307, 3307, 8307	1407, 3407, 8407	1507, 3507, 8507	1607, 3607, 8607	1707, 3707, 8707	3807	1907
Clarinet	1112, 3112, 5112	1212, 3212, 8212	1312, 3112, 8312	1412, 3412, 8412	1512, 3512, 8512	1612, 3612, 8612	1712, 3712, 8712	3812	1912
Double Bass	1108, 3108, 5108	1208, 3208, 8208	1308, 3308, 8308	1408, 3408, 8408	1508, 3508, 8508	1608, 3608, 8608	1708, 3708, 8708	3808	1908
Flute	1109, 3109, 5109	1209, 3209, 8209	1309, 3309, 8309	1409, 3409, 8409	1509, 3509, 8509	1609, 3609, 8609	1709, 3709, 8709	3809	1909
French Horn	1115, 3115, 5115	1215, 3215, 8215	1315, 3315, 8315	1415, 3415, 8415	1515, 3515, 8515	1615, 3615, 8615	1715, 3715, 8715	3815	1915
Guitar	1123, 3123, 5123	1223, 3223, 8223	1323, 3323, 8323	1423, 3423, 8423	1523, 3523, 8523	1623, 3623, 8623	1723, 3723, 8723	3823	1923
Harp	1122, 3122, 5122	1222, 3222, 8222	1322, 3322, 8322	1422, 3422, 8422	1522, 3522, 8522	1622, 3622, 8622	1722, 3722, 8722	3822	1922
Harpicord	1102, 3102, 5102	1202, 3202, 8202	1302, 3202, 8302	1402, 3402, 8402	1502, 3202, 8502	1602, 3602, 8602	1702, 3702, 8702	3802	1902
Oboe	1111, 3111, 5111	1211, 3211, 8211	1311, 3311, 8311	1411, 3411, 8411	1511, 3511, 8511	1611, 3611, 8611	1711, 3711, 8711	3811	1911
Organ	1103, 3103, 5103	1203, 3203, 8203	1303, 3303, 8303	1403, 3403, 8403	1503, 3503, 8503	1603, 3603, 8603	1703, 3703, 8703	3803	1903
Percussion	1121, 3121, 5121	1221, 3221, 8221	1321, 3321, 8321	1421, 3421, 8421	1521, 3521, 8521	1621, 3621, 8621	1721, 3721, 8721	3821	1921
Piano	1101, 3101, 5101	1201, 3201, 8201	1301, 3301, 8301	1401, 3401, 8401	1501, 3501, 8501	1601, 3601, 8601	1701, 3701, 8701	3801	1901
Saxophone	1113, 3113, 5113	1213, 3213, 8213	1313, 3313, 8313	1413, 3413, 8413	1513, 3513, 8513	1613, 3613, 8613	1713, 3713, 8713	3813	1913
Trombone	1117, 3117, 5117	1217, 3217, 8217	1317, 3317, 8317	1417, 3417, 8417	1517, 3517, 8517	1617, 3617, 8617	1717, 3717, 8717	3817	1917
Tuba	1119, 3119, 5119	1219, 3219, 8219	1319, 3319, 8319	1419, 3419, 8419	1519, 3519, 8519	1619, 3619, 8619	1719, 3719, 8719	3819	1919
Viola	1106, 3106, 5106	1206, 3206, 8206	1306, 3306, 8306	1406, 3406, 8406	1506, 3506, 8506	1606, 3606, 8606	1706, 3706, 8706	3806	1906
Violin	1105, 3105, 5105	1205, 3205, 8205	1305, 3305, 8305	1405, 3405, 8405	1505, 3505, 8505	1605, 3605, 8605	1705, 3705, 8705	3805	1905
Voice	1104, 3104, 5104	1204, 3204, 8204	1304, 3304, 8304	1404, 3404, 8404	1504, 3504, 8504	1604, 3604, 8604	1704, 3704, 8704	3804	1904

Courses in applied music are classified according to nine modes: elective (with or without credit), principal, major, secondary required, secondary elective, principal beyond requirement, major beyond requirement, minor, and transfer student, as well as 3 levels: 1000-, 3000-, and 8000- level (graduate level). You may not register for a course in applied music for credit until you pass the required applied entrance exam. The examining committee will determine the mode(s) for which you may register. You should consult the School of Music, 100 Ferguson Hall, regarding the mode and level appropriate for your degree program. Studio class is required for all undergraduates registering at the x2xx, x3xx, x6xx, x7xx, or 19xx levels. Specific times for these classes will be available from the applied instructor.

Fees for non-music majors are based on individual lessons: \$115 for 0-2 credits. Music and music education majors at the x2xx, x3xx, or x4xx level are exempt from payment of these fees, as are M.M. and D.M.A. students taking courses at the 83xx level. Majors at the x5xx, x6xx, or x7xx level pay \$45 for 2 credits. Music fees are course fees: they are applied in addition to tuition.

R.8970. INDEPENDENT STUDY. (1-4 cr; prereq music education/ therapy or graduate student, #, Δ; hrs ar; FergH 100)

An independent study project organized by the student with the appropriate instructor.

Sec 21, (489404) Borg
Sec 22, (585571) Schultz
Sec 23, (987687) Furman
Sec 24, (588552) Haack
Sec 25, (190880) McCoy

R.8990. RESEARCH PROBLEMS. (1-12 cr; prereq knowledge of elem statistics; hrs ar; FergH 100)

Sec 21, (385572) Borg
Sec 22, (185573) Schultz
Sec 23, (787688) Furman
Sec 24, (388553) Haack
Sec 25, (990881) McCoy

SECOND TERM

5606. MOVEMENT-BASED METHODS FOR MUSIC EDUCATION—July 22-August 11. (xxxxxx) (3 cr prereq music major or #; 0800-1015 MTWThF; FergH 85) McCoy
Participation in movement activities; study of Dalcroze philosophy and techniques; applications of movement to music education; examination of relevant research.

R.5667. COMPUTER-BASED MUSIC INSTRUCTION—July 22-July 30. (xxxxxx) (2 cr; limited to 12 students; 1300-1515 MTWThF; FergH 113; A-F only) Schultz

5750. WORKSHOP: MUSIC EDUCATION: Psychological Foundations of Music Education—July 22-Aug 13. (689420) (2 cr [max 12 cr]; 1030-1130 MTWThF; FergH 151) Furman
Analysis and interpretation of psychologies of music and education as applied to the teaching of music.

5970. INDEPENDENT STUDY. (1-4 cr; prereq music education/ therapy or graduate student #, Δ; hrs ar; FergH 100)

See First Term.
Sec 21, (289405) Borg
Sec 22, (189406) Schultz
Sec 23, (989407) Furman
Sec 24, (789408) Haack
Sec 25, (790882) McCoy

8990. RESEARCH PROBLEMS. (1-12 cr; prereq knowledge of elem statistics; hrs ar)

Sec 21, (188554) Borg
Sec 22, (088555) Schultz
Sec 23, (888556) Furman
Sec 24, (688557) Haack
Sec 25, (590883) McCoy

N

Natural Resources and Environmental Studies (NRES)

439 Borlaug Hall, St. Paul. 625-1244
115 Green Hall, St. Paul. 624-3400
College of Agriculture
College of Natural Resources

FIRST TERM

3050. EXPERIENCE AND TRAINING IN A FIELD SETTING. (289484) (1-4 cr; prereq #: A-F only) Soil Science and Forest Resources staff.
Students are required to obtain professional experience in a field setting.

3225. DIRECTED STUDY EXPERIENCE. (689966) (1-5 cr; prereq fr or soph) Soil Science and Forest Resources staff.
The student develops, in consultation with the advisor for the project, a prospectus, and completes progress reports and a final report on her or his project.

5225. DIRECTED STUDY EXPERIENCE. (489967) (1-5 cr; prereq jr or sr or grad stu)
See 3225.

SECOND TERM

3050. EXPERIENCE AND TRAINING IN A FIELD SETTING. (189485)(1-4 cr; prereq #: A-F only)
See First Term.

3225. DIRECTED STUDY EXPERIENCE. (289968)(1-5 cr; prereq fr or soph)
See First Term.

5225. DIRECTED STUDY EXPERIENCE. (189969)(1-5 cr; prereq jr or sr or grad stu)
See First Term.

Neurology (Neur)

12-100 Phillips-Wangenstein Building. 625-9900
Medical School

FIRST TERM

5599. SUBINTERNSHIP IN CLINICAL NEUROLOGY. (390884) (Cr ar; prereq 5510, course director recommendation, med stu; S-N only) Rottenberg

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

5122. PEDIATRIC NEUROLOGY: HEALTH CARE PSYCHOLOGY

INTERNS. (587742) (Cr and hrs ar; prereq #) Shapiro

8200. CLINICAL NEUROLOGY. (386589) (Cr ar) Price, staff

8201. CLINICAL PEDIATRIC NEUROLOGY. (786590) (Cr ar) Swaiman, staff

8202. RESEARCH IN NEUROLOGY. (586591) (Cr ar) Price, staff

8203. APPLIED ELECTROENCEPHALOGRAPHY. (386592) (Cr ar) Torres

8204. APPLIED ELECTROMYOGRAPHY. (186593) (Cr ar) Parry

8205. APPLIED NEUROPATHOLOGY. (086594) (Cr ar) Sung

8236. RESEARCH IN NEUROPATHOLOGY. (886595) (Cr ar) Sung

8705. NEUROLOGICAL-NEUROSURGICAL CONFERENCE. (686596) (1 cr, §Rad 0124) Staff

8777. THESIS CREDITS: MASTERS. (488897) (1-16 cr [max 11 cr per summer term])

SECOND TERM

5599. SUBINTERNSHIP IN CLINICAL NEUROLOGY. (190885) (Cr ar; prereq 5510, Course Director recommendation, med stu; S-N only) Rottenberg

8777. THESIS CREDITS: MASTERS. (989116) (1-16 cr [max 11 cr per summer term])

Neuroscience (NSc)

6-255 Millard Hall. 624-7660
Graduate School

FIRST TERM

R.5100. INTRODUCTORY NEUROBIOLOGY LABORATORY AT ITASCA—June 15-July 2. (089219) (3 cr; limited to 12 students; prereq junior or senior in biological or physical sciences; introductory biology and chemistry, #; hrs ar; taught at Lake Itasca Forestry and Biological Station; A-F only) Poppele, others

Designed for biological or physical sciences undergraduate students with an interest in the neurosciences. Provides an introduction to concepts in cellular neurosciences in a laboratory environment. Emphasis on understanding the basis of membrane properties, including ionic and molecular mechanisms of resting potentials, action potentials, and synaptic potentials. Students will work with state-of-the-art equipment and contemporary techniques to examine the experimental evidence for these concepts. This is a 3-week, full-time,

intensive course. Financial aid will be available. See page 40.

8888. THESIS CREDITS: DOCTORAL. (188899) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.5550. ITASCA CELL AND MOLECULAR NEUROBIOLOGY LABORATORY—July 26-August 27. (185565) (6 cr; limited to 12 students; prereq enrolled in neurosci grad prog or consent of neurosci prog; hrs ar; taught at Itasca; S-N only) Poppele, others

Intensive laboratory course introducing cellular and molecular research techniques and topics in contemporary neuroscience. Electrophysiological studies of neuronal properties, neuropharmacological assays of transmitter action, and immunohistochemical identification of transmitters. Concepts and techniques studied in the context of a number of preparations including the neuromuscular junction, in vitro invertebrate nervous system, the hippocampal slice, the nervous system of the gut. Course is designed for entering or 1st year graduate students in the neurosciences or closely related fields.

8888. THESIS CREDITS: DOCTORAL. (789117) (1-36 cr [max 11 cr per summer term])

Neurosurgery (NSu)

B-590 Mayo. 624-6666
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (688901) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288903) (1-36 cr [max 11 cr per summer term])

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5531. ADVANCED NEUROPSYCHOLOGICAL SEMINAR. (187016) (2 cr; hr ar; prereq psych fellow spec or #) Meier

5532. CLERKSHIP IN NEUROPSYCHOLOGICAL ASSESSMENT. (087017) (1-4 cr; hr ar; prereq psych fellow spec or #) Meier

5533. CASE CONFERENCE IN NEUROPSYCHOLOGY. (887018) (1 cr; hr ar; prereq psych fellow spec or #; S-N only) Meier

5534. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (687019) (3 cr; hr ar;

COURSE DESCRIPTIONS

prereq psych fellow spec or #; S-N only) Meier

5535. CASE CONFERENCE IN CLINICAL PSYCHOLOGY. (087020) (1-2 cr; hr ar; prereq psych fellow spec) Meier

5536. SEMINAR IN CLINICAL PSYCHOLOGY. (887021) (1-2 cr; prereq psych fellow spec) Meier

5537. PSYCHOLOGY INTERNSHIP. (687022) (4-8 cr; prereq psych fellow spec) Meier

5550. NEUROPHYSIOLOGICAL LITERATURE SEMINAR. (586607) (1 cr; prereq Medical School course in physiology, #; hrs ar) Ebner
Study of selected papers covering several topics in neurophysiology. Correlations between neurological and neurosurgical problems and basic concepts in neurophysiology emphasized.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)
Required Courses for Graduate Students

8305. NEUROSURGICAL DIAGNOSIS. (386608) (4 cr; MTWThF; Mayo B524) Heros, Erickson, Maxwell, Haines, Hall
Neurosurgical fellow assists in instruction of clinical clerks and interns, studies problems in diagnosis at University and affiliated hospitals.

8308. NEUROSURGICAL PROBLEMS AND MANAGEMENT. (186609) (4 cr; MTWThF; Mayo B401) Heros, Erickson, Maxwell, Haines, Hall
Neurosurgical fellow acts as house surgeon at University and affiliated hospitals.

8311. OPERATIVE NEUROSURGERY. (586610) (4 cr; MTWThF; Mayo B401) Heros, Erickson, Maxwell, Haines, Hall
Neurosurgical fellow acts as first assistant for operations at University and affiliated hospitals, and later may be permitted to operate.

8316. NEUROSURGICAL RESEARCH. (186612) (6 cr; MTWThF; Diehl F109-110 and G134-144) Ebner
Problems in experimental or clinical surgery.

8318. NEURORADIOLOGICAL CONFERENCE. (086613) (1 cr; 1325-1415 F; Mayo C231-Todd Amph) Heros, Erickson, Maxwell, Haines
A review of X-ray films and case histories on neurosurgical service.

8320. NEUROSURGICAL CONFERENCE. (486616) (2 cr; 0800-1100 Sa) Heros, Ebner, Erickson, Maxwell, Haines, Hall
In-depth review of selected topics in basic and clinical neurosurgery.

8322. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART I. (586624) (1 cr; 0800-0850 T; offered Su and W; Sta 51, Mayo B524) Staff
Review and discussion of topics.

8323. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART II. (786623) (1 cr; prereq 8322; T; offered F and Sa) Staff
Advanced review and discussion of topics.

8330. NEUROSURGERY LITERATURE SEMINAR. (286620) (2 cr; 1st and 2nd Th evenings) Heros, Seljeskog, Ebner, Erickson, Maxwell, Haines, Hall
Review and discussion of current literature relating to neurosurgery and the neurosciences.

SECOND TERM

8777. THESIS CREDITS: MASTERS. (589118) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389119) (1-36 cr [max 11 cr per summer term])

Nursing (Nurs)

6-101 Health Sciences Unit F. 624-9600

FIRST TERM

5240. CORE CONCEPTS IN CRITICAL CARE. (489242) (6 cr; prereq 5140, 5141, 5142; 1030-1515 MTh, 1030-1245 TW + 3 additional hrs per week ar; MoosT 2620) Steffes, Stenberg
Provides core knowledge underlying nursing of critically ill children or adults, including technological life support.

5450. INTRODUCTION TO COMMUNITY HEALTH. (388309) (3 cr; prereq nursing student or Δ; 0800-1015 MWTh; MoosT 2620) Lia-Hoagberg
Study of those concepts and theories that provide a foundation for community health.

5620. INDEPENDENT STUDY IN NURSING TOPICS. (890081) (1-9 cr; #) Staff
Learning experiences planned to meet individual student needs, beyond required credits.

5799. SELF-DIRECTED STUDY AS A MEANS OF ACCOMPLISHING NURSING ELECTIVES. (187221) (Cr ar; prereq #) Staff
Opportunity for students to engage in learning experiences not provided for in established nursing elective courses.

R.5820. DECISION MAKING IN HEALTH CARE. (189736) (3 cr; limited to 15 students; prereq grad stu in health related major; 0915-1215 W, 1315-1615 W; HSUnitF 4155/4157)

Corcoran-Perry
Comparison of selected conceptual models of decision making. Development of plans for assessing, evaluating, teaching, or assisting others (health professionals, patients, families) in making decisions about health care.

5942. NURSING CARE OF THE ELDERLY I. (191941) (4 cr; prereq grad nursing students; assessment of the elderly course; ar) Snyder/Camillo
Managing the health care of the elderly; testing nursing interventions for maintaining and restoring health; particular attention will be focused on persons whose presenting concerns are primarily in the physiological realm.

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (prereq Δ)
Various learning experiences planned to meet individual needs.
Sec 1, (687294) arr, staff, ar cr

8009. SPECIAL TOPICS. (Cr ar; prereq #) Staff
Sec 1, (287296) arr, ar, cr
Sec 2, (190966) arr, 2 cr (NMW)

8777. THESIS CREDITS: MASTERS. (188904) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988905) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (prereq Δ)
See Term I.
Sec 2, (691474) 1300-1630 Th; HSUnit F, Josten, 3 cr.

R.8014. RESEARCH IN NURSING. (688512) (3 cr; prereq inferential statistics; limited to 25 students; 1645-2030 W; HSUnitF 4150/4176) Duckett
Research processes and methodologies appropriate to nursing. Analysis of research reports.

R.8030. NURSING INTERVENTION MODELS. (289243) (8 cr; prereq 8012, 8011 or # 8011, #; 1300-1745 T, HSUnitF 4155/4157) Gordon, (Psych cln ar)
Developing, providing and evaluating nursing intervention with a specified client population.

8050. PROBLEMS IN NURSING. (1-9 cr; prereq #; S-N only)
Individual study of a problem.
Sec 1, (187302) ar, Alaniz
Sec 2, (786279) ar, Bearinger
Sec 3, (186280) ar, Bull
Sec 4, (986281) ar, Burns
Sec 5, (786282) ar, Corcoran-Perry
Sec 6, (586283) ar, Crisham
Sec 7, (386284) ar, DeHart
Sec 8, (186285) ar, Donaldson
Sec 9, (086286) ar, Duckett

Sec 10, (886287) ar, Edwardson
Sec 11, (686288) ar, Egan
Sec 12, (486289) ar, Feldman
Sec 13, (785410) ar, Gordon
Sec 14, (585411) ar, Gross
Sec 15, (385412) ar, Gustafson
Sec 16, (185413) ar, Hansen
Sec 17, (085414) ar, Josten
Sec 18, (885415) ar, Krichbaum
Sec 19, (685416) ar, Leonard
Sec 20, (485417) ar, Lewis
Sec 21, (285418) ar, Lia-Hoagberg
Sec 22, (185419) ar, Lindquist
Sec 23, (485420) ar, Newman
Sec 24, (189244) ar, Ostwald
Sec 25, (089737) ar, Pederson
Sec 26, (890260) ar, Post-White
Sec 27, (090886) ar, Ryden
Sec 28, (491475) ar, Sime
Sec 29, (291476) ar, Snyder
Sec 30, (191477) ar, Sodergren
Sec 31, (191480) ar, Tomlinson
Sec 32, (991481) ar, staff

8051. SPECIAL TOPICS IN NURSING RESEARCH. (991478) (1-9) Staff
Seminar and/or individual study in nursing research.

8060. ADVANCED CLINICAL NURSING. (586395) (3-9 cr; prereq #, Δ) Staff

8111. MORAL AND ETHICAL DEVELOPMENT IN NURSING SCIENCE. (788307) (4 cr; prereq 8011 or equivalent, nurs grad stu or #; 0915-1400 Th; HSUnitF 4150/4176) Crisham
Study of the interactions among research and theory in moral judgment and behavior, applied ethics, and nursing.

8315. NURSE-MIDWIFERY MANAGEMENT: INTRAPARTAL AND POSTPARTAL. (588308) (9 cr; prereq 8314; 0915-1400 W; HSUnitF 4150/4176) Rossi, staff
Theory and clinical experience in management and care of the laboring woman/couple through the six-week restorative period. Early care of the newborn is an integrated component.

8509. SPECIAL TOPICS: NURSING EDUCATION. (386396) (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION.
Sec 1, (186397) cr ar, Staff
Sec 2, (791479) 4 cr, ar, Josten

SECOND TERM

5241. PRACTICUM: CRITICALLY ILL INFANTS, CHILDREN, OR ADULTS. (7 cr; Lect 0800-1245 M, Owre 2210, Sem 1010-1205 M, HSUnitF 4150, 4151, 4153, 4154, 4155, 4157, 4172, 4176; prereq 5240)
Provides experience in caring for critically ill children or adults under supervision of a preceptor.
Clinical 1, (290649) ar
Clinical 2, (690650) ar
Clinical 3, (490651) ar
Clinical 4, (290652) ar
Clinical 5, (190653) ar
Clinical 6, (990654) ar

Clinical 7, (790655) ar
Clinical 8, (590656) ar

5620. INDEPENDENT STUDY IN NURSING TOPICS. (490259) (cr ar; prereq #) Staff
See First Term.

5799. SELF-DIRECTED STUDY AS A MEANS OF ACCOMPLISHING NURSING ELECTIVES. (789747) (Cr ar; prereq #) Staff
See First Term.

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (587417) (Cr ar; prereq Δ) Staff
See First Term.

8009. SPECIAL TOPICS. (187419) (Cr ar; prereq #) Staff

8051. SPECIAL TOPICS IN NURSING RESEARCH. (387676) (1-9 cr) Staff
Seminar and/or individual study in nursing research.

8060. ADVANCED CLINICAL NURSING. (087566) (3-9 cr; prereq #, Δ) Staff

8509. SPECIAL TOPICS: NURSING EDUCATION. (887567) (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION. (687568) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (789120) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589121) (1-36 cr [max 11 cr per summer term])

Nutrition (Nutr)

225 Food Science and Nutrition, St. Paul. 624-1290
(Food Science and Nutrition)
Colleges of Agriculture and Human Ecology

FIRST TERM

8777. THESIS CREDITS: MASTERS. (388908) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188909) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (688199) (2-5 cr; prereq #)

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389122) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189123) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (088197) (2-5 cr; prereq #)

O

Obstetrics and Gynecology (Obst)

12-280 Moos Tower. 626-3503
Medical School

**SPECIAL TERMS: JUNE 15-
JULY 20 AND JULY 22-
AUGUST 25**

Elective Courses for Undergraduate Students

5500. EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY. (186635)(Cr ar; prereq regis med) Twiggs, staff
Six-week experience in clinical obstetrics and gynecology spent in hospitals: Hennepin County Medical Center, North Memorial, St. Mary's, Fairview, St. Paul-Ramsey, University, or St. Luke's (Duluth). Students may express hospital preference, but final assignments will be made by course coordinator. This is the core clinical course in obstetrics and gynecology for Years Three and Four students. All students meet at University Hospital Tuesday, Wednesday, and Thursday the first week and each Wednesday afternoon thereafter for didactic presentations.

5520. OBSTETRICS AND GYNECOLOGY EXTERNSHIP IN CLINICAL PRACTICE. (986636) (4.5 cr; prereq regis med) Twiggs, staff
Practical community experience in obstetrics and gynecology under preceptorship of one or more practicing members of clinical staff. Both office and hospital practice included. The student must obtain a letter from the desired community proctor stating the rotation is acceptable, and this must be received in the coordinator's office and approved prior to beginning the rotation.

5540. ADVANCED EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY. (786637) (Cr ar; prereq 5500) Twiggs
Full-time clinical experience as acting intern on obstetrical and gynecological service at Hennepin County Medical Center, St. Paul-Ramsey Medical Center, University Hospitals, and Waconia Clinic. Rotations in general obstetrics and gynecology (HCMC), high risk obstetrics (HCMC, UMH), gynecologic endocrinology and infertility (UMH), or gynecologic oncology (UMH) are available.

5560. RESEARCH IN REPRODUCTION. (586638) (Cr ar; prereq 5500) Twiggs, staff
Topics selected for each student or chosen by the student.

5575. GYNECOLOGICAL PATHOLOGY AND DIAGNOSTIC CYTOLOGY. (386639) (9 cr; prereq 5500) Okagaki, Brooker
Review of daily gynecological histopathology material of surgical and clinical cases from the Ob-Gyn Service. Includes diagnostic cytology of Pap smears encountered in actual practice.

5590. PRECEPTORSHIP IN OBSTETRICS AND GYNECOLOGY. (786640) (9 cr; prereq 5500) Twiggs
Full-time preceptorship in clinical obstetrics and gynecology, offered by AHEC. Similar to 5520.

Courses for Graduate Students

8201. ADVANCED OBSTETRICS AND GYNECOLOGY I. (486731)(cr ar; required for first year fellows.)
Includes services in the University of Minnesota-affiliated hospitals (University, Metropolitan Medical Center, and Hennepin County Medical Center) with ample experience in diagnosis, care, and treatment (operative and nonoperative) of patients.

8205. ADVANCED OBSTETRICS AND GYNECOLOGY II. (286732) (cr ar; required for second year fellows)
Similar to 8201 but more advanced, both in clinical and research aspects of the subjects; adapted to increased training and experience of fellows.

8209. ADVANCED OBSTETRICS AND GYNECOLOGY III. (186733)(cr ar; required for third year fellows)
Similar to 8205 but more advanced.

8213. ADVANCED OBSTETRICS AND GYNECOLOGY IV. (186741)(cr ar; prereq 8212)

8222. GYNECOLOGICAL ONCOLOGY. (286746) (Cr ar; prereq 8221) Twiggs, staff

8223. GYNECOLOGICAL ONCOLOGY. (986748) (Cr ar; prereq 8222) Twiggs, staff

8224. GYNECOLOGICAL ENDOCRINOLOGY-I. (186750) (Cr ar; prereq 8223) Twiggs, staff

8225. GYNECOLOGICAL ENDOCRINOLOGY-II. (586753) (Cr ar; prereq 8224) Twiggs, staff

8230. RESEARCH IN REPRODUCTION. (486762) (Cr ar; prereq 8229) Twiggs, staff

8777. THESIS CREDITS: MASTERS. (888914) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (689126) (1-16 cr [max 11 cr per summer term])

Operations and Management Sciences (OMS)

332 Management/Economics Building.
624-7010
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on pages 11,12.

FIRST TERM

R.3000. INTRODUCTION TO OPERATIONS MANAGEMENT. (589250) (4 cr; limited to 30 students; 1300-1430 MTWTh; BlegH 125; A-F only)
Concepts and principles related to the management of operations functions, including operations strategy, process design, just-in-time, forecasting inventory management, principles of scheduling, and quality improvement. Examples from service industries, nonprofit organizations, and manufacturing stressing the relationships between operations and the environment from a managerial perspective.

8990. READINGS IN OPERATIONS AND MANAGEMENT SCIENCE. (389251) (Cr ar; prereq #, grad SMgmt approval; A-F only)

8995. GRADUATE RESEARCH IN OPERATIONS AND MANAGEMENT SCIENCE. (189252) (Cr ar; prereq #, grad SMgmt approval; A-F only)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

R.1020. DATA ANALYSIS AND STATISTICAL INFERENCE FOR MANAGERS. (189249) (4 cr; prereq IDSc 1010, Math 1111, Math 1131 recommended; limited to 45 students; Lec 0900-1015 TTh, BlegH 130; Lab 0915-1015 F, BlegH 130; A-F only)
Introduction to probabilistic and statistical techniques for decision making, including data analysis, sampling, estimation, and hypothesis testing and regression. Using computer software and computer-stored data in statistical analysis. Introduction to modeling and linear programming.

R.8041. PROJECT MANAGEMENT. (592018) (4 cr; limited to 15 students; prereq OMS 3000 or MBA 8050 or #; 1730-2100 T; HHHCr 20; A-F only)
Principles and methods useful for planning and controlling a project, including development of a project plan, resource planning and scheduling, and project monitoring and control. Various computerized packages are studied, including PERT and CPM, and examples of different

COURSE DESCRIPTIONS

types of projects from manufacturing and service industries are used.

SECOND TERM

R.3000. INTRODUCTION TO OPERATIONS MANAGEMENT. (089253) (4 cr; limited to 30 students; 1300-1430 MTWTh; BlegH 125; A-F only)
See First Term.

8990. READINGS IN OPERATIONS AND MANAGEMENT SCIENCE. (889254) (Cr ar; prereq #, grad SMgmt approval; A-F only)

8995. GRADUATE RESEARCH IN OPERATIONS AND MANAGEMENT SCIENCE. (689255) (Cr ar; prereq #, grad SMgmt approval; A-F only)
See First Term.

Ophthalmology (Oph)

9th floor, Phillips-Wangenstein Building, 625-4400
Medical School

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

5100. INTRODUCTION TO ANATOMY, HISTOLOGY, AND EMBRYOLOGY. (186764) (1 cr; prereq physician or vet med student; 0715-0830 Th; PWB 9335) Cameron

8101. CLINICAL OPHTHALMOLOGY. (786766) (8 cr; 0800-1700 MTWThF; PWB 9100) Krachmer, staff

8106. STRABISMUS MANAGEMENT. (088376) (1 cr; prereq grad physician or grad in veterinary science; 0730-0830 M; PWB 9339) Letson

8131. PRACTICAL OCULAR SURGERY. (586767) (3 cr; 0800-1200 MTWThF) Krachmer, staff

8142. OPHTHALMIC PATHOLOGY LABORATORY. (186769) (2 cr; 1330-1530 M; PWB 9335) Cameron

8152. OPHTHALMOLOGY LABORATORY. (586770) (15 cr) Krachmer, staff

8155. SPECIAL TOPICS IN OPHTHALMOLOGY. (186772) (1-3 cr; prereq #) Staff

Oral and Maxillofacial Surgery (OSur)

7-174 Moos Tower, 624-7133
School of Dentistry

FIRST TERM

5257. AMBULATORY GENERAL ANESTHESIA. (986426) (1 cr)
A clinical rotation involving

experience in outpatient management utilizing intravenous sedation and general anesthesia.

5270. ORAL AND MAXILLOFACIAL RADIOLOGY REVIEW. (989584) (1 cr)
Weekly review and discussion of radiographs taken at University Hospitals relating to oral surgery procedures.

5275. ORAL PATHOLOGY REVIEW. (087650) (1 cr)
Evaluation and microscopic interpretation of diagnostic tissue from oral and peri-oral areas. Other diagnostic information such as clinical appearance, history, and radiologic films is utilized. Course is based on individual participation in a seminar format.

5276. MEDICINE FOR THE ORAL SURGEON. (789585) (2 cr; prereq participation in oral surgery residency program)
Rotation at Mt. Sinai Hospital on medical service under direction of University's Internal Medicine department. Rotation involves workup and admission, and daily management of patients on medical service.

5280. ADVANCED ORAL SURGERY FOR POSTGRADUATE DENTAL FELLOWS. (289971) (1 cr; S-N only)
Basic principles of dental alveolar surgery and the introduction of advanced concepts and principles of oral and maxillofacial surgery for the general dentist. Instruction is provided in differential diagnosis of odontogenic infections, case and risk assessment, drug therapy in contemporary practice. Topics include preprosthetic surgery procedures, biopsy, surgical extraction of erupted and impacted teeth, root recovery, the management of intraoperative and postoperative complications, orthognathic and TMJ surgery, implants, and facial trauma.

8250. ADVANCED ORAL AND MAXILLOFACIAL SURGERY. (786427) (cr ar)
Assigned clinics in University Hospitals, Veterans Administration Medical Center, Hennepin County Medical Center, and School of Dentistry.

8251. SEMINAR: ORAL SURGERY. (189583) (1 cr)
Topics in oral surgery.

8252. RESEARCH IN ORAL AND MAXILLOFACIAL SURGERY. (586428) (Cr ar)
Research in fields related to oral and maxillofacial surgery.

8253. PROBLEMS IN ORAL AND MAXILLOFACIAL SURGERY. (386429) (cr ar)
Current literature review.

8255. GENERAL SURGERY. (786430) (cr ar)
Clinical rotation on the general

surgical service at Fairview Hospital, Minneapolis. Includes seminars, clinics, and operating room experience.

8258. ANESTHESIA II SEMINAR. (586431) (1 cr)
Outpatient general anesthesia topics and related subjects.

8280. ORAL AND MAXILLOFACIAL SURGERY CLINICAL PATHOLOGY CONFERENCE. (589586) (1 cr)
Evaluation and discussion of clinical, radiographic, and microscopic aspects of oral and perioral diseases and neoplasms. Individual participation in seminar format.

FIRST AND SECOND TERM: TEN-WEEK COURSE

(Register once in Term I)

5500. EVALUATION IN ORAL SURGERY. (590947) (1 cr; S-N only)

SECOND TERM

5257. AMBULATORY GENERAL ANESTHESIA. (387113) (1 cr)
See First Term.

5270. ORAL AND MAXILLOFACIAL RADIOLOGY REVIEW. (189588) (1 cr)
See First Term.

5275. ORAL PATHOLOGY REVIEW. (887651) (1 cr)
See First Term.

5276. MEDICINE FOR THE ORAL SURGEON. (089589) (2 cr; prereq participation in an oral surgery residency program)
See First Term.

5277. PHYSICAL DIAGNOSIS FOR ORAL AND MAXILLOFACIAL SURGERY RESIDENTS. (791420) (1 cr; prereq participation in oral and maxillofacial surgery residency program)
Six-week didactic course coupled with evaluation of patients at University Hospital under direction of Department of Medicine and its faculty.

5280. ADVANCED ORAL SURGERY FOR POSTGRADUATE DENTAL FELLOWS. (189972) (1 cr; S-N only)
See First Term.

8250. ADVANCED ORAL AND MAXILLOFACIAL SURGERY. (187114) (cr ar)
See First Term.

8251. SEMINAR: ORAL SURGERY. (389587) (1 cr)
See First Term.

8252. RESEARCH IN ORAL AND MAXILLOFACIAL SURGERY. (087115) (Cr ar)
See First Term.

8253. PROBLEMS IN ORAL AND MAXILLOFACIAL SURGERY. (887116) (cr ar)
See First Term.

8255. GENERAL SURGERY. (687117) (2 cr)
See First Term.

8258. ANESTHESIA II SEMINAR. (487118) (1 cr)
See First Term.

8280. ORAL AND MAXILLOFACIAL SURGERY CLINICAL PATHOLOGY CONFERENCE. (389590) (1 cr)
See First Term.

Oral Biology (OBio)

17-252 Moos Tower, 624-9123
School of Dentistry

FIRST TERM

8001. RESEARCH IN ORAL BIOLOGY. (486423) (Cr ar)

8002. TUTORIAL IN ORAL BIOLOGY. (286424) (Cr ar [may be repeated for cr]; 2 hrs per wk=1 cr)

8024. TOPICS IN ORAL BIOLOGY. (189213) (1-3 cr [may be repeated for cr]; prereq #)

8777. THESIS CREDITS: MASTERS. (388911) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088913) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8001. RESEARCH IN ORAL BIOLOGY. (987110) (Cr ar)

8002. TUTORIAL IN ORAL BIOLOGY. (787111) (Cr ar [may be repeated for cr]; 2 hrs per wk=1 cr)

8777. THESIS CREDITS: MASTERS. (089124) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889125) (1-36 cr [max 11 cr per summer term])

Oral Pathology (OPat)

16-116 Moos Tower, 624-2463
School of Dentistry

FIRST TERM

5017. ORAL PATHOLOGY CLINIC. (489256) (Cr ar)
Resident participates in management of Oral Pathology Clinic patients at the School of Dentistry and serves as oral pathology consultant with designated staff in school's screening facilities.

8001. RESEARCH IN ORAL PATHOLOGY. (586333) (cr ar)

8004. HISTOPATHOLOGY. (186425) (2 cr)
Weekly presentation of various pathologic cases in which methods of diagnosis are stressed. Clinical or radiographic aspects utilized. Covers the spectrum of oral and paraoral pathology.

8006. CURRENT LITERATURE REVIEW. (289257) (1 cr)
Seminars on a variety of research problems, topics, and areas of special interest between graduate students and oral pathology faculty. Students expected to determine both subjects for discussion and nature of discussions.

8011. SURGICAL ORAL PATHOLOGY. (589409) (Cr ar)
Residents and graduate students participate as staff assistants in diagnosis of oral diseases. Histopathologic, frozen section, clinical, cytologic, cytogenetic, microbiologic, hematologic, radiologic, and other diagnostic means are utilized.

SECOND TERM

5017. ORAL PATHOLOGY CLINIC. (688686) (Cr ar)
See First Term.

8001. RESEARCH IN ORAL PATHOLOGY. (386334) (cr ar)

8004. HISTOPATHOLOGY. (587112) (2 cr)
See First Term.

8006. CURRENT LITERATURE REVIEW. (189258) (1 cr)
See First Term.

8011. SURGICAL ORAL PATHOLOGY. (989410) (Cr ar)
See First Term.

Oral Radiology (ORad)

7-158 Moos Tower, 625-8418
School of Dentistry

FIRST AND SECOND TERMS: TEN-WEEK COURSES
(Register once in Term I)

5500. EVALUATION IN DIAGNOSTIC/SURGICAL SCIENCES. (390948) (1 cr; S-N only)

Orthodontics (Otho)

6-320 Moos Tower, 625-5110
School of Dentistry

FIRST TERM

Required Courses for Graduate Students

5004. CLINICAL ORTHODONTICS. (386432) (Cr ar)
Students are assigned patients for the complete management of orthodontic and orthodontically related occlusal problems under direct staff supervision. Credits from this course may not be used for degree programs.

8001. RESEARCH IN ORTHODONTICS. (088362) (Cr ar)

8203. GROWTH AND DEVELOPMENT. (186433) (Cr ar)
Head growth, development, osteology and myology. Includes both normal and abnormal morphology and function; cephalometric methods.

8207. ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING. (086434) (Cr ar)
Etiology, treatment, and prognosis of clinical orthodontic patients.

8211. ORTHODONTIC SEMINAR. (886435) (Cr ar)
Review of current literature and discussion of current research and its implications.

8219. TOPICS IN ORTHODONTICS. (686436) (Cr ar)
Studies in special topics for advanced students.

SECOND TERM

5004. CLINICAL ORTHODONTICS. (287119) (Cr ar)
See First Term.

8001. RESEARCH IN ORTHODONTICS. (588423) (Cr ar)

8203. GROWTH AND DEVELOPMENT. (687120) (Cr ar)
See First Term.

8207. ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING. (487121) (Cr ar)
See First Term.

8211. ORTHODONTIC SEMINAR. (287122) (Cr ar)
See First Term.

8219. TOPICS IN ORTHODONTICS. (187123) (Cr ar)
See First Term.

Orthopaedic Surgery (OrSu)

Variety Club Heart & Research Center
Rm. 350, 625-1177
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (588700) (1-16 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES
(Register Once in Term I)

Required Courses for Graduate Students

8401. ORTHOPAEDIC CONFERENCE. (486793) (3 cr) Thompson, House, Premer, Robinson, Craig, Ogilvie
Review of X-ray films and case histories of patients on the orthopaedic inpatient or outpatient service.

8403. FRACTURES. (788582) (5 cr) Custilo, staff
Orthopaedic fellow acts as house surgeon on the fracture service at Hennepin County Medical Center.

8405. ORTHOPAEDIC DIAGNOSIS. (586798) (3 cr) Thompson, House, Robinson, Craig, Ogilvie, Arendt
Orthopaedic fellow assists in instruction of medical students and interns and studies problems in diagnosis in the Outpatient Department and in University Hospital.

8407. PEDIATRIC ORTHOPAEDICS. (186800) (5 cr) Staff
Orthopaedic fellow acts as house surgeon at Gillette Children's Hospital.

8408. ORTHOPAEDIC PROBLEMS AND MANAGEMENT. (986801) (5 cr) Thompson, House, Premer, Robinson, Craig, Ogilvie, Arendt
Orthopaedic fellow acts as house surgeon at University and Veterans hospitals.

8409. ORTHOPAEDIC PROBLEMS AND MANAGEMENT. (386804) (5 cr) Aamoth
Orthopaedic fellow acts as house surgeon on the orthopaedic service at Fairview Hospital.

8410. ORTHOPAEDIC PATHOLOGY. (086806) (2 cr) Thompson, House, Premer, Robinson, Craig, Ogilvie, Arendt
Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities.

8411. ORTHOPAEDIC OPERATIVE SURGERY. (886810) (5 cr) Thompson, House, Premer, Robinson, Craig, Ogilvie, Arendt
Orthopaedic fellow acts as first assistant at operations at University and affiliated hospitals and later may be permitted to operate.

8412. ORTHOPAEDIC ANATOMY. (186814) (2 cr) House
Orthopaedic fellow dissects upper and lower extremities and aids in instruction of medical students in anatomy of the extremities.

8416. ORTHOPAEDIC RESEARCH. (786816) (5 cr) Thompson, House, Robinson, Craig, Ogilvie, Arendt
Problems in experimental or clinical surgery, University Hospital.

SECOND TERM

8777. THESIS CREDITS: MASTERS. (188781) (1-16 cr [max 11 cr per summer term])

Otolaryngology (Otol)

8-240 Phillips-Wangenstein Building,
625-3200
Medical School

SPECIAL TERMS: THREE-, SIX-, AND TWELVE-WEEK COURSES

5970. DIRECTED STUDIES. (085350) (Cr ar; prereq #)

8250. ADVANCED BIOCHEMISTRY OF THE AUDITORY SYSTEM. (989259) (2 cr; prereq MdBc 5100, MdBc 5101 or #) Juhn

FIRST TERM

8777. THESIS CREDITS: MASTERS. (388701) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188702) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (288786) (1-16 cr [max 11 cr per summer term])

COURSE DESCRIPTIONS

P

Pathobiology (Path)

D-242 Mayo. 625-9171
(Laboratory Medicine and Pathology)
Medical School

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (088703) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

Courses for Graduate Program

5141. PROBLEMS IN EXPERIMENTAL AND CLINICAL CHRONOBIOLOGY. (186845) (Cr ar; prereq #) Halberg

8201. RESEARCH. (986846) (Cr ar; prereq #) Staff
Students with the necessary preliminary training may elect research either as a major or minor in pathobiology.

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (588793) (1-36 cr [max 11 cr per summer term])

Pediatric Dentistry (Pedo)

6-150 Moos Tower. 624-2161
School of Dentistry

FIRST TERM

5414. ADVANCED CLINICAL PEDODONTICS. (486437) (Cr ar; prereq #)
Assignment of patients for treatment of difficult or unusual pedodontic problems under direct faculty supervision.

8001. RESEARCH. (286438) (Cr ar)

8290. HOSPITAL PEDODONTICS I. (186439) (Cr ar; S-N only)
Diagnosis and treatment of difficult and unusual problems in children with various handicapping conditions in the Children's Physical Medicine and Rehabilitation Center under direct faculty supervision. Includes pre-op and post-op discussion of faculty-supervised general anesthetic cases, and seminar discussion of operating room techniques and procedures, pharmaceutical adjuncts for dental procedures.

8291. HOSPITAL PEDODONTICS II. (486440) (Cr ar; S-N only)
Diagnosis and treatment of pedodontic problems under direct

faculty supervision at Hennepin County Medical Center. Includes participation on a rotation basis in seminars in pediatrics and anesthesia conducted by staff. Pre-op and post-op seminar discussion and evaluation of treatment plans.

8292. PEDODONTIC LITERATURE. (788341) (2 cr)
In-depth literature review and seminar discussion of specific pedodontic topics.

8294. PEDODONTIC DIAGNOSIS AND TREATMENT PLANNING. (286441) (Cr ar)
Systematic approach to diagnosis and treatment planning for various pedodontic problems.

SECOND TERM

5414. ADVANCED CLINICAL PEDODONTICS. (787125) (Cr ar)
See First Term.

8001. RESEARCH. (587126) (Cr ar)

8290. HOSPITAL PEDODONTICS I. (187128) (Cr ar; S-N only)
See First Term.

8291. HOSPITAL PEDODONTICS II. (087129) (Cr ar; S-N only)
See First Term.

8293. ADVANCED PEDODONTIC TECHNIQUES. (387130) (Cr ar)
Description and exercises in advanced pedodontic skills and techniques.

8295. INDEPENDENT PEDODONTIC STUDY. (087132) (Cr ar)
Review of pertinent literature and preparation of a position paper on an assigned topic.

8298. INTERDISCIPLINARY CARE OF THE CLEFT PALATE PATIENT. (387001) (1 cr; S-N only)
Comprehensive surgical, dental, speech and hearing evaluation and management of patients with cleft lip and palate.

Periodontics (Pero)

7-368 Moos Tower. 625-2418
School of Dentistry

FIRST TERM

8250. SUPPORTING STRUCTURES OF THE TEETH. (188361) (Cr ar)
Gingival tissues, cementum, periodontal ligament, and alveolar bone discussed from a histological, physiological, and pathological point of view.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

5222. DENTISTRY AND SYSTEMATIC HEALTH CARE. (191124) (1 cr)
Seminar designed to improve the dentist's knowledge about treating

medically compromised patients. Subjects covered include cardiac murmurs, coagulation, diabetes mellitus, organ transplants, hypertension, radiation and chemotherapy for oncology patients, and control of transmittable diseases.

5500. EVALUATION IN PERIODONTOLOGY. (190949) (1 cr; S-N only)

8000. ADVANCED CLINICAL PERIODONTOLOGY. (186442) (Cr ar)
Clinical training in examination, diagnosis, treatment planning, and various phases of prevention and treatment of periodontal disease.

8200. LECTURES. (986443) (Cr ar)
Clinical cases are discussed from a diagnostic, treatment planning, and therapeutic viewpoint.

8300. SEMINAR: PERIODONTOLOGY. (786444) (Cr ar)
Discussion of assigned weekly literature reviews. Preparation of assigned formal literature reviews.

SECOND TERM

5222. DENTISTRY AND SYSTEMATIC HEALTH CARE. (091181) (1 cr)
See First Term.

Pharmaceutics (Phm)

9-177 Health Sciences Unit F. 624-5151
College of Pharmacy

FIRST TERM

8200. RESEARCH PROBLEMS. (185033) (cr ar; prereq #)

8777. THESIS CREDITS: MASTERS. (188708) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988709) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8200. RESEARCH PROBLEMS. (690969) (cr ar; prereq #)

8777. THESIS CREDITS: MASTERS. (288836) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788839) (1-36 cr [max 11 cr per summer term])

Pharmaceutics, Undergraduate (Phmc)

Pharmacy Student Affairs Office,
5-110 Health Sciences Unit F. 624-9490
College of Pharmacy

FIRST TERM

5970. DIRECTED STUDIES. (687005) (1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (487006) (Cr and hrs ar; prereq #)

SECOND TERM

5970. DIRECTED STUDIES. (287007) (1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (187008) (Cr and hrs ar; prereq #)

Pharmacology (Phcl)

3-249 Millard Hall. 625-9997
Medical School

FIRST TERM

5109. PROBLEMS IN PHARMACOLOGY. (086871) (Cr and hrs ar; prereq grad or upper div stu or #) Loh, staff

8203. RESEARCH IN PHARMACOLOGY. (190264) (Cr and hrs ar; prereq #) Loh, staff

8777. THESIS CREDITS: MASTERS. (888704) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688705) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5109. PROBLEMS IN PHARMACOLOGY. (887150) (Cr and hrs ar; prereq grad or upper div stu or #) Loh, staff

8203. RESEARCH IN PHARMACOLOGY. (290263) (Cr and hrs ar; prereq #) Loh, staff

8777. THESIS CREDITS: MASTERS. (188823) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788825) (1-36 cr [max 11 cr per summer term])

Pharmacy Practice (Phar)

Pharmacy Student Affairs Office,
5-110 Health Sciences Unit F. 624-9490
College of Pharmacy

FIRST TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (490875) (2 cr, SHSU 5210) McKennell
A modern programmed learning course with the most current usage and traditional components; the language of health care delivery. For information go to room 5120 HSUnit before the first day of class.

COURSE DESCRIPTIONS

5290. SPECIALTY CLERKSHIPS.
(385037) (1-16 cr; prereq pharmacy intern)
Practice experience with specialized populations.

5291. SPECIALTY EXTERNSHIP.
(289260) (1-12 cr; prereq pharmacy intern)
Advanced or specialty drug distribution or pharmacy management experience conducted at participating practice sites.

5970. DIRECTED STUDIES. (685030)
(1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (485031)
(Cr ar; prereq #)

**SPECIAL TERM: JUNE 21-
SEPTEMBER 12**
(Register once in Term I)

**5550. PHARMACY PRACTICE
CLERKSHIP: ACUTE CARE.** (187011)
(4-12 cr; prereq Pharm.D. IV student;
S-N only)

**5551. PHARMACY PRACTICE
CLERKSHIP: CLINICAL PHARMACO-
KINETICS.** (987012) (4 cr; prereq
Pharm.D. IV student; S-N only)

**5552. PHARMACY PRACTICE
CLERKSHIP: PEDIATRICS.** (787013) (4
cr; prereq Pharm.D. IV student; S-N
only)

**5553. PHARMACY PRACTICE
CLERKSHIP: CLINICAL ELECTIVE I.**
(587014) (4-12 cr; prereq Pharm.D. IV
student; S-N only)

**5554. PHARMACY PRACTICE
CLERKSHIP: SPECIAL ELECTIVE I.**
(387015) (4-12 cr; prereq Pharm.D. IV
student; S-N only)

**5555. PHARMACY PRACTICE
CLERKSHIP: CLINICAL ELECTIVE II.**
(488303) (4-12 cr; prereq Pharm.D. IV
student; S-N only)

**5556. PHARMACY PRACTICE
CLERKSHIP: CLINICAL ELECTIVE III.**
(288304) (4-12 cr; prereq Pharm.D. IV
student; S-N only)

**5557. PHARMACY PRACTICE
CLERKSHIP: SPECIAL ELECTIVE II.**
(188305) (4-12 cr; prereq Pharm.D. IV
student; S-N only)

**5558. PHARMACY PRACTICE
CLERKSHIP: SPECIAL ELECTIVE III.**
(988306) (4-12 cr; prereq Pharm.D. IV
student; S-N only)

EIGHT-WEEK COURSES
(Register once in Term I)

**5391. PHARM.D. COMMUNITY
EXTERNSHIP-June 21-August 15.**
(987009) (4-8 cr; prereq Pharm.D. III
student; S-N only)

**5393. PHARM.D. HOSPITAL
EXTERNSHIP-June 21-August 15.**
(287010) (4-8 cr; prereq Pharm.D. III
student; S-N only)

SECOND TERM

**5210. TERMINOLOGY OF THE
HEALTH SCIENCES.** (290876) (2 cr,
SHSU 5210) McKennell
See First Term.

5290. SPECIALTY CLERKSHIPS.
(585036) (Cr ar)
See First Term.

5291. SPECIALTY EXTERNSHIP.
(789263) (1-12 cr)
See First Term.

5970. DIRECTED STUDIES. (485028)
(1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (285029)
(Cr ar; prereq #)

Philosophy (Phil)

355 Ford Hall. 625-6563
College of Liberal Arts

FIRST TERM

1001. INTRODUCTION TO LOGIC.
(185718) (5 cr; 0915-1015 MTWThF;
FordH 115) Waters
Application of formal techniques for
evaluating arguments.

**1002. INTRODUCTION TO
PHILOSOPHY.** (188515) (5 cr; 1030-
1210 TWTh; BlegH 420) Peterson
Problems, principal methods, and
schools of philosophy; historical and
contemporary views.

**3001. GENERAL HISTORY OF
WESTERN PHILOSOPHY.** (090435) (5
cr; 0840-1015 TWTh; AmundH 120)
Hopkins
Greek philosophy, pre-socratics,
Socrates, Plato, Aristotle.

**3302. MORAL PROBLEMS OF
CONTEMPORARY SOCIETY.**
(589748) (5 cr; 0915-1055 TWTh;
FordH 120) Root
Selected problems of current interest.

3970. DIRECTED STUDIES. (085719)
(1-5 cr; prereq #, Δ, □) staff

**5760. SELECTED TOPICS IN
PHILOSOPHY: NATURAL LOGIC.**
(791496) (4 cr; prereq Phil 3201 or
5201 or #, 0915-1015 MTWThF;
FordH 150) Kac
Approaches to a precise account of
such notions as validity, consistency,
entailment and equivalence for a
natural language such as English.
Implications for philosophy,
linguistics, cognitive science, artificial
intelligence.

**5970. DIRECTED STUDIES AND
RESEARCH.** (185721) (1-5 cr; prereq
#, Δ, CLA approval) staff

**5990. DIRECTED STUDIES AND
RESEARCH.** (989486) (4 cr; prereq #,
Δ, CLA approval)

8777. THESIS CREDITS: MASTERS.
(488706) (1-16 cr [max 11 cr per
summer term])

8888. THESIS CREDITS: DOCTORAL.
(288707) (1-36 cr [max 11 cr per
summer term])

**8970. DIRECTED STUDY AND
RESEARCH.** (685724) (1-4 cr; prereq
passed written prelim exam for the
PhD in philosophy) staff

SECOND TERM

1001. INTRODUCTION TO LOGIC.
(286682) (5 cr; 0915-1015 MTWThF;
FordH 150) Hanson
See First Term.

1003. INTRODUCTION TO ETHICS.
(890436) (5 cr; 0915-1055 TWTh;
FordH 115) Mason
Problems that arise when human
beings attempt to think systematically
about conduct and value.

**3003. GENERAL HISTORY OF
WESTERN PHILOSOPHY.** (591497) (5
cr, 1145-1320 TWTh; FordH 160)
Gunderson
Modern Philosophy from Descartes
through Hume.

**3105. INTRODUCTION TO THE
THEORY OF KNOWLEDGE.** (391498)
(4 cr; prereq 1001 or #; 1030-1200
TWTh; FordH 150) Anderson
Theories and problems concerning
evidence, belief, and knowledge.

3305. MEDICAL ETHICS. (588521) (5
cr; 1030-1210 TWTh; FordH 130)
Dolan
Moral problems confronting
physicians, patients, and others
concerned with medical treatment,
research, and health care policy.
Withholding and withdrawing life-
sustaining treatment, proxy decision-
making, abortion, and cost contain-
ment in medicine. Analysis of
connections between individual
decision-making and institutional
policies.

3970. DIRECTED STUDIES. (086692)
(1-5 cr; prereq #, Δ, □) staff

**5970. DIRECTED STUDIES AND
RESEARCH.** (886693) (1-5 cr; prereq
#, Δ, CLA approval) staff

8777. THESIS CREDITS: MASTERS.
(088829) (1-16 cr [max 11 cr per
summer term])

8888. THESIS CREDITS: DOCTORAL.
(188831) (1-36 cr [max 11 cr per
summer term])

**8970. DIRECTED STUDY AND
RESEARCH.** (486695) (1-4 cr; prereq
passed written prelim exam for the
PhD in philosophy; #) staff

Physical Education (PE)

224 Cooke Hall. 625-1007
(School of Kinesiology and Leisure
Studies)
College of Education

Courses listed are for students
interested in taking physical activity
classes for elective credit.

All activity courses listed below are
high intensity (participation requiring
a high level of energy expenditure)
except those otherwise indicated. It is
therefore recommended that students
who have questions about their ability
to participate safely in the physical
activities involved in a course seek
advice from a physician.

All undergraduate, graduate, and
professional licensure courses for
physical education, adapted physical
education, and athletic coaching are
listed under KINESIOLOGY. (KIN).

FIRST TERM

R.1007. SWIMMING. (085574) (1 cr;
limited to 22 students; prereq
nonswimmer; 0915-1015 MTWTh;
CookeH 10)

Course for nonswimmers includes
aquatic breathing, floating, bobbing,
treading, finning, human stroke,
elementary backstroke, sidestroke,
front crawl.

R.1014. CONDITIONING. (1 cr; each
section limited to 40 students)
Sec 1, (690440) 0800-0900 MTWTh,
St. Paul Gym
Sec 2, (389749) 0915-1015 MTWTh,
Fieldhouse
Improvement of physical fitness
through running, circuit training, and
progressive exercises.

R.1015. WEIGHT TRAINING. (1 cr;
each section limited to 30 students)
Fundamentals including techniques,
theory, and individualized exercise
prescription.
Sec 1, (490441) 0915-1015 MTWTh,
St. Paul Gym
Sec 2, (988225) 1030-1130 MTWTh,
CookeH 5

R.1029. HANDBALL. (191759) (1 cr;
limited to 20 students; 0800-0900
MTWTh, URC)
Basic fundamentals of skills and shots;
rules and game strategy.

R.1036. RACQUETBALL. (591760) (1
cr; limited to 20 students; 0915-1015
MTWTh, URC)
Fundamentals of skills and shots; rules
and game strategy.

R.1037. SQUASH RACQUETS.
(391761) (1 cr; limited to 15; 0800-
0900 MTWTh, URC)
Fundamental strokes and rules with
game situations emphasized.

R.1038. TENNIS. (1 cr; each section
limited to 24 students)

COURSE DESCRIPTIONS

Fundamental strokes of service, forehand and backhand, drives and volley; court positions and strategy for singles and doubles; rules, terminology, and etiquette.
 Sec 1, (885575) 0800-0900 MTWTh, Fieldhouse, Tennis Courts
 Sec 2, (685576) 1030-1130 MTWTh, Fieldhouse, Tennis Courts

R.1048. BOWLING. (1 cr; moderate intensity; each section limited to 32 students)

For the beginning student. Fundamentals of the stance, approach, and delivery; scoring; bowling terminology, and etiquette.
 Sec 1, (986944) 0800-0900 MTWTh, CMU B55
 Sec 2, (285421) 0915-1015 MTWTh, CMU B55

R.1050. GOLF. (1 cr; moderate intensity; each section limited to 21 students)

Fundamentals; stance, and swing; etiquette and rules.
 Sec 1, (285578) 0915-1015 MTWTh, Golf Course
 Sec 2, (485580) 1030-1130 MTWTh, Golf Course

R.1074. VOLLEYBALL. (989245) (1 cr; limited to 36 students; 1030-1130 MTWTh; CookeH 325)

Fundamental skills and rules of volleyball; basic team play and strategy.

R.1107. SWIMMING. (185422) (1 cr; limited to 24 students; prereq ability to swim 100 yards; 1030-1130 MTWTh; CookeH 10)

Deep water skills, elementary back stroke, side stroke, front crawl, back crawl, elementary diving, and distance swimming.

SECOND TERM

R.1007. SWIMMING—July 22-August 18. (1 cr; prereq nonswimmer; each section limited to 22 students)
 See First Term.

Sec 1, (186408) 0800-0900 MTWThF, CookeH 10
 Sec 2, (789246) 1030-1130 MTWThF, CookeH 10

R.1014. CONDITIONING—July 22-August 18. (786945) (1 cr; limited to 40 students; 0800-0900 MTWThF; Fieldhouse)
 See First Term.

R.1015. WEIGHT TRAINING—July 22-August 18. (986409) (1 cr; limited to 30 students; 0915-1015 MTWThF; CookeH 5)
 See First Term.

R.1036. RACQUETBALL—July 22-August 18. (191762) (1 cr; limited to 20 students; 0915-1015 MTWThF, URC)
 See First Term.

R.1038. TENNIS—July 22-August 18. (1 cr; each section limited to 24 students)
 See First Term.

Sec 1, (286410) 0800-0900 MTWThF, Fieldhouse, Tennis Courts
 Sec 2, (186411) 0915-1015 MTWThF, Fieldhouse, Tennis Courts

R.1041. CYCLING—July 22-August 18. (789750) (1 cr; limited to 20 students; prereq supply own bicycle; 1300-1400 MTWThF; St. Paul Gym). Basic skills; physiological and mechanical principles; maintenance, safety, training.

R.1050. GOLF—July 22-August 18. (1 cr; moderate intensity; each section limited to 21 students)

Sec 1, (586946) 0915-1015 MTWThF, Golf Course
 Sec 2, (188224) 1030-1130 MTWThF, Golf Course
 See First Term.

R.1067. BASKETBALL—July 22-August 18. (589247) (1 cr; limited to 30 students; 0915-1015 MTWThF; Fieldhouse)

Fundamentals of offense and defense; elementary team play and game strategy.

R.1107. SWIMMING—July 22-August 18. (786301) (1 cr; limited to 24 students; prereq ability to swim 100 yards; 0915-1015 MTWThF; CookeH 10)

See First Term.

R.1138. TENNIS—July 22-August 18. (586302) (1 cr; limited to 24 students; prereq 1038 or equiv; 1300-1400 MTWThF; Fieldhouse, Tennis Courts)
 See First Term.

R.1205. SCUBA AND SKIN DIVING. (386303) (1 cr; limited to 18 students; prereq 1107 or equiv; 0800-1000 TTh; CookeH 15, 214) Whortonbury

Physical Medicine and Rehabilitation (PMed)

860 Mayo. 626-5961
 Medical School

FIRST TERM

5396. FIELD WORK EDUCATION IN OCCUPATIONAL THERAPY. (986877) (Cr ar; prereq regis OT; S-N only) Berkeland, Meyers

5397. FIELD WORK EDUCATION IN OCCUPATIONAL THERAPY. (586879) (Cr ar; prereq 5396; S-N only) Berkeland, Meyers

5398. FIELD WORK EDUCATION IN OCCUPATIONAL THERAPY. (587000) (1 cr; prereq regis OT; S-N only) Meyers

5410. ADULT REHABILITATION MEDICINE. (487703) (Cr ar; prereq regis med)

5414. PHYSICAL MEDICINE AND REHABILITATION FOR THE FAMILY PHYSICIAN. (985020) (Cr ar; prereq regis med)

5415. PRIVATE PRACTICE IN PHYSICAL MEDICINE AND REHABILITATION. (185176) (4.5-9 cr; prereq regis med)

5416. PHYSICAL MEDICINE AND REHABILITATION AT ST. PAUL RAMSEY. (985177) (Cr ar; prereq regis med)

5441. ADULT PHYSICAL MEDICINE AND REHABILITATION: HEALTH CARE PSYCHOLOGY INTERNS. (885205) (Cr ar; prereq #)

5817. SPECIAL TOPICS IN PHYSICAL THERAPY. (885351) (1-3 cr) DiFabio, staff

8103. CLINIC. (986880) (Cr ar; prereq regis PT) Ellingham

8130. SEMINAR: CURRENT LITERATURE IN PHYSICAL THERAPY. (787965) (1 cr) Scudder, DiFabio

8170. SPECIAL TOPICS IN PHYSICAL THERAPY. (986863) (1 cr; prereq #) DiFabio, staff

8185. PROBLEMS IN PHYSICAL THERAPY. (786864) (Cr ar; prereq regis PT) DiFabio, staff

8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (586865) (Cr ar; prereq 8192 or #) DiFabio, staff

8195. RESEARCH IN PHYSICAL THERAPY. (186867) (Cr ar; prereq #) DiFabio, staff

8200. PHYSICAL MEDICINE AND REHABILITATION SERVICE. (686873) (Cr and hrs ar) Awad, staff

8205. READINGS IN PHYSICAL MEDICINE AND REHABILITATION. (286875) (1-2 cr [max 2 cr]; 0900-0955 M) Dykstra

8206. CONFERENCE ON PHYSICAL MEDICINE AND REHABILITATION. (985132) (2 cr; 0800-0900 F) Dykstra

8207. BASIC AND APPLIED PHYSIATRY. (187677) (2 cr; 0800-0900 M) staff

R.8210. RESEARCH IN PHYSICAL MEDICINE. (085008) (ar cr; limited to 10 students)

R.8212. ELECTROMYOGRAPHY. (885009) (Cr and hrs ar; limited to 10 students; prereq #) Dykstra

8214. READINGS IN ELECTROMYOGRAPHY. (786976) (1 cr; max 3 cr; prereq #; 0900-1000 F) Dykstra

8220. SEMINAR IN PHYSICAL MEDICINE AND REHABILITATION. (785133) (Cr ar; 0800-0900 W) Dykstra

8777. THESIS CREDITS: MASTERS. (188778) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388780) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5255. CLINICAL EDUCATION IN PHYSICAL THERAPY. (987964) (Cr ar; regis PT) Ellingham
 Five weeks of supervised practice at affiliated hospitals.

5817. SPECIAL TOPICS IN PHYSICAL THERAPY. (685352) (1-3 cr) DiFabio

8103. CLINIC. (687151) (Cr ar; prereq regis PT) Ellingham

8130. SEMINAR: CURRENT LITERATURE IN PHYSICAL THERAPY. (187963) (1 cr) Scudder, DiFabio

8170. SPECIAL TOPICS IN PHYSICAL THERAPY. (487152) (1 cr; prereq #) DiFabio, staff

8185. PROBLEMS IN PHYSICAL THERAPY. (287153) (Cr ar; prereq regis PT) DiFabio, staff

8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (187154) (Cr ar; prereq 8192 or #) DiFabio, staff

8195. RESEARCH IN PHYSICAL THERAPY. (987155) (Cr ar; prereq #) DiFabio, staff

8777. THESIS CREDITS: MASTERS. (888945) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688946) (1-36 cr [max 11 cr per summer term])

Physics (PhyS)

148 Physics. 624-7375
 Institute of Technology

FIRST TERM

R.3970. DIRECTED STUDIES. (185024) (1-5 cr; prereq #, Δ; limited to 10 students)
 Independent directed study in areas arranged by the student and a faculty member.

R.5124. EXPERIMENTAL PROJECT. (487040) (Cr ar; prereq 5123, #; limited to 10 students)
 Research project in some aspect of contemporary physics. Project must be approved by faculty coordinator prior to registration.

R.5940. PHYSICS FOR HIGH SCHOOL TEACHERS: Experimental Foundations and Historical Perspectives—June 21-July 23. (486275) (5 cr; [no cr for physics grad students or grad minors in physics]; prereq general physics, #; may be

COURSE DESCRIPTIONS

repeated for credit; 8-10 lecture hours and 18 lab activity hours per week; qualified students may register for graduate credit at the University of Minnesota; limited to 10 students; 0800-1600 MTWThF; offered at Bakken Library) Kipnis
For teachers of physics and physical science. Historical approach is combined with investigative experimentation for an in-depth examination of a conceptual theme in physics and its experimental foundations and historical perspectives. Typical themes are kinematics and dynamics from Aristotle through Einstein; the nature of change; the nature of light; energy and thermodynamics; electricity, magnetism, and quantized fields; the structure of matter.

R.5970. DIRECTED STUDIES. (185193) (1-5 cr; prereq #, Δ; limited to 10 students)
See 3970.

R.5990. DIRECTED RESEARCH. (387662) (Cr ar; prereq 3rd yr, Δ; limited to 10 students)
Problems, experimental or theoretical, of special interest to students. Written reports.

R.8500. PLAN B PROJECT. (689272) (4 cr [no cr toward PhD]; prereq #; limited to 5 students; S-N only)
May be taken once to satisfy project requirement for Plan B master's program. May appear on master's program but does not count toward 20-credit minimum in major field. Project topic to be arranged between student and instructor. Written report required.

8777. THESIS CREDITS: MASTERS. (988712) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (788713) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

R.1041. INTRODUCTORY PHYSICS. (5 cr; each lab limited to 20 students; prereq high school algebra and plane geometry; lecture 0800-0900 MTWF; Phys 170)
Lecture, recitation, and lab sessions. Primarily for students interested in technical areas. Fundamental principles of physics in the context of the everyday world; the use of kinematics, dynamics, and conservation principles together with quantitative, and qualitative problem solving techniques to understand phenomena of mechanics, electromagnetism, and the structure of matter.

Lab 1, (391887) 0915-1130 F; rec 0800-0900 Th, Phys 143
Lab 2, (091889) 0915-1130 T; rec 0800-0900 Th, Phys 157
Lab 3, (191891) 0915-1130 W; rec 0800-0900 Th, Phys 236A

Lab 4, (891893) 0915-1130 Th; rec 0800-0900 Th, KoltH S136

R.1042. INTRODUCTORY PHYSICS. (5 cr; each lab limited to 20 students; prereq 1041, high school algebra and plane geometry; lecture 1030-1130 MTWF; Phys 33)
See 1041.

Lab 1, (691913) 0800-1015 W; rec 1030-1130 Th, LindH 315
Lab 2, (291915) 0800-1015 Th; rec 1030-1130 Th, LindH 320
Lab 3, (991917) 0800-1015 F; rec 1030-1130 Th, LindH 325

R.1251. GENERAL PHYSICS I. (4 cr; each lab limited to 20 students; prereq Math 1251 or ¶1251; lecture 0800-0900 MWF; Phys 133)
Lab 1, (291896) 0915-1130 W; rec 0800-0900 Th, LindH 303
Lab 2, (991898) 0915-1130 F; rec 0800-0900 Th, LindH 315
Lab 3, (491900) 0915-1130 Th; rec 0800-0900 Th, LindH 320

R.1252. GENERAL PHYSICS II. (4 cr; each lab limited to 20 students; prereq Math 1252 or ¶1252, Phys 1251; lecture 0915-1015 MWF; Phys 133)
Lab 1, (991903) 1030-1245 F; rec 0915-1015 Th, Phys 157
Lab 2, (591905) 1030-1245 Th; rec 00915-1015 W, Phys 143

R.1253. GENERAL PHYSICS III. (4 cr; each lab limited to 20 students; prereq Math 1261 or ¶1261, Phys 1252; lecture 1030-1130 MWF; Phys 170)
Lab 1, (091908) 0800-1015 W; rec 1030-1130 Th, Phys 143
Lab 2, (191910) 0800-1015 Th; rec 1030-1130 Th, Phys 157

SECOND TERM

R.3970. DIRECTED STUDIES. (085025) (1-5 cr; prereq #, Δ; limited to 10 students)
See First Term.

R.5124. EXPERIMENTAL PROJECT. (286276) (Cr ar; prereq 5123, #; limited to 10 students)
See First Term.

R.5970. DIRECTED STUDIES. (985194) (1-5 cr; prereq #, Δ; limited to 10 students)
See First Term.

R.5990. DIRECTED RESEARCH. (587661) (Cr ar; prereq 3rd yr, Δ; limited to 10 students)
See First Term.

R.8500. PLAN B PROJECT. (489273) (4 cr [no cr toward PhD]; prereq #; limited to 5 students; S-N only)
See First Term

8777. THESIS CREDITS: MASTERS. (088930) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688932) (1-36 cr [max 11 cr per summer term])

Physiology (Phsl)

6-255 Millard Hall. 625-5902
Medical School

FIRST TERM

5113. PROBLEMS IN PHYSIOLOGY. (886869) (Cr and hrs ar; prereq #) Staff
Topics assigned for laboratory study; conferences and readings.

5552. READINGS IN PHYSIOLOGY. (486874) (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.

5553. RESEARCH IN PHYSIOLOGY. (886872) (Cr and hrs ar) Staff

8113. PROBLEMS IN PHYSIOLOGY. (486874) (Cr and hrs ar; prereq #) Staff
Topics assigned for laboratory study; conferences and readings.

8202. READINGS IN PHYSIOLOGY. (786878) (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.

8203. RESEARCH IN PHYSIOLOGY. (186876) (Cr and hrs ar) Staff

8777. THESIS CREDITS: MASTERS. (288710) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188711) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5552. READINGS IN PHYSIOLOGY. (487569) (Cr and hrs ar) Staff
See First Term.

5553. RESEARCH IN PHYSIOLOGY. (887570) (Cr and hrs ar) Staff

8202. READINGS IN PHYSIOLOGY. (687571) (Cr and hrs ar) Staff
See First Term.

8203. RESEARCH IN PHYSIOLOGY. (487572) (Cr and hrs ar) Staff

8777. THESIS CREDITS: MASTERS. (788842) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188845) (1-36 cr [max 11 cr per summer term])

Plant Biology (PBio)

220 Biological Science, St. Paul. 625-1234
College of Biological Science
(See also Itasca Biology Program on page 40.)

FIRST TERM

R.5801. PLAINS AND BOREAL FLORA-June 15-July 20. (390903) (5

cr; limited to 20 students; prereq course in taxonomy; 0800-1700 WS; Itasca) Vanderpool
Survey of the summer flowering plants and ferns of the state with particular reference to the local flora. Identification by technical keys; important plants families; field recognition of common species; habitat preferences, collecting methods; literature; taxonomic methods.

5890. RESEARCH PROBLEMS. (186870) (1-5 cr per qtr; prereq Δ)
Individual research for undergraduates and graduates. (Taught at Itasca)

5970. DIRECTED STUDIES. (789229) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (989228) (Cr ar; prereq #, Δ) Staff
Laboratory or field investigation of selected areas of research.

8777. THESIS CREDITS: MASTERS. (288769) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088927) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (189227) (Cr ar; prereq #, Δ) Staff

SECOND TERM

5970. DIRECTED STUDIES. (989231) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (789232) (Cr ar; prereq #, Δ) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (488866) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188988) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (589233) (Cr ar; prereq #) Staff

Plant Breeding (PBr)

411 Borlaug Hall, St. Paul. 625-7773
(Agronomy and Plant Genetics)
College of Agriculture

FIRST TERM

8777. THESIS CREDITS: MASTERS. (588714) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388715) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (288934) (1-16 cr [max 11 cr per summer term])

COURSE DESCRIPTIONS

8888. THESIS CREDITS: DOCTORAL. (988936) (1-36 cr [max 11 cr per summer term])

Plant Pathology (PIPa)

495 Borlaug Hall, St. Paul. 625-8200
College of Agriculture

FIRST TERM

3090. RESEARCH IN PLANT PATHOLOGY. (285239) (Cr ar; prereq 1001 or equiv or #) Staff

R.5102. ECOLOGY OF FUNGI-July 1-19. (690275) (3 cr; limited to 20 students; prereq 5 credits botany; 0800-1700 MTh) Menge
Emphasis on ecological studies and identification of fungi. Lectures include topics on fungal symbioses, morphology, coevolution, and applicable ecological theory. Student teams will determine species richness in an aquatic, grassland, and forest habitat.

8090. ADVANCED PROCEDURES AND RESEARCH IN PLANT PATHOLOGY. (785293) (Cr ar) Staff
Special assignment in laboratory and field problems in pathological research.

8500. RESEARCH IN PLANT PATHOLOGY. (490276) (1-8 cr; S-N only) Staff
Laboratory or field research in selected areas of plant pathology.

8777. THESIS CREDITS: MASTERS. (188716) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088717) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

5000. PROFESSIONAL EXPERIENCE PROGRAM. (188215) (4 cr; prereq #; ar) Percich

5650. FIELD PLANT PATHOLOGY. (589572) (2 cr; prereq 5002 or #; 0900-1630 Th, BorH 491; A-F only) Staff
Plant disease in field situations; disease control strategies within the context of current cropping practices. Participation required in at least 6 of 8 field trips.

SECOND TERM

3090. RESEARCH IN PLANT PATHOLOGY. (685240) (Cr ar; prereq 1001 or equiv or #) Staff

8090. ADVANCED PROCEDURES AND RESEARCH IN PLANT PATHOLOGY. (886273) (Cr ar) Staff
See First Term.

8500. RESEARCH IN PLANT PATHOLOGY. (890274) (1-8 cr; S-N only) Staff
Laboratory or field research in selected areas of plant pathology.

8777. THESIS CREDITS: MASTERS. (388939) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (588941) (1-36 cr [max 11 cr per summer term])

Plant Physiology (PIPh)

220 Biological Sciences Center. 625-4222
Agriculture

FIRST TERM

8777. THESIS CREDITS: MASTERS. (888718) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688719) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (188943) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088944) (1-36 cr [max 11 cr per summer term])

Political Science (Pol)

1414 Social Sciences. 624-4144
College of Liberal Arts

FIRST TERM

1026. AMERICAN FOREIGN POLICY. (689644) (4 cr; 1030-1130 MTWThF; BlegH 145) Brown-Thompson
Institutions and processes that determine American foreign policy; major developments in U.S. foreign policy since World War II; contemporary issues of U.S. policy.

R.1061. INTRODUCTION TO POLITICAL THOUGHT. (791868) (4 cr; limited to 40 students; 0915-1015 MTWThF; BlegH 125) Disch
Major concepts, ideas, and arguments concerning topics such as liberty, justice, obligation, consent, authority, violence.

3070. DIRECTED FIELD STUDIES. (185209) (1-4 cr; prereq #, Δ; A-F only)

3080. INTERNSHIP. (385040) (4 cr [max 8 cr]; prereq Δ; S-N only)
Internship with government or community organizations, arranged by the department and awarded competitively.

3110H. HONORS WORK IN SELECTED FIELDS. (787724) (1-6 cr

[6 cr max]; open only to political science honors program majors; prereq 3109H)
Individual research and writing of departmental honors thesis.

R.3308. THE UNITED STATES CONGRESS. (591869) (4 cr; limited to 50 students; prereq 1001 or equiv or #; 0800-0900 MTWThF, BlegH 110) Smith
Internal organization, committee system, party leadership, norms, recruitment; legislative policy making; relationship with the president and bureaucracy; interest group, political party, and constituency influences on the congressional process.

R.3477. POLITICAL DEVELOPMENT. (991870) (4 cr; limited to 50 students; prereq 1054 or 3051 or #; 0800-0900 MTWThF; BlegH 135) Kindley
Political processes and problems associated with economic development processes; the political economy of underdevelopment and development; problems of state building and the development of political institutions.

R.3739. THE POLITICS OF ETHNIC COMMUNITIES. (489645) (4 cr; limited to 75 students; prereq 6 cr in social sciences; 1145-1245 MTWThF; BlegH 150) Nimtz
Cross-cultural study of politics of ethnic communities; emphasis on politics of black communities in the United States. Internal community politics and their local and national political systems.

3835. THE INTERNATIONAL SYSTEM. (289646) (4 cr; 0915-1015 MTWThF; BlegH 350) Erb
Structure of international system; balance of power, bi-polar and other international systems; theories of stability, change, conflict, and cooperation.

3970. DIRECTED STUDIES. (185234) (1-6 cr; prereq #, Δ, □)

R.5471. GOVERNMENT AND POLITICS OF THE FORMER SOVIET UNION. (791871) (4 cr; limited to 40 students; prereq 3051 or non political science grad or #; 1030-1130 MTWThF, BlegH 135) Davidheiser
Politics in the former Soviet Union, now the Commonwealth of Independent States. Course is composed of two parts: the evolution of the system- theories of revolution and their relation to Russia's experience of 1917; and the emergence and breakdown of the stable Soviet system of government-current attempts to re-establish political stability and to cope with the pressing problems facing the political system in the Commonwealth and in Russia more narrowly.

R.5710. SUMMER INSTITUTE FOR TEACHERS—QUESTIONS OF JUSTICE: TEACHING FOR AND ABOUT HUMAN RIGHTS—June 21-26. (092041) (3 cr; limited to 20

students; prereq § Elem 5101, SeEd 5153; 0900-1200 MTWThF; BuH 123) Avery, Sullivan

This is the first course devoted to human rights issues that is specifically designed for teachers. It will provide opportunities for teachers to explore the relationships between human rights issues and education within local and global contexts. In discussions with human rights advocates, teachers will examine the historical, political and legal dimensions of current human rights issues, and they will develop curricula for use in their classrooms. Meets with Elem 5101 and SeEd 5153.

8777. THESIS CREDITS: MASTERS. (088720) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (888721) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.1001. AMERICAN GOVERNMENT AND POLITICS. (591872) (5 cr; limited to 50 students; 0800-0930 MTWThF, BlegH 235) McGuire
Principles, organization, processes, functions of government, and the interplay of political forces in the United States. Attention throughout to current issues.

1025. WORLD POLITICS. (586977) (4 cr; 1030-1130 MTWThF; BlegH 145) Duvall
Contemporary international relations; forms of state interaction; problem of conflict and cooperation.

3051. INTRODUCTION TO POLITICAL ANALYSIS. (189647) (5 cr; 0830-1015 MTWThF; BlegH 215) Saco
Formation of political communities, political participation, policymaking, compliance, legitimacy, political development, types of political systems. Empirical and normative problems. Comparisons among major countries.

3070. DIRECTED FIELD STUDIES. (285211) (1-4 cr; prereq #, Δ)

3080. INTERNSHIP. (185050) (4 cr [max 8 cr]; prereq Δ; S-N only)
See First Term.

3110H. HONORS WORK IN SELECTED FIELDS. (386978) (1-6 cr [6 cr max]; open only to political science honors program majors; prereq 3109H)
See First Term.

R.3306. THE AMERICAN PRESIDENCY. (391873) (4 cr; limited to 50 students; prereq 1001 or equiv or #; 1030-1130 MTWThF, BlegH 230) Binder
The office and individual presidents; organizational characteristics of the Executive Office and individual qualities of decision making;

COURSE DESCRIPTIONS

relationships with Congress, the bureaucracy, parties, interest groups, media, and public opinion.

R. 3659. AMERICAN POLITICAL THOUGHT. (891876) (4 cr; limited to 40 students; 0915-1015 MTWThF; BlegH 255) Gerencser
From colonial times to present; Puritanism; Revolution; Constitution; utopianism; sectionalism and pluralism; anarchist, socialist, populist, and syndicalist thought; social Darwinism; conservatism; political thought in law and literature.

R. 3766. POLITICAL PSYCHOLOGY. (491878) (4 cr; limited to 50 students; prereq 1001 or equiv or #; 0915-1015 MTWThF, BlegH 420) Sullivan
Political learning; processes of political perception and information processing; subjectivity and political ideology; personality and political behavior; symbols and politics.

R.3836. FOREIGN POLICY DECISION MAKING. (189650) (4 cr; ¶ 5876; limited to 60 students; 1145-1245 MTWThF; BlegH 120) Nair
Theories and examples of foreign policy decision-making processes, including policy formation and implementation. Examples drawn from various foreign policy issues.

5737. AMERICAN POLITICAL PARTIES. (691880) (4 cr; prereq 1001 or #; 1145-1245 MTWThF, BlegH 225) Backstrom
The American two-party system; party influence in legislatures and executives; decline of parties and their future.

8777. THESIS CREDITS: MASTERS. (488947) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288948) (1-36 cr [max 11 cr per summer term])

Portuguese (Port)

34 Folwell Hall. 625-5858
(Spanish and Portuguese)
College of Liberal Arts

FIRST TERM

5970. DIRECTED READINGS. (485546) (1-5 cr per qtr [15 cr max]; prereq #, Δ, CLA approval) Staff
Guided individual reading or study.

5990. DIRECTED RESEARCH. (189574) (1-5 cr per qtr; prereq #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (688722) (1-16 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSE

(Register once in Term I)
A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's

sequence in language. Students must enroll in all three courses and may not enroll in other summer courses. Prospective students should talk to an adviser before registering for intensive language courses.

R.1001-1002-1003. BEGINNING PORTUGUESE. (15 cr for both terms; limited to 23 students; 0800-1130 MTWThF; FolH 218)
Emphasis on speaking and understanding Portuguese; pronunciation (Brazilian speech stressed); gradual introduction to writing and reading skills; basic grammar, cultural aspects of language, and civilizations of Portuguese-speaking world.

R.1001, Sec 5, (086241) June 15-July 8, 5 cr
R.1002, Sec 5, (886242) July 9-August 2, 5 cr
R.1003, Sec 5, (686243) August 3-25, 5 cr

SECOND TERM

R.5970. DIRECTED READINGS. (285547) (1-5 cr per qtr [15 cr max]; prereq #, Δ, CLA approval) Staff
See First Term.

5990. DIRECTED RESEARCH. (389573) (1-5 cr per qtr; prereq #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (188949) (1-16 cr [max 11 cr per summer term])

Prosthodontics (Pros)

9-176 Moos Tower. 625-6969
School of Dentistry

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

5100. ART FOR THE PROSTHODONTIST. (389234) (1 cr; prereq grad stu in prosthodontics; S-N only)

For Prosthodontic residents interested in learning basic principles of art as related to prosthodontics. Understanding color concepts, manipulating light and its effect on color, physical principles of color theory, and practical application using oil painting in still life settings.

5500. EVALUATION IN PROSTHODONTICS. (590950) (1 cr; S-N only)

8006. ADVANCED CLINICAL PROSTHODONTICS II. (586445) (Cr ar [may be repeated for cr]; prereq #) Experience in prosthodontic treatment of patients having systemic complications.

8034. ADVANCED CLINICAL MAXILLOFACIAL PROSTHETICS. (386446) (Cr ar; prereq 8030, 8032, #) Factors involved in diagnosis and organization of a treatment plan for

the maxillofacial patient, and practical experience in associated clinical, and laboratory procedures.

Psychology (Psy)

N-218 Elliott Hall. 625-4042
College of Liberal Arts

FIRST TERM

1001. INTRODUCTION TO PSYCHOLOGY. (585912) (5 cr; 0800-1000 MTWThF; NichH 45)
Introduction to study of human behavior. Prerequisite for all advanced courses in psychology.

R.1004. INTRODUCTORY LABORATORY PSYCHOLOGY.

(4 cr; each section limited to 20 students; 1004-1005†; prereq soph, 1001 or ¶ 1001)
Experiments illustrating contemporary subject matter such as sensory psychology, psychophysics, perception, motivation, verbal behavior, animal and human learning, problem solving, and psychological measurement.

Sec 1, (385913) 0915-1215 MF, 0915-1115 W, EltH 150

Sec 2, (185914) 0915-1215 MF, 0915-1115 W, EltH 160

Sec 3, (085915) 1300-1600 MF, 1300-1500 W, EltH 150

Sec 4, (286990) 1300-1600 MF, 1300-1500 W, EltH 160

3011. INTRODUCTION TO PSYCHOLOGY OF LEARNING.

(885916) (4 cr; prereq 1001; 1145-1245 MTWThF; EltH N119) Peterson
Basic methods in study of learning. Fundamental concepts and principles governing the learning process.

3051. INTRODUCTION TO COGNITIVE PSYCHOLOGY.

(886290) (4 cr; prereq 1001; 1030-1130 MTWThF; EltH N119)
Discussion of the basic research problems and theoretical concepts in the study of cognitive factors in perception and memory.

3061. INTRODUCTION TO PHYSIOLOGICAL PSYCHOLOGY.

(989973) (4 cr; §5061; prereq 1005 or Biol 1009 or #; 1300-1400 MTWThF, EltH N119) Chapman
Neural mechanisms of motivation, emotion, sleep-wakefulness cycle, learning, and communication in animals and humans.

3101. INTRODUCTION TO PERSONALITY. (789389) (4 cr, §5101; prereq 1001; 0915-1015 MTWThF; WullH 230)

Concepts and issues in personality, personality theory, personality research, and personality assessment.

3604. INTRODUCTION TO ABNORMAL PSYCHOLOGY.

(885401) (4 cr, §5604H; prereq 1001; 0800-0900 MTWThF; WullH 230)
Surveys the field of abnormal psychology. Etiologies of behavioral disorders; available treatment.

3617. INTRODUCTION TO CLINICAL PSYCHOLOGY. (685402) (4 cr; prereq 3604 or 5604H, 3801; 1145-1245 MTWThF; WullH 130) Grove

Survey of historical developments and contemporary issues in clinical psychology. Focuses upon relevant research and clinical trends in psychological assessment methods and various prevention and intervention strategies.

3801. INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS.

(588244) (4 cr; prereq 1001; 0915-1015 MTWThF; EltH N119)
Quantification in research problems in psychology. Descriptive and inferential statistics, hypothesis testing, nonparametric statistics. Examples from various areas in psychology.

3970. DIRECTED STUDIES. (188353) (1-8 cr; prereq #, Δ, □)

3990. DIRECTED RESEARCH. (988354) (1-8 cr; prereq #, Δ, □)

R.5205. APPLIED SOCIAL PSYCHOLOGY.

(188358) (4 cr; limited to 20 students; prereq 3201 or grad student or #; 1030-1130 MTWThF; EltH 225) Gonzales
Overview of field. Applications of social psychology research and theory to the criminal justice system, media, behavioral medicine, desegregation, institutions, and energy conservation programs.

8519. PRACTICUM IN REHABILITATION COUNSELING. (685917) (3 cr; prereq 8503, #; hrs ar) Athelstan
Counseling experience with physically and emotionally disabled clients in approved public and private rehabilitation agencies.

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (485918) (1-12 cr; prereq #; hrs ar)

8620. PRACTICUM IN CLINICAL PSYCHOLOGY. (285919) (1-6 cr; prereq #; hrs ar; S-N only)
Field experience in professional work in clinical settings.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (685920) (2-4 cr; prereq PhD candidate in clinical psychology program and consent of director of clinical psychology training program; hr ar)

8777. THESIS CREDITS: MASTERS. (488723) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288724) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (688400) (prereq #; 1-6 cr). Staff

COURSE DESCRIPTIONS

FIRST AND SECOND TERMS; TEN WEEK COURSE

(Register once in Term I)

R.3902. MAJOR PROJECT IN PSYCHOLOGY. (786332) (4 cr; limited to 25 students; prereq 1005, 3801, jr or sr psychology major; 1315-1500 Th; Elt N227)

SECOND TERM

1001. INTRODUCTION TO PSYCHOLOGY. (486700) (5 cr; 0800-1000 MTWThF; AndH 210)
See First Term.

R.1005. INTRODUCTORY LABORATORY PSYCHOLOGY. (4 cr; each section limited to 20 students; 1004-1005†; prereq soph, 1004)

See 1004 First Term.

Sec 1, (186702) 0915-1215 MF, 0915-1115 W, EltH 50

Sec 2, (986703) 0915-1215 MF, 0915-1115 W, EltH 60

Sec 3, (786704) 1300-1600 MF, 1300-1500 W, EltH 60

R. 3201. INTRODUCTION TO SOCIAL PSYCHOLOGY. (789974) (4 cr; limited to 60 students; prereq 1001; 1030-1130 MTWThF; EltH N119) Fleming
Theories and research in social psychology. Effects upon attitudes and behavior, situational variables, and group membership.

R.3607. SURVEY OF CLINICAL INTERVENTION METHODS. (289274) (4 cr; limited to 30 students; prereq 3604 or 5604; 1145-1245 MTWThF, WullH 130) Staff
Introduction to therapeutic procedures for dealing with abnormal behavior in children and adults. Focuses on the theory and philosophy underlying the particular schools of therapy rather than emphasizing specific methods of behavior change.

3801. INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS. (686291) (4 cr; prereq 1001 or equiv; 1015-1155 MTW; WullH 230)
Quantification in research problems in psychology. Descriptive and inferential statistics, hypothesis testing, nonparametric statistics. Examples from various areas in psychology.

3970. DIRECTED STUDIES. (788355) (1-8 cr; prereq #, Δ, □)

3990. DIRECTED RESEARCH. (588356) (1-8 cr; prereq #, Δ, □)

R.5011. THEORIES OF LEARNING AND COGNITION. (891456) (4 cr; limited to 20 students; prereq 3011 or #; 1030-1130 MTWThF; EltH N227) Peterson
Major theories of learning and contemporary theories of information processing and cognition.

5054. PSYCHOLOGY OF LANGUAGE. (189770) (4 cr; prereq 3011,

except for students in honors sequence and grad students; 1145-1245 MTWThF; EltH N227) Fletcher
Theories and experimental evidence in past and present conceptions of psychology of language.

5202. ATTITUDES AND SOCIAL BEHAVIOR. (388522) (4 cr; prereq 3201 or #; 1145-1245 MTWThF; EltH N119)

Survey of attitude theory, measurement, and attitude change research in social psychology. Focus on structure, function, and formation of attitudes; relationship between attitudes and various social behaviors; attitude change.

8519. PRACTICUM IN REHABILITATION COUNSELING. (386706) (3 cr; prereq 8503, #; hrs ar) Athelstan
See First Term.

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (886709) (1-12 cr; prereq #; hrs ar)

8620. PRACTICUM IN CLINICAL PSYCHOLOGY. (086711) (1-6 cr; prereq #; hrs ar; S-N only)
See First Term.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (886712) (2-4 cr; prereq PhD candidate in clinical psychology program and consent of director of clinical psychology training program; hrs ar)

8777. THESIS CREDITS: MASTERS. (288951) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988953) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (988399) (1-6 cr; prereq #) Staff

Public Affairs (PA)

230 Humphrey Center. 625-9505
Humphrey Institute of Public Affairs

FIRST TERM

8910. INDEPENDENT STUDY. (286245) (Cr ar; prereq #)
Individual reading or research project.

SECOND TERM

8910. INDEPENDENT STUDY. (986247) (Cr ar; prereq #)
See First Term.

SPECIAL TERM: AUGUST 16-SEPTEMBER 17

Econ 3101. MICROECONOMIC THEORY. (886614) (4 cr; \$3105; limited to 45 students; prereq Econ 1101, 1102, 1 qtr calculus, Humphrey Institute Students only, or equiv; 0915-1015 MTWThF, HHHctr 30) Kudrle
Microeconomics with a public policy emphasis. For incoming graduate students in public affairs. Course is a

prerequisite to the school's core sequence in policy analysis.

PA 3902. QUANT START. (792020) (2 cr; prereq public affairs or planning maj, or Δ; 1145-1345 MTWThF; HHHctr 25; S-N only) Toutkoushian
The goal of Quant Start is to prepare students to better understand the materials to be presented in the core curriculum of quantitative analysis (Quantitative Methods I and II). The course is designed primarily for students who either: 1) have had virtually no exposure to statistical analysis, or 2) have not recently had a course in statistics and would like an opportunity to review this material. The course will review relevant mathematical functions, discuss common research designs, and introduce students to methods of summarizing and analyzing data.

Public Health (PubH)

A302 Mayo. 624-6669
School of Public Health

FIRST TERM

R.3001. PERSONAL AND COMMUNITY HEALTH. (487068) (3 cr, \$3004, 5022, 5023, GC 3114; limited to 150 students; 1030-1245 MWF; MoosT 2650) Rothenberger
Fundamental principles of health conservation and disease prevention. Meets with 3003, 3004, 5022, 5023.

R.3003. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE. (786962) (2 cr, \$3004, 5003, 5023; limited to 150 students; 1030-1245 TTh; MoosT 2650) Rothenberger
Lecture, discussion, and readings on the scientific, sociocultural, and attitudinal aspects of alcohol and other drug abuse problems. Emphasis on incidence, prevalence, high risk populations, prevention, and intervention. Meets with 3001, 3004, 5003, 5023.

R.3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH. (287069) (5 cr, \$3001, 3003, 5003, 5022, 5023, GC 3114; limited to 186 students; 1030-1245 MTWThF; MoosT 2650) Rothenberger
Introduction to scientific, sociocultural, and attitudinal aspects of communicable and degenerative diseases, environmental and occupational health hazards, alcohol and drug problems; emphasis on role of education in health conservation, disease control, and drug abuse. Meets with 3001, 3003, 5003, 5022, 5023.

R.3034. TOPICS IN ALCOHOL AND DRUG PROBLEMS. (188417) (cr ar; limited to 10 students; prereq #) Staff
Selected readings in alcohol and drug use and problems, and evaluation of student's mastery of the assigned study.

R.5003. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE.

(188661) (2 cr; \$3003, 3004, 5023; limited to 25 students; 1030-1245 TTh; MoosT 2650) Rothenberger
See 3003. Meets with 3001, 3003, 3004, 5022, 5023.

5004. FIELD INSTRUCTION IN PUBLIC HEALTH. (885026) (Cr ar; prereq #)
Generalized, function-oriented or discipline-oriented community experience under academic and professional supervision. Emphasis on application of acquired knowledge and skills relevant to health issues and problems.

5005. TOPICS IN PUBLIC HEALTH. (687070) (Cr ar; prereq advance proposal, #) Staff
Individualized, directed instruction. Selected readings in public health with discussion based on these readings.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (487071) (Cr ar; prereq #) Staff
Individualized, directed instruction. Selected readings in interdisciplinary studies with discussion based on these readings.

R.5022. PERSONAL AND COMMUNITY HEALTH. (988659) (3 cr, \$3001, 3004, 5023, GC 3114; limited to 25 students; 1030-1245 MWF; MoosT 2650) Rothenberger
See 3001. Meets with 3001, 3003, 3004, 5003, 5023.

R.5023. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH. (288660) (5 cr, \$3001, 3003, 3004, 5003, 5022, GC 3114; limited to 25 students; 1030-1245 MTWThF; MoosT 2650) Rothenberger
See 3004. Meets with 3001, 3003, 3004, 5003, 5022.

5044. TOPICS IN ALCOHOL AND DRUG PROBLEMS. (190068) (1-4 cr; prereq advanced proposal, #) Staff
Individualized, directed instruction. Selected readings in alcohol and drug problems with discussion based on these readings.

5084. INTERNSHIP IN HEALTH EDUCATION PRACTICE I. (385426) (Cr ar; prereq health educ maj and community health educ maj or #; S-N only) Staff
Supervised health education internship in a health or public health setting under academic and professional supervision. Emphasis on application of acquired health education knowledge and skills to relevant health issues and problems.

5085. INTERNSHIP IN HEALTH EDUCATION PRACTICE II. (185427) (Cr ar; prereq health educ maj and community health educ maj or #; S-N only) Staff
See 5084.

5090. RESEARCH TOPICS IN HEALTH EDUCATION. (487684) (2-8 cr; prereq health education maj and community health educ maj or #) Staff

COURSE DESCRIPTIONS

Scholarly review of health education research and experience in a selected area for a Plan B project.

5096. TOPICS: RESEARCH. (287685) (Cr ar; prereq health education maj and community health educ maj or #) Staff
Original research in or secondary analysis of data sets related to health education.

5097. TOPICS: SELECTED READINGS. (187686) (Cr ar; prereq health science grad student) Staff
Study of a topic in health education not covered in available courses.

5150. TOPICS: ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (Cr ar; prereq #)
Sec 1, (387077) Staff
Sec 2, (089933) McGovern
Sec 3, (889934) Olson

5154. PRACTICUM IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (186294) (1-6 cr; prereq env health maj; S-N only) Staff
Assignments to work with organizations with environmental health concerns under the joint supervision of a faculty adviser and staff of the organization.

5155. ISSUES IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH-June 21-25. (789411) (2 cr; public health or grad student or #; 0800-0945 MTWThF; MoosT 2580) Olson
The field, current issues, and principles and methods of environmental and occupational health protection. Independent field visits to observe, review, and analyze environmental health programs is required.

5197. TOPICS: INJURY PREVENTION IN THE WORKPLACE, COMMUNITY, AND HOME. (489936) (1-3 cr; \$5597; prereq #) Gerberich
Selected projects: Students pursue projects relevant to injury problems.

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (085087) (Cr ar; prereq VPH or Epi major or #) Staff
Research in the relationship of animal health to human health.

R. 5330. EPIDEMIOLOGY I. (388343) (4 cr; limited to 40 students; prereq PubH Pharmacy, Med School, School of Nursing, Dentistry, Epi Grad, Biostatistics Grad, Env Hlth Grad or #; lec 1200-1355 MWF; lab 1410-1550 MW; MoosT 2530)Luepker, Sellers
Basic epidemiologic principles applicable to infectious and noninfectious disease; host-agent-environment complex; factors underlying spread of infectious disease; laboratory applications of statistical and epidemiologic methods.

R.5391. INTRODUCTION TO BEHAVIORAL EPIDEMIOLOGY. (188658) (3 cr; limited to 20 students; PubH, Pharmacy, Med School, School of Nsg, Dentistry, Epi Grad,

Biostatistics Grad, Env Hlth Grad or #; 0915-1200 TTh; MoosT 2520) Pirie
Theoretical measurement and research issues in behavioral epidemiology. Lifespan patterns in the development, change, and maintenance of behaviors related to major chronic diseases. Examines risk-related behaviors from an epidemiological perspective using the concepts of prevalence, incidence, risk, and trends.

R. 5450. BIOSTATISTICS I. (189266) (4 cr; \$5414; limited to 45 students; \$5414, prereq Math 1111 or 1201 [college algebra];0830-1000 MTWThF; Mayo D326) Kjelsberg
Descriptive statistics; Gaussian probability models; point and interval estimation for means and proportions; hypothesis testing, including t-tests and chi-square tests; regression and correlation techniques; one way analysis of variance; applications in the health sciences using output from statistical packages.

5470. TOPICS IN BIOSTATISTICS. (187073) (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

5510. RESEARCH METHODOLOGY IN PUBLIC HEALTH NURSING. (1-3 cr; prereq #; S-N only) Staff
Guidance in development of study design, implementation, and analysis.
Sec 1, (586963) Aroskar
Sec 2, (386964) Froberg
Sec 3, (186965) McGovern
Sec 4, (086966) Olson
Sec 5, (886967) Ostwald
Sec 6, (686968) Spradley

5530. PUBLIC HEALTH NURSING PRACTICUM. (185086) (1-4 cr; prereq #; hr ar; S-N only) Staff
Guided application of education and/or management concepts and theories to the delivery of indirect public health nursing services in community-based settings.

5531. PUBLIC HEALTH NURSING PRACTICUM. (289985) (1-4 cr; prereq #; S-N only) Staff

5575. TOPICS: PUBLIC HEALTH NURSING. (287086) (Cr ar; prereq #) Staff
Individualized learning experiences arranged with Public Health Nursing faculty.

5614. FIELD EXPERIENCE IN MATERNAL AND CHILD HEALTH. (Cr ar; prereq MCH grad student; S-N only)
Field experiences are selected by the student to meet career goals.
Sec 1, (087082) Alexander
Sec 2, (691457) Himes
Sec 3, (491458) Leland
Sec 4, (291459) Patterson
Sec 5, (691460) Story
Sec 6, (491461) ten Bense

5648. TOPICS IN MATERNAL AND CHILD HEALTH. (cr ar; prereq #)
New course offerings, selected readings or individualized directed instruction.

Sec 1, Adolescent Health Topics: Secondary Data Analysis. (189938) 3 cr, prereq 5330, 5625, 5414 or 5450, 5806, 5621 or equivalent, #, public health students only, 0900-1200 TTh, Mayo A269, Leland

Sec 2, Perinatal Topics: Secondary Data Analysis. (190109) 3 cr, prereq 5330, 5625, 5414, or 5450, 5806, 5621 or equivalent, #, public health students only, 0900-1200 TTh, Mayo A269, Alexander
Sec 3, (190796) Alexander
Sec 4, (990797) Himes
Sec 5, (790798) Leland
Sec 6, (590799) Patterson
Sec 7, (290800) Story
Sec 8, (190801) ten Bense

5649. MATERNAL AND CHILD HEALTH RESEARCH. (Cr ar; prereq #; S-N only) Staff
Selected readings in maternal and child health with discussion based on these readings.
Sec 1, (887083) Alexander
Sec 2, (787707) Himes
Sec 3, (585473) Leland
Sec 4, (385474) Patterson
Sec 5, (185475) Story
Sec 6, (088247) ten Bense

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (687084) (1-12 cr; prereq student in public health administration or #; S-N only)
Assignment to State Health Department or other health agency for supervised work on a project of limited scope. Preparation of a formal report.

5704. FIELD EXPERIENCE: PUBLIC HEALTH ADMINISTRATION. (1-12 cr; prereq student in the public health administration or #; S-N only) Staff
Supervised field experience at a management level in selected community or public health agencies and institutions.
Sec 1, (487085) Block
Sec 2, (585506) Dornblaser
Sec 3, (385507) Gordon
Sec 4, (185508) Johnson
Sec 5, (085509) Litman
Sec 6, (385510) Resnick
Sec 7, (185511) Spradley
Sec 8, (085512) Veninga
Sec 9, (885513) Weckwerth
Sec 10, (685514) Staff

5707. INDEPENDENT STUDY: PUBLIC HEALTH ADMINISTRATION. (1-12 cr; prereq public health administration student or #; S-N only)
Independent study, under tutorial guidance, of selected problems and current issues in public health administration.
Sec 1, (985082) Block
Sec 2, (089771) Spradley
Sec 3, (189929) Veninga
Sec 4, (589930) Staff

5723. ADMINISTRATIVE RESIDENCY. (688039) (Cr ar; prereq public health administration student or #; S-N only)
Ten months of field work in approved health care planning or operating organization, rotation through

departments, solution of management problems, special projects. Preparation of thesis and formal reports.

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (785083) (Cr ar; prereq student in public health administration or #) Staff
Selected readings with discussion based on these readings.

5758. STRATEGIC FINANCIAL PLANNING IN HEALTH CARE ORGANIZATIONS-June 21-July 9. (385085) (4 cr; prereq 5757; MHA or PHA stu; 1700-2200 TWTh; MoosT 2520) Oszustowicz
Case studies and readings involving review and analysis of actual hospital financial statements, third-party payer cost reports, and other financial documents. Students apply key financial ratios to financial statement analysis to test their ability to apply course material presented in the winter and spring quarters and to become familiar with basic financial documents.

5770. TOPICS: HOSPITAL AND HEALTH CARE ADMINISTRATION. (2 cr; prereq hospital administration student or #) Weckwerth, staff
Selected readings in hospital and health care with discussion based on these readings.
Sec 1, June 21-July 9. (285080) 1300-1700 TTh, MoosT 2520, Weckwerth, staff
Sec 2, (888170) ar

5774. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE AMBULATORY CARE FACILITY-July 12-23. (288187) (15 cr; prereq 5773; 0800-1700 MTWThF) Weckwerth, staff
A 12-month program of on-campus and independent study that includes periodic seminars and monthly sessions with clinical preceptors. Change theory, ethics, epidemiology, prepaid systems, legal aspects, planning.

5776. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE HEALTH CARE FACILITY-July 12-23. (185081) (15 cr; prereq 5775; 0800-1700 MTWThF) Weckwerth, staff
A 12-month program consisting of an on-campus residential session and off-campus independent study that includes seminars and monthly classes under program preceptors. Board of trustees, medical staff, nursing, hospital law, medical records, planning, community health systems, continuing health education, change theory.

5779. MANAGING MULTIPLE FORCES: INTERNAL AND EXTERNAL ASPECTS OF PATIENT CARE ADMINISTRATION-July 12-23. (387080) (15 cr; prereq present employment as administrator of patient care [director of nursing or equivalent], 5778, #; A/F only; 0800-1700 MTWThF) Madden, staff

COURSE DESCRIPTIONS

A 12-month program of an on-campus and independent study which begins with a two-week introductory residential session. Seminars on planning, organizing and staffing, directing and controlling are scheduled during initial phase of course. Students return to campus the following summer to share and demonstrate their research projects.

5786. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN MENTAL HEALTH RELATED ORGANIZATIONS—July 12-23.

(985115) (15 cr; prereq 5785; 0800-1700 MTWThF) Weckwerth, staff
A 12-month program beginning with an on-campus residential session (2 weeks) and involving off-campus independent study that includes periodic seminars and monthly dialogue with program preceptors. Governance, legal aspects, public education and information, evaluation of mental health programs, prevention and primary treatment in mental health, current trends and concepts, public relations and the legislative process.

R.5903. NUTRITION ASSESSMENT—June 21-25. (191155) (2 cr; limited to 25 students; 0800-1000 MTWThF, Mayo A367) Himes

Methods used to assess nutritional status of populations and individuals with emphasis on anthropometric methods.

5906. FIELD EXPERIENCE: PUBLIC HEALTH NUTRITION. (889268) (1-8 cr; prereq public health nutrition maj; S-N only) Krinke

Placement in an approved agency with opportunity for experience in nutritional aspects of public health programs.

5909. TOPICS IN PUBLIC HEALTH NUTRITION. (1-12 cr; prereq public health nutrition student or #)

Independent study in research topic related to public health nutrition.
Sec 1, (488401) Brown
Sec 2, (288402) Buzzard
Sec 3, (188403) Himes
Sec 4, (988404) Krinke
Sec 5, (885561) Kushi
Sec 6, (685562) Splett
Sec 7, (988581) Story
Sec 8, (589975) Staff

5933. NUTRITION: HEALTH/DISEASE RELATIONSHIPS—June 21-July 9. (986376) (3 cr; prereq FScN 5622 or MdBc 5201 or equiv and PubH 5330 or equiv, or #; 1000-1145 MTWThF; Mayo A270) Kushi

Critical analysis of issues in nutrition and public health through investigation of biological and epidemiological bases for public health dietary recommendations. The relationship of nutrition to heart disease, cancer, hypertension, obesity, and other conditions.

R.5934. ADMINISTRATIVE SKILL BUILDING—June 21-July 2. (291462) (3 cr; limited to 25 students; Mayo A367) Splett

For nutrition and other students interested in administration and management. Assessment of the process that leads to administrative effectiveness. Understanding and application of planning, financial management, marketing, networking, grant writing, and decision making skills.

8150. RESEARCH: ENVIRONMENTAL AND OCCUPATIONAL HEALTH.

(187078) (1-6 cr; prereq #; S-N only) Staff
Opportunities for qualified students to pursue research in the importance of environmental stresses on human health.

8191. RESEARCH: INJURY PREVENTION IN THE WORKPLACE, COMMUNITY, AND HOME.

(289937) (3-6 cr; prereq #) Gerberich

8330. RESEARCH: IN EPIDEMIOLOGY. (087079) (1-8 cr; prereq epidemiology maj) Staff

Opportunities offered by the School of Public Health and various cooperating organizations for qualified students to pursue research work.

8332. READINGS EPIDEMIOLOGY. (188529) (1-4 cr; prereq Epi major and #) Staff

Readings in current research studies in epidemiology.

8400. SEMINAR IN BIOSTATISTICS. (987074) (Cr ar; prereq biostat maj; or #) Staff

8449. TOPICS IN BIOSTATISTICS. (787075) (Cr ar; prereq 5450, #) Staff

Studies in special topics for advanced students.

8450. RESEARCH IN BIOSTATISTICS. (587076) (Cr ar) Staff

Opportunities for qualified students to pursue research work.

8763. EXTERNAL FORCES AFFECTING HEALTH SERVICES DELIVERY.

(486969) (3 cr; prereq PhD students in hospital administration or health services research and policy or #; A-F only) Weckwerth
Development of concepts, models, and principles of financing, social policy making, organizing, and human resource development for health services delivery, including written papers, oral presentations, and cross examination.

8764. RESEARCH APPLICATIONS TO HEALTH SERVICES DELIVERY.

(886970) (3 cr; prereq 8763; S-N only) Weckwerth
Tutorial guidance and supervised course development covering research design, application, analysis, and presentation in health services delivery.

8777. THESIS CREDITS: MASTERS. (188725) (1-16 cr [max 11 cr per summer term])

8782. RESEARCH PRACTICUM. (3 cr; prereq PhD student in hospital

administration or health services research and policy or #) Litman, Weckwerth, Staff

Field experience in health care research. Supervised independent and team research on selected topics and problems in the field of health care. Sec 1, (785214) Litman, Weckwerth Sec 2, (686971) Weckwerth, Litman

R.8796. TOPICS IN HEALTH ECONOMICS—June 21-July 9.

(187081) (3 cr; limited to 35 students; prereq hospital administration student or #; 0800-1200 MWF; MoosT 2520) Dahl
General principles of health economics applied to current issues in health. Implications for health policy derived and discussed.

8888. THESIS CREDITS: DOCTORAL. (988726) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register Once in Term I)

5746. CLERKSHIP. (585084) (3 cr for 10 wks; prereq 5744, hospital administration student) Miller, staff
Survey and solution of management problem within a local health services organization and preparation of formal report.

SECOND TERM

R.3034. TOPICS IN ALCOHOL AND DRUG PROBLEMS. (988418) (cr ar; limited to 10 students; prereq #) Staff
See First Term.

5004. FIELD INSTRUCTION IN PUBLIC HEALTH. (685027) (Cr ar; prereq #) Staff
See First Term.

R.5005. TOPICS IN PUBLIC HEALTH. (187087) (Cr ar; prereq advanced proposal and #; limited to 20 students) Staff
See First Term.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (987088) (Cr ar; prereq #) Staff
See First Term.

5084. INTERNSHIP IN HEALTH EDUCATION PRACTICE I. (085428) (Cr ar; prereq health educ maj and community health educ maj or #; S-N only) Staff
See First Term.

5085. INTERNSHIP IN HEALTH EDUCATION PRACTICE II. (885429) (Cr ar; prereq health educ maj and community health educ maj or #; S-N only) Staff
See First Term.

5090. RESEARCH TOPICS IN HEALTH EDUCATION. (186948) (2-8 cr; prereq health education maj and community health educ maj or #) Staff
See First Term.

5096. TOPICS: RESEARCH. (086949) (Cr ar; prereq health education student and community health educ maj or #) Staff
See First Term.

R.5097. TOPICS: SELECTED READINGS. (787755) (Cr ar; limited to 5 students; prereq health science grad student) Staff
See First Term.

5150. TOPICS: ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (Cr ar; prereq #)
See First Term.
Sec 1, (187095) Staff
Sec 2, (989942) McGovern
Sec 3, (789943) Olson

5154. PRACTICUM IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (786296) (1-6 cr; prereq env health maj; S-N only) Staff
See First Term.

5197. TOPICS: INJURY PREVENTION IN THE WORKPLACE, COMMUNITY, AND HOME. (589944) (1-3 cr; \$5597; prereq #) Gerberich
See First Term.

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (987107) (Cr ar; prereq VPH or Epi major or #) Staff
See First Term.

5470. TOPICS IN BIOSTATISTICS. (987091) (Cr ar; prereq #) Staff
See First Term.

5510. RESEARCH METHODOLOGY IN PUBLIC HEALTH NURSING. (1-3 cr; prereq #; S-N only) Staff
See First Term.

Sec 1, (386950) Aroskar
Sec 2, (186951) Froberg
Sec 3, (186304) McGovern
Sec 4, (886953) Olson
Sec 5, (686954) Ostwald
Sec 6, (486955) Spradley

5530. PUBLIC HEALTH NURSING PRACTICUM. (189986) (1-4 cr; prereq #; S-N only) Staff
See First Term

5531. PUBLIC HEALTH NURSING PRACTICUM. (787089) (1-4 cr; prereq #; hr ar; S-N only)
See First Term.

5575. TOPICS: PUBLIC HEALTH NURSING. (187106) (cr ar; prereq #) Staff
See First Term

5605. PERINATAL HEALTH AND FAMILY PLANNING. (192015) (3 cr; prereq MCH student or #)

5606. HEALTH OF INFANTS AND YOUNG CHILDREN. (992016) (3 cr; prereq 5610 or #)

5614. FIELD EXPERIENCE IN MATERNAL AND CHILD HEALTH. (Cr ar; prereq MCH grad student; S-N only)
See First Term.

COURSE DESCRIPTIONS

Sec 1, (887102) Alexander
 Sec 2, (991464) Himes
 Sec 3, (791465) Leland
 Sec 4, (591466) Patterson
 Sec 5, (391467) Story
 Sec 6, (191463) ten Bensel

5648. TOPICS IN MATERNAL AND CHILD HEALTH. (cr ar; prereq #)

See First Term.
 Sec 1, (089947) Alexander
 Sec 2, (590110) Himes
 Sec 3, (790803) Leland
 Sec 4, (590804) Patterson
 Sec 5, (390805) Story
 Sec 6, (190806) ten Bensel

5649. MATERNAL AND CHILD HEALTH RESEARCH. (Cr ar; prereq #)

See First Term.
 Sec 1, (687103) Alexander
 Sec 2, (587708) Himes
 Sec 3, (085476) Leland
 Sec 4, (885477) Patterson
 Sec 5, (685478) Story
 Sec 6, (088250) ten Bensel

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (487104) (1-12 cr; prereq student in public health administration or #; S-N only)

See First Term.

5704. FIELD EXPERIENCE: PUBLIC HEALTH ADMINISTRATION. (1-12 cr; prereq student in public health administration or #; S-N only) Staff

See First Term.
 Sec 1, (287105) Block
 Sec 2, (485515) Dombblaser
 Sec 3, (285516) Gordon
 Sec 4, (185517) Johnson
 Sec 5, (985518) Litman
 Sec 6, (785519) Resnick
 Sec 7, (185520) Spradley
 Sec 8, (985521) Veninga
 Sec 9, (785522) Weckwerth
 Sec 10, (585523) Staff

5707. INDEPENDENT STUDY: PUBLIC HEALTH ADMINISTRATION. (1-12 cr; prereq public health administration student or #; S-N only)

See First Term.
 Sec 1, (685089) Block
 Sec 2, (689773) Spradley
 Sec 3, (989939) Veninga
 Sec 4, (289940) Staff

5723. ADMINISTRATIVE RESIDENCY. (888041) (Cr ar; prereq public health administration student or #; S-N only)

See First Term.

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (085090) (Cr ar; prereq student in public health administration or #) Staff

See First Term.

5770. TOPICS: HOSPITAL AND HEALTH CARE ADMINISTRATION. (185251) (Cr ar; prereq hospital administration student or #)

See First Term.

R.5773. MANAGEMENT AND ORGANIZATION WITHIN THE AMBULATORY CARE FACILITY-July 18-30. (188188)(15 cr; ; limited to 40

students; prereq current employment as ambulatory care administrator and #; 0800-1700 MTWThF) Weckwerth, staff

A 12-month program of on-campus and independent study that includes periodic seminars and monthly sessions with clinical preceptors. Management, organizational behavior, problem solving, executive role, personnel management, financial management, governance, clinicians, productivity, and efficiency.

R.5775. MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES-July 18-30. (187100) (15 cr; limited to 40

students; prereq current employment as health care facility administrator or #; 0800-1700 MTWThF) Weckwerth, staff

A 12-month program consisting of an on-campus residential session and off-campus independent study that includes a seminar and monthly classes under program preceptors. Principles of management, executive role, hospital development and organization, functions of personnel, financial control, business office, and patient care services.

5777. EXTERNAL FORCES AFFECTING HEALTH CARE DELIVERY-AUGUST 9-20. (087101) (25 cr; prereq 5774, 5776, 5786, 5788 or #; 0800-1700 MTWThF) Weckwerth

A 10-month program consisting of an on-campus residential session and off-campus independent study that includes seminars covering financing, human resources, organizing, social policy, and project planning and design. Requires a project that can be either a management study or a research thesis. Each student must verbally present and defend the project at a week-long symposium at end of course.

R.5778. PATIENT CARE MANAGEMENT AND ORGANIZATION WITHIN THE HOSPITAL AND HEALTH CARE ORGANIZATION-July 18-30. (885088) (15 cr; limited to 40

students; prereq present employment as administrator of patient care [director of nursing or equivalent] or #; 0800-1700 MTWThF) Madden, staff
 A 12-month program consisting of an on-campus residential session in the summer, one week in March, and independent study that includes periodic seminars and monthly sessions with clinical preceptors. Management, organizational behavior, problem solving, executive role, personnel management, financial management, governance, labor relations, and patient care services.

5785. MANAGEMENT AND ORGANIZATION WITHIN MENTAL HEALTH RELATED ORGANIZATIONS-July 18-30. (785116) (15 cr; prereq current employment as mental health administrator or #; 0800-1700 MTWThF) Weckwerth, staff

A 12-month program beginning with

an on-campus residential session (2 weeks) and involving off-campus independent study that includes periodic seminars and monthly dialogue with program preceptors. Governance, legal aspects, public education and information, evaluation of mental health programs, prevention and primary treatment in mental health, current trends and concepts, public relations and the legislative process.

5906. FIELD EXPERIENCE: PUBLIC HEALTH NUTRITION. (187039) (1-8 cr; prereq public health nutrition maj; S-N only) Krinke

Placement in an approved agency with opportunity for experience in nutritional aspects of public health programs.

5909. TOPICS IN PUBLIC HEALTH NUTRITION. (1-12 cr; prereq public health nutrition student or #)

See First Term.
 Sec 1, (088040) Brown
 Sec 2, (485479) Buzzard
 Sec 3, (885480) Himes
 Sec 4, (685481) Krinke
 Sec 5, (485482) Kushi
 Sec 6, (285483) Splett
 Sec 7, (188344) Story
 Sec 8, (389976) Staff

8150. RESEARCH: ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (087096) (1-6 cr; prereq #; S-N only)

Staff

8191. RESEARCH: INJURY PREVENTION IN THE WORKPLACE, COMMUNITY, AND HOME. (389945) (3-6 cr; prereq #; S-N only)

Gerberich

8330. RESEARCH EPIDEMIOLOGY. (887097) (1-8 cr; prereq epidemiology maj; #) Staff

See First Term.

R.8332. READINGS IN EPIDEMIOLOGY. (788419) (1-4 cr; limited to 10 students; prereq Epi major and #) Staff

See First Term.

8400. SEMINAR IN BIOSTATISTICS. (787092) (Cr ar; prereq biostat maj or #) Staff

8449. TOPICS IN BIOSTATISTICS. (587093) (Cr ar; prereq 5450 and #) Staff

See First Term.

8450. RESEARCH IN BIOSTATISTICS. (387094) (Cr ar) Staff

See First Term.

8763. EXTERNAL FORCES AFFECTING HEALTH SERVICES DELIVERY. (286956) (3 cr; prereq PhD students in hospital administration or health services research and policy or #; A-F only) Weckwerth

See First Term.

8764. RESEARCH APPLICATIONS TO HEALTH SERVICES DELIVERY. (186957) (3 cr; prereq 8763; S-N only)

Weckwerth
 See First Term.

8777. THESIS CREDITS: MASTERS. (588955) (1-16 cr [max 11 cr per summer term])

8782. RESEARCH PRACTICUM. (3 cr; prereq PhD student in hospital administration or health services research and policy or #) Litman, Weckwerth, Staff

See First Term.
 Sec 1, (085266) Litman, Weckwerth
 Sec 2, (986958) Weckwerth, Litman

8888. THESIS CREDITS: DOCTORAL. (188957) (1-36 cr [max 11 cr per summer term])

R

Recreation, Park, and Leisure Studies (Rec)

203 Cooke Hall. 625-5300
 (School of Kinesiology and Leisure Studies)
 College of Education

FIRST TERM

3700. SENIOR INTERNSHIP. (686176) (1-15 cr; prereq sr, recreation major or minor, Δ; hrs ar; S-N only) Schultz

Supervised experiences in selected agencies.

5630. PRACTICUM: THERAPEUTIC RECREATION. (486177) (3-9 cr; prereq recreation MEd or graduate student; hrs ar; S-N only) Schultz

Supervised experiences in program operation; administrative and supervisory duties.

5640. PRACTICUM: LEISURE SERVICES. (286178) (3-9 cr; prereq recreation MEd or graduate student; hrs ar; S-N only) Schultz

Supervised experiences in program operation; administrative and supervisory duties.

5695. PRACTICUM: SPORT MANAGEMENT. (590432) (3-9 cr; prereq Δ; A-F only) Schultz

Theory and application of principles in developing and managing sport programs, including supervised experiences in program operation.

5860. LEGAL ASPECTS OF SPORT AND PHYSICAL ACTIVITY. (790431) (4 cr; SKin 5860; prereq 3550 or 5460 or Kin 3143; 0915-1115 MWF; CookeH 206; A-F only) Schultz

A survey of a variety of legal considerations in sport and physical activity programs in schools, colleges, and the private sector. Contracts, legal liability, and civil rights involving sports participants, coaches, and administrators. Meets with Kin 5860.

COURSE DESCRIPTIONS

5983. READINGS: RECREATION. (186179) (1-3 cr; prereq MEd or grad student or Δ; hrs ar; A-F only) Schultz Independent study under tutorial guidance.

8777. THESIS CREDITS: MASTERS. (788727) (1-16 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (189235) (Cr ar; prereq 8980 or #; S-N only) Schultz. Individual problems.

SECOND TERM

3700. SENIOR INTERNSHIP. (786413) (1-15 cr; prereq sr, recreation major or minor, Δ; hrs ar; S-N only) Schleien See First Term.

3900. DIRECTED STUDY. (988516) (3 cr [max 9 cr]; S-N optional; prereq recreation majors only and Δ) Schleien Self-directed study preceded by classroom study and possession of basic competence.

5460. FOUNDATIONS OF SPORT MANAGEMENT-July 22-August 6. (289579) (3 cr, \$Kin 5460; prereq Rec or Kin major or #; 0915-1130 MTWThF; CookeH 206; A-F only) Kane Principles of sport management and fitness including theories and techniques related to the marketing, administration, and management of sport enterprises. Organizational theory and policy, with practical examples of sport management skills and strategies. Meets with Kin 5460.

5630. PRACTICUM: THERAPEUTIC RECREATION. (586414) (3-9 cr; prereq recreation MEd or graduate student; hrs ar; S-N only) Schleien See First Term.

5640. PRACTICUM: LEISURE SERVICES. (386415) (3-9 cr; prereq recreation MEd or graduate student; hrs ar; S-N only) Schleien See First Term.

5695. PRACTICUM: SPORT MANAGEMENT. (390433) 3-9 cr; prereq Δ; A-F only) Schleien See First Term.

5981. PROBLEMS. (788517) (cr ar; prereq MEd or MA student or Δ; A-F only) Schleien Focus on conduct of recreation programs.

5983. READINGS: RECREATION. (186416) (1-3 cr; prereq MEd or grad student or Δ; hrs ar; A-F only) Schleien See First Term.

8777. THESIS CREDITS: MASTERS. (188960) (1-16 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (788226) (cr ar; prereq 8980 or #; S-N only) Schleien Individual problems.

Religious Studies (RelS)

314 Ford Hall. 624-5553 College of Liberal Arts (See also Middle Eastern Studies and South and Southwest Asian Studies)

FIRST TERM

1001. INTRODUCTION TO RELIGIOUS STUDIES. (588518) (4 cr, 1145-1400 TTh; FolH 134) Melandra Individual and social religious behavior; methodologies for studying it; emergence of modern religious studies. Theistic Western religions (Judaism, Christianity, Islam) and nontheistic Buddhism.

1031. INTRODUCTION TO THE RELIGIONS OF SOUTH ASIA. (089785) (4 cr, \$SoAS 1504; 0900-1130 TTh; FolH 138) Malandra Introduction to Hinduism, Buddhism, and Jainism. Meets with SoAs 1504.

3072. THE NEW TESTAMENT. (490438) (4 cr; \$Clas 3072; 0915-1145 TTh; FolH 419) Sellw First-century Israel under Roman law. Jesus of Nazareth. Earliest Christian communities. Mission to Gentiles. Paul the Apostle. Beginnings of the New Testament. Meets with 5072, Clas 3072, 5072.

5072. THE NEW TESTAMENT. (290439) (4 cr; \$Clas 5072; 0915-1145 TTh; FolH 419) Sellw Meets with 3072, Clas 3072, 5072. Additional work for graduate credit.

8777. THESIS CREDITS: MASTERS. (588728) (1-16 cr [max 11 cr per summer term])

SECOND TERM

1034. INTRODUCTION TO JUDAISM. (191616) (4 cr; \$3034, \$JwSt 1034, \$JwSt 3034; 1300-1530 MW; FolH 134) Paradise Concepts, movements, and institutions in the development of classical Judaism, as manifested in the literature and festivals of the Jewish people from Second Commonwealth times to the present. Meets with 3034 and JwSt 1034, 3034.

1036. THE RELIGION OF ISLAM. (689417) (4 cr, \$MidE 1536; 1000-1230 TTh; FolH 234) Tesdell The rise of Islam in historical context; the role of Muhammad, Koran, traditions; fundamentals and observances of the faith; sectarian movements; the spread of Islam into Asia and Africa; Black Muslim component; Reformist movements and change; Activism and Revivalism in Muslim world today. Meets with MidE 1536, 3036, MidE 1536, 3036, SoAS 3036.

3034. INTRODUCTION TO JUDAISM. (091617) (4 cr, \$1034,

\$JwSt 1034, \$JwSt 3034; 1300-1530 MW; FolH 134) Paradise Additional written assignments and reading. Meets with 1034 and JwSt 1034, 3034.

3036. THE RELIGION OF ISLAM. (290442) (4 cr; \$5036, \$MidE 3036, MidE 5036; 1000-1230 TTh; FolH 234) Tesdell See 1034. Additional written assignments and readings. Meets with 1036 and MidE 1536.

3201. THE BIBLE: NARRATIVE TEXTS. (790901) (4 cr; \$ANE 1001, ANE 3001; 0900-1130 MW; FolH 306) Paradise See 1036. Literary and historical texts from: Pentateuch, Joshua, Judges, Samuel, and Kings. Readings of Bible and secondary materials on literary background of texts. Meets with ANE 1001, 3001.

3413. BUDDHISM. (689787) (4 cr; \$5413, \$SoAs 3413, \$SoAs 5413; 1000-1230 TTh, FolH 208) Junghare Historical account of the Buddhist religion: rise, development, various schools, and common philosophical concepts. Focuses on Indian Buddhism, compares it with Hinduism, and discusses its demise and revival on the Indian subcontinent. Meets with 5413, SoAs 3413, 5413.

5413. BUDDHISM. (990931) (4 cr; 1000-1230 TTh; FolH 208) Junghare See 3413. Meets with 3413, SoAS 3413, 5413.

8777. THESIS CREDITS: MASTERS. (688963) (1-16 cr [max 11 cr per summer term])

Rhetoric (Rhet)

202 Haecker Hall, St. Paul. 624-3445 College of Agriculture

FIRST TERM

R.1104. LIBRARY RESEARCH METHODS. (588261) (1 cr; limited to 30 students; S-N only; microcomputer card required; lab 1030-1200 T; Cla Off 145) Richardson On-site and interactive video instruction in information retrieval techniques designed to strengthen skills in using the library. Students work independently but must satisfactorily complete all exercises and problem-solving assignments to receive credit. Students must attend an initial orientation session of one hour. Computer assisted instruction.

R.1151. WRITING IN YOUR MAJOR. (786914) (4 cr; limited to 20 students; computer assisted instruction; prereq soph, completion of fr communication requirements, 1104; 0915-1100 MWF; Cla Off 17) Walzer Students investigate and write on subjects related to their majors. Gathering, evaluating, synthesizing, and summarizing information;

adapting it for various audiences. Assignments include literature review, abstract, fact sheet, instructions, and feature article.

R.1222. PUBLIC SPEAKING. (585294) (4 cr; limited to 18 students; prereq completion of fr communication requirements; 0800-1015 TWTh; CentLib 6) Montgomery A practical course in the fundamentals of effective speechmaking. Researching and organizing a speech and communicating with an audience.

R.3266. COMMUNICATION, DISCUSSION IN SMALL GROUP DECISION-MAKING. (290277) (4 cr; limited to 20 students; prereq 1222 or #; 1030-1245 TWTh; CentLib 4) Bennett Role of communication techniques in the small group decision-making process. Emphasis on problem-solving discussion requiring some kind of formal outcome.

3374. SPECIAL PROBLEMS IN HUMANITIES. (287749) (1-2 cr; prereq #, Δ) Ferguson, Scanlan, others Primarily for supervised reading and research on topics not covered in regularly scheduled humanities offerings.

R.3562. WRITING IN YOUR PROFESSION. (4 cr; each section limited to 22 students; prereq jr or sr, completion of fr communication requirements, 1151; A-F only) Projects in writing professional reports. Analysis of audience and situation; writing to meet the needs of particular readers. Assignments such as instructions, feasibility report, proposal, memorandum, letter of application, and resume. Computer assisted instruction. Sec 1, (385295) 0915-1015 MTWThF, CentLib 4, Scanlan Sec 2, (187680) 1030-1210 MWF, HckrH 111, Ferguson

5100. TECHNICAL COMMUNICATION: SPECIAL PROBLEMS. (885186) (Cr ar; prereq #, Δ) McDowell, others Designed for supervised reading, research, and work on advanced technical communication projects not covered in regularly scheduled courses.

5180. INTERNSHIP IN SCIENTIFIC AND TECHNICAL COMMUNICATION. (685187) (2-6 cr; prereq STC/ Tech Comm maj or grad stu, #, Δ) McDowell, others Designed to give scientific and technical communication majors on-the-job experience at the University or in industry or government.

8180. DESIGN PROJECT. (688395) (8 cr req, 4 cr per qtr; prereq MS student in sci and tech comm plan B) McDowell, others Extended problem-solving situation in business, government, or industry in which student acts as consultant to explore a problem, identify possible solutions, introduce solution, and

apply it. Scheduled workshops provide guidance, support, and research findings.

8777. THESIS CREDITS: MASTERS. (388729) (1-16 cr [max 11 cr per summer term])

SECOND TERM

R.1104. LIBRARY RESEARCH METHODS. (388262) (1 cr; limited to 30 students; microcomputer card required; 1030-1200 T; Cla Off 145; S-N only) Richardson
See First Term.

R.1222. PUBLIC SPEAKING. (788520) (4 cr; limited to 18 students; prereq completion of fr communication requirements; 1030-1245 TWTh, CentLib 4) Bennett
See First Term.

3374. SPECIAL PROBLEMS IN HUMANITIES. (186917) (1-2 cr; prereq #, Δ) Horberg, others
See First Term.

R.3562. WRITING IN YOUR PROFESSION. (4 cr; prereq jr or sr; completion of fr communication requirements, 1151; A-F only)
See First Term.
Sec 1, (087678) 1030-1130 MTWThF, limited to 22 students, HckrH 111, Horberg
Sec 2, (887679) 0915-1100 MWF, limited to 20 students, ClaOff 17, Lay

5100. TECHNICAL COMMUNICATION: SPECIAL PROBLEMS. (485188) (Cr ar; prereq #, Δ) Schuelke, others
See First Term.

5180. INTERNSHIP IN SCIENTIFIC AND TECHNICAL COMMUNICATION. (285189) (2-6 cr; prereq STC/Tech Comm maj or grad stu, #, Δ) Connolly, McDowell, others
See First Term.

5257. SCIENTIFIC AND TECHNICAL PRESENTATIONS. (592021) (4 cr; prereq 1222, 3562, or grad status or #; 1030-1245 TWTh; HckrH 222) Schuelke
Presentations for specific situations related to technical or scientific topics. Audience analysis and adaptation, techniques of support and visualization, organization for clarity and accuracy, and techniques of interpreting and answering questions. Students make and evaluate technical and scientific presentations. Emphasis on seminar reports and professional conference papers.

8180. DESIGN PROJECT. (488396) (8 cr req, 4 cr per qtr; prereq M5 student in sci and tech comm plan B) McDowell
See First Term.

8777. THESIS CREDITS: MASTERS. (288965) (1-16 cr [max 11 cr per summer term])

Russian (Russ)

Slavic Languages & Literature
College of Liberal Arts

FIRST AND SECOND TERMS: TEN-WEEK COURSES

(Register once in Term I)

A concentrated program of study permitting students to earn 15 hours of credit for the beginning course and 12 hours of credit for the intermediate course; each equivalent of a full year's sequence in language. **Students must enroll in all three courses and may not enroll in other summer courses.** Prospective students should talk to an adviser before registering for intensive language courses.

R.1101-1102-1103. BEGINNING RUSSIAN. (15 cr for both terms; each section limited to 40 students; 0800-1100 MTWThF; AmundH 124) Staff
Speaking, reading, and understanding Russian through acquisition of basic patterns of speech.
1101, Sec 5, (386012) June 15-July 8, 5 cr
1102, Sec 5, (186013) July 9-August 2, 5 cr
1103, Sec 5, (086014) August 3-25, 5 cr

1104-1105-1106. INTERMEDIATE RUSSIAN. (12 cr for both terms; 0800-1100 MTWTh; SmithH 121) Jahn
Expansion of experience in speaking, reading, and understanding Russian; reading contemporary texts.
1104, Sec 5, (088345) June 15-July 8, 4 cr
1105, Sec 5, (888346), July 9- August 2, 4 cr
1106, Sec 5, (688347), August 3-25, 4 cr

Russian Area Studies (RAS)

253 Elliott Hall. 625-9870
(Russian and East European Studies)
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (891411) (1-15 crs; prereq #, Δ, □) Staff

5970. DIRECTED STUDIES. (691412) (1-15 crs; prereq #, Δ)
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS. (491413) (1-16 cr [max 11 cr per summer term])

SECOND TERM

3970. DIRECTED STUDIES. (291414) (1-15 crs; prereq #, Δ, □) Staff

5970. DIRECTED STUDIES. (191415) (1-15 crs; prereq #, Δ)
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS. (991416) (1-16 cr [max 11 cr per summer term])

S

Scandinavian (Scan)

200 Folwell Hall. 625-9887
(Scandinavian Languages and Literature)
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (586915) (1-5 cr; prereq #, Δ, □)

5970. DIRECTED STUDIES. (386916) (1-15 cr; prereq #, Δ, CLA approval)

8888. THESIS CREDITS: DOCTORAL. (088734) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3970. DIRECTED STUDIES. (786248) (1-5 cr; prereq #, Δ, □)

5970. DIRECTED STUDIES. (586249) (1-15 cr; prereq #, Δ, CLA approval)

8888. THESIS CREDITS: DOCTORAL. (388973) (1-36 cr [max 11 cr per summer term])

Science in Agriculture (ScAg)

FIRST TERM

5009. UNDERGRADUATE SENIOR THESIS: SCIENCE IN AGRICULTURE. (190071) (1-5 cr; not for graduate cr; prereq #; A-F only) Hunter

Secondary Education (SeEd)

125 Peik Hall. 625-6372
(Curriculum and Instruction)
College of Education

FIRST TERM

3600. STUDENT TEACHING. (185346) (Cr ar; prereq Δ; S-N only) E. Anderson
Supervised teaching for students wishing to elect credits in student teaching in addition to regular requirements.

5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (690521) (1-12 cr [max 12 cr]; A-F only) Avery
Opportunity to work individually or in teams on curricular, instructional, or evaluation problems within the school.

R.5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES. (1-3 cr [max 12 cr]; each section limited to 30 students; A-F only)

Issues, materials, and instructional techniques related to current topics of particular relevance to social studies teachers.

Sec 1, Interdisciplinary Approaches to Teaching History—June 15-29. (191768) (0800-1015 MTWThF; PeikH 40)

Offered for 2 credits.

Sec 2, Creating a Thoughtful Social Studies Classroom: Dealing with Controversy and Conflict—July 6-20. (991769) (1300-1515 MTWThF; PeikH 48)

Offered for 2 credits.

Sec 3, Questions of Justice: Teaching for and About Human Rights—June 21-26. (692043) (3 cr; limited to 30 students; §Elem 5101, Pol 5710; 0900-1200 MTWThF; BuH 123)

This is the first course devoted to human rights issues that is specifically designed for teachers. It will provide opportunities for teachers to explore the relationships between human rights issues and education within local and global contexts. In discussions with human rights advocates, teachers will examine the historical, political and legal dimensions of current human rights issues, and they will develop curricula for use in the classrooms.

Offered for 2 credits.

5185. SCHOOL AND PROFESSIONAL BASED EXPERIENCES IN SECOND LANGUAGES AND CULTURES. (1-12 cr [max 12 cr]; prereq MEd students; A-F only)
Opportunity for teachers to work together on curricular, instructional, or evaluation problems; internship experiences; participation in professional activities.
Sec 21, (187669) Jorstad
Sec 23, (190507) Paige
Sec 24, (990508) Tedick
Sec 25, (790509) Walker

R.5191. WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES. (1-10 cr [max 10 cr]; each section limited to 25 students; A-F only)

Related specifically to the needs of the inservice teacher.

Sec 1, Beyond Culture in the Classroom- Theoretical Expectations—June 22-July 13. (690504) (3 cr; 1145-1630 TTh; PeikH 225; A-F only) Paige

Sec 2, Exploring the Assessment of Limited English Proficient Students—July 6-20. (890503) (2 cr; 1145-1515 TTh; PeikH 165) Walker

Intended for advanced graduate students. Will explore issues that influence assessment practices, including: examination of student achievement data within particular ethnic and linguistic groups; consideration of legal, legislative, judicial, theoretical mandates and constraints; artificial dichotomies; purposes of assessment and options for change.

Sec 3, Exploring Issues of Diversity in Second Language Textbooks—July 12-16. (392036) (1 cr; limited to 30 students; 0915-1130 MTWThF; PeikH 28; A-F only) Tedick

COURSE DESCRIPTIONS

Provides a forum for ESL and foreign language teachers to examine language textbooks with a particular emphasis on exploring the ways in which diversity issues are reflected. Will invite students to discover the biases in the textbooks and begin to develop ways in which they can supplement their texts and materials that represent diverse views and experiences and diminish the perpetuation of stereotypes.

R.5225. THE MULTICULTURAL GENDER-FAIR CURRICULUM-June 16-July 19. (190837) (4 cr; limited to 15 students; 1145-1600 MW; PeikH 165; A-F only) Tedick, Walker
A 4-credit offering on planning for development and implementation of a multicultural gender-fair perspective in elementary and secondary classrooms. Development of individual teacher goals, exploration of professional issues, and the acquisition of resources and teaching strategies for successful exploration of new perspectives. Meets with Elem 5225.

R.5322. TEACHING WRITING. (291770) (3 cr; limited to 25 students; 0915-1015 MTWThF; PeikH 165; A-F only) Beach
Historical and contemporary context; analysis of composing process; pre-writing and revision; audience analysis, comprehension and coherence; selected problems in assigning and evaluating writing. Concurrent registration in SeEd 5323 is recommended.

R.5323. DIAGNOSING AND ASSESSING WRITING IN SECONDARY SCHOOLS. (191771) (3 cr; limited to 25 students; prereq educ jr or sr or grad std; 1030-1130 MTWThF; PeikH 165; A-F only) Beach
Application of theory and research on composition instruction to analysis of diagnosis of writing samples; evaluation of writing using written or conference feedback; large group writing assessment using different rating scales; development of assignments and curriculum materials for writing instruction. Concurrent registration in SeEd 5322 is recommended.

5351. DIRECTED STUDY. (Cr ar [max 6 cr]; prereq education or graduate student; S-N optional)
Sec 21, (589278) Paige
Sec 22, (587689) Jorstad
Sec 24, (190510) Tedick
Sec 25, (189776) Avery
Sec 26, (591774) Beach
Sec 27, (989777) Walker

R.5382. SECOND LANGUAGE TESTING, ASSESSMENT, AND EVALUATION-June 15-July 6. (290506) (3 cr; limited to 25 students; 0915-1130 MTWThF; PeikH 215; A-F only) Tedick
Language proficiency assessment, English as a second language, bilingual education; oral interviews; testing communicative abilities;

standardized language measures; building test items; evaluating programs; aptitude and attitude measurement.

R.5385. PLANNING AND ASSESSING SECOND LANGUAGE INSTRUCTION-June 29-July 20. (991772) (4 cr; limited to 25 students; 1300-1630 MTWThF; PeikH 215; A-F only) Jorstad
Language proficiency assessment, English as a second language, bilingual education; oral interview; testing communicative abilities; standardized language measures; building test items; evaluating programs; aptitude and attitude measurement.

R.5390. CURRENT DEVELOPMENTS IN SECONDARY SCHOOL SCIENCE TEACHING-July 6-20. (789778) (3 cr; limited to 25 students; prereq 3356, 3357 or equiv undergrad courses or exper in tchg science; 1230-1600 MTWThF; PeikH 365; A-F only) Finley
Curricula, methods, materials of instruction, evaluation.

R.5394. WORKSHOP: SCIENCE EDUCATION -Demonstration Techniques in Secondary Physical Sciences-June 17-July 20. (791773) (1-12 cr [max 12 cr]; limited to 25 students; 0915-1245 TTh; PeikH 385; A-F only) Heller
Analysis of issues, materials, and instructional techniques on current topics of relevance to secondary school and college science teachers. This 3-credit workshop examines the use of demonstrations in physical science, chemistry, and physics courses at the junior high and high school level. Teachers will share their favorite demonstrations, learn and/or build new demonstrations, and practice different demonstration techniques for introducing a new topic, teaching concepts and principles, and for evaluating student learning.

5395. SCHOOL-BASED PROJECTS IN SCIENCE EDUCATION. (891764) (1-12 cr [max 12 cr]; prereq MEd student in science education; A-F only) Finley
Individual or group work on curricular, instructional, or evaluation problems and projects applicable to school situations.

5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS. (691765) (1-6 cr [max 6 cr]; prereq MEd student in English education; A-F only) Beach
Individual or group work on curricular, instructional, or evaluation problems and projects applicable to school situations.

8801. PROBLEMS: TEACHING SOCIAL STUDIES. (490522) (3-9 cr; prereq 5150, 5152, 5156, 8104 or #; hrs ar) Avery
Individual research.

8871. PROBLEMS: CURRICULUM CONSTRUCTION. (290523) (Cr and hrs ar; prereq #) Finley

8894. PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION. (Cr ar [max 8 cr])
Individual research.
Sec 21, (487670) Jorstad
Sec 23, (790512) Paige
Sec 24, (590513) Tedick
Sec 25, (390514) Walker

8895. READINGS IN ENGLISH EDUCATION. (491766) (1-3 cr) Beach
Readings in secondary school English curriculum and instruction.

8896. PROBLEMS: TEACHING ENGLISH. (291767) (Cr and hrs ar) Beach

8898. READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION. (1-3 cr)
Readings in development, research, curriculum, instruction, evaluation, culture, teacher education, as needed by the student.
Sec 21, (287671) Jorstad
Sec 23, (890517) Paige
Sec 24, (690518) Tedick
Sec 25, (490519) Walker

*Student teaching is open only to students in regular degree programs of the College of Education. Application must be made by May 1. Forms and instructions are available in 125 Peik Hall.

SECOND TERM

R.5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (589782) (1-12 cr [max 12 cr]; limited to 8 students; A-F only) Avery
See First Term.

R.5227. TEACHING ABOUT THE NEWSPAPER IN THE CLASSROOM-July 26-August 9. (890534) (1-3 cr [max 4 cr]; §Elem 5227; limited to 15 students; 0915-1245 MTWThF; ClaOf B30; A-F only) Avery
The institution of the newspaper; articulation of a series of articles of useful instructional strategies, curriculum development techniques, and teaching materials. This 3-credit offering meets with Elem 5227.

R.5344. TEACHING READING IN CONTENT AREAS-July 22-Aug 6. (891795) (3 cr; limited to 30 students; 0800-1015 MTWThF; PeikH 315; A-F only) Graves
Methods of accommodating to student abilities and facilitating reading in regular content classes.

5351. DIRECTED STUDY. (691782) (Cr ar [max 6 cr]; S-N optional; prereq education or graduate student) Avery

5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS. (191785) (1-6 cr [max 6 cr]; prereq MEd student in English education; A-F only) Graves
See First Term.

8801. PROBLEMS: TEACHING SOCIAL STUDIES. (789280) (3-9 cr;

prereq 5150, 5152, 5156, 8104 or #)
Avery
See First Term.

8895. READINGS IN ENGLISH EDUCATION. (791787) (1-3 cr) Graves

8896. PROBLEMS: TEACHING ENGLISH. (391789) (Cr and hrs ar) Graves

Small Animal Clinical Sciences (SACS)

C-339 Veterinary Hospital, St. Paul.
625-7744
College of Veterinary Medicine

FIRST TERM

R. 5257. A CLINICIAN'S ANALYSIS OF UNINALYSIS—June 14-July 12. (892042) (1 cr; A/F only; 1300-1500 M; 125 AnScVM) Osborne

R.5398. INDEPENDENT RESEARCH IN VETERINARY ANESTHESIOLOGY. (485563) (1-6 cr; prereq regis vet med or grad student or #; limited to 10 students) Raffé, E. Robinson
Special problems course for evaluating research methods. Controlled study, prospective, and retrospective models of evaluation defined, critiqued, and used for experimental design and data collection. Analysis of data collection to validate research methods.

5454. ROENTGENOLOGY BONE-LARGE ANIMALS-June 14-July 12. (685500) (1 cr; prereq regis vet med, 3rd or 4th yr or grad student or #; 1500-1650 M; AnScVM 135; S-N only) Walter, Feeney, G. Johnston
Roentgen signs of common bone diseases of large animals. Primary emphasis on the horse.

5455. ROENTGENOLOGY BONE-SMALL ANIMALS-July 19-August 16. (091441) (1 cr; prereq regis vet med, 3rd or 4th yr or grad student or #; 1500-1650 M; AnScVM 135) Walter, Feeney, G. Johnston
Roentgen signs of common bone diseases of small animals.

8197.* ADVANCED DERMATOLOGIC CLINICS. (086157) (4 cr; prereq grad student, #; A-F only) McKeever
In-depth clinical study of dermatologic disease states, diagnosis and therapy in animals.

8198.* PROBLEMS IN VETERINARY COMPARATIVE DERMATOLOGY. (886158) (Cr ar; prereq grad student, #) McKeever
Individual study involving a research study of a selected dermatologic problem.

8200. DIRECTED STUDIES IN VETERINARY COMPARATIVE DERMATOLOGY. (088524) (2 cr; prereq grad, #; A-F only) McKeever

COURSE DESCRIPTIONS

Assigned readings and literature review of veterinary comparative dermatology.

8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES. (788405) (1 cr; prereq 5172, LACS 5162, #) Staff
Detailed examination, discussions, and treatment of cases of animal diseases.

8293. MEDICAL CONFERENCE. (385491) (Cr ar; prereq 5172, LACS 5162, #) Staff
Medical, surgical, or obstetrical cases supported by anatomic, bacteriologic, pathologic, physiologic, pharmacologic, and radiologic evaluations whenever applicable.

8390. SEMINAR: VETERINARY SURGERY. (986975) (Cr ar; prereq 5360, 5365, or equiv, #) Caywood, Lipowitz, Wallace

8391. ADVANCED SMALL ANIMAL SURGERY. (686159) (Cr ar; prereq CVM 5350 or equiv, #) Caywood, Lipowitz, Wallace
Surgery of the various systems in small animals with preoperative and postoperative evaluation and treatment.

8394. SURGERY OF THE GASTRO-INTESTINAL SYSTEM. (687666) (Cr ar; prereq LACS 5160 or #) Lipowitz, Caywood

8398. RESEARCH IN VETERINARY ANESTHESIA. (086384) (2-4 cr; prereq grad of professional veterinary curriculum, 8396, CAPS 8397 or equiv, #; A-F only) Raffe, E. Robinson
A special problems course designed to evaluate research methods in veterinary anesthesia. Controlled study prospective and retrospective models of evaluation will be defined, critiqued, and used for experimental design and data collection. Analysis of data collection will validate research methods selected and used.

8399. SEMINAR: VETERINARY ANESTHESIA. (492013) (1 cr; prereq grad of professional vet curriculum, 8396, CAPS 8397, or equiv, #; A-F only) Raffe, E. Robinson
Topics in veterinary anesthesia and critical care in large and small animal species.

8410. SURGICAL PHYSIOLOGY. (487667) (2 cr; prereq 8391, #) Wallace
Macro and micro physiological changes that occur in the animal body as the result of surgical disease and intervention.

8420. NEUROSURGERY. (287668) (3 cr; prereq 8391 or equiv, #; A-F only) Wallace
Treatment of surgical diseases of animal nervous system, including pathophysiology of these animals.

8430. THORACIC AND CARDIO-VASCULAR SURGERY. (785035) (3 cr;

prereq 8391, #; lect 0800-1300 MTWThF, Vet Tch Hos 350; lab 1400-1700 MTWThF, VetTchHos 350) Caywood, Ogburn

8490. ADVANCED VETERINARY RADIOLOGY. (086160) (1-2 cr; prereq 5450, 5451, 5452 or equiv, #; A-F only) Feeney, others
Advanced radiological procedures and modalities and their interpretation or application to veterinary medicine.

8491. FUNDAMENTALS OF NUCLEAR MEDICINE. (189499) (1 cr; prereq #; A-F only) Feeney, Jessen, G. Johnston, Walter
Lecture and laboratory exercises to orient the graduate student in medical sciences to principles and applications of radio isotopes in medicine.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

(Register once in Term I)

5111. INTERNAL MEDICINE. (991013) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only) Hardy, Klausner, others
Includes: problem solving skills (incl. problem definitions); quality patient care; clinical skill acquisition & application; communication skills (for clients, clinicians, technicians) including record keeping; ethics; economics of internal medicine; and referral etiquette.

5121. COMPARATIVE OPHTHALMOLOGY/DERMATOLOGY. (591015) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only) Bistner, McKeever, others
Case material that entry level veterinarians face in practice.

5131. EMERGENCY ROTATION. (191051) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Assist interns with night and weekend emergency cases.

5141. CLINICAL NUTRITION/INTERNAL MEDICINE. (091052) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Concepts of clinical nutrition: answering client questions regarding feeding practices of the normal dog and cat; nutritional aspects of medical patients and knowledge of the use of therapeutic diets.

5151. COMMUNITY PRACTICE. (891053) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Clinical experience in preventative health, behavior, and communication skills; basic small animal husbandry; client education resources; team work within the practice environment, referral cases, and community involvement. Selected pet bird and pocket pet appointments.

5211. SMALL ANIMAL SURGERY. (791014) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only) Wallace, Caywood, others
Diagnostic skills; clinical and

technical surgical skills; quality patient care; economics related to surgical practice.

5311. ANESTHESIOLOGY. (391016) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only) E. Robinson, Raffe, others
Preoperative evaluation, restraint, sedation, anesthetic, and management, and post-operative care of canine, feline, and occasional exotic animal cases.

5321. SMALL ANIMAL CRITICAL CARE MEDICINE. (691054) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only)
Clinical and seminar exposure to critical care medicine. Provides a blend of individual case contact and nursing assistance in the SAICU, and rounds review of cases in the ICU. Seminar information in CPR, nutrition, fluid therapy, respiratory care, and shock. A self-assessment program will permit mastering skills required in critical care medicine. Rostering in the SAICU will permit case contact with critical patients during assigned time blocks.

5411. RADIOLOGY. (191017) (4-24 crs; prereq 3rd or 4th yr vet med student; S-N only) Feeney, Johnston G., others
Positioning of animals, good techniques of standard survey radiographs and special procedures, and interpretive skills.

R.5802. RESIDENCY IN VETERINARY DERMATOLOGY. (290053) (Cr ar; prereq #; limited to 10 students; S-N only) McKeever
Rotations in veterinary dermatology clinics and review of dermatopathology slides submitted to the Veterinary Diagnostic Laboratory. Rotations through veterinary internal medicine, human dermatology service (Medical School), and dermatology journal club.

SECOND TERM

R.5398. INDEPENDENT RESEARCH IN VETERINARY ANESTHESIOLOGY. (285564) (1-6 cr; prereq regis vet med or grad student or #; limited to 20 students) Raffe, E. Robinson
See First Term.

R.5812. COMPANION ANIMAL ONCOLOGY. (190278) (2 cr; prereq DVM or equivalent degree; limited to 10 students) Klausner
Principles of veterinary oncology and the biologic behavior, treatment, and prognosis of various neoplastic disorders.

8192. SPECIAL CARDIOLOGY CLINICS. (491170) (Cr ar; prereq grad student, #)
Intensive clinical studies in investigative clinical cardiology. Diagnosis and management of cardiovascular disease in small animals.

8197.* ADVANCED DERMATOLOGIC CLINICS. (187047) (4 cr; prereq grad student, #; A-F only) McKeever
See First Term.

8198.* PROBLEMS IN VETERINARY COMPARATIVE DERMATOLOGY. (087048) (Cr ar; prereq grad student, #) McKeever
See First Term.

8200. DIRECTED STUDIES IN VETERINARY COMPARATIVE DERMATOLOGY. (888525) (2 cr; prereq grad, #; A-F only) McKeever
See First Term.

8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES. (491167) (Cr ar; prereq 5172, CAPS 5162, #)
Detailed examination, discussions, and treatment of cases of animal diseases.

8293. MEDICAL CONFERENCE. (585490) (Cr ar; prereq 5172, CAPS 5162, #) Staff
See First Term.

8390. SEMINAR: VETERINARY SURGERY. (486972) (Cr ar; prereq 5360, 5365, or equiv, #) Caywood, Lipowitz, Wallace

8391. ADVANCED SMALL ANIMAL SURGERY. (887049) (Cr ar; prereq CVM 5350 or equiv, #) Lipowitz, Wallace, Caywood, others
See First Term.

8394. SURGERY OF THE GASTROINTESTINAL SYSTEM. (187663) (Cr ar; prereq CAPS 5160 or #) Lipowitz, Caywood, Wallace

8399. SEMINAR: VETERINARY ANESTHESIA. (488687) (1 cr; prereq grad of professional vet curriculum, 8396, CAPS 8397, or equiv, #; A-F only) Raffe, E. Robinson
Topics in veterinary anesthesia and critical care in large and small animal species.

8410. SURGICAL PHYSIOLOGY. (087664) (2 cr; prereq 8391, #) Wallace
See First Term.

8420. NEUROSURGERY. (887665) (3 cr; prereq 8391 or equiv, #; A-F only) Wallace
See First Term.

8430. THORACIC AND CARDIO-VASCULAR SURGERY. (186974) (3 cr; prereq 8391, #; lect 0800-1300 MTWThF, Vet Tch Hos 350; lab 1400-1700 MTWThF, VetTchHos 350) Caywood

8490. ADVANCED VETERINARY RADIOLOGY. (187050) (1-2 cr; prereq 5450, 5451, 5452 or equiv, #; A-F only) Feeney, others
See First Term.

8491. FUNDAMENTALS OF NUCLEAR MEDICINE. (889500) (1 cr;

COURSE DESCRIPTIONS

prereq #: A-F only) Feeney, Jessen, G. Johnston, Walter
See First Term.

Social and Administrative Pharmacy (SAPh)

7-115 Health Sciences Unit F. 624-2112
College of Pharmacy

FIRST TERM

8200. RESEARCH PROBLEMS. (587658) (Cr ar)

8400. SPECIAL CLINICAL PROBLEMS. (585196) (Cr ar)

8777. THESIS CREDITS: MASTERS. (788730) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (588731) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8200. RESEARCH PROBLEMS. (185248) (Cr ar)

8400. SPECIAL CLINICAL PROBLEMS. (385197) (Cr ar)

8777. THESIS CREDITS: MASTERS. (588969) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988970) (1-36 cr [max 11 cr per summer term])

Social and Philosophical Foundations of Education (SPFE)

275 Peik Hall. 624-1006
(Educational Policy and Administration)
College of Education
See also EdPA

FIRST TERM

8777. THESIS CREDITS: MASTERS. (788744) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (288996) (1-16 cr [max 11 cr per summer term])

Social Work (SW)

400 Ford Hall. 624-5888
College of Human Ecology

FIRST TERM

R.1001. INTRODUCTION TO SOCIAL WELFARE AND COMMUNITY SERVICES. (191499) (5 cr, limited to 35 students, 0915-1115 MTWThF, FordH 285) Hollister
History of American social services; rise of professional social work in response to human need. Social, political, and economic factors influencing public policy and services. Role of social workers with individuals, families, groups and communities; values and ethics of professional helping role.

R.3970. DIRECTED STUDY. (685190) (1-15 cr; limited to 10 students)

R.3990. DIRECTED RESEARCH. (185405) (ar cr; limited to 10 students; prereq #)

R.5010. SEMINAR: SPECIAL TOPICS. (3 cr each section)

Sec 1, Physical Assault of Women-June 15-18, 21. (985406) 3 cr, limited to 30 students, 0900-1630 MTWThF, FordH 160, Edleson
Current theories, research and social work practice in the area of physical assault of women.

Sec 2, Social Work Practice: Psychopathology and Intervention-June 29,30; July 1, 2, 6. (089284) 3 cr; limited to 25 students; 0900-1630 MTWThF; FordH 160, Graham
Roles and intervention strategies of social workers in a variety of service settings. Emphasis on problems frequently presented, treatment alternatives, interdisciplinary practice and ethical issues.

Sec 3, Issues and Interventions in Child Sexual Abuse-July 7-9, 12-13. (688526) 3 cr, limited to 30 students, 0900-1630 MTWThF; McNH 22, Gilgun
Major issues and interventions involved in child sexual abuse. Perceptions of victims, perpetrators, mothers, and other family members on the abuse; family dynamics; interviewing, the justice system; child protection; rural and urban treatment programs; prevention. Development of knowledge and skills in working with sexually abused children and their families through lecture, guest speakers, readings, small group discussion, role play, in-class exercises, and audio-visual material.

R.5026. MEDIATION AND CONFLICT RESOLUTION-June 22-25, 28. (990279) (3 cr; limited to 25 students; 0900-1630 MTWThF; McNH 22) Umbreit
Developing beginning skills as a mediator. Making informed decisions regarding the appropriateness of mediation in relation to conflicts frequently confronting social work practitioners: divorce, neighborhood

disputes, conflicts between parents and adolescents, conflicts between spouses, and crime victims and others.

8020. FIELD INSTRUCTION II. (886015) (4 cr or cr ar by #; prereq 8010; seminar meets weekly for 6-9 cr. students; S-N only) Sullivan

8030. FIELD INSTRUCTION IN SOCIAL WORK III. (785407) (Cr ar; prereq 8020; hrs ar; S-N only) Sullivan

8888. THESIS CREDITS: DOCTORAL. (888749) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDY. (785181) (cr ar; prereq #)

8990. RESEARCH PROJECTS. (486938) (cr ar; [max 6 cr])

SECOND TERM

R.3970. DIRECTED STUDY. (485191) (1-15 cr; limited to 10 students)

R.3990. DIRECTED RESEARCH. (485403) (ar cr; prereq #; limited to 10 students)

R.5010. SEMINAR: SPECIAL TOPICS. Sec 1. Social Work Practice and Gays, Lesbians, and Bisexuals. (686937) 3 cr; limited to 25 students, 0915-1215 MW, FordH 170, Jones
Psycho-social and public policy issues related to effective advocacy and practice with gay, lesbian, and bisexual individuals and families.
Sec 2, AIDS: Biopsychosocial and Policy Aspects. (389783) 3 cr; limited to 35 students; 1300-1600 MW; FordH 170, Graham
Understanding HIV epidemiology and approaches to infection control/risk reduction. Examining personal and professional values and fears related to HIV infection. Increase awareness of the psychosocial issues with persons with AIDS-related concerns; develop a framework for thinking about the impact of AIDS in the areas of civil rights/responsibilities and ethics.

8020. FIELD INSTRUCTION II. (486728) (4 cr or cr ar by #; prereq 8010; seminar meets weekly for 6-9 cr. students; S-N only) Sullivan

8030. FIELD INSTRUCTION IN SOCIAL WORK III. (285404) (Cr ar; prereq 8020; hrs ar; S-N only) Sullivan

R.8407. STRATEGIES OF FAMILY INTERVENTION. (991500) (3 cr; prereq 8401, 2nd yr MSW student, or #; limited to 18 students; 0800-1100 TTh; FordH 160) Peterson
Seminar in methods of and strategies for helping families cope with family problems.

8888. THESIS CREDITS: DOCTORAL. (389007) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDY. (585246) (ar cr; prereq #)

8990. RESEARCH PROJECTS. (088037) (ar cr; [max 6 cr])

Sociology (Soc)

909 Social Sciences. 624-4300
College of Liberal Arts

FIRST TERM

R.1001. INTRODUCTION TO SOCIOLOGY. (386074) (4 cr; limited to 125 students; 0915-1015 MTWThF; BlegH 10) Brustein
The scientific study of social behavior. Overview of major theories, methods, concepts, and research findings. Characteristics of the basic social units (social relations, groups, organizations, institutions, society), their patterns of interrelation, and processes of change.

R.1004. AMERICAN RACE RELATIONS. (491881)(4 cr; limited to 75 students; 1030-1130 MTWThF; BlegH 235) Staff
Sociological overview of relations between American racial minorities (Afro-American, Chicano, Native American, Asian) and the dominant majority. Consideration of migration and settlement patterns; community life and family life; gender roles; education and labor force participation; inequalities in wealth, status, health, and welfare; discrimination and institutional racism; public policy responses.

R.3101. INTRODUCTION TO AMERICAN CRIMINAL JUSTICE. (586297) (4 cr; limited to 100 students; 0800-0900 MTWThF; BlegH 10) Staff
Components and dynamics as well as philosophical underpinnings of the criminal justice system.

R. 3481. MODERN JAPANESE SOCIETY. (492044)(4 cr; limited to 25 students; prereq 1001 or #; SEAS 3481;1000-1230TTh; BlegH330) Broadbent
Japanese social institutions including family, education, business and labor relations, government, and the status of women. How they differ from the West and have contributed to Japanese economic success. Meets with EAS 3481.

R.3501. THE FAMILY. (291882) (4 cr; limited to 90 students; prereq 1001 or #; 0915-1015 MTWThF; BlegH 150) Staff
The family in contemporary American society with attention to historical and cross-cultural comparisons; interrelationships with other social institutions, socialization patterns of mate selection, life cycle processes, and norms of human sexuality.

3970. DIRECTED STUDIES. (186075) (1-15 cr per term; prereq #, Δ, □) Staff
Guided individual reading or study.

R.5162. CRIMINAL PROCEDURE IN AMERICAN SOCIETY. (989617) (4 cr; limited to 60 students; 0915-1015 MTWThF; HHH Ctr 25) Samaha
Power of the state to intrude into lives of citizens and deprive them of life, liberty, and property in order to enforce criminal laws; topics such as arrest, search and seizure, pretrial practices, and prisoners' rights. Suggested limits on discretionary power of police, prosecutors, judges, and corrections authorities.

5970. DIRECTED STUDIES. (086076) (1-15 cr per term; prereq #, Δ, CLA approval) Staff
Guided individual reading or study.

8090. TOPICS IN SOCIOLOGY. (885110) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (688736) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488737) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.1001. INTRODUCTION TO SOCIOLOGY. (286729) (4 cr; limited to 125 students; 0915-1015 MTWThF; BlegH 125) Kennedy
See First Term.

R.1003. SOCIAL PROBLEMS. (991884) (4 cr; limited to 75 students; 0915-1015 MTWThF; BlegH 250) Cooperman

Sociological analysis of major contemporary problems; theory behind the causes, discussion of methods for studying them and analysis of potential solutions. Problems may include poverty, racial discrimination, inequality, sex roles, crime, drugs, population problems, and pollution.

R.3102. INTRODUCTION TO CRIMINAL BEHAVIOR AND SOCIAL CONTROL. (386298) (4 cr; prereq 3101; limited to 70 students; 0800-0900 MTWThF; BlegH 115) Staff
Basic issues in criminology and the sociology of law and social control organizations.

R.3551. WORLD POPULATION PROBLEMS. (490455) (4 cr; limited to 60 students; 1145-1245 MTWThF; BlegH 145) Kennedy
Population growth and natural resources, population dynamics, fertility and mortality in less developed nations, population forecasts, population policies to reduce fertility.

R.3960. TOPICS IN SOCIOLOGY: LETHAL CONFLICTS. (290456) (4 cr; limited to 50 students; prereq 1001; \$Contemporary Conflict; 1145-1245 MTWThF; BlegH 420) Cooperman
Current social conflicts. Violent and non-violent conflicts in divided societies, cases, comparisons, and

outcomes. Study of selected conflicts in Yugoslavia and eastern European societies, Northern Ireland, Asia. Explanation of causes, changes, resolutions.

3970. DIRECTED STUDIES. (686730) (1-15 cr per term; prereq #, Δ, □) Staff
See First Term.

R.5161. CRIMINAL LAW IN AMERICAN SOCIETY. (789618) (4 cr; limited to 60 students; 0915-1015 MTWThF; HHH Ctr 25) Samaha
Purposes and principles of criminal law; proper limits of criminal sanction and suggested reforms in existing criminal law.

R.5705. BACKGROUNDS OF MODERN SOCIAL THOUGHT. (791885) (4 cr; limited to 50 students; prereq 8 cr in social science or #; 1030-1130 MTWThF; BlegH 135) Brustein

Originators of modern sociological theory examined through original texts: Marx, Weber, Durkheim, Freud, and Gilman. Division of labor, social cohesion, and social control, gender and social reproduction, class relations and the social organization of production, norms and values, and history.

5970. DIRECTED STUDIES. (786735) (1-15 cr per term; prereq #, Δ, CLA approval) Staff
See First Term.

8090. TOPICS IN SOCIOLOGY. (586736) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (688977) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288982) (1-36 cr [max 11 cr per summer term])

Soil Science (Soil)

439 Borlaug Hall, St. Paul. 625-1244
College of Agriculture

FIRST TERM

5114.* SPECIAL PROBLEMS IN SOILS. (185296) (1-7 cr per qtr [max 10 cr]; prereq 3125 or #) Baker, Bloom, Malzer, Graham, Rust, Grigal, Cooper
Research, readings, instruction.

8124.* RESEARCH PROBLEMS IN SOILS. (085297) (2-5 cr; hrs ar) Baker, Bloom, Dowdy, Graham, Malzer, Molina, Rust, Grigal
Individual laboratory or fieldwork on special problems in a phase of soils other than the student's major thesis. Arrangements must be made in advance.

8777. THESIS CREDITS: MASTERS. (288738) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (188739) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5114.* SPECIAL PROBLEMS IN SOILS. (586199) (1-7 cr per qtr [max 10 cr]; prereq 3125 or #) Baker, Bloom, Malzer, Graham, Rust, Grigal
See First Term.

8124.* RESEARCH PROBLEMS IN SOILS. (286200) (2-5 cr; hrs ar) Baker, Bloom, Graham, Malzer, Rust, Grigal
See First Term.

8777. THESIS CREDITS: MASTERS. (588986) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388987) (1-36 cr [max 11 cr per summer term])

South Asian Languages & Cultures (SALC)

South Asian & Middle Eastern Languages & Culture
College of Liberal Arts

FIRST TERM

3411. INTRODUCTION TO INDIAN PHILOSOPHY. (891618) (4 cr; \$5411, SoAs 3411; 1000-1230 TTh; FolH 214) Junghare

3501. THE HERITAGE OF INDIA. (091620) (4 cr; \$SoAs 3501, Hum 1211; 0915-1015 MTWThF; FolH 148) Staneslow

5411. INTRODUCTION TO INDIAN PHILOSOPHY. (691619) (4 cr; \$3411, SoAs 5411; 1000-1230 TTh; FolH 214) Junghare

8777. THESIS CREDITS: MASTERS. (990976) (1-16 [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (790977) (1-16 [max 11 cr per summer term])

SECOND TERM

R. 3413. BUDDHISM. (891621) (4 cr; \$5413, SoAs 3413, RelS 3413, RelS 5413; 1000-1230 TTh; FolH 208) Junghare

R.5413. BUDDHISM. (691622) (4 cr; \$3413, SoAs 5413, RelS 3413, RelS 5413; 1000-1230 TTh; FolH 208) Junghare

South Asian Studies (SoAs)

214 Social Science. 624-8543
(Area Studies Programs.)
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (791417) (1-15 crs; prereq #, Δ, □) Staff

SECOND TERM

3970. DIRECTED STUDIES. (591418) (1-15 crs; prereq #, Δ, □) Staff

Spanish (Span)

34 Folwell Hall. 625-5858
(Spanish and Portuguese)
College of Liberal Arts

FIRST TERM

R.1101. BEGINNING SPANISH. (5 cr, each section limited to 23 students)
Basic listening, speaking, reading, and writing skills. Stress on the development of communicative competence. Some culture readings.

Sec 1, (886077) 0800-1015 MTWThF, VinH 1

Sec 2, (985535) 0800-1015 MTWThF, FordH 70

Sec 3, (488527) 0800-1015 MTWThF, FordH 60

R.1102. BEGINNING SPANISH. (686078) (5 cr, limited to 23 students; prereq 1101; 0800-1015 MTWThF; VinH 213)
See 1101.

R.1103. BEGINNING SPANISH. (486079) (5 cr, limited to 23 students; prereq 1102; 0915-1130 MTWThF; MechE 202)
See 1101.

R.1104. INTERMEDIATE SPANISH. (886080) (5 cr; limited to 23 students; prereq 1103 or 3 yrs high school Spanish; 0915-1130 MTWThF; NichH 122)

Speaking and comprehension; development of reading and writing skills based on materials from Spain and Spanish America. Grammar review; compositions and short presentations.

R.1105. INTERMEDIATE SPANISH. (690471) (5 cr; limited to 23 students; prereq 1104 or 4 yrs high school Spanish; 0915-1130 MTWThF; KoltH 5134)
See 1104.

R.1106. INTERMEDIATE SPANISH. (889478) (5 cr; limited to 23 students; prereq 1105 or 5 years; high school Spanish; 0915-1130 MTWThF; AkerH 211)
See 1104.

R.3005. ORAL COMMUNICATION: SPEAKING AND LISTENING. (490472) (4 cr; limited to 15 students; prereq 1106 or equiv; 1030-1200 MTWThF; FolH 318) Ramos-Garcia
Dialogues, group discussions, simulated situational conversations, interviews, skits, debates based on themes from sound and video tapes, records, speakers from Spain and Spanish America. Emphasis on fluency in speaking and understanding of oral expression.

3614. DON QUIJOTE: A STUDY OF LOST ILLUSIONS. (491623) (4 cr;

COURSE DESCRIPTIONS

limited to 30 students; 0800-1030 TTh; FolH 326) Zahareas Analysis of Cervantes; Don Quijote and an examination of its reception from early 1600s to modern time; book's reception in Spanish America. Taught in English.

3730. TOPICS IN HISPANIC LINGUISTICS. (291624) (4 cr; limited to 30 students; prereq 3004 or #; 1300-1400 MTWThF; FolH 326) Klee

3970. DIRECTED STUDIES. (086952) (1-5 cr per term; prereq #, Δ, □) Guided individual reading or study.

R.3973. MAJOR PROJECT. (987740) (2 cr; A-F only) Guided individual project for Spanish majors. Used to fulfill graduation requirements. Office of Undergraduate Studies has details.

5532. LITERATURE AND NATIONAL DISINTEGRATION. (191625) (4 cr; prereq three 3xxx or 5xxx literature courses in Spanish or Portuguese or Δ; 1300-1500 M, 1300-1600 W; FolH 214) O'Connell
Literary reaction to the contemporary structural changes in the world economic system (1970 to present). Effects on literature as institution. Text related to revolutionary trends and social movements (feminism, theology of liberation, defense of human rights).

5910. TOPICS IN SPANISH PENINSULAR LITERATURE. (089298) (4 cr; prereq 3104 or SpPt 3104 or Δ; 1300-1500 T, 1300-1600 Th; FolH 312) Spadaccini
Important groups, movements, trends, methods, genres. Topics may include conversos; mysticism, poesia tradicional; essay and enlightenment; novela realista; and avant-garde.

5970. DIRECTED READINGS. (686081) (1-5 cr per term [max 15 cr]; prereq #, Δ, CLA approval; hrs ar) Staff
To fill gaps in students' preparation, especially when courses in certain indispensable topics, figures, periods, or issues have not been offered. Readings in Spanish and/or Spanish-American areas.

5990. DIRECTED RESEARCH. (989519) (1-5 cr per qtr; prereq #, Δ, CLA approval)

8750. SEMINAR IN SPANISH AND PORTUGUESE PRAGMATICS. (991626) (4 cr; prereq 5715 or #; 1300-1500 T, 1300-1600 Th; FolH 214) Ocampo
Research and critical examination of readings in specific topic of Hispanic pragmatics.

8777. THESIS CREDITS: MASTERS. (488740) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (288741) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (486082) (Cr and hrs ar; prereq Δ; mainly for PhD candidates) Staff
Authors and topics not otherwise offered. Weekly meetings based on student's research and analysis. Student and instructor agree on plan of reading or particular topics, figures, issues, etc. Readings in Spanish and/or Spanish-American areas.

FIRST AND SECOND TERMS: TEN-WEEK COURSE (Register once in Term I)

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must enroll in all three courses and may not enroll in other summer courses. Prospective students should talk to an adviser before registering for intensive language courses.

R.1101-1102-1103. BEGINNING SPANISH. (15 cr for both terms, each section limited to 23 students; prereq Δ. Dept overrides available during registration period only; 0800-1130 MTWThF; section 5, KoltH S133, sec 6, KoltH S132)
See 1101 First Term.
R.1101, Sec 5, (286083) June 15-July 8, 5 cr
R.1102, Sec 5, (186084) July 9-August 2, 5 cr
R.1103, Sec 5, (986085) August 3-25, 5 cr
R.1101, Sec 6, (786086) June 15-July 8, 5 cr
R.1102, Sec 6, (586087) July 9-August 2, 5 cr
R.1103, Sec 6, (386088) August 3-25, 5 cr

R.1104-1105-1106. INTERMEDIATE SPANISH. (15 cr for both terms, each section limited to 23 students; 0800-1130 MTWThF; sec 5, AmundH 158)
See 1104 First Term
R.1104, Sec. 5 (985423) June 15-July 8, 5 cr
R.1105, Sec. 5 (785424) July 9-August 2, 5 cr
R.1106, Sec. 5 (585425) August 3-25, 5 cr

SECOND TERM

R.1102. BEGINNING SPANISH. (5 cr, each section limited to 23 students; prereq 1101)
See 1101 First Term.
Sec 1 (186738) 0800-1015 MTWThF, FordH 70
Sec 2 (488530) 0800-1015 MTWThF, FolH 344

R.1103. BEGINNING SPANISH. (386740) (5 cr, limited to 23 students; prereq 1102; 0800-1015 MTWThF; FolH 148)
See 1101 First Term.

R.1104. INTERMEDIATE SPANISH. (190479) (5 cr; limited to 23 students;

prereq 1103 or 3 yrs high school Spanish; 0915-1130 MTWThF; CivMinE 213)
See First Term.

R.1105. INTERMEDIATE SPANISH. (186747) (5 cr; limited to 23 students; prereq 1104 or 4 yrs high school Spanish; 0915-1130 MTWThF; AmundH 120)
See 1104 First Term.

R.1106. INTERMEDIATE SPANISH. (590480) (5 cr; limited to 23 students; prereq 1105 or 5 yrs high school Spanish; 0915-1130 MTWThF; FolH 426)
See 1104 First Term.

R.3104. THE ART OF READING LITERARY TEXTS. (889772) (4 cr; limited to 15 students; \$LAS 3104, Spn 3104; prereq 3002; 1300-1400 MTWThF; FolH 138) Reis
See First Term.

R.3512. SPANISH-AMERICAN CIVILIZATION: MODERN LATIN AMERICA. (791627) (5 cr; limited to 30 students; \$LAS 3513; prereq 3002; 1145-1245 MTWThF; FolH 218) Vidal
Spanish-American civilization from 1800 to the present. Impact of independence movements on literature, art, and music. Relationship between political development and cultural phenomena in the 19th and 20th centuries. Popular culture. Folklore and the oral tradition (ballads, corridos, folktales, the lyric, others.) The impact of 20th-century ideologies and technology on cultural development in Spanish-American republics.

3970. DIRECTED STUDIES. (487751) (1-5 cr per term; prereq #, Δ, □) Guided individual reading or study.

R.3973. MAJOR PROJECT. (787741) (2 cr; A-F only)
See First Term.

5015. METHODS OF TRANSLATION. (591628) (4 cr; prereq 10 cr from 3001-3005 series or #; 1300-1500 T, 1300-1600 Th; FolH 234) Sousa
Meaning, use, and theories of translation. Techniques and problems of translation from Spanish and Portuguese to English and vice versa. Translation patterns, use of special vocabularies and other adjuncts needed to understand both languages. Practical vocabulary and usage for various fields of work.

5920. TOPICS IN SPANISH-AMERICAN LITERATURE. (391629) (4 cr; prereq 3104 or SpPt 3104 or Δ; 1300-1500 M, 1300-1600 W; FolH 246) Jara
Important groups, movements, trends, methods, genres.

5970. DIRECTED READINGS. (086756) (1-5 cr per qtr [max 15 cr]; prereq #, Δ, CLA approval; hrs ar) Staff
See First Term.

R.5990. DIRECTED RESEARCH. (388679) (1-5 cr per qtr; prereq #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (088989) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388990) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (686758) (Cr and hrs ar; prereq Δ; mainly for Ph.D. candidates) Staff
See First Term.

Speech-Communication (Spch)

460 Folwell Hall. 624-5800
College of Liberal Arts

FIRST TERM

R.1101. FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION. (4 cr; each section limited to 22 students)
Oral communication processes and elements. Criticism and response to oral discourse. Individual speaking. Sec 1, (186089) 0800-0900 MTWThF, FolH 318
Sec 2, (586090) 0915-1015 MTWThF, FolH 318

R.1313. ANALYSIS OF ORAL ARGUMENT. (087681) (4 cr; limited to 22 students; 1030-1130 MTWThF; FolH 334)
Strategies for analyzing and evaluating arguments received aurally. Problems in listening and responding to argument.

3211. DETERMINANTS OF BROADCAST PROGRAMMING. (791630) (4 cr; 0800-1015 MTW; FolH 50) Browne
Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. Problem areas in programming.

3402. COMMUNICATION IN RELATIONSHIPS. (591631) (4 cr; prereq 1102; limited to 25 students; 0915-1130 MTW; FolH 208) Hewes
Communicative interactions between individuals in acquaintance, friendship, work, and significant ongoing relationships from onset to termination.

R.3411. SMALL GROUP COMMUNICATION PROCESSES. (4 cr; each section limited to 22 students; prereq 1101 or #)
Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings. Sec 1, (585408) 0800-1015 MWF, FolH 419
Sec 2, (588390) 1030-1245 MWF, FolH 419

COURSE DESCRIPTIONS

R.3451. INTERCULTURAL COMMUNICATION: THEORY AND PRACTICE. (887682) (4 cr; prereq planning an intercultural experience; limited to 20 students; 0915-1015 MTWThF; FolH 334)

Theories of intercultural communication; factors influencing intercultural communication for students wishing to become both knowledgeable and proficient in interaction across cultures.

3601. APPROACHES TO PUBLIC DISCOURSE. (188537) (4 cr; prereq 1101; 0800-0900 MTWThF; FolH 104) Scott

Theoretical systems intended to explain or direct the creation of public discourse. Traditional rhetoric to contemporary perspectives. Using theory to explain the practice of public discourse.

3970. DIRECTED STUDIES. (386091) (Cr ar [cr does not count toward speech-communication major]; prereq at least one course in speech-communication, #, Δ, □) Individual study projects in speech-communication. Consultation with an instructor who agrees to supervise the project is required.

3980. DIRECTED INSTRUCTION. (186092) (1-4 cr per term [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ, □)

Students work with an instructor in planning and teaching an undergraduate course.

5211. CONTEMPORARY PROBLEMS IN AMERICAN BROADCASTING. (091634) (4 cr; limited to 20; prereq 3211, sr; 1300-1530 TTh; FolH 419)

Braun
Problems affecting American commercial and educational broadcasting. Cable television, prime-time television programming, violence on television, management issues, regulatory agencies.

R.5414. AUTHORITY AND POWER IN TASK-ORIENTED COMMUNICATION-June 15-29. (888539) (4 cr; limited to 50 students; S-N only; prereq 3411 or #; 1615-1815 MTWThF; 0900-1700 Sa, Su; FolH 306) Shapiro

Authority and power in task-oriented groups. Tavistock type, small group, intergroup, and large group laboratory experiences. Verbal and nonverbal processes that operate in and among groups to facilitate or inhibit effective leadership and followership.

5970. DIRECTED READINGS. (086093) (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ, CLA approval) Directed reading and preparation of reports on selected subjects.

8110. SEMINAR: ADVANCES SPEECH PROBLEMS. (391632) (3 cr; prereq undergrad degree in spch-

comm or equiv; 1300-1515 ThF; FolH 426) Hewes
Evaluation of research methods in speech and communication.

8130. SEMINAR: ADVANCED SPEECH PROBLEMS. (990542) (3 cr; prereq undergrad degree in spch-comm or equiv; 1300-1515 MW; FolH 426) Scott
Evaluation of research methods in speech and communication.

8501. INTROCUION TO SURVEY RESEARCH IN SPEECH-COMMUNICATION. (191633) (3 cr; prereq Jour 8001 or #; 1030-1245 TTh; FolH 426) Tims
Research-survey-based projects in broadcasting and public address. Execution of small scale, research-based survey; problems attendant upon execution of studies.

8777. THESIS CREDITS: MASTERS. (188742) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (988743) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH. (886094) (Cr ar; prereq #, Δ)
Open to graduate students engaged in research on special problems.

SECOND TERM

R.1101. FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION. (686761) (4 cr, limited to 22 students; 0800-0900 MTWThF; FolH 419)
See First Term.

1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS. (589295) (4 cr; 0915-1015 MTWThF; FolH 419)
Introduction to communication theory and research focusing on interpersonal, intercultural, group, and family settings.

R.1313. ANALYSIS OF ORAL ARGUMENT. (687683) (4 cr; limited to 22 students; 1030-1130 MTWThF; FolH 318)
See First Term.

3401. THEORIES OF PERSON TO PERSON COMMUNICATION. (891635) (4 cr; prereq 1102 or #, Psy 1001; 0800-0900 MTWThF; FolH 104) Sykes
Social scientific perspectives on talk. Review of variable analytic, covering-law, pragmatic, and rule-based theories of conversation.

R.3411. SMALL GROUP COMMUNICATION PROCESSES. (4 cr; each section limited to 22 students; \$3641; prereq 1101 or #)
See First Term.
Sec 1, (385409) 0800-1015 MWF; FolH 334
Sec 2, (488673) 1030-1245 MWF; FolH 419

3431. THE ROLE OR PERSUASION IN THE MODERN WORLD. (691636) (4 cr; soph standing rec; limited to 30; 0915-1015 MTWThF; FolH 326)
Persuasion in interpersonal, organizational, intracultural, and intercultural relationships. Contemporary persuasion, with occasional historical segments.

R.3441. COMMUNICATING IN ORGANIZATIONS. (389296) (4 cr; prereq 1101 or 1102 or equiv; limited to 22 students; 1145-1245 MTWThF; FolH 340)
Theory and practice of communicating in organizations. How communication creates, maintains, and changes organizational culture. Role of individual communicator in organizational culture.

R.3451. INTERCULTURAL COMMUNICATION: THEORY AND PRACTICE. (189297) (4 cr; prereq planning an intercultural experience; limited to 20 students; 0915-1015 MTWThF; FolH 318)
See First Term.

3970. DIRECTED STUDIES. (686775) (Cr ar [cr does not count toward speech-communication major]; prereq at least one course in speech-communication, #, Δ, □)
See First Term.

3980. DIRECTED INSTRUCTION. (286777) (1-4 cr per term [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ, □)
See First Term.

R.5405. NONVERBAL COMMUNICATION: THEORY AND RESEARCH-July 22-August 6. (490553) (4 cr; limited to 20 students; 1145-1500 MTWThF; FolH 50) Sykes
Nonverbal interpersonal communication. Nonverbal categories: gesture, facial expression, posture, clothing, environment.

R.5441. COMMUNICATION IN HUMAN ORGANIZATIONS. (489774) (4 cr; limited to 25 students; prereq 3401 or 8 cr in social science, 3441 or #; 0915-1130 MTW; FolH 340) Poole
Communication in organizational settings. Organizational structure and dynamics and their effect upon the communication process. Individual projects.

5970. DIRECTED READINGS. (986779) (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ, CLA approval)
See First Term.

8110. SEMINAR: ADVANCED SPEECH PROBLEMS. (289775) (3 cr; prereq undergrad degree in speech-comm or equiv; 1030-1245 MW; FolH 344) Browne
Evaluation of research methods in speech and communication.

8777. THESIS CREDITS: MASTERS. (088992) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688994) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH. (786783) (Cr ar; prereq #, Δ)
See First Term.

Statistics (Stat)

270 Vincent Hall. 625-8046
College of Liberal Arts

FIRST TERM

R.3011. STATISTICAL ANALYSIS. (788310) (4 cr; limited to 50 students; prereq college algebra; 1030-1130 MWF, 1030-1230 TTh; Phys 210)
Descriptive statistics; elementary probability; estimation; one- and two-sample tests; introduction to regression and ANOVA.

R.3091. INTRODUCTION TO PROBABILITY AND STATISTICS. (685075) (4 cr, \$5121, \$5131; limited to 40 students; prereq differential and integral calculus; 1030-1230 MW, 1145-1245 TTh; VinH 311)
Elementary probability and probability distributions, sampling and elements of statistical inference.

R.5021. STATISTICAL ANALYSIS. (888038) (5 cr, \$3012; limited to 30 students; prereq college algebra; 0915-1015 MTWThF, 1100-1230 TTh; ClaOff B42)
Frequency distributions, descriptive statistics, elementary probability; binomial, Poisson, and normal distributions, estimation and testing, analysis of variance, multiple comparisons, linear regression.

5121. THEORY OF STATISTICS. (686095) (5 cr; prereq Math 1261; 0915-1015 MTh, 0915-1115 TWF; Arch 50)
Univariate and multivariate distributions, law of large numbers, sampling, likelihood methods, estimation and hypothesis testing.

R.5302. APPLIED REGRESSION ANALYSIS. (989780) (5 cr, \$5161; prereq 3012 or 5021 or 5133 or #; limited to 30 students; 0910-1020 MTWThF, 1330-1430 TTh; ClaOff B25)
Simple, multiple, and polynomial regression. Estimation, testing, and prediction. Stepwise and other numerical methods; examination of residuals; weighted least squares; nonlinear models; response surface. Experimental research and economic applications.

5890. SENIOR PAPER. (287718) (2 cr; prereq sr statistics major; A-F only)
Satisfies senior project requirement for majors. Directed study. Paper on specified area, a consulting project, or original computer program.

COURSE DESCRIPTIONS

8777. THESIS CREDITS: MASTERS. (588745) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (388746) (1-36 cr [max 11 cr per summer term])

SECOND TERM

R.1001. INTRODUCTION TO IDEAS OF STATISTICS. (588311) (4 cr; limited to 40 students; prereq high school algebra; 1030-1130 MWF, 1030-1230 TTh, VinH 206) Controlled vs. observational studies; presentation and description of data; correlation and causality; sampling, accuracy of estimates; tests.

R.3012. STATISTICAL ANALYSIS. (4 cr; each section limited to 20 students; prereq 3011) ANOVA; randomized blocks; multiple comparisons; factorial experiments; multiple regression; transformations; goodness of fit; nonparametric methods; contingency tables; selected topics.
Sec 1, (388312), 0915-1015 MWTh, 0915-1115 TF; VinH 203
Sec 2, (289503), 1015-1215 MTh, 1115-1215 TWF; VinH 203

R.3091. INTRODUCTION TO PROBABILITY AND STATISTICS. (186786) (4 cr, \$5121, \$5131; limited to 40 students; prereq differential and integral calculus; 0915-1015 MWF, 0915-1115 TTh; Arch 5) See First Term.

R.5122. THEORY OF STATISTICS. (886791) (5 cr; prereq 5121; limited to 35 students; 0915-1015 MTh, 0915-1115 TWF; 1030-1130 TTh; VinH 1) Confidence intervals, testing hypotheses, regression, analysis of variance and covariance, distribution-free methods.

R.5301. DESIGNING EXPERIMENTS. (789781) (5 cr, \$5163; limited to 30 students; prereq 3012 or 5021 or 5133 or #; 0910-1020 MTWThF, 1330-1430 TTh; ClaOff B45) Control of variation, construction and analysis of complete and incomplete block, split plot, factorial, and groups of similar experiments. Confounding, crossover, and optimum seeking designs.

5890. SENIOR PAPER. (188692) (2 cr; prereq sr statistics major; A-F only) Satisfies senior project requirement for majors. Directed study. Paper on specified area, a consulting project, or original computer program.

8777. THESIS CREDITS: MASTERS. (788999) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689000) (1-36 cr [max 11 cr per summer term])

Surgery (Surg)

11-100 Phillips-Wangensteen Building, 625-1400 Medical School

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in term I)

Elective Courses for Undergraduate Students

5526. CLINICAL NUTRITION SEMINAR. (589412) (1 cr; prereq acceptance MS program NSS diet or Kellogg fellow; 1300-1430 Th; PWB 11-157; S-N only) Shrouts

5527. HOSPITAL NUTRITION SUPPORT. (389413) (9 cr; prereq acceptance to MS program NSS diet; S-N only) Shrouts

Required Courses for Graduate Students

8200. CLINICAL SURGICAL PROBLEMS IN MANAGEMENT. (187193) (5 cr; ar) Najarian, staff

8201. SURGERY-ROENTGENOLOGICAL CONFERENCE. (087194) (1 cr; 1600-1730 F; Mayo C321-Todd Amph) Najarian

8202. SURGICAL RESEARCH. (887195) (5 cr; ar; Sur Res Lab) Staff

8203. SURGERY COMPLICATIONS AND RESEARCH CONFERENCE. (687196) (1 cr; 1630-1730 T; PWB 11-157) Najarian, staff

8207. TRANSPLANTATION AND BONE MARROW CONFERENCE. (487197) (1 cr; 1630-1730 Th; PWB 11-157) Najarian

FIRST TERM

8777. THESIS CREDITS: MASTERS. (188747) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088748) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189003) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789005) (1-36 cr [max 11 cr per summer term])

Swedish (Swed)

200 Folwell Hall, 625-9887 (Scandinavian Languages and Literature) College of Liberal Arts

FIRST AND SECOND TERMS: TEN-WEEK COURSE (Registration once in Term I)

R.1101-1102-1103. BEGINNING SWEDISH. (15 cr for both terms; limited to 20 students; 0900-1245 MTWTh; FolH 246) Stockentrom
R.1101, Sec 5, (491637) June 15-July 8, 5 cr
R.1102, Sec 5, (291638) July 9-August 3, 5 cr
R.1103, Sec 5, (191639) August 4-25, 5 cr

T

Textiles and Clothing (TexC)

240 McNeal Hall, St. Paul, 624-9700 (Design, Housing, and Apparel) College of Home Economics

FIRST TERM

R.3217. AESTHETICS OF CLOTHING. (691877) (3 cr; limited to 48; \$3662; prereq Dsgn 1300 or 1501 or #; 0900-1130 TTh; McNH 376) DeLong
Perception of design elements and artistic principles for clothing applied in specific laboratory problems.

R.3241. MERCHANDISING PRINCIPLES. (392022) (4 cr; \$3643; prereq 1211 or 1641, 3203 or 3003, Math 1131; limited to 50 students; 0800-1030 MWF; McNH 376) Johnson
Principles and mathematics of merchandise inventory control and the merchandise selection process; includes a computer component.

8280. DIRECTED STUDY IN APPAREL SCIENCES AND DESIGN. (192023) (1-4 cr; prereq #; A-F only) Independent study under tutorial guidance.

8290. READINGS IN APPAREL SCIENCES & DESIGN. (191874) (1-3 cr; prereq #; A-F only) Independent study and review of books and periodicals useful for individual programs, but not available in the course offerings.

SECOND TERM

R.5254. PERFORMANCE EVALUATION; FABRIC AND GARMENTS. (291879) (5 cr; limited to 24 students \$5627; prereq 3216 or 3621; 0900-1200 MWF; McNH 322) LaBat

Standard laboratory methods for rapid prediction of performances of textile fabrics and products.

8280. DIRECTED STUDY IN APPAREL SCIENCES AND DESIGN. (092024) (1-4 cr; prereq #; A-F only) Independent study under tutorial guidance.

8290. READINGS IN APPAREL SCIENCES & DESIGN. (892025) (1-3 cr; prereq #; A-F only) Independent study and review of books and periodicals useful for individual programs, but not available in the course offerings.

Theatre Arts (Th)

208 Middlebrook Hall, 625-6699 College of Liberal Arts

FIRST TERM

R.3513. TECHNICAL THEATRE PRODUCTION I. (391419) (5 cr; limited to 40 students; prereq 1504; 0800-1015 MTWTh; RarigC 275) Brockman, Gwinup
Theory and practice of design and execution of stage scenery and properties. Laboratory.

R.3701. INTRODUCTION TO DIRECTING. (591421) (4 cr; limited to 12 students; prereq 1101, 1301 or 1321, or major or minor; 0915-1130 MTWTh; RarigC 185) Adey
A creative approach to basic stage direction techniques, stressing elementary script analysis, rehearsal techniques, improvisation, blocking and movement.

R.3712. INTERMEDIATE STAGE DIRECTION. (191423) (4 cr; limited to 12 students; prereq 3711, jr or sr; 1300-1515 MTWTh; Rarig 185) Adey
Script analysis, rehearsal technique, and actor coaching. Rehearsal and production of scenes.

5100. THEATRE PRACTICUM. (486096) (1-6 cr; prereq written permission, #, Δ; A-F only) Staff
Arranged individual creative projects in production of approved plays. Playwriting, directing, acting, and design.

5110. THEATRE PERFORMANCE. (286097) (1 cr [9 cr max]); prereq written permission after casting and/or assignment to a production; credit awarded after quarter performance takes place; S-N only) Staff
Participation in the rehearsals and performances of a major University Theatre production.

R.5510. DRAWING AND RENDERING FOR THEATRE DESIGNERS. (891425) (2 cr; limited to 10 students; prereq 3513 or 3515 or grad, #; 1030-1245 TTh; RarigC 275) Egan
Drawing and rendering skills for presentation of scenic and costume designs.

5720. PLAYS IN PRODUCTION AND PERFORMANCE. (485076) (2-4 cr [max 6 cr for undergrads]; prereq 5712 and written permission) Staff Work on campus or in the field with a community, high school, touring, or professional theatre group for experience in stage direction.

5760. ADVANCED STAGE MANAGEMENT. (285077) (1-3 cr [max 6 cr for undergrads]; prereq 5716 or 5716 and written permission) Staff Practical experience in stage management for specific productions of the University Theatre with emphasis on rehearsal and performance.

R.5930. TOPICS IN THEATRE: Dance for Musical Theatre. (690891) (2 cr [max 12 cr]; limited to 30 students; 1415-1630 TTh; RarigC 10) Command Musical-theatre dance for less-experienced as well as experienced performers. A practical approach to necessary skills, including dance audition techniques.

R.5940. TOPICS IN THEATRE: SHOW BIZ: Staging And Performing Musical Theatre. (490892) (4 cr [max 12 cr]; limited to 30 students; 1300-1630 MWF; RarigC 190 and 20) Command, Ruth

An intensive fundamental course in music-theatre performance, staging and choreography. For actors, singers, dancers, directors, and choreographers who would like to expand their skills. Includes audition techniques and contact with professional guest artists. Taught by two music-theatre professionals with extensive experience in the Twin Cities and Hollywood.

5970. DIRECTED READINGS. (1-6 cr; prereq 9 cr in theatre, #, Δ, CLA approval) Staff Directed reading and preparation of reports on selected subjects. Sec 1, (986099) Sec 2, (189518)

8100. THEATRE PRACTICUM. (691426) (1-6 crs; prereq , written #) Design Faculty Arranged individual creative advanced projects in the production of a play of an actor, designer, director, dramaturg, or playwright.

8777. THESIS CREDITS: MASTERS. (188750) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (088751) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH. (186098) (Cr ar; prereq #, Δ) Staff Open to graduate students engaged in research on special problems.

SECOND TERM

3171. HISTORY OF THE THEATRE. (491427) (4 cr; prereq 1101, theatre

major; 1030-1245 MW; 1030-1130 T; RarigC 210) Kobialka History of Western theatre and drama; theatrical practices, staging conventions and dramatic structure of plays. Ancient Greece through Renaissance.

3711. BEGINING STAGE DIRECTION. (189292) (4 cr; prereq 1504, 3701, jr or sr; 0915-1130 MTWTh; RarigC 210; A-F only) Adey Theory of direction; concept and analysis. Blocking and production of short scenes.

5100. THEATRE PRACTICUM. (691202) (1-6 cr; prereq written permission, #, Δ; A-F only) Staff Arranged individual creative projects in production of approved plays. Playwriting, directing, acting, and design.

5950. TOPICS IN THEATRE: Arts, Entertainment and Popular Culture in Victorian United States-July 27-August 12. (190501) (4 cr; 1145-1245 MTWTh; RarigC 75) Adey An examination of changing trends that occurred in the 19th century, especially in the performing arts and theatre. Field trips and guest lectures. See box on page xx.

5970. DIRECTED READINGS. (1-6 cr; prereq 9 cr in theatre, #, Δ, CLA approval) Staff Directed reading and preparation of reports on selected subjects. Sec 1, (690115) Sec 2, (491959)

8100. THEATRE PRACTICUM. (591428) (1-6 cr; prereq , written #) Design faculty. Arranged individual creative advanced projects in the production of a play of an actor, designer, director, dramaturg, or playwright.

8777. THESIS CREDITS: MASTERS. (089009) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189011) (1-36 cr [max 11 cr per summer term])

Therapeutic Radiology (TRad)

M-10 Masonic Cancer Center. 626-6700
Medical School

FIRST TERM

3122. RADIATION PHYSICS. (085042) (3 cr; prereq 3121)

3151. RADIATION ONCOLOGY TREATMENT PLANNING. (885043) (4 cr; prereq #)

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I);

5508. SPECIAL PROBLEMS IN RADIATION BIOLOGY. (887200) (Cr ar)

5512. DOSIMETRY OF INTERNAL AND EXTERNAL RADIATION EMITTERS. (687201) (1 cr; 0730-0830 W; UHosp 1243) Khan, Werner, Deibel, Gerbi

8310. FUNDAMENTALS OF RADIATION THERAPY. (187204) (1 cr; 1600-1700 M; UHosp 1243)

8315. RADIATION THERAPY PATHOLOGY. (987205) (1 cr)

8410. SEMINAR: RADIATION BIOLOGY. (187209) (1 cr; prereq #) Song, others

8450. RESEARCH IN RADIATION

Theriogenology (Tgen)

FIRST TERM

8777. THESIS CREDITS: MASTERS. (289131) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189132) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (989133) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789134) (1-36 cr [max 11 cr per summer term])

U

University College (UC)

12 Morrill Hall. 624-2022

FIRST TERM

3075. INDEPENDENT STUDY. (186156) (Cr ar; prereq Δ)

SECOND TERM

3075. INDEPENDENT STUDY. (187288) (Cr ar; prereq Δ)

Urban Studies (UrbS)

348 Social Sciences. 626-1626
College of Liberal Arts

SECOND TERM

3900. INTERNSHIP. (388536) (1-6 cr per term [max 12 cr]; prereq jr or sr, #; 1730-1930 T; SocSci 101; A-F only) Byers A weekly seminar integrating the internship experience with the academic program. Should be taken during or immediately after the internship. This offering for 3 credits.

3970. DIRECTED STUDIES. (088538) (2-6 cr; prereq #, Δ, p) Martin

Urologic Surgery (Urol)

A-597 Mayo. 625-9933
Medical School

FIRST TERM

Required Courses for Graduate Students

8250. UROLOGICAL SURGERY. (087213) (4 cr; 0900-1200 MTThF; Mayo OR-H) Fraley, others Urological fellow first assists at operations in the University Hospitals and later is permitted to operate under supervision of the staff.

8251. CYSTOSCOPY AND UROLOGICAL DIAGNOSIS. (887214) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others. Urological fellow performs cystoscopies and other diagnostic procedures.

8252. UROLOGICAL CONFERENCE. (687215) (4 cr; 1600-1700 F, Ward Rds, Sta 57; 0900-1100 S, Sta 57 Conf Rm) Fraley, others Problems in diagnosis and treatment.

8253. RESEARCH: UROLOGY. (487216) (4 cr) Fraley, others Problems in experimental and clinical surgery.

8254. UROLOGICAL SEMINAR. (287217) (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (187218) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (987219) (3 cr; 1645-1745 W; Mayo A503) Fraley, others

8257. SELECTED TOPICS: ON THE GENITOURINARY SYSTEM. (088006) (2 cr) Li, Bronson

COURSE DESCRIPTIONS

SECOND TERM

Required Courses for Graduate Students

8250. UROLOGICAL SURGERY. (687585) (4 cr; 0900-1200 MTThF; Mayo OR-H) Fraley, others
See First Term.

8251. CYSTOSCOPY AND UROLOGICAL DIAGNOSIS. (187591) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others
See First Term.

8252. UROLOGICAL CONFERENCE. (787576) (4 cr; 1600-1700 F; Ward Rds, Sta 57; 0900-1100 S; Sta 57 Conf Rm) Fraley, others
See First Term.

8253. RESEARCH: UROLOGY. (187582) (4 cr) Fraley, others
See First Term.

8254. UROLOGICAL SEMINAR. (487586) (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (287950) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (287766) (3 cr; 1645-1745 W; Mayo A503) Fraley, others

V

Veterinary Biology (VB)

295K Animal Science, St. Paul. 624-2700
College of Veterinary Medicine

FIRST TERM

5149.* TOPICS OF ORGANOLGY. (886161) (1-5 cr [may be repeated for cr]; prereq 5104, #)
Lecture and laboratory presentation of selected organ systems of domestic and laboratory animals.

5950. DIRECTED STUDIES. (191107) (1-5 cr; prereq #, Δ)
Independent, directed study in veterinary science in area arranged by the student and a faculty member.

8111. HISTOLOGIC AND ULTRAHISTOLOGIC TECHNIQUES. (387743) (3 cr; prereq 5106, #)
Principles and methods in preparing animal tissues for histological and ultrahistological observation.

8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY. (686162) (486163) (286164) (2 cr per qtr; prereq #) Staff
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.

8134-8135. COMPARATIVE VETERINARY NEUROLOGY. (186165) (986166) (4 cr per qtr; prereq 5100, #) Fletcher, Beitz
Correlated studies of the central nervous system of domestic animals. Emphasis on relating neuroanatomy to neurophysiology.

8136. EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY. (786167) (3 cr, \$NSc 8136; prereq 8135, #) Fletcher, Beitz
Principles, methods, and laboratory exercises in investigating the central nervous system of domestic animals.

8150. RESEARCH PROBLEMS IN VETERINARY ANATOMY. (586168) (1-5 cr; prereq 8149, #)
Individual research projects under staff direction in selected areas of veterinary anatomy. Topics and species determined by consultation. Project may be a specialized aspect of a thesis problem or an independent problem of mutual interest to graduate student and adviser.

8349. RESEARCH IN PHYSIOLOGY. (386169) (Cr ar; prereq #) Duke
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.

8448. PROBLEMS IN VETERINARY PHARMACOLOGY. (786170) (Cr ar; prereq 5401, #) A. Larson, Brown

8550. SEMINAR: VETERINARY BIOLOGY. (186299) (1 cr; A-F only; prereq #) Gallant

8777. THESIS CREDITS: MASTERS. (888752) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (688753) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5149.* TOPICS OF ORGANOLGY. (087051) (1-5 cr [may be repeated for cr]; prereq 5104, #)
See First Term.

5950. DIRECTED STUDIES. (991108) (1-5 cr; prereq #, Δ)
Independent, directed study in veterinary science in area arranged by the student and a faculty member.

8111. HISTOLOGIC AND ULTRAHISTOLOGIC TECHNIQUES. (086918) (3 cr; prereq 5106, #)
See First Term.

8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY. (887052) (687053) (487054) (2 cr per qtr; prereq #) Staff
See First Term.

8134-8135. COMPARATIVE VETERINARY NEUROLOGY. (287055) (187056) (4 cr per qtr; prereq 5100, #) Fletcher, Beitz
See First Term.

8136. EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY. (987057) (3 cr, \$NSc 8136; prereq 8135, #) Fletcher, Beitz
See First Term.

8150. RESEARCH PROBLEMS IN VETERINARY ANATOMY. (787058) (1-5 cr; prereq 8149, #) Staff
See First Term.

8349. RESEARCH IN PHYSIOLOGY. (587059) (Cr ar; prereq #) Duke
See First Term.

8448. PROBLEMS IN VETERINARY PHARMACOLOGY. (987060) (Cr ar; prereq 5401, #) A. Larson, Brown

8550. SEMINAR: VETERINARY BIOLOGY. (986300) (1 cr; A-F only; prereq #) Gallant

8777. THESIS CREDITS: MASTERS. (289016) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189017) (1-36 cr [max 11 cr per summer term])

Veterinary Diagnostic Medicine (VDM)

E-220 Veterinary Diagnostic Laboratories, St. Paul. 625-8787
College of Veterinary Medicine

FIRST TERM

5111. DIAGNOSTIC MEDICINE. (091021) (2-12 crs; prereq 3rd or 4th yr vet med student)
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences to veterinary diagnostic medicine.

R.5622. PROBLEMS IN DIAGNOSTIC VIROLOGY. (390285) (1-4 cr; limited to 10 students; prereq #; A-F only)
Goyal
Laboratory techniques in diagnostic virology and viral research.

SECOND TERM

5521. SURGICAL PATHOLOGY. (290280) (3 cr; prereq #; A-F only)
Preparation and interpretation of surgical and necropsy specimens.

5522. DIAGNOSTIC PATHOLOGY. (190281) (5 cr; prereq #; A-F only)
Laboratory techniques in diagnostic virology and viral research.

R.5622. PROBLEMS IN DIAGNOSTIC VIROLOGY. (990282) (1-4 cr; limited to 10 students; prereq #; A-F only)
Goyal
See First Term.

Veterinary Medicine (CVM)

460 Veterinary Teaching Hospitals, St. Paul. 624-4747
College of Veterinary Medicine

FIRST AND SECOND TERM: TWELVE-WEEK COURSE

1809. INTERNSHIP IN ANIMAL HOSPITAL PRACTICE. (188210) (4 cr; prereq #; 0800-1630 MTWThF; VetTchHos; S-N only) Staff
Laboratories devoted to the principles and techniques of medical and surgical nursing care, examination, diagnostic and therapeutic procedures, and applied procedures in anesthesiology and radiology. Rotations in small animal medicine and surgery, large animal medicine and surgery, anesthesiology, radiology, and intensive care.

Veterinary Medicine, Graduate (VMed)

FIRST TERM

8777. THESIS CREDITS: MASTERS. (488754) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (488771) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (989018) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789019) (1-36 cr [max 11 cr per summer term])

Veterinary Microbiology (VMic)

295K Animal Science/Veterinary Medicine, St. Paul. 624-2700
(Veterinary Biology)
College of Veterinary Medicine

FIRST TERM

8777. THESIS CREDITS: MASTERS. (489077) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189079) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (889089) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189090) (1-36 cr [max 11 cr per summer term])

Veterinary Parasitology (VPar)

205 Vet Science/Veterinary Medicine, St. Paul. 624-2700
(Veterinary Pathobiology)
College of Veterinary Medicine

FIRST TERM

8777. THESIS CREDITS: MASTERS. (189082) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989083) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (689093) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489094) (1-36 cr [max 11 cr per summer term])

Veterinary Pathobiology (VPB)

205g Veterinary Science, St. Paul. 625-5255
College of Veterinary Medicine

FIRST TERM

5011. VETERINARY HOSPITAL NECROPSY. (091018) (2-12 crs; prereq 3rd or 4th yr vet med students) Hayden, staff

Necropsy techniques, examination of tissue for diagnosis, submission of tissue for laboratory analysis, and preparation of reports and records.

5021. CLINICAL HEMATOLOGY AND CYTOLOGY. (891019) (2-12 crs; prereq 3rd or 4th yr vet med student) Perman, staff

Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences in hematology and cytology.

5031. CLINICAL MICROBIOLOGY. (191020) (2-12 crs; prereq 3rd or 4th yr vet med students) Ward
Laboratories devoted to the application of principles and techniques of veterinary clinical and diagnostic microbiology.

5523. PATHOLOGY OF SPONTANEOUS DISEASES OF LABORATORY ANIMALS. (185119) (2-3 cr; prereq #) Gunther

Gross and microscopic pathology of laboratory animals.

5748 PROBLEMS IN VETERINARY MICROBIOLOGY AND PUBLIC HEALTH. (985048) (Cr ar; prereq 5703 or equiv, #)

8530. ONCOLOGY. (090287) (4 cr; prereq #) Hayden, staff
Spontaneous and induced mammalian neoplasms with emphasis on diagnosis.

8531. HOSPITAL PATHOLOGY. (685397) (1-2 cr; prereq 5501, 5502, 5503, #) Hayden, others
Necropsy and surgical pathology techniques, examination of tissues for diagnosis, preparation of reports and records.

8533. PROBLEMS: PATHOLOGY. (586171) (Cr ar; prereq #) Johnson, others

8534. PROBLEMS: CLINICAL PATHOLOGY. (386172) (Cr ar; prereq #) Perman, Weiss

8648. PROBLEMS IN VETERINARY PARASITOLOGY. (186173) (Cr ar; prereq 5602 or equiv, #) Stromberg

8720. ADVANCED VETERINARY MICROBIOLOGY. (086174) (Cr ar; prereq #) Staff
Special topics, techniques, collateral reading, and conferences.

8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY. (886175) (Cr ar; prereq #) Ward
Lectures and laboratory in techniques of diagnostic mycology, bacteriology, virology, and serology.

SECOND TERM

5523. PATHOLOGY OF SPONTANEOUS DISEASES OF LABORATORY ANIMALS. (685254) (2 cr; prereq #) Gunther
See First Term.

5533. DIRECTED STUDIES IN VETERINARY PATHOBIOLOGY. (188689) (Cr ar; prereq regis vet med, 4th yr and #)

Principles, methods, and laboratory exercises in selected pathobiological research problems. Assigned research problems conducted under faculty direction.

8531. HOSPITAL PATHOLOGY. (485398) (1-2 cr; prereq 5501, 5502, 5503, #) Hayden, others
See First Term.

8533. PROBLEMS: PATHOLOGY. (787061) (Cr ar; prereq #) Johnson, others

8534. PROBLEMS: CLINICAL PATHOLOGY. (587062) (Cr ar; prereq #) Perman, Weiss

8648. PROBLEMS IN VETERINARY PARASITOLOGY. (387063) (Cr ar; prereq 5602 or equiv, #) Stromberg

8720. ADVANCED VETERINARY MICROBIOLOGY. (187064) (Cr ar; prereq #) Staff
See First Term.

8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY. (087065) (Cr ar; prereq #) Ward
See First Term.

8725. CELL CULTURE TECHNIQUES. (186920) (2 cr; prereq 5703 or equiv, #) Shope
Laboratory exercises and discussions on culture of vertebrate cells; proper preparation of all materials necessary for handling cell cultures; establishment of primary cell cultures by various techniques and maintenance of cells as monolayers or in suspension. Animal viruses used for plaque assays, neutralization tests, limited fluorescent antibody techniques, and microtitration. Laboratory work in student's specific area of interest.

Veterinary Pathology (VPth)

205g Veterinary Science, St. Paul. 625-5255
College of Veterinary Medicine

FIRST TERM

8777. THESIS CREDITS: MASTERS. (589085) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389086) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (289095) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989097) (1-36 cr [max 11 cr per summer term])

Veterinary Surgery, Radiology and Anesthesiology (VSRA)

C350 Veterinary Hospitals, St. Paul. 625-9731
College of Veterinary Medicine

FIRST TERM

8777. THESIS CREDITS: MASTERS. (189087) (1-11 cr)

8888. THESIS CREDITS: DOCTORAL. (089088) (1-11 cr)

SECOND TERM

8777. THESIS CREDITS: MASTERS. (589099) (1-11 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289100) (1-11)

Vocational Education (VoEd)

210 Vocational/Technical Building, St. Paul. 624-1221
(Vocational and Technical Education)
College of Education

FIRST TERM

5100. SPECIAL TOPICS IN INSTRUCTION. (1-6 cr [max 9 cr]; prereq #)
Sec 1, Effective Management of Diversity in Educational Work Settings-June 15-18. (189289) 0800-1600 TWThF, VoTech R285, A-F only, Brown and Tomervik

This course will provide educators, as well as business and industry representatives, with information and strategies for understanding diversity so that it can be effectively addressed in school and work settings. Specific methods for improving assessment, training, on-the-job and interagency communications; organization transformation concepts and evaluation of students/employees will be examined. This offering for 3 credits.

Sec 2, Youth Apprenticeship and Tech Prep-June 15-25. (791823) 0900-1200 MTWThF, VoTech R385, A-F only, Stone

This course is designed to examine Youth Apprenticeship, Tech Prep, and School-Based Enterprises as important strategies for integrating academic and vocational curriculum and for improving the process of adolescent transition from school to work. This offering for 3 credits.

5101. SPECIAL TOPICS IN CURRICULUM. (1-6 cr [max 9 cr]; prereq #; A-F only)

Sec 1, Special Needs Program Improvement-June 22-30. (690549) (1300-1650 MTWThF; VoTech R285) Brown

This course will focus on the design, development, implementation or revision, and evaluation of inservice personnel development and improvement efforts. This offering for 3 credits.

Sec 2, Integration of Vocational and Academic Education-June 15-25. (991822) (1300-1600 MTWThF, VoTech R370) Lum

This course is designed for academic and vocational teachers, counselors, and administrators who are interested in curricular integration. Includes: Key concepts, the latest research, and current practice around the country regarding integration of academic and vocational education at the secondary school level. There will be opportunity to develop skills needed to plan and do curricular integration. This offering for 3 credits.

COURSE DESCRIPTIONS

R.5750. TRAINING IN INDUSTRY AND BUSINESS-June 21-July 2. (185372) (3 or 4 cr; limited to 25 students; 0800-1200 MTWThF; VoTech R285; A-F only) Lewis Appraisal of the training function in industry and business; advancement of competencies in areas of analysis, design, development, delivery, and evaluation of training. This offering for 4 credits.

R.5770. TRAINING AND DEVELOPMENT. (1-4 cr) Developments related to problems; practices; programs; methodologies in training and development.

Sec 1, Quality and Productivity Theories and Practices-July 6-16. (090550) (limited to 25 students, 1245-1715 MTWThF, VoTech R285) Peck-Chapman

This section will focus on an examination of leading quality management and productivity improvement concepts from a training and organization development perspective. Specific processes and strategies to implement Juran's, Deming's, and Crosby's concepts will be developed. This is not a statistical process control course. This offering for 4 credits.

Sec 2, Using Team Building in Business and Industry-June 21-25. (591824) (limited to 25 students, 0800-1500 MTWThF, VoTech 220; S-N only)

Focus this offering: Introduction to the theory and techniques of building effective work teams. Skills development in facilitating team-building activities. This offering for 3 credits.

R.5780. INTERNSHIP: TRAINING AND DEVELOPMENT. (785066) (Cr ar [max 15 cr]; limited to 15 students; prereq 5750; hrs ar) McLean Students apply and contract for training and development positions in industry and business; individual contracts describe the specific training and development responsibilities to be fulfilled during internship.

R.5900. USING VOCATIONAL EDUCATION RESEARCH-June 15-23. (188540) (3 cr; limited to 30 students; prereq admission to graduate-level program or #: 0830-1200 MTWThF; VoTech R280; A-F only) Daines An introduction to the role of vocational education research in professional practice, significant problems of practice for research, alternative modes of research, and synthesis and application of the results of research.

8888. THESIS CREDITS: DOCTORAL. (988774) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5101. SPECIAL TOPICS IN CURRICULUM: Current Issues in Vocational Technical Education-August 17-20. (589622)(1-6 cr [max 9 cr]; prereq #)(WThF; off campus location)

Special curriculum offering in conjunction with the Minnesota Vocational Association (MVA) annual meeting. Information will be available with MVA registration and program information or call 612/624-1700. Registration is on site for this offering.

5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION-August 2-12. (989620) (3 cr; 1300-1600 MTWThF; VoTech R385; A-F only) Peterson Interpretation of the purposes of vocational education in varying socioeconomic contexts; analysis of vocational fields in regard to recipients, practices, legislation, and funding. This course meets vocational licensure requirements.

5330. COORDINATION TECHNIQUES IN COOPERATIVE EDUCATION-August 2-12. (789621) (3 or 4 cr; BME 5352, HEEEd 5106, Ind 5310, AgEd 5071; 0915-1215 MTWThF; VoTech R385; A-F only) Leske Responsibilities of instructor-coordinator; guidance, selection, placement, supervision, and evaluation of students; articulation of related instruction; training sponsor identification, orientation, development, and evaluation of the program. This course meets vocational licensure requirements. This offering for 3 credits.

R.5760. ORGANIZATION DEVELOPMENT IN INDUSTRY AND BUSINESS-July 26-August 6. (289291) (4 cr; limited to 25 students; 0800-1200 MTWThF; VoTech R285; A-F only) Brouwer Introduction to major concepts, skills, and techniques. This offering for 4 credits.

R.5762. MANAGEMENT OF CONFLICT-July 24, 31, August 7, 14. (190555) (2 cr; limited to 25 students; 0800-1300 Sa; VoTech R285; A-F only) Conbere Types, sources, and diagnosis of conflict styles; skills and strategies for managing interpersonal, intergroup, and intragroup conflict.

R.5780. INTERNSHIP: TRAINING AND DEVELOPMENT. (787657) (Cr and hrs ar [max 15 cr]; limited to 15 students; prereq 5750) Schwartz See First Term.

R.5790. STRATEGIC PLANNING: TRAINING AND DEVELOPMENT. (391825) (3 or 4 cr; prereq VoEd 5750 or VoEd 5760; limited to 25 students; 1730-2130 TTh; VoTech R285; A-F only) Torraco Human capital as a component of industry and business strategic planning; analysis and articulation of practices. This offering for 4 credits.

8888. THESIS CREDITS: DOCTORAL. (189020) (1-36 cr [max 11 cr per summer term])

WYZ

Women's Studies (WoSt)

492 Ford Hall. 624-6006
College of Liberal Arts

FIRST TERM

R.1001. INTRODUCTION TO WOMEN'S STUDIES. (285399) (4 cr; limited to 40 students; 0915-1100 MWF; FordH 170) Mouton Brief history of feminism; overview of issues related to the current and rapidly changing role and status of women.

R.3306. U.S. MINORITY WOMEN WRITERS. (791501) (4 cr; prereq 8 cr women's studies or 4 cr women's studies and 4 cr literature, American studies, Chicano studies, Afro-American studies, or American Indian studies; 0815-1045 TTh, FordH 175) Reyes Analysis of poetry, fiction, and drama written by minority women in the United States.

3970. DIRECTED STUDIES. (388035) (1-15 cr; prereq #, Δ, □)

R.5103. FEMINIST PEDAGOGY. (389623) (4 cr; limited to 20 students; prereq 8 cr in women's studies or #: 1100-1330 TTh; FordH 170) Scheman Theory and practice of feminist teaching and learning as a system of inquiry. Emphasizes challenges raised by the diversity of women's experiences and perspectives.

5970. DIRECTED STUDIES. (085199) (1-5 cr [max 12 cr]; prereq #, Δ, CLA approval)

8970. DIRECTED STUDY. (286939) (1-8 cr; prereq completion of courses approved by faculty supervisor and DGS)

SECOND TERM

R.1003. WOMEN IN WORLD CULTURES. (591502) (4 cr; 0915-1100 MWF, FordH 175) Suleman The lives of women in non-Western societies, including their economic, political, and social contributions, familiar roles, and status in society.

R.3300. TOPICS IN WOMEN'S STUDIES: Animated Women—Images of Female Characters in Comics, Cartoons, and Feature Length Animation (A Feminist Ethnographic Study of Pop Culture and Humor). (292045)(4 cr; limited to 45 students; 1200-1430 TTh; FordH 175)Olano Course will focus on social construction of the female in comics and "tunes" (cartoons), and in animated feature films. Issues of gender, class, and race will be

examined through a study of humor and animation, both historically (early fairy tales/nursery rhymes) and in contemporary "incarnations."

R.3406. WOMEN, RACE, AND CLASS IN THE U.S. (091505) (4 cr; prereq 1001, 1002 or 1003 or major or #: 0915-1145 TTh, FordH 175) Marquit Impact of racism on women in different communities of color; Jewish American and white ethnic communities.

3970. DIRECTED STUDIES. (385264) (1-15 cr; prereq #, Δ, □)

5970. DIRECTED STUDIES. (785200) (1-5 cr; max 12 cr; prereq #, Δ, CLA approval)

8970. DIRECTED STUDY. (686940) (1-8 cr; prereq completion of courses approved by faculty supervisor and DGS)

Youth Development and Research (YoSt)

386 McNeal Hall, St. Paul. 624-3700
College of Human Ecology

FIRST TERM

5120. INDEPENDENT STUDY IN YOUTH STUDIES. (785343) (Cr ar [max 12 cr per qtr]; prereq #: hrs ar) Beker, Staff Independent reading and/or research under faculty supervision.

SECOND TERM

5120. INDEPENDENT STUDY IN YOUTH STUDIES. (986538) (Cr ar [max 12 cr per qtr]; prereq #: hrs ar) Beker, Staff See First Term.

Zoology (Zool)

100 Ecology. 625-4466
College of Biological Sciences

FIRST TERM

8777. THESIS CREDITS: MASTERS. (788775) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (588776) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389024) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189025) (1-36 cr [max 11 cr per summer term])

BUILDING ABBREVIATIONS AND BUILDING ACCESSIBILITY INFORMATION

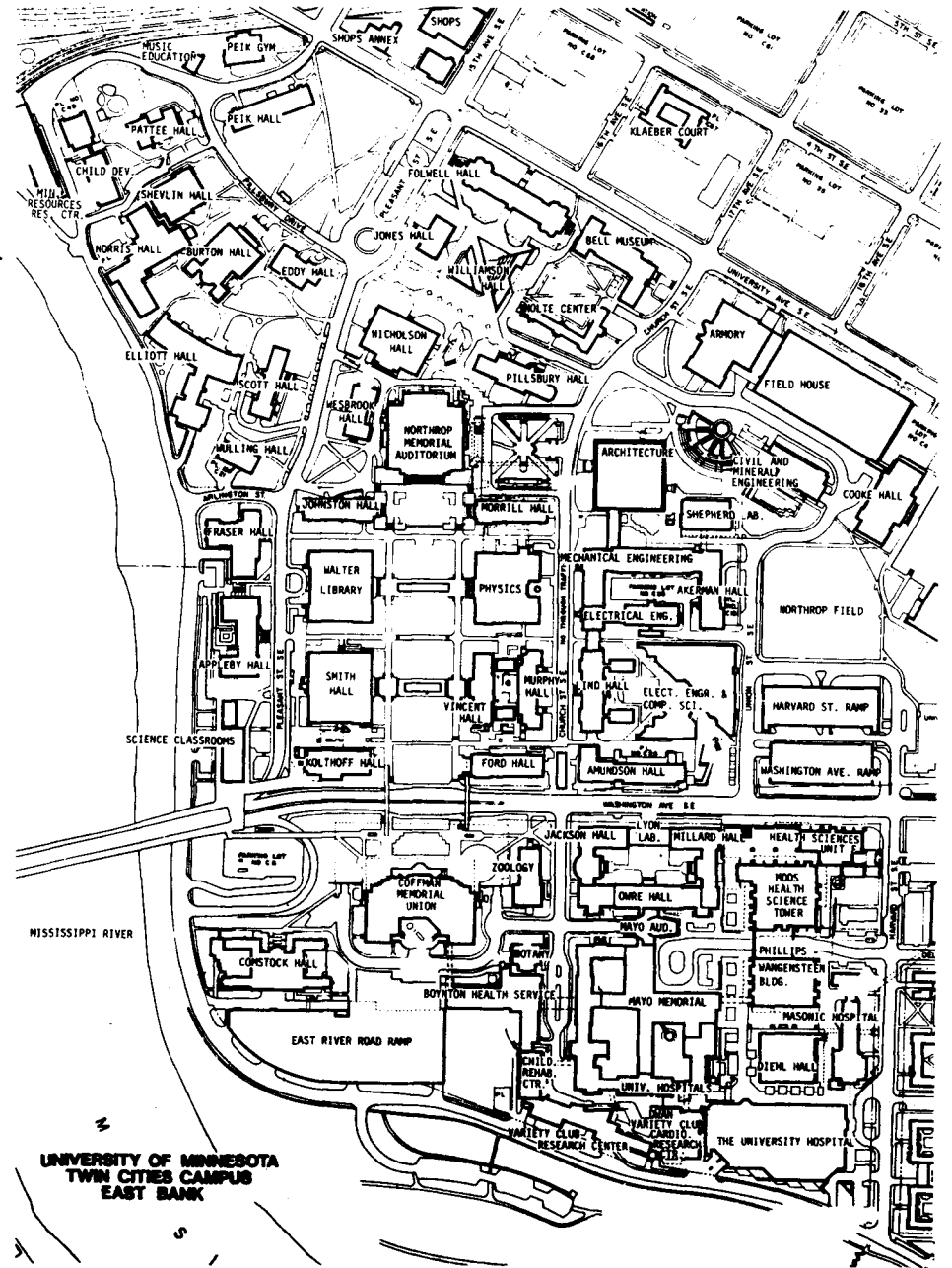
MINNEAPOLIS East Bank

AkerH, Akerman Hall □
 AmundH, Amundson Hall ◊ * L
 ApH, Appleby Hall ■ *
 Arch, Architecture ◊ L
 Armory □
 BellMus, Museum of Natural History ◊ L
 BFAB, Bierman Field Athletic Building □ * L
 Botany □
 BoynHS, Boynton Health Service ◊ * L
 BuH, Burton Hall ◊ L
 CenH, Centennial Hall
 ChDev, Child Development ◊
 ChRC, Children's Rehabilitation Center ◊
 L
 CivMinE, Civil and Mineral Engineering ◊
 L
 CMU Coffman Memorial Union ◊ * L
 ComH, Comstock Hall □
 CookeH, Cooke Hall ■
 DiehlH, Diehl Hall ◊
 DVCCRC, Dwan Variety Club
 Cardiovascular
 Research Center ◊ * L
 EddyH, Eddy Hall ■
 EdHAN, Eddy Hall Annex
 EE/CSci, Electrical Engineering/Computer
 Science Building ◊ * L
 ElectE, Electrical Engineering □
 EllH, Elliott Hall ◊ * L
 FieldHse, University Field House
 FolH, Folwell Hall ◊ * L
 FordH, Ford Hall ◊ * L
 FraserH, Fraser Hall □
 FronH, Frontier Hall ◊
 HL, St. Anthony Falls Hydraulic Laboratory
 (Hennepin Island)
 HSUnitF, Health Sciences Unit F ◊ * L
 JachH, Jackson Hall ◊
 JOAd, Jackson-Owre Addition ◊ * L
 JohH, Johnston Hall ◊ * L
 JonesH, Jones Hall ■
 KlaCt, Klaeber Court □
 KoltH, Kolthoff Hall ◊ * L
 LindH, Lind Hall ◊ * L
 LyonL, Lyon Laboratories
 Mayo, Mayo Memorial ◊ * L
 MechE, Mechanical Engineering ◊ * L

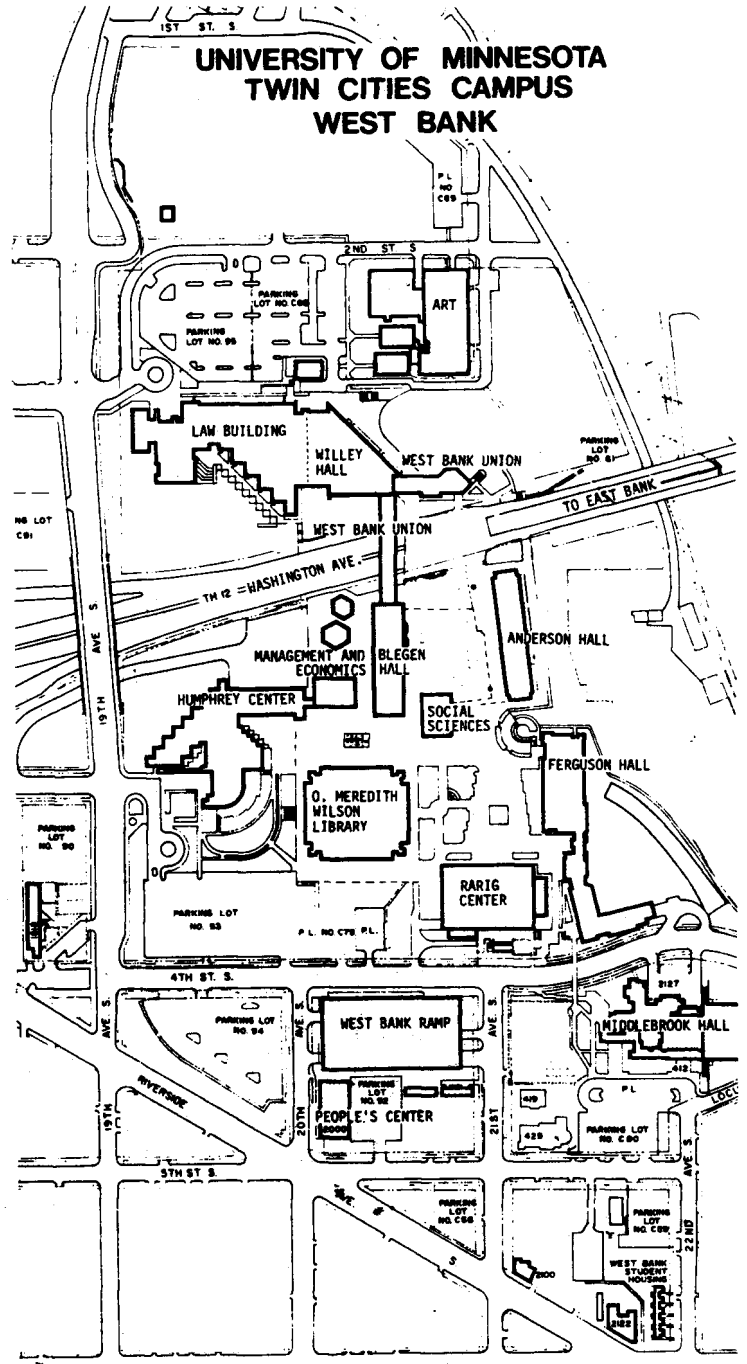
MirdH, Millard Hall ◊
 MMA, Mayo Memorial Auditorium □
 MoosT, Moos Health Sciences Tower ◊ * L
 MorH, Morrill Hall ◊ * L
 MRRC, Mineral Resources Research
 Center ■
 MurH, Murphy Hall ■
 MusEd, Music Education ■
 NichH, Nicholson Hall ◊ * L
 NMA, Northrop Memorial Auditorium ◊ * L
 NorrisH, Norris Hall □ L
 OwreH, Owre Hall ◊ * L
 PeikG, Peik Gym □
 PeikH, Peik Hall □ *
 Phys, Tate Laboratory of Physics ◊
 PiH, Pioneer Hall □
 PillsH, Pillsbury Hall
 PTH, Pattee ◊
 PWB, Phillips Wangensteen Building ◊ * L
 SaH, Sanford Hall ■
 SciCB, Science Classroom Building □ *
 ScottH, Scott Hall ■
 ShepLab, Shepherd Laboratories ◊
 ShevH, Shevlin Hall ◊
 SmithH, Smith Hall ◊
 Stad, Stadium □ L
 TerH, Territorial Hall ■
 UAqCtr, University Aquatic Center ◊ * L
 UHosp, University Hospital ◊ * L
 VinH, Vincent Hall ◊
 WaLib, Walter Library ◊ * L
 WesH, Westbrook Hall ■
 WmsA, Williams Arena □ L
 WmsonH, Williamson Hall ◊ * L
 WullH, Wulling Hall □ *
 Zoology ◊ * L

CODES:

- ◊ = accessible building
- = partially accessible
- = inaccessible building
- * = elevator
- L = adapted restroom



For a map, *Campus Accessibility Guide*, and further information, contact the Office for Students with Disabilities at 624-4037.



**BUILDING ABBREVIATIONS AND
BUILDING ACCESSIBILITY INFORMATION**

**MINNEAPOLIS
West Bank**

- AndH, Anderson Hall Ⓢ*
- ArtB, Art Building (2020 Washington Ave S) Ⓢ
- BlegH, Blegen Hall Ⓢ* L
- FergH, Ferguson Hall Ⓢ* L
- HHH Ctr, Humphrey Center Ⓢ* L
- Law, Law Building Ⓢ* L
- MdbH, Middlebrook Hall Ⓢ* L
- Mgmt/Econ, Management/Economics Building Ⓢ*
- OMWL, O Meredith Wilson Library Ⓢ* L
- PeoCtr, People's Center (2000 5th Street)
- RarigC, Rarig Center Ⓢ* L
- SocSci, Social Sciences Building Ⓢ*
- WBU, West Bank Union ⓈL
- WilleyH, Willey Hall Ⓢ* L

CODES:

- Ⓢ = accessible building
- Ⓢ = partially accessible
- = inaccessible building
- * = elevator
- L = adapted restroom

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BUILDING ABBREVIATIONS AND BUILDING ACCESSIBILITY INFORMATION

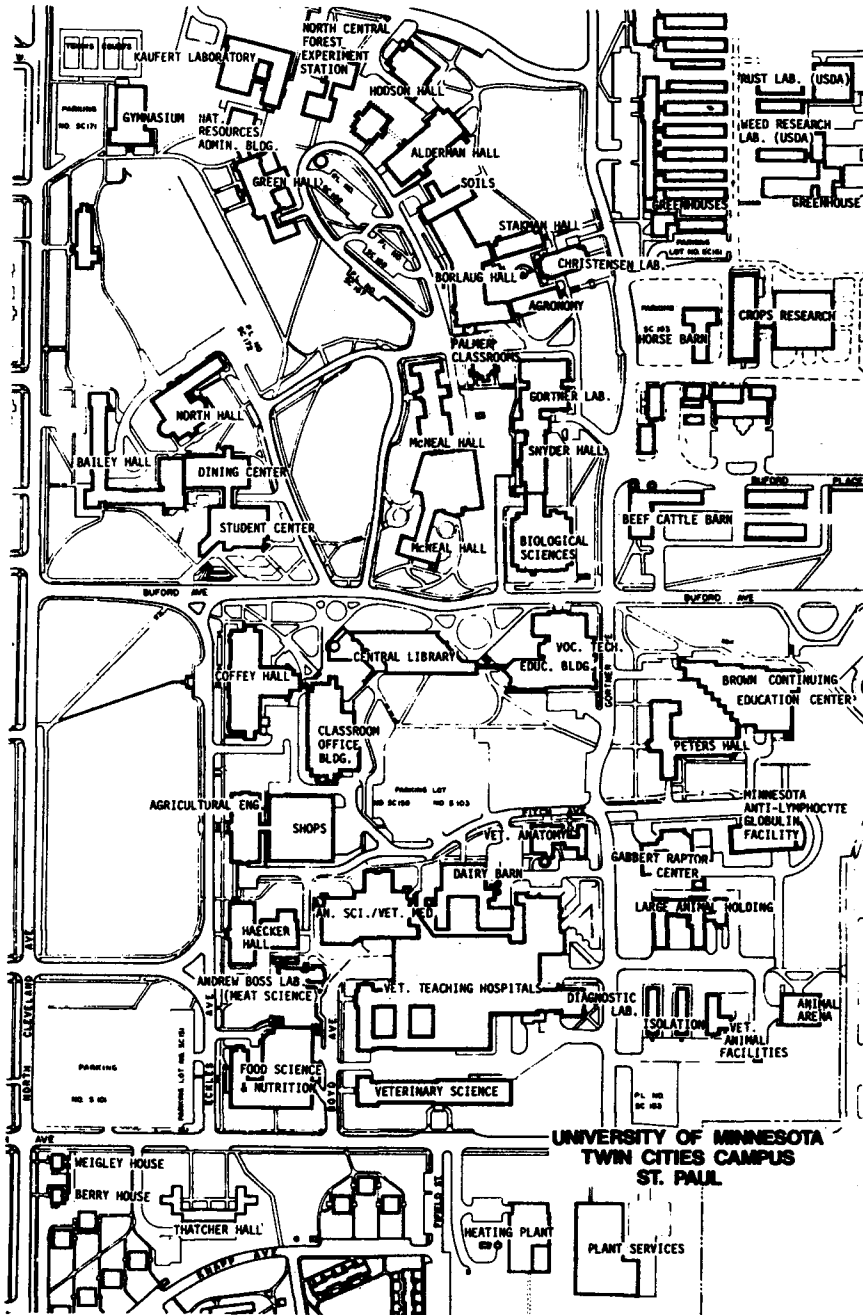
ST. PAUL

- ABLMS, Andrew Boss Laboratory-Meat Science ♂*
 AgEng, Agricultural Engineering □*
 AgEngShop, Agriculture Engineering Shop ♂
 Agr, Agronomy ■
 AgGhCl, Agronomy Greenhouse Classroom ♂
 AgrPGGh, Agronomy/Plant Genetics Greenhouse
 AlderH, Alderman Hall ♂*
 AnAren, Animal Arena
 AnScVM, Animal Science, Veterinary Medicine □*
 BCB, Beef Cattle Barn ♂
 Berry, Berry House (1304 Cleveland Ave N) □
 BioSci, Biological Sciences Center □*
 BorH, Borlaug Hall ♂* L
 CentLib, St. Paul Campus Central Library ♂*
 ClaOff, Classroom Office Bldg ♂*
 CoffH, Coffey Hall ♂*
 DinC, Dining Center ♂*
 EBCEC, Earle Brown Continuing Education Center ♂* L
 FScN, Food Science and Nutrition ♂*
 GorL, Gortner Laboratory of Biochemistry ♂*
 GrnH, Green Hall ♂* L
 Gym, Gymnasium ■
 HckrH, Haecker Hall □
 HodsonH, Hodson Hall ♂*
 HrG, Horticulture Greenhouse
 KaufL, Kaufert Laboratory ♂*
 McNH, McNeal Hall ♂* L
 NatResAd, Natural Resources Administration Building ♂* L
 NorthH, North Hall ■
 PetH, Peters Hall □
 PlSci, Plant Sciences ■
 SnH, Snyder Hall
 Soils ♂*
 StakH, Stakman Hall of Plant Pathology ■
 StCen, Student Center ♂* L
 VetA, Veterinary Anatomy □
 VetDL, Veterinary Diagnostic Laboratories ■
 VetS, Veterinary Science ■
 VetTchHos, Veterinary Teaching Hospitals □
 VoTech, Vocational-Technical Education ♂* L
 Weigley, Weigley House (1316 Cleveland Ave N)

CODES:

- ♂ = accessible building
- = partially accessible
- = inaccessible building
- = elevator
- L = adapted restroom

For a map, *Campus Accessibility Guide*, and further information, contact the Office for Students with Disabilities at 624-4037.



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