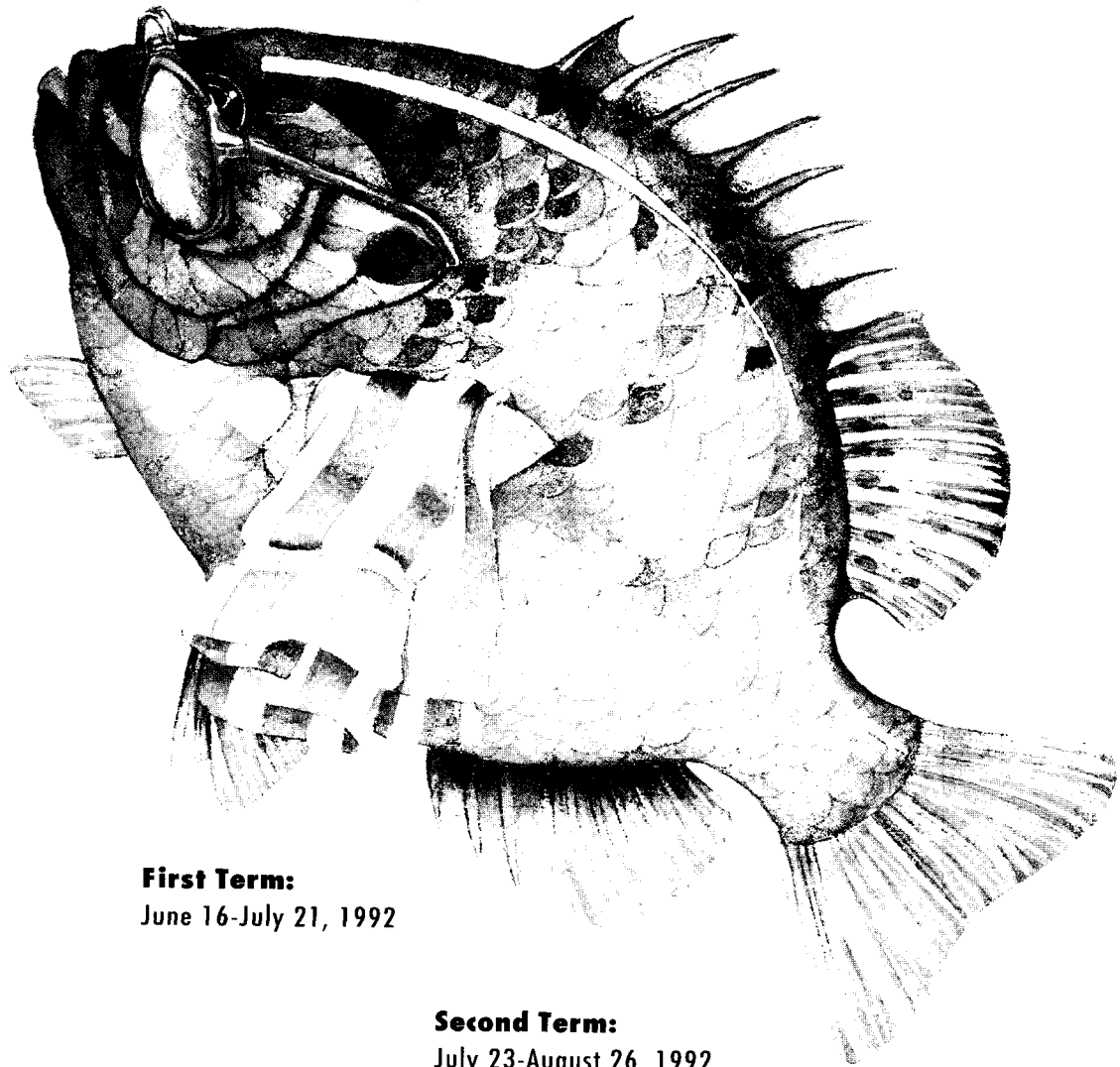


S U M M E R S E S S I O N 1 9 9 2

Twin Cities Campus Bulletin



First Term:
June 16-July 21, 1992

Second Term:
July 23-August 26, 1992

Where to call for information

Summer Session Office 624-3555

Office hours are Monday through Friday, 8:00 a.m. to 4:30 p.m.

From Monday, April 8 to Monday, June 22, the office will stay open on all Mondays until 6:00 p.m.

If the number you need is not listed below or if you need personal assistance, please call the Summer Session office directly, or write: Summer Session, 135 Johnston Hall, University of Minnesota, 101 Pleasant Street S.E., Minneapolis, MN 55455.

University Information Service 625-5000

Advisers

- CLA summer-only students 624-9585
- College of Education 625-6501
- Extension and Summer Session
Counseling 625-2500

Admissions 625-2008

- Adult Special, advanced standing, and
international students 625-2008
- Master of Business Administration
Office 624-0006
- New students for fall, 1991 625-2008

Bookstores

- Minnesota Book Center, East Bank 625-6000
- Books Underground, St. Paul 624-9200
- Smith Bookstore, West Bank 625-3000

Certifications/Transcripts 625-5333

College Offices

- Agriculture, 277 Coffey Hall 624-3009
- Architecture and Landscape Architecture,
110 Arch. 624-7866
- Biological Sciences,
223 Snyder Hall 624-2244
- Dental Hygiene,
9-436 Moos Health Sciences Tower 625-9121
- Education, 1425 University Ave. S.E. 625-6501
- General College, 109 Appleby Hall 625-6663
- Graduate School, 307 Johnston Hall 625-3014
- Human Ecology,
32 McNeal Hall 624-1717

Liberal Arts

- Regular students: College Office,
214 Johnston Hall 625-2020
- High school students:
49 Johnston Hall 626-1666
- Summer-only students:
B-18 Johnston Hall 624-9585

- School of Management, 230 Management and
Economics Building 625-0027
- Medical Technology, 15-170 Phillips-
Wangensteen Building 625-9490
- Medicine, 14-106 Phillips-Wangensteen Bldg. 625-3220
- Military Science, 108 Armory Building 624-7300
- Mortuary Science, A-275 Mayo Memorial Bldg. 624-6464
- Natural Resources, 235 Nat Res Adm. 624-1234
- Nursing, 6-101 Health Sciences Unit F 624-9600
- Pharmacy, 5-130 Health Sciences Unit F 624-1900
- Physical and Occupational Therapy,
271 Children's Rehabilitation Center 626-5887
- Humphrey Institute of Public Affairs,
300 Hubert H. Humphrey Center 625-9505
- Public Health,
A-302 Mayo Memorial Building 624-6669
- Institute of Technology,
107 Walter Library 624-2006
- University College,
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- Veterinary Medicine, 455 Veterinary Teaching
Hospitals 624-9227
- Extension Classes Information 625-3333
- Financial Aid 624-1665
- Handicapped Services 624-4037
- Housing 624-2994
- Independent Study 624-0000
- Medical Services
Boyclon Health Service 625-8400
- Emergency Room,
University Hospital (24 hour) 626-2700
- Parking Office 626-7275
- Recreational Sports 625-6800
- Student Accounts Receivable 625-8500
- Student Employment 624-8070
- Transcripts 625-5333
- Veteran's Information 625-8076

BULLETIN REQUESTS

- Graduate School 625-3014
- Extension Classes
(Summer Evening classes) 624-2388
- Summer Session 624-3555
- Other College Bulletins 625-2008

Cover: Terry Genesen-Becker is a Minnesota watercolorist. She teaches painting at the Minnesota Center for the Arts and at Bloomington Art Center. Her paintings have been exhibited extensively and she is represented in public and private collections throughout the country.

Postal Statement

Volume 95, Number 2

March 16, 1992

University of Minnesota Bulletin (USPS 651-720)

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University of Minnesota
(USPS 651-720)

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Calendar 1992.....

May 14	Advance registration for Term I and Term II begins for continuing academic year students
May 18	Early Fall registration begins and advance summer registration continues
May 22	Visiting students begin registration, other registration continues
June 16	Term I classes begin
July 3	Independence Day holiday
July 21	Last class meeting of Term I
July 23	Term II classes begin
August 26	Last class meeting of Term II

Welcome to summer

The University of Minnesota-Twin Cities conducts the largest Summer Session in the nation.

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 or ten-week sessions, are complemented by evening extension classes, institutes, workshops, conferences, lectures, films, concerts, theatre productions, campus recreational activities, and hundreds of special programs which give the campus a vibrancy unlike that found at any other time of year.

You can enjoy the campus in summer for many reasons—

- Make up credits
- Accelerate progress toward your degree
- Take courses which are difficult to fit in during the academic year
- Experience smaller classes
- Enjoy a more relaxed and informal atmosphere
- Find easier parking

The University in summer has something for you—

- If you're a continuing University student
- If you're a summer-only visiting student
- If you're an incoming Freshman
- If you're a professional who needs to keep up on developments in your field
- If you're a high school student (over twenty different academic programs)
- If you're an adult of any age who is interested in personal enrichment

IMPORTANT FACTS AT A GLANCE

For a 5-Week Course offered through the College of Liberal Arts*:

<u>The Last Day to:</u>	Term I	Term II
Register	First day of class	First day of class
Add or Change Section	June 22	July 29
Cancel Course (without transcript notation)	June 22	July 29
Change Grading System	June 22	July 29
Get Refund:		
100%	June 19	July 28
75%	June 23	July 30
50%	June 25	August 3

* Other colleges may require professor or departmental signatures. Please call the department.

Payment of Fees- Billing date for Term I is June 22 with a due date of July 10.
Billing date for Term II is July 30 with a due date of August 17.

Student Services Fee- A regent-set fee of \$60.80 paid each summer term by all students registering for 3 or more credits. A listing of services provided by the student services fee is available to students on request.

Hospitalization Insurance- is required by the University. Any student not covered by a health insurance policy will be required to pay for hospitalization insurance through the University. An additional \$47.00 to \$141.00 will be included on the fee statement.

Mail Registration- is available only to summer-only students in the College of Liberal Arts and summer-only, M.Ed and adult special students registering through the College of Education.

Tuition and Fees- are listed on pages 32-33.

Special courses and features for summer 1992

Advanced aerospace workshop for secondary teachers— July 20-31

This new workshop has been developed for secondary math and science school teachers, building upon AEM 5001. This course will benefit from 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 undergraduate students were required to design a system of vehicles to transport astronauts to Mars; this will be the focus of the 1992 summer workshop.

Workshop students will become familiar with contemporary NASA design tools and will design and construct a Mars surface rover vehicle using selected tools and information generated by the Advanced Design Program. 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. Enrollment is limited to 30 participants for the session. Registration is through the Department of Aerospace Engineering and Mechanics, 107 Akerman Hall, University of Minnesota, 110 Union Street S.E., Minneapolis, MN 55455. A registration information packet may be obtained by calling 625-8000.

Course enrollment is limited to education majors who are presently in-service math, science or aerospace teachers (documentation required). Students are required to obtain a



Registration Override Permit which is completed and signed by the department of Aerospace Engineering and Mechanics. In addition, students must follow their collegiate guidelines to complete registration. Restrictions are:

1. Request for registration override permit must be accompanied by written verification of current in-service teaching status on school district letterhead.
2. Qualified students will be issued a dated course override. Students who do not register by the designated expiration date will lose their place in the course.
3. Students who are 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 include the 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. Note: course fills 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.

Business and Marketing Education

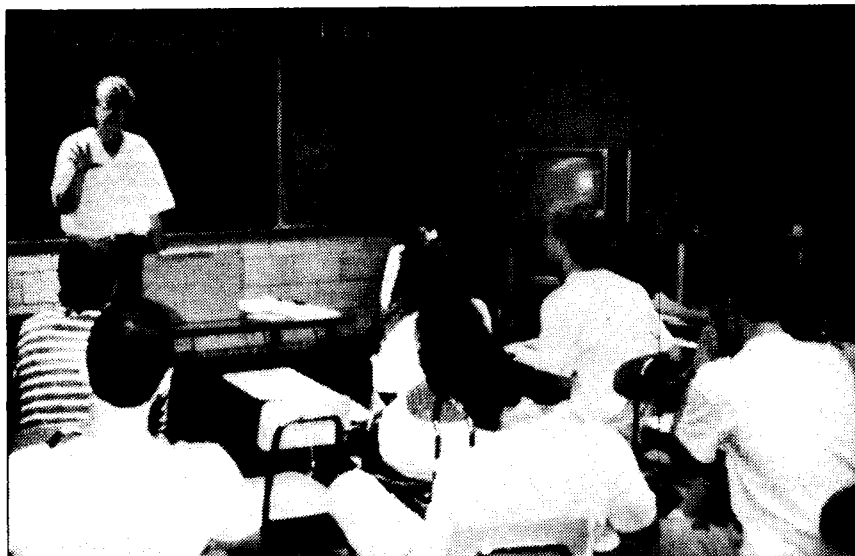
Business Observation (BME 5361), offered first term, provides an update on a wide range of contemporary strategies used by business organizations to become competitive in the global marketplace. The class will analyze the impact of these strategies on the training and development of the workforce, and identify organizational change, and curriculum and training strategies used by business to improve worker productivity in a changing environment.

The course is designed around business-based seminars conducted by representatives of leading Minnesota organizations. Participants will critique these strategies and propose solutions to the problems raised.

Special Topics in Technical Updating: MSDOS and Windows (BME 5390), scheduled for August 3-7, will study advance MSDOS functions for disks, files, and directories. Students will also explore the many features of Microsoft Windows 3.0 for IBM and compatible hardware as they create files and transfer information among Windows features that the student will use. With the increasing use of windows in a wide range of microcomputer applications, teachers and trainers have a need to acquire competency in their use.

Elementary Education

Creative writing for and by children
The thirteenth annual Chase Lecture will be presented this year on Tuesday, June 16, at 3:30 p.m. in Coffman Memorial Union. This lecture, which emphasizes creative writing for and by children, is open to the public and is supported by the University of Minnesota Foundation with funds from an endowment given for the purpose of encouraging the improvement of children's writing and reading. This year's guest lecturer is Katherine Paterson who is also one of several guest lecturers in creative writing course Elem 5318. Other guest lecturers include Jane Resh Thomas, Karen Ritz, Judy Delton, Margaret Phinney,



and Emily Kelly. Questions about the course or the Chase Lecturer 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.

Educational Psychology

Educational Measurement in the Classroom (EPsy 5220, July 27-31). This workshop will focus on rationales for developing classroom tests, techniques for writing and scoring items, methods for analyzing test results, and procedures for combining a variety of assessment data for purposes of grade assignment. Large group sessions in the mornings will be followed by small group activities in the afternoons. The workshop is designed for teachers at both the secondary and postsecondary levels. For information contact Professor James S. Terwilleger, 319 Burton Hall, University of Minnesota, 178 Pillsbury Drive S.E., Minneapolis, MN 55455, or call 612/624-1643.

Clinical Supervision in Human Services (EPsy 5400 Sec 1, June 19-21). This workshop is designed for individuals in human services fields who provide clinical supervision. The workshop will include theory, research, and techniques of supervision through lecture, instructor demonstrations, videotapes of critical incidents in supervision, discussion, and small group interaction. Participants will be

encouraged to articulate and refine philosophy of supervision that integrates theory, research, and personal experience. For information, contact Professor Patricia McCarthy, 612/624-3580, or Professor Thomas Skovholt, 612/625-3573 129 Burton Hall, University of Minnesota, 178 Pillsbury Drive S.E., Minneapolis, MN 55455.

Leadership for Career Development: Programs, Skill, Resources (EPsy 5400, Section 2, July 6-10, Project due July 17). Designed for counselors, teachers, and other human service professionals interested in developing skills to create and implement career development programs in schools, colleges, and agencies. Participants will examine societal changes affecting career needs as well as topical issues on the career development of children, youth, and adults (e.g., self esteem, emerging paradigms, transitions, work readiness, work-family linkages, workplace diversity, changing gender roles, multicultural issues, and an integrated model for life planning. The National Career Development Guidelines will provide a framework for the content focus, and participants will learn a process for effecting change in their own institutions. Focus will be on working with students and their parents in creating career programs for the next decade. Illustrative program resources will be available. Teams from a given building, district, college are encouraged to attend. For information, call 612/626-1302.

More special courses and features for summer 1992

Educational Psychology, continued

Psychology of Human Learning-(EPsy 5114) will be offered both terms-during Summer Session I over 4 days-June 17, 19, 22 and 24 and during Summer Session II as a 3-week workshop July 24-Aug. 14). This course will include: 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. For further information regarding the Summer Session I offering, contact Professor Jay Samuels, 178 Pillsbury Drive S.E., Minneapolis, MN 55455, or call 612/625-5586. For information regarding the Summer Session II offering, contact Professor Paul van den Broek 178 Pillsbury Drive S.E., Minneapolis, MN 55455, or call 612/626-1302.

Psychology of Adult Learning-(EPsy 5115, July 24-August 14). This class is a survey of psychological methods and principles in human learning with emphasis on the adult learner. Topics will include motivation, creativity, achievement, intelligence and implications for teaching and curriculum design in higher education, continuing education, and professional training. For information, contact Professor Robert Tennyson, 211 Burton Hall, University of Minnesota, 178 Pillsbury Drive S.E., Minneapolis, MN 55455, or call 612/626-1618.

General College "Summer in the City" 1992

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.

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

GC 1557. Business & Society: Field Experience, July 6-21 Shari Peterson
Field trips to local businesses involved in marketing, manufacturing, finance and international business!

GC 1112. Ecological Evaluation of Environmental Problems, July 23-August 7 Jay Hatch
Visit the Black Dog Wildlife Preserve, the Pig's Eye Heron Rookery, the Minneapolis Water Treatment Facility, NSP power plants, the Minnesota PCA and other environmental facilities!

GC 1311. General Arts, June 16-July 2 Del Adamson
Visits to galleries, museums, theaters, Minneapolis Sculpture Garden, and other places where art is found!

GC 1285. Cultural Anthropology, 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!

Geology Field Study

Fieldwork in geologic mapping (Geo 5111) will be conducted in a special term (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

July 27 - August 7, 1992

Two Centuries of the Fur Trade in Minnesota

From 1650 to 1850 Minnesota became a destination for European traders and entrepreneurs from eastern parts of the Continent, and for indigenous hunters, trappers, and traders from the vast North American interior. A robust new economy emerged from the intersection of these two entirely unique and hitherto independent cultures.

Within this span of history is a wealth of topics on which to build curriculum units for classroom use: character studies of intrepid explorers, aristocratic business tycoons, swaggering couriers du bois, or multi-talented Indian and metis women; wintering stations, and strongholds; comparisons of gender roles in white and Indian communities; the vast network of trade routes and the variety of methods by which it was navigated; the comparative economics of furs, wild rice, cloth, and metal; or specific episodes in the drama of cultural contact playing across immense geographical distances and changing forever the settlement of North America.

Individual research in primary sources, activity modeling, guest lecturers, two field trips and ongoing discussions make up the curriculum. Students work in teams directed toward the goal of creating a unit of study or a classroom activity.

This 5-credit workshop will meet at the new Minnesota Historical Society building in downtown St. Paul. Students should register for this course through the registration center on the Twin Cities campus. Those registering for the first time should register for Hist 5831; repeaters should register for History 5970, Section 2. For further information call the Summer Session office at 612-624-3555.



Home Economics Education

HEEd 5406. Special Topics in Parent and Family Education: Home and School Collaboration will focus on how parents, school, and community collaboratively can support individual students' success in school. Models for collaboration (pre-school through grade 12) and strategies for developing and strengthening significant partnerships between families and schools will be examined. Teachers and administrators in early childhood education programs, K-12 schools, and parent education and community leaders will utilize course content to develop collaboration between home and school.

HEEd 5001. Special Topics: Planning for Outcome Based Education will focus on the revision of Personal and Family Life Sciences curriculum to meet state guidelines for outcome based education. Teachers will revise curriculum from their own programs to implement outcome based education.

Courses which meet requirements for licensure as a parent educator are scheduled over first and second summer sessions. Scheduled courses meet requirements for adult methods, parent education group methods, family life education, and introduction to early childhood education.

HEEd 5310. Methods in Teaching Home Economics: Attitudes, Values and Knowledge meets the teaching methods requirement for adult vocational parent education relicensure.

Ulpan Hebrew language course

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 education 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 the two terms, 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. Students will spend 15 hours per week in class during the 10 weeks. In addition to normal class session, 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, 9 Pleasant Street S.E., University of Minnesota, Minneapolis, MN 55455.

Industrial Education

Industrial Education Workshop: Recent Technological Innovations-Ind 5306, offered for 3 credits, June 16-26. Students will visit industrial sites where personnel in charge of technological innovation will describe recent innovations and the impact they have had on their industries. Students will produce curriculum materials incorporating these new technological concepts.

Industrial Course Construction-Ind 5330, offered for 3 credits, June 16 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 Education Workshop: Trends in Industrial Education: Implications for Curriculum-Ind 5306, offered for 2 credits, August 18 and arranged. This course will be offered in conjunction with the Minnesota State Comprehensive Conference on Vocational Education during August. Students attend a number of conference sessions around a theme approved by the instructor and write a paper that will indicate how the new ideas identified might affect their curriculum. This course will address the needs of technology educators and vocational-industrial educators.

Industrial Education Workshop: Technical Training in Industry-Ind 5306, offered for 3 credits, July 18-30. This course will acquaint participants with alternative technical training techniques and how they are implemented in industry. Participants will visit a variety of training sites to observe technical training at each site. Students will prepare a paper summarizing the various techniques and how they might be implemented in a training setting of their choice.

Itasca Forestry Session

Study amidst the forests and lakes of Northern Minnesota

Learn while living in Itasca State Park: August 26-September 19, 1992.

Study Minnesota Plants (FR 3100); Field Forest Ecology (FR 3101); Important Plants: Fisheries and Wildlife Techniques (FW 3600); or Practicum in Forest Biology and Measurements (FR 5160).

For information, contact Professor Edward Sucoff, 612/624-7249.

Journalism

The School of Journalism and Mass Communication (SJMC) offers courses in each term for undergraduate and graduate students interested in professional training. A number of the courses are open to majors in other fields who wish to study mass communication.

Saturday, August 1, through Thursday, August 6, the following high school student workshops will be held: newspaper, yearbook, photography, and desktop publishing. During this same period, Jour 5182 will be taught for teachers and other university students. This is a day-long course; therefore, you would not be able to take other coursework during this 5-day period. Details may be obtained from the MHSPA, 620 Rarig Center, University of Minnesota, 330 21st Avenue South, Minneapolis, MN 55455, 612/625-8335.

Kinesiology

Early Childhood Adapted Physical Education--June 16-July 6. Kin 5720, sec 1, is a 3-credit lecture course that offers an in-depth view of service models, assessment procedures, and instructional strategies related to the provision of adapted physical education or developmental movement activities for children with disabilities from birth to 5 years, as mandated by PL 99-457. Taught by Allen Burton, assistant professor.

Technology Application in Sport and Physical Education--June 29-July 19. Kin 5720, sec 2, is a 3-credit workshop that will explore computer and video technology applications in sport and physical education including materials development and evaluation of equipment, software, and new applications. Taught by Lela June Stoner.

Issues in Youth Sports. Kin 5720, sec 3, is a 3-credit course which focuses on a number of behavioral and biological issues having important implications for sport participants from early childhood through high school. Current research on these issues will provide the basis for class lecture and discussion, with an emphasis on translating this research into practical implications for youth sport teachers, coaches, and administrators. Taught by Diane Wiese-Bjornstal.

Coaching of Individual, Dual, or Team Sports: Volleyball--June 16-July 6. Kin 5740, is a 3-credit participation, demonstration and lecture course that is appropriate for coaches and teachers of volleyball. The instruction level assumes students have a basic knowledge of volleyball fundamentals, and includes analyses of skills, game strategies, and techniques of coaching. Taught by Diane Wiese-Bjornstal.

Legal Aspect of Sport and Physical Activity. Kin 5860 is a 4-credit course that surveys 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. Taught by John Schultz.

Systematic Observation in P.E.--July 23-August 12. Kin 5720, sec 1, is a 3-credit lecture course offered second term that explores a variety of observational techniques and systems useful to physical educators. Taught by Mary Ann Bayless.

Human Factors in Physiology--July 23-August 19. Kin 5720, sec 2, is a 3-

credit course that will examine theories and principles as pertinent to the design and implementation of technological systems of human capabilities. In particular, the course will focus on individuals performing complex tasks under high levels of stress. Taught by Peter Hancock.

The Minnesota MBA Programs

The Carlson School of Management offers a fulltime 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.

Nankai Institute in China

The 1992 Nankai Institute in Chinese Language, an intensive language program in Chinese held at Nankai University, Tianjin, China, June 15 through August 20, 1992, offers courses in standard Chinese at second year, third year and advanced levels. It also provides students with a rare opportunity to experience Chinese culture firsthand through contact with Chinese students.

Applications must be made by February 28, 1992. There is an optional post-Institute tour August 20-August 27 that includes visits to cities such as Xi'an, Nanjing, and Shanghai.

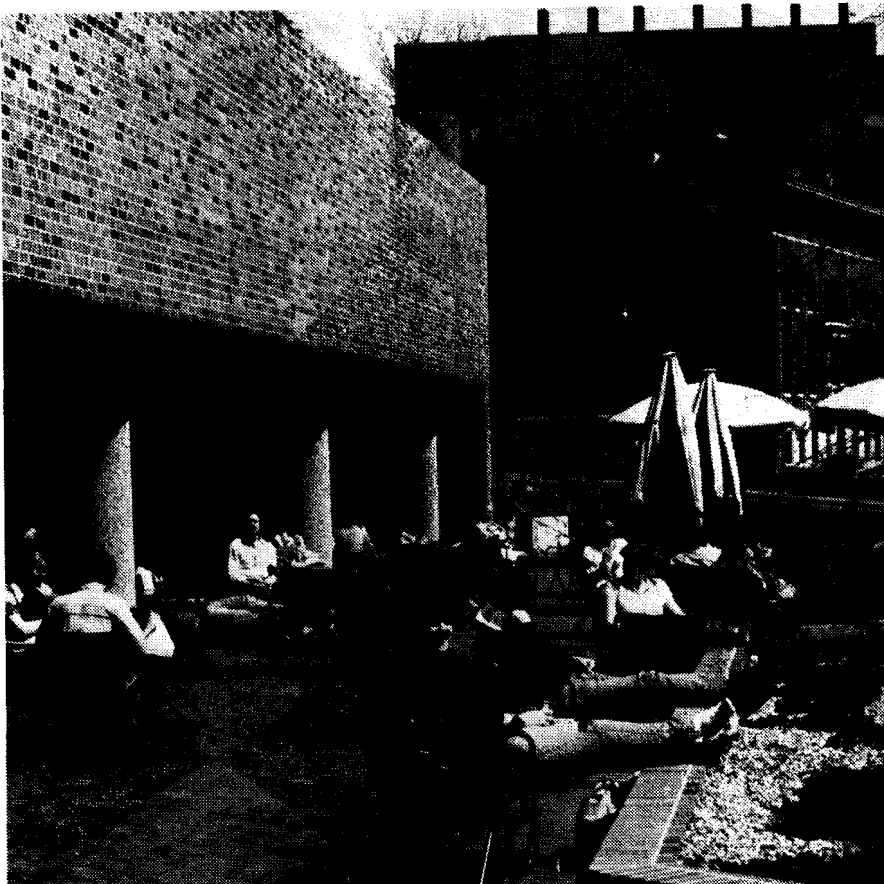
For information and application forms please call (612) 624-0386, or 624-0007.

School of Public Health

Tenth Annual Occupational Health and Safety Institute-This intensive, interdisciplinary course of study is designed for professionals currently or soon-to-be practicing in the field of occupational health and safety. This year's institute will be held **August 24-September 4, 1992** on the Minneapolis campus. Fourteen individual, graduate-level courses will be offered over the two-week period. Courses include: Administrative and Legal Issues in Workers' Compensation, Environmental and Occupational Toxicology, Ergonomics in Occupational Health, Hazardous Waste Management, Industrial Hygiene Engineering, Introduction to Occupational Safety, Occupational Health Seminar, Principles in Occupational Epidemiology, Principles of Management in Health Services Organizations, Risk Assessment and Risk Management, Theory and Practice of Occupational Health, Topics in Occupational Health, Topics in Occupational Medicine, Ventilation Control of Occupational Hazards, and Agricultural Health and Safety. These 14 courses are designated for Category 1 credit of the Physician's Recognition Award of the American Medical Association, are designed to meet the requirements of the MN Board of Nursing for nursing contact hours, and have been awarded Maintenance of Certification Points by the American Board of Industrial Hygiene. For further information, call 612/221-3992.

Vocational Education

Special Topics in Instruction: Teaching for Thinking--June 17-July 6. VoEd 5100. This course focuses on information processing, knowledge structures, and dispositions as underlying factors in complex thinking relevant to vocational education including problem solving, critical thinking, and decision making, and on approaches to teaching that facilitated thinking. Designed for teachers in all settings of vocational and technical education and training who wish to enhance their teaching of complex thinking skills.



Special Topics in Curriculum: School to Work: Instructional Strategies--June 16-26. VoEd 5101. This course will focus on educational practices for enhancing the transition of at-risk learners from school to the adult community/work place. Course activities will examine instructional strategies and materials for improving transition-related efforts. The emphasis will be on identifying and addressing participants' specific educational program needs.

Training and Development: Wellness as an Organization Development Intervention. VoEd 5770. This 4-credit course focuses on an examination of developments related to problems; practices; programs and methodologies in training and development. This course will identify key issues related to the perception of individual health and organization well-being in business and industry. Developing creative interventions to maximize organizational potential and to effect positive cultural change will be one of the major points of focus in this course.

Special Topics in Curriculum: Vocational Education in the Developing World--July 20-30. VoEd 5101. Philosophy, organization, management and implementation of vocational education and training in Third World settings. Emphasis on the economic, social, cultural, traditional and family influences in vocational education systems. Comparisons and contrasts between Third World and First World systems of education and training. Designed for educators who wish to enhance the international dimensions of the programs for which they are responsible.

Special Topics in Administration: Student Retention in Vocational Education: Issues, Barriers, and Intervention Strategies--July 20-30. VoEd 5102. This 3-credit course addresses the pressing issue of student "dropouts" in secondary and postsecondary vocational education. Models of student persistence/attrition will be examined to analyze the factors which influence student non-completion. Intervention strategies to minimize the attrition potential of students will be explored.

Courses in thirteen languages to be offered in 1992

CHINESE (Chn)

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

DANISH (Dan)

Summer I
1101,2,3 Beginning Danish
(10-week intensive)

DUTCH (Dtch)

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

FRENCH (Fren)

Summer I
1101 Beginning French
1102 Beginning French
1103 Beginning French
1101,2,3 Beginning French
(10-week intensive)
1104 Intermediate French
1104, 5,6 Intermediate French
(10-week intensive)
1106 Intermediate French
3015 French Composition
and Conversation
3016 Advanced French
Composition and
Conversation

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

GERMAN (Ger)

Summer I
1101 Beginning German
1101,2,3 Beginning German
(10-week intensive)
1104 Intermediate German
1105 Intermediate German
3011 Conversation and
Composition

Summer II

1102 Beginning German
1106 Intermediate German
3012 Conversation and
Composition

HEBREW (Hebr)

Summer I
1101,2,3 Beginning "Ulpan"
(10-week intensive)

ITALIAN (Ital)

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

Summer II
1105 Intermediate Italian

JAPANESE (Jpn)

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

LATIN (Lat)

Summer I
3001 Beginning Latin
(5-week intensive)

NORWEGIAN (Nor)

Summer I
1101,2,3 Beginning Norwegian
(10-week intensive)

PORTUGUESE (Port)

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

RUSSIAN (Russ)

Summer I
1101,2,3 Beginning Russian
(10-week intensive)
1104,5,6 Intermediate Russian
(10-week intensive)

SPANISH (Span)

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

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

Summer Institute for Teachers

Developments for 1992 include exciting first-time offerings, in addition to the courses that have been the foundation of past teacher institutes. The everchanging world and classroom create the opportunity for us to come together to explore the emerging issues, important changes and new ideas of today to bring to your classroom tomorrow. 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. We hope you can join us this summer!

Harlem Renaissance: African-American Art and Culture in the 1920s, (Afro 5597/Engl 5597) will be offered through interactive video to the Duluth campus. Teachers in the Duluth area should contact the Twin Cities Summer Session for registration information.

Studies in Gender and Cultural Diversity June 22 - July 2

Explore the creative contributions to American culture by writers and artists traditionally underrepresented in high school curricula. Each of the four courses will have a seminar format and will encourage individual and group research and discussion.

Engl 5920 Intercultural Studies in Literature (4 credits) Charles Sugnet; 9:00 - 12:00 + arr.

This course will involve 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 will be studied. Texts will be chosen from such works as: Chinua Achebe, *Things Fall Apart* (African); Toni Morrison, *Sula* (African American); Louise Erdrich, *Love Medicine* (American Indian); Sandra Cisneros, *House on Mango Street* (Chicana); Maxine Hong Kingston, *The Woman Warrior* (Chinese American); Jamaica Kincaid, *Annie John* (Caribbean); Bharati Mukherjee, *The Middle Man and Other Stories* ("new" American Immigrants-India, Iran, Korea); and selected Hmong texts.

WoSt 5100 Gender and Sexuality in a Multicultural World (4 credits) Jacquelyn Zita; 9:00-12:00 + arr.

This course will examine recent theoretical writing, novels and short stories for different ways of representing women's experiences of gender and sexuality in a multicultural context. In what ways do narratives "theorize" about gender and sexuality? In what ways do theories

need stories or tell stories? How can we better teach students, through critical thinking and interactive learning exercises about the complexities and histories of gender and sexuality in a world of plural cultures. These are the questions which will guide our study.

Afro 5597/Engl 5597 Harlem Renaissance: African-American Art and Culture in the 1920s (4 credits) John Wright; 9:30 - 12:00 + arr.

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: 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 curricula.

AmIn 5960/AmSt 5920 Sec 5 The Flowering Tree: Traditional and Contemporary American and Indian Literature and Culture (4 credits) Carol Miller; 9:30 - 12:00 + arr.

This course will integrate the cultural and aesthetic qualities of texts such as *Black Elk Speaks*; Ignatia Broker, *Night Flying Women*; Basil Johnston, *Ojibway Ceremonies*; Scott Momaday, *The Way to Rainy Mountain*; Leslie Silko, *Storyteller*, and Louise Erdrich, *Tracks* to illustrate the reflowering and connectedness of traditional Native expression within contemporary American Indian literature. These works will also serve as models for discussion of the opportu-

nities and challenges multicultural curricula engender in the classroom, especially in terms of diverse and often problematic-student response.

The New Europe: 1992 and Beyond

The implications are so profound, and the pace so quick, that it is difficult at best for Americans to comprehend what is happening in the "New Europe." Here is a chance to update your understanding of the events taking place in Europe and to gain some insights into three central elements of its rapidly changing face.

Symposium The New Europe: 1992 and Beyond, Monday, July 13, 9 - 3:30 This symposium will look at the several significant developments occurring in Europe, particularly the establishment in 1992 of a single-market economy in the European Community and the collapse of Soviet communism. Topics include the prospects for European integration, the changing nature of European security policy following the end of the Cold War, the enhanced urgency of problems of ethnicity and migration in the New Europe, the question of stability in Eastern and Central Europe, and many more that will be analyzed with a view toward helping us understand the implications of a New Europe for life and business in the United States.

IntR 5900 Sec 5 Power, Politics and Political Change in the New Europe (1 credit) July 13 - 17; Kim Munholland; 10-12:00

political power and government within the New Europe, including background and development of European institutions of cooperation; the implications of German unification and of the end of the Cold War; transitions and the prospects for democracy in southern and eastern Europe; the impact of migrations; the rise of political extremism and xenophobic reactions among the new "radical right."

IntR 5900- 6 Cultural Aspects of Change in the New Europe (1 credit) July 20 - 24; Donald Browne, 9:30-12:00
Causes and dynamics of cultural change in Europe, especially the role of the mass media as it affects both cultural integration and preservation. You will also look at the influence of U.S. media and the concept of cultural imperialism, whether there is a "pan-European" culture and identity, and the relationship between the artist and the state in the New Europe.

IntR 5900- 7 Economic Integration in the New Europe (1 credit) July 27 - 31; Peter Coffey; 9:30-12:00
A concise overview of the exciting moves being made by the European Community (EC) to create an economic and monetary "United State of Europe" by January 1993. Several key policy areas will be examined: common agricultural policy; competition and industrial policy; regional and social policy; the European Monetary System; and the EC's plan for creating full economic and monetary union, including a common currency. You will conclude with an analysis of the possible implication of these developments for others-notably the United States.

Urban Studies for Teachers June 15 - June 26

Address the opportunities and challenges of teaching in-and about-the city. Minneapolis and St. Paul are the focus of this important new program. All teachers K-12 are invited to enroll.

AmSt 5920 Sec 6 The American City: A Socio-Cultural Perspective (4 credits); William Morrish; 9:30-12:00

A workshop to help you teach about how our physical environment is organized, how it functions, and how it can be shaped and reshaped. You will explore how five basic urban features-homes and gardens, neighborhood niches, reclaimed streets, parks, and anchoring institutions-can create a spirit of community and place within the city. A framework will be provided for identifying these features and other physical resources of the community. Design Center staff will then work directly with you to help you develop individual curricula for using local neighborhoods to teach history, English, art, geography and civics.

Geog 5900 Learning About Neighborhoods, Community and the Spirit of Place (4 credits); Judith Martin; 9:30-12:00

An assessment of challenging human issues facing contemporary urban America, using the Twin Cities metropolitan area as a laboratory. Topics will include the urban landscape and how we use it; the social/ethnic/racial complexion of the Twin Cities (compared to other, quite different, metro areas) and the implications for growing pluralism; and aspects of the cultural landscape-parks, arts facilities, schools and shopping malls. The object will be to help you achieve a better understanding of the complexity, and prospects, for urban life and culture in the Twin Cities of the 1990s.

EdPa 5128 City Schools: Strategies for Survival (4 credits); Sharon Tolbert-Glover; 9:30-12:00

This course offers a broad overview of the condition of urban education in the 1990s. Emphasis will be placed on the policy issues that will continue to affect urban schools over the next decade and some of the emerging solutions that are being proposed to address the problems. Topics include: politics and governance, demography, changing family structures, and health and social welfare of children and youth.

Other institute courses

Hist 5381 Minnesota History Workshop: Two Centuries of the Fur Trade in Minnesota see page 6 for more information.

AnSt 5100 Archaeology in the Classroom: (1 cr) June 22 - 25; Eldon Johnson; Little Falls, MN

The yearly interest in finding archaeological resources to enhance learning in school prompted the Institute for Minnesota Archaeology to create a workshop designed specifically for teaching archaeology in the classroom. The goals of this workshop are to expand teachers' knowledge of the discipline of archaeology, expand the understanding of Minnesota prehistory and history and to help teachers find ways to introduce archaeological concepts into existing curriculum units. The workshop will include lectures by professional archaeologists and a member of the Native American community, discussions with teachers who are currently using archaeological techniques and theories for learning in their classroom and the exploration of available curriculum. You will have the opportunity to experience an actual archaeological field trip.

Th 5950 Art, Entertainment and Popular Culture in the Victorian United States (4 credits) July 27 - August 7; Led by Lee Adey; 1:00-4:00 + arr.

In the last century there have been enormous changes in the way that people interact culturally. This new course is an interdisciplinary examination of the period and of the different art forms that were predominant. Guest lecturers from the University of Minnesota and other institutions will offer their expertise about history, music, theatre and dance. The lectures will be combined with field trips to historical theatres like the Mabel Tainter Theatre in Menomonie, the State and Orpheum Theatres, or the Centennial Showboat here in Minneapolis.

For registration materials

and cost in formation please contact the Summer Session office at (612)624-3555 or 624-4898 and request the Summer Institute for Teachers brochure. Registration deadlines are May 15 for June programs and June 15 for July programs. Teachers from Duluth registering for the Harlem Renaissance course may register through June 10. Housing is available for all programs.

Workshops and short courses for teachers

ADULT AND TEACHER EDUCATION (AdEd)

- 5401 Adult Learning and Development through the Lifespan (June 18-July 21)

AEROSPACE ENGINEERING AND MECHANICS (AEM)

- 5001 Workshop: Elementary and Secondary Teachers (June 22-July 2) or (July 6-17)
- 5002 Advanced Workshop: (July 20-31)

AGRICULTURAL ED (AgEd)

- 5082 Current Issues in Agricultural Education (June 16-19, 23-26) or (July 20-23, 27-30)

ART EDUCATION (ArEd)

- 5302 Curriculum Innovations in Art Education (June 16-26)
- 5316 Intercultural Education through Art (July 23-August 7)
- 5389 Applications of Aesthetic Theory in Education (July 27-August 14)

BUSINESS & MARKETING ED (BME)

- 5353 Curriculum Construction in Business and Marketing Education (July 6-17)
- 5361 Business Observation and Seminar (June 22-26)
- 5390 Special Topics in Technical Updating:MSDOS and Windows (August 3-7)

CHILD PSYCHOLOGY (CPsy)

- 3331 Introduction to Social Development
- 5303 Adolescent Psychology (July 23-August 19)
- 5310 Topics in Child Psychology: Early Adolescent Development (June 16-26)
- 5311 Introduction to Developmental Psychopathology (July 23-August 12, and August 17)
- 5329 Genetics, Ethology and Development (June 16-29)

CURRICULUM AND INSTRUCTIONAL SYSTEMS (CISy)

- 5006 Introduction to Instructional Computer Programming (June 17-July 20)
- 5206 Microcomputer Uses in Elementary Classrooms (June 17-July 17)
- 5600 Introduction to Curriculum Systems June 16-July 2) and (July 23-August 13)

EDUCATIONAL POLICY AND ADMINISTRATION (EdPA)

- 5128 Workshop: Educational Administration
Sec 1, Managing the At-Risk School, (June 22-July 2) and Facilitating School Change (July 25-August 7)
Sec 2, Outcome Based Education, (June 22-July 2)
Sec 3, Human Resource Management in Higher Education (June 16-July 9)
Sec 4, Professional Ethics
- 5141 Critical Issues in Contemporary Education (June 17-July 12)
- 5200 Design and Management of Education Services (July 6-21)

EDUCATIONAL PSYCHOLOGY (EPSY)

- 5114 Psychology of Student Learning (June 17, 19, 22, 24) and (July 24-August 14)
- 5115 Psychology of Adult Learning (July 24-August 14)
- 5135 Workshop on Human Relations (June 16 and July 6-17)
- 5151 Structuring Learning: Social Psychological Approaches (June 17-July 2, and July 17)
- 5220 Educational Measurement in the Classroom (July 27-31)
- 5229 Classroom Assessment Methods (June 16-29) and (August 3-14)
- 5400 Workshop: Counseling Psychology:
Sec 1: Clinical Supervision in Human Services (July 17-19)
Sec 2: Leadership for Career Development: Skills, Programs, Resources (July 6-10)
- 5608 Parent and Professional Planning for Handicapped Students (July 23-August 7)
- 5609 Family-Professional Planning for Persons with Severe Handicaps (July 23-August 7)
- 5612 Education of Learning-Disabled Children
- 5624 Biomedical Aspects of Physical Impairments (June 22-July 2)
- 5641 Models of Service Delivery to Students with Hearing Impairments (July 20-24)
- 5646 Reading and Instructional Practices with Hearing-Impaired Students (July 6-10)
- 5647 Aural and Speech Programming for Children with Hearing Impairments (July 13-17)
- 5656 Educational Needs of Students with Emotional Disturbances or Behavioral Disorders (June 16-July 2)
- 5657 Educational Interventions for Students with Emotional Disturbance or Behavioral Disorders (July 6-21)

- 5670 Introduction to Education of Visually Handicapped Children (June 22-July 2)
- 5674 Orientation and Mobility Techniques for Visually Impaired Students (Aug 7-15)
- 5675 Structure and Function of the Eye: Educational Implications (July 27-August 7)
- 5702 Workshop: Special Education
Sec 1, Collaboration for Inclusion: Strategies for Educating Students with Disabilities in General Education (June 22-26)
- 5710 Contemporary Services for Persons with Developmental Disabilities (July 6-17)

ELEMENTARY EDUCATION (Elem)

- 5100 Elementary School Curriculum (July 2-20) and (July 23-August 7)
- 5101 Workshop: Programs and Procedures of Curriculum Development-Classroom Management and Discipline (August 3-14)
- 5107 Diagnosis and Treatment of Learning Difficulties (June 16-July 1) and (July 23-August 7)
- 5140 Microcomputer Uses in Elementary Classrooms (June 17-July 17)
- 5145 Classroom Management (June 16-July 2)
- 5225 Gender-Fair Curriculum (June 17-July 20)
- 5227 Teaching About the Newspaper in the Classroom (July 7-August 7)
- 5316 Teaching and Supervision of English in the Elementary Schools (June 16-July 1)
- 5318 Creative Writing for and by Children (June 16-July 1)
- 5319 Teaching Second Languages and Cultures in Elementary Schools (June 16-29)
- 5331 Teaching and Supervision of Reading in the Elementary School (July 23-August 7)
- 5334 Reading Difficulties (July 23-August 7)
- 5338 Teaching Reading in the Intermediate Grades (July 23-August 7)
- 5350 Elementary School Science: Materials and Resources (June 16-July 1)
- 5376 Current Trends in Early Childhood Education (June 16-July 2)

GEOLOGY AND GEOPHYSICS (Geo)

- 5051 Physical Geology for Teachers

HOME ECONOMICS EDUCATION**(HEEd)**

- 5001 Special Topics: Planning for Outcome Based Education (June 16-19, and 29)
- 5310 Methods in Teaching Home Economics: Attitudes, Values, and Knowledge (June 16-26)
- 5320 Adult Education in Home Economics (June 29-July 10)
- 5404 Introduction to Early Childhood Family Programs (July 19)
- 5405 Child Development and Parent Education (July 27-August 7)
- 5406 Special Topics in Parent and Family Education: Home and School Collaboration (June 29-July 10)
- 5407 Family Life Education (June 16-26)
- 5409 Group Methods for Parent and Family Education (July 13-17)
- 5510 Orientation to Teaching Home Economics (July 27-August 17)

INDUSTRIAL EDUCATION (Ind)

- 5306 Industrial Education Workshop: Recent Technological Innovations (June 16-26)
- 5306 Industrial Education Workshop
Sec 1, Trends in Industrial Education (Aug 18 and ar)
Sec 2, Technical Training in Industry (July 23-Aug 4)

KINESIOLOGY (Kin)

- 3111 Mechanics of Movement (July 23-August 19)
- 3115 Physiological Application to Sports (July 23-August 19)
- 3143 Organization and Management of Sport (July 23-August 19)
- 5102 Practicum: Developmental Adapted Physical Education (June 16-July 6)
- 5141 Nutrition for Exercise and Physical Performance (July 23-August 19)
- 5371 Sociology of Sport (July 23-August 19)
- 5460 Foundations of Sport Management (July 23-August 7)
- 5522 Pedagogy in Physical Education (July 23-August 26)
- 5720 Topics in Kinesiology
Sec 1, Early Childhood Adapted Physical Education, June 16-July 6
Sec 1, Systematic Observation in Physical Education (July 23-August 19)
Sec 2, Human Factors Physiology (July 23-August 19)
Sec 2, Technology Applications in Sport and Physical Education (June 29-July 10)
Sec 3, Issues in Youth Sports

MATHEMATICS EDUCATION (MthE)

- 5101 Workshop: Elementary School Mathematics (July 23-31; August 10-17)
- 5171 Teaching Probability and Statistics (June 17-July 17)
- 5152 Geometry for Primary Grades (July 23-29)
- 5153 Geometry in the Intermediate Grades (July 30-31, August 10-17)
- 5332 Current Trends and Issues in Secondary School Mathematics Instruction (June 17-July 17)

MUSIC EDUCATION

- 3850 Field Experiences: Music Therapy (June 16-29)
- 5750 Workshop: Music Education
Sec 1, Techniques for Middle Schools/Jr. High School Choirs, June 16-26
Sec 1, Movement-Based Methods for Music Education, July 23-August 12
Sec 2, Ethnic Music for Teachers, June 16-26
Sec 2, Percussion Techniques, July 13-21

PHYSICS (Phys)

- 5940 Physics for High School Teachers: Experimental Foundations of Electromagnetism and Optics (June 24-July 17)

RECREATION, PARK & LEISURE (Rec)

- 5460 Foundations of Sport Management (July 23-August 7)

SECONDARY EDUCATION (SeEd)

- 5191 Workshop: Teaching of Second Languages and Cultures Materials, (June 16-July 9, or July 6-21)
- 5227 Teaching about the Newspaper in the Classroom (June 17-August 7)
- 5322 Teaching Writing (July 23-August 18)
- 5323 Diagnosing and Assessing Writing in Secondary Schools (July 23-August 18)
- 5390 Current Developments in Secondary School Science Teaching (June 16-July 1)
- 5395 School Based Projects in Science Education
- 5659 School-Related Projects in Language Arts
- 5151 School Based Projects in Social Studies Education
- 5185 School and Professional Based Experiences in Second Languages and Cultures
- 5350 Current Developments in English Education
- 5659 School Related Projects in Language Arts

SOCIAL WORK (SW)

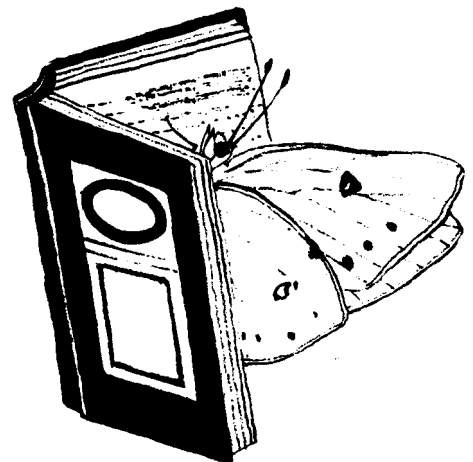
- 5010 Seminar: Special Topics
Sec 1 Physical Abuse of Women (June 17-21)
Sec 2 Social Work Practice with the Elderly (June 24-28)
Sec 3 Issues and Interventions in Child Sexual Abuse (July 8-12)

VOCATIONAL EDUCATION (VoEd)

- 5100 Special Topics in Instruction: Teaching for Thinking (June 16-26)
- 5750 Training in Industry and Business (June 16-26)
- 5900 Using Vocational Educational Research (June 16-19, 25-28)
- 5101 Special Topics in Curriculum: School to Work
Sec 1, Vocational Education in the Developing World (July 20-30)
- 5102 Special Topics in Administration: Student Retention in Vocational Education: Issues, Barriers, and Intervention Strategies (July 20-30)
- 5300 Philosophy and Practice of Vocational Education (August 3-13)
- 5330 Coordination Techniques in Cooperative Education (August 3-13)
- 5760 Organization Development in Industry and Business (August 5-15)

WOMEN'S STUDIES (WoSt)

- 5100 Gender and Sexuality in a Multicultural World (Summer Institute for Teachers, June 22-July 2)



Special programs for high school scholars

For additional information on any of the programs listed below or on other High School programs, contact the Summer Session office at (612) 624-3555

Itasca Field Biology Enrichment Program

Lake Itasca Forestry and Biological Station, University of Minnesota
June 17 - July 2, 1992

The Itasca Field Biology Enrichment Program is a residential program held at the Lake Itasca Forestry and Biological Station in Itasca State Park. Students will be housed in on-site cabins during the two-week program. The goal of the program is to introduce students to a wide range of experiences in the field of biology in general, and more specifically, to involve them in the methods of science. Students will have a wide variety of "hands-on" experiences with plants and animals in a field setting that is possible only at a facility such as the Itasca Station.



Summer Honors College

University of Minnesota-Twin Cities
June 15 - July 2, 1992

Summer Honors College gives high ability high school students a chance to briefly experience the intellectual, cultural and social environment of a university campus. Students live in a residence hall and study with some of the finest University faculty, selecting two of the many specially designed courses from such areas as English, studio arts, political science, geography and forest resources.

Cost is \$500, including room, board, tuition and social and cultural activities.

Honors Institute in Theatre

University of Minnesota - Twin Cities
June 21 - July 18, 1992

The Honors Institute in Theatre is a four-week residential program for high school students who have shown an interest and talent in theatre. It is designed as a special challenge for students seeking an experimental and formal exploration of the elements of stage: text, process and performance. For students who make it a part of their summer, the Honors Institute in Theatre promises unique opportunities to grow. Cost is \$735, including room, board, tuition and attendance at Twin City theatre's performances.

Summer Scholars Program

University of Minnesota-Morris
July 5 - July 17, 1992

Academically motivated high school students may select one of two interdisciplinary courses offered especially for them on the Morris campus in western Minnesota. "Biotechnology and Human Reproduction: Tinkering with Nature" focuses on the biological, philosophical and historical 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 is \$300.

Lake Itasca Biology Program

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 fields. The forests of the park are unique. Here the northern coniferous and deciduous types of the central hardwood region meet. In addition, the many bog areas provide a wide variety of plant communities for study. Itasca's forests have been protected for over a half century, and many 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 closely during June and July are particularly outstanding. An abundance of interesting animals, such as nesting bald eagles, breeding loons, beaver, raccoons, and deer, affords many striking behavioral and ecological problems for study. Fish and other aquatic life are plentiful and provide an excellent source for special studies.

COURSE OFFERINGS FOR 1992

TERM I • TUESDAY, JUNE 16-TUESDAY, JULY 21

Biol 5816. Field Biology Photography, June 16-July 4, Wednesday/Saturday(185484) 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 dark-room supplies that they use.

Biol 5850. Special Topics in Biology.

Sec 1, Measurements of Plant Environments. June 16-July 6; Monday/Thursday(886466) 3 cr; limited to 20 students; prereq course in ecology; 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).

Sec 2, Field Studies in Mammalogy, June 16-July 17, Tuesday/Friday (686467) 5 cr; limited to 20 students; 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.

Sec 3, Peatland Ecosystems and Climate Change, July 3-21, Tuesday/Friday (486468) 3 cr; limited to 12 students; A/F only; Janssens
This course covers boreal peatland ecology, peatland change related to Holocene climate change, and autecology of peatland plants. The Itasca area has a large diversity of boreal peatlands within easy reach. The course will include morning lectures, half-day and full-day field trips to peatlands, and the study of the peatland flora, both vascular plants and bryophytes (field characteristics and laboratory identification techniques), plant autecology, peatland ecosystem gradients, such as hydrology and water chemistry, and peat stratigraphy as a guide to paleoenvironmental reconstruction, interpreted in light of Holocene climate change.

Sec 4, Advanced Field Biology Photography, July 8-18, Wednesday/Saturday (488723) 2 cr, limited to 20 students; prereq Field Biology Photography; A/F only; Rubbelke
A course designed to introduce students to more advanced photographic application, including high resolution black and white photomacrography, ultraviolet photography, and infra-red technology for remote documentation. Students will be charged for the darkroom supplies that they use.

Biol 5890. Research Problems at Itasca. (685335) 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 16-July 21, Monday/Thursday (189888) 5 cr; limited to 15 students; prereq course in general biology including study of zoology, department permission; Blockstein
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.

NSc 5100. Introductory Neurobiology Laboratory at Itasca, June 16-July 3 (189669) 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 16-July 21, Wednesday/Saturday (192130) 5 cr; limited to 20 students; prereq course in taxonomy, departmental permission; Collins
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, June 16-July 6, Monday/Thursday(891425) 3 cr; limited to 20 students; prereq 5 credits botany or permission of the instructor; A/F only; Instructor to be named.

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 23-WEDNESDAY, AUGUST 26

Biol 3812. Plant Biology, July 23-August 26, Tuesday/Friday, (190586) 5 cr; limited to 20 students; prereq general courses in biology and chemistry; Biesboer and Wick

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 23-August 26, Wednesday/Saturday(188991) 5 cr; limited to 20 students; prereq course in calculus, course in plant biology and/or animal biology; 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 5, Behavior/Telemetry, July 23-August 10, Monday/Thursday (091259) 3 cr; limited to 20 students; 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; processing data from radio-fixes; telemetry of further behavioral and physiological information.

Sec 6, Ecological Genetics, July 23-August 24, Monday/Thursday (188482) 5 cr; limited to 15 students; A/F only; Curtsinger
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.

Sec 7, Conservation Biology, July 23-August 26, Wednesday/Saturday(988483) 5 cr, limited to 20 students; A/F only; Lowman
Introduction to basic concepts of conservation biology including island biogeography, habitat fragmentation, metapopulations, biotic reserves, stochastic threats to small populations, and conservation genetics. Case studies emphasize critically-threatened species. Field projects designed to reinforce conservation biology principles. Laboratory projects utilize computer population simulations to model demographic, genetic, and environmental factors affecting small populations.

Biol 5890. Research Problems at Itasca. (585411) See Term I.

EEB 5814. Plant Community Ecology, July 23-August 26, Monday/Thursday (192063) 5 cr, limited to 20 students; prereq course in ecology; A/F only; Webb

Communities represented in Itasca Park and vicinity, with emphasis on vegetation. Patterns of distribution of the communities, their interaction with the environment, and their dynamic relationships. Methods of community description and analysis.

EEB 5817. Vertebrate Ecology, July 23-August 26, Tuesday/Friday. (589894) 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.

NSc 5550. Itasca Cell and Molecular Neurobiology Laboratory, July 27-August 28. (785651) 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.

STUDENT SERVICES AND INFORMATION

Housing

Comstock Hall - East Bank
210 Delaware Street S.E.
Mpls, MN 55455
612/624-2994

For information on summer housing and applications for residence. Requests should be made as early as possible because space is limited.

Off-campus housing in private residences is available in a listing proved 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.

Recreational Sports Facilities

101 Cooke Hall, East Bank
(612/625-6800)
104 St. Paul Gymnasium, St. Paul
(612/625-8283)

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

University Child Care Center

1818 4th Street South, Mpls 55454
M-F 7:15-5:30
612/627-4014

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.

University of Minnesota Unions

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

St. Paul Student Center
M-F 7:00 a.m. to 10:00 p.m.
612/625-7200

Features:

Terrace Cafe for breakfast, lunch and snacks with indoor and outdoor seating
Books Underground - the campus bookstore carries course texts, books for leisure reading, school supplies and U of M souvenirs.

Outdoor Store - sells outdoor gear, rents canoes, tents and camping equipment
Copies on Campus - xeroxing and self-service word processing.
Information booth - sells snacks, candy, tobacco, MTC bus passes and movie and entertainment discount tickets.

Minneapolis Union
(formerly Coffman and West Bank Unions) 612/624-5200

Features:

Rental spaces for groups from 2 - 150.
Skyway Service Center - offers magazines, MTC bus passes, movie discount tickets, candy, tobacco, locker rental, parking coupons, newspapers and assorted sundries.

WMMR Radio Station
MSA Store
Golden Razor and Beauty Salon
Postal and service center
Copy center
Cultural and International centers

Summer Entertainment

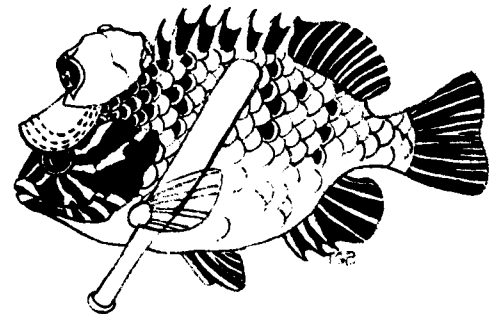
Big bands, jazz, upbeat classics-all kinds of music and entertainme events make the **Summer at Northrop Festival**-a campus highlight each year. Events run from June through August. Most are free and performed outdoors on the Northrop Mall during the noon hour so people can enjoy them during lunch. 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 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 riverboat moored on the Mississippi River. Audiences enjoy lighthearted musical entertainment or melodramas aboard the air-conditioned Showboat. Call 625-4001 for ticket information and reservations.



Advising and Counseling Services

Summer-only 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. In addition, there are several offices that specialize in assisting students of color, or students who have been culturally, educationally or financially disadvantaged. For more information or a referral to one of these services, please call an adviser at 625-2500.

Counseling Department of Continuing Education and Extension (CEE)
314 Nolte Center, East Bank
315 Pillsbury Drive S.E. Mpls
(a curb cut is provided on the south entrance to Nolte Center)
612/625-2500

Counseling- Professional counseling services in career and educational planning are available.

Advising- Academic advising is available to help students select programs of study, determine prerequisites and academic standing, evaluate transcripts, choose courses and handle other academic matters.

Financial Aid- Advising is available to students seeking information about grants, scholarships, loans and work-study for part-time or full-time study.

College Advising

(See list of college offices on the inside front cover.)

Bring pertinent records and materials to advisory appointment for individual help in planning your program and discussing other academic life concerns.

College of Education visiting summer-only students

Education Student Affairs Office
1425 University Av S.E. Mpls 55414
612/625-2342

For consultation concerning admission, information about teacher licensure requirements and placement services.

College of Liberal Arts visiting summer-only students

B18 Johnston Hall, East Bank
M-F 8:00-4:30
612/624-9585

Advisers can assist you with your concerns regarding registration, course work, choosing a major and using a computer-assisted career planning program. Services are available on a walk-in basis or by appointment. Please phone for an appointment for more extended academic or career related concerns.

Office for Minority and Special Students Affairs (OMSSA)

Learning Resource Centers:

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

Provides minority and special students with a wide range of support services including counseling, tutoring and cultural programs. The OMSSA's mission is to assist students of color in receiving meaningful educational opportunities through graduation from the University of Minnesota. The OMSSA summer institute is an intensive head-start program designed to help students of color develop college-level skills in English and Mathematics, so that they can pursue their studies at the University of Minnesota. The summer institute runs for seven weeks from late June through early August. All summer institute participants will receive a full stipend to cover their tuition, student fees and living expenses. Call the LRC listed above for more information

Other college services for minority students

MLK Program is specifically designed to serve the needs of minority students enrolled in CLA.

612/626-0219 for more information
Student Services Special Programming assists in daycare funding through Project HELP, counseling, career and educational planning, registration and tutorial services.

University Counseling Services

109 Eddy Hall, East Bank
612/624-3323

Service available to all students and covers 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.

Disability Services

Office for Students With Disabilities
16 Johnston Hall, East Bank
612/624-4037 (Voice or TDD)

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.

Campus Bus Service

Detailed information about University bus service between the Minneapolis and St. Paul campuses, between the East and West Banks and to and from the Como Avenue parking complex is available at the main information centers in the Minneapolis Union, Williamson Hall, the St. Paul Student Center, Housing Services in Comstock Hall and University Transit Services at 2818 Como Ave. S.E. Mpls 55414. Call 625-9000 for more information on fares, routes and schedules.

Route 52 Commuter and City Bus Service

The University and the Transit Board jointly operate a semi-express bus system known as the Route 52 Commuter Bus Service. It consists of twelve routes directly serving the University's Minneapolis Campus from various residential areas of the Twin Cities. Call 625-9000 for more information.

UNIVERSITY LIBRARIES

The University of Minnesota- Twin Cities Libraries, with a collection of more than 4 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 over 19 separate locations and directly support the curriculum of the University and serve 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

in Wilson Library:

Ames Library of South Asia (S-10)

East Asian Library (S-75)

Gov't 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 Bldg.

Law Library

Law Center, West Bank

Collection of legal literature including state and federal statutes, reports and regulations, legal periodicals and treatises and a broad range of foreign and comparative international legal sources.

Science Collections

in Bio-Medical Library (Diehl Hall)

Collections in allied health, dentistry, medicine, mortuary science, nursing, pharmacy and public health.

in Science & Engineering Library located in Walter Library

Collections in chemistry, engineering, geology and physics.

in St. Paul Central Library (St. Paul)

Collections in agriculture, food science and nutrition, biotechnology and biological science.

Related Subject Collections:

(call 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 625-5000 for locations)

- Andersen Horticultural Library

- Charles Babbage Institute Archives

- James Ford Bell Library

- Children's Literature Research Collections

- Manuscripts Divisions

- Social Welfare History Archives

- Special Collections and Rare Books Division

- University Archives

- Wangenstein Historical Collection

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 626-2206. For hardware or software problems, call 626-2272. LUMINA is accessible from any of over seventy 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 624-4552.

MUSEUMS

The **University Art Museum** is located on the 3rd and 4th floors of Northrop Auditorium and presents frequently changing exhibitions of photographs, paintings, sculpture, prints and decorative arts and related interdisciplinary events. Call 624-9876 for information on exhibits and hours.

The **Bell Museum of Natural History** is located at 17th and University Av S.E. and features exhibits of Minnesota wildlife and provides educational programs for the public and the University's natural history library.



Call 624-1582 for information on exhibits and programs and exhibit hours and for fees and group reservations.

Registration

Summer Session courses at the University of Minnesota, Twin Cities, are open to high school graduates and to high school students who have completed the 10th grade and are in the top 20% of their class.

Types of students

The information on these pages applies to your registration. Read all information carefully to avoid potential problems. You will receive credit only for those courses in which you are properly registered. Also, you must pay for every course for which you register unless you officially cancel. (For information on course cancellation, see pages 24-26)

Academic-year students have been officially admitted to the University of Minnesota and have registered in their degree program during any fall, winter, or spring quarter.

If you have graduated from the University of Minnesota, you are considered an academic-year student unless you have adult special status. Adult special students register as summer-only students. If you wish to register for a course in a college other than the one from which you received your degree, you must first get approval at your college office.

An academic-year student cannot register as a summer-only student through another college.

An incoming freshman can register as an academic-year student, but will need to check with his/her college office for registration instructions.

Summer-only students are summer visitors who have never been admitted to a degree program at the University and have never registered at least once in that program. This includes unadmitted high school students, students from other colleges and universities taking summer courses, and students at the University of Minnesota with adult special status.



General information about registration for all students

Courses in this bulletin are listed alphabetically by department. The address and telephone number of the department and the name of the college with which the department is affiliated are printed above each department's listing.

Registration for both terms begins May 14 for academic-year students and May 22 for summer-only students.

Academic-year students. Registering for courses in the summer is the same procedure as registering for courses in fall, winter, or spring quarters.

There is no queue for summer, and registration, therefore, is on a first come, first served basis. However, it usually isn't necessary to register on the first or second day. Don't wait in long lines unless you are trying for high-demand courses that close immediately. (Courses that often close on the first day of registration are ArtS 1701, Comp 3031, 3032, EPsy 3131, Mgmt 3004, Rhet 1222, Span 1101, 1102, 1103, and Spch 3411, 3641, as well as all engineering and physical education activity courses.) You may register for both terms during May and June. Academic-year students can register for fall quarter during May or early June, and can plan programs carefully. If those special or necessary courses need to be adjusted, you can register for or cancel/add summer courses during early fall registration. In fact, you may register for both summer and fall during your spot in the fall queue.

Summer-only students do not need to apply for admission. All that is required is that you fill out the Request for Summer-only Status form which you will find on page xx, and then follow the registration procedure described below. Summer-only students who plan to register through the College of Liberal Arts or through the College of Education, may also register by mail. Please read page 30 for instructions about mail registration.

Registration is a two-step process:

Fill out the forms on the insert, then...

1. Go to the college office for program approval.

When you register for courses at the University as a summer-only student, you register through a particular college. Typically, the college through which you register is the one offering the course. Registration is also possible through the College of Liberal Arts for courses in the following departments; architecture, astronomy, biology, botany, chemistry, child psychology, computer science, geology, mathematics, physical education (activity courses only), physics, physiology, public affairs, and public health (3001 and 3004 only).

Exception: There are two colleges that do not require college approval for your program. **You do not need college approval if you register through the Institute of Technology or through the College of Liberal Arts unless you are a high school student.** (If you are a high school student you must get college approval.)

2. A trip to the registration center is the second part of the registration process.

The registration center on the Minneapolis campus is on the second floor of Fraser Hall. On the St. Paul campus the registration center is in 130 Coffey Hall. At the registration center you will be given a fee statement which will contain the following charges;

- tuition
- the student services fee if you register for 3 or more credits
- hospitalization insurance if you have no private coverage

Full information on tuition and fees is found on pages 32-34.



Late Registration Fee. You must register by June 16 for first term or July 23 for second term to avoid a late registration fee of \$10.00. Students who register on or after June 17 for first term or on or after July 24 for second term will be charged a \$20 late registration fee. Exception: If you take a course that begins after June 16 for first term or July 23 for second term, you may register for that course through the first day it meets without incurring a late registration fee.

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, list the

course on your Course Request form and place a V in the grading option column for that course.

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 (625-5333) or 130 Coffey Hall (624-3731).

The first week of class- mandatory attendance. You must attend the first class meeting of every course in which you are registered, unless you obtain 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.

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. You should first go 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 you must have a signed Registration Override Permit from the instructor.

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 17 for first term and July 24 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 625-5333 for more information.

How/When to cancel courses. Course cancellations are generally allowed without college permission during the first week of the term. (For first term, the first week of classes ends on Monday, June 22. For second term, the first week of classes ends on Wednesday, July 29.) Cancellation of a course after the first week of the term, for 5-week courses, will result in a 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, no Ws will appear on your transcript; however, a notation of your cancellation will appear.)

Many colleges require special approval for cancellations after the end of the first week. Check with your college office for complete cancel/add policies.

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 a \$10 late payment fee. Unless you make full payment, a hold will be placed on your record.

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. For more information on refunds, see chart on page 3.

How to change your registration. Use a Course Request form to make all changes in your registration, including cancellations. Changes in registration are not official until you take a completed Course Request form to your registration center. To change your course load or grading system, you should;

1. Check the box indicating cancel/add and note the number of credits you will have after this change. If you are cancelling all courses, check the appropriate 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. Remember, each fee statement you receive has its own due date. Later fee statements do not extend the due dates on earlier fee statements.

Program Approval-Registration for more than 10 credits per term requires approval of the scholastic committee (except for 15-credit, intensive-language sequences).

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 must be approved by the instructor, the director of graduate studies, and the Graduate School. Approval forms are available in 306 Johnston Hall.

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.

Grading options and policies. There are two grading systems at the University of Minnesota-Twin Cities; 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.

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 your 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 22 for first term; Wednesday, July 29 for second term) and through the second week of classes for 7- and 10-week courses (Monday, June 29). For short term courses, check with your college office for deadlines. To change your grading option, bring a completed Course Request form to your registration center (202 Fraser or 130 Coffey Hall).

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 to the address on your Course Request form—approximately 2-3 weeks after the end of each term. 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 2-3 weeks after the end of the course.

Special instructions for College of Liberal Arts students

Advising for visiting summer-only students is available in B18 Johnston Hall between 8 a.m. and 4 p.m. from May 22 through August 26. Advisers can assist you with your concerns regarding registration, course work, choosing a major, and using a computer-assisted career planning program.

Exceptions to registration deadlines listed in the middle column at right 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 B18 Johnston Hall before the deadline.

Courses may be cancelled through the second-to-the-last day of the term (Term I, July 20; Term II, August 25). Requests to cancel courses after this deadline must be approved by a Scholastic Committee Representative in B18 Johnston Hall.

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

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.

For S-N registration information see the middle column to the right. 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 apply- ing to College of Liberal Arts and College of Educa- tion students

Registration Deadlines - The following registration deadlines are strictly enforced. Be sure to make any adjustments in your registration promptly. All changes must be made at the registration center in 202 Fraser Hall. See the paragraphs on How to Change your Registration on page 25.

The fifth day of the term (Term I, June 22; Term II, July 29) or the tenth day for 7- and 10-week courses (June 29) is the last day to:

- register or add a course or change sections of a course (instructor's signature needed after the third day of the term for CLA and after the second week for Education with ESAO approval)
- change grading systems (to or from S-N grading)
- cancel a course without transcript notation (CLA students see paragraph at left for specifics. Education students need instructor's signature and ESAO approval after the third week)

Any course cancellation must be done through 202 Fraser Hall before the last day of the term. See pages 24-25 for specifics on course cancellation. **If you never attend or stop attending classes you must officially cancel even if your fees are unpaid.**

Special instructions for College of Educa- tion students.

Registration Approvals

Most undergraduates must have a Department Stamp, however, some majors also need an Advisor Signature for registration approval. *Undergraduates in Elementary Education* are no longer required to have approvals.

The following B.S. majors need only Department Stamps: Early Childhood Ed. and Mathematics Ed..

The following B.S. majors need Department Stamps AND Advisor Signature: Art Ed.; Kinesiology; Recreation, Park and Leisure Studies; Agricultural Ed.; Business and Marketing Ed.; Industrial Ed. and Vocational-Industrial Ed.

M.Ed. and postbaccalaureate students in the following majors no longer require approvals to register: Art Ed., Curriculum and Instructional Systems, Early Childhood Ed., Elementary Ed., English Ed., Second Languages and Cultures and Social Studies Ed.

The following M.Ed. and postbaccalaureate majors need only Department or College stamps: Adult Ed. and Math Ed..

The following M.Ed. and postbaccalaureate majors need Department or College stamps AND Advisor Signature: Physical Ed., Recreation, Park and Leisure Studies, Music Ed., Agricultural Ed., Business and Marketing Ed., Home Economics Ed., Industrial and Vocational Ed.

All Summer-only and Adult Special students must obtain a College Stamp on their Course Request Form in the Education Student Affairs Office (ESAO).

For questions regarding registration deadlines and change of registration, please refer to the middle column at left or page 3.

For questions regarding any registration procedures please refer to pages 22-25 or call ESAO at 625-5815.

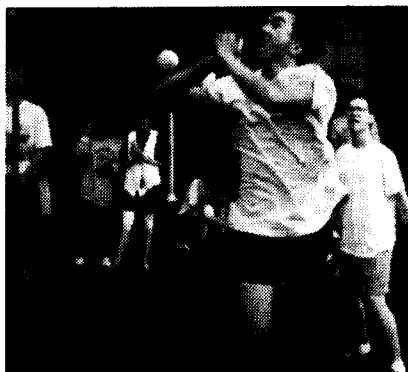
Special instructions for Carlson School of Management students

Summer-only registration.

If you register as a summer-only student in the Carlson School, you will need to complete a Carlson School Summer-only form in 290 Humphrey Center in addition to Forms A and Bin this bulletin. If you register as a summer-only student through another college, you must still meet the credit and grade point average requirements listed below. Plan to register as a summer-only student through the college in which you will be taking the majority of your summer credits. Registration Override Permits for 3000- and 5000-level Carlson School courses are issued only in 290 Humphrey Center.

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 which shows a cumulative grade point average of 2.8 or higher.

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.) There are no grade point average requirements for registration in 1000-level courses; you must, however, meet all prerequisite requirements.



Academic year students

Carlson School of Management Students enrolled in Carlson School undergraduate degree programs may register for 3000- and 5000-level Carlson School courses.

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). 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.

Accounting courses (Acct)

Acct 1050 is available to all students who have completed 40 or more credits. Acct 3001 is available to all Carlson School students and select majors outside the Carlson School. Students with a declared finance emphasis can register for Acct 3101 and 3201 and do not need an override. Non-accounting majors may submit an accounting request form in 290 Humphrey Center to obtain permission to register for 3000- and 5000-level accounting courses; non-Carlson School students must attach a current transcript which shows 90 credits completed and a GPA of 2.8 or higher. 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 (624-3313).

Special instructions for high school students

High school students have several opportunities open to them during the summer to take advantage of courses and programs offered by the University of Minnesota and to earn college credits that can be used later at the University or at most other colleges and universities. Special programs are available exclusively for high school students. (See page 15 for special programs.) Many regular summer session courses are also open to 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 be in the top 20% 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 a letter of recommendation from a high school teacher or counselor. This letter is required if your transcript does not indicate your high school rank.

For registration approval:

If you want to take introductory (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 107 Armory (626-1666).

For advanced 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 front cover. When you have received college approval, you may register by following the instructions for summer-only students on page 23.

Post-Secondary Enrollment Options Act

PSEOA- the state options act which allows high school juniors and seniors to attend college tuition-free is not in effect during the summer. You may want, however, to take a regular summer course or enroll in one of the special programs for high school students in order to discover whether you want to take advantage of the options act next fall. You are responsible for tuition during the summer, although financial aid is available for the special programs.

High school students who have advising questions related to summer course choice, transfer of credits, and/or utilization of PSEOA for the upcoming year should talk to an adviser in the Advanced High School Student Services Office. If you are interested in taking University of Minnesota courses fall quarter 1992, contact this office long before the beginning of your high school year so that you can work out the details involved in using college credits toward your high school graduation. Call 612/ 626-1666 for an appointment with an academic adviser or write to the Advanced High School Student Services Office at 107 Armory, 15 Church St, Minneapolis, MN 55455.

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. 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.

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 6 credits or are away from campus for the summer or an academic quarter. See Health Service and Hospitalization Charges, page 37.

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 during your visit there. You will be given information about requirements for English classes during your visit to the MEC. You can also call the MEC office, 624-1503, for more information.

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, you may want to consider transient graduate student status at the University of Minnesota during the summer. 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. 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

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

Previously Registered Students-You must clear any Graduate School holds in 316 Johnston Hall. Instructions on procedures for release of holds will be available here.

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 (625-8060)

Tuition benefits for graduate assistants do not 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, 416 Johnston Hall, preferably before you register, in order to receive your tuition benefit. 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 department or the GAO 416 Johnston Hall, 626-1310

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 exam or 625-5833 for a final oral exam.



Special instructions for mail registration through the College of Liberal Arts or the College of Education

There are restrictions on registering through the mail for CLA and the College of Education. You cannot register by mail if you are a high school student who has not yet graduated, or for courses that have special registration instructions. See other restrictions listed under the paragraphs for CLA and Education below.

In-person registration is recommended for all courses that fill quickly (see page 23) and for high school students who have graduated and are entering college in the fall.

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 # or delta or square appear in the prerequisite statement) or for 8xxx-level courses. Mail registration requests are processed beginning on May 22, 1992 - the first day for summer-only registration. Registration forms must be received in the Summer Session office by June 1, 1992.

College of Education

Mail registration is possible for students registering in the College of Education as previously registered M.Ed., Postbaccalaureate, Adult Special students and visiting Summer-Only students. Registration in the Graduate School or in 8xxx level courses is not possible by mail. Mail-in registrations will be processed beginning May 14 and must be received by the Education Student Affairs Office no later than June 1.

To register by mail:

1. Complete Forms A and B - entering all information requested according to the example. Any incomplete or inaccurate registration materials received will be returned to you and you will have to register in person unless the registration can be returned before the mail registration deadline. **Mail registration deadline is June 1.** Materials received after the above deadline cannot be processed by mail and will be returned so that you may register in person. Please use a separate Course Request Form for each Summer Session. An advisor's signature is not necessary, but you are responsible for your registration. It is your responsibility to acquire any special approval required such as overrides from the instructor, department or college *before* sending in your registration.

2. Mail the completed forms to the appropriate address found on either the back of Form A or Form B. If you prefer to send your registration in an envelope, the address for Education mail registration is: *Educational Student Affairs Office*

1425 University Ave S.E.

Mpls, MN 55414

Attn. Registration

for Liberal Arts mail registration:

Summer Session Office

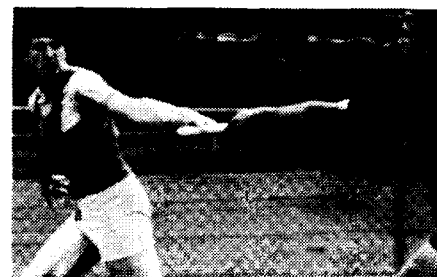
135 Johnston Hall

101 Pleasant St S.E.

Mpls, MN 55455

Attn. Registration

3. **Do not send a check or money order 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 5, please call 625-5815 (Education) or 626-2209 (Liberal Arts). **A billing statement will be mailed to you AFTER the start of each session. Fees are due for Summer Session I on July 10 and for Summer Session II on August 17.**



4. **The Student Services Fee is charged to all students registering for 3 or more credits per term.** A partial exemption from the Health Service Fee is no longer available. If you have further questions about the Health Service Fee, please contact Boynton Health Service, Room W220, 624-1471.

5. **Attend the first meeting of class** unless you notify the instructor in advance of an unavoidable absence. If you miss the first class, you may lose your place to another student.

6. **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, please consult page 24 in this bulletin or call 625-5815 (Education mail registration) or 626-2209 (Liberal Arts mail registration).





REGISTRATION SERVICES

Summer Session Office

135 Johnston Hall, East Bank
M-F 8:00-4:30
Mondays 8:00-6:00 beginning April 6
612/624-3555

For general information and help on all summer session concerns. Summer bulletins available.

Registration Center

202 Fraser Hall, East Bank
M 8:00-6:00, T-F 8:00-4:00
June 16, July 23 8:00-5:30

For turning in scholarships, registration materials, cancel-add materials and obtaining fee statements.

Student Accounts Receivable

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

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

Registration Center/Admissions and Records

130 Coffey Hall, St. Paul
M 8:00-6:00, T-F 8:00-4:00
612/624-3731

Registration Service:

For turning in registration materials and cancel-add materials and obtaining fee statements for St. Paul colleges, College of Architecture and Landscape Architecture, College of Education and Graduate School only.

Student Contact Area:

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 regular service for official transcripts, rush service for official transcripts and for unofficial copies of students records (limit one copy per day plus fee for official transcripts). For obtaining bulletins.

Bursar's Office

145 Williamson Hall, East Bank
Anderson Hall lower level, West Bank
107 Coffey Hall, St. Paul
M-F 8:00-3:30

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.

ID Card Office

248 Williamson Hall, East Bank
M-F 8:00-4:00
June 16, July 23 8:00-5:30

For obtaining new student ID cards (summer-only students are not issued student ID cards: your course confirmation form is your proof of enrollment); lost ID cards turned in.

Information Center

1st floor concourse, Williamson Hall, East Bank
M-F 7:45-4:30
June 16, July 23 8:00-5:30

For obtaining college bulletins, maps, campus bus information (routes 13 and 52 only) and miscellaneous publications and information.

1992 Summer Session Tuition and Fees¹

Unless otherwise noted, tuition rates are listed per credit.

You are considered to be an academic year undergraduate if you have ever been admitted to a degree program at the University of Minnesota-Twin Cities and registered at least once in that program. You pay a lower division rate through the summer term in which you are registered for your 90th credit; upper division rates apply thereafter. Students from other campuses of the University of Minnesota and students newly admitted to the University are considered as academic year students.

You are a visiting summer-only student if (a) you have never been admitted to a degree program at the University of Minnesota-Twin Cities and did not register at least once in that program or (b) you are presently classified as an adult special student. Students who attend other colleges and universities but wish to enroll in the University of Minnesota Summer Session are normally considered as visiting summer-only students.

Reciprocity -- Students from other University campuses or other systems who come to the University for summer, and who now receive reciprocity, must notify their home state that they have switched campuses or systems.

Any current student who is receiving a reciprocity benefit will continue to receive it for summer session 1992 and the following academic year. Students who enter the University for the first time during summer session must apply for the reciprocity benefit (using the 1991-92 application).

If a student's first enrollment at the University is for summer session, and reciprocity has been granted, they need not reapply for the following academic year.

Nonresident rates apply to several new groups this summer.

Undergraduate Programs

	Resident	Nonresident
Academic year <i>lower division</i> students	\$64.00	\$189.00
Academic year <i>upper division</i> students	\$70.00	\$206.50
(Note: Pharmacy B.S. seniors pay \$38.50 resident, \$70.50 nonresident)		
Visiting summer-only and Adult Special students ²	\$77.00	\$77.00

Graduate Programs

Departmental Masters (Agriculture, Education, Public Health)	\$ 84.00	\$168.00
Graduate School	\$139.50	\$279.00
M.B.A. (day)	\$183.00	\$279.00
M.B.A. (evening)	\$183.00	\$183.00

Professional Degree Programs

Dentistry		
per credit	\$ 203.50	\$ 305.00
12 or more credits	\$2,441.50	\$3,662.50
Law	\$ 232.50	\$ 232.50
Medicine		
1-5 credits	\$ 805.50	\$1,611.00
6-10 credits	\$1,611.00	\$3,222.00
11-15 credits	\$2,416.50	\$4,833.00
16 credits or more	\$3,222.00	\$6,444.00
Pharmacy		
Pharm.D.	\$ 92.50	\$ 185.00
Veterinary Medicine		
per credit	\$ 188.50	\$ 283.00
12 credits or more	\$2,262.00	\$3,392.50

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.

Course Fees¹

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

Composition and Communication
\$205²—0011

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

Field Studies Health Service Fee
\$27 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 which 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
\$205²—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
\$236²—1008
\$295—1111, 1201

Music, Applied
Courses in applied music carry 2 credits (minimum of 5 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
\$35—1104 (Computer-assisted instruction section 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, 5970
\$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
Arranged (amount adjusted to individual needs of students or particular class project)—3420, 3970, 3980, 5420, 5970, all other 8000-level courses

Special Fees¹

Business Quarterly
\$1.28 per term—Assessed to all Carlson School of Management students. Assessed at registration

COGS (Council of Graduate Students)
\$.09 per term—Assessed to *all* students in the Graduate School

Credit by Special Examination
\$30—Check with your college office for further information

Deposit Cards
\$30—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)
\$.65 per term—Assessed to *all* 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 and 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)
\$.58 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
U of M 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.

Reciprocity—Students from other University campuses or other systems who come to the University for summer, and who now receive reciprocity, must notify their home state that they have switched campuses or systems.

Any current student who is receiving a reciprocity benefit will continue to receive it for summer session 1992 and the following academic year.

Students who enter the University for the first time during summer session must apply for the reciprocity benefit (using the 1991-92 application).

If a student's first enrollment at the University is for summer session, and reciprocity has been granted, they need not reapply for the following academic year.

Late Fees, Due Dates—Late fees are assessed for both late registration and late payment.

Late Registration—No registration will be accepted after June 16 (first term) or July 23 (second term without payment of the late registration fee as follows:

June 17-22 or July 24-29	\$10
Thereafter	\$20

Exception: If you take a course that begins after June 16 for first term or July 23 for second term, you may register for that course through the first day it meets without incurring a late registration fee.

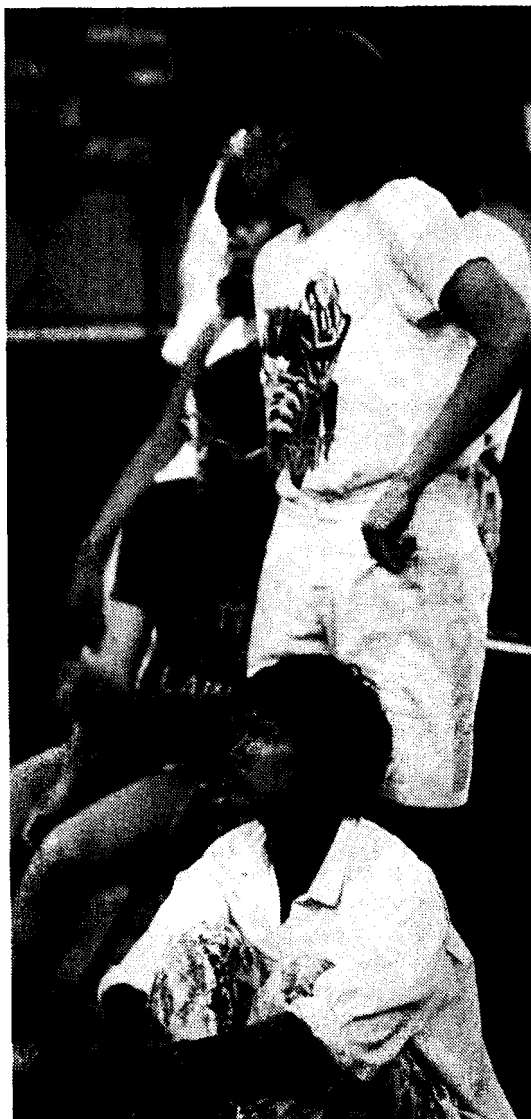
Late Payment—A fee of \$15 is charged if your tuition and fees are not paid in full by the due date on your billing statement. See Fee Payment, pages for more information or call Student Accounts Receivable at (612) 625-8500.

Student Services Fee—If you register for 3 or more credits in a term, you must pay a \$60.80 student services fee for that term in addition to tuition. Students who register for 3 or more credits in a course of 7-to 10-week length will be assessed the student services fee for both terms.

The student services fee is generally waived for courses held outside the 9-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 is assessed for the Itasca Biology Program and the Itasca Forestry Session.

The student services fee supports a number of organizations and services available to summer students including: 3 student unions, the student newspaper Minnesota Daily, Boynton Health Service prepaid outpatient care, sports facilities, and music and dance events.

Minnesota Public Interest Research Group—MPIRG is a nonprofit, nonpartisan, student-run organization funded by an additional fee of \$1.25 per term. 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.



FEE 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 the 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, but they will not carry payment due dates. Your tuition due dates will be on your billing statements.

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 625-8500.) If you do not receive any billing statement, you must obtain a payment voucher on or before the payment due dates listed on the chart at the top of this page. 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 22 and will have a due date of July 10; for second term the billing statement will be sent on July 29 and will have a due date of August 17. 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 24 with a due date of September 11.

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 of Williamson Hall; Anderson Hall; Coffman 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 statement, do not remove the student copy before sending in 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.

Refund of Tuition and Fees-Refunds 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-by taking a completed Course Request form to your registration center-not on the date you stopped attending classes. If you stop attending class for any reason, cancel immediately. To receive a refund, you must cancel within the time periods outlined below.

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 classes ends on Monday, June 22.

In a limited number of circumstances, (e.g., active military duty, scholastic drop) retroactive cancellation may be possible. If retroactive cancellation is 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 (625-5333) or 130 Coffey Hall for details.

Transcripts

There are two types of service for official transcripts; regular service and rush service. (Official transcripts are certified and signed by the University Registrar.) Regular service is available for \$3 a copy. Processing time for regular service is 2-3 workdays; after processing your copies will be mailed to the places you have specified. Rush service on your official transcript requests 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 (125 Williamson Hall, Minneapolis, or 130 Coffey Hall, St. Paul) for more information, or call 625-5333.

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

Students who take courses in Minneapolis units should send their requests to the Certifications Unit, 155 Williamson Hall, 231 Pillsbury Drive Southeast, Minneapolis, Minnesota, 55455. Students who take courses in St. Paul units should send their requests to the Office Admissions and Records, 130 Coffey Hall, 1420 Eckles Avenue, St. Paul, Minnesota 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 window in 155 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.

Financial Aid

Eligibility for summer 1992 financial aid is based on your 1991-92 ACT Family Financial Statement (FFS). If you have not previously submitted an FFS for 1991-92, you must submit one to ACT by May 1,

1992, to be eligible for summer aid. Only applicants on the Minnesota Part-Time Student Grand 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 25. For information on these programs or other financial aid procedures, including procedures for student loans, you may 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. You may also call (612) 624-1665.

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 5 credits or less for the entire summer in day school, Extension classes, Continuing Education for Women, Independent Study (correspondence), or the Split Rock Arts Program. You must complete a separate application available from Continuing Education and Extension (CEE) counseling, 314 Nolte Center, 315 Pillsbury Drive S.E., 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.

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 1991-92 school year, or who took fewer than 12 credits in one or more quarters in 1991-92. You must register for at least 6 credits during the summer to qualify. Checks are disbursed in the summer. Students must turn in their Student Aid Reports (SARs) by their last day of eligible enrollment or June 30, 1992, whichever is earlier. Completion of the 1991-92 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 1991-92 school year, or who took less than 12 credits in one or more quarters in 1991-92. 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 1991-92 FFS is required.

Summer Employment Opportunities

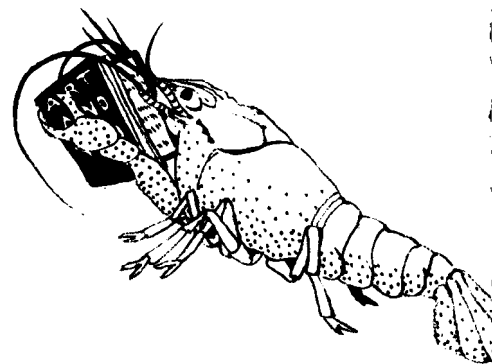
You are eligible for summer employment if you were registered for at least 6 undergraduate or 3 graduate credits in a degree program during spring quarter and are returning to school in the fall, or are registered for a minimum number of credits during the summer. For more information, contact the Student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

Summer Loan Programs

To be considered for summer 1992 loans, your financial aid file must be complete by July 18, 1992. If you already received on Stafford Student Loan for 1991-92, 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 1992. All loans require at least half-time registration in a degree or certificate program. 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. You can also call the financial aid office, (612) 624-1665, to request forms by mail.

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.



Health Care

Health Service and Hospitalization Charges

General Information—All students who take 3 or more credits per summer term are assessed the student services fee. (Students who register for 3 or more credits in a course of 7-10 week's length are assessed for both terms). By paying the fee, you are eligible to receive most nonhospital medical services at Boynton Health Service 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 on the Minneapolis campus is open throughout the summer. Boynton hours are 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 clinic, 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 clinics, 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 will be responsible for full payment of these charges. Full fees are charged for prescription medications, eye glasses and contacts, and most dental care.

During the hours that Boynton is closed, medical care for emergencies is available in the emergency department of University Hospital. The cost for after-hours care in the emergency department is only partially covered by your prepaid health care. Specifically, Boynton will pay 50% 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.

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, be sure to fill in the name of your insurance company and your policy number on the hospitalization insurance form found elsewhere 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 final date of departure from the U.S.

If you are registered for only one summer term, you can, if you wish, 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 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 fees for coverage are: first term—\$47 (5-week coverage); second term, including interim—\$94 (9-week coverage); both terms—\$141

(14-week coverage). For an insurance brochure, or specific information concerning benefits or dependent insurance coverage, 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.

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

Graduate Assistant Health Care Plan

University subsidized 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% 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). 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, 625-4346.

A guide to the course listings

Symbols—The following symbols are used throughout the course descriptions in place of page footnotes:

* Courses in which graduate students may prepare Plan B projects.

† 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 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.

R The letter **R** preceding a course number. Following each course title are parenthetical statements; the first indicates the computer 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.

Prerequisites—Entrance into certain courses requires completion of or concurrent enrollment in other specified courses, or possession of particular qualifications or class standing. If no prerequisites are listed, there are none, except insofar as the course number indicates a minimum class standing requirement.

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, 91-1

35 credits; senior, 136 or more credits. Check with your college office for further information.

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

When no abbreviated departmental prefix precedes the course listed as a prerequisite, that prerequisite course is in the same department as the course being described. Example; "prereq 1011 or 1017 and Psy 1002" indicates that you must have completed either course 1011 or 1017 in the same department and Psychology 1002. Work equivalent to a prerequisite course (having the same content) is ordinarily accepted in place of that prerequisite. Instructors may also, at their discretion, waive prerequisites.

Hours and Days—The starting and ending times for classes are indicated in 24-hour clock time.

To convert any time between 1:00 p.m. and 12:00 midnight from standard time to the 24-hour clock, add 1200 (for example, 3:45 p.m. + 1200=1545). 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.

Many classes, especially those in the Carlson School of Management meet for more than 60 minutes; these extended class periods are indicated in the course descriptions. To avoid conflicts, check such listings carefully before registering. Days of the week are abbreviated M, T, W,Th,F.

Limited Enrollment Courses—Courses with limited enrollments have an **R** before the course number. 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.

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.

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—While Summer Session staff sincerely regrets to do so, it is sometimes necessary to cancel courses with insufficient enrollment. If Summer Session cancels a course, you will be notified and will be given the opportunity to transfer into another course without penalty. If you do not want to enroll in another course, a full refund will be given. The academic departments reserve the right to cancel, postpone, limit enrollment, split, or combine courses, and to change instructors and/or locations of courses.

Changes made subsequent to 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.

A

Accounting (Acct)

625 Management/Economics 624-6506
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on page 27.

SPECIAL TERM: SEVEN-WEEK COURSES JUNE 16-AUGUST 4

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, (290294) 0800-0930 MTWTh, BlegH 240

Sec 2, (591466) 1200-1330 MTWTh, BlegH 240

3001. INTRODUCTION TO MANAGEMENT ACCOUNTING.

(388181) (4 cr; limited to 50 students; prereq 1050; A-F only; 0800-0945 MWTh; BlegH 235)

Broad overview of management accounting as the main information collection and analysis technology in an organization. Analysis of cost-volume-profit relationships, budgeting and analysis of variances from budgeted performance, and decentralized organizational design.

3101. INTERMEDIATE FINANCIAL REPORTING. (190295) (4 cr; limited to 60 students; prereq 1050, acct maj or gen mgmt maj with finance emphasis; 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.

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 235)

The relationship between complex events such as defined benefit pension plans, leases, and intercorporate investments, and the reflection of these events in financial statements. Introduction to business combinations and consolidated reporting.

Sec 1 (990296)

Sec 2 (191009) MBA only

5125. AUDITING PRINCIPLES AND PROCEDURES. (4 cr; limited to 40 students; prereq 5102; accounting majors or grad students only; A-F only; 1730-2000 TTh; BlegH 220)

Auditor's role and function. Includes audit standards, ethics, procedures, legal responsibilities.

Sec 1 (285337)

Sec 2 (691006) MBA only

5135. INCOME TAX ACCOUNTING. (4 cr; limited to 40 students; prereq 1025 or 1050; accounting majors or grad students only; A-F only; 1730-2000 MW; BlegH 110)

Introduction to principles of federal income taxation of various taxpaying entities.

Sec 1 (185338)

Sec 2 (491007) MBA only

5180. ADVANCED FINANCIAL REPORTING II. (4 cr; limited to 40 students; prereq 5102; mgmt or MBA students only; A-F only; 1730-2000 TTh; BlegH 110)

Consolidated financial reporting with a particular focus on international business organizations. Introduction to reporting issues in government and not-for-profit entities.

Sec 1 (289579)

Sec 2 (291008) MBA only

SPECIAL TERM: TEN-WEEK COURSE JUNE 16-AUGUST 26

5160. FINANCIAL STATEMENT ANALYSIS. (4 cr; limited to 40 students; prereq 1050 or MBA 8030; A-F only; 1730-2100 Th; BlegH 240)

Interpretation and analysis of financial statements and schedules for investors and other users.

Sec 1 (890856)

Sec 2 (090998) (MBA stu 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]; \$Educ 5205; prereq #; A-F only)

Sec 23, (690132) Williams

Sec 25, (490133) Park

5401. ADULT LEARNING AND DEVELOPMENT THROUGH THE LIFE SPAN—June 18-July 21. (290134) (3 cr; \$Educ 5401; 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; \$8302; prereq #) Individual research in area of adult education.

Sec 23, (590138) Williams

Sec 25, (390139) Park

SECOND TERM

5205. FIELD EXPERIENCE IN ADULT EDUCATION. (691474) (4-8 cr [max 8 cr]; \$Educ 5205; prereq #; A-F only) Park
See First Term.

8302. PROBLEMS: ADULT EDUCATION. (491475) (1-9 cr; \$Educ 8302; prereq #) Park
See First Term.

Adult Psychiatry (AdPy)

A-614 Mayo. 626-6015
Medical School

FIRST TERM

5109. EXTERNSHIP IN CLINICAL PSYCHIATRY: DULUTH HOSPITAL. (087275) (9 cr; prereq regis med) Olson

5110. CONTEMPORARY HOSPITAL PSYCHIATRY—ST. LUKE'S HOSPITAL, DULUTH. (887276) (9 cr; prereq regis med) Cowan

5500. PSYCHIATRY EXTERNSHIP. (587286) (9 cr; prereq regis med) Eckert

5511. PSYCHIATRY IN MEDICINE—Consultation Liaison: UNIVERSITY HOSPITALS. (287296) (9 cr; prereq regis med) Popkin

5514. SUBSTANCE ABUSE AND ASSOCIATED PSYCHIATRIC DISORDERS. (291283) (9 cr; prereq regis med) Halikas

5515. NEUROPSYCHOLOGY: UNIVERSITY HOSPITALS. (187302) (9 cr; prereq regis med) Meier

5516. ST. MARY'S EXTENDED CARE CENTER, ALCOHOLIC TREATMENT UNIT. (587305) (4.5-9 cr; prereq regis med) Hiers

5518. COMMUNITY PSYCHIATRY—Braham, MN (887309) (9 cr; prereq regis med) Walton

5530. INDEPENDENT STUDY. (887312) (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. (687313) (1 cr; prereq regis med) Abuzzahab

5800. CASE CONFERENCE: Psychiatry in Medicine. (987317) (1 cr; prereq MD or #) Popkin

5801. CONSULTATION LIAISON PSYCHIATRY. (587319) (ar cr; prereq MD) Popkin

8777. THESIS CREDITS: MASTERS. (389167) (1-16 cr [max 11 cr per summer term])

SECOND TERM

5109. EXTERNSHIP IN CLINICAL PSYCHIATRY: DULUTH HOSPITAL. (691121) (9 cr; prereq regis med) Olson

5110. CONTEMPORARY HOSPITAL PSYCHIATRY—ST. LUKE'S HOSPITAL, DULUTH. (691913) (9 cr; prereq regis med) Cowan

5500. PSYCHIATRY EXTERNSHIP. (987222) (9 cr; prereq regis med) Eckert

5511. PSYCHIATRY IN MEDICINE—Consultation Liaison: UNIVERSITY HOSPITALS. (286536) (9 cr; prereq regis med) Popkin

5514. SUBSTANCE ABUSE AND ASSOCIATED PSYCHIATRIC DISORDERS. (191261) (9 cr; prereq regis med) Halikas

5515. NEUROPSYCHOLOGY: UNIVERSITY HOSPITALS. (491914) (9 cr; prereq regis med) Meier

5516. ST. MARY'S EXTENDED CARE CENTER, ALCOHOLIC TREATMENT UNIT. (291915) (4.5-9 cr; prereq regis med) Hiers

5518. COMMUNITY PSYCHIATRY—Braham, MN. (191916) (9 cr; prereq regis med) Walton

5530. INDEPENDENT STUDY. (089057)
See First Term.

5602. CLINICAL PSYCHOPHARMACOLOGY SEMINAR. (991917) (1 cr; prereq regis med) Abuzzahab

5800. CASE CONFERENCE: Psychiatry in Medicine. (791918) (1 cr; prereq MD or #) Popkin

5801. CONSULTATION LIAISON PSYCHIATRY. (591919) (ar cr; prereq MD) Popkin

8777. THESIS CREDITS: MASTERS. (189249) (1-16 cr [max 11 cr per summer term])

Aerospace Engineering and Mechanics (AEM)

107 Akerman Hall. 625-8000
Institute of Technology

FIRST TERM

1015. STATICS. (4 cr; each rec limited to 30 students; prereq Phys 1271 or equiv; Math 1241 or equiv; IT student; A-F only; lect 0800-1015 MWF; Arch 10)

Vector algebra; Principles of statics; Application of equations of equilibrium to analysis of simple structures and machines; Statically determinate beams; Cables; Nature and influence of friction;

Rec 1, (485062) 0915-1015 TTh, Arch 10

Rec 2, (790042) 0915-1015 TTh, Arch 60

3036. DYNAMICS. (4 cr; limited to 30 students; prereq 1015, *Math 3221 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, (285063) 1030-1130 TTh, Arch 10

5001. WORKSHOP: ELEMENTARY AND SECONDARY TEACHERS—June 22-July 2 or July 6-17 (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 spacemobile, 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.)

Prerequisite will be enforced. Special registration procedures apply (see *Restrictions*, p. 4). Note: Course fills up quickly.

Sec 1 (286200) 1300-1745 MTWThF;
MechE 108 (June 22-July 2)
Sec 2 (091441) 1300-1745 MTWThF;
MechE 108 (July 6-17)

8777. THESIS CREDITS: MASTERS.
(189168) (1-16 cr [max 11 cr per
summer term])

**8800. SELECTED TOPICS IN
MECHANICS AND MATERIALS.**
(186201) (1-4 cr per qtr; prereq Δ)
Topics of current interest.

8880. PLAN B PROJECT. (887908) (1-4
cr per qtr [max 4 cr]; prereq grad
aerospace engineering or mechanics
maj, Δ)

8888. THESIS CREDITS: DOCTORAL.
(889335) (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.** (585182) (1-4 cr per
qtr; prereq Δ)
Topics of current interest. Individual
projects.

**5810. PROBLEMS IN FLUID
MECHANICS.** (385183) (1-4 cr per qtr;
prereq Δ)

**5838. SUMMER ENGINEERING
EMPLOYMENT.** (486521) (1-4 cr per
qtr; prereq completion of 3rd yr, Δ)

5840. INDUSTRIAL ASSIGNMENT.
(986202) (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.
(786203) (2 cr; prereq regis in
engineering intern program; Δ)

5842. INDUSTRIAL ASSIGNMENT.
(586204) (2 cr; prereq regis in
engineering intern program; Δ)

5843. INDUSTRIAL ASSIGNMENT.
(487152) (2 cr; prereq regis in
engineering intern program; Δ)

SECOND TERM

**3016. DEFORMABLE BODY
MECHANICS.** (4 cr; each rec limited to
30 students; prereq 1015, Φ Math
3221 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, (185064) 1030-1130 TTh,
Arch 10
Rec 2, (689580) 1030-1130 TTh,
Arch 60

**5002. ADVANCED AEROSPACE
WORKSHOP—July 20-31.** (192029) (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.

*Prerequisite will be enforced. Special
registration procedures apply (see
Restrictions, p. 4). Note: Course fills up
quickly.*

8777. THESIS CREDITS: MASTERS.
(189252) (1-16 cr [max 11 cr per
summer term])

**8800. SELECTED TOPICS IN
MECHANICS AND MATERIALS.**
(989066) (1-4 cr; prereq Δ)
See First Term.

**8810. SELECTED TOPICS IN FLUID
MECHANICS.** (186795) (1-4 cr per qtr;
prereq Δ)
Topics of current interest.

8880. PLAN B PROJECT. (887907) (1-4
cr per qtr [max 4 cr]; prereq grad
aerospace engineering and mechanics
maj, Δ)

8888. THESIS CREDITS: DOCTORAL.
(589393) (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

**3002. INTRODUCTION TO WEST
AFRICAN HISTORY: 1800 TO
PRESENT.** (489919) (4 cr; limited to 40
students; 0915-1015 MTWThF; BlegH
440) Coifman
Until 1800.

**3601. INTRODUCTION TO
AFRICAN LITERATURE.** (291476) (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. (985048)
(1-15 cr per term; prereq #, Δ , CLA
approval)

**3991-3992-3993. SENIOR PROJECT
IN AFRO-AMERICAN AND AFRICAN
STUDIES.** (389900, 189901, 089902) (2
cr per qtr; prereq completed CLA
advanced composition requirement,
permission of undergrad adviser; A-F
only)

Continuous (X) 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.** (092055)
(4 cr; Φ Engl 5597; 0930-1200
MTWThF; SocSci 815) Wright
See page xx 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)

Agricultural and Applied Economics (AgEc)

231 Classroom/Office Building,
St. Paul. 625-1222
College of Agriculture

FIRST TERM

**5990. SPECIAL TOPICS AND
INDEPENDENT STUDY IN
AGRICULTURAL AND APPLIED
ECONOMICS.** (188182)
(Cr ar; prereq #) Staff
Independent study, supervised reading,
or research on agricultural economics
problems not covered in regularly
offered courses.

**8200. ADVANCED TOPICS IN
AGRICULTURAL AND APPLIED
ECONOMICS.** (485305) (1-9 cr; [may
be repeated for cr]; hrs ar) Staff
Special problems for individual work by
qualified students.

8777. THESIS CREDITS: MASTERS.
(089169) (1-16 cr [max 11 cr per
summer term])

8888. THESIS CREDITS: DOCTORAL.
(689336) (1-36 cr [max 11 cr per
summer term])

SECOND TERM

**5990. SPECIAL TOPICS AND
INDEPENDENT STUDY IN
AGRICULTURAL AND APPLIED
ECONOMICS.** (088183)
(Cr ar; prereq #) Staff
See First Term.

**8200. ADVANCED TOPICS IN
AGRICULTURAL AND APPLIED
ECONOMICS.** (888184) (1-9 cr; [may
be repeated for cr]; hrs ar) Staff
See First Term.

8777. THESIS CREDITS: MASTERS.
(689255) (1-16 cr [max 11 cr per
summer term])

8888. THESIS CREDITS: DOCTORAL.
(389394) (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

**3001. EXPERIENTIAL LEARNING:
PRODUCTION AGRICULTURE.**
(988712) (1-14 cr [max 14 cr]; limited
to 8 students; prereq #; hrs ar; S-N only)
Baerg

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.

**3002. EXPERIENTIAL LEARNING:
AGRICULTURAL BUSINESS.** (589569)
(1-14 cr; limited to 8 students; prereq #;
hrs. ar; S-N only) Baerg
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 persons employed in
agricultural businesses.

**5082. CURRENT ISSUES IN
AGRICULTURAL EDUCATION—June
16-19, 23-26.** (989570) (1-3 cr [max 9
cr]; prereq #; 1300-1600 & hrs. ar;
MTWThF; VoTech R385; A-F only)
Peterson

Emphasizes study and clarification of
current issues: strategies of responses,
implications of response actions, and
related leadership roles. This offering for
2 or 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, (387807) Norenberg
Sec 22, (187808) Peterson
Sec 23, (087809) Leske
Sec 25, (387810) 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, (187811) Norenberg
Sec 22, (087812) Peterson
Sec 23, (887813) Leske
Sec 25, (687814) 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, (487815) Norenberg
Sec 22, (287816) Peterson
Sec 23, (187817) Leske
Sec 25, (987818) Persons

8091. FIELD PROBLEMS. (3 cr; hrs ar)
Making investigations, gathering data,
and formulating plans regarding
agricultural education.

Sec 21, (787819) Norenberg
Sec 22, (187820) Peterson
Sec 23, (987821) Leske
Sec 25, (787822) Persons

8777. THESIS CREDITS: MASTERS.
(389170) (1-16 cr [max 11 cr per
summer term])

SECOND TERM

**3001. EXPERIENTIAL LEARNING:
PRODUCTION AGRICULTURE.**
(788713) (1-14 cr [max 14 cr]; limited to
8 students; prereq #; hrs ar; S-N only)
Baerg
See First Term.

**3002. EXPERIENTIAL EDUCATION:
AGRICULTURAL BUSINESS.** (789571)
(1-14 cr [max 14 cr]; limited to 8
students; prereq #; hrs ar; S-N only)
Baerg
See First Term.

**5082. CURRENT ISSUES IN
AGRICULTURAL EDUCATION—July
20-23, 27-30.** (191284) (1-3 cr [max 9
cr]; prereq #; 0915-1215 & hrs ar;
MTWTh; VoTech R385; A-F only)
Leske, Norenberg, Persons, Peterson
See First Term.

5090. INDEPENDENT STUDY. (1-3 cr; prereq sr; hrs ar; A-F only)
See First Term.

Sec 21, (387791) Norenberg
Sec 22, (187792) Peterson
Sec 23, (087793) Leske
Sec 25, (887794) 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, (687795) Norenberg
Sec 22, (487796) Peterson
Sec 23, (287797) Leske
Sec 25, (187798) Persons

8001. RESEARCH IN AGRICULTURAL EDUCATION. (Cr ar; prereq 15 cr in education)
See First Term.

Sec 21, (987799) Norenberg
Sec 22, (687800) Peterson
Sec 23, (487801) Leske
Sec 25, (287802) Persons

8091. FIELD PROBLEMS. (3 cr; hrs ar)
See First Term.

Sec 21, (187803) Norenberg
Sec 22, (987804) Peterson
Sec 23, (787805) Leske
Sec 25, (587806) Persons

8777. THESIS CREDITS: MASTERS. (189258) (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. (189171) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489337) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189261) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889397) (1-36 cr [max 11 cr per summer term])

Agricultural Engineering Technology (AgET)

213 Agricultural Engineering, St. Paul.
625-7733
College of Agriculture

FIRST TERM

5031. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE: AGRICULTURAL MACHINERY AND MECHANIZATION. (991285) (1-3 cr; prereq 5020 or #) Bear
Principles and practices pertaining to implementation of instructional

programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment used in agricultural mechanics for the specific instructional program.

SECOND TERM

5032. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE: ELECTRICAL POWER AND PROCESSING. (791286) (1-3 cr; prereq 5020 or #) Bear
See 5031 First Term.

Agronomy and Plant Genetics (Agro)

411 Borlaug Hall, St. Paul. 625-7773
College of Agriculture

FIRST TERM

1020. SPECIAL PROBLEMS. (285306) (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. (185307) (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. (985308) (Cr ar; prereq #) Staff
Problems in physiology and production of crop plants.

8330. RESEARCH IN PLANT GENETICS. (785309) (Cr ar) Staff

8777. THESIS CREDITS: MASTERS. (089172) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289338) (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. (589572) (1 cr; prereq 5020 or #; 0800-1000 F; BorH 306) Stuthman
Field study of plant breeding programs and techniques.

8320. ORIENTATION TO AGRONOMY AND SOILS FIELD RESEARCH TECHNIQUES. (685383) (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. (786279) (1-3 cr; prereq 5 cr agronomy, #) Smith, Cardwell
See First Term.

5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS. (186280) (1-5 cr; prereq 20 cr agronomy, #) Smith, Cardwell
See First Term.

8010. RESEARCH IN AGRONOMY. (986281) (Cr ar; prereq #) Staff
See First Term.

8330. RESEARCH IN PLANT GENETICS. (485112) (Cr ar) Staff

8777. THESIS CREDITS: MASTERS. (789263) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689398) (1-36 cr [max 11 cr per summer term])

American Indian Studies (AmIn)

102 Scott Hall. 624-1338
College of Liberal Arts

FIRST TERM

3036. DAKOTA CULTURE AND HISTORY. (291350) (4 cr; 0915-1015 MTWTh; FolH 240) Schommer
The processes of maintenance and change in Dakota culture.

3810. FIELD PRACTICE: INDIAN STUDIES. (687036) (3-9 cr per term; prereq soph or jr or sr, #)
Supervised field practice in approved agencies serving Indian clients.

5960. SUMMER INSTITUTE FOR TEACHERS: The Flowering Tree: Traditional and Contemporary American Indian Literature and Culture—June 22-July 2. (192144) (4 cr; 0930-1200 MTWThF; Arch 5) Miller
Meets with AmSt 5920. See page 11 for details.

5990. DIRECTED RESEARCH. (087955) (1-15 cr per term; prereq by petition only, #, Δ, CLA approval)
Independent research under faculty guidance.

SECOND TERM

3810. FIELD PRACTICE: INDIAN STUDIES. (487037) (3-9 cr per term; prereq soph or jr or sr, #)
See First Term.

5990. DIRECTED RESEARCH. (487961) (1-15 cr per term; prereq by petition only, #, Δ, CLA approval)
See First Term.

American Studies (AmSt)

104 Scott Hall. 624-4190
College of Liberal Arts

FIRST TERM

r1001. AMERICAN CULTURES. (191477) (4 cr; limited to 45 students; 0800-0900 MTWThF; BlegH 225)
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.

r3113. AMERICAN CULTURAL DIVERSITY. (888735) (4 cr; limited to 40 students; §CLit 3979; 1145-1245 MTWThF; BlegH 250) Sarles
Patterns of American cultural expression, values, and lifestyles analyzed within the context of the dominant "normative" pattern of American life. Meets with CLit 3979.

3970. DIRECTED STUDIES. (288626) (1-15 cr; prereq #, Δ, CLA approval)
Staff

r5920. TOPICS IN AMERICAN STUDIES. (991478) (4 cr [max 12 cr]; limited to 20 students; 1030-1130 MTWThF, BlegH 125) Noble

5920. SUMMER INSTITUTE FOR TEACHERS.

Sec 5, June 22-July 2—*The Flowering Tree: Traditional and Contemporary American Indian Literature and Culture.* (892056) (4 cr; 0930-1200 MTWThF; Arch 5) Miller

Sec 6, June 15-26—*Communities and the Sense of Place.* (692057) (4 cr; 0900-1200 MTWThF; NichH 209) Morrish

See page 11 for details.

8777. THESIS CREDITS: MASTERS. (889173) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189339) (1-36 cr [max 11 cr per summer term])

8970. READINGS IN AMERICAN CIVILIZATION. (785665) (Cr and hrs ar) Staff

SECOND TERM

r1003. AMERICAN CULTURES. (790297) (4 cr; limited to 40 students; 0915-1015 MTWThF; BlegH 420) 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 1920's to the present.

r3111. CREATIVE AMERICANS AND THEIR WORLDS: 1920s to the present. (590298) (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. (886693) (1-15 cr; prereq #, Δ, CLA approval)
Staff

8777. THESIS CREDITS: MASTERS. (389265) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189400) (1-36 cr [max 11 cr per summer term])

8970. READINGS IN AMERICAN CIVILIZATION. (186697) (ar cr) Staff

Ancient Near Eastern Studies (ANE)

178 Klaeber Court. 624-0060
(Classical and Near Eastern Studies)
College of Liberal Arts

(See also Hebrew; Jewish Studies;
Religious Studies)

SECOND TERM

1001. THE BIBLE: NARRATIVE TEXTS. (492058) (4 cr, §3001; ReLS 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 discussing literary background of the texts. Meets with 3001, ReLS 3201.

3001. THE BIBLE: NARRATIVE TEXTS. (292059) (4 cr, §1001; ReLS 3201; 0900-1130 MW; FolH 306) Paradise Meets with 1001 and ReLS 3201, but requires additional work for advanced undergraduate and graduate credit. Meets with 1001, ReLS 3201.

Ancient Studies (AnSt)

230 Folwell Hall. 625-2503
College of Liberal Arts

FIRST TERM

5100. SUMMER INSTITUTE FOR TEACHERS: Archeology in the Classroom. (992145) (4 cr; prereq enrollment in AnSt or #)

8777. THESIS CREDITS: MASTERS. (289176) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289341) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (089270) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689403) (1-36 cr [max 11 cr per summer term])

Anesthesiology (Anes)

8515 Mayo. 624-9990
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (689174) (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. (288447) (15 cr; prereq CRNA, regis B.S. in nurs anes, 5086, #) Palahniuk, staff

5286. DIRECTED STUDY, ANESTHESIA TOPICS/PROJECT: CLINICAL. (385216) (Cr ar; prereq CRNA, regis B.S. in nurs anes, #)

5386. EDUCATION IN NURSE ANESTHESIA. (688445) (1 cr; prereq CRNA, regis B.S. in nurs anes, #) Palahniuk, staff

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189266) (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. (489175) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489340) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (889268) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889402) (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. (188692) (1 cr; prereq #...3305rec; 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. (185310) (Cr ar; prereq #) Staff Research in an area of animal science under the supervision of a staff member. Written report on the research required.

5715. TUTORIAL. (287153) (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. (985311) (1 cr [may be repeated once for cr]; prereq #) Staff

Review and evaluation of pertinent scientific literature.

8777. THESIS CREDITS: MASTERS. (189557) (1-16 cr [max 11 cr per summer term])

8810.* RESEARCH IN ANIMAL SCIENCE. (785312) (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. (585313) (Cr and hrs ar; prereq #) Staff Research in quantitative genetics, cytogenetics, and other areas related to animal breeding.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (385314) (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. (185315) (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. (085316) (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. (089558) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5710. SPECIAL PROBLEMS. (786282) (Cr ar; prereq #) Staff See First Term.

5715. TUTORIAL. (385054) (Cr ar; prereq #) Staff See First Term.

8750. CONCEPTS AND DEVELOPMENTS IN MEAT SCIENCE AND TECHNOLOGY. (586283) (1 cr [may be repeated once for cr]; prereq #) Staff See First Term.

8777. THESIS CREDITS: MASTERS. (889559) (1-16 cr [max 11 cr per summer term])

8810.* RESEARCH IN ANIMAL SCIENCE. (386284) (Cr and hrs ar; prereq #) Staff See First Term.

8820.* RESEARCH IN ANIMAL GENETICS. (186285) (Cr and hrs ar; prereq #) Staff See First Term.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (086286) (Cr and hrs ar; prereq #) Staff See First Term.

8840.* RESEARCH IN ANIMAL NUTRITION. (886287) (Cr and hrs ar; prereq #) Staff See First Term.

8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY. (686288) (Cr and hrs ar; prereq #) Staff See First Term.

8888. THESIS CREDITS: DOCTORAL. (189560) (1-36 cr [max 11 cr per summer term])

Anthropology (Anth)

215 Ford Hall. 625-3400
College of Liberal Arts

FIRST TERM

1101. HUMAN ORIGINS. (190300) (5 cr; 1030-1130 MTWThF; FordH 55) Gibbon 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. (688185) (5 cr, §1115, §5102; 0915-1015 MTWThF; FordH 55) Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world.

3131. RELIGION AND CULTURE. (391288) (4 cr; prereq 1102 or #; 0915-1015 MTWThF; FordH 115) Penn Anthropological perspectives on Religion. Religion in relation to social order and individual life cycle. Religion and cultural change.

3201. APPROACHES IN CULTURAL ANTHROPOLOGY. (489581) (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. (385667) (Cr and hrs ar; prereq #, Δ, □) Staff

5910. TOPICS IN ANTHROPOLOGY: ETHNOGRAPHIC FIELD RESEARCH. (191289) (8 cr; limited to 30 students; prereq 1102 and #; 1145-1245 MTWTh plus field work hours arranged; FordH 150) 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. (488186) (2-4 cr; prereq #, Δ, CLA approval) Qualified students may register for work on tutorial basis.

8211. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (288187) (3 cr; hrs ar) Staff

8777. THESIS CREDITS: MASTERS. (189177) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189342) (1-36 cr [max 11 cr per summer term])

8950. DIRECTED STUDIES. (185668) (Cr and hrs ar; prereq #) Staff

SECOND TERM

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (288190) (5 cr, \$1115, \$5102; 1145-1245 MTWThF; FordH 55) Gerlach
See First Term.

3293. PEOPLES AND CULTURES OF THE PACIFIC ISLANDS. (591287) (4 cr; 0915-1015 MTWThF; FordH 130) Lipset

Life on Pacific islands, from Hawaii to New Guinea. Comparison of traditional cultural adaptations. Impact of Western civilization on islanders' lives. Examination of Oceanic data in the context of anthropological thought.

3970. DIRECTED STUDIES. (986703) (Cr and hrs ar; prereq #, Δ, □) Staff

5141. CULTURE AND PERSONALITY. (289582) (4 cr; prereq 1102 or 5102 or # [waived for majors in public health, nursing, psychology, sociology, and social work]); 1030-1130 MTWThF; FordH 285) Ingham
Role of culture in formation of personality. Individual adjustments to demands of culture. Psychological approach to culture.

5970. DIRECTED READINGS. (188191) (2-4 cr; prereq #, Δ, CLA approval)
See First Term.

8777. THESIS CREDITS: MASTERS. (889271) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489404) (1-36 cr [max 11 cr per summer term])

8950. DIRECTED STUDIES. (786704) (Cr and hrs ar; prereq #) Staff

Arabic (Arab)

808 Social Sciences. 624-9847
(Afro-American and African Studies)
College of Liberal Arts

FIRST TERM

3303. ARABIC DRAMA IN TRANSLATION. (791479) (4 cr; \$MidE 3303; limited to 10 students; 1115-1315 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, Wannua, and al-Madani. Plays discussed in cultural and historical context. Theoretical and critical essays. All readings in English. Meets with 5503.

5503. ARABIC DRAMA. (191480) (4 cr; \$MidE 5503; limited to 10 students; 1115-1315 TTh; BlegH 245) AshShareef
See description for 3303. Meets with 3303.

Architecture (Arch)

110 Architecture. 624-7866
College of Architecture and Landscape Architecture

FIRST TERM

1010. INTRODUCTION TO ARCHITECTURAL DRAWING. (390108) (4 cr; limited to 10 students; prereq arch maj or pre-arch maj or #; 0915-1200 MWF; Arch 60) Piotrowski
Introduction to perception and representation in architecture. The study of orthographic, oblique, isometric projections and perspective drawing. Development of freehand drawing skills.

1021. HISTORY OF ARCHITECTURE. (186456) (4 cr; limited to 80 students; \$LA 1021; 0915-1130 MWF; Arch 25) Satkowski
Introduction to history and theory of architecture. Survey of architecture from ancient through modern periods.

3062. BUILDING SYSTEMS. (4 cr; limited to 25 students, prereq arch major or adult special, 3061; 0800-1000 MW, Arch 55) Weeks
Building systems, subsystems, and components; principles of structural theory; materials and methods used in building; new and developing technologies.
Lab 1, (191986) 0915-1200 F, Arch 55

3970. DIRECTED STUDY. (385278) (Cr ar; prereq 3081 or Δ)

5961. COMPUTER-AIDED ARCHITECTURAL DESIGN. (989584) (4 cr; limited to 20 students; prereq architecture major, 3083 or #; 1030-1225 MWF; Arch 35) Anderson
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. (989178) (1-16 cr [max 11 cr per summer term])

SECOND TERM

1023. HISTORY OF CITIES. (091987) (4 cr; \$LA 1023; limited to 80 students; 0915-1130 MWF, Arch 25) Satkowski

5970. DIRECTED STUDY. (785181) (Cr ar; prereq #)

8777. THESIS CREDITS: MASTERS. (289274) (1-16 cr [max 11 cr per summer term])

Art Education (ArEd)

135 Wulling Hall. 625-8021
(Curriculum and Instruction)
College of Education

FIRST TERM

5302. CURRICULUM INNOVATIONS IN ART EDUCATION—June 15-26. (188456) (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.

5600. INTERNSHIP. (988726) (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. (788727) (3-9 cr; prereq #; A-F only) DiBlasio
Independent project under direction; gathering data, developing proposals, experimenting with evaluating innovative practices.

5900. PROFESSIONAL PROBLEMS. (789585) (3 cr; prereq MEd student; #; hrs ar, A-F only) DiBlasio
Independent study for MEd candidates integrating learning from art education, art, and education.

8900. PROBLEMS: ART EDUCATION. (589586) (Cr ar; prereq #; hrs ar) DiBlasio
Independent projects under staff guidance; may include advanced studio practice or technical problems requiring experimental or library research.

SECOND TERM

3309. INDEPENDENT STUDY. (389587) (1-4 cr [max 4 cr]; prereq #; A-F only) Freedman-Norberg
Individual exploration and study of basic types of art expression with the opportunity for in-depth professional research and creative involvement in one area of interest.

5001. ART MEDIA TECHNIQUES: Computer Use in the Art Class. (189588) (1-12 cr [max 12 cr]; limited to 25 students; 0915-1130 MWTh; PeikH 355; A-F only) Freedman-Norberg
Lectures, demonstrations, discussions, critique sessions exploring and learning various techniques and processes in creativity; handling specific media. Learning experiences using computer graphics technology. Focuses on three areas of graphics production and research: 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 offering for 3 credits.

5316. INTERCULTURAL EDUCATION THROUGHOUT ART—July 23-August 7. (991481) (3 cr; 1300-1545 MTWThF, WullH 130; A/F only) Freedman-Norberg
Approaches to international understanding through recognition of aesthetic contributions of diverse people to American life.

5389. APPLICATIONS OF AESTHETIC THEORY IN EDUCATION—July 27-August 14. (690146) (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. (3-9 cr; prereq #; hrs ar; A-F only)
See First Term.

Sec 21, (490150) DiBlasio
Sec 22, (490147) Freedman-Norberg

5605. PRACTICUM. (3-9 cr; prereq #; A-F only; hrs ar)
See First Term.

Sec 21, (290151) DiBlasio
Sec 22, (290148) Freedman-Norberg

5900. PROFESSIONAL PROBLEMS. (3 cr; prereq MEd student; #; hrs ar; A-F only)
See First Term.

Sec 21, (189591) DiBlasio
Sec 22, (089589) Freedman-Norberg

8900. PROBLEMS: ART EDUCATION. (Cr ar; prereq #; hrs ar)
See First Term.

Sec 21, (089592) DiBlasio
Sec 22, (389590) Freedman-Norberg

Art History (ArH)

108a Jones Hall. 624-4500
College of Liberal Arts

FIRST TERM

3009. HISTORY OF MEDIEVAL ART. (191642) (4 cr; 0900-1015 MTWTh; limited to 140 students; JonesH 207B) Steyaert
Medieval architecture, painting, and sculpture from early Christian to Gothic period.

3011. HISTORY OF RENAISSANCE AND BAROQUE ART. (387032) (4 cr; limited to 130 students; 0900-1015 MTWTh; AndH 310) Canedy
The major monuments in architecture, sculpture, and painting from the early 14th century through the baroque period.

3013. INTRODUCTION TO FAR EASTERN ART. (991643) (4 cr; \$EAS 3013; limited to 70 students; 1030-1145 MTWTh; AndH 310) Poor
Major themes of Far Eastern art. The arts of China and Japan (not all-inclusive). Meets with EAS 3013.

3970. DIRECTED STUDIES. (887956) (1-5 cr; prereq #, Δ, □) Staff
Guided individual reading or study.

3971. MAJOR PROJECT. (988192) (1 cr; prereq art history major, 3895, #; A-F only) Staff
Completion of a research paper begun in a 5000-level project course.

5120. FIELD RESEARCH IN ARCHAEOLOGY. (892140) (3-6 cr; \$CLas 5120; prereq #; hrs ar) Cooper
Field excavation, survey, and research at archaeological sites in the Mediterranean area. Techniques of excavation and exploration; interpretation of archaeological materials.

5970. DIRECTED READINGS. (08507B) (1-5 cr; prereq sr, #, Δ, CLA approval) Staff
Guided individual reading or study.

8888. THESIS CREDITS: DOCTORAL. (98934B) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3008. HISTORY OF ANCIENT ART. (791644) (4 cr; limited to 140 students; 1130-1245 MTWTh; AndH 310) McNally
Architecture, sculpture, and painting of selected early cultures; stress on influences contributing to the development of Western art. Meets with Clas 3008.

3012. HISTORY OF 19TH-AND 20TH-CENTURY ART. (591645) (4 cr; limited to 130 students; 0900-1015 MTWTh; AndH 310) Haxthausen
Major monuments and concepts of the modern period: sculpture, architecture, painting and prints.

3970. DIRECTED STUDIES. (087888) (1-5 cr; prereq #, Δ, □) Staff
See First Term.

3971. MAJOR PROJECT. (788193) (1 cr; prereq art history major, #; A-F only) Staff
See First Term.

5970. DIRECTED READINGS. (386706) (1-5 cr; prereq sr, #, Δ, CLA approval) Staff
See First Term.

8888. THESIS CREDITS: DOCTORAL. (289405) (1-36 cr [max 11 cr per summer term]; open to graduate students first registered in the Graduate School fall, 1983 or later)

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 33. Although classes are scheduled Monday through Friday, attendance is required Monday through Thursday; Friday is considered a lab.

FIRST TERM

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, (085669) 0800-1015
MTWThF, ArtB 150, Gray
Sec 2, (088197) 0800-1015
MTWThF, ArtB 140, Cowette
Sec 3, (888198) 1030-1245
MTWThF, ArtB 140, Cowette

1301. SCULPTURE. (591290) (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.

1302. SCULPTURE. (987785) (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.

1510. PRINTMAKING: INTAGLIO. (391291) (4 cr per term [8 cr. max]; limited to 8 students; 1030-1245 MTWThF; ArtB 170) Krepps
Intaglio printing processes. Etching, engraving, and collagraphic techniques in creative context. Meets with 3510 and 5510.

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, (788291) 0800-1015
MTWThF, ArtB 120
Sec 2, (187784) 1030-1245
MTWThF, ArtB 120

1812. CERAMICS: WHEEL THROWING. (386351) (4 cr; limited to 20 students; 1030-1245 MTWThF; ArtB 10) Hoard
Introduction to wheel throwing techniques for individual creative expression.

3105. INTRODUCTION TO PAINTING. (485448) (4 cr; limited to 20 students; prereq 1101, 1102, 1401, 1404; 1030-1245 MTWThF; ArtB 151)
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.

3110. DRAWING. (385670) (4 cr per term [max 12 cr]; limited to 12 students; prereq 1102, 1401; 1030-1245 MTWThF; ArtB 150) Gray
From model, still life, and nature; individual creative expression in various mediums. Meets with 5110.

3304. SCULPTURE: WOOD AND STONE. (691300) (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.

3430. PAPER: PULP TO PLASTIC EXPRESSION. (590110) (4 cr per term [max 12 cr]; limited to 10 students; prereq 1401, 1xxx level Studio Arts course; 0800-1015 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 5340.

3510. PRINTMAKING: INTAGLIO. (792146) (4 cr per term [8 cr. max]; limited to students; 1030-1245 MTWThF; ArtB 170) Krepps
Intaglio techniques on metal and collagraph. Embossing. Meets with 1510 and 5510.

3540. PRINTMAKING: SCREEN. (291302) (4 cr per term [12 cr max]; limited to 8 students; prereq 1401, 4 cr of 1540 or #; 0800-1015 MTWThF; ArtB 170) Bethke
Screen printing techniques, emphasis on color and image development. Meets with 5540.

3970. DIRECTED STUDY. (1-5 cr per term [max 8 cr]; prereq 24 cr in studio arts and #, Δ, □)

Sec 1, (188658) Baldwin
Sec 2, (191292) Bethke
Sec 4, (085011) Cowette
Sec 6, (091293) Gray
Sec 9, (287041) Hoard
Sec 11, (886354) Krepps
Sec 13, (891294) Lucey

3980. DIRECTED INSTRUCTION. (1-5 cr per term [max 8 cr]; prereq #, Δ, □)
Students assist in teaching a course they have completed.

Sec 1, (988659) Baldwin
Sec 2, (691295) Bethke
Sec 4, (885012) Cowette
Sec 6, (491296) Gray
Sec 9, (587045) Hoard
Sec 11, (686355) Krepps
Sec 13, (291297) Lucey

5110. DRAWING. (185671) (4 cr per term [max 16 cr]; 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.

5190. ADVANCED ENTRY: DRAWING AND PAINTING. (4 cr; max 16 cr; prereq #, Δ)
Sec 4, (586364) Cowette
Sec 6, (191298) Gray

5340. SCULPTURE: WOOD AND STONE. (491301) (4 cr per term [16 cr max]; limited to 8 students; prereq 3304; 1030-1245 MTWThF; ArtB 50) Lucey
Wood and stone construction, assemblage, and arrangement. Meets with 3304.

5390. ADVANCED ENTRY: SCULPTURE. (4 cr; max 16 cr; prereq #, Δ)
Sec 1, (186450) Baldwin
Sec 13, (991299) Lucey

5430. PAPER: PULP TO PLASTIC EXPRESSION. (390111) (4 cr per term [max 16 cr]; limited to 4 students; prereq 12 cr of 3430 or #; 0800-1015 MTWThF; ArtB 35) Krepps
See description for 3430. Meets with 3430.

5510. PRINTMAKING: INTAGLIO. (592147) (4 cr per term [8 cr. max]; limited to 6 students; 1030-1245 MTWThF; ArtB 170) Krepps
Color processes. Intaglio and combined techniques. Meets with 1510 and 3510.

5540. PRINTMAKING: SCREEN. (191303) (4 cr per term [16 cr max]; limited to 5 students; prereq 12 cr of 3540 or #; 0800-1015 MTWThF; ArtB 170) Bethke
Screen processes and combined techniques. Meets with 3540.

5590. ADVANCED ENTRY: PRINTMAKING. (4 cr; max 16 cr; prereq #, Δ)
Sec 2, (991304) Bethke
Sec 11, (786363) Krepps

5890. ADVANCED ENTRY: CERAMICS/GLASS. (886452) (4 cr; max 16 cr; prereq #, Δ) Hoard

5970. DIRECTED STUDIES. (1-5 cr per term [max 12 cr]; prereq 24 cr in studio arts and #, Δ, CLA approval)
Sec 1, (288660) Baldwin
Sec 2, (791305) Bethke
Sec 4, (685013) Cowette
Sec 6, (591306) Gray
Sec 9, (387046) Hoard
Sec 11, (486356) Krepps
Sec 13, (891165) Lucey

8110. DRAWING. (4 cr per term [max 12 cr])

Sec 4, (187154) Cowette
Sec 6, (391307) Gray

8120. PAINTING. (4 cr per term [max 24 cr])

Sec 4, (987155) Cowette
Sec 6, (191308) Gray

8510. PRINTMAKING. (286357) (4 cr per term [max 36 cr])

Sec 2, (091309) Bethke
Sec 11, (286357) Krepps

8810. CERAMICS. (787156) (4 cr per term [max 24 cr]) Hoard

SECOND TERM

1101. DRAWING I. (588292) (4 cr; limited to 20 students; 0800-1015 MTWThF; ArtB 150) Roode
See First Term.

1102. DRAWING II. (186707) (4 cr; limited to 20 students; prereq 1101; 1030-1245 MTWThF; ArtB 150) Roode
Work from life and nature; color and pictorial structure.

1404. COLOR. (086353) (4 cr; limited to 20 students; \$1104; prereq 1101; 0800-1015 MTWThF; ArtB 141) Feinberg
Color and its visual implications.

1701. PHOTO MEDIUM. (4 cr; each section limited to 20 students)
See First Term.
Sec 1, (188201), 0800-1015
MTWThF, ArtB 120
Sec 2, (889903), 1030-1245
MTWThF, ArtB 120

1811. CERAMICS: HANDBUILDING. (185078) (4 cr; limited to 20 students; 1030-1245 MTWThF; ArtB 10) Lane
Introduction to handbuilding techniques in clay for individual creative expression.

3120. PAINTING. (986720) (4 cr per term [max 12 cr]; limited to 12 students; prereq 1101, 1102, 1401, 1404, 3105, 4 cr of 3110 or 3110; 1030-1245 MTWThF; ArtB 151) Feinberg
Media and problems in painting. Individual projects. Meets with 5120.

3131. NATURE OF ABSTRACTION. (191311) (4 cr; limited to 20 students; prereq 1101, 1102, 1401, 1404; 1030-1245 MTWThF; ArtB 141) Rowan
Two-dimensional projects in varied media in which representational images from nature are transposed toward abstract syntheses through specific attention to visual elements.

3160. WATERCOLOR. (091312) (4 cr per term [12 cr max]; limited to 12 students; prereq 1101, 1102, 1401, 1404; 0800-1015 MTWThF; ArtB 141) Rowan
Transparent watercolor, gouache, casein, tempera. Figure, still life, landscape, abstract design. Meets with 5160.

3970. DIRECTED STUDY. (1-5 cr per term [max 8 cr]; prereq 24 cr in studio arts and #, Δ, □)
Sec 5, (587787) Feinberg
Sec 12, (186361) Lane
Sec 16, (691314) Roode
Sec 18, (491315) Rowan

3980. DIRECTED INSTRUCTION. (1-5 cr per term [max 8 cr]; prereq #, Δ , \square) See First Term.

Sec 5, (387788) Feinberg
Sec 12, (986362) Lane
Sec 16, (291316) Roode
Sec 18, (191317) Rowan

#5120. PAINTING. (486728) (4 cr per term [max 16 cr]; limited to 8 students; prereq 12 cr of 3120 or #; 1030-1245 MTWThF; ArtB 151) Feinberg
Various media. Individual problems. Meets with 3120.

#5160. WATERCOLOR. (891313) (4 cr per term [16 cr max]; limited to 8 students; prereq 12 cr of 3160 #; 0800-1015 MTWThF; ArtB 141) Rowan
Advanced watercolor techniques, aesthetic directions. Individual concepts and development of sensibilities. Meets with 3160.

5190. ADVANCED ENTRY: DRAWING AND PAINTING. (4 cr [max 16 cr]; prereq #, Δ)

Sec 5, (186447) Feinberg
Sec 16, (991318) Roode
Sec 18, (791319) Rowan

5890. ADVANCED ENTRY: CERAMICS/GLASS. (286455) (4 cr [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, (187789) Feinberg
Sec 12, (186352) Lane
Sec 16, (191320) Roode
Sec 18, (991321) Rowan

8110. DRAWING. (4 cr per term [max 12 cr])

Sec 5, (587157) Feinberg
Sec 16, (791322) Roode
Sec 18, (591323) Rowan

8120. PAINTING. (4 cr per term [max 24 cr])

Sec 5, (387158) Feinberg
Sec 16, (391324) Roode
Sec 18, (191325) Rowan

8810. CERAMICS. (991822) (4 cr per term [max 24 cr]) Lane

Astronomy (Ast)

356 Physics. 624-0211
Institute of Technology

FIRST TERM

#1011. DESCRIPTIVE ASTRONOMY. (586249) (4 cr, \$1021; 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.

#1015. DESCRIPTIVE ASTRONOMY LABORATORIES. (1 cr, \$1025H; prereq high school algebra...high school trigonometry recomb; each section limited to 25 students; 4 lab hrs per wk; minimum one night observation required)

Sec 1, (888721) 1300-1500 MW, Phys 450
Sec 2, (688722) 0915-1115 TTh, Phys 450

8777. THESIS CREDITS: MASTERS. (789179) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789344) (1-36 cr [max 11 cr per summer term])

SECOND TERM

#1011. DESCRIPTIVE ASTRONOMY. (186822) (4 cr, \$1021; limited to 153 students; 0915-1115 MWF; Phys 166)
See First Term.

#1015. DESCRIPTIVE ASTRONOMY LABORATORIES. (1 cr, \$1025H; prereq high school algebra...high school trigonometry recomb; each section limited to 25 students; 4 lab hrs per wk; minimum one night observation required)

Sec 1, (688719) 1300-1500 MW, Phys 450
Sec 2, (088720) 0915-1115 TTh, Phys 450

8777. THESIS CREDITS: MASTERS. (989276) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989407) (1-36 cr [max 11 cr per summer term])

B

Biochemistry (BioC)

140 Görtner Laboratory, St. Paul.
624-7755
College of Biological Sciences

FIRST TERM

5950. SPECIAL TOPICS. (688431) (1-5 cr; prereq #, Δ)

5970. DIRECTED STUDIES. (788419) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (188420) (Cr ar; prereq #, Δ) Staff
Laboratory or field investigation of selected areas of research.

8290. CURRENT RESEARCH TECHNIQUES. (585330) (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. (189180) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389346) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (385331) (2-5 cr; prereq #) Graduate faculty
Research problems in various fields in biochemistry represented by staff interest.

SECOND TERM

5950. SPECIAL TOPICS. (488432) (1-5 cr; prereq #, Δ)

5970. DIRECTED STUDIES. (988421) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (788422) (Cr ar; prereq #, Δ) Staff
See First Term.

8290. CURRENT RESEARCH TECHNIQUES. (186299) (1-3 cr; prereq grad major in biochemistry; S-N only) Graduate faculty
See First Term.

8777. THESIS CREDITS: MASTERS. (589278) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589409) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (986300) (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. (686596) (1-10 cr; may be taken one or both terms; biochem grad student must register S-N prereq 5100 or 5753; hrs ar) Staff
Special work arranged with qualified students.

8290. CURRENT RESEARCH TECHNIQUES. (486597) (1-3 cr; prereq grad major in biochemistry, #; S-N only) Staff

8300. RESEARCH. (286598) (Cr and hrs ar) Staff

SECOND TERM

5053. PROBLEMS IN BIOCHEMISTRY. (487314) (1-10 cr; may be taken one or both terms; biochem grad student must register S-N prereq 5100 or 5753; hrs ar) Staff
See First Term.

8290. CURRENT RESEARCH TECHNIQUES. (287315) (1-3 cr; prereq grad major in biochemistry, #; S-N only) Staff

8300. RESEARCH. (187316) (Cr and hrs ar) Staff

Biology (Biol)

223 Snyder Hall. 624-9717
College of Biological Sciences

FIRST TERM

#1009. GENERAL BIOLOGY. (5 cr; \$1011; each section limited to 24 students; lect 0800-0900 MTWThF; MoosT 2-650) Burkhouse
Introduction to the principles of biology. The cell, metabolism, heredity, reproduction, ecology, and evolution.
Lab 1, (289596) 0915-1100 MTWTh, KoltH S160
Lab 2, (189597) 0915-1100 MTWTh, KoltH S167
Lab 3, (989598) 0915-1100 MTWTh, KoltH S170

#1103. GENERAL BOTANY. (790798) (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.

#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, (489600) 1000-1200 MTWTh, BioSci 107
Lab 2, (289601) 1400-1600 MTWTh, BioSci 107

#3012. PLANT BIOLOGY. (785410) (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. (189602) (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. (185332) (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. (288464) (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.

#5041. ECOLOGY. (4 cr; each section limited to 18 students; \$5841; prereq Math 1142 or 1211, Biol 1103 or 1106, or 3011 of 3012; A-F only; lect 0800-1000 MTThF; Zoology 108) 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, (#86373) 1030-1130 TTh, Zoology 108
Rec 2, (#86374) 1145-1245 TTh, Zoology 108

5816. FIELD BIOLOGY

PHOTOGRAPHY—June 16-July 4. (185484) (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.

5850. SPECIAL TOPICS IN BIOLOGY. (prereq Δ ; each section limited to 20 students; A-F only; taught at Itasca.

Sec 1, (886466), Measurements of Plant Environments, June 16-July 6; 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).
Sec 2, (686467), Field Studies in Mammalogy, June 16-July 17; 0800-1700 TF, 5 cr; 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.
Sec 3, (486468) Peatland Ecosystems and Climate Change, July 3-21; 0800-1700 TF, 3 cr; Janssens
This course covers boreal peatland ecology, peatland change related to Holocene climate change, and autecology of peatland plants. The Itasca area has a large diversity of boreal peatlands within easy reach. The course will include morning lectures, half-day and full-day field trips to peatlands, and the study of the peatland flora, both vascular plants and bryophytes (field characteristics and laboratory identification techniques), plant autecology, peatland ecosystem gradients, such as hydrology and water chemistry, and peat stratigraphy as a guide to paleoenvironmental reconstruction, interpreted in light of Holocene climate change.
Sec 4, (488723), Advanced Field Biology Photography, July 8-18; prereq field biology photography; 0800-1700 WS, 2 cr; Rubbelke
A course designed to introduce students to more advanced photographic application, including high resolution black and white photomacrography, ultraviolet photography, and infra-red technology for remote documentaiton.

5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR FISHERIES AND WILDLIFE; OR PLANT PATHOLOGY; OR ZOOLOGY.

(685335) (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.

5950. SPECIAL TOPICS.

Sec 1 (689594), Microbial Ecology, Laboratory course conducted at the Gray Freshwater Biological Institute. Students may apply for admission to: Summer Course in Microbial Ecology, GFBI, University of Minnesota, P.O. Box 100, Navarre, MN 55392. Offered in July. Cr ar staff

SECOND TERM

1008. INTRODUCTORY BIOLOGY: AN EVOLUTIONARY APPROACH. (4 cr; each section limited to 25 students; lect 1030-1130 MTWThF, MoosT 2650) Fall

Description of evolution as the unifying principle in biology; organization and change in the biological world and the origin of humans.

Rec 1, (188479) 0915-1015 TF, AmundH 116

Rec 2, (288724) 1145-1245 TF, AmundH 116

1812. PLANT BIOLOGY—July 23-August 26. (190586) (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, Wick

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.

5004. CELL BIOLOGY. (789604) (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.

5841. ECOLOGY—July 23-August 23 (188991) (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 WS; Special offering of the core ecology course, taught at Itasca. Siniiff 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 5, (091259), Behavior/Telemetry, July 23-August 10, 0800-1700 MTh, 3 cr, Siniiff, 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 6, (188482), Ecological Genetics, July 23-August 24, 0800-1700 MTh, 5 cr, Curtsinger

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

Sec 7, (988483), Conservation Biology, July 23-August 26; 0800-1700 WS; (5 cr; limited to 20 students) Lowman

Introduction to basic concepts of Conservation Biology including island biogeography, habitat fragmentation, metapopulations, biotic reserves, stochastic threats to small populations, and conservation genetics. Case studies emphasize critically-threatened species. Field projects designed to reinforce conservation biology principles. Laboratory projects utilize computer population simulations to model demographic, genetic, and environmental factors affecting small populations.

5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR FISHERIES AND WILDLIFE; OR PLANT PATHOLOGY; OR ZOOLOGY. (585411) (Cr ar; prereq #, Δ) Staff

Biomedical Engineering (BMEn)

455 Mechanical Engineering. 625-0140 (Mechanical Engineering) Institute of Technology

FIRST TERM

8002. INTERNSHIP IN BIOMEDICAL ENGINEERING. (990024) (3 cr; prereq biomed engineering grad stu or Δ ; S-N only)

8770. PLAN B PROJECT. (490858) (4 cr; no cr toward Ph.D.; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (889478) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889576) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (290859) (1-4 cr; prereq #; A-F only)

SECOND TERM

8002. INTERNSHIP IN BIOMEDICAL ENGINEERING. (790025) (3 cr; prereq biomed engineering grad stu or Δ ; S-N only)

8770. PLAN B PROJECT. (690860) (4 cr; no cr toward PhD; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (689577) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689479) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (490861) (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. (390075) (Cr ar) Staff

8777. THESIS CREDITS: MASTERS. (589183) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089348) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8223. RESEARCH IN BIOPHYSICS. (190076) (Cr ar) Staff

8777. THESIS CREDITS: MASTERS. (189283) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089415) (1-36 cr [max 11 cr per summer term])

Business Administration (BA)

290 Hubert H. Humphrey Center. 624-3313 Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses, on page 27.

FIRST TERM

3998. INDEPENDENT STUDY. (985339) (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 HHHCr.

8888. THESIS CREDITS: DOCTORAL. (589345) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3998. INDEPENDENT STUDY. (886306) (Cr ar [may be repeated for cr]; limited to 10 students; prereq Staff
See First Term.

8888. THESIS CREDITS: DOCTORAL. (789408) (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

#3260. PROFESSIONAL SALES EDUCATION. (691331) (3 cr; limited to 25 students; BME 5260; 1730-2030 MW; VoTech 220; A-F only) Kachelmyer
Instruction designed to help students acquire and demonstrate higher order selling competencies reflecting client-centered and problem-solving abilities.

#5353. CURRICULUM CONSTRUCTION IN BUSINESS AND MARKETING EDUCATION—July 6-17. (685397) (4 cr; limited to 25 students; \$BDE 5353; 0800-1200 MTWThF; VoTech R285; A-F only) Stone
Content identification, program organization, preparation of instructional objectives, guidelines for selection and development of instructional materials.

#5359. OCCUPATIONAL EXPERIENCE. (587790) (1-18 cr; limited to 15 students; prereq #; S-N optional; 1800-2000 T, June 16, 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.

#5361. BUSINESS OBSERVATION AND SEMINAR—June 22-26. (491332) (3-9 cr; limited to 25 students; BDE 5361; 0800-1500 MTWThF; VoTech 220; A-F only) Stone
Current operating practices and career opportunities in business and industry combining planned experiences in work environments and related seminars.

5600. FIELD-BASED PROJECTS IN BUSINESS AND MARKETING EDUCATION. (1-12 cr [max 12 cr]; prereq #; 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, (485398) Stone

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, (291333) Stone

8777. THESIS CREDITS: MASTERS. (989181) (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, (285399) Stone

SECOND TERM

#5253. SUPERVISORY TRAINING. (191334) (3 cr; limited to 25 students; \$BDE 5253, prereq VoEd 5340 or equiv; 1730-2030 MW; VoTech R285; A-F only) DeVogel

Problems, practices, programs, issues, and methodologies related to preparing trainers of supervisors in business, office, and marketing occupations.

#5390. SPECIAL TOPICS IN TECHNICAL UPDATING: MSDOS and Windows—August 3-7. (190157) (1-6 cr; limited to 25 students; 0800-1500 MTWThF; off campus location call 624-7799 for location details; S-N opt) Chen

Advanced MSDOS functions for disks, files, and directories; features of Microsoft Windows 3.0 for creating files and transferring information, including file and print manager functions. Focus is on IBM and compatible hardware. This offering for 3 credits.

5600. FIELD-BASED PROJECTS IN BUSINESS AND MARKETING EDUCATION. (1-12 cr [max 12 cr]; prereq #; hrs ar; A-F only)

Sec 24, (090158) McLean

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 24, (588714) McLean

See First Term.

8777. THESIS CREDITS: MASTERS. (789280) (1-16 cr [max 11 cr per summer term])

8900. PROBLEMS: BUSINESS AND MARKETING EDUCATION. (1-9 cr [max 9 cr]; prereq #; hrs ar)

Sec 24, (388715) McLean

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 page 27.

FIRST TERM

#3058. INTRODUCTION TO LAW, THE LAW OF CONTRACTS AND SALES CONTRACTS. (285340) (4 cr, \$8158; limited to 40 students; prereq Econ 1002; 0800-0945 MTW; BlegH 435; 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; and law affecting the sales of goods contracts.

Business, Government, and Society (BGS)

835 Management/Economics.
624-5232
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on page 27.

FIRST TERM

#3004. INTERNATIONAL BUSINESS. (791482) (4 cr; limited to 45 students; 0900-1130 TTh; BlegH 415) Vaaler
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. (089186) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089351) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (289288) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289419) (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. (985485) (2 cr; prereq #) Staff
Guided individual reading or study.

8156. ADVANCED ANATOMY. (085493) (1-6 cr; prereq #) Staff
Individual problems in gross anatomy, embryology, histology, or neuroanatomy.

8200. RESEARCH. (492142) (1-10 cr; prereq #) Staff
Gross anatomy, cytochemistry, histology, endocrinology, embryology, hematology, or neuroanatomy. Special facilities offered to graduate students in clinical departments for work on problems in applied anatomy.

8777. THESIS CREDITS: MASTERS. (189185) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889349) (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. (785486) (5 cr; prereq participation in a residency in the Medical School or School of Dentistry) Robertson and staff

5500. GENERAL GROSS ANATOMY. (585487) (ar cr; prereq Phase D medical student or #) Robertson

5501. THE EXTREMITIES. (385488) (ar cr; prereq Phase D medical student or #) Robertson

5502. HEAD AND NECK. (185489) (ar cr; prereq Phase D medical student or #) Robertson

5508. THE THORAX. (585490) (ar cr; prereq Phase D medical student or #) Robertson

5509. THE ABDOMEN. (385491) (ar cr; prereq Phase D medical student or #) Robertson

5510. PERINEUM, GENITAL-URINARY SYSTEM AND PELVIS. (185492) (ar cr; prereq Phase D medical student or #) Robertson

SECOND TERM

3970. SPECIAL PROBLEMS. (685495) (2 cr; prereq #) Staff
See First Term.

8156. ADVANCED ANATOMY. (485496) (1-6 cr; prereq #) Staff
See First Term.

8200. RESEARCH. (292143) (1-10 cr; prereq #) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (889285) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689417) (1-36 cr [max 11 cr per summer term])

Chemical Engineering (ChEn)

151 Amundson Hall. 625-1313
(Chemical Engineering and Materials Science)
Institute of Technology

FIRST TERM

5902, 5903, 5904, 5905. SPECIAL TOPICS. (386205) (186206) (086207) (886208) (Cr ar)

8777. THESIS CREDITS: MASTERS. (189204) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789358) (1-36 cr [max 11 cr per summer term])

8901-8902-8903. RESEARCH IN CHEMICAL ENGINEERING. (686209) (086210) (886211) (Cr ar)

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

3091. INDUSTRIAL EMPLOYMENT. (285239) (1-2 cr)

SECOND TERM

5902, 5903, 5904, 5905. SPECIAL TOPICS. (986796) (786797) (586798) (386799) (Cr ar)

8777. THESIS CREDITS: MASTERS. (389296) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589426) (1-36 cr [max 11 cr per summer term])

8901-8902-8903. RESEARCH IN CHEMICAL ENGINEERING. (186800) (986801) (786802) (Cr ar)

Chemical Physics (ChPh)

139 Smith Hall. 624-6000
Institute of Technology

FIRST TERM

8777. THESIS CREDITS: MASTERS. (689210) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589362) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (589300) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389430) (1-36 cr [max 11 cr per summer term])

Chemistry (Chem)

139 Smith Hall, 624-6000
Institute of Technology

A \$30 deposit card, available at the Bursar's Office, Williamson Hall, is necessary for all lab courses.

FIRST TERM

■ **1004. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr; limited to 100 students; 1004-1005†, §1001, §1002, §1014, §1031, §1032; primarily for non-chemistry majors; prereq high school chemistry or equiv, placement index of Y or predicted mathematics GPA 1.90 on ACT or Math 0009 or college course in algebra, high school physics, 4 yrs math recommended; lect 0800-0930 MTWThF, SmithH 100; each recitation section limited to 20 students)

Sec 1 Rec (092153) 1145-1245 MW
SmithH 100; Lab 1300-1600
MWF*; SmithH 210
Sec 2 Rec (892154) 1145-1245 MW
Kolth S134; Lab 1300-1600
MWF*; SmithH 210
Sec 3 Rec (692155) 1145-1245 MW
Kolth S133; Lab 1300
MWF*; SmithH 210
Sec 4 Rec (492156) 1145-1245 MW
Kolth S135; Lab 1300-1600
MWF*; SmithH 210
Sec 5 Rec (292157) 1145-1245 MW
Kolth S136; Lab 1300-1600
MWF*; SmithH 210

*Fridays are make-up labs only; all sections may attend.

Introduction to chemistry from the standpoint of atomic structure; periodic properties of elements and compounds derivable from structural considerations; laws governing behavior of matter, theories of solutions, acids, bases, and equilibria.

■ **1006. PRINCIPLES OF SOLUTION CHEMISTRY.** (186190) (4 cr; limited to 20 students; prereq 1005 or 1032; lect 0915-1015 MTWThF, SmithH 331; lab 1145-1545 MWF, SmithH 210)
Lecture and laboratory work is related to chemistry of selected cations and anions. Detection methods include spectrophotometric and potentiometric as well as chromatographic procedures. Included in the program of metal ion studies are systematics; acid-base principles; influence on the environment; importance in biological systems; formation and stereochemistry of complexes.

■ **1014. CONCEPTS OF CHEMISTRY.** (687165) (4 cr; for IT students only; prereq Phys 1105 or 1281 or 1321 or 1421 or #; 1030-1145 MTWThF; SmithH 331)
Fundamental principles of chemistry. A terminal course—cannot be used as a prereq for any advanced chemistry course.

■ **3100. QUANTITATIVE ANALYSIS LECTURE.** (086191) (3 cr; limited to 60 students; 3100-3101†; for non-chemistry majors; prereq 1005 or 1032; 1145-1400 MWF; SmithH 231)
Modern quantitative methods of analysis.

■ **3101. QUANTITATIVE ANALYSIS LABORATORY.** (485403) (2 cr; limited to 36 students; 3100-3101†; for non-chemistry majors; prereq 3100 or §3100; 0800-1130 MTWThF; SmithH 310)
Modern quantitative methods of analysis including elementary physicochemical procedures.

■ **3301. ELEMENTARY ORGANIC CHEMISTRY I.** (886192)
(4 cr; limited to 100 students; §3331; for non-chemistry majors; prereq 1005 or 1032; 0800-1015 MTWTh; SciCB 325)
Important classes of organic compounds, both aliphatic and aromatic, and heterocyclic compounds.

■ **3303. ELEMENTARY ORGANIC CHEMISTRY III.** (386365) (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.

■ **3305. ELEMENTARY ORGANIC CHEMISTRY LABORATORY I.** (486194)
(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 STUDIES.** (186196) (Cr ar; prereq #)
On- or off-campus learning experiences, individually arranged between a student and faculty member, in areas not covered by regular courses.

■ **5520. ELEMENTARY PHYSICAL CHEMISTRY.** (286195)
(3 cr; limited to 50 students; prereq 1 yr college chemistry, Phys 1291 or §Phys 1291 or 1106 or #; Math 3211; 0800-1015 MWF; SmithH 231)
Brief general survey. Chemical thermodynamics.

■ **8777. THESIS CREDITS: MASTERS.** (789201) (1-16 cr [max 11 cr per summer term])

■ **8888. THESIS CREDITS: DOCTORAL.** (989357) (1-36 cr [max 11 cr per summer term])

■ **8990. RESEARCH IN CHEMISTRY.** (185646) (Cr ar; limited to 1 student; prereq Δ)

SECOND TERM

■ **1005. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr; limited to 100 students; 1004-1005†, §1001, §1002, §1014, §1031, §1032; primarily for non-chemistry majors; prereq 1004; lect 0800-0930 MTWThF, SmithH 100 each recitation section limited to 20 students)

Sec 1 Rec (292160) 1145-1245 MW
SmithH 100; Lab 1300-1600
MWF*; SmithH 110
Sec 2 Rec (192161) 1145-1245 MW
Kolth S134; Lab 1300-1600
MWF*; SmithH 110
Sec 3 Rec (992162) 1145-1245 MW
Kolth S135; Lab 1300-1600
MWF*; SmithH 110
Sec 4 Rec (792163) 1145-1245 MW
Kolth S136; Lab 1300-1600
MWF*; SmithH 110
Sec 5 Rec (592164) 1145-1245 MW
Kolth S133; Lab 1300-1600
MWF*; SmithH 110

*Fridays are make-up labs only; all sections may attend.
See 1004 First Term.

■ **3302. ELEMENTARY ORGANIC CHEMISTRY II.** (086983) (4 cr; limited to 100 students; prereq 3301, 3305 or §3305; if 3305 taken concurrently, a passing grade required for 3305 to receive cr for 3302; 0800-1015 MTWTh; SciCB 325)
See 3301 First Term.

■ **3306. ELEMENTARY ORGANIC CHEMISTRY LABORATORY II.** (986989) (2 cr; limited to 100 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.** (786993) (Cr ar; prereq #)
See First Term.

■ **5521. ELEMENTARY PHYSICAL CHEMISTRY.** (386995)
(3 cr; limited to 50 students; prereq 5520; 0800-1015 MWF; SmithH 231)
Kinetics, bonding, and structure.

■ **8777. THESIS CREDITS: MASTERS.** (789294) (1-16 cr [max 11 cr per summer term])

■ **8888. THESIS CREDITS: DOCTORAL.** (789425) (1-36 cr [max 11 cr per summer term])

■ **8990. RESEARCH IN CHEMISTRY.** (085655) (Cr ar; prereq Δ)

Chicano Studies (Chic)

102 Scott Hall, 624-6309
College of Liberal Arts

FIRST TERM

■ **3106. INTRODUCTION TO CHICANO STUDIES: MEXICO AND THE UNITED STATES.** (290683) (4 cr; limited to 20 students; 0915-1015 MTWThF; EE/CSci 3115) 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.** (185243) (Cr ar; prereq #, Δ, CLA approval)
Guided individual reading or study.

SECOND TERM

■ **3105. INTRODUCTION TO CHICANO STUDIES: THE BEGINNINGS.** (691443) (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.** (985244) (Cr ar; prereq #, Δ, □)
Guided individual reading or study.

■ **5970. DIRECTED STUDIES.** (685280) (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 22-SEPTEMBER 6

■ **5203. CHILD AND ADOLESCENT PSYCHIATRY FOR PSYCHOLOGY INTERNS.** (787335) (1-5 cr; prereq #) Jensen
Experience in assessment and therapeutic interventions with children, adolescents, and families in an outpatient child and adolescent psychiatric setting.

■ **5603. INPATIENT CLINICAL CHILD PSYCHIATRY FOR PRIMARY CARE PHYSICIANS.** (187338) (Cr and hrs ar) Jensen
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.** (087339) (3 cr; prereq MD and/or #, basic psychopath course, current supervised involvement in treatment of cases)

■ **8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY.** (987348) (1 cr; hrs ar) August
Research design, methodology, and current research projects are reviewed with faculty members and invited guests.

Child Psychology (CPsy)

104 Child Development, 624-2396
College of Education

FIRST TERM

■ **1301. INTRODUCTORY CHILD PSYCHOLOGY.** (585358)
(4 cr, §3309, §5301; prereq 5 cr introductory psychology; 0935-1055 MTWThF; ChDev 216)
Mooney-McLoone
Introduction to science of child behavior; review of theories and research. Meets with 3309.

■ **3308. RESEARCH METHODS IN CHILD PSYCHOLOGY.** (591483) (4 cr; limited to 20 students; prereq 1301, §Psy 1004; 1000-1215 MWF; NichH 122)
Stansbury
Techniques used in the study of child development; emphasis on collection, organization, and analysis of data.

■ **3309. INTRODUCTORY CHILD PSYCHOLOGY FOR THE SOCIAL SCIENCES.** (887049) (4 cr, §1301, §5301; prereq Psy 1001; 0935-1055 MTWThF; 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.

■ **3313. PSYCHOLOGY OF ATYPICAL CHILDREN.** (390304) (4 cr; limited to 30 students; §5313; prereq 1301 or equiv; 0800-0920 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.** (090306) (4 cr; prereq 1301 or equiv; 1110-1230 MTWThF; ChDev 216)
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. (191485) (4 cr; prereq 1301; 0915-1035 MTWThF; NichH 207) Dow
Development of cognitive processes; research, methodology, and contrasting theoretical perspectives. Introduction to research and theory in developmental psychology necessary to understand course material.

3980. DIRECTED INSTRUCTION. (385359) (1-4 cr [max 4 cr]; prereq #; A-F only) Weinberg
Undergraduates serve as teaching assistants in courses they have successfully completed for credit.

5310. TOPICS IN CHILD PSYCHOLOGY: Early Adolescent Development: Perspectives from Current Research—June 16-26. (787044) (4 cr; prereq 1301; 0915-1225 MTWThF June 16-25 ChDev 105 and 0800-1700 F June 26) Collins
This offering is for teachers, youth workers, parents, and others who work with adolescents. Psychological development during the transition from childhood to adolescence. Application of research findings to settings represented by the course participants. On the final day, a conference will be held for class members and for individuals who are unable to attend the class but want an overview of the changing information on the early years of adolescence.

5313. PSYCHOLOGY OF ATYPICAL CHILDREN. (190305) (4 cr, limited to 10 students; §3313; prereq 1301 or equiv; 0800-0920 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 3313.

5329. GENETICS, ETHOLOGY, AND DEVELOPMENT—June 16-29. (391484) (4 cr; prereq 1301 or equiv; 0830-1245 MTWThF; 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. (890307) (4 cr; prereq 1301 or #, 3308 or Psy 1005; 1050-1210 MTWThF; NichH 207) Maratsos
Development of cognitive processes; discussion of relevant theory, research literature, and methodology.

5970. DIRECTED STUDY. (585361) (Cr ar; prereq #) Weinberg
Independent reading.

5990. DIRECTED RESEARCH. (385362) (Cr ar; prereq #) Weinberg
Individual empirical investigation.

8777. THESIS CREDITS: MASTERS. (189218) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989374) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (185363) (Cr ar) Weinberg
Independent reading.

8990. RESEARCH PROBLEMS. (085364) (Cr ar) Weinberg
Individual empirical investigation.

SECOND TERM

3308. RESEARCH METHODS IN CHILD PSYCHOLOGY. (091486) (4 cr; limited to 20 students; prereq 1301, Psy 1004; 0835-1015 MTWTh; ChDev 105) Heinrichs
See First Term.

3980. DIRECTED INSTRUCTION. (986314) (1-4 cr [max 4 cr]; A-F only; prereq #) Weinberg
See First Term.

5302. INFANCY. (891487) (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 23-August 19. (191227) (4 cr; §3303; prereq 5 cr introductory psychology; 1030-1210 MTWThF; ChDev 105) Shulman
Physical, cognitive, and social development during adolescence.

5311. INTRODUCTION TO DEVELOPMENTAL PSYCHOPATHOLOGY: Understanding Behavioral Problems of School Children—July 23-August 17. (490309) (4 cr; prereq 1301 or equiv, 3308 or Psy 1005; 0915-1200 MTWTh July 23-Aug. 12; Exam Aug. 17; ChDev 216) Masten
Theories and research strategies to investigate origins and course of disordered behavior in childhood and adults, including description, etiology, development. Excluded are problems of physical, sensory, or mental handicaps. This offering will focus on child and adolescent problems confronting classroom teachers.

5336. DEVELOPMENT AND INTERPERSONAL RELATIONS. (990587) (4 cr, §5339; prereq 1301 or equiv, 3308 or Psy 1005, 3331 or 5331; 0915-1035 MTWThF; ChDev 218) Repinski
Processes and functions of interactions with parents and peers; analysis of theory and research on developmental changes and influences.

5970. DIRECTED STUDY. (386317) (Cr ar; prereq #) Weinberg
See First Term.

5990. DIRECTED RESEARCH. (086319) (Cr ar; prereq #) Weinberg
See First Term.

8777. THESIS CREDITS: MASTERS. (189308) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289436) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT STUDY. (386320) (Cr ar) Weinberg
See First Term.

8990. RESEARCH PROBLEMS. (186321) (Cr ar; prereq #) Weinberg
See First Term.

Chinese (Chn)

105 Folwell Hall. 624-0007
(East Asian Studies)
College of Liberal Arts

FIRST TERM

3161. CHINESE POETRY IN ENGLISH TRANSLATION. (889688) (4 cr; 1145-1245 MTWThF; FolH 138)

Major poets examined in context of their intellectual, social, and aesthetic traditions. Knowledge of Chinese not required.

3970. DIRECTED STUDIES. (588194) (1-15 cr; prereq #, Δ , \square) Staff

5970. DIRECTED STUDIES. (285127) (1-4 cr; prereq #, Δ , CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (489208) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989360) (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; 0800-1215 MTWThF; KoltH 5137)
1011, Sec 5, (287086) June 16-July 9, 5 cr; Liu
1012, Sec 5, (187087) July 10-Aug. 3, 5 cr; Liu
1013, Sec 5, (987088) August 4-26, 5 cr; Liu

SECOND TERM

3970. DIRECTED STUDIES. (187825) (1-15 cr; prereq #, Δ , \square) Staff

5970. DIRECTED STUDIES. (087826) (1-4 cr; prereq #, Δ , CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (089298) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189428) (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. (289064) (4 cr; prereq #)

8777. THESIS CREDITS: MASTERS. (389198) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289355) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8097. CIVIL ENGINEERING RESEARCH. (189065) (4 cr; prereq #)

8777. THESIS CREDITS: MASTERS. (189292) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289422) (1-36 cr [max 11 cr per summer term])

Classical Civilization (ClCv)

304a Folwell Hall. 625-7565
College of Liberal Arts

FIRST TERM

3350. FIELD RESEARCH IN ARCHAEOLOGY. (xxxxxx) (4 cr; §ArH 5120, §Clas 5120)

SECOND TERM

3990. DIRECTED RESEARCH. (789084) (4 cr; prereq #, Δ , \square)

Classics (Clas)¹

309 Folwell Hall. 625-5353
(Classical and Near Eastern Studies)
College of Liberal Arts

FIRST TERM

1042. GREEK AND ROMAN MYTHOLOGY. (791353) (4 cr; 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. (187243) (3 cr; independent and optional assistance labs ar; orientation 0800-0900 T, June 16 or 1145-1245 W, June 17 or 1300-1400 Th, June 18; Arch 5)
Study of prefixes, suffixes, and high frequency roots from Greek and Latin through computer-assisted instruction; principles of word compounding; methods and techniques of work analysis.

1048. GREEK AND LATIN TERMINOLOGY IN THE MEDICAL AND BIOLOGICAL SCIENCES. (087244) (2 cr, §1141; prereq 1045 or 11045; independent and optional assistance labs ar; orientation See 1045)
Study of roots and terms basic to the medical and biological sciences in English contexts.

1141. GREEK AND LATIN TERMINOLOGY FOR NURSING. (887827) (3 cr, §1048; independent and optional assistance labs ar; orientation See 1045)

Greek and Latin prefixes, suffixes, and roots basic to the vocabulary of nursing through computer-assisted instruction.

3046. ADVANCED ETYMOLOGY: VOCABULARY OF THE SCIENCES AND HUMANITIES. (687828) (2 cr; prereq 1045 or 11045; independent and optional assistance labs ar; orientation See 1045)

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.

3072. THE NEW TESTAMENT. (591354) (4 cr; §5072, §RelS 3072; 5072; 0915-1145 TTh; FolH 419) Sellow

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.

¹Knowledge of Greek or Latin is not required.

Contemporary methods of New Testament study. The ancient sources as evidence for constructing critical history and as narrative structures.

5072. THE NEW TESTAMENT. (391355) (4 cr; §3072, §RelS 3072; 5072; 0915-1145 TTh; FolH 419) Sellow

Meets with 3072. Requires additional work.

5080. NEW TESTAMENT PROSEMINAR; JESUS AND THE GOSPEL TRADITION. (191356) (4 cr; 0915-1145 MW; FolH 344) Sellow

5120. FIELD RESEARCH IN ARCHAEOLOGY. (385605) (4 cr; §Arth 5120, §Clcv 3120) Cooper
Field excavation, survey and research in the Western Peloponnese. Intensive training in techniques of excavation and exploration as well as analysis and interpretation of archaeological materials. Meets with Arth 5120.

8777. THESIS CREDITS: MASTERS. (289212) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689370) (1-36 cr [max 11 cr per summer term])

SECOND TERM

1045. BASIC PROGRAM IN TECHNICAL TERMINOLOGY AND WORD STUDY. (787089) (3 cr; independent and optional assistance labs ar; **orientation** 0800-0900 Th, July 23, or 1145-1245 F, July 24, or 1300-1400 M, July 27; Arch 5) See First Term.

1048. GREEK AND LATIN TERMINOLOGY IN THE MEDICAL AND BIOLOGICAL SCIENCES. (187090) (2 cr; §1141; prereq 1045 or 11045; independent and optional assistance labs ar; **orientation** See 1045) See First Term.

1141. GREEK AND LATIN TERMINOLOGY FOR NURSING. (987091) (3 cr; §1048; independent and optional assistance labs ar; **orientation** See 1045) See First Term.

3008. HISTORY OF ANCIENT ART. (191602) (4 cr; §Arth 3008; 1130-1245 MTWTh; AndH 310)
Architecture, sculpture and painting of selected early cultures; stress on influences contributing to the development of Western art. Meets with Arth 3008.

3011. THE WORLD OF GREECE. (091357) (4 cr; §5011; 0915-1015 MTWThF; FolH 326) Sheets
Greek civilization from the world of Homer to the age of Alexander. The Greek view of life as seen in art, history, literature, and philosophy. The gold age of Greece in the 5th century B.C. and the expansion of the Greek spirit under Alexander. Meets with 5011.

3046. ADVANCED ETYMOLOGY: VOCABULARY OF THE SCIENCES AND HUMANITIES. (787092) (2 cr; prereq 1045 or 11045; independent and optional assistance labs ar; **orientation** See 1045) See Term I. Meets with 1045.

5011. THE WORLD OF GREECE. (891358) (4 cr; §3011; 0915-1015 MTWThF; FolH 326) Sheets
Meets with 3011. Requires additional work.

5120. FIELD RESEARCH IN ARCHAEOLOGY. (085610) (4 cr; §Arth 5120, §Clcv 3120) Cooper
Field excavation, survey and research in the Western Peloponnese. Intensive training in techniques of excavation and exploration as well as analysis and interpretation and archaeological materials.

8777. THESIS CREDITS: MASTERS. (089303) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089432) (1-36 cr [max 11 cr per summer term])

Clinical and Population Sciences (CAPS)

225 Veterinary Hospital, St. Paul.
625-7755

College of Veterinary Medicine

FIRST TERM

5000. CLINICAL LARGE ANIMAL MEDICINE. (690633) (6 cr; prereq #; arranged MTWThFS; VetTchHos; S-N only) Staff
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences to the diagnosis, prognosis, treatment, prevention, and eradication of disease in food-producing animals and the horse.

5002. CLINICAL LARGE ANIMAL SURGERY. (490634) (6 cr; prereq #; arranged MTWThFS; VetTchHos; S-N only) Staff
Laboratories devoted to the application and techniques of the basic and clinical surgical sciences to the diagnosis, treatment, and surgical management of disease in food-producing animals and the horse.

5004. CLINICAL THERIOGENOLOGY. (290635) (6 cr; prereq #; arranged MTWThFS; VetTchHos; S-N only) Staff
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences in theriogenology.

5006. CLINICAL HERD MEDICINE. (190636) (6 cr; prereq #; arranged MTWThFS; VetTchHos; S-N only) Staff
Application of principles and techniques of the basic and clinical medical sciences in herd medicine.

5009. VETERINARY PUBLIC HEALTH. (990637) (4 cr; prereq #; arranged MTWThFS; VetTchHos; S-N only) Staff
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences in veterinary public health.

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (590639) (Cr ar; prereq 5650 or equiv or #) Diesch, Pullen, R. Robinson, others
Individual study arranged with faculty member.

5951. DIRECTED STUDIES. (990640) (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. (790641) (Cr ar; prereq grad student, #) 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. (590642) (Cr ar; prereq grad student, #) 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. (390643) (Cr ar, prereq #) 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. (190644) (1-3 cr) Olson, others
Impact of animal disease on animal productivity and the return to investment in animal health by producers of the society studied using disease problems of current interest as subjects. Questions involving human health problems may be studied.

8290. ADVANCED VETERINARY MEDICINE. (090645) (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. (890646) (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. (690647) (Cr ar; prereq #) V. Larson, Osborne, others

8293. MEDICAL CONFERENCE. (490648) (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. (290649) (Cr ar; prereq #) V. Larson, others
Research problems relating to any aspect of internal medicine or to the various systems in animals.

8390. SEMINAR: VETERINARY SURGERY. (690650) (Cr ar; prereq DVM degree or equiv) Wallace

8392. ADVANCED LARGE ANIMAL SURGERY. (490651) (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. (290652) (3 cr; prereq 5365, #) Kobluk, Trent

8397. LARGE ANIMAL ANESTHESIA. (190653) (Cr ar; prereq SACS 5380, #) Raffe
Special problems associated with anesthesia of large animals.

8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES. (990654) (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. (790655) (Cr ar; prereq 5570, #) Staff
Detailed discussion and laboratory study of specific reproductive disorders.

8595. SEMINAR: VETERINARY OBSTETRICS. (590656) (1 cr; prereq #) Seguin

8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS. (390657) (3 cr; prereq grad student, #)
Lecture, discussion, and clinical laboratory course examining clinical cases and experimental animals, and dealing with pharmacotherapeutics of various drugs used for food producing and companion animals.

8791. SEMINAR IN CLINICAL PHARMACOLOGY AND THERAPEUTICS. (190658) (2 cr; prereq grad student, #)
Examination of current literature and case material.

SECOND TERM

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (090659) (Cr ar; prereq 5650 or equiv or #) Diesch, Pullen, R. Robinson, others
See First Term.

5951. DIRECTED STUDIES. (390660) (1-5 cr; prereq #, Δ)
See First Term.

8193.* ADVANCES IN CLINICAL IMMUNOBIOLOGY. (190661) (Cr ar; prereq grad student or #) Molitor
See First Term.

8194.* PROBLEMS IN DIAGNOSTIC VIROLOGY, SEROLOGY, AND IMMUNOLOGY. (090662) (Cr ar; prereq grad student or #) Ames, Molitor
See First Term.

8195.* PREVENTIVE VETERINARY MEDICINE. (890663)

(Cr ar; prereq #) Diesch, others
See First Term.

8199. PROBLEMS IN ECONOMICS OF ANIMAL HEALTH. (690664) (1-3 cr)

Olson, others
See First Term.

8290. ADVANCED VETERINARY MEDICINE. (490665) (Cr ar; prereq

5162, 5172, #) V. Larson, Hardy, others
See First Term.

8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES. (290666) (Cr ar; prereq

5162, SACS 5172, #) V. Larson, Osborne, McKeever, Ogburn, Olson, others
See First Term.

8292. SEMINAR: VETERINARY MEDICINE. (190667) (Cr ar; prereq #)

V. Larson, Osborne, others

8293. MEDICAL CONFERENCE. (990668) (Cr ar; prereq 5162, SACS

5172, #) V. Larson, Osborne, others
See First Term.

8299. RESEARCH IN VETERINARY MEDICINE. (790669)

(Cr ar; prereq #) V. Larson, others
See First Term.

8390. SEMINAR: VETERINARY SURGERY. (190670)

(Cr ar; prereq DVM degree or equiv)
Wallace

8392. ADVANCED LARGE ANIMAL SURGERY. (790671)

(Cr ar; prereq DVM degree or equiv, #)
Kobluk, Trent
See First Term.

8393. PROBLEMS IN LARGE ANIMAL ORTHOPEDICS. (790672) (3 cr; prereq

5365, #) Kobluk, Trent

8397. LARGE ANIMAL ANESTHESIA. (590673) (Cr ar; prereq SACS 5380, #)

Raffe
See First Term.

8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES. (390674) (Cr ar; prereq 5570

or #) Staff
See First Term.

8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION. (190675)

(Cr ar; prereq 5570, #)
See First Term.

8595. SEMINAR: VETERINARY OBSTETRICS. (090676)

(1 cr; prereq #) S. Johnston

8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS. (890677) (3 cr; prereq

grad student or #)
See First Term.

8791. SEMINAR IN CLINICAL PHARMACOLOGY AND THERAPEUTICS. (690678) (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. (785407) (1-5 cr; prereq #) Yasmineh**8236. RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (985406)

(1-10 cr) Hallgren

8777. THESIS CREDITS: MASTERS. (789215) (1-16 cr [max 11 cr per

summer term])

FIRST AND SECOND TERMS: TEN WEEK COURSE

5768. ADVANCED HEMATOLOGY. (585408) (Cr ar; prereq #) Brunning

SECOND TERM

5180. ADVANCED CHEMISTRY. (185405) (1-5 cr; prereq #) Yasmineh**8236. RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (285404)

(1-10 cr) Hallgren

8777. THESIS CREDITS: MASTERS. (289307) (1-16 cr [max 11 cr per

summer term])

Communication Disorders (CDis)

115 Shevlin Hall. 624-3322

College of Liberal Arts

FIRST TERM

83100. 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, (885673) 0800-1200 W,

MoosT 6296, Starr, Moller

Sec 2, (086367) 1230-1600 Th,

MoosT 6296, Starr, Moller

5303. PHONETICS LABORATORY. (991335) (2 cr; 0800-1015 TTh; FolH

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.

5704. NOISE AND HUMANKIND. (992064) (4 cr; prereq 5301 or #;

1300-1515 MTWTh; FolH 334) 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.

5900. TOPICS IN COMMUNICATION DISORDERS (4 cr)

Sec 1, (187033) Guest Lecturer

Sec 2, (792065) Guest Lecturer

5970. DIRECTED STUDIES. (685674)

(Cr ar [may be repeated for cr]; prereq #, Δ, CLA approval) Staff

Directed readings and preparation of reports on selected subjects.

8508. SEMINAR: VOICE. (791336) (3

cr; prereq 5508 or #; 0915-1130 TTh; ShevH 125) Starr

Advanced study and independent research.

8520. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (485675) (1-6 cr [may be repeated for

cr]; prereq communication disorders grad stu) Staff

8521. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (688204) (1-6 cr [may be repeated for

cr]; prereq communication disorders grad stu) Staff

8720. CLINICAL EDUCATION IN AUDIOLOGY. (285676)

(1-6 cr [may be repeated for cr]; prereq communication disorders grad stu) Staff

8721. CLINICAL EDUCATION IN AUDIOLOGY. (488205)

(1-6 cr [may be repeated for cr]; prereq communication disorders grad stu) Staff

8777. THESIS CREDITS: MASTERS. (789196) (1-16 cr [max 11 cr per

summer term])

8888. THESIS CREDITS: DOCTORAL. (689353) (1-36 cr [max 11 cr per

summer term])

8990. RESEARCH. (185677) (Cr ar

[may be repeated for cr]) Staff
Open to graduate students engaged in research.

SECOND TERM

5970. DIRECTED STUDIES. (986748)

(Cr ar [may be repeated for cr]; prereq #, Δ, CLA approval) Staff
See First Term.

8520. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (186750) (1-6 cr [may be repeated for

cr]; prereq communication disorders grad stu) Staff

8521. CLINICAL EDUCATION IN SPEECH-LANGUAGE PATHOLOGY. (088202) (1-6 cr [may be repeated for

cr]; prereq communication disorders grad stu) Staff

8720. CLINICAL EDUCATION IN AUDIOLOGY. (986751) (1-6 cr [may be

repeated for cr]; prereq communication disorders grad stu) Staff

8721. CLINICAL EDUCATION IN AUDIOLOGY. (888203) (1-6 cr [may be

repeated for cr]; prereq communication disorders grad stu) Staff

8777. THESIS CREDITS: MASTERS. (289291) (1-16 cr [max 11 cr per

summer term])

8888. THESIS CREDITS: DOCTORAL. (489421) (1-36 cr [max 11 cr per

summer term])

8990. RESEARCH. (586753) (Cr ar

[may be repeated for cr]) Staff
See First Term.

Comparative Literature (CLit)

301 FolH. 624-8099

College of Liberal Arts

FIRST TERM

3910. ISSUES IN THE STUDY OF LITERATURE: CONTEMPORARY LITERATURE & CRITICISM: READINGS. (590169) (3 cr; prereq jr or

sr or #; 1300-1545 TTh; FolH 344)
Canning

Discussion of problems in criticism and interpretation based on student reading and writing projects. Group meetings and individual consultation. Meets with 5910.

83979. ISSUES IN CULTURAL PLURALISM. (488799) (4 cr; limited to

35 students; \$AmSt 3113; 1145-1245 MTWThF; BlegH 250) Sarles

Critical, comparative basis for studying minority cultures in America: fabric, dynamics, strengths, tensions; how they differ, yet form a distinct culture. Meets with AmSt 3113.

5910. ISSUES IN THE STUDY OF LITERATURE: CONTEMPORARY LITERATURE & CRITICISM: READINGS. (592066) (3 cr; prereq jr or

sr or #; 1300-1545 TTh; FolH 344)
Canning
See 3910.

5970. DIRECTED READINGS. (488883) (1-4 cr; prereq #, Δ, CLA

approval) Staff
Guided individual reading or study.

8888. THESIS CREDITS: DOCTORAL. (289372) (1-36 cr [max 11 cr per

summer term])

8970. DIRECTED READING. (887973)

(1-4 cr; prereq grad student in comparative literature, Δ)

SECOND TERM

3910. ISSUES IN THE STUDY OF LITERATURE: CONTEMPORARY LITERATURE & CRITICISM: READINGS. (491444) (3 cr; prereq jr or

sr or #; 1300-1545 TTh; FolH 344)
Sousa
See First Term. Meets with 5910.

5910. ISSUES IN THE STUDY OF LITERATURE: CONTEMPORARY LITERATURE & CRITICISM READINGS. (392067) (3 cr; prereq jr or sr or #;

1300-1545 TTh; FolH 344) Sousa
See First Term. Meets with 3910.

5970. DIRECTED READINGS. (688798)

(1-4 cr; prereq #, Δ, CLA approval) Staff
Guided individual reading or study.

8888. THESIS CREDITS: DOCTORAL. (689434) (1-36 cr [max 11 cr per

summer term])

8970. DIRECTED READING. (885656)

(1-4 cr; prereq grad student in comparative literature, Δ)

Comparative Studies in Discourse and Society (CSDS)

314 Ford Hall, 624-5553
(Humanities)
College of Liberal Arts

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (189378) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (789439) (1-36 cr [max 11 cr per summer term])

Composition and Communication (Comp)

306 Lind Hall, 625-2888
College of Liberal Arts

(See also Rhetoric)

FIRST TERM

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, (188269) 0800-1000 MWF, MurH 311
Sec 2, (488270) 0915-1115 MWF, CivMinE 213

1027. INTERMEDIATE EXPOSITORY WRITING. (685688) (4 cr; limited to 25 students; prereq fulfillment of Writing Practice requirement; 0915-1015 MTWThF, NichH 201) Focuses on the range of choices writers make based on audience, purpose, and context. Relies on critical reading and a variety of written assignments to improve students' control over their writing and the effect it will have on their intended audiences.

3011. WRITING ABOUT LITERATURE. (886368) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.; 1030-1130 MTWThF, 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.

3012. WRITING IN THE HUMANITIES. (188806) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.; 0915-1015 MTWThF, LindH 303) 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.

3013. WRITING FOR THE ARTS. (686369) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr.; 0800-0900 MTWThF, 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.

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, (086370) 0915-1015 MTWThF, Peikh 315
Sec 2, (585618) 0800-0940 MWF, LindH 325
Sec 3, (688672) 0915-1055 MWF, AmundH 158
Sec 4, (889044) 1030-1210 MWF, AmundH 156

3015. WRITING ABOUT SCIENCE. (390500) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr; 1030-1130 MTWThF; 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.

3022. CRITICAL READING AND WRITING FOR MANAGEMENT. (sec 1) (989777) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, 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.

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, (687831) 0915-1015 MTWThF, LindH 340
Sec 2, (887942) 1030-1130 MTWThF, LindH 340
Sec 3, (386513) 0800-0940 MWF, LindH 215

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, (288271) 0800-0940 MWF, LindH 320
Sec 2, (585022) 0915-1055 MWF, LindH 229

3032. PREPROFESSIONAL WRITING FOR BUSINESS. (087034) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, School of Mgmt or BIS stu, jr; 1030-1130 MTWThF, AmundH 104) 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 student's major fields.

3033. WRITING FOR THE HEALTH SCIENCES. (888959) (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

1011. WRITING PRACTICE I. (290585) (5 cr; limited to 25 students; 0915-1115 MWF, LindH 302) See First Term.

3014. WRITING IN THE SOCIAL SCIENCES. (090502) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, jr)
Sec 1, (090502) 0800-0940 MWF, LindH 325)
Sec 2, (191454) 0915-1055 MWF, NichH 201
See First Term.

3022. CRITICAL READING AND WRITING FOR MANAGEMENT. (891456) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, mgmt or pre-mgmt stu with more than 60 cr; 1030-1130 MTWThF; LindH 320) See First Term.

3027. ADVANCED EXPOSITORY WRITING. (4 cr; each section limited to 20 students; prereq fulfillment of Writing Practice requirement, jr) See First Term.
Sec 1, (887035) 0800-0900 MTWThF, LindH 340
Sec 2, (886371) 1030-1130 MTWThF, LindH 325
Sec 3, (186514) 0915-1055 MWF, LindH 340

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, (988273) 0800-0940 MWF, LindH 217
Sec 2, (987964) 0915-1015 MTWThF, Lind 303

3032. PREPROFESSIONAL WRITING FOR BUSINESS. (788274) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, School of Mgmt or BIS stu, jr; 0915-1015 MTWThF; LindH 320) See First Term.

3033. WRITING FOR THE HEALTH SCIENCES. (890503) (4 cr; limited to 20 students; prereq fulfillment of Writing Practice requirement, health science or pre-health science majors with more than 60 credits; 0800-0900 MTWThF, LindH 303) See First Term.

Computer Science (CSci)

4-192 EE/CSci, 625-4002
Institute of Technology

FIRST TERM

3101. A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING. (986197) (4 cr; limited to 50 students; prereq Math 1111 or 1201 or equiv or #; 0915-1115 MW, 0915-1015 F; AmundH 116) FORTRAN computer language with extension; applications; programming techniques. Designed to bring students to advanced level competence in FORTRAN programming. Integral nonscheduled laboratory.

3113. INTRODUCTION TO PROGRAMMING IN C. (091343) (4 cr; limited to 50 students; prereq 3101 or 3102 or any programming experience and precalculus or #; 1300-1500 MW, 1300-1400 Th; 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.

3311. DISCRETE STRUCTURES OF COMPUTER SCIENCE. (391338) (4 cr; limited to 50 students; prereq 1 qtr. calculus or #; \$3400; lec 1530-1730 MW, 1530-1630 Th, EE/CSci 3111, rec 1630-1730 Th, EE/CSci 3111) Mathematical techniques and structures needed in Computer Science. Topics include formal logic, elementary combinations, induction, recurrences, relations and graphs.

3316. THE STRUCTURE OF COMPUTER PROGRAMMING I. (591340) (4 cr; limited to 50 students; prereq 1 qtr. calculus or #; \$3106; lec 1030-1230 TW, 1030-1130 Th, AmundH 240 rec 1130-1230 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. The language Scheme is used for illustration of ideas and lab problems.

3327. INTRODUCTION TO THE ORGANIZATION OF COMPUTER SYSTEMS. (191342) (4 cr; limited to 50 students; prereq 3316 or 3121 or #; 3107, 5101; lec 0800-1000 MT, 0915-1015 W, EE/CSci 3111 rec 1015-1115 W, EE/CSci 3111)

Organization of hardware and software systems that support computer programming and program execution. Symbolic assembly language to study the mapping of application programs and data into the underlying hardware. Ideas illustrated in assembly language programs (currently Motorola 6800).

#5106. STRUCTURE OF HIGH LEVEL LANGUAGES. (586350) (4 cr; limited to 50 students; prereq 3322, 5102, or #; 1030-1230 WTh, 1030-1130 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.

#5301. NUMERICAL ANALYSIS. (985065) (4 cr; limited to 65 students; prereq Math 3321 or equiv or #...a knowledge of Pascal or FORTRAN is assumed; 1030-1230 MT, 1145-1245 W; EE/CSci 3111)

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. (389220) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589376) (1-36 cr [max 11 cr per summer term])

SECOND TERM

#3102. INTRODUCTION TO PASCAL PROGRAMMING. (891344) (4 cr; limited to 50 students; prereq non CSci major, Math 1111 or 1201 or equiv. or #; informal lab; 0915-1115 MW, 0915-1015 F; EE/CSci 3115)

Pascal computer language, applications, programming techniques. Designed to bring students to advanced level competence in Pascal programming. Integral nonscheduled laboratory.

#3121. SURVEY OF DATA STRUCTURES AND ALGORITHMS. (691345) (4 cr; limited to 50 students; prereq 3102 or 3113 or #; \$3105, 3321; 1300-1500 MW, 1300-1400 Th; EE/CSci 3111)

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.

#3317. THE STRUCTURE OF COMPUTER PROGRAMMING II. (291347) (4 cr; limited to 50 students; prereq 3316; lec 1030-1230 TW, 1030-1130 Th, EE/CSci 3111; rec 1130-1230 Th, EE/CSci 3111)

Advanced programming paradigms. Object-oriented programming, logic programming, and pattern matching are

illustrated with examples. Generic operators, local variables, and objects as ways of encapsulating different conceptual parts of a program. The language Scheme is used for illustration of ideas and lab problems.

#3321. ALGORITHMS AND DATA STRUCTURES I. (991349) (4 cr; limited to 50 students; prereq 3311 or 3400 or 3106 or #; \$3105, 3113; lec 1530-1730 MW, 1530-1630 Th, EE/CSci 3111; rec 1630-1730 Th, EE/CSci 3111)

Fundamental data structures with some of the rudimentary computer algorithms are introduced. Implementation of data structures and their operations as abstract data types. Includes a study of C++ with emphasis on implementation of data types and control structures.

8777. THESIS CREDITS: MASTERS. (289310) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189437) (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. (389380) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (189440) (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

#5006. INTRODUCTION TO INSTRUCTIONAL COMPUTER PROGRAMMING—June 17-July 20. (990170) (3 cr; limited to 20 students; prereq 5003 or #; 0800-1100 MW; EdHan; A-F only) Hooper Introduction to designing computer-based instructional programs through programming. Students need not have a science or mathematics background.

#5206. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS—June 17-July 17. (485417) (3 cr, \$Elem 5140; limited to 5 students; 1300-1600 MWF; 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.

#5208. COMPUTER-BASED TOOLS FOR TEACHERS. (389606) (3 cr; prereq 5003 or 5206, or #; limited to 25 students; 0800-1100 TTh; PeikH 355; 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, (491489) Anderson
Sec 24, (189607) Hooper

#5600. INTRODUCTION TO CURRICULUM SYSTEMS—June 16-July 2 and June 29. (188188) (3 cr; limited to 30 students; 1030-1245 TWTh and Monday, June 29; PeikH 48; A-F only) Carlson

Exploration of 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. (891490) (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, (691488) Anderson
Sec 24, (889609) Hooper

SECOND TERM

#5600. INTRODUCTION TO CURRICULUM SYSTEMS—July 23-August 13. (189034) (3 cr; limited to 30 students; 1030-1245 MTWTh; PeikH 315; A-F only) Carlson
See First Term.

#8100. CURRICULUM AND INSTRUCTION CORE: CRITICAL EXAMINATION OF CURRICULAR CONTEXTS—August 13-26. (888458) (3 cr; prereq Ph.D. student or #; limited to 15 students; 1300-1515 MTWThF; PeikH 315; A-F only) Lange 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)

106 Norris Hall. 624-5060 (Theatre Arts and Dance) College of Liberal Arts

FIRST TERM

#1110. TOPICS IN DANCE THEORY. Sec 1, Beginning Modern Technique. (790865), 2 cr, limited to 25 students; prereq audition, #, 0845-1015 MWF, NorrisH M153A, Cheng

Sec 2, Tap. (590866), 1 cr, limited to 18 students, 0910-1015 TTh, PeikG G65, Chuala The basics of tap; working on fundamental syncopation and various rhythms.

Sec 3, Beginning Jazz Technique. (390867), 2 cr, limited to 20 students; prereq audition, #, 0845-1015 MWF, NorrisH 67, Stoen Basic technique of jazz dance for those at a high beginning/low intermediate level.

#3330. TOPICS IN DANCE THEORY. Sec 1, Intermediate Modern Technique. (490312), 2 cr, limited to 25 students; prereq audition, #, 0845-1015 MWF, NorrisH M153A, Cheng

Basic technique of modern dance for those at a high beginning/low intermediate level.

Sec 2, Intermediate Jazz Technique. (990864), 2 cr, limited to 20 students; prereq audition, #, 0845-1015 MWF, NorrisH 67, Stoen

Basic technique of jazz dance for those at a high beginning/low intermediate level.

#5910. TOPICS IN DANCE. Sec 1, Choreographic and Dance Practicum in Musical Theatre. (290313), 3 cr [max 12 cr], limited to 25 students; prereq #, 1025-1205 MTWTh, NorrisH M153A, Chenmg/Sealy and guests Performance of dance theatre work constructed by faculty and guest choreographer.

Danish (Dan)

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)

#1101-1102-1103. BEGINNING DANISH. (15 cr for both terms; limited to 20 students; 0915-1245 MTWThF; AkerH 309) Gram

1101. Sec 5, (392179) June 16-July 6, 5 cr

1102. Sec 5, (792180) July 9-August 3, 5 cr

1103. Sec 5, (592181) August 4-26, 5 cr

Dentistry (Dent)

15-209 Moos Tower. 625-9982
School of Dentistry

FIRST TERM

5009. FIXED PROSTHODONTICS: INDEPENDENT STUDY. (691359) (Cr and hrs ar)

5055. HEALTH ECOLOGY: INDEPENDENT STUDY. (091360) (Cr and hrs ar)

5070. HEALTH ECOLOGY ELECTIVE. (586560) (Cr ar)
Allows highly motivated students to undertake study and receive academic credit for activities in special-interest areas.

5155. OPERATIVE DENTISTRY LABORATORY. (490018) (2 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. (891361) (Cr and hrs ar)

5183. PATIENT MANAGEMENT IV. (691362) (1 cr)
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. (491363) (Cr and hrs ar)

5320. ORAL SURGERY: INDEPENDENT STUDY. (291364) (Cr and hrs ar)

5335. ORAL SURGERY CLINIC ELECTIVE ROTATION. (191365) (Cr and hrs ar)
Development of examination, diagnosis, treatment planning, and clinical skills in oral surgery.

5385. ORTHODONTICS: INDEPENDENT STUDY. (991366) (Cr and hrs ar)

5420. PEDIATRIC DENTISTRY: INDEPENDENT STUDY. (791367) (Cr and hrs ar)

5460. PERIODONTOLOGY: INDEPENDENT STUDY. (591368) (Cr and hrs ar)

5553. REMOVABLE PROSTHODONTICS: INDEPENDENT STUDY. (391369) (Cr and hrs ar)

5602. BIOMATERIALS: INDEPENDENT STUDY. (791370) (Cr and hrs ar)

5630. ENDODONTICS: INDEPENDENT STUDY. (591371) (Cr and hrs ar)

5654. ORAL ANATOMY: INDEPENDENT STUDY. (391372) (Cr and hrs ar)

5680. ORAL BIOLOGY: INDEPENDENT STUDY. (190071) (ar cr)

5755. OCCLUSION: INDEPENDENT STUDY. (191373) (Cr and hrs ar)

5785. ORAL RADIOLOGY: INDEPENDENT STUDY. (091374) (Cr and hrs ar)

5807. TREATMENT PLANNING: INDEPENDENT STUDY. (891375) (Cr and hrs ar)

5900. DENTAL CLINIC. (091889) (Cr ar; 0900-1200 MTWThF, 1315-1600 MTWThF, MoosT 6125, 7336, 7555, 8327, 9346)

5945. GERIATRIC HOSPITAL DENTISTRY. (290022) (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. (390125) (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. (990072) (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.

8441. SEMINARS IN TMJ AND CRANIOFACIAL PAIN. (488642) (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. (190126) (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. (288643) (1 cr; 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. (489225) (1-16 cr [max 11 cr per summer term])

FIRST AND SECOND TERM: TEN-WEEK COURSES (Register once in Term I)

5930. HENNEPIN COUNTY MEDICAL CENTER CLINICAL ORAL AND MAXILLOFACIAL SURGERY. (690115) (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. (490116) (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 temporomandibular joint pain.

5936. HENNEPIN COUNTY MEDICAL CENTER CLINICAL HOSPITAL DENTISTRY II. (290117) (10 cr; S-N only)
See 5935.

5937. HENNEPIN COUNTY MEDICAL CENTER CLINICAL HOSPITAL DENTISTRY III. (190118) (10 cr; S-N only)
See 5935.

5950. ADVANCED GENERAL DENTISTRY SEMINAR I. (585604) (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. (990119) (Cr ar; S-N only)
Field experience in community dental clinic practice and administration.

5960. ADVANCED GENERAL DENTISTRY CLINIC I. (290120) (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. (190121) (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. (585215) (Cr ar)
A sequence of lectures, discussions, and seminars on topics, related to current dental practice. Correlated with clinical experiences.

5974. GENERAL PRACTICE CLINICAL ADMINISTRATION I. (990122) (Cr ar)
Field experience in hospital dental clinic administration for residents.

5980. GENERAL PRACTICE CLINIC I. (790123) (Cr ar)
A series of planned experiences in the clinical disciplines of dentistry. Emphasis on patient care.

5984. GENERAL PRACTICE CLINIC V. (590124) (Cr ar)
A series of planned experiences in the clinical disciplines of dentistry. Emphasis on patient care.

SECOND TERM

5009. FIXED PROSTHODONTICS: INDEPENDENT STUDY. (691376) (Cr and hrs ar)

5055. HEALTH ECOLOGY: INDEPENDENT STUDY. (491377) (Cr and hrs ar)

5070. HEALTH ECOLOGY ELECTIVE. (787285) (ar cr)
See First Term.

5158. OPERATIVE DENTISTRY: INDEPENDENT STUDY. (291378) (Cr and hrs ar)

5250. ORAL PATHOLOGY: INDEPENDENT STUDY. (191379) (Cr and hrs ar)

5320. ORAL SURGERY: INDEPENDENT STUDY. (491380) (Cr and hrs ar)

5385. ORTHODONTICS: INDEPENDENT STUDY. (291381) (Cr and hrs ar)

5420. PEDIATRIC DENTISTRY: INDEPENDENT STUDY. (191382) (Cr and hrs ar)

5460. PERIODONTOLOGY: INDEPENDENT STUDY. (585053) (Cr ar)

5553. REMOVABLE PROSTHODONTICS: INDEPENDENT STUDY. (991383) (Cr and hrs ar)

5602. BIOMATERIALS: INDEPENDENT STUDY. (185050) (Cr ar)

5630. ENDODONTICS: INDEPENDENT STUDY. (791384) (Cr and hrs ar)

5654. ORAL ANATOMY: INDEPENDENT STUDY. (591385) (Cr and hrs ar)

5680. ORAL BIOLOGY: INDEPENDENT STUDY. (391386) (Cr and hrs ar)

5755. OCCLUSION: INDEPENDENT STUDY. (191387) (Cr and hrs ar)

5785. ORAL RADIOLOGY: INDEPENDENT STUDY. (091388) (Cr and hrs ar)

5807. TREATMENT PLANNING: INDEPENDENT STUDY. (891389) (Cr and hrs ar)

5900. DENTAL CLINIC. (790199) (Cr ar)

5938. HENNEPIN COUNTY MEDICAL CENTER CLINICAL HOSPITAL DENTISTRY IV. (490200) (5 cr; S-N only)

See 5935, First and Second Term: Ten-Week Courses

5945. GERIATRIC HOSPITAL DENTISTRY. (091391) (Cr ar)
See First Term.

5989. ADVANCED CLINICAL GERIATRIC DENTISTRY. (190202) (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. (790073)
See First Term.

8441. SEMINARS IN TMJ AND CRANIOFACIAL PAIN. (188649) (1 cr; prereq #; A-F only)
See First Term.

8442. ADVANCED CLINICAL TMJ AND CRANIOFACIAL PAIN. (990203) (1-4 cr; prereq #; A-F only)
See First Term.

8443. CURRENT LITERATURE IN TMJ AND CRANIOFACIAL PAIN. (588650) (1 cr; prereq #; A-F only)
See First Term.

8777. THESIS CREDITS: MASTERS. (389315) (1-16 cr [max 11 cr per summer term])

Dermatology (Derm)

4240 Phillips-Wangenstein Building.
625-8625
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (189227) (1-16 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

5184. SPECIAL COURSE IN DERMATOLOGY. (686601) (Cr ar)
Gentry

8225. CLINICAL DERMATOLOGY. (286603) (Cr ar) Lynch, Dahl, Gentry, others

8226. CLINICAL SEMINAR. (186604) (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. (986605) (Cr ar; 1530-1630 WF; PWB 4-272) Kaye, Orkin, others
Includes histopathology, histochemistry, and fluorescence microscopy.

8228. RESEARCH: DERMATOLOGY AND RELATED BASIC SCIENCES. (786606) (Cr ar) Dahl, Hordinsky, Kalish

8229. ELECTRON MICROSCOPY IN DERMATOLOGY. (586607) (Cr ar)
Zelickson, others

8230. FUNCTIONAL BIOLOGY OF THE SKIN. (386608) (Cr ar) Dahl, Lynch

8231. CLINICS IN DERMATOLOGY FOR NON- DERMATOLOGISTS. (186609) (Cr ar) Lynch, Gentry

8232. SEMINAR: DERMATOLOGIC HISTOPATHOLOGY AND MYCOLOGY. (586610) (Cr ar) Kaye, others

SECOND TERM

5182. PRECEPTORSHIP IN DERMATOLOGY. (689062) (Cr ar; prereq regis med)

8777. THESIS CREDITS: MASTERS. (089317) (1-16 cr [max 11 cr per summer term])

Design (Dsgn)

240 McNeal Hall, St. Paul. 624-9700
(Design, Housing, and Apparel)
College of Human Ecology

FIRST TERM

1525. DESIGN PROCESS: TWO-DIMENSIONAL DESIGN I. (392070) (4 cr; prereq Appl Dsgn, Pre-Appl Dsgn, Cos Dsgn, Hsg, Int Dsgn, Pre-Int Dsgn, Ret Mdse, Pre-Ret Mdse, or TexC student; limited to 22 students; 0800-1200 MWF, McNH 258) Blade
Experiments with principles of two-dimensional design.

3534. COMPUTER APPLICATION TO DESIGN PROBLEMS. (492061) (4 cr; prereq 1523, 1525, 1528; limited to 20 students; 0800-1200 MWF, McNH 305 (MAC Lab)) Eckersley
Focuses on solutions to the design process using the Macintosh. Students will gain experience in microcomputers, peripherals, and software.

3584. FIELD EXPERIENCE IN DESIGN. (787206) (Cr ar [max 8 cr]; limited to 20 students; prereq 3571 or 3571, #, completion of min 60 credits in Category E, and plan to be submitted and approved in advance by adviser and employer; S-N only) Madson, M.
Supervised work experience with a professional, design studio, retail store, community service, museum, printing or publishing firm, or other appropriate organization. Evaluative report required.

SECOND TERM

3584. FIELD EXPERIENCE IN DESIGN. (186366) (Cr ar [max 8 cr]; limited to 20 students; prereq 3571 or 3571, #, completion of min 60 credits in Category E, and plan to be submitted and approved in advance by adviser and employer)
See First Term.

5574. RESEARCH ISSUES IN INTERIOR DESIGN. (791031) (3 cr prereq #; limited to 15 students; July 27-August 7, 0800-1100 MTWThF; McNH 233) Guerin
In depth investigation of a single, specific topic.

Design, Housing, and Apparel (DHA)

240 McNeal Hall, St. Paul. 624-9700
College of Home Economics

FIRST TERM

8777. THESIS CREDITS: MASTERS. (189230) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089382) (1-36 cr [max 11 cr per summer term])

SECOND TERM

1001. INTRODUCTION TO THE DESIGNED ENVIRONMENT. (992131) (3 cr; 0900-1100 MWF; McNH 33) Yust
Analysis of the interaction between people and the designed environment, both at the micro and macro levels.

8777. THESIS CREDITS: MASTERS. (689319) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289470) (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.

1101-1102-1103. BEGINNING DUTCH. (15 cr for both terms; §1110; limited to 23 students; 0900-1245 MTWThF; JonesH 10) VanderSanden
Structure, listening and reading comprehension, writing, speaking.

1101, Sec 5. (491458) June 16-July 9, 5 cr

1102, Sec 5. (291459) July 10-August 3, 5 cr

1103, Sec 5. (691460) August 4-26, 5 cr

E

East Asian Studies (EAS)

105 Folwell Hall. 624-0007
(East Asian Studies)
College of Liberal Arts

FIRST TERM

3013. INTRODUCTION TO FAR EASTERN ART. (392182) (4 cr; §ArH 3013; limited to 70 students; 1030-1145 MTWTh; AndH 310) Poor
Major themes of Far Eastern art. The arts of China and Japan (not all-inclusive). Meets with ArtH 3013.

3468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (588745) (4 cr, §Hist 3468, Hist 5468; 0915-1015 MTWThF; HHHCTr 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.

3970. DIRECTED STUDIES. (287833) (1-15 cr; prereq #, Δ, □) Staff

5970. DIRECTED STUDIES. (590043) (1-15 cr; prereq #, Δ, CLA approval)
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS. (989231) (1-16 cr [max 11 cr per summer term])

SECOND TERM

3970. DIRECTED STUDIES. (187834) (1-15 cr; prereq #, Δ, □) Staff

5970. DIRECTED STUDIES. (790588) (1-15 cr; prereq #, Δ, CLA approval)
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS. (889321) (1-16 cr [max 11 cr per summer term])

Ecology, Evolution, and Behavior (EEB)

109 Zoology. 625-4466
College of Biological Science

FIRST TERM

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; Zoology 102)

Basic concepts in ecology dealing with organization, development, and functioning of ecosystems; population growth and regulation. Human impact on such systems.

Rec 1, (489886) 0800-0900 TTh,
Zoology 102

Rec 2, (289887) 0915-1015 TTh,
Zoology 102

5834. FIELD ORNITHOLOGY—June 16-July 21. (189888) (5 cr; limited to 15 students; prereq course in general biology including study of zoology, Δ ; 0800-1700 MTh; offered at Itasca. Blockstein

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.

5970. DIRECTED STUDIES. (989889) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (289890) (Cr ar; prereq #, Δ) Staff
Laboratory or field investigation of selected areas of research.

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (189891) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (989892) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789893) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5814. PLANT COMMUNITY ECOLOGY—July 23-August 26, Monday/Thursday (192063) (5 cr; limited to 20 students; prereq course in ecology) Webb
Communities represented in Itasca Park and vicinity, with emphasis on vegetation. Patterns of distribution of the communities, their interaction with the environment, and their dynamic relationships. Methods of community description and analysis.

5817. VERTEBRATE ECOLOGY—July 23-August 26. (589894) (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. This is a research-oriented course supplemented with lectures and field trips.

5970. DIRECTED STUDIES. (389895) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (189896) (Cr ar; prereq #, Δ) Staff
See First Term.

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (089897) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (889898) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689899) (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

1101. PRINCIPLES OF MICROECONOMICS. (4 cr, \$1002, \$1005, \$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, (388746) 0800-0900
MTWThF, BlegH 115

Sec 2, (188747) 0915-1015
MTWThF, BlegH 115

Sec 3, (088748) 1030-1130
MTWThF, BlegH 225

Sec 4, (888749) 1145-1245
MTWThF, BlegH 225

Sec 5, (188750) 1300-1400
MTWThF, BlegH 115

1102. PRINCIPLES OF MACROECONOMICS. (4 cr, \$1001, \$1004, \$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, (088751) 0800-0900
MTWThF, HHHCr 25

Sec 2, (888752) 0915-1015
MTWThF, BlegH 135

Sec 3, (688753) 1030-1130
MTWThF, BlegH 250

3101. MICROECONOMIC THEORY. (985678) (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.

3102. MACROECONOMIC THEORY. (785679) (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.

3103. WELFARE ECONOMICS. (788484) (4 cr; limited to 35 students; prereq 3101 or equiv; 1030-1130 MTWThF; BlegH 220)
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.

3601. INDUSTRIAL ORGANIZATION, AND ANTI-TRUST POLICY. (488754) (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.

3701. MONEY AND BANKING. (085140) (4 cr, \$5701, \$5721; limited to 65 students; prereq 1101, 1102 or equiv; not open to economics majors; 1145-1245 MTWThF, AndH 370)
Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system, and monetary policy.

3751. FINANCIAL ECONOMICS I. (185534) (4 cr; limited to 35 students; prereq 3101 or 3105 or equiv, 1 qtr statistics, 1 qtr calculus; 1030-1130 MTWThF; BlegH 120)
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. (190314) (2 cr; prereq 3101, 3102, 3103 or equiv)

3970. DIRECTED STUDIES. (185680) (Cr ar; prereq #, Δ , \square)
Guided individual reading or study in areas not available in regular course offerings.

5301. ECONOMIC DEVELOPMENT. (985681) (4 cr, \$5331; limited to 35 students; prereq 1101, 1102 or equiv; not open to economics majors; 1145-1245 MTWThF; BlegH 155)
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.

5331. ECONOMIC DEVELOPMENT. (785682) (4 cr, \$5301; limited to 25 students; prereq 3101, 3102 or equiv; 1145-1245 MTWThF; BlegH 155)
See 5301. Meets with 5301.

5401. INTERNATIONAL ECONOMICS. (585683) (4 cr, \$5429, \$5431, \$5432; limited to 40 students; not open to economics majors; prereq 1101, 1102 or equiv; 1030-1130 MTWThF; BlegH 155)
Explanations of trade patterns. Commercial policy and international capital movements. Balancing international receipts and payments, the role of exchange rates, international monetary reform.

5431. INTERNATIONAL TRADE. (991741) (4 cr; \$5401, \$5429; 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.

5631. INDUSTRIAL ORGANIZATION AND ANTITRUST POLICY. (288755) (4 cr, \$3601; limited to 35 students; prereq 3101, 3102 or equiv; 0800-0900 MTWThF; BlegH 145)
See 3601. Meets with 3601.

5721. MONEY AND BANKING. (385684) (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.

5731. MACRO ECONOMIC POLICY. (591743) (4 cr; limited to 35 students; prereq 3101, 3102 or equiv; 0915-1015 MTWThF; BlegH 220)
Evaluation of policy alternatives. Rational expectations. Rules versus discretion. Control of inflation. Natural rate of unemployment. Targets and instruments.

5831. COST-BENEFIT ANALYSIS. (187106) (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. (185685) (Cr ar; prereq #, Δ , CLA approval) Staff
Guided individual reading or study in areas not available in regular course offerings.

8777. THESIS CREDITS: MASTERS. (389234) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889383) (1-36 cr [max 11 cr per summer term])

8990. INDIVIDUAL RESEARCH. (085686) (Cr ar) Staff

SECOND TERM

1101. PRINCIPLES OF MICROECONOMICS. (4 cr; \$1002, \$1005, \$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, (988757) 0915-1015
MTWThF, BlegH 145

Sec 2, (788758) 1030-1130
MTWThF, BlegH 440

Sec 3, (588759) 1145-1245
MTWThF, BlegH 440

1102. PRINCIPLES OF MACROECONOMICS. (4 cr; §1001, §1004, §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, (988760) 0800-0900 MTWThF, BlegH 440

Sec 2, (788761) 0915-1015 MTWThF, BlegH 440

Sec 3, (588762) 1030-1130 MTWThF, BlegH 125

Sec 4, (388763) 1145-1245 MTWThF, BlegH 135

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, (686758) 0915-1015 MTWThF, BlegH 135

3102. MACROECONOMIC THEORY. (486762) (4 cr; limited to 35 students; prereq 3101 or equiv; 1145-1245 MTWThF; BlegH 205) See First Term.

3103. WELFARE ECONOMICS. (186764) (4 cr; limited to 35 students; prereq 3101 or equiv; 0915-1015 MTWThF; BlegH 115) Coen See First Term.

3701. MONEY AND BANKING. (986765) (4 cr, §5701, §5721; limited to 65 students; prereq 1101, 1102 or equiv; not open to economics majors; 0915-1015 MTWThF; AndH 350) See First Term.

3751. FINANCIAL ECONOMICS I. (790316) (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.

3801. ELEMENTS OF PUBLIC FINANCE. (987107) (4 cr, §5821; limited to 15 students; prereq 1101, 1102 or equiv; not open to Economics majors; 0915-1015 MTWThF; BlegH 220)

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. (990315) (2 cr; prereq 3101, 3102, 3103 or equiv)

3970. DIRECTED STUDIES. (786766) (Cr ar; prereq #, Δ, □) See First Term.

5307. COMPARATIVE ECONOMIC SYSTEMS. (787836) (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.

5337. COMPARATIVE ECONOMIC SYSTEMS. (587837) (4 cr, §5307; limited to 25 students; prereq 3101, 3102 or equiv; 1030-1130 MTWThF; BlegH 120) See 5307. Meets with 5307.

5401. INTERNATIONAL ECONOMICS. (987835) (4 cr, §5429, §5431 §5432; limited to 40 students; not open to economics majors; prereq 1101, 1102 or equiv; 1145-1245 MTWThF; BlegH 110) See First Term.

5432. INTERNATIONAL FINANCE. (091746) (4 cr; limited to 35 students; prereq 3101, 3102, 3103 or equiv; 5431 or equiv recommended; 1030-1130 MTWThF; BlegH 220) Balancing international receipts and payments; the role of exchange rates; international monetary reform.

5821. ELEMENTS OF PUBLIC FINANCE. (787108) (4 cr, §3801; limited to 35 students; prereq 3101, 3103 or equiv; 0915-1015 MTWThF; BlegH 220) See 3801. Meets with 3801.

5970. DIRECTED STUDIES. (386768) (Cr ar; prereq #, Δ, CLA approval) Staff See First Term.

8777. THESIS CREDITS: MASTERS. (189325) (1-16 cr [max 11 cr per summer term]; □)

8888. THESIS CREDITS: DOCTORAL. (789473) (1-36 cr [max 11 cr per summer term])

8990. INDIVIDUAL RESEARCH. (186769) (Cr ar) Staff

SPECIAL TERM: AUGUST 10-SEPTEMBER 11

3101. MICROECONOMIC THEORY. Sec 2, (686761) (4 cr, §3105; limited to 45 students; prereq 1101, 1102 or equiv, 1 qtr calculus, Humphrey Institute Students only; 0915-1015 MTWThF; HHCtr 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, (490178) Higher Education
- Sec 2, (290179) Curriculum and Instruction
- Sec 3, (690180) Vocational Education
- Sec 4, (490181) Recreation, Park, and Leisure Studies
- Sec 5, (290182) Social and Philosophical Foundations of Education

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (1-36 cr [max 11 cr per summer term])

- Sec 1, (190183) Higher Education
- Sec 2, (990184) Curriculum and Instruction
- Sec 3, (790185) Vocational Education
- Sec 4, (590186) Recreation, Park, and Leisure Studies
- Sec 5, (390187) Social and Philosophical Foundations of Education

Educational Administration (EdAd)

275 Peik Hall, 624-1006
(Educational Policy and Administration)
College of Education
Also see EdPA

FIRST TERM

8777. THESIS CREDITS: MASTERS. (089236) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489385) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (989326) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589474) (1-36 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

5090. SCHOOL AND SOCIETY. (590351) (3 cr, §SPFE 3090, §SPFE 5090; limited to 45 students; prereq sr or post-BA in education or CLA music ed major or □; 0800-0900 MTWThF; PeikH 28; A-F only) Harkins Readings in social science and philosophy integrating views of the role of the school in a changing American society.

5099. DIRECTED STUDY. (Cr and hrs ar [max 9 cr]; §SPFE 5099; prereq #; S-N optional) Individual or group work on topics or problems in social and philosophical foundations of education.

- Sec 21, (390352) Harkins
- Sec 22, (190353) Louis
- Sec 23, (090354) Turner
- Sec 24, (191051) King
- Sec 25, (691491) Lum

5128. WORKSHOP: EDUCATIONAL ADMINISTRATION. (1-6 cr; §EdAd 5128)

Laboratory approach provides opportunities for experienced administrators to concentrate their study on common administrative and supervisory problems.

- 1. Managing the At-Risk School—June 22-July 2.** (490357) 3 cr, 0915-1215 MTWThF, VoTech R280, limited to 30 students, Ammentorp
- 2. Outcome Based Education—June 22-July 2.** (890355) 3 cr, 1300-1545 MTWThF, ClaOff B36, King
- 3. Human Resource Management in Higher Education—June 16-July 9.** (690356) 3 cr; 0915-1230 TTh, PeikH 28, Delmont
- 4. Professional Ethics.** (290358) 3 cr; 0915-1130 TTh, PeikH 155, Lum

Sec 6, Summer Institute for Teachers: City Schools: Strategies for Survival—June 16-June 26. (092069) (4 cr; 0930-1200 MTWThF; NichH 216) Tolbert-Glover and Louis See page 12 for details.

5141. CRITICAL ISSUES IN CONTEMPORARY EDUCATION. (190359) (3 cr; §SPFE 5141; 0915-1130 MWF; PeikH 46; S-N optional) Lum Introduces ideas involved in current theory and practice.

5142. MINORITIES IN HIGHER EDUCATION—June 16-19. (490360) (3 cr; limited to 20 students; 0900-1600 TWThF; CCE 133; North Hennepin Community College A-F only) Turner Explores 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.

5200. DESIGN AND MANAGEMENT OF EDUCATION SERVICES—July 6-21. (491492) (3 cr; §EdAd 5200; 0915-1100 MTWThF, Claoff B36; 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—June 23-July 21. (485384) (3 cr; §EdAd 5201, EdAd 8201; 0915-1215 TTh; CivMinE 213; S-N optional) Turner 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. (291493) (3 cr; §EdAd 5202, §EdAd 8202, §SPFE 5202, §SPFE 8202; 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. (290361) (3 cr, §EdAd 5210, §EdAd 8210; 0800-1000 MWF; PeikH 48; 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. (990363) (3 cr, §EdAd 5215, §EdAd 8215; 1300-1600 MW; PeikH 46; S-N optional) Alkire Problems in elementary school administration and the principal's role of leadership.

5227. PUBLIC SCHOOL PERSONNEL PROGRAMS. (790364) (3 cr, \$EdAd 5227, \$EdAd 8227; 0915-1145 TTh; FolH 344; 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. (590365) (4 cr, \$Educ 5250, \$EdAd 5250, \$HiEd 5250; 1030-1300 WF; 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.

8228. PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar, \$EdAd 8228, \$HiEd 8228; prereq #) Selected topics on college programs, instruction, organization, and administration.

Sec 21, (390366) Ammentorp
Sec 22, (190367) Louis
Sec 23, (090368) Turner
Sec 24, (191494) Anderson

8238. SEMINAR: THEORY AND RESEARCH. (890369) (3 cr, \$EdAd 8238; prereq educational administration major or #; 1030-1230 MWF; PeikH 31) Mueller Research design involving thesis or field project; includes interrelatedness of formulation of conceptual framework and the analytical process; clinical and research problems.

8247. SEMINAR: SCHOOL DISTRICT POLITICS. (991495) (3 cr, \$EdAd 8247; prereq 5202 or EdAd 5202 or SPFE 5202; 1300-1530 TTh; PeikH 31) Mazzoni Local school district as an arena for political action; emphasis on conceptual and technical skills useful to administrators exercising policy leadership in this arena.

8261. PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (Cr and hrs ar; \$SPFE 8241; prereq #) For graduate students interested in research and original work in these areas.

Sec 21, (190370) Harkins
Sec 22, (090371) Louis
Sec 23, (890372) Turner
Sec 24, (791496) King
Sec 25, (591497) Lum

8270. PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION. (690373) (Cr and hrs ar; \$EdAd 8270; prereq #) Alkire

8271. PROBLEMS: SECONDARY SCHOOL ADMINISTRATION. (490374) (Cr and hrs ar; \$EdAd 8271; prereq #) Nickerson

8272. PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term, hrs ar, \$EdAd 8272) For superintendents and principals qualified to make intensive studies of a school system.

Sec 21, (290375) Alkire
Sec 25, (391498) Mazzoni
Sec 26, (190376) Mueller
Sec 27, (990377) Nickerson
Sec 31, (790378) Ammentorp

Sec 32, (590379) Turner
Sec 33, (990380) Louis
Sec 34, (790381) King

8273. FIELD STUDY. (0-10 cr, hrs ar, \$EdAd 8273; 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, (590382) Alkire
Sec 25, (191499) Mazzoni
Sec 26, (390383) Mueller
Sec 27, (190384) Nickerson
Sec 31, (090385) Ammentorp
Sec 32, (890386) Turner
Sec 33, (690387) Louis
Sec 34, (490388) King

SECOND TERM

#5090. SCHOOL AND SOCIETY. (290389) (3 cr, \$SPFE 3090, \$SPFE 5090; limited to 45 students; prereq sr or post-BA in education or CLA music ed major □; 0800-0900 MTWThF; PeikH 40; A-F only) Harkins See First Term

5099. DIRECTED STUDY. (Cr and hrs ar, [max 9 cr] prereq #; S-N optional) See First Term.

Sec 21, (091505) Harkins
Sec 22, (991500) Louis

5128. WORKSHOP: EDUCATIONAL ADMINISTRATION. (1-6 cr) See First Term. Also see page 25.

Sec 1, **Facilitating School Change—July 27-August 7.** (190393) 3 cr; 0915-1215 MTWThF; PeikH 25, Wahlstrom

#5130. LEADERSHIP DEVELOPMENT SEMINAR. (990394) (3 cr, \$EdAd 5130; 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, 1992.

#5139. LABORATORY IN DECISION MAKING. (790395) (3 cr, \$EdAd 5139; 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, 1992.

5212. SCHOOL BUDGETING. (590396) (3 cr, \$EdAd 5212, \$EdAd 8212; 1300-1530 MW; PeikH 25) 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. (390397) (3 cr, \$EdAd 5213, \$EdAd 8213; 1300-1530 TTh; PeikH 25) 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 27-August 19. (190398) (3 cr, \$EdAd 5214, \$EdAd 8214; 0800-1115 MW; EdHAn 64) 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 27-August 11. (090399) (3 cr, \$EdAd 5216, \$EdAd 8216; prereq 5215 or EdAd 5215; 1300-1600 MTWTh; PeikH 28; S-N optional) Alkire Pertinent research literature.

5246. COMPUTERS IN EDUCATIONAL POLICY AND ADMINISTRATION—July 28-August 20. (192068) (3 cr; 0800-1115 TTh; EdHAn 64; only grad stds may take course S-N, all others must register A-F) Hendrix Hands-on microcomputer introduction to computers and software applications for administrative/policy tasks in educational institutions.

8228. PROBLEMS: HIGHER EDUCATION. (790400) (Cr and hrs ar, \$EdAd 8228, \$HiEd 8228; prereq #) Louis See First Term.

8261. PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (Cr and hrs ar, \$SPFE 8241; prereq #) See First Term.

Sec 21, (891506) Harkins
Sec 22, (791501) Louis

8270. PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION. (390402) (Cr and hrs ar, \$EdAd 8270; prereq #) Alkire

8271. PROBLEMS: SECONDARY SCHOOL ADMINISTRATION. (190403) (Cr and hrs ar, \$EdAd 8271; prereq #) Nickerson

8272. PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per qtr, hrs ar, \$EdAd 8272) See First Term.

Sec 21, (090404) Alkire
Sec 22, (890405) Hendrix
Sec 27, (690406) Nickerson
Sec 28, (490407) Sederberg
Sec 33, (591502) Louis
Sec 35, (391503) Wahlstrom

8273. FIELD STUDY. (0-10 cr, hrs ar, EdAd 8273; prereq #) See First Term.

Sec 21, (190409) Alkire
Sec 22, (490410) Hendrix
Sec 27, (290411) Nickerson
Sec 28, (190412) Sederberg
Sec 33, (691507) Louis
Sec 35, (191504) Wahlstrom

Educational Psychology (EPsy)

204 Burton Hall, 624-3543
College of Education

FIRST TERM

#5114. PSYCHOLOGY OF STUDENT LEARNING—June 17, 19, 22, 24. (487040) (3 cr; limited to 50 students; \$PSyF 5182; 0900-1600 MWF; 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.

#5119. LEARNING AND COGNITIVE FOUNDATIONS OF EDUCATION. (4 cr; each lab limited to 25 students; prereq education student, or CLA music ed maj or □, 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, (291509) 0800-0920 WF, Phys 150
Lab 2, (691510) 0800-0920 WF, Phys 143
Lab 3, (491511) 0800-0920 WF, Phys 131
Lab 4, (291512) 0800-0920 WF, Phys 210

#5135. WORKSHOP IN HUMAN RELATIONS. (987043) (6 cr, \$PSyF 5305; limited to 25 students; 0800-1300 June 16 and 0800-1300 MTWThF July 6-17; Arch 30; 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.

#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, (191513) 1030-1230 MTWTh, Phys 150, Rest
Sec 2, (991514) 1030-1230 MTWTh, Phys 131, LeCount

#5151. STRUCTURING LEARNING: SOCIAL PSYCHOLOGICAL APPROACHES. (585442) (3 cr; \$PSyF 5172; limited to 30 students; June 17-July 2; 1300-1600 MTWTh and 1300-1500, July 17; BuH 125, 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.

5229. CLASSROOM ASSESSMENT METHODS—June 16-29. (791515) (2 cr; limited to 100 students; prereq concurrent student participation in practice teaching or some similar field experience is strongly suggested; 1300-1440 MTWThF, 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.

5240. PRINCIPLES AND METHODS OF EVALUATION. (686405) (3 cr; \$PsyF 5125; limited to 30 students; 0800-0900 MTWThF; BuH 125; S-N optional)
Introductory course in program evaluation; theory; practical examples; purpose, roles, program descriptions, and evaluation strategies.

5260. INTRODUCTORY STATISTICAL METHODS. (187047) (4 cr; \$PsyF 5110; 0800-0900 MTWThF; EltH N119; limited to 40 students; S-N optional)
Techniques for organizing and presenting data; descriptive indices of central tendency, variability, and bivariate correlation/regression; procedures for making inferences concerning means and proportions.

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, Clinical Supervision in Human Services—July 17-19. (086403) (3 cr; limited to 30 students; 1300-2100 F, 0915-1630 SaSu, EltH N647, A-F only) McCarthy, Skovholt
Designed for individuals in human services fields who provide clinical supervision, this workshop will include theory, research, and techniques of supervision through lecture, instructor demonstrations, videotapes of critical incidents in supervision, discussion, and small group interactions.

Sec 2, Leadership for Career Development: Programs, Skills, Resources—July 6-10. (689613) (3 cr; limited to 25 students; 0800-1630 MTWTh, 0800-1300 F; EltH N639, A-F only) Hansen
Examines societal changes, work structures, and family patterns affecting career development of youth and adults over the life span; uses emerging knowledge and paradigms including workplace diversity, transitions, spirituality and work readiness and transformational leadership; emphasizes career development programs, K-adult; change process skills in the context of a holistic, integrated approach to career. Illustrative program resources for schools, colleges and business/industry will be available. Teams of counselors, teachers and administrators from one building, district or college are encouraged. All

participants will develop a team or individual applied project for their own present or future work site.

5601. EDUCATION OF EXCEPTIONAL CHILDREN. (187050) (4 cr; \$PsyS 5101; 1030-1200 MTWThF; BuH 125; A-F only) Deno
Introduction to field of special education for classroom teachers and other school personnel.

5612. EDUCATION OF LEARNING-DISABLED CHILDREN. (090418) (3 cr; limited to 30 students; PsyS 5112; 1030-1130 MTWThF; NichH 109 A-F only) Espin
Analysis of considerations in design and conduct of services for learning-disabled children; approaches to education of such children.

5624. BIOMEDICAL ASPECTS OF PHYSICAL IMPAIRMENTS—June 16-29. (890419) (3 cr; \$PsyS 5124; 1030-1330 MTWThF; BuH 123; A-F only) Keller-Gautsch
Selected information in genetics; anatomy, physiology, and kinesiology; central and peripheral nervous system; prenatal, perinatal, and postnatal development; physically disabling conditions; and management and educational procedures.

5641. MODELS OF SERVICE DELIVERY TO STUDENTS WITH HEARING IMPAIRMENTS—July 13-24. (591516) (3 cr; \$PsyS 5141; 1300-1600 MTWThF; MN State Academy for the Deaf; A-F only) Klasek-Kyllo
Programmatic and systems of support for infants, children, and youth with hearing impairments; educational delivery system models, curriculum and material adaptation and consultation skills.

5646. READING AND INSTRUCTIONAL PRACTICES WITH HEARING-IMPAIRED STUDENTS—July 6-10. (391517) (4 cr; 0830-1600 MTWThF; MN State Academy for the Deaf; A-F only) McAnally
The knowledge and skills required to assess, plan and implement instruction for individuals with hearing impairments. Theoretical and pragmatic issues in the acquisition of reading and writing skills, curricular adaptations, and effective instructional approaches used with hearing-impaired learners.

5647. AURAL AND SPEECH PROGRAMMING FOR CHILDREN WITH HEARING IMPAIRMENTS—July 13-24. (191518) (4 cr; \$PsyS 5147; 0830-1230 MTWThF; MN State Academy for the Deaf; A-F only) Rose
Fundamentals of the speech and hearing mechanisms; survey of instructional practices, technology-based assistive devices to develop auditory and speech skills. Strategies to adapt to the classroom acoustic environment.

5656. EDUCATIONAL NEEDS OF STUDENTS WITH EMOTIONAL DISTURBANCES OR BEHAVIORAL DISORDERS—June 16-July 2. (489614) (3 cr; limited to 40 students; students must also register for 5657; 0800-1015 MTWThF; BuH 123; A-F only) Wood
Preparation for specialists: educational characteristics, educational interventions, teaching of social behavior, legal and ethical issues.

5657. EDUCATIONAL INTERVENTIONS FOR STUDENTS WITH EMOTIONAL DISTURBANCE OR BEHAVIORAL DISORDERS—July 6-21. (289615) (3 cr; prereq 5656; limited to 40 students; students must also register for 5656; 0800-1015 MTWThF; BuH 120; A-F only) Wood
Preparation for specialists: assessment and planning procedures, interagency cooperation, career preparation and transition for EBD students.

5670. INTRODUCTION TO EDUCATION OF VISUALLY HANDICAPPED CHILDREN—June 22-July 2. (091519) (3 cr; \$PsyS 5170; 0900-1500 MTWThF; Rochester CEE; A-F only) Knowlton
Educational programs, services, and resources for blind and partially seeing children; historical background; philosophy, sociological and psychological problems.

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, (887052) Wilderson; off campus
Sec 2, (588681) off-campus
Sec 11, (092072)
Sec 12, (892073)
Sec 21, (687053) Knowlton; off-campus
Sec 23, (691524) 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, Collaboration for Inclusion: Strategies for Educating Students with Disabilities in General Education—June 22-26. (690423) 3 cr, 0800-1600 MTWThF, BuH 120, A-F only, York
This week-long workshop is designed for general educators, special educators, related services personnel, parents, and administrators interested in learning collaborative teamwork strategies for including students with exceptional needs in general education classes. Minnesota educators who have been directly involved in inclusive schooling efforts will participate as speakers in the class. Emphasis will be placed on sharing information that will be of direct relevance for students to use in their respective local communities to promote inclusion. Students will be required to spend after-class time working with other members in the class and are encouraged to participate in the course with colleagues from their respective districts.

5703. PRACTICUM EXPERIENCE: SPECIAL EDUCATION. (Cr and hrs ar; off-campus; prereq #; A-F only)
Supervised experience in teaching or related work in schools or other agencies serving exceptional children.
Sec 1, (189616) off campus
Sec 2, (490424) off campus

5710. CONTEMPORARY SERVICES FOR PERSONS WITH DEVELOPMENTAL DISABILITIES—July 6-17. (290425) (3 cr; 0800-1030 MTWThF; BuH 123)
Survey course focusing on the characteristics and service needs of persons with developmental disabilities using interdisciplinary approaches. Addresses 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 21, (788615) psychological foundations, MacEachern
Sec 26, (989617) special education, Deno
Sec 27, (291526) special education, Rose
Sec 29, (487054) special education, Wood
Sec 30, (287055) special education, Knowlton
Sec 31, (790414) counseling, Hansen
Sec 32, (789618) counseling, McCarthy
Sec 34, (191527) counseling, Romano
Sec 35, (988600) special education
Sec 42, (589619) counseling, Skovholt
Sec 43, (190426) special education, Wilderson
Sec 44, (990427) special education, York
Sec 45, (790428) special education, Espin
Sec 46, (991528) psychological foundations, Bart
Sec 47, (791529) psychological foundations, Maruyama
Sec 48, (191530) psychological foundations, Terwilliger
Sec 49, (991531) special education, Hupp
Sec 50, (791532) special education, McEvoy

8260. STATISTICAL METHODS. (187056) (3 cr, \$PsyF 8110; prereq 5260 or PsyF 5110 or Psy 3801 or equiv; 0745-0900 MTWThF; MechE 18) MacEachern
Foundations of statistical theory; practice in applying theories in solution of educational and psychological problems.

8262. STATISTICAL METHODS. (987057) (3 cr, \$PsyF 8112; prereq 8261; 0915-1015 MTWThF; MechE 18) 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, (787058) MacEachern

8777. THESIS CREDITS: MASTERS. (189140) (1-16 cr [max 11 cr per summer term])

8832. CLINICAL PRACTICE IN SCHOOL PSYCHOLOGY. (189957) (1-5 cr; prereq 8810 or PsyS 8310)
Supervised diagnosis and treatment of children referred to psychoeducational settings; training in broad range of

approaches to problems of adjustment in school-age children, their families, schools, and community settings.

8888. THESIS CREDITS: DOCTORAL. (089141) (1-36 cr [max 11 cr per summer term])

8900. RESEARCH PROBLEMS. (Cr and hrs ar; prereq #)

- Sec 22, (587059) psychological foundations, Davison
 Sec 24, (987060) psychological foundations, Maruyama
 Sec 27, (787061) psychological foundations, MacEachern
 Sec 32, (989620) special education, Deno
 Sec 33, (591533) special education, Rose
 Sec 36, (285483) special education, Wood
 Sec 37, (391534) counseling, Romano
 Sec 38, (590415) counseling, Hansen
 Sec 39, (789621) counseling, McCarthy
 Sec 41, (788601) special education
 Sec 42, (589622) special education, Knowlton
 Sec 46, (389623) counseling, Skovholt
 Sec 47, (889920) school psychology
 Sec 48, (590429) special education, Wilderson
 Sec 49, (990430) special education, York
 Sec 50, (790431) special education, Espin
 Sec 51, (191535) psychological foundations, Bart
 Sec 52, (091536) psychological foundations, Terwilliger

SECOND TERM

#5114. PSYCHOLOGY OF STUDENT LEARNING—July 24-August 14.

(388861) (3 cr, \$PsyF 5182; limited to 50 students; 1500-1730 MWF, BuH 123; 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 24-August 14.

(887083) (4 cr, \$PsyF 5183; 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.

#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 (191544) 0830-0950 F, Phys 150

#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, (191552) 1030-1230 MTWTh, Phys 150, Rest
 Sec 2, (091553) 1030-1230 MTWTh, Phys 131, LeCont

#5220. EDUCATIONAL MEASUREMENT IN THE CLASSROOM—July 27-31. (186408) (4 cr; limited to 25 students; \$PsyF 5120; 0800-1200 MTWThF, 1300-1500 MTWThF, Fairview Community Center, 1910 W County Rd B, Roseville, MN; S-N) 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.

#5229. CLASSROOM ASSESSMENT METHODS—August 3-14. (891554) (2 cr; limited to 100 students; prereq concurrent student participation in practice teaching or some similar field experience is strongly suggested; 1300-1440 MTWThF; Phys 131; A-F only) Terwilliger

See First Term.

#5260. INTRODUCTORY STATISTICAL METHODS. (187064) (4 cr, \$PsyF 5110; 0800-0900 MTWThF, BuH 123) Davenport, E

See First Term.

5401. COUNSELING PROCEDURES. (887066) (3 cr, \$PsyS 5110; 0915-1130 TTh; BuH 123; A-F only) Skovholt

For persons whose professional work includes counseling and interviewing; not for licensure as school counselor. Emphasis on counseling relationship and principles of interviewing; case studies, role-playing, and demonstration.

5608. PARENT AND PROFESSIONAL PLANNING FOR HANDICAPPED STUDENTS—July 23-August 7.

(190434) (3 cr, \$PsyS 5108; 0800-1015 MTWThF; BuH 120; A-F only)
 Study and demonstration of constructive approaches to cooperative 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 23-August 7. (090435) (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.

#5615. EDUCATIONAL INTERVENTIONS FOR LEARNING DISABILITIES. (189610) (3 cr; prereq 5612; limited to 30 students; 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.

5674. ORIENTATION AND MOBILITY TECHNIQUES FOR VISUALLY IMPAIRED STUDENTS—August 7-15.

(692074) (3 cr; \$PsyS 5124; 0900-1500 MTWThF; Rochester CEE; A-F only) Lhotka

Introduction to basic techniques to gain skills in precane techniques, orientation to learning environment, construction of cane, guide dog and telescopic aids to mobility.

5675. STRUCTURE AND FUNCTION OF THE EYE: EDUCATIONAL IMPLICATIONS—July 27-August 7.

(291557) (3 cr; \$PsyS 5175; 0900-1500 MTWThF; Rochester CEE; A-F only) Knowlton

Ophthalmological and educational considerations of anatomy and physiology of the eye and visual tract, visual screening, and functional visual efficiency.

5700. ASSESSMENT AND DECISION MAKING IN SPECIAL EDUCATION. (588860) (3 cr; \$PsyS 5200; 1030-1130 MTWThF; BuH 125; 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.

5701. PRACTICUM: SPECIAL EDUCATION. (Hrs ar; S-N only; prereq #)

Sec 30, (191558) Knowlton, off-campus

5900. INDEPENDENT STUDY. (Cr and hrs ar [max 12 cr]; prereq #; A-F only)

- Sec 21, (588616) psychological foundations, MacEachern
 Sec 40, (188862) special education
 Sec 41, (089611) special education, Deno
 Sec 44, (290442) counseling, Skovholt
 Sec 46, (991559) special education, Espin
 Sec 47, (291560) special education, Knowlton
 Sec 48, (191561) special education, Hupp
 Sec 50, (991562) psychological foundations, Terwilliger
 Sec 51, (791563) psychological foundations, Davenport
 Sec 52, (591564) psychological foundations, Tennyson, R.

8129. RESEARCH PROBLEMS: LEARNING AND COGNITION. (185444) (Cr ar; prereq #) R Tennyson
 Formulation of research designs.

8261. STATISTICAL METHODS.

(487068) (3 cr, \$PsyF 8111; prereq 8260; 0745-0900 MTWThF; MechE 18) MacEachern
 Foundations of statistical theory; practice in applying theories in solution of educational and psychological problems.

8263. DESIGN AND ANALYSIS OF EXPERIMENTS. (287069) (3 cr, \$PsyF 8113; prereq 8262 or PsyF 8112 or #;

0915-1015 MTWThF; MechE 18) 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)

Sec 22, (590446), MacEachern
 Sec 23, (390447), Davenport
 See First Term.

8777. THESIS CREDITS: MASTERS. (889447) (1-16 cr [max 11 cr per summer term])

8832. CLINICAL PRACTICE IN SCHOOL PSYCHOLOGY. (689921)

(1-5 cr; prereq 8810 or Psy 8310)
 Supervised diagnosis and treatment of children referred to psychoeducational settings; training in broad range of approaches to problems of adjustment in school-age children, their families, schools, and community settings.

8888. THESIS CREDITS: DOCTORAL. (689448) (1-36 cr [max 11 cr per summer term])

8900. RESEARCH PROBLEMS. (Cr and hrs ar; prereq #)

- Sec 22, (385443) psychological foundations, R Tennyson
 Sec 23, (687070) psychological foundations, Davison
 Sec 24, (487071) psychological foundations, MacEachern
 Sec 25, (391565) psychological foundations, Terwilliger
 Sec 40, (088863) special education
 Sec 41, (889612) special education, Deno
 Sec 45, (790445) psychological foundations, Davenport
 Sec 47, (489922) School Psychology
 Sec 48, (990444) counseling, Skovholt
 Sec 51, (191566) special education, Espin
 Sec 52, (091567) special education, Knowlton
 Sec 53, (891568) special education, Hupp

Electrical Engineering (EE)

4178 Electrical Engineering/Computer Science. 625-3300
 Institute of Technology

FIRST TERM

#1400. CIRCUITS LABORATORY. (1 cr; limited to 12 students; prereq IT student, 3009 or #3009)
 Laboratory to accompany EE 3009 and 3060.

Lab 1, (388214) 1300-1515 MW, EE/CSci 3160

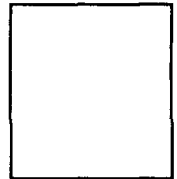
#3009. LINEAR CIRCUITS I. (688218)

(4 cr; limited to 90 students; prereq IT student; Math 3321 or #Math 3321, Phys 1281 or #Phys 1281; 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. (785066) (Cr and hrs ar; prereq Δ)

8450. SPECIAL INVESTIGATIONS. (585067) (1-4 cr; hrs ar; prereq #)

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SUMMER SESSION OFFICE
135 JOHNSTON HALL
101 PLEASANT ST S.E.
MPLS, MN 55455
ATTN: Registration

LIBERAL ARTS MAIL REGISTRATION

-----fold along this line-----

Print name (last, first, middle) and ID number or Social Security number.

COURSE(S)—First Choice (original registration)			
CALL NUMBER	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NUMBER, AND SECTION
041169	A-F	5	Math 1511-01

EXAMPLE

College of Enrollment	Street 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 cancel/add 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. →

ADVISER APPROVAL
(if needed)

ADDITIONAL APPROVAL
(if needed)

A22-otr 9/88

Print name (last, first, middle) and ID number or Social Security number.

COURSE(S)—First Choice (original registration)			
CALL NUMBER	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NUMBER, AND SECTION
748236	S-N	3	Comp 1011-02

EXAMPLE

College of Enrollment	Street 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 cancel/add 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. →

ADVISER APPROVAL
(if needed)

ADDITIONAL APPROVAL
(if needed)

REGISTRATION INSTRUCTIONS

See all definitions and guidelines on pages 22-30

In-person registration is open to all **academic year students** starting on *Thursday May 14, 1992*. Bring the *Course Request Form (Form A)* and the *blue health card* to your registration center.

In-person registration is open to all **summer-only students** starting on *Friday May 22, 1992*. Bring the *Course Request Form (Form A)*, the *blue health card* and *Form B* to the registration center.

Registration centers:

- Fraser Hall (East Bank, Mpls) - 8:00-6:00 Mondays, 8:00-4:00 T-F
- Coffey Hall (St. Paul campus) - 8:00-6:00 Mondays, 8:00-4:00 T-F

Mail-in registration is available for summer-only students in the College of Liberal Arts and for summer-only students, Adult Specials and M.Ed. students in the College of Education. **Mail registration is not available to academic year students.**

To register by mail, first see **all instructions and restrictions** on page 30. Then fill out Forms A and B and the health card and fold together in proper fashion to mail either to the Liberal Arts mail registration address or Education mail registration address. *Any incomplete registrations received in the mail will be returned and you will have to register in person.*

Hospitalization insurance	Student Hospitalization Insurance University of Minnesota	
	Summer Term I _____	Summer Term II _____
	Name (last, first, middle)	U of M I.D. Number
<p>If you are taking 3 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 3 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 _____

U of M Student ID Number (if any)	Social Security Number	Birthdate (mo/day/yr)
Student name (last,first,middle)		Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female
Street address	City/ State	Zip code
Permanent street address (if different from above)		Phone number
To which college are you submitting your request? (eg. CLA, IT, Education, etc...)		Summer Term/Year _ I _ II 19__

Student Status

Check all that apply:

- I have never attended the University of Minnesota.
- *I am currently in day school at the University of Minnesota. Campus/College _____ Major _____
- I have applied or been admitted to the University of Minnesota. Campus/College _____ Term/Yr _____
- *I was previously enrolled in a day school degree program at the University of Minnesota
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 of Minnesota.
- I am a high school student. High School/year _____
- I am currently enrolled in a degree program at another college/university.
College/university _____ Major _____

***IMPORTANT - Current and previously enrolled U of MN students: You must register in your last Twin Cities college of enrollment unless you have been admitted to another Twin Cities U of MN college.**

Request for confidential information

The University of Minnesota 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 in any way.

Predominant Ethnic Background

- Black (Afro-American, non-Hispanic origin)
- Chicano (Mexican-American)
- American Indian or Alaskan Native
- Other Hispanic origin
- Asian or Pacific Islander
- White, non-Hispanic origin
- International student (foreign student)

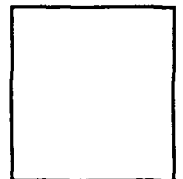
Standard Ethnic Categories Used by Reporting Offices

1. 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, other Hispanic origin).
2. 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.
3. 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 China, Japan, Korea, India, the Phillipine Islands, and Samoa.
4. 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 I-551/I-555), is to be reported in the appropriate ethnic categories along with U.S. citizens.
5. Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race.
6. White, non-Hispanic origin: 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
 approved for summer-only registration
 college code date
 college approval/stamp

for records office use only
 initials
 date

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EDUCATION STUDENT AFFAIRS OFFICE
1425 UNIVERSITY AVE S.E.
MPLS, MN 55414
ATTN: Registration

EDUCATION MAIL REGISTRATION

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8460. PLAN B PROJECT. (385068) (4 cr; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (689238) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189387) (1-36 cr [max 11 cr per summer term])

**FIRST AND SECOND TERMS:
TEN-WEEK COURSES
(Register once in Term I)**

#3003. CIRCUITS AND ELECTRONICS. (188215) (4 cr; limited to 50 students; not for EE majors; prereq IT student, Phys 1291, Math 3321 or #Math 3321; 0800-0900 MTWF; EE/CSci 3230)

Analysis of linear passive circuits; semiconductor principles, devices, and circuits. Applications to digital circuits, logic elements, microprocessors, and operational amplifiers.

#3004. CIRCUITS AND ELECTRONICS LABORATORY. (1 cr; each section limited to 14 students; no EE majors; prereq IT student, 3003 or #3003)

Lab 1, (088216) 1030-1245 M, EE/CSci 3160

Lab 2, (888217) 0800-1015 Th, EE/CSci 3160

#3012. SYSTEM DESIGN. (386219) (4 cr; limited to 50 students; upper division EE major, 3011, Math 3321; 1145-1245 MTWF; EE/CSci 3230; A-F only)

Continuous, discrete-time systems. Feedback: stability, applications.

#3062. ANALOG AND DIGITAL ELECTRONICS. (287850) (4 cr; limited to 65 students; prereq upper division EE, CSci, or ME major, 3061, 3351; 0915-1015 MTWF; EE/CSci 3230)

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.

#3111. ELECTROMAGNETIC WAVES. (187851) (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.

#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, (691393) 1030-1245 T, EE/CSci 2178

Lab 2, (888220) 1300-1515 W, EE/CSci 2178

Lab 3, (688221) 1300-1515 Th, EE/CSci 2178

#3402. JUNIOR ELECTRICAL ENGINEERING LABORATORY. (2 cr; each section limited to 12 students; prereq 3401, 3062 or #; A-F only)

Lab 1, (686226) 1300-1745 M, EE/CSci 3146

Lab 2, (486227) 1300-1745 T, EE/CSci 3146

Lab 3, (286228) 0800-1245 Th, EE/CSci 3146

3476. INDUSTRIAL ASSIGNMENT I. (786220) (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. (586221) (2 cr; prereq 3476)
See 3476.

#5002. DIGITAL SIGNAL PROCESSING. (987852) (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.

#5003. DIGITAL SIGNAL PROCESSING LABORATORY. (1 cr; each section limited to 12 students; prereq upper division EE maj, 3402 or #3402, 5002 or #)

Lab 1, (188800) 0800-1015 T, EE/CSci 2170

Lab 2, (088801) 1030-1245 T, EE/CSci 2170

#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, (185422) 0915-1245 Th, EE/CSci 3230

Sec 2, (985423) 0915-1245 Th, EE/CSci 3230

Sec 3, (188487) 0915-1245 Th, EE/CSci 3230

5478. INDUSTRIAL ASSIGNMENT III. (386222) (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. (186223) (2 cr; prereq 5478)
See 5478.

SECOND TERM

#1400. CIRCUITS LABORATORY. (787853) (1 cr; limited to 12 students; prereq IT student, 3009 or #3009; 1300-1515 MW; EE/CSci 3160)

#3010. LINEAR CIRCUITS II. (788226) (4 cr; limited to 75 students; prereq IT student; at least C grades in 3009, Math 3321, Phys 1291 or #Phys 1291; 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. (685223) (Cr and hrs ar; prereq Δ)

8450. SPECIAL INVESTIGATIONS. (585232) (1-4 cr; hrs ar; prereq #)

8460. PLAN B PROJECT. (587854) (4 cr; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (389329) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389475) (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

#3300. CHILDREN'S LITERATURE. (185413) (3 cr; limited to 35 students; 0800-0900 MTWThF, PeikH 165; A-F only) Phinney
Materials for children's reading in the elementary school program.

3604.¹ STUDENT TEACHING IN THE NURSERY SCHOOL. (885365) (3-6 cr; S-N only; prereq approval of major adviser and director of student tchg; hrs ar) Durgin

#5100. ELEMENTARY SCHOOL CURRICULUM—July 2-20. (685366) (3 cr; prereq 3101; limited to 35 students; 0915-1130 MTWThF, ClaOff B30; A-F only)
Selection and organization of subject matter for courses; methods, problems, and findings of research by subjects.

#5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—June 16-July 1. (085414) (3 cr; limited to 35 students; 0800-1015 MTWThF; ClaOff B36; 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.

#5140. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS—June 17-July 17. (188196) (3 cr; limited to 18 students; #CISy 5206; 1300-1600 MWF; 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.

#5145. CLASSROOM MANAGEMENT—June 16-July 2. (089625) (3 cr; limited to 40 students; #SeEd 5145; prereq tchg or admin exper or #; 1300-1515 MTWThF; PeikH 155; 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 17-July 20. (792051) (1-6 cr [max 6 cr]; limited to 20 students; 1145-1515 MW; PeikH 165; A-F only) Avery, 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 SeEd 5225.

#5300. LITERATURE FOR THE ELEMENTARY SCHOOL. (485367) (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.

#5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOLS—June 16-July 1. (388195) (3 cr; limited to 35 students; prereq 3316 or elem tchg exper; 0915-1130 MTWThF; PeikH 165; A-F only) Phinney
Improvement of instruction; study of trends in English education.

#5318. CREATIVE WRITING FOR AND BY CHILDREN—June 16-July 1. (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, (285368) 1300-1515

MTWThF, FolH 306, Monson

Sec 2, (488477) 1300-1515

MTWThF, FolH 218, Dykstra

5319. TEACHING SECOND LANGUAGES AND CULTURES IN ELEMENTARY SCHOOLS—June 16-29. (287072) (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.

#5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES. (890226) (3 cr; limited to 15 students; prereq 5334; 0800-0900 MTWThF; PeikH 25 and off campus location to be announced; A-F only) Taylor
Relationship to psychological factors and remedial correction. Concurrent registration in 5336 required.

#5336. CLINICAL PRACTICE IN REMEDIAL TEACHING. (885124) (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) Taylor
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.

#5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES—June 16-July 1. (490228) (3 cr; limited to 25 students; 1300-1545 MTWThF; PeikH 365; A-F only) Finley
Experiences in the use of educational materials and media common to the teaching of modern elementary school science.

■5361. TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL.

(290229) (3 cr; prereq 3101 or equiv; limited to 30 students; 1145-1515 TTh; PeikH 165; A-F only) Avery
Content and organization of social studies programs; programs of understanding, improving the learning situation, and effective use of materials.

■5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION—June 16-July 2. (689627) (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; S-N only; hrs ar)

Sec 21, (185369) Dykstra
Sec 23, (485370) Stochl
Sec 25, (285371) Monson
Sec 27, (185372) Taylor
Sec 28, (690230) Finley
Sec 29, (490231) Avery
Sec 30, (188828) Jackson
Sec 31, (489628) Hansen
Sec 32, (191754) Phinney

*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.

8916. PROBLEMS: TEACHING ENGLISH. (Cr and hrs ar; prereq #)

Sec 21, (385412) Dykstra
Sec 22, (885415) Monson
Sec 23, (991755) Phinney

8931. PROBLEMS: TEACHING READING. (190233) (Cr and hrs ar; prereq 5331 or SeEd 5344 and #) Taylor**8976. PROBLEMS: TEACHING KINDERGARTEN.** (289629) (3 cr; prereq #; hrs ar) Hansen**8991. PROBLEMS: IMPROVEMENT OF INSTRUCTION.**

(Cr and hrs ar; prereq #)
Sec 21, (985373) Dykstra
Sec 23, (585375) Stochl
Sec 25, (385376) Monson
Sec 27, (185377) Taylor
Sec 28, (290232) Finley
Sec 30, (489631) Jackson
Sec 31, (689630) Hansen
Sec 32, (791756) Phinney

SECOND TERM**■5100. ELEMENTARY SCHOOL CURRICULUM—July 23-August 7.** (491766) (3 cr; prereq 3101; limited to 35 students; 1030-1245 MTWThF; PeikH 46; A-F only)
See First Term.**■5101. WORKSHOP: PROGRAMS AND PROCEDURES OF CURRICULUM DEVELOPMENT: Classroom Management and Discipline—August 3-14; Sept. 17; Oct. 1.** (990234) (1-3 cr; limited to 30 students; prereq elementary teaching experience, #; 1300-1600 MTWThF; Aug 3-14; 1600-2000 Sept 17, Oct 1; PeikH 215 and off-campus; A-F only) Hansen

This 3-credit offering will deal specifically with problems unique to urban settings, will include a cross-discipline approach through the use of appropriate resource personnel, and will meet prior to the start of schools to ensure that teachers will have strategies to get the first days and weeks off to a good start. Several follow-up sessions will be held in the fall. Meets off-campus after first week. Intended for elementary teachers in urban schools. Not applicable to elem. Med majors.

■5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 23-August 7. (886547) (3 cr; limited to 35 students; 0800-1015 MTWThF; PeikH 28; A-F only) Park
See First Term.**■5227. TEACHING ABOUT THE NEWSPAPER IN THE CLASSROOM—July 27-August 7.** (891764) (1-3 cr [max 4 cr]; \$SeEd 5227; limited to 20 students; 1145-1515 MTWThF; PeikH 165; 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.**■5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL—July 23-August 7.** (289632) (3 cr; prereq 9 credits in education; limited to 35 students; 1300-1515 MTWThF; PeikH 155; A-F only) Watts
Objectives, materials, and teaching procedures; current practices and curricula; class and individual projects.**■5334. READING DIFFICULTIES—July 23-August 7.** (686548) (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.**■5338. TEACHING READING IN THE INTERMEDIATE GRADES—July 23-August 7.** (691765) (3 cr; limited to 35 students; prereq 3331 or elem teaching experience or #; 1030-1245 MTWThF; PeikH 155; A-F only) Watts
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.**5602. PRACTICUM: IMPROVEMENT OF TEACHING.** (3 cr; prereq MEd student in elem education; S-N only; hrs ar)

Sec 21, (486549) Jackson
Sec 26, (289050) Manning
Sec 29, (191768) Avery
Sec 32, (291767) Watts

8931. PROBLEMS: TEACHING READING. (Cr and hrs ar; prereq 5331 or SeEd 5344 and #) Manning
Sec 21, (191771) Manning
Sec 22, (991769) Watts**8991. PROBLEMS: IMPROVEMENT OF INSTRUCTION.** (Cr and hrs ar; prereq #)

Sec 21, (886550) Jackson
Sec 26, (189051) Manning
Sec 32, (291770) Watts

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.** (990914) (Cr. ar; A-F only)

5303. ADVANCED CLINICAL ENDODONTICS. (386561) (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. (790915) (1 cr; S-N only)

5313. ADVANCED ENDODONTIC EMERGENCY PROBLEMS. (186562) (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. (590916) (1 cr; S-N only)

5333. REVIEW OF CASES. (086563) (1 cr; S-N only)
Students present cases from the previous quarter for review by endodontic faculty and graduate students.

8004. RESEARCH IN ENDODONTICS. (886564) (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. (686565) (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. (489144) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (489449) (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

■1005. INTRODUCTION TO LITERATURE. (185427) (4 cr; limited to 38 students; 0800-0900 MTWThF; LindH 305) Staff
Understanding and enjoying literature. Readings of novels, short stories, poems, and plays.

■1016. INTRODUCTION TO AMERICAN LITERATURE. (090340) (4 cr; limited to 38 students; 0915-1015 MTWThF; LindH 305) Staff
Critical discussion and of writing about selected works of American literature. Typical authors: Poe, Hawthorne, Whitman, Dickinson, Twain, Frost, Fitzgerald, Hurston.

■1591. LITERATURE OF AMERICAN MINORITIES. (690342) (4 cr; limited to 38 students; 1030-1130 MTWThF; LindH 305) Staff
Representative works by Afro-American, American Indian, Asian American, and Chicano/Chicana writers. Examination of relevant social factors.

■1671. THE SHORT STORY. (191463) (4 cr; limited to 38 students; 1145-1245 MTWThF; LindH 229) 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.

■3008. TECHNIQUES OF LITERARY STUDY. (689692) (4 cr; limited to 30 students; 0915-1145 MW; LindH 302) Brown
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.

■3241. SHAKESPEARE. (885687) (4 cr; \$3243; limited to 30 students; 0915-1055 MWF; AmundH 162) 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.

■3242. SHAKESPEARE. (991464) (4 cr; \$3243; limited to 30 students; 0800-1030 TTh; MurH 311) Luke
Plays from the middle and late periods. All sections read *King Lear*, *Macbeth*, *The Tempest*, and two or three others.

■3455. AMERICAN SHORT STORY. (489693) (4 cr; limited to 30 students; 1030-1210 MWF; MurH 311) Solotaroff
Typical authors: Irving, Poe, Hawthorne, Twain, Crane, Cather, Faulkner, Welty, Bellow.

■3851. THE ENGLISH LANGUAGE. (289694) (4 cr; \$5851; limited to 76 students; 0915-1015 MTWThF; AmundH 240) MacLeish

The English language: its structure (phonetics, phonology, morphology, syntax, semantics) and use (pragmatics, dialect variation, and first language acquisition).

3963H. HONORS THESIS. (087096) (4 cr; prereq honors candidacy in English and consent of English honors adviser)

3970. DIRECTED STUDIES. (587935) (1-15 cr per term; prereq #, Δ, □)
Guided individual reading or study.

3980. DIRECTED INSTRUCTION. (387094) (Cr ar; prereq #, Δ, □)

■5134. 20TH-CENTURY BRITISH POETRY. (791465) (4 cr; prereq grad stud or Engl major or Δ; limited to 38 students; 0915-1145 TTh; LindH 215) Browne
Major figures; historical and intellectual background; poetic theory. Typical

authors: Hardy, Housman, Hopkins, Yeats, Eliot, S. Smith, Thomas, Larkin, Hughes.

#5152. 19TH-CENTURY ENGLISH NOVEL. (190345) (4 cr; limited to 38 students; 1100-1330 TTh; AmundH 116) Luke

Novels by such authors as Scott, Dickens, the Brontes, Thackeray, Eliot, Hardy.

#5221. CHAUCER: THE CANTERBURY TALES. (085428) (5 cr; limited to 38 students; prereq grad stu or engl undergrad maj or Δ; 1145-1245 MTWThF; LindH 203) MacLeish Reading *The Canterbury Tales*; Chaucer's language. Prerequisite to all other courses in Middle English literature (5215-5222).

#5261. MILTON. (491461) (4 cr; prereq grad stu or Engl maj or Δ; limited to 38 students; 0800-1030 MW; LindH 217) Haley *Paradise Lost, Samson Agonistes*, minor poems, *Arcopagitica*, and often *Paradise Regained*.

#5451. 19-TH-CENTURY AMERICAN NOVEL. (291462) (4 cr; prereq grad stu or Engl major Δ; limited to 38 students; 1030-1300 WF; LindH 215) Ross Typical authors: Cooper, Hawthorne, Melville, Stowe, Twain, Chopin, James.

5597. SUMMER INSTITUTE FOR TEACHERS: HARLEM RENAISSANCE. Art and Culture in the 1920's—June 22-July 2. (092122) (4 cr; 0930-1200 MTWThF; SocSci 815) Wright Meets with Afro 5597. See page 11 for details.

#5714. MODERN AND CONTEMPORARY CRITICAL THEORY. (392120) (4 cr; limited to 38 students; prereq grad stu cr Engl maj cr Δ; 1030-1300 WF; LindH 217) Mowitt Readings in modern and postmodern literary criticism; contemporary movements, theory and practice.

5920. SUMMER INSTITUTE FOR TEACHERS: Intercultural Studies in Literature—June 22-July 2. (892123) (4 cr; 0900-1200 MTWThF; Arch 50) Sugnet See page 11 for details.

5970. TOPICS: MELUS Institute—July 13-17. (392165) (cr ar) Special opportunity for teachers to attend a summer institute sponsored by the Society for the Study of Multi-Ethnic Literature of the United States (MELUS) and work on curriculum development for a new, four-year, multicultural, gender-fair, reader-response literature program to be published by D.C. Health. Institute expenses (including travel to and from) will be paid. Faculty include Rich Beach (Curriculum and Instruction), Charlie Sugnet (English), Paul Lauter (English, Trinity College). Very limited number of openings. Apply by April 1, 1992. For application, write to: 1992 MELUS Institute, % Carol Ann Dickinson, 135 Johnston Hall, University of Minnesota, Minneapolis, MN 55455.

#8240. SHAKESPEARE. (192121) (4 cr; 0800-1030 MW; LindH 216) Staff

8888. THESIS CREDITS: DOCTORAL. (789389) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT READING. (387936) (1-15 cr; prereq #, Δ)

SECOND TERM

#1005. INTRODUCTION TO LITERATURE. (885429) (4 cr; limited to 38 students; 1300-1400 MTWThF; LindH 305) Staff See First Term.

#1013. FAMOUS ENGLISH AND AMERICAN POEMS. (391467) (4 cr; limited to 38 students; 1145-1245 MTWThF; LindH 305) Staff Shorter poems by English and American poets, ranging from the Renaissance to the present. An introduction to the reading of poetry; introduction to poems traditionally thought basic to English and American literature.

#1019. INTRODUCTION TO MODERN DRAMA. (191468) (4 cr; limited to 38 students; 1030-1130 MTWThF; LindH 305) Staff Critical discussion of and writing about selected modern plays. Typical authors: Ibsen, Shaw, Synge, Chekhov, O'Neill, Williams, Beckett.

#1591. LITERATURE OF AMERICAN MINORITIES. (689689) (4 cr; limited to 38 students; 0915-1015 MTWThF; LindH 305) Staff See First Term.

#1621. INTRODUCTION TO WOMEN WRITERS. (091469) (4 cr; limited to 38 students; 0800-0900 MTWThF; LindH 305) Staff Works by several major women writers writing in English.

#3241. SHAKESPEARE. (692124) (4 cr; limited to 38 students; \$3243; 0915-1145 TTh, AmundH 120) Staff Plays from Shakespeare's early and middle periods. All sections read *A Midsummer Night's Dream, Hamlet*, a history play, two or three others.

#3455. AMERICAN SHORT STORY. (492125) (4 cr; limited to 38 students; 0915-1015 MTWThF; EE/CSci 3111) Staff Typical authors: Irving, Poe, Hawthorne, Twain, Crane, Jewett, Cather, Faulkner, Welty, Bellow, Oates.

#3851. THE ENGLISH LANGUAGE. (688803) (4 cr; limited to 76 students; \$5851; 0915-1145 MW; AmundH 240) Anson

The English language: its structure (phonetics, phonology, morphology, syntax, semantics) and its use (pragmatics, dialect variation, and first language acquisition).

#3960. JUNIOR-SENIOR SEMINAR: Language and Gender. (191471) (4 cr per qtr; limited to 15 students; 1030-1300 TTh; LindH 215; prereq English major, jr or sr, completion of 3xxx composition requirement, Δ; Comp 3011 or Comp 3012 or Comp 3013 highly recommended) Escure

3961. SENIOR PAPER. (089690) (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)

3963H. HONORS THESIS. (887097) (4 cr; prereq honors candidacy in English and consent of English honors adviser)

3970. DIRECTED STUDIES. (187937) (1-15 cr per term; prereq #, Δ, □) Guided individual reading or study.

3980. DIRECTED INSTRUCTION. (187095) (Cr ar; prereq #, Δ, □)

#5151. 18TH-CENTURY ENGLISH NOVEL. (590348) (4 cr; limited to 38 students; prereq grad stu or engl maj or Δ; 0915-1145 MW; LindH 215)

Weinsheimer Novels by such authors as Defoe, Richardson, Fielding, Smollett, Sterne, Austen.

#5452. 20TH-CENTURY AMERICAN NOVEL: Late 19th and 20th Centuries. (292126) (4 cr; prereq grad stu or Engl maj or Δ; 0915-1055 MWF; MurH 308) Geffen

Typical authors: James, Dreiser, Cather, Hemingway, Fitzgerald, Faulker, Ellison

8888. THESIS CREDITS: DOCTORAL. (189476) (1-36 cr [max 11 cr per summer term])

8970. INDEPENDENT READING. (087938) (1-15 cr; prereq #, Δ)

Entomology (Ent)

219 Hodson Hall, St. Paul. 624-3278 College of Agriculture

FIRST TERM

5910. SPECIAL PROBLEMS IN ENTOMOLOGY. (188451) (Cr ar; prereq #) Staff

Individual field, laboratory, or library studies in various areas of entomology.

8500.* RESEARCH IN ENTOMOLOGY. (885317) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (689241) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189390) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5910. SPECIAL PROBLEMS IN ENTOMOLOGY. (988452) (Cr ar; prereq #) Staff See First Term.

8500.* RESEARCH IN ENTOMOLOGY. (486289) (Cr ar; prereq #; S-N only) Staff

8777. THESIS CREDITS: MASTERS. (589331) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089477) (1-36 cr [max 11 cr per summer term])

F

Family Practice and Community Health (FPCH)

6-240 Phillips-Wangenstein Building. 624-2622 Medical School

SPECIAL TERM: JULY 1-SEPTEMBER 26

Required Courses

8201. CLINICAL FAMILY MEDICINE. (386611) (Cr ar; hrs ar) Ciriacy, staff

8207. SEMINAR: COMMON DISEASES SEEN IN FAMILY PRACTICE. (286617) (1 cr; hrs ar) Ciriacy, staff

8208. FAMILY MEDICINE CONFERENCES. (186612) (1 cr; hrs ar) Ciriacy, staff

8209. FAMILY MEDICINE X-RAY CONFERENCE. (186618) (1 cr; hrs ar) Ciriacy, staff

8210. FAMILY MEDICINE GRAND ROUNDS. (086613) (0-1 cr; hrs ar) Asp, staff

8212. CLINICAL PSYCHIATRY ROUNDS. (886614) (1 cr; prereq 1st yr resident in family practice; hrs ar) Kelly, staff

Elective Courses

5955. DIRECTED STUDY. (685531) (1-15 cr; prereq #; hrs ar) Coleman

5960. BASIC RESEARCH METHODS SEMINAR AND PRACTICUM. (788212) (4 cr; hrs ar) Kelly, staff

5967. INTRODUCTION TO HEALTH DATA SYSTEMS. (687909) (ar cr; prereq completion of first yr residency in family practice and community health or #) Krogh

5968. COMPUTERS IN THEORY AND PRACTICE. (785424) (Cr ar) Gepner

8205. MEDICAL RECORDS SYSTEMS. (585425) (2 cr; hrs ar) Ciriacy, Kelly

8223. INTRODUCTION TO GERONTOLOGY, GERIATRIC MEDICINE. (087941) (2 cr; prereq 2nd yr FPCH resident or #; 1300-1630 Th; 0830-1600 F; Ebenezer Society) Keenan

8253. RESEARCH PROBLEMS. (986619) (Cr ar; hrs ar) Kelly, staff

Family Social Science (FSoS)

290 McNeal Hall. 625-1900 College of Human Ecology

FIRST TERM

#1001. DYNAMICS OF FAMILY RELATIONSHIPS. (888489) (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. (188764) (4 cr; 1300-1530 TTh; McNH 197) Smith 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.

3260. FAMILY RESOURCE MANAGEMENT. (791420) (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.

5220. FAMILY ECONOMICS. (188490) (4 cr; prereq 3260 or #; 1300-1530 MW; 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. (785374) (1-5 cr [max 16 cr]) Staff

5251. AGING FAMILIES. (390450) (4 cr; prereq 5200 or SW 5024 or equiv; 1300-1530 TTh; McNH 198) Detzner Aging families examined as complex developing systems interacting with a changing social structure. Marital relationships, role changes, and family caregiving issues are studied.

8222. INTERNSHIP IN TEACHING COLLEGE LEVEL FAMILY COURSES II. (391033) (2-6 cr; prereq 8221) Maddock

8223. INTERNSHIP IN TEACHING COLLEGE LEVEL FAMILY COURSES III. (191034) (2-6 cr; prereq 8222) Maddock

8230. DIRECTED STUDY. (190448) (1-7 cr; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (089205) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689207) (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. (888766) (5 cr [max 15 cr]; prereq 5231, human relationships maj; 1000-1130 T; McNH 375; S-N only) Goodman

8553. INTERNSHIP IN MARITAL AND FAMILY THERAPY III. (989956) (7 cr; prereq 8214, 8215, family therapy intern; 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

3600. FAMILY ISSUES ACROSS THE LIFESPAN. (192071) (5 cr; prereq Psy 1001, Soc 1001; 0845-1200 MW; McNH B3) Maddock Major family theories serve as frameworks to analyze selected problems confronting families throughout the lifespan.

5200. FAMILY RELATIONSHIPS. (188756) (5 cr; prereq Psy 1001, Soc 1001; 0830-1145 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. (591418) (4 cr; prereq Psy 1001, introductory sociology or #; 1300-1530 MW; McNH 33) 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. (186660) (1-5 cr [max 16 cr]) Staff

5500. RACIAL AND ETHNIC DIVERSITY IN FAMILIES. (391419) (4 cr; prereq 5200; 0900-1130 MW; 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. (091035) (2-6 cr; prereq 8221)

8223. INTERNSHIP IN TEACHING COLLEGE LEVEL COURSES III. (891036) (2-6 cr; prereq 8222)

8230. DIRECTED STUDY. (190451) (1-5 cr; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (389458) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189459) (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 27.

FIRST TERM

#3000. FINANCE FUNDAMENTALS. (185341) (4 cr, \$MBA 8040; limited to 50 students; prereq Acct 1025; 0900-1030 MTWTh; BlegH 215; A-F only) 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).

#3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS. (985342) (4 cr, \$8300; limited to 40 students; prereq 3000; 0830-1030 TWF; BlegH 205) Dym 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)

#8150. THEORY OF FINANCE. (191664) (4 cr; limited to 20 students; prereq MBA 8040 or #, grad mgmt/IR student or Grad Sch Mgmt approval; 1730-2100 W; BlegH 420; A-F only) Alexander Rigorous introduction to modern theory of finance. Discussion of, *inter alia*, capital budgeting, capital structure, dividend policy, asset pricing, application of option pricing to corporate finance, and efficiency of financial markets.

#8200. FINANCIAL MARKETS AND INTEREST RATES. (288884) (4 cr; limited to 20 students; prereq MBA 8040 or #, grad mgmt 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.

#8400. INTERNATIONAL FINANCIAL MANAGEMENT. (492075) (4 cr; prereq 8150 or #, grad mgmt student or grad SMgt approval; 1730-2100 W; BlegH 425) Hess Implications of modern finance theory for multinational corporation. Discussion, for background, of alternative exchange rate regimes and risks each regime imposes on the multinational and how different international risks influence basic corporate financial decisions.

SECOND TERM

#3000. FINANCE FUNDAMENTALS. (686307) (4 cr, \$MBA 8040; limited to 50 students; prereq Acct 1025; 0900-1030 MTWTh; BlegH 105; A-F only) Lee See First Term.

Fisheries and Wildlife (FW)

200 Hodson Hall, St. Paul. 624-3600
College of Natural Resources

FIRST TERM

5393. SPECIAL PROBLEMS IN FISHERIES BIOLOGY. (685318) (Cr ar; prereq #) Staff Individual field, library, and laboratory research in various lines of fisheries biology.

5398. SPECIAL PROBLEMS IN WILDLIFE BIOLOGY. (485319) (Cr ar; prereq #) Staff Individual field, library, and laboratory research in various areas of wildlife biology.

8364.* RESEARCH IN FISHERIES BIOLOGY. (885320) (Cr ar; prereq fisheries grad) Staff

8377.* RESEARCH IN WILDLIFE BIOLOGY. (685321) (Cr ar; prereq wildlife grad) Staff

8777. THESIS CREDITS: MASTERS. (289209) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489211) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3600. FISHERIES AND WILDLIFE FIELD TECHNIQUES—August 26-September 19. (688493) (5 cr; prereq 3052, Δ; offered at Itasca) 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. (886290) (Cr ar; prereq #) Staff See First Term.

5398. SPECIAL PROBLEMS IN WILDLIFE BIOLOGY. (686291) (Cr ar; prereq #) Staff See First Term.

8364.* RESEARCH IN FISHERIES BIOLOGY. (486292) (Cr ar; prereq fisheries grad) Staff

8377.* RESEARCH IN WILDLIFE BIOLOGY. (286293) (Cr ar; prereq wildlife grad) Staff

8777. THESIS CREDITS: MASTERS. (589460) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389461) (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. (889190) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489192) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (489452) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289453) (1-36 cr [max 11 cr per summer term])

Food Science and Nutrition (FScN)

225 Food Science and Nutrition,
St. Paul. 624-1290
Colleges of Agriculture and Human Ecology

FIRST TERM

#1612. PRINCIPLES OF NUTRITION. (688767) (4 cr; limited to 100 students; prereq HS Chem and Biol; 0800-1015 MWF, 0915-1015 TTh; 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.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (485322) (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.

5404. CURRENT ISSUES IN FOOD AND NUTRITION—June 29-July 13. (189624) (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. (285323) (1-5 cr; prereq Δ; hrs ar) Staff
Independent study and written reports.

8621. INDEPENDENT STUDY: NUTRITION. (185324) (1-9 cr; prereq #; hrs ar) Staff
Independent study and written reports.

8777. THESIS CREDITS: MASTERS. (989200) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389203) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (186294) (1-5 cr [may be repeated for cr]; prereq Δ; hrs ar) Staff
See First Term.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (986295) (1-5 cr; prereq Δ; hrs ar) Staff
See First Term.

8403. ADVANCED TOPICS IN FOOD SCIENCE. (088491) (3 cr; prereq #; 0800-1100 MTW; ABLMS 222)
Review of recent research in food science.

8621. INDEPENDENT STUDY: NUTRITION. (786296) (1-9 cr; prereq #; hrs ar) Staff
See First Term.

8777. THESIS CREDITS: MASTERS. (789456) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589457) (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. (688770) (1-54 cr; prereq □)

3490. INSTITUTE OF EUROPEAN STUDIES PROGRAM AT THE UNIVERSITY OF SINGAPORE. (488771) (1-45 cr; prereq □)

3590. INSTITUTE OF EUROPEAN STUDIES INTERNATIONAL BUSINESS MANAGEMENT PROGRAM IN DIJON. (291445) (1-24 cr; prereq □)

3620. COUNCIL ON INTERNATIONAL EDUCATIONAL EXCHANGE JAPANESE BUSINESS AND SOCIETY PROGRAM. (190806) (1-24 cr; prereq □)

3680. COUNCIL ON INTERNATIONAL EDUCATIONAL EXCHANGE BUSINESS AND SOCIETY PROGRAM IN SEVILLE, SPAIN. (090807) (1-26 cr; prereq □)

3820. DENMARK'S INTERNATIONAL BUSINESS STUDIES PROGRAM IN COPENHAGEN. (288772) (1-36 cr; prereq □)

Foreign Study (FoSt)

260 Social Sciences. 624-4525
College of Liberal Arts

FIRST TERM

0010. STUDY ABROAD. (787920) (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. (991447) (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.

3280. CIC SUMMER PROGRAM IN GUANAJUATO, MEXICO. (791448) (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. (591449) (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's prior college French or equivalent required.

3420. IES PROGRAM IN LONDON. (988774) (1-54 cr; prereq Δ)
Semester or academic year at Institute of European Studies London Center. Students choose between two tracks: social sciences or humanities. Includes tutorial. For academic year students, spring semester centers on business or parliamentary internship. Six-week summer program with more limited curriculum.

3430. IES PROGRAM IN NANTES, FRANCE. (991450) (1-54 cr; prereq Δ)
Semester or year, entirely in French, in Nantes. Institute of European Studies courses supplemented by opportunities to take regular University of Nantes courses. Course offerings emphasize French language, literature, and area studies. Some internships available.

Six-week summer program with more limited curriculum.

3440. IES PROGRAM IN PARIS. (788775) (1-54 cr; prereq Δ)
Semester or year study in courses offered by Institute of European Studies. Curriculum includes French language and literature, history, political science, economics, art history. Opportunities to take regular courses at Paris universities. Some internships available. Six-week summer program with more limited curriculum.

3450. IES PROGRAM IN MADRID. (588776) (1-54 cr; prereq Δ)
Semester or year study in courses offered by Institute of European Studies. Curriculum includes Spanish language and literature, history, and social science studies. Opportunities to take regular University of Madrid courses. Six-week summer program with more limited curriculum.

3460. IES PROGRAM IN VIENNA. (388777) (1-54 cr; prereq Δ)
Semester or year study in English at Vienna Center of Institute of European Studies. Curriculum emphasizes arts, Eastern Europe and East-West studies, business/economics, and required intensive German instruction. Advanced students of German may also take University of Vienna courses. Some internships available. Six-week summer program with more limited curriculum.

3600. CIEE; SUMMER/SEMESTOR PROGRAM IN THE SOVIET UNION. (090077) (1-27 cr; prereq Δ)
Fall or spring semester at St. Petersburg State University or summer at St. Petersburg, Novosibirsk (for science students), or Kalinin, under auspices of Council on International Education Exchange. Intensive language study supplemented by lecture series on USSR, local excursions, and field trip to other regions. Instruction by Soviet faculty.

3730. CIEE TROPICAL BIOLOGY PROGRAM IN COSTA RICA. (791451) (1-10 cr; prereq Δ)
Summer program in tropical biology, under auspices of Council on International Educational Exchange. Based at the Monteverde Institute, located in a cloud forest in northwestern Costa Rica. Curriculum includes core courses in tropical biology (taught in English), Spanish language instruction, and a field research project.

3820. DENMARK'S INTERNATIONAL STUDY PROGRAM. (090127) (1-54 cr; prereq Δ)
Semester or year of study in Copenhagen. Three curricula offered: liberal arts, architecture and design, international business and economics. All three tracks also offer Danish language courses. All instruction is in English by Danish faculty, mostly from University of Copenhagen. Two summer programs are offered: Architecture and Design (10 weeks), and an interdisciplinary program entitled "Europe in Transition" (10 weeks).

SECOND TERM

0010. STUDY ABROAD. (087924) (prereq Δ; S-N only)
See First Term.

Foreign Study SPAN (FSSP)

107 Nicholson Hall. 626-1083
College of Liberal Arts

FIRST TERM

5960. PREPARATORY SEMINAR FOR SPAN OVERSEAS RESEARCH. (6 cr; prereq approval before Nov 1990 by a faculty selection committee; A-F only)
Sec 1 (188627) Botswana, O'Toole
Sec 2 (690871) Italy, Blue
Sec 3 (090872) Thailand, Buckstead
Sec 4 (890873) Turkey, Huff
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.

SECOND TERM

5970. PREPARATORY SEMINAR FOR SPAN OVERSEAS RESEARCH. (6 cr; prereq satisfactory completion of first term; A-F only)
Sec 1 (188599) Botswana, O'Toole
Sec 2 (690874) Italy, Blue
Sec 3 (490875) Thailand, Buckstead
Sec 4 (290876) Turkey, Huff
Summer directed field study in Botswana, Italy, Thailand or Turkey under the guidance of a SPAN faculty adviser accompanying each country group. Each student writes a comprehensive research paper upon return.

Forest Products (ForP)

203 Kaufert Laboratory, St. Paul.
624-9219
College of Natural Resources

FIRST TERM

8300.* RESEARCH PROBLEMS. (886645) (Cr ar) Staff

8301.* RESEARCH PROBLEMS. (686646) (Cr ar) Staff

8302.* RESEARCH PROBLEMS. (486647) (Cr ar) Staff

FIRST AND SECOND TERM: TEN-WEEK COURSES (Register once in Term I)

3301. INDUSTRIAL INTERNSHIP. (187168) (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. (387211) (prereq sr, #) (Cr ar)

SECOND TERM

8300.* RESEARCH PROBLEMS. (286620) (Cr ar) Staff

8301.* RESEARCH PROBLEMS. (186621) (Cr ar) Staff

8302.* RESEARCH PROBLEMS. (986622) (Cr ar) Staff

Forest Resources (FR)

115 Green Hall, St. Paul. 624-3400
College of Natural Resources

FIRST TERM

3225. DIRECTED STUDY EXPERIENCE. (986457) (1-5 cr; prereq #)

5225. DIRECTED STUDY EXPERIENCE. (190944) (1-5 cr; prereq #)

8100.* RESEARCH PROBLEMS: SILVICULTURE. (286648) (Cr ar) Alm, Scholten

8101.* RESEARCH PROBLEMS: FOREST-TREE PHYSIOLOGY. (186649) (Cr ar) Sucoff

8102.* PROBLEMS: FOREST-TREE GENETICS. (486650) (Cr ar) Mohn, Furnier

8103.* RESEARCH PROBLEMS: FOREST HYDROLOGY. (286651) (Cr ar) Brooks, Perry

8105. ADVANCED FIELD SILVICULTURE. (086658) (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.

8200.* RESEARCH PROBLEMS: FOREST MANAGEMENT. (186652) (Cr ar) Rose, Blinn, Hoganson

8201.* RESEARCH PROBLEMS: FOREST ECONOMICS. (986653) (Cr ar) Skok, Ellefson, Gregersen, Rose, Blinn

8202.* RESEARCH PROBLEMS: FOREST BIOMETRY. (786654) (Cr ar) Ek, Burk

8203.* RESEARCH PROBLEMS: FOREST RECREATION. (586655) (Cr ar) Anderson, Lime

8204.* RESEARCH PROBLEMS: FOREST POLICY. (386656) (Cr ar) Skok, Ellefson, Gregersen, Baughman

8205.* RESEARCH PROBLEMS: REMOTE SENSING. (186657) (Cr ar) Bauer, Martin, Queen

8207. ECONOMIC ANALYSIS OF FORESTRY PROJECTS. (691037) (3 cr; limited to 10 students; prereq #) Gregersen

SECOND TERM

3225. DIRECTED STUDY EXPERIENCE. (087972) (1-5 cr)

5225. DIRECTED STUDY EXPERIENCE. (990945) (1-5 cr)

8100.* RESEARCH PROBLEMS: SILVICULTURE. (786623) (Cr ar) Alm, Scholten

8101.* RESEARCH PROBLEMS: FOREST-TREE PHYSIOLOGY. (586624) (Cr ar) Sucoff

8102.* PROBLEMS: FOREST-TREE GENETICS. (386625) (Cr ar) Mohn, Furnier

8103.* RESEARCH PROBLEMS: FOREST HYDROLOGY. (186626) (Cr ar) Brooks, Perry

8200.* RESEARCH PROBLEMS: FOREST MANAGEMENT. (086627) (Cr ar) Rose, Blinn, Hoganson

201.* RESEARCH PROBLEMS: FOREST ECONOMICS. (886628) (Cr ar) Skok, Ellefson, Gregersen, Rose, Blinn

8202.* RESEARCH PROBLEMS: FOREST BIOMETRY. (686629) (Cr ar) Ek, Burk

8203.* RESEARCH PROBLEMS: FOREST RECREATION. (086630) (Cr ar) Anderson, Lime

8204.* RESEARCH PROBLEMS: FOREST POLICY. (886631) (Cr ar) Skok, Ellefson, Gregersen, Baughman

8205.* RESEARCH PROBLEMS: REMOTE SENSING. (686632) (Cr ar) Bauer, Martin, Queen

SPECIAL TERM OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION—AUGUST 26-SEPTEMBER 15

83100. MINNESOTA PLANTS. (2 cr; each section limited to 20 students; prereq Biol 1103, Δ; offered at Itasca) Identification of plants as related to habitat.

Sec 1, (486633) Staff

Sec 2, (286634) Staff

Sec 3, (186635) Staff

Sec 4, (986636) Staff

83101. FIELD FOREST ECOLOGY. (3 cr; each section limited to 15 students; prereq Chem 1001 or 1004, Δ; offered at Itasca)

Field examination of succession, soils, silvical characteristics, tree classification, stand structure, and the ecology of regeneration.

Sec 1, (786637) Sucoff, Kurmis

Sec 2, (586638) Sucoff, Kurmis

Sec 3, (386639) Sucoff, Kurmis

Sec 4, (786640) Sucoff, Kurmis

83106. IMPORTANT PLANTS: FISHERIES AND WILDLIFE HABITATS. (1 cr; each section limited to 16 students; prereq 1FW 3600 or #; A-F only)

Field identification of important plants in fisheries and wildlife habitats. Offered at Itasca.

Sec 1, (189915) Splett

Sec 2, (391422) Staff

83201. 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, (586641) Splett

Sec 2, (386642) Splett

Sec 3, (186643) Splett

Sec 4, (086644) Splett

85160. PRACTICUM IN FOREST BIOLOGY AND MEASUREMENTS. (587160) (3 cr; limited to 15 students; prereq graduate student, offered at Itasca) Sucoff, Splett

Plant identification, plant dynamics, tree measurement.

8207. ECONOMIC ANALYSIS OF FORESTRY PROJECTS. (491038) (3 cr; limited to 10 students; prereq #) Gregersen

Forestry (Fors)

235 Natural Resources Administration Building (NRAB), St. Paul. 624-2774
College of Natural Resources

FIRST TERM

8777. THESIS CREDITS: MASTERS. (089480) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889481) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (689480) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489483) (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

81101. BEGINNING FRENCH. (485689) (5 cr; each section limited to 20 students; 0915-1130 MTWThF, FordH 349)

81102. BEGINNING FRENCH. (885690) (5 cr; limited to 20 students; prereq 1101 or equiv; degree credit granted only according to Entrance Standard; 0800-1015 MTWThF; Arch 45)

81103. BEGINNING FRENCH. (685691) (5 cr; limited to 20 students; prereq 1102 or Entrance Standard proficiency test; 0800-1015 MTWThF; AmundH 156)

81104. INTERMEDIATE FRENCH. (485692) (5 cr; limited to 20 students; prereq 1103 or 3 yrs high school French; 1030-1245 MTWThF; VinH 213)

81106. INTERMEDIATE FRENCH. (985437) (5 cr; limited to 20 students; prereq 1105; 1030-1245 MTWThF; Arch 45)

83015. FRENCH COMPOSITION AND CONVERSATION. (285693) (4 cr; limited to 18 students; prereq 1106; 0915-1130 MWF; FolH 340) Robinson Emphasis on writing, development of communication skills. Based on a consolidation of grammar.

83016. ADVANCED FRENCH COMPOSITION AND CONVERSATION. (391520) (4 cr; limited to 18 students; prereq 3015 or #; 0915-1130 MWF; FolH 214) Preckshot

83101. INTRODUCTION TO FRENCH LITERARY TEXTS: POETRY. (191521) (4 cr; limited to 25 students; prereq 3015 or equiv; 0915-1130 MWF; FolH 138) Sivert

Approaches to literary analysis and techniques examined through critical reading. Aims beyond, but focuses on, poetry.

83103. INTRODUCTION TO FRENCH LITERARY TEXTS: NOVEL. (891523) (4 cr; limited to 25 students; prereq 3101 or above; 0915-1130 MWF; FolH 134) Paganini Approaches to literary analysis and techniques examined through critical reading.

83259. TOPICS IN 18TH-CENTURY FRENCH LITERATURE. (491525) (4 cr; limited to 25 students; prereq 3101, 3103; 0915-1130 MWF; FolH 326) Waldauer Selected texts. Taught in French.

3970. DIRECTED READINGS. (185694) (1-5 cr; prereq undergrad, #, Δ, □)

8777. THESIS CREDITS: MASTERS. (989195) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589197) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (985695) (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.

81101-1102-1103. BEGINNING FRENCH. (15 cr for both terms; limited to 20 students; 0915-1245 MTWThF; KoltH 5139)

81101, Sec 5, (785696) June 16-July 9, 5 cr

81102, Sec 5, (585697) July 10-August 3, 5 cr

81103, Sec 5, (385698) August 4-26, 5 cr, Barnes

81104-1105-1106. INTERMEDIATE FRENCH. (15 cr for both terms; limited to 20 students; 0915-1245 MTWThF; FolH 104)

81104, (390514) Sec 5, June 16-July 9, 5 cr, Wieland

81105, (190515) Sec 5, July 10-August 3, 5 cr

81106, (090516) Sec 5, August 4-26, 21, 5 cr

SECOND TERM

81102. BEGINNING FRENCH. (086773) (5 cr; limited to 20 students; prereq 1101 or equiv; degree credit granted only according to Entrance Standard; 0915-1130 MTWThF; CivMinE 212)

81103. BEGINNING FRENCH. (886774) (5 cr; limited to 20 students; prereq 1102 or Entrance Standard proficiency test; 0800-1015 MTWThF; FolH 138)

81105. INTERMEDIATE FRENCH. (686775) (5 cr; limited to 20 students; prereq 1104; 0915-1130 MTWThF; AmundH 156)

83016. ADVANCED FRENCH COMPOSITION AND CONVERSATION. (486776) (4 cr; limited to 18 students; prereq 3015 or #; 0915-1130 MWF; FolH 234) Brewer

#3601. LITERATURE IN ENGLISH TRANSLATION. (890517) (4 cr [cr does not count toward French major]; limited to 60 students; taught in English; 0915-1130 MWF; FolH 50) Akehurst Representative works from the Middle Ages through the 18th century; movements; genres; themes.

3970. DIRECTED READINGS. (286777) (1-5 cr; prereq undergrad, #, Δ, □) Staff

8777. THESIS CREDITS: MASTERS. (189454) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989455) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (186778) (1-5 cr; hrs ar) Staff

French and Italian (Frit)

260 Folwell Hall. 624-4308
(French and Italian)
College of Liberal Arts

SECOND TERM

#3608. NEW WAVE CINEMAS. (691989) (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 306) 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

GENERAL COLLEGE

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

#1132. BIOLOGICAL SCIENCE: THE HUMAN BODY. (788792) (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.

#1421. WRITING LABORATORY: BASIC WRITING. (187890) (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.

#1456. FUNCTIONS AND PROBLEMS OF LOGIC. (789795) (4 cr; limited to 30 students; §1442; 1030-1245 MTWThF; ApH 226) Zanoni
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.

#1461. ORAL COMMUNICATION: SPEAKING AND CREATIVE THINKING. (291414) (4 cr; limited to 25 students; 1030-1245 MTWThF; ApH 102) Benson
In conversations, discussions, and prepared speeches, students share ideas, attitudes and experiences with others; examine how language functions as means of communication. Modes and methods of creative thinking are explored in relation to effective oral communication. Students listen and respond to communication of others and comment on what they see, hear, and feel.

FIRST TERM: SHORT COURSES

Summer in the City

#1284. BEHAVIOR PROBLEMS OF CHILDREN—July 6-21. (790512) (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.

#1285. CULTURAL ANTHROPOLOGY—June 16-July 2. (289792) (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.

#1311. ART: GENERAL ARTS—June 16-July 2. (189793) (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.

#1375. FILM AND SOCIETY. (092119) (4 cr; limited to 25 students; 0945-1200 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.

#1557. BUSINESS AND SOCIETY: FIELD EXPERIENCE—July 6-21. (791417) (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: EIGHT-WEEK COURSES

#0621. ELEMENTARY ALGEBRA—June 16-August 7. (388956) (No cr; limited to 30 students; §0617, 1435; prereq GC math level C or 0611 or 0615; 0830-1015 MTWThF; ApH 223) A. Johnson
Topics include signed numbers, variables, expressions, equations, inequalities, exponents, polynomials, factoring, rational expressions, Cartesian graphing, systems of equations, radicals, and word problems.

#0625. INTERMEDIATE ALGEBRA, PART I—June 16-August 7. (088961) (No cr; limited to 30 students; §1445; prereq GC math level D or 0621 with grade of C or better or 0617; 0830-1015 MTWThF; ApH 226) Ganguli
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.

#0631. INTERMEDIATE ALGEBRA, PART II—June 16-August 7. (888962) (No cr; limited to 30 students; §1446; 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.

#0643. BASIC MATHEMATICS: PROGRAMMED STUDY—June 16-August 7. (589068) (No cr; limited to 20 students; prereq GC math level B or C, #; may be repeated as needed; 0830-1015 MTWThF; ApH 11 [offered through Mathematics Learning and Assessment Center]) Math staff
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.

FIRST TERM: FOUR-WEEK COURSES

#1221. MINNESOTA HISTORY—June 22-July 21. (689787) (4 cr; limited to 15 students; 0900-1115 MTWTh; ApH 209) Buckley
Introduction to the settlement, economic development, politics, people, resources, and institutions of Minnesota. Compressed section will make use of the resources of several historic sites in the Twin Cities as well as those on campus. Some sessions will meet at Fort Snelling, the Ramsey House, the James J. Hill House, and the State Capitol complex; other sessions will meet on the Minneapolis campus.

FIRST AND SECOND TERM: SEVEN-WEEK COURSE

#1235. UNITED STATES: LAW IN SOCIETY—June 22-August 7. (489791) (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.

SECOND TERM: SHORT COURSE Summer in the City

#1112. ECOLOGICAL EVALUATION OF ENVIRONMENTAL PROBLEMS—July 23-August 7. (190510) (4 cr; limited to 20 students; 0830-1200 MTWThF; SciCB 175) Hatch
Concepts of ecology (organization of ecosystems, material cycling, energy

flow and production, population dynamics, and community interactions needed to understand proximate and ultimate causes of environmental problems such as world hunger, endangered species, deforestation, solid and hazardous wastes, global climate change, acid rain, and cultural eutrophication. Frameworks and methodologies for critically evaluating impacts and proposing interventions.

SECOND TERM

#1166. PHYSICAL SCIENCE: PRINCIPLES OF CHEMISTRY. (991416) (4 cr; limited to 40 students; 1030-1245 MTWThF; SciCB 125) Uthe 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.

#1422. WRITING LABORATORY: COMMUNICATING IN SOCIETY. (886659) (4 cr; prereq 1421; limited to 18 students; 1030-1245 MTWThF; APH 204) Miller 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.

#1513. SMALL BUSINESS OPERATIONS. (192118) (4 cr; limited to 30 students; 1030-1245 MTWThF; APH 303) St. John 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.

Genetics (Gene)

250 Biological Sciences, St. Paul.
624-3003
(Genetics and Cell Biology)
College of Biological Sciences

FIRST TERM

8777. THESIS CREDITS: MASTERS. (189213) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989214) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189462) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089463) (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. (188229) (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. (588230) (Cr ar; prereq #, Δ) Staff Laboratory or field investigation of selected areas of research.

8970. DIRECTED STUDIES. (085333) (Cr ar; prereq #) Staff

8990. RESEARCH. (885334) (Cr ar; prereq #; S-N only) Staff

SECOND TERM

3022. GENETICS. (091410) (4 cr, \$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. (891411) (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. (388231) (Cr ar; prereq #, Δ) Staff See First Term.

5990. DIRECTED RESEARCH. (188232) (Cr ar; prereq #, Δ) Staff See First Term.

8970. DIRECTED STUDIES. (786301) (Cr ar; prereq #) Staff

8990. RESEARCH. (586302) (Cr ar; prereq #; S-N only) Staff

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. (288674) (2 cr; prereq IT sr or #; A-F only) Literature survey, research work, or design study in geo-engineering problems.

8777. THESIS CREDITS: MASTERS. (089219) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189221) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5660. SPECIAL GEO-ENGINEERING PROBLEMS. (590091) (2 cr; prereq IT sr or #; A-F only)

8612. GEO-ENGINEERING RESEARCH PROBLEMS. (490097) (1 cr; prereq #; A-F only)

8777. THESIS CREDITS: MASTERS. (489466) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289467) (1-36 cr [max 11 cr per summer term])

Geography (Geog)

414 Social Sciences, 625-6080
College of Liberal Arts

FIRST TERM

1401. PHYSICAL GEOGRAPHY. (291669) (5 cr; 1030-1130 MTWThF; BlegH 440) Hammel, Shanahan Distribution patterns of climate, relief, vegetation, and soils; regional differences in problems of physical development.

3121. LATIN AMERICA. (190457) (4 cr; \$LAS 3121; 0915-1145 TTh; BlegH 105) Weil Physical and human geography of Latin America.

3161. EUROPE. (691670) (4 cr; 0915-1055 MWF; BlegH 105) Leitner Roots and distinctiveness of the European culture realm; the diversity of ethnic groups, languages, religions, and the physical environment; the political landscape; the changing nature of urban and rural Europe on both sides of the Iron Curtain; regional differences in levels of economic development and well being; European integration.

3331. ECONOMIC GEOGRAPHY. (492089) (4 cr; 1145-1245 MTWThF; BlegH 210)

World patterns of economic activity; levels of development; appraisal of resources, production, circulation and consumption; principles, models and planning of economic behavior.

3940. DIRECTED FIELD STUDY. (687943) (2-4 cr; prereq #; A-F only) Staff Guided individual field study.

3970. DIRECTED READINGS. (585702) (1-15 cr per qtr; prereq #, Δ, □) Staff

#5701. FIELD RESEARCH—June 15-July 10. (088765) (4 cr; limited to 8 students; prereq 12 cr in geography, #) J. Adams **Urban Field Study: Russia and Central Europe.** Exploration of progress toward privatizing housing, small business, and land use in Poland and Northern Russia. Emphasis on Central Poland and on northern Russian industrial cities between St. Petersburg, Moscow, and the northern Urals. The field study will be conducted jointly with a study involving faculty and students from the Department of Geography, Moscow State University. Permission of instructor, Professor John S. Adams, required.

5900. SUMMER INSTITUTE FOR TEACHERS: The American City: A Social/Cultural Perspective—June 15-26. (892090) (4 cr; 0900-1200 MTWThF; RarigC 616) Martin See page 12 for details.

8777. THESIS CREDITS: MASTERS. (089222) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889223) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (385703) (1-5 cr) Staff

SECOND TERM

1301. HUMAN GEOGRAPHY. (989648) (5 cr; 0915-1100 MWF; BlegH 255) Rice Geography of population and principal ways of life; capacity of earth for future population.

3101. GEOGRAPHY OF UNITED STATES AND CANADA. (291672) (4 cr; 0915-1015 MTWThF; BlegH 110) Thornquist 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.

3181. SOVIET UNION. (191673) (4 cr; 1145-1245 MTWThF; HHHCTr 60) Adams, VanDrasek Survey of physical resources, population, and economic geography; prospects and comparisons with the United States.

3381. POPULATION GEOGRAPHY. (789649) (4 cr; 1145-1330 MWF; BlegH 415) Rice Characteristics of human populations that relate to the nature of places and regions. Differential growth of populations, with consideration of spatial variations in fertility, mortality, and migration. Regional variations in relationship of population and material welfare.

3940. DIRECTED FIELD STUDY. (487944) (2-4 cr; prereq #; A-F only) Staff Guided individual field study.

3970. DIRECTED READINGS. (986779) (1-15 cr per qtr; prereq #, Δ, □) Staff

5900. TOPICS IN GEOGRAPHY: HUMAN AND PHYSICAL GEOGRAPHY OF THE WESTERN GREAT LAKES REGION—July 20-August 22. (991674) (4 cr; prereq Δ) Miller Characteristics of the urban, rural, and regional geography of the Western Great Lakes Region will be covered in three weeks of classroom study and observed and analyzed during a two-week joint Geology-Geography field trip. Issues to be addressed include changes in the agricultural sector of the economy, regional decline in traditional industrial employment opportunities, and rapid growth in real estate, information, and service sectors of the economy. Participants must also enroll in Geology 5980.

8777. THESIS CREDITS: MASTERS. (189468) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989469) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS. (286780) (1-5 cr) Staff

Geology and Geophysics (Geo)

106 Pillsbury. 624-1333
Institute of Technology

FIRST TERM

1001. THE DYNAMIC EARTH: AN INTRODUCTION TO GEOLOGY. (085400) (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.

1021. INTRODUCTION TO GEOLOGY LAB: GEOLOGY OF MINNESOTA. (1 cr; each lab limited to 25 students; prereq 1001 or 11001 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, (885401) 1030-1245 MWF, FordH 185
Lab 2, (685402) 1300-1515 MWF, FordH 185

3990. PROBLEMS IN GEOLOGY AND GEOPHYSICS. (587899) (1-6 cr; prereq #, Δ)
Research or problem selected on the basis of individual interests and background.

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, (185122) 1030-1245 MWF, FordH 185
Lab 2, (085123) 1300-1515 MWF, FordH 185

5111. FIELD GEOLOGY—June 15-July 28. (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, (287900) (9 cr)
Sec 2, (687098) (5 cr; prereq grad student; ar)

8777. THESIS CREDITS: MASTERS. (589216) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389217) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3990. PROBLEMS IN GEOLOGY AND GEOPHYSICS. (186545) (1-6 cr; prereq #, Δ)
See First Term.

5980. SEMINAR: CURRENT TOPICS IN GEOLOGY AND GEOPHYSICS—Geology of the Interior of the North American Continent—July 20-August 22. (891442) (4 cr; prereq #) Hudleston
Two-week field trip through Midwestern section of the United States. Participants must also register for Geography 5900.

8777. THESIS CREDITS: MASTERS. (889464) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689465) (1-36 cr [max 11 cr per summer term])

German (Ger)

231 Folwell Hall. 625-2080
College of Liberal Arts

FIRST TERM

1101. BEGINNING GERMAN. (185704) (5 cr; \$1000; limited to 20 students; 0800-1015 MTWThF, KoltH 5132)
Listening and reading comprehension, writing, speaking.

1104. INTERMEDIATE GERMAN. (385071) (5 cr; limited to 25 students; prereq 1103 or 10 cr of 1110 or Entrance Standard proficiency test; 0915-1130 MTWThF; MechE 202)
See 1101 First Term.

1105. INTERMEDIATE GERMAN. (491539) (5 cr; limited to 25 students; prereq 1104 or placement; 0915-1130 MTWThF; Arch 20)
See 1101 First Term.

1106. INTERMEDIATE GERMAN. (585439) (5 cr; limited to 25 students; prereq 1105 or placement; 0915-1130 MTWThF; LindH 203)
See 1101 First Term

3011. CONVERSATION AND COMPOSITION. (587112) (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.

3104. READING AND ANALYSIS OF PROSE. (190532) (4 cr; limited to 20 students; prereq 1106 or graduation proficiency test; 1030-1145 MTWThF; FolH 426) McCormick
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.

3501. CONTEMPORARY GERMANY: THE FEDERAL REPUBLIC. (890534) (4 cr; limited to 25 students; prereq 1106 or graduation proficiency test; 1145-1245 MTWThF; FolH 240) Weiss
Culture of the Federal Republic of Germany and its evolution since 1949. Lectures in English, readings in German.

3610. GERMAN AUTHORS IN TRANSLATION. (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)

Sec 1, Franz Kafka (985440)
1030-1130 MTWThF, FolH 240, Taraba
Lectures and discussions; works to be read include "The Metamorphosis," "The Penal Colony," "A Hunger Artist," *The Trial*, and *The Castle*.

8777. THESIS CREDITS: MASTERS. (689224) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289226) (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.

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.

1101, Sec 5, (085705) June 16-July 9, 5 cr
1102, Sec 5, (885706) July 10-August 3, 5 cr
1103, Sec 5, (685707) August 4-26, 5 cr

SECOND TERM

1102. BEGINNING GERMAN. (186781) (5 cr, \$1110; limited to 23 students; prereq 1101 or 1000; 0800-1015 MTWThF, Arch 20)
See 1101 First Term.

1105. INTERMEDIATE GERMAN. (488480) (5 cr; limited to 25 students; prereq 1104 or placement; 0915-1130 MTWThF; ApH 103)
See 1101 First Term.

1106. INTERMEDIATE GERMAN. (891537) (5 cr; limited to 25 students; prereq 1105 or placement; 0915-1130 MTWThF; AmundH 104)

3011. CONVERSATION AND COMPOSITION. (691538) (4 cr; limited to 20 students; prereq 1106, graduation proficiency test; 0800-1015 MTWTh; FolH 50)
See 3011 First Term.

3105. READING AND ANALYSIS OF DRAMA AND POETRY. (988807) (4 cr; limited to 20 students; prereq 1106 or graduation proficiency test; 1030-1130 MTWThF; FolH 240)
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.

3610. GERMAN TOPICS IN TRANSLATION. (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)

Sec 1, Literature of the German Democratic Republic and Reunification. (588955) 1030-1130 MTWThF; FolH 214
Examination of both unique and universal aspects of literature of the GDR, particularly in light of recent political events.

8777. THESIS CREDITS: MASTERS. (189471) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989472) (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. (989228) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789229) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (289484) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189485) (1-36 cr [max 11 cr per summer term])

Greek (Grk)

310 Folwell Hall. 624-0060
(Classical and Near Eastern Studies)
College of Liberal Arts

FIRST TERM

8777. THESIS CREDITS: MASTERS. (789232) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589233) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3001. BEGINNING CLASSICAL GREEK: ACCELERATED. (191446) (10 cr; 0915-1245 MTWThF; FolH 344) Krevans
Grammar, syntax, composition and reading.

8777. THESIS CREDITS: MASTERS. (989486) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789487) (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

#5446. BIOCOMPUTING CONSULTING SEMINAR. (188644) (3 cr; prereq HInf major, 5432, PubH 5454 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.

#5470. TOPICS IN HEALTH INFORMATICS. (988645) (cr ar; prereq #; limited to 10 students)
Selected readings and/or projects.

#8449. ADVANCED READINGS IN HEALTH INFORMATICS. (788646) (1-3 cr; prereq 5432, PubH 5434, #; limited to 10 students) Staff
Discussion of methodology and results.

#8450. RESEARCH IN HEALTH INFORMATICS. (588647) (cr ar; prereq #; limited to 10 students) Staff

8777. THESIS CREDITS: MASTERS. (889240) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489242) (1-36 cr [max 11 cr per summer term])

SECOND TERM

#5446. BIOCOMPUTING CONSULTING SEMINAR. (388651) (3 cr; prereq HInf major, 5432, PubH 5454 or #; limited to 10 students)
See First term.

#5470. TOPICS IN HEALTH INFORMATICS. (188652) (cr ar; prereq #; limited to 10 students)
See First term.

#8449. ADVANCED READINGS IN HEALTH INFORMATICS. (088653) (1-3 cr; prereq 5432, PubH 5434, #; limited to 10 students) Staff
See First term.

#8450. RESEARCH IN HEALTH INFORMATICS. (888654) (cr ar; prereq #; limited to 10 students) Staff
See First term.

8777. THESIS CREDITS: MASTERS. (389489) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789490) (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. (988449) (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. (288450) (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)

178 Klaeber Court. 624-0060
(Classical and Near Eastern Studies)
College of Liberal Arts
(See also Jewish Studies; ANE)

FIRST TERM

3980. DIRECTED INSTRUCTION. (485563) (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 with instructor and staff on problems of language teaching.

5970. DIRECTED READINGS. (085803) (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.

#1101-1102-1103. BEGINNING HEBREW ("ULPAN"). (15 cr for both terms; each section limited to 30 students; 0915-1245 MTWThF; FolH 312) Shendar
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 xx.

Sec 5, (786458) June 16-July 9, 5 cr
Sec 5, (586459) July 10-August 3, 5 cr
Sec 5, (986460) August 4-26, 5 cr

SECOND TERM

3980. DIRECTED INSTRUCTION. (285564) (1-5 cr; prereq #, Δ, □)
See First Term.

5970. DIRECTED READINGS. (486793) (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. (687084) (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. (086448) (4 cr, \$1002, \$3002; not open to jrs, srs; prereq #; 1030-1130 MTWThF; BlegH 115) Thayer
See 1002. Meets with 1002 and 3002.

1051. ANCIENT CIVILIZATION. (192077) (4 cr; \$3051, 0900-1100; TWTh; BlegH 150) Evans, J.
History and civilization of the ancient world to 500 B.C. Meets with 3051.

1101. INTRODUCTION TO MEDIEVAL HISTORY. (488768) (4 cr; 1030-1130 MTWThF; HHHCr 30) Bachrach
Europe from the decline of Rome to the early renaissance politics, institutions, society, economy, and culture of the Middle Ages.

1301. AMERICAN HISTORY. (288769) (4 cr, \$1301H; 1030-1130 MTWThF; AndH 370) Staff
Colonial era and early national period from the Revolution through Civil War and Reconstruction. Meets with 1301H.

1301H. HONORS COURSE: AMERICAN HISTORY. (188885) (4 cr, \$1301; prereq #; 1030-1130 MTWThF; AndH 370) Staff
See 1301 for description. Meets with 1301.

3002. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (487085) (4 cr, \$1002, \$1002H; 1030-1130 MTWThF; BlegH 115) Thayer
See 1002. Meets with 1002 and 1002H.

3051. ANCIENT CIVILIZATION. (992078) (4 cr; \$1051; 0900-1100 TWTh; BlegH 150) Evans, J
See 1051. Meets with 1051.

3245. HISTORY OF EASTERN EUROPE, 19TH AND 20TH CENTURIES. (190465) (4 cr; 1030-1130 MTWThF; HHHCr 20) Rudolph
Poland, Czechoslovakia, Hungary, Romania, and Yugoslavia, Nationalism, and formation of national states; fascism and World War II. Jews in Eastern Europe; communist takeovers, society in Communist Eastern Europe today.

3422. THE WORLD AND THE WEST. (792079) (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. (891750) (4 cr; 1030-1130; MTWThF; BlegH 260) Staff

3468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (188773) (4 cr, \$5468, \$EAS 3468; 0915-1015 MTWThF; HHHCr 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. (690468) (4 cr, \$MidE 3505, MidE 5505; 0900-1130 MW; RarigC 610) Farah

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 MidE 3505, MidE 5505.

3624. FRANCE FROM THE RENAISSANCE TO RICHELIEU. (192080) (4 cr; 0800-0900 MTWThF; BlegH 135) Tracy
The religious wars and the growth of an absolute monarchy.

3637. RUSSIAN HISTORY FROM PETER THE GREAT TO THE PRESENT. (390884) (4 cr; \$5133; 1145-1245 MWThF; HHHCr 25) Stravrou
A survey of Russian history since Peter the Great.

3748. THE AUSTRIAN REPUBLIC FROM WORLD WAR I TO PRESENT. (188778) (4 cr; 0915-1130 TTh; BlegH 330) Wright
The First Republic, "the state no one wanted," Anschluss and Hitler, World War II, decade of occupation, the new Austria.

3822. UNITED STATES IN THE 20TH CENTURY, 1932-1960. (889660) (4 cr; 0915-1015 MTWThF; BlegH 250) Berman
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 Scare; the politics and culture of the Eisenhower era; the origins of the civil rights movement.

3882. HISTORY OF AMERICAN FOREIGN RELATIONS. (992081) (4 cr; 1030-1130 MTWThF; BlegH 350) Brauer
America's commercial expansion, involvement in war; and imperialism; 1865-1945.

3970. DIRECTED STUDIES. (485708) (1-15 cr; prereq #, Δ, □)
Guided individual reading or study. Open to qualified students for 1 or more quarters.

3990. DIRECTED RESEARCH. (285709) (1-15 cr; prereq #, Δ, □)
Qualified students, with consent of instructor, work on a tutorial basis.

5285. DIPLOMATIC HISTORY OF EUROPE, 1900-1945. (689661) (4 cr; 0915-1015 MTWThF; BlegH 260) Kieft The World Wars.

5468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (689258) (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. (491752) (4 cr; 1030-1130 MTWThF; BlegH 125) Noble Writings of current scholars of American culture that express paradigmatic conflicts in the study of ideas and values. Meets with AmSt 5920, sec 3.

5970. DIRECTED STUDIES. (685710) (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. (485711) (1-15 cr; prereq #, Δ, CLA approval) Qualified senior and graduate students may register for work on tutorial basis.

8777. THESIS CREDITS: MASTERS. (189244) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789246) (1-36 cr [max 11 cr per summer term])

SECOND TERM

1001. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (488494) (4 cr, \$1001H, \$3001; not open to jrs, srs; 1030-1130 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. (588633) (4 cr, \$1001, \$3001; not open to jrs, srs; prereq #; 1030-1130 MTWThF; BlegH 155) Staff See 1001. Meets with 1001 and 3001.

1052. ANCIENT CIVILIZATION. (792082) (4 cr; \$3052; 0915-1015 MTWThF; BlegH 205) Kelly History and civilization of the ancient world, 146 B.C. Meets with 3052.

1302. AMERICAN HISTORY. (388780) (4 cr, \$1302H; 0915-1015 MTWThF; BlegH 225) O'Brien Modern America from 1880 to the present. Meets with 1302H.

1302H. HONORS COURSE: AMERICAN HISTORY. (188781) (4 cr, \$1302; prereq #; 0915-1015 MTWThF; BlegH 225) Staff See 1302. Meets with 1302.

1305. CULTURAL PLURALISM IN AMERICAN HISTORY. (592083) (4 cr; 1030-1130 MTWThF; BlegH 250) Staff Survey of the development of American society focusing on the role of Afro-Americans, American Indians, Asian Americans, and Hispanic Americans. Concepts of cultural pluralism, racism, and intergroup relations explored within a comparative historical framework.

3001. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (288495) (4 cr, \$1001, 1001H; 1030-1130 MTWThF; BlegH 155) Staff For description see 1001. Meets with 1001, 1001H.

3052. ANCIENT CIVILIZATION. (392084) (4 cr; \$1052; 0915-1015 MTWThF; BlegH 205) Kelly See 1052. Meets with 1052.

3424. HISTORY OF MEXICO: PRE-COLUMBIAN PERIOD THROUGH INDEPENDENCE. (191762) (4 cr; meets with LAS 3424; 1030-1130 MTWThF; BlegH 115) Schwartz Indian cultures of Mexico before the conquest and subsequent contact between Europeans and Indians during the formation of Mexican society.

3427. HISTORY OF CUBA AND PUERTO RICO. (192166) (4 cr; meets with Chic 3427 and LAS 3427; 0915-1015 MTWThF; BlegH 260) Staff Historical development from Spanish conquest to the present, conquest and colonization, slavery, Hispanic Caribbean society and culture, Operation Bootstrap, Cuban Revolution.

3432. HISTORY OF AFRICA: 1800 TO THE PRESENT. (192085) (4 cr; 1030-1130 MTWThF; HHHctr 30) Staff Colonial rule, the forced restructuring and underdevelopment of African economies, African resistance, nationalism, and the problems of independence.

3722. EUROPE IN THE ERA OF WORLD WAR II. (690471) (4 cr, \$3224; 0915-1130 TW; HHHctr 60) Munholland Rise of fascism and totalitarian movements in Europe; political and military origins of World War II, course of the war; and impact on European Society.

3823. UNITED STATES IN THE 20TH CENTURY: 1960 TO THE PRESENT. (490472) (4 cr; 1030-1130 MTWThF, BlegH 135) 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.

3845. AMERICAN ECONOMIC HISTORY, 1870 TO PRESENT. (092086) (4 cr; 0915-1015 MTWThF; BlegH 245) Green Farm problems in the 19th century. Rise of big business and finance capitalism. The 1920s economy and the Great Depression. Corporate capitalism, government policies and modern society.

3970. DIRECTED STUDIES. (886788) (1-15 cr; prereq #, Δ, □) See First Term.

3990. DIRECTED RESEARCH. (686789) (1-15 cr; prereq #, Δ, □) See First Term.

5381. MINNESOTA HISTORY WORKSHOP: Two Centuries of the Fur Trade in Minnesota—July 27-August 7. (385538) (5 cr; students repeating workshop register for 5970, sec. 2; limited to 50 students. Held in the new History Center in St. Paul) 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.

5473. FAMILY, SCHOOL, AND WORK IN MODERN JAPANESE HISTORY. (190474) (4 cr; 1145-1245 MTWThF, HHHctr 30) Marshall Impact of industrialization on family, life, economic role of women, educational opportunities and curriculum, and the work ethic, and the Japanese employment system in the 19th and 20th centuries.

5970. DIRECTED STUDIES. (prereq #, Δ, CLA approval)

Sec 1, (485076) (1-15 cr)
See First Term.

Sec 2, (185539) (5 cr; for students who are repeating Hist 5381, Minnesota History Workshop, July 23-August 2)

5990. DIRECTED RESEARCH. (086790) (1-15 cr; prereq #, Δ, CLA approval)
See First Term.

8777. THESIS CREDITS: MASTERS. (589491) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389492) (1-36 cr [max 11 cr per summer term])

Minnesota History Workshop to be held in St. Paul July 27-August 7, 1992. The Minnesota Historical Society summer workshop is a two-week, 5-credit course for history teachers and graduate students. The workshop is co-sponsored by the University of Minnesota and the Minnesota Historical Society, and will be held in the new History Center with convenient parking and access to downtown St. Paul. Credit for the class is arranged through the University of Minnesota College of Liberal Arts and the Summer Session. This year's topic is the fur trade.

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.

History of Medicine (HMed)

510 Diehl Hall, 624-4416
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (589247) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389248) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189493) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089494) (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. (489256) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8888. THESIS CREDITS: DOCTORAL. (489497) (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

55001. SPECIAL TOPICS: Planning for Outcome Based Education—June 16-19, 26. (291719) (1-6 cr; limited to 25 students; 0830-1215 TWThF; VoTech R370; S-N optional) Madsen Focuses on the revision of Personal and Family Life Sciences curriculum to meet state guidelines for outcome based education. This offering is for 2 credits.

5310. METHODS IN TEACHING HOME ECONOMICS: ATTITUDES, VALUES, AND KNOWLEDGE—June 16-26. (691720) (3 cr; limited to 25 students; 0830-1130 MTWThF; VoTech R390; A-F only) McClelland Derivation of theory for educational method from relevant research; application to educational objectives, strategies, and student motivation.

5320. ADULT EDUCATION IN HOME ECONOMICS—June 29-July 10. (486387) (3 cr; limited to 25 students; 1300-1545 MTWThF; VoTech R370; A-F only) Ernst Planning a community program; teaching procedures; special problems.

#5404. INTRODUCTION TO EARLY CHILDHOOD FAMILY EDUCATION PROGRAM—June 29. (088782) (1 cr; limited to 25 students; 0800-1700 M; VoTech R380; A-F only) Cooke Concept and philosophy of such programs as a basis for program implementation.

#5406. SPECIAL TOPICS IN PARENT AND FAMILY EDUCATION: Home and School Collaboration—June 29-July 10. (390190) (1-6 cr; limited to 25 students; 0830-1115 MTWThF; VoTech R380; S-N opt) Rossmann Study of issues and current literature focused on emerging topics relevant to parent and family education. This offering for 3 credits.

#5407. FAMILY LIFE EDUCATION—June 16-26. (986278) (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.

#5409. GROUP METHODS FOR PARENT AND FAMILY EDUCATION—July 13-17. (785441) (2 cr; limited to 25 students; 1230-1615 MTWThF; VoTech R380; A-F only) Bowman Methods and theories applied to development of skills for leading parent and family education groups.

5900. READINGS: HOME ECONOMICS EDUCATION. (1-3 cr [max 12 cr]; prereq #; hrs ar; A-F only) Independent study under tutorial guidance.

Sec 22, (188465) Rossmann
Sec 23, (189650) McClelland

5920. DIRECTED STUDIES. (1-6 cr; prereq #; hrs ar; S-N optional) Opportunity for individualized learning experience not covered by regular courses.

Sec 22, (988466) Rossmann
Sec 23, (989651) McClelland

8777. THESIS CREDITS: MASTERS. (189235) (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, (788467) Rossmann
Sec 23, (789652) McClelland

SECOND TERM

#5405. CHILD DEVELOPMENT AND PARENT EDUCATION—July 27-August 7. (289786) (1-4 cr [max 12 cr]; limited to 25 students; 0830-1205, MTWThF; VoTech R390; A-F only) Cutting 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.

#5510. ORIENTATION TO TEACHING HOME ECONOMICS—July 27-August 17. (589653) (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, (488611) Thomas

5920. DIRECTED STUDIES. (1-6 cr; prereq #; S-N optional) See First Term.

Sec 24, (288612) Thomas

8777. THESIS CREDITS: MASTERS. (589488) (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, (188613) Thomas

Honors Seminar (HSem)

115 Johnston Hall. 624-5522
(Honors Program)
College of Liberal Arts

FIRST TERM

#3010. THE CHANGING NATURE OF REVOLUTIONARY CHANGE. (690129) (4 cr; limited to 15 students; prereq jr or sr, reg CLA Honors div; 1030-1230 MWF; SocSci 101) 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. Requirement for adult vocational parent education relicensure.

Horticultural Science (Hort)

305 Alderman Hall, St. Paul. 624-4242
College of Agriculture

FIRST TERM

3097. HORTICULTURAL PRACTICUM. (187204) (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. (690051) (4 cr; prereq #; S-N only; free elective for Hort undergrads, not for grad; Extension regis 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. (387208) (2-6 cr; prereq 8 cr upper division hort course, Δ) Opportunities for in-depth exploration of concepts, technology, materials, or programs in specific areas 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. (685237) (3-9 cr; prereq #)

8052. ADVANCED PROBLEMS IN PHYSIOLOGY OF HORTICULTURAL CROPS. (787903) (3-9 cr; prereq #)

8777. THESIS CREDITS: MASTERS. (589250) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089253) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3097. HORTICULTURAL PRACTICUM. (187221) (4 cr; prereq upper division horticulture emphasis or sequence, Δ) See First Term.

5091. DIRECTED STUDIES. (987219) (2-6 cr; prereq 8 cr upper division hort course, Δ) See First Term.

8007. EXTENSION HORTICULTURE PRACTICUM. (385281) (1-5 cr, max 6 cr; prereq 12 grad cr)

8051. ADVANCED PROBLEMS IN HORTICULTURAL CROP BREEDING. (485238) (3-9 cr; prereq #)

8052. ADVANCED PROBLEMS IN PHYSIOLOGY OF HORTICULTURAL CROPS. (587904) (3-9 cr; prereq #)

8777. THESIS CREDITS: MASTERS. (889495) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689496) (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

3880. INTERNSHIP IN HOUSING. (185386) (5-15 cr [max 15]; prereq 3870, completion of half of professional sequence, #; S-N only 1145-1245 MWF; McNH 363) Franklin International, intercultural, or other directed work in a community that offers a variety of housing experiences.

5888. DIRECTED STUDY IN HOUSING. (886533) (1-4 cr [max 4]; prereq #) Goetz Independent study in housing.

8880. DIRECTED STUDY IN HOUSING. (985387) (1-4 cr [max 8]; prereq #; A-F only) Goetz Independent study in housing.

SECOND TERM

3880. INTERNSHIP IN HOUSING. (785388) (5-15 cr [max 15]; prereq 3870, completion of half of professional sequence, #; S-N only 1145-1245 MWF; McNH 363) Franklin See First Term.

5888. DIRECTED STUDY IN HOUSING. (989634) (1-4 cr [max 4]; prereq #) Goetz Independent study in housing.

8880. DIRECTED STUDY IN HOUSING. (789635) (1-4 cr [max 8]; prereq #; A-F only) Goetz Independent study in housing.

Humanities (Hum)

314 Ford Hall. 624-5553
College of Liberal Arts

FIRST TERM

#1001. HUMANITIES IN THE MODERN WORLD I. (590477) (4 cr, SRhet 1301; limited to 70 students; 1030-1250 TTh; FordH 155) Thomas Eighteenth-century Europe. Old Regime through French Revolution and Napoleon; new science, Enlightenment, cult of sensibility; rococo, neoclassicism, incipient romanticism. Integrative study of works by creative figures such as Pope, Voltaire, Rousseau, Diderot, Goethe, Watteau, Boucher, Hogarth, David, Goya, Mozart, Haydn.

#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.

#1005. HUMANITIES IN THE MODERN WORLD V. (990475) (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.

#1301. DISCOURSE AND SOCIETY: (288481) (4 cr; limited to 30 students; 0800-1030 MW; FordH 150) Engh 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.

#3458. THE BODY AND THE POLITICS OF REPRESENTATION. (790476) (4 cr; limited to 45 students; 0800-1020 TTh; FordH 150) Leppert

Western representation of the human body, Renaissance to 1900, considering both Western and non-Western peoples. 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.

3970. DIRECTED STUDIES. (285077) (Cr ar; prereq #, Δ) Guided individual reading or study.

5970. DIRECTED STUDIES. (385023) (Cr ar; prereq jr or sr or grad student, #, Δ) Guided individual reading or study.

SECOND TERM

1113. EUROPEAN HERITAGE: ROME. (691569) (4 cr; §Rhet 3321; limited to 30 students; 0800-1030 MW; FordH 160) Johnson
Roman civilization of the late republic and empire; rise of Christianity. Literature, religion, philosophy, art, architecture. Integrative study of selected works influential in modern Western culture; Caesar, Lucretius, Virgil, Ovid, Seneca, Petronius, Augustine, Boethius.

1302. TEXT AND CONTEXT. (390481) (4 cr; limited to 30 students; 1030-1300 TTh; FordH 150) Horne
Examination of varied historically grounded case studies, in order to explicate 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.

1303. KNOWLEDGE, PERSUASION, AND POWER. (091570) (4 cr; limited to 30 students; 1030-1300 MW; FordH 150) Morton
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.

1376. CINEMATIC DISCOURSE AND CULTURAL POLITICS. (190479) (4 cr; limited to 70 students; prereq 1301 or ArtH 1921; 0800-1030 MW; FordH 50) Mowitz

Examination of the way film texts and the social institutions of cinema both contribute to and resist the reproduction of social relations in modern Western countries. Particular attention to class, race, and gender as sites of sociocultural conflict.

13701. COMEDY: TEXT AND THEORY. (788808) (4 cr; limited to 70 students; 1030-1300 TTh; FordH 155) 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.

3970. DIRECTED STUDIES. (688235) (Cr ar; prereq #, Δ) See First Term.

5970. DIRECTED STUDIES. (787898) (Cr ar; prereq jr or sr or grad student, #, Δ) See First Term.

Industrial Education (Ind)

425 Vocational/Technical Building, St. Paul 624-3004
(Vocational and Technical Education) College of Education

FIRST TERM

3200. TECHNICAL DEVELOPMENT: ADVANCED. (990217) (1-9 cr; max 33 cr; prereq Ind 1000, 1001, #; hrs ar; A-F only) Miletich
Individualized advanced technical development in areas of construction, graphic communication, manufacturing, power and energy, and transportation.

5000. OCCUPATIONAL EXPERIENCE. (790218) (1-5 cr, max 15 cr; prereq #; hrs ar; A-F only) Miletich
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. (590219) (1-9 cr, max 24 cr; prereq #; hrs ar; A-F only) Miletich
Integration of specialized technical instruction in advanced and emerging areas into courses in industrial education.

5306. INDUSTRIAL EDUCATION WORKSHOP: Recent Technological Innovations—June 16-26. (990220) (3 cr; prereq tchg exper, #; 1330-1630 MTWThF; VoTech R280; A-F only) Lewis
Students will visit industrial sites where personnel in charge of technological innovation will describe recent innovations in their industries. Students will be allowed to view the innovations and the impact they have had on the industry. They will produce curriculum materials that they could use in their teaching incorporating those new technological concepts into their curricula.

5330. INDUSTRIAL COURSE CONSTRUCTION—June 16 and ar. (285418) (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.)

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 21, (691572) Brown
Sec 22, (491573) Lewis
Sec 23, (386303) Miletich
Sec 25, (387175) 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 21, (191575) Brown
Sec 22, (991576) Lewis
Sec 23, (388469) Miletich
Sec 25, (788470) Pucel

8777. THESIS CREDITS: MASTERS. (589264) (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 21, (591578) Brown
Sec 22, (391579) Lewis
Sec 23, (186304) Miletich
Sec 25, (187176) Pucel

8901. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
Individual conferences.

Sec 21, (791580) Brown
Sec 22, (591581) Lewis
Sec 23, (086305) Miletich
Sec 25, (087177) Pucel

SECOND TERM

5306. INDUSTRIAL EDUCATION WORKSHOP. (1-6 cr; prereq tchg exper, #; A-F only)

Sec 1, Trends in Industrial Education: Implications for Curriculum—August 18 and ar. (790221) 0900-1030 T; VoTech R280, Lewis
This course is offered in conjunction with the Minnesota State Comprehensive Conference on Vocational Education during August. Students will attend a number of conference sessions around a theme approved by the instructor and write a paper indicating how the new ideas identified might affect their curriculum. The course will address the needs of technology educators and vocational-industrial educators. This offering for 2 credits.

Sec 2, Technical Training in Industry—July 23-August 4. (590222) 1630-1930 MTWThF, VoTech R280)
Alternative technical training techniques and their implementation in industry. Participants will visit a variety of training sites to observe and receive an orientation to technical training. Each participant will prepare a paper summarizing the various techniques and how they might be implemented in a training setting of her/his choice. 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, (391582) Lewis
Sec 25, (389654) Pucel

5901. INDEPENDENT STUDY. (1-6 cr; prereq Δ; hrs ar; A-F only)
See First Term.

Sec 22, (191583) Lewis
Sec 25, (390223) Pucel

8777. THESIS CREDITS: MASTERS. (889500) (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, (091584) Lewis
Sec 25, (189655) Pucel

8901. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
See First Term.

Sec 22, (691586) Lewis
Sec 25, (089656) Pucel

Industrial Engineering/Operations Research (IEOR)

125 Mechanical Engineering, 625-0705
(Mechanical Engineering) Institute of Technology

FIRST TERM

3000. INTRODUCTION TO INDUSTRIAL ENGINEERING ANALYSIS. (185430) (4 cr; limited to 40 students; prereq IT student; 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.

5040. INTRODUCTION TO OPERATIONS RESEARCH. (886225) (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.

8410. INDUSTRIAL ENGINEERING RESEARCH. (986328) (3-5 cr; limited to 10 students; hrs ar; prereq #)

8411. INDUSTRIAL ENGINEERING RESEARCH. (786329) (3-5 cr; limited to 10 students; hrs ar; prereq 8410)

8412. INDUSTRIAL ENGINEERING RESEARCH. (186330) (3-5 cr; limited to 10 students; hrs ar; prereq 8411)

8777. THESIS CREDITS: MASTERS. (989259) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989262) (1-36 cr [max 11 cr per summer term])

**FIRST AND SECOND TERMS:
TEN-WEEK COURSES**

(Register once in Term I)

#5180. APPLIED INDUSTRIAL ENGINEERING. (086224) (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.

SECOND TERM

#5020. ENGINEERING COST ACCOUNTING, ANALYSIS AND CONTROL. (988614) (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.

#5050. ENGINEERING ECONOMIC ANALYSIS. (085431) (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.

#8410. INDUSTRIAL ENGINEERING RESEARCH. (986331) (3-5 cr; limited to 10 students; hrs ar; prereq #)

#8411. INDUSTRIAL ENGINEERING RESEARCH. (786332) (3-5 cr; limited to 10 students; hrs ar; prereq 8410)

#8412. INDUSTRIAL ENGINEERING RESEARCH. (586333) (3-5 cr; limited to 10 students; hrs ar; prereq 8411)

8777. THESIS CREDITS: MASTERS. (289498) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189499) (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 page 27.

FIRST TERM

#3002. PERSONNEL AND INDUSTRIAL RELATIONS. (785343) (4 cr, \$8002; limited to 35 students; prereq Econ 1101, 1102, Psy 1001; 0800-1015 MTWTh; BlegH 120)

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. Meets with 8002.

#8002. AN INTRODUCTION TO INDUSTRIAL RELATIONS. (585344) (4 cr, \$3002; limited to 15 students; prereq Econ 1101, 1102, Psy 1001, IR grad student or Δ ; 0800-1015 MTWTh; BlegH 120)
See 3002. Meets with 3002.

#8003. STAFFING, TRAINING AND DEVELOPMENT. (189638) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or Δ ; 1730-2100 TTh; HHHCtr 15)

Introduction to processes of recruiting, selecting, training, and developing employees in complex organizations. Cost-benefit analysis of individual selection and training strategies, management of special employee problems, and emerging training techniques.

#8006. LABOR MARKET ANALYSIS. (091004) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or department approval; 1730-2100 MW; HHHCtr 15)

Introduction to labor supply and demand, wages, employment, and unemployment. Basic concepts and data sources, their application to market analysis for human resource development, allocation, and utilization.

8777. THESIS CREDITS: MASTERS. (990878) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089267) (1-36 cr [max 11 cr per summer term])

SECOND TERM

#3002. PERSONNEL AND INDUSTRIAL RELATIONS. (486308) (4 cr, \$8002; limited to 45 students; prereq Econ 1101, 1102, Psy 1001; 0800-1015 MTWTh; BlegH 120)
See First Term. Meets with 8002.

#8002. INTRODUCTION TO INDUSTRIAL RELATIONS. (488236) (4 cr, \$3002; limited to 15 students; prereq Econ 1101, 1102, Psy 1001; IR grad student or Δ ; 0800-1015 MTWTh; BlegH 120)
See 3002 First Term. Meets with 3002.

#8005. EMPLOYEE COMPENSATION AND REWARD. (491590) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or Δ ; 1730-2100 MW; HHHCtr 15)

Introduction to systems of employee compensation and reward in organizations. Concepts, models, and theories relating to processes of compensation designed to influence worker behavior and performance within constraints. Wage structuring, fringe benefits, individual appraisal and reward, employee motivation, and compensation controls.

#8007. COLLECTIVE BARGAINING IN THE PUBLIC AND PRIVATE SECTORS. (188501) (4 cr; limited to 15 students; prereq 8002 or # and IR grad student or

Δ ; 1730-2100 TTh; HHH Ctr 15)
Introduction to collective bargaining and administration. Legal frameworks imposed on public and private sector negotiators.

#8023. TRAINING AND DEVELOPMENT. (589636) (4 cr; limited to 15 students; prereq 8003 or # and IR grad student or Δ ; 1730-2100 MW; HHHCtr 60)

Integration of appropriate learning principles and organizational objectives into training programs. Design implementation and evaluation of training systems to effect development, utilization, and conservation of human resources.

8777. THESIS CREDITS: MASTERS. (689501) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489502) (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 page 27.

FIRST TERM

8990. READINGS IN INFORMATION AND DECISION SCIENCES. (289646) (Cr ar; \$DSci 8990, MIS 8990; prereq PhD student and #; A-F only)

8995. GRADUATE RESEARCH IN INFORMATION AND DECISION SCIENCES. (189647) (Cr. ar; \$DSci 8995, MIS 8995; prereq PhD student and #; A-F only)

**FIRST AND SECOND TERMS: 10-WEEK
COURSES**

(Register once in Term I)

#1010. FUNDAMENTALS OF INFORMATION DEVELOPMENT AND USE. (4 cr; \$MSci 1010; prereq 30 cr; Math 1111 or #1111; limited to 45 students; A-F only) Lect 1, 0900-1015 MW; BlegH 130

Lab 1, (889643) 0800-0900 Th, BlegH 90
Meeting information needs of managers. Sources of data, data collection methods, data organization and presentation. Descriptive statistical analysis methods. Lab instruction to provide skill development in word processing and spreadsheet analysis on personal computers.

#8101. MIS: THE MANAGEMENT OF INFORMATION TECHNOLOGY IN ORGANIZATIONS. (689644) (4 cr, \$MIS 8100 or 8300; limited to 15 students; prereq MBA 8025 or #; A-F only; 1730-2100 W, HHHCtr 20)
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. (389640) (Cr ar; \$DSci 8990, MIS 8990; prereq PhD student and #; A-F only)

8995. GRADUATE RESEARCH IN INFORMATION AND DECISION SCIENCES. (189641) (Cr ar; prereq PhD student and #; A-F only)

**Interdepartmental
Study (ID)**

220 Johnston Hall. 624-7577
College of Liberal Arts

FIRST TERM

3205/5205. COMMUNITY SERVICE AND SOCIAL CHANGE: INTERDISCIPLINARY PERSPECTIVES. (892087) (692088) (4 cr; prereq Δ ; Students must meet with an OSLO adviser in 220 Johnston Hall before the first class session to obtain a course override and discuss internship possibilities; 0900-1100 TThF, FolH 148)

Historical, economic, philosophical, anthropological, and social services approaches to community service in cultural context. The combination of participation in one of four community service groups projects, classroom lectures, and discussions will enable students to assess community service and the role it plays (or fails to play) in community development and social change.

3970. DIRECTED STUDIES. (285712) (1-15 cr; prereq consult with Office for Special Learning Opportunities, JohH 220, \square)
Individual projects, readings, and research in areas that cross departmental lines.

SECOND TERM

3970. DIRECTED STUDIES. (885141) (1-15 cr; prereq consult with Office for Special Learning Opportunities, JohH 220, \square)
See First Term.

**Interdisciplinary
Medicine (InMd)**

Box 33 UMHC. 625-3622
Medical School

Contact college office for information regarding summer courses.

**International Relations
(IntR)**

214 Social Sciences. 624-9007
College of Liberal Arts

FIRST TERM

3960. FIELD STUDIES/INTERNSHIP IN INTERNATIONAL STUDIES. (987074) (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. (285211) (1-15 cr; prereq #, Δ , \square) Staff
Guided individual reading or study.

3981. MAJOR PROJECT SEMINAR. (692091) (4 cr; limited to 15 students; prereq non-honors, IntR major, sr, or #; 0915-1130 TTh; BlegH 340; A-F only) Sampson

3990H. HONORS COURSE: SUPERVISED RESEARCH PAPER. (685433) (1-5 cr; prereq sr honors candidate in international relations, Δ)

3990. SUMMER INSTITUTE FOR TEACHERS. (1 cr; 0900-1200 MTWThF; RarigC 616) (4 cr; each section limited to 40 students; prereq 12 cr in social sciences)

See page 11 for details.

Sec 5, Power, Politics and Political Changes in the New Europe—July 13-17. (492092) Munholland
Sec 6, Cultural Aspects of Changes in the New Europe—July 20-24. (292093) Browne

SECOND TERM

3960. FIELD STUDIES/INTERNSHIP IN INTERNATIONAL STUDIES. (485434) (1-8 cr | 8 cr max for international relations majors); prereq Δ) Staff
See First Term.

3970. DIRECTED STUDIES. (285435) (1-15 cr; prereq #, Δ , \square) Staff
See First Term.

3990H. HONORS COURSE: SUPERVISED RESEARCH PAPER. (185436) (1-5 cr; prereq sr honors candidate in international relations, Δ) Job

3990. TOPICS IN INTERNATIONAL RELATIONS: Environmental Issues: A Social Sciences Perspective. (992095) (4 cr; limited to 40 students; prereq 12 cr in social sciences; 0915-1130 TTh; BlegH 330) Knudson
Issues to be addressed include the relationship between environment and development; integrated versus fragmented policy formulation and implementation; educational approaches aimed at changing individual and collective human behavior; gender, ethnic and racial considerations.

SUMMER INSTITUTE FOR TEACHERS. (1 cr; 0900-1200 MTWThF; RarigC 616)
See page 12 for details.

Sec 7, Economic Integration in the New Europe—July 27-31. (192094) Coffey

Italian (Ital)

260 Folwell Hall. 624-4308
(French and Italian)
College of Liberal Arts

FIRST TERM

1104. INTERMEDIATE ITALIAN. (090225) (5 cr; limited to 20 students; prereq 1103 or equiv; 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 , \square) Staff
Guided individual reading or study.

8777. THESIS CREDITS: MASTERS. (689269) (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.

1101-1102-1103. BEGINNING ITALIAN. (15 cr for both terms; each section limited to 20 students; 0915-1245 MTWThF; sec 5, KoltH S140, sec 6, Phys 236A)
A course with speaking objectives based on an audiolingual approach. Students learn to understand and express fundamental structures of the language. Includes audiovisual aids.

1101, Sec 5, (185699) June 16-July 9, 5 cr

1101, Sec 6, (490066) June 16-July 9, 5 cr

1102, Sec 5, (985700) July 10-August 3, 5 cr

1102, Sec 6, (290067) July 10-August 3, 5 cr

1103, Sec 5, (785701) August 4-26, 5 cr

1103, Sec 6, (190068) August 4-26, 5 cr

SECOND TERM

1105. INTERMEDIATE ITALIAN. (190224) (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. (189504) (1-16 cr | max 11 cr per summer term)

Japanese (Jpn)

105 Folwell Hall. 624-0007
(East Asian Studies)
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (985194) (1-15 cr; prereq #, Δ , \square) Staff

5970. DIRECTED STUDIES IN JAPANESE. (985275) (1-15 cr; prereq #, Δ , CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (189275) (1-16 cr | max 11 cr per summer term)

8888. THESIS CREDITS: DOCTORAL. (789277) (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.

1011-1012-1013. BEGINNING JAPANESE. (15 credits for both terms; limited to 28 students per recitation section; daily lecture, recitation and labs with English and Japanese speaking instructors; 0800-1220 MTWThF; KoltH S138)

1011, Sec 5, (089673) June 16-July 9, 5 cr Staff

1012, Sec 5, (689675) July 10-August 3, 5 cr

1013, Sec 5, (289677) August 4-26, 5 cr Staff

SECOND TERM

3970. DIRECTED STUDIES. (985213) (1-15 cr; prereq #, Δ , \square ; 1000-1130 MTWThF, FolH 114) Staff
Meets with 5970.

5970. DIRECTED STUDIES IN JAPANESE. (085297) (1-15 cr; prereq #, Δ , CLA approval; 1000-1130 MTWThF, FolH 114) Staff
Meets with 3970.

8777. THESIS CREDITS: MASTERS. (589510) (1-16 cr | max 11 cr per summer term)

8888. THESIS CREDITS: DOCTORAL. (289517) (1-36 cr | max 11 cr per summer term)

Jewish Studies (JwSt)

178 Klaeber Court. 624-0060
College of Liberal Arts
(Classical and Near Eastern Studies)
(See also Hebrew; ANE; Religious Studies)

FIRST TERM

1034. INTRODUCTION TO JUDAISM. (588809) (4 cr, \$3034, \$RelS 1034, \$RelS 3034; 0915-1130 TTh; FolH 134) Zahavy
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 RelS 1034 and 3034.

3034. INTRODUCTION TO JUDAISM. (988810) (4 cr, \$1034, \$RelS 1034, \$RelS 3034; 0915-1130 TTh; FolH 134) Zahavy
Additional written assignments and reading. Meets with 1034 and RelS 1034 and 3034.

5970. DIRECTED STUDIES. (388486) (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

Departmental consent for courses marked with a delta (Δ) must be obtained in 15 Murphy Hall, 625-0120. When a keyboarding prereq is listed, testing must be arranged through 15 Murphy Hall. Students must abide by the course prerequisites. For 5000-level courses, inquire about graduate credit at the time of registration, or by calling 625-4054.

FIRST TERM

3008. MASS COMMUNICATION PROCESSES AND STRUCTURE. (790235) (4 cr; limited to 72 students; prereq jour major or minor status, 3004 or concurrent; Δ ; 1030-1130 MTWThF; MurH 308; A-F only) Chang
Analysis of a variety of communication theories as they relate to mass communication processes; examination of major structural aspects of mass communication systems as they impact on mass communication processes.

3173. MAGAZINE WRITING. (291638) (4 cr; limited to 16 students; prereq jour major status, 3004, 3101, Δ ; 0915-1015 MTWThF; MurH 212; A-F only) Roberts
Writing feature articles for general, class, and trade publications; study of market free-lance methods.

3970. PROJECTS IN JOURNALISM. (185184) (1-4 cr per term; | max 8 cr); prereq jour major or minor status, 3004, #, Δ , \square) Staff
Independent study; projects.

3980. DIRECTED INSTRUCTION. (592097) (1-2 cr max); prereq jour major status, adviser approval; one professional course for prof. majors; one adviser approved course for mass comm majors; Δ) 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.

3251. PSYCHOLOGY OF ADVERTISING. (191639) (4 cr; limited to 72 students; prereq Psy 1001; if you have not been officially admitted to major or minor status in a SJMC program, you may not apply this toward the major or minor; 0915-1015 MTWThF; MurH 308; A-F only) Tims
Psychological principles, research techniques, and applications in advertising and selling. Consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.

3501. COMMUNICATION AND PUBLIC OPINION. (491640) (4 cr; limited to 72 students; prereq 16 crs in social science depts; if you have not been officially admitted to major or minor status in a SJMC program, you may not apply this toward the major or minor; 1145-1245 MTWThF; MurH 308; A-F only) Tims
Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation.

#5801. INTERNATIONAL COMMUNICATION. (390237) (4 cr; limited to 72 students; prereq 16 cr in social sciences; if you have not been officially admitted to major or minor status in a SJMC program you may not apply this toward the major or minor; 1300-1400 MTWThF; MurH 308; A-F only) Chang
Structures, processes and consequences of international mass communication. *Problems in free flow of information.* Roles of international organizations. Mass communication in social, political, economic development; implications for conflict resolution.

5970. ADVANCED PROJECTS IN JOURNALISM. (185713) (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. (389959) (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. (689272) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489273) (1-36 cr [max 11 cr per summer term])

8970. ADVANCED PROJECTS IN MASS COMMUNICATION. (985714) (1-4 cr [max 8 cr]; prereq grad major or minor in mass comm, #, Δ; A-F only) Staff
Individual research.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

#3003. PRODUCING MASS MEDIA MESSAGES. (4 cr; limited to 48 students; prereq formal pre-jour program filed 1001, freshman composition or exemption, Δ formerly Jour 1003; A-F only) Huntzicker
Lect 0900-1015, MW, MurH 105
Lab 1 (191633) 1030-1130 M, MurH 435
Lab 2 (091634) 1145-1245 M, MurH 435
Lab 3 (891635) 1030-1130 W, MurH 435
Lab 4 (792096) 1145-1245 W, MurH 435

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.

SECOND TERM

#1001. INTRODUCTION TO MASS COMMUNICATION. (190238) (4 cr; limited to 72 students; 1400-1515 MTWTh; MurH 308; A-F only) Babcock
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.

#3101. REPORTING. (090239) (4 cr; limited to 16 students; prereq jour maj status, 3004; grad students must pass 30 wpm; Δ; 0915-1215 MTWTh; MurH 212; A-F only) Babcock
Fact gathering and journalistic writing. Problems in judgment and handling of news and news features.

3970. PROJECTS IN JOURNALISM. (085185) (1-4 cr per term [max 8 cr]; prereq jour major or minor status, #, Δ, □) Staff
Independent Study; projects.

3980. DIRECTED INSTRUCTION. (392134) (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) 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.

#5741. MINORITIES AND MASS MEDIA. (291641) (4 cr; limited to 36 students; if you have not been officially admitted to major or minor status in a SJMC program, you may not apply this toward the major or minor: 1415-1555 TWTh; MurH 311; 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. (886791) (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. (289078) (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; projects.

8777. THESIS CREDITS: MASTERS. (789506) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589507) (1-36 cr [max 11 cr per summer term])

8970. ADVANCED PROJECTS IN MASS COMMUNICATION. (686792) (1-4 cr [max 8 cr]; prereq grad major or minor in mass comm, #, Δ; A-F only) Staff
Individual research.

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. (990590) (3 cr; SPE 3110; 0800-0900 MTWThF; CookeH 214; A-F only; Physical Education Licensure) Serfass
Emphasizes bones, nerves, and muscles and their significance in physical education.

#3327. TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL. (790591) (3 cr; SPE 3327; prereq elem education major; limited to 35 students; 0800-0900 MTWThF; NorrisH 3, 151; A-F only; Physical Education Licensure) Lampe
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.

3625. SUPERVISED PRACTICAL EXPERIENCE. (590592) (1-12 cr [max 12 cr]; SPE 3625; prereq Δ; S-N only) Stoner
On-the-job experience under a specialist in the practical area of study.

5102. PRACTICUM: DEVELOPMENTAL/ADAPTED PHYSICAL EDUCATION. (191740) (1-6 cr [max 6 cr]; \$5102; prereq 5100, 5101, PE 5100, 5101 or #) 0800-1000 MTWThF; CookeH 215, June 16-July 6; S-N only (Physical Education Licensure) Burton.

Observation of and participation in physical education instruction for students with disabilities; includes seminar component for discussion of current issues in developmental/adapted physical education and exchange of ideas and problems.

5521. PEDAGOGY I: ELEMENTARY PHYSICAL EDUCATION I. (090953) (6 cr; prereq #: 0915-1115 MTWThF; Norris M151, 3; A-F only; Physical Education Licensure) Lampe
The planning, structuring, communicating, class management, and evaluating role of the contemporary K-middle school physical educator in diverse settings.

5720. TOPICS IN KINESIOLOGY. (1-12 cr [max 12 cr]; SPE 5720; prereq #: A-F only)

Sec 1, (190594) Early Childhood Adapted Physical Education—June 16-July 6. 3 cr, 1400-1500 MTWThF, CookeH 214, Physical Education Licensure, Burton

Sec 2, (090595) Technology Applications in Sport and Physical Education—June 29-July 10. 3 cr, 1300-1700 MTWThF, CookeH 400, (Physical Education Licensure) Stoner

Sec 3, (191745) Issues in Youth Sports. 3 cr, 0915-1015 MTWThF, CookeH 214 Wiese-Bjornstal
See special course description, above.

#5740. WORKSHOP: COACHING OF INDIVIDUAL, DUAL, OR TEAM SPORTS—VOLLEYBALL. (791742) (1-12 cr [max 12 cr]); limited to 40 students; 1300-1500 MTWThF; June 16-July 6; CookeH 215, 325; 3 cr this offering, (Physical Education Licensure)Wiese-Bjornstal

5860. LEGAL ASPECTS OF SPORT AND PHYSICAL ACTIVITY. (391744) (4 cr; prereq \$Rec 5860, 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; SPE 5981; prereq MEd candidate, #; A-F only)
Focus on teaching of physical education.

Sec 21, (890596) Serfass
Sec 22, (690597) Stoner
Sec 23, (490598) Burton
Sec 24, (191737) Wiese-Bjornstal
Sec 25, (290599) Wade

5983. READINGS: KINESIOLOGY. (Cr ar [max 9 cr]; SPE 5983; prereq education or graduate student; A-F only)
Sec 21, (090600) Serfass
Sec 22, (890601) Stoner
Sec 23, (690602) Burton
Sec 24, (991738) Wiese-Bjornstal
Sec 25, (490603) Wade

8777. THESIS CREDITS: MASTERS. (490679) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (890680) (1-36 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (Cr and hrs ar; SPE 8981; prereq 8980 or #; S-N only)
Individual problems.

Sec 21, (290604) Serfass
Sec 22, (190605) Stoner
Sec 23, (990606) Burton
Sec 24, (791739) Wiese-Bjornstal
Sec 25, (790607) Wade

SECOND TERM

3111. MECHANICS OF MOVEMENT—July 23-August 26. (590608) (3 cr; SPE 3111; prereq CBN 1027, 0800-0915 MTWThF; NorrisH 3; A-F only; Physical Education Licensure) Greer
Structure of the body; principles and mechanics of bodily movements.

#3115. PHYSIOLOGICAL APPLICATION TO SPORTS—July 23-August 26. (390609) (3 cr, SPE 3385, 3386, PE 3115, PE 3385, PE 3386; limited to 40 students; prereq Phsl 3051 or #; 1030-1145 MTWThF; NorrisH 3; A-F only; Physical Education Licensure) Greer

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 23-August 26. (790610) (3 cr; \$PE 3143; prereq 2 cr coaching course; 0915-1030 MTWThF; CookeH 206; A-F only; Physical Education Licensure) Krotec
Principles, policies, and procedures involved in the coaching of interscholastic sports.

5141. NUTRITION FOR EXERCISE AND PHYSICAL PERFORMANCE—July 23-August 26. (190613) (3 cr; \$HEEd 5412, PE 5141; limited to 30 students; prereq 3115 or FScn 1612 or equiv; 1145-1300 MTWThF; CookeH 214, 215) Leon, 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. (891747) (4 cr; \$Soc 5371; \$PE 5371; A-F only) 0800-0915 MTWThF; CookeH 214; July 23-Aug. 19) Krotec
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.

5460. FOUNDATIONS OF SPORT MANAGEMENT—July 23-August 7. (090614) (3 cr; \$PE 5460, \$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 the sport management and fitness areas. Meets with Rec 5460.

5522. PEDAGOGY II: SECONDARY PHYSICAL EDUCATION—July 23-August 26. (890954) (6 cr; prereq #; 0915-1115 MTWThF; CookeH 400, 325, Fieldhouse; A-F only; Physical Education Licensure) Spletzer
This course focuses on the planning, structure, communicating, class management and evaluating role of the contemporary middle school through 12th grade physical educator in diverse settings.

5720. TOPICS IN KINESIOLOGY. (1-12 cr [max 12 cr]; each section limited to 30 students; \$PE 5720; prereq #; A-F only)

Sec 1, Systematic Observation in Physical Education—July 23-August 12. (890615) (3 cr, 1300-1500 MTWThF, CookeH 400, Physical Education Licensure) Bayless
Sec 2, Human Factors Physiology—July 23-August 19. (691748) (3 cr; 1300-1415 MTWThF; CookeH 215) Hancock
Observational techniques and systems useful to physical educators.

5980. RESEARCH METHODOLOGY—July 23-August 19. (490617) (3 cr; \$PE 5980; prereq education or grad student; 1300-1415 MTWThF; CookeH 109; A-F only) Kane
Methods and design for research in health, physical education, and recreation.

5981. PROBLEMS. (Cr and hrs ar; \$PE 5981; prereq MEd candidate, #; A-F only)
See First Term.

Sec 21, (290618) Greer
Sec 22, (190619) Krotec
Sec 23, (490620) Kane
Sec 24, (290621) Wade

5983. READINGS: KINESIOLOGY. (Cr ar [max 9 cr]; \$PE 5983; prereq education or graduate student; A-F only)
See First Term.

Sec 21, (290623) Greer
Sec 22, (790624) Krotec
Sec 23, (590625) Kane
Sec 24, (390626) Wade

8777. THESIS CREDITS: MASTERS. (690681) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (490682) (1-36 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (Cr and hrs ar; \$PE 8981; prereq 8980 or #; S-N only)
See First Term.

Sec 21, (090628) Greer
Sec 22, (890629) Krotec
Sec 23, (190630) Kane
Sec 24, (090631) 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. (486664) (Cr ar; prereq 3rd or 4th yr medical student, #) Halberg

5141. PROBLEMS IN EXPERIMENTAL PATHOLOGY. (286665) (Cr ar; prereq 3rd or 4th yr medical student, #) Staff

5152. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING: (Veterans Administration Hospital). (786668) (Cr ar; prereq 3rd or 4th yr medical student) Posalaky

5158. CARDIAC PATHOLOGY (Miller Hospital). (986670) (Cr ar; prereq 3rd or 4th yr medical student, #) Titus, Edwards

5192. LABORATORY MEDICINE FOR PRIMARY CARE (Virginia). (186674) (Cr ar; prereq 4th yr medical student, #) Knabe

5193. CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital). (086675) (Cr ar; prereq #) Eilers

5194. COMPUTER APPLICATIONS IN MEDICINE. (788176) (Cr ar; prereq #) Ellis

5195. COMPUTER APPLICATIONS IN MEDICAL RESEARCH. (588177) (Cr ar; prereq #) Ellis

5203. CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank). (886676) (Cr ar; prereq #) Polesky

5210. SURGICAL PATHOLOGY FOR POST-MDs. (888511) (1-10 cr; prereq regis med fellow spec, #)

5211. AUTOPSIES FOR POST-MDs. (688512) (1-10 cr; prereq regis med fellow spec, #)

5212. ADVANCED NEUROPATHOLOGY FOR POST-MDs. (488513) (1-5 cr; prereq regis med fellow spec, #) Sung

5213. LABORATORY MEDICINE FOR POST-MDs. (288514) (1-10 cr; prereq regis med fellow spec, #)

SPECIAL TERMS: SIX-WEEK COURSES

5113. SURGICAL PATHOLOGY: UNIVERSITY HOSPITALS. (086661) (9 cr; prereq 3rd or 4th yr medical student) Snover

5114. SURGICAL PATHOLOGY (Hennepin County Medical Center). (886662) (9 cr; prereq 3rd or 4th yr medical student) Anderson

5115. SURGICAL PATHOLOGY (Veterans Administration Hospital). (686663) (9 cr; prereq 3rd or 4th yr medical student) Ewing

5119. FORENSIC PATHOLOGY—Medical Examiner's Office, Hennepin County Medical Center. (589071) (9 cr; prereq year 3 or 4) Peterson
The function of a medical examiner's office in determining the cause and manner of types of death.

5141. PROBLEMS IN EXPERIMENTAL PATHOLOGY. (286665) (Cr ar; prereq 3rd or 4th year medical student, #) Staff

5150. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING: (University Hospitals). (186666) (9 cr; prereq 3rd or 4th year medical student) Burke

5151. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING (Hennepin County Medical Center). (986667) (9 cr) Anderson, Strom

5153. ANATOMIC PATHOLOGY IN A HOSPITAL SETTING (St. Paul-Ramsey Medical Center). (586669) (9 cr; prereq 3rd or 4th yr medical student) Posalaky

5181. LABORATORY AND CLINICAL HEMATOLOGY. (786671) (9 cr; prereq #) Brunning

5184. IMMUNOHEMATOLOGY IN BLOOD BANKING. (386673) (9 cr; prereq #) McCullough

5186. LABORATORY MEDICINE IN A COMMUNITY HOSPITAL. (185047) (9 cr; prereq 4th yr medical student, #) Bandt

Landscape Architecture (LA)

205 North Hall, St. Paul. 625-8285
(Architecture and Landscape Architecture)
College of Agriculture, Institute of Technology

FIRST TERM

5132. DIRECTED STUDIES IN LANDSCAPE ARCHITECTURE DESIGN. (485241) (1-6 cr; prereq third yr landscape architecture student, Δ; A-F only) Nassauer

5140. INTERDISCIPLINARY STUDIES IN LANDSCAPE ARCHITECTURE. (185498) (2-6 cr [max 18 cr]; prereq #; A-F only) Staff

8500. LANDSCAPE ARCHITECTURE RESEARCH PROJECT. (390898) (1-6 cr; prereq 8283 cr #; A-F only) Pitt

8777. THESIS CREDITS: MASTERS. (389279) (1-16 cr [max 11 cr per summer term])

SECOND TERM

5140. INTERDISCIPLINARY STUDIES IN LANDSCAPE ARCHITECTURE. (187081) (2-6 cr [max 18 cr]; prereq #; A-F only) Staff

8500. LANDSCAPE ARCHITECTURE RESEARCH PROJECT. (190899) (1-6 cr; prereq 8283 cr #; A-F only) Pitt

8777. THESIS CREDITS: MASTERS. (189518) (1-16 cr [max 11 cr per summer term]) Ewing

Latin American Studies (LAS)

Area Studies Programs. 624-8543
232a Social Science
College of Liberal Arts

FIRST TERM

3121. LATIN AMERICA. (791661) (4 cr; \$Geog 3121; 0915-1145 TTh; BlegH 105) Weil

SECOND TERM

3424. HISTORY OF MEXICO: PRE-COLUMBIAN PERIOD THROUGH INDEPENDENCE. (391663) (4 cr; \$Hist 3424; 1030-1130 MTWThF, BlegH 115) Schwartz

3427. HISTORY OF CUBA AND PUERTO RICO. (092167) (4 cr; \$Chic 3427, Hist 3427; 0915-1015 MTWThF; BlegH 260) Valdes

Latin (Lat)

309 Folwell Hall. 625-5353
(Classical and Near Eastern Studies)
College of Liberal Arts

FIRST TERM

3001. BEGINNING LATIN: INTENSIVE. (085672) (10 cr, \$1101-1102; 0915-1245 MTWThF; FolH 234) Erickson
Grammar, syntax, composition, and reading.

8777. THESIS CREDITS: MASTERS. (389282) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089284) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3002. LATIN READINGS. (785438) (5 cr, \$1103; continuation of 3001 for 3rd quarter of beg Latin; 1030-1130 MTWThF; FolH 142) Sheets Reading of selected Latin authors, development of reading proficiency.

8777. THESIS CREDITS: MASTERS. (989522) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589524) (1-36 cr [max 11 cr per summer term])

Law School (Law)

285 Law. 625-1000
Law School

Calendar

May 26

First day of summer session classes

July 27

Last day of summer session classes

July 26, 27

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 \$232.50 per credit for MN residents and \$465.00 for nonresidents. 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 22, 1992. 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, May 26-July 27

5051. BA/CORPUS I. (992128) (4 cr; 0745-0915 MTWTh; Law 50, 65) Matheson

Introduction to general law of multi-person unincorporated business organizations, principally partnerships and limited partnerships. Procedures for forming such organizations, rights and obligations of participants among themselves and with respect to third persons. Corporate organization; distribution of powers among corporate board of directors, its officers and stockholders; proxy system; control devices in close corporation; fiduciary duties of directors, officers, and controlling shareholders.

5109. CREDITORS' REMEDIES/SECURED TRANSACTIONS. (892168) (4 cr;

prereq Δ ; 0925-1040 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.

5153. WILLS AND TRUSTS. (092170) (4 cr; prereq Δ ; 1205-1320 MTWTh; Law 50, 65) Younger Owners' power to choose who will succeed to their property when they die. Wills, will substitutes (includes intestate succession), rudiments of gift and estate taxation, and future interests.

5219. EVIDENCE. (086336) (4 cr; prereq Δ ; 1105-1235 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. (987933) (2 cr; prereq Δ ; 0830-0915 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.

5618. TRIAL PRACTICE. (692169) (3 cr; prereq civil procedure and evidence; 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 and they 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.

Learning and Academic Skills (LASK)

104 EddyH. 624-7546
College of Liberal Arts

1303. INTERNSHIP EXPERIENCE FOR DISABLED STUDENTS. (988984) (2 cr; prereq 1302 or equiv; 1300-1515 Th; VinH 1)

Linguistics (Ling)

142 Klaeber Court. 624-3528
(Linguistics)
College of Liberal Arts

FIRST TERM

3001. INTRODUCTION TO LINGUISTICS. (785715) (5 cr, \$3005, \$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. (187209) (1-5 cr; prereq linguistics major, #, Δ , \square) Guided individual reading or study.

5001. INTRODUCTION TO LINGUISTICS. (585716) (5 cr, \$3001, \$3005; prereq grad standing or #; 1300-1515 MWF, 1300-1400 TTh; FolH 234) See 3001. Meets with 3001.

5731. A CONTRASTIVE APPROACH TO MODERN ENGLISH. (188515) (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. (988516) (1-5 cr; prereq Ling or ESL major, #, Δ , CLA approval)

8777. THESIS CREDITS: MASTERS. (689286) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489287) (1-36 cr [max 11 cr per summer term])

8900. INDEPENDENT STUDY. (788517) (1-5 cr; prereq Ling major, #)

SECOND TERM

5732. A CONTRASTIVE APPROACH TO MODERN ENGLISH. (588518) (4 cr; prereq 5731; does not fulfill degree requirements for majors in ling or ESL; 1300-1515 MWF; FolH 234) Linguistic structures of standard English and contrastive analysis of these structures with those of another language. Implications for learning English as a second language. NOTE: This course is the second in a two-course sequence.

5970. DIRECTED STUDIES. (388519) (1-5 cr; prereq ling or ESL major, #, Δ , CLA approval)

8777. THESIS CREDITS: MASTERS. (089527) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889528) (1-36 cr [max 11 cr per summer term])

8900. INDEPENDENT STUDY. (788520) (1-5 cr; prereq Ling major, #)

Logistics Management (LM)

1235 Mgmt/Econ. 624-5055
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on page 27.

FIRST TERM

3000. INTRODUCTION TO LOGISTICS MANAGEMENT. (891652) (4 cr; \$Tran 3064, 8264; prereq Econ 1101 or equiv; A-F only; 0915-1115 MWF; BlegH 330) Harper 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. (886337) (Cr ar; prereq consent of advisor, #, Grad School of Mgmt approval; A-F only)

8995. GRADUATE RESEARCH IN LOGISTICS MANAGEMENT. (686338) (Cr ar; prereq Grad School of Mgmt approval; A-F only)

SECOND TERM

8990. READINGS IN LOGISTICS MANAGEMENT. (486339) (Cr ar; prereq consent of advisor, #, Grad School of Mgmt approval; A-F only)

8995. GRADUATE RESEARCH IN LOGISTICS MANAGEMENT. (886340) (Cr ar; prereq Grad School of Mgmt approval; A-F only)

M

Management (Mgmt)

735 Management/Economics Building.
624-5232
Carlson School of Management

Refer to registration instructions for undergraduate Carlson School of Management courses on page 27.

FIRST TERM

3001. FUNDAMENTALS OF MANAGEMENT. (4 cr, \$8001; each section limited to 40 students; A-F only) Saavedra 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. Sec 1, (185346) 0900-1130 MW, BlegH 415

8990. READINGS IN MANAGEMENT THEORY AND ADMINISTRATION. (885348) (Cr ar; prereq 2nd yr grad stu, consent of adviser 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. (685349) (Cr ar; prereq consent of adviser, 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)

r5101. MANAGERIAL COMMUNICATIONS. (4 cr; limited to 20 students; prereq sr or grad, #, SMgmt approval)

Sec 1, (691653) 1300-1445 TTh, BlegH 330, Facchino

r8006. PSYCHOLOGY IN MANAGEMENT. (489953) (4 cr; §3002; prereq grad mgmt student or Grad Sch Mgmt approval; limited to 20 students; 1730-2100 T; BlegH 330)

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

r3001. FUNDAMENTALS OF MANAGEMENT. (686310)

(4 cr; §8001; limited to 45 students; 0900-1130 MW; BlegH 330; A-F only) Hoover
See First Term.

r3004. BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION. (5 cr; limited to 35 students; prereq sr and completion of business core or § final core course; A-F only) Berger

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.

Sec 1, (491654) 1030-1245 MTW; HHHCTr 25

8990. READINGS IN MANAGEMENT THEORY AND ADMINISTRATION. (486311) (Cr ar; prereq consent of adviser, Grad Sch Mgmt approval, and #, 2nd-yr grad student and requisite introductory courses) Staff

See First Term.

8995. RESEARCH IN MANAGEMENT THEORY AND ADMINISTRATION. (286312) (Cr ar; prereq consent of adviser 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 page 27.

FIRST TERM

r3000. PRINCIPLES OF MARKETING. (085350) (4 cr; §8000; limited to 35 students; prereq Econ 1101; A-F only; 0915-1115 MWF; BlegH 340)

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.

r3010. BUYER BEHAVIOR AND MARKETING ANALYSIS. (791658) (4 cr; limited to 35 students; prereq 3000 and OMS 1020 or equiv.; 0915-1115 MWF; HHHCTr 35) Childers

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 concepts and processes, consumer and organizational decision-making models, and managerial applications of these models.

8990. READINGS IN MARKETING. (885351) (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. (685352) (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)

r8051. MARKETING RESEARCH. (591659) (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) John, D.

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.

r8078. MARKETING COMMUNICATIONS. (088796) (4 cr; limited to 15 students; prereq either MBA core courses, or MBA 8045, grad Mgmt student or Grad School Mgmt approval; 1730-2100 T; BlegH 340) Ross

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

r3020. MARKETING OPERATIONS MANAGEMENT. (786315) (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. (586316) (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. (186318) (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

r5100. MANAGEMENT TOPICS—June

8-July 11. (088958) (Cr ar; limited to 10 students; prereq #) Lyon, France

FIRST AND SECOND TERMS:

TEN-WEEK COURSES (Register once in Term I)

r8005. COMPUTER ACCESS AND PROGRAMMING FOR BUSINESS ANALYSIS. (1 cr; MBA students only; limited to 50 students; S-N only)

Provides computer access and use information necessary for MBA courses. Covers introduction to computer terminology and computing at Minnesota, plus programming in BASIC. Sec 1, (485353) 1300-1500 M, HHHCTr 25

r8015. HUMAN RESOURCES MANAGEMENT. (285354) (4 cr; MBA students only; limited to 60 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 and industrial relations professionals.

r8020. BUSINESS STATISTICS: DATA SOURCES, PRESENTATION, AND ANALYSIS. (688932) (4 cr; MBA students only; limited to 30 students; A-F only; 1730-2100 M; BlegH 425)

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.

r8025. DECISION SCIENCES AND INFORMATION SYSTEMS. (185355) (4 cr; MBA students only; limited to 50 students; A-F only; 1000-1145 MW; BlegH 425)

Systems analysis, probability and decision analysis applied to managerial problems under uncertainty.

Formulation and interpretation of mathematical models. The role of information systems in decision making. Principles of implementation of decision science models and information system.

r8030. FINANCIAL ACCOUNTING. (588812) (4 cr; MBA students only; limited to 15 students; A-F only; 1730-2100 T; BlegH 440)

Understanding, interpreting, and analyzing financial statements of business enterprises.

r8035. MANAGERIAL ACCOUNTING. (388813) (4 cr; MBA students only; limited to 60 students; A-F only; 0800-0945 MW; BlegH 425)

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.

r8040. FINANCIAL MANAGEMENT. (985356) (4 cr; MBA students only; limited to 60 students; A-F only; 1300-1445 TTh; BlegH 425) 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.

r8045. MARKETING MANAGEMENT. (189736) (4 cr; MBA students only; limited to 20 students; A-F only; 1730-2100 Th; BlegH 425)

Managing the marketing function; marketing planning, strategy, and management concepts. Identification of marketing problems and opportunities; construction, evaluation, and management of a marketing plan.

r8050. OPERATIONS MANAGEMENT. (4 cr; MBA students only or #; limited to 60 students; 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.

Sec 1, (785357) 1300-1600 W, Law 35

r8060. STRATEGY AND POLICY. (190054) (4 cr; limited to 12 students; MBA students only, 1730-2100 T; Law 15; A-F only)

Emphasis on development of skills necessary for effective oral presentation, written presentation, and oral attack and defense of alternative positions. Focuses on strategy, planning, and control systems.

Materials Science (MatS)

151 Amundson Hall, 625-1313
(Chemical Engineering and Materials Science)
Institute of Technology

FIRST TERM

■3400. MECHANICAL PROPERTIES OF MATERIALS. (686212) (4 cr; prereq 2nd-year IT student; limited to 125 students; 0800-0955 MWF; AmundH B75) 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. (486213)(286214)(186215) (Cr ar; prereq sr)

8480, 8481, 8482. SELECTED TOPICS IN MATERIALS SCIENCE AND ENGINEERING. (986216) (786217) (586218) (Cr ar)

8777. THESIS CREDITS: MASTERS. (989293) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589295) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5481, 5482, 5483. SPECIAL PROBLEMS IN PHYSICAL METALLURGY AND MATERIALS SCIENCE. (586803) (386804) (186805) (Cr ar; prereq sr)

8480, 8481, 8482. SELECTED TOPICS IN MATERIALS SCIENCE AND ENGINEERING. (086806) (886807) (686808) (Cr ar)

8777. THESIS CREDITS: MASTERS. (889531) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689532) (1-36 cr [max 11 cr per summer term])

Mathematics (Math)

127 Vincent Hall, 625-2004
Institute of Technology
(See also General College)

FIRST TERM

■1005. INTRODUCTION TO ELEMENTARY MATHEMATICS. (986233) (4 cr; prereq pre-elem educ stu, 1111 or equiv; May not be applied toward any CLA degree; limited to 30 students; 1145-1245 MTTh, 1030-1245 WF; VinH 206) Harper
For pre-elementary education students. Elementary computer programming (BASIC), progressions, financial mathematics, counting problems and other selected topics.

■1008. TRIGONOMETRY. (786234) (4 cr, §1201; prereq plane geometry, 2 yrs high school algebra or §1111, grade of C or better in GC 0631; limited to 35 students; 0915-1015 MWF; 0915-1130 TTh; VinH 209)
Analytic trigonometry, identities, equations, and properties of trigonometry functions; right and oblique triangles.

■1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY. (5 cr, §1201; prereq plane geometry, 2 yrs high school algebra or plane geometry, grade of C or better in GC 0631; each section limited to 40 students)
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, (586235) 0800-1015
MTWThF, VinH 20
Sec 2, (386236) 0915-1130
MTWThF, VinH 313
Sec 3, (189759) 1030-1245
MTWThF, VinH 20

■1131. FINITE MATHEMATICS. (186237) (5 cr; prereq 3½ yrs high school math or grade of C or better in 1111, pre-bus or soc and behav sci students; limited to 40 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.

■1142. SHORT CALCULUS. (5 cr, §1211, §1411H; prereq 3½ yrs of high school math or grade of C or better in 1111 or 1181 or 1201; each section limited to 40 students)
For students requiring a minimal amount of calculus. Derivatives, integrals, differential equations, maxima and minima, partial differentiation, applications.

Sec 1, (086238) 0800-1015
MTWThF, VinH 364
Sec 2, (886239) 1030-1245
MTWThF, VinH 364

■1201. PRE-CALCULUS. (186240) (5 cr, §1008, §1111; prereq 4 yrs high school math including trigonometry; limited to 30 students; 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.

■1211. CALCULUS I. (086241) (4 cr, §1142, §1411H; prereq 4 yrs high school math including trigonometry or grade of C or better in [1201 or 1191] or [1008, 1111]; may be used to replace 1251; limited to 40 students; 0915-1130 MTWThF; VinH 2)
Analytic geometry and calculus of functions of one variable, applications.

■1221. CALCULUS II. (686243) (5 cr, §1421H; prereq grade of C or better in 1211; may be used to replace 1252; limited to 50 students; 1030-1245 MTWThF; VinH 1)
See 1211.

■1241. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS I. (690518) (5 cr; limited to 35 students; §1231, §3142, §3211, §3511; prereq grade C or better in 1221 or equiv may be used to replace 1261; 0800-1015 MTWThF; VinH 16)
Linear algebra, geometry, and linear transformations in two, three, and more generally n-dimensional space; curves; limits and continuity in the multi-variable setting.

■1251. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS I. (4 cr; §1451, 1211, 1411H; prereq 4 yrs high school math including trig, or C grade or better in 1201 or 1008, 1111, or equiv; limited to 40 students)
Calculus of functions of one-variable and related geometry and applications.
Sec 1, (191860) 0800-1015
MTWThF, VinH 6

■1252. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS II. (891862) (4 cr; §1452H, 1221, 1421H; prereq C grad or better in 1251; limited to 40 students; 0800-1015 MTWThF; Arch 35)

■1261. THE ALGEBRA AND GEOMETRY OF EUCLIDEAN SPACE. (492027) (4 cr; §1241, 3142, 3211, 3221, 3511H; prereq 1251 or equiv; limited to 40 students; 1030-1245 MTWThF; SciCB 125)
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.

■1342. LINEAR ALGEBRA. (286245) (5 cr, §1241, §1261; prereq 1252 or 1221; limited to 40 students; 0915-1015 MWF, 0915-1130 TTh; VinH 211)
Vectors, systems of linear equations, matrices, determinants, eigenvalues, applications. Techniques and some proofs of theorems.

■3311. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS II. (5 cr; §1231, §3142, §3211, §3511; each section limited to 35 students; prereq grade of C or better in 1241; may be used to replace 3251)
Differentiation, extreme values, and integration of functions of several variables.

Sec 1, (890520) 0800-1015
MTWThF, VinH 207
Sec 2, (690521) 1030-1245
MTWThF, VinH 314

■3321. DIFFERENTIAL EQUATIONS AND GENERAL VECTOR SPACES. (490522) (5 cr; limited to 40 students; §3066, §3142, §3212, §3221, §3511H; prereq grade of C or better in 1241 or equiv; may be used to replace 3261; 0800-1015 MTWThF; AkerH 211)
Vector spaces, especially vector spaces of functions; linear transformations and eigenvalues; first order differential equations; linear differential equations and linear differential systems.
Recommended that 3311 be taken first.

■3331. INFINITE SEQUENCES AND SERIES; VECTOR INTEGRAL CALCULUS. (290523) (5 cr; limited to 35 students; §1231, §1431H; prereq 3311; 0800-1015 MTWThF; JonesH 4)

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 be taken first.

■5082. FUNDAMENTALS OF ALGEBRA. (691863) (4 cr; not intended for math majors or minors; prereq 3511H or 3212 or 3142 or 3221 or 3311 or equiv; limited to 30 students; 0915-1015 MWF; 0915-1130 TTh; VinH 301; A-F only)
Number theory including fundamental theorem of arithmetic and congruences; at least one general algebraic structure (group ring or field); equivalence relations; possible other topics. Proofs by mathematical induction and by contradiction.

■5242. LINEAR ALGEBRA WITH APPLICATIONS. (4 cr, §5232-5233, §5264, §5284 prereq 3521H or 3213 or 3142 or 3221 or equiv; limited to 40 students)
Systems of linear equations, finite dimensional linear spaces, bases, linear transformations, matrices, determinants, eigenvalues, reduction to canonical forms, quadratic and bilinear forms, applications.

Sec 1, (986247) 1145-1245 MTTh,
1030-1245 WF, VinH 301

■5245. INTRODUCTION TO MODERN ALGEBRA I. (491864) (4 cr; §5282; prereq 3321 or 3511H or equiv or #; limited to 40 students; 0915-1015 MWF; 0915-1130 TTh; VinH 113)
Basic algebra course; a more concrete level than 5282-5283; 5284. Group theory, including normal subgroups, homomorphism; automorphism, the theory of Langrange and rings, and fields. Linear algebra including ideals, integral domains, Euclidean rings, polynomial rings and fields. Linear algebra including an abstract approach to vector spaces, and their linear transformations, and their structure.

■5457. METHODS OF APPLIED MATHEMATICS. (786248) (4 cr; prereq 3211-3212-3213 or 3511-3521-3531 or equiv; limited to 35 students; 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.

■5512. DIFFERENTIAL EQUATIONS WITH APPLICATIONS I. (585084) (4 cr; prereq 3521H or 3213 or [3211, 3066] or [3211, 3221] or equiv; limited to 35 students; 0915-1015 MWF; 0915-1130 TTh; VinH 206)
Applications, review of special techniques, and numerical approximation for first-order equations. Euler and Runge-Kutta methods with error analysis. Applications and power series solutions for second-order equations.

#5567. FOURIER SERIES AND BOUNDARY VALUE PROBLEMS. (188246) (4 cr, \$5571; prereq 3521H or 3213 or [3211, 3066] or [3211, 3221] or equiv or #; limited to 30 students; 1145-1245 MTTh, 1030-1245 WF; VinH 311)

Partial differential equations of theoretical physics. Fourier Series, proof of convergence, orthogonal systems, Sturm-Liouville systems, solution of boundary value problems by separation of variables, applications.

#5606. ADVANCED CALCULUS: A RIGOROUS APPROACH. (088832) (4 cr; prereq 3211-3212-3213 or 3411-3431 or 3511-3521-3531; limited to 35 students; 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. Analysis on the line and in Euclidean space. Other topics of the instructor's choice.

#5900. TUTORIAL COURSE IN ADVANCED MATHEMATICS. (588664) (Cr ar; limited to 10 students; prereq #)

8777. THESIS CREDITS: MASTERS. (189289) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489290) (1-36 cr [max 11 cr per summer term])

8990. READING AND RESEARCH. (187212) (Cr ar)

SECOND TERM

#1008. TRIGONOMETRY. (4 cr, \$1201; prereq plane geometry, 2 yrs high school algebra or #1111, grade of C or better in GC 0631; each section limited to 30 students)
See First Term.

Sec 1, (486809) 0915-1015 MWF, 0915-1130 TTh, VinH 209
Sec 2, (886810) 1145-1245 MTTh, 1030-1245 WF, VinH 209

#1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY. (5 cr, \$1201; prereq plane geometry, 2 yrs high school algebra or plane geometry, grade of C or better in GC 0631; each section limited to 40 students)
See First Term.

Sec 1, (686811) 0800-1015 MTWThF, VinH 1
Sec 2, (486812) 1030-1245 MTWThF, VinH 6

#1142. SHORT CALCULUS. (5 cr, \$1211, \$1411H, prereq 3¹/₂ yrs high school math or grade of C or better in 1111 or 1181 or 1201; each section limited to 40 students)
See First Term.

Sec 1, (286813) 0800-1015 MTWThF, VinH 313
Sec 2, (186814) 1030-1245 MTWThF, VinH 313

#1201. PRE-CALCULUS. (986815) (5 cr, \$1008, \$1111; prereq 4 yrs high school math including trigonometry; limited to 30 students; 1030-1245 MTWThF; VinH 301)
See First Term.

#1211. CALCULUS I. (786816) (5 cr, \$1142, \$1411H; prereq 4 yrs high school math including trigonometry or

grade of C or better in 1201 or 1191) [1008 and 1111]; limited to 40 students; may be used to replace 1251; 1030-1245 MTWThF; VinH 20)
See First Term.

#1221. CALCULUS II. (386818) (5 cr, \$1421H; prereq grade of C or better in 1211; limited to 50 students; may be used to replace 1252; 0800-1015 MTWThF; AmundH B75)
See 1211 First Term.

#1241. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS I. (990525) (5 cr; limited to 35 students; \$1231, \$3142, \$3211, \$3511; prereq grade C or better in 1221 or equiv; may be used to replace 1261; 0800-1015 MTWThF; VinH 16)
See First Term

#1251. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS I. (291865) (4 cr; \$1451H, 1211, 1411H; prereq 4 yrs high schl math incl trig, or C grade or better in 1201 or 1008, 1111, or equiv; limited to 40 students; 0800-1015 MTWThF; VinH 20)
See First Term.

#1252. ONE-VARIABLE DIFFERENTIAL AND INTEGRAL CALCULUS II. (191866) (4 cr; \$1452H, 1221, 1421H; prereq C grade or better in 1251; limited to 40 students; 1030-1245 MTWThF; AmundH B75)
See 1251 First Term.

#1261. THE ALGEBRA AND GEOMETRY OF EUCLIDEAN SPACE. (292028) (4 cr; \$1241, 3142, 3211, 3221, 3511H; prereq 1251 or equiv; limited to 40 students; 1030-1245 MTWThF; VinH 16)
See First Term.

#3311. LINEAR AND NONLINEAR MULTIVARIABLE ANALYSIS II. (5 cr; each section limited to 35 students; \$1231, \$3142, \$3211, \$3511; prereq grade C or better in 1241; may be used to replace 3251)
See First Term.

Sec 1, (590527) 0800-1015 MTWThF, Arch 35
Sec 2, (390528) 1030-1245 MTWThF, VinH 2

#3321. DIFFERENTIAL EQUATIONS AND GENERAL VECTOR SPACES. (5 cr; each section limited to 35 students; \$3066, \$3142, \$3212, \$3221, \$3511H; prereq grade of C or better in 1241 or equiv; may be used to replace 3261)
See First Term.

Sec 1, (190529) 0800-1015 MTWThF, VinH 2
Sec 2, (590530) 1030-1245 MTWThF, VinH 1

#3331. INFINITE SEQUENCES AND SERIES; VECTOR INTEGRAL CALCULUS. (390531) (5 cr; limited to 35 students; \$1231, \$1431H; prereq 3311; 1030-1245 MTWThF; VinH 311)
See First Term.

#5243. LINEAR ALGEBRA WITH APPLICATIONS. (4 cr, prereq 5242; limited to 30 students)
See 5242 First Term.

Sec 1, (586820) 1145-1245 MTTh, 1030-1245 WF, VinH 207

#5246. INTRODUCTION TO MODERN ALGEBRA II. (991867) (4 cr; \$5283; prereq 5245; limited to 40 students; 0915-1015 MWF; 0915-1130 TTh; MechE 221)
See First Term.

#5458. METHODS OF APPLIED MATHEMATICS. (386821) (4 cr; prereq 5457; limited to 35 students; 0915-1015 MWF; 0915-1130 TTh; VinH 211)
See 5457 First Term.

#5607. ADVANCED CALCULUS: A RIGOROUS APPROACH. (188831) (4 cr; prereq 5606; limited to 35 students; 1145-1245 MTTh; 1030-1245 WF; VinH 314)
See 5606 First Term.

#5679. PROBABILITY. (385085) (4 cr, \$5681 \$Stat 5131; prereq 3521H or 3211 or 3311 or equiv; limited to 35 students; 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.

#5900. TUTORIAL COURSE IN ADVANCED MATHEMATICS. (388665) (Cr ar; limited to 10 students prereq #)

8777. THESIS CREDITS: MASTERS. (685529) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089530) (1-36 cr [max 11 cr per summer term])

8990. READING AND RESEARCH. (787979) (Cr ar)

Mathematics Education (MthE)

125 Peik Hall. 625-6372
(Curriculum and Instruction)
College of Education

FIRST TERM

#5082. TEACHING ALGEBRA. (991724) (3 cr; limited to 24 students; prereq mathematics education major or minor, Math 5082 or #5082 or #; 1300-1515 TTh; PeikH 375; A-F only) Stochl
Survey of concepts, principles, and processes of the secondary school algebra curriculum; learning difficulties, teaching strategies and alternatives; mathematical foundations of algebra topics.

#5171. TEACHING PROBABILITY AND STATISTICS—June 17-July 17. (392053) (3 cr; limited to 24 students; prereq math educ maj or grad stu or #; one math course in probability, statistics, or combinatorics recommended; 1300-1515 MWF; PeikH 375; A-F only) House
Fundamental concepts and principles of probability and statistics. Emphasis on activities and applications appropriate for junior and senior high school classes. Pedagogical experiences to prepare teachers to integrate quantitative literacy accurately and effectively in classrooms.

#5331. CURRENT DEVELOPMENTS IN ELEMENTARY SCHOOL MATHEMATICS INSTRUCTION—June 17-July 17. (791725) (3 cr; limited to 8 students; prereq 5311 or #; 1030-1245 MWF; PeikH 375; A-F only) House
Contemporary literature, trends and experimentation with content; criteria for program evaluation. Meets with MthE 5332.

#5332. CURRENT TRENDS AND ISSUES IN SECONDARY SCHOOL MATHEMATICS INSTRUCTION—June 17-July 17. (591726) (3 cr; limited to 16 students; prereq 5312 or #; 1030-1245 MWF; PeikH 375; A-F only) House
Recent developments in mathematics curriculum and instructional alternatives; issues in teaching and learning; providing for special student needs; program planning and evaluation. Meets with MthE 5331.

#5355. MATHEMATICS FOR SLOW LEARNING CHILDREN. (790249) (3 cr, limited to 24 students; prereq 5311 or Elem 3391 or #; 1030-1245 TTh; 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. (3-9 cr [max 9 cr]; prereq #; A-F only)
Supervised experience in teaching or related work in school.

Sec 21, (391727) Stochl
Sec 23, (191728) House
Sec 25, (091729) Jackson

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, (985079) Stochl
Sec 23, (285080) House
Sec 25, (289727) Jackson

8980. PROBLEMS: MATHEMATICS EDUCATION. (Cr ar; prereq 8500 or 8570)

Sec 21, (885379) Stochl
Sec 23, (185380) House
Sec 25, (189728) Jackson

SECOND TERM

#5101. WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS—July 23-31; August 10-17. (286388) (1-12 cr [max 12 cr]; prereq #; not open to mathematics education majors; limited to 24 students; 0800-1015 MTWThF; PeikH 375; A-F only) Jackson
Modern trends, methods, and materials used to convey mathematical ideas. This offering for 3 credits.

#5152. GEOMETRY FOR PRIMARY GRADES—July 23-29. (491721) (1-3 cr; [max 3 cr]; limited to 24 students; prereq education or graduate student or #; 1145-1400 MTWThF; PeikH 375; A-F only) Jackson
Geometric content and pedagogy for primary grades. Levels of geometric thought, formation of spatial abilities, early childhood concepts from topology, transformational geometry, Euclidean geometry, and applications; dimensional models, construction, planal tessellations. This offering for 1 credit.

85153. GEOMETRY IN THE INTERMEDIATE GRADES—July 30-31, August 10-17. (090242) (1-3 cr [max 3 cr]; limited to 24 students; prereq educ grad or student or #; 1145-1400 MTWThF; PeikH 375; A-F only) Jackson Instructional approaches and physical materials relating to teaching of information and intuitive geometric concepts in intermediate and middle school grades. Fundamental concepts of measurements and geometric relationships in 1, 2, and 3 dimensions, measurement systems, estimation, geometric figures and their properties, transformational and symmetry, congruence and similarity. This offering for 2 credits.

5680. PRACTICUM IN MATHEMATICS EDUCATION. (288237) (3-9 cr [max 9 cr]; prereq #; A-F only) Jackson

5980. DIRECTED STUDIES. (188238) (3-9 cr [max 9 cr]; prereq #; A-F only) Jackson

8680. INTERNSHIP: MATHEMATICS EDUCATION. (988239) (Cr ar) Jackson

8980. PROBLEMS: MATHEMATICS EDUCATION. (288240) (Cr ar; prereq 8500 or 8570) Jackson

Mechanical Engineering (ME)

125 Mechanical Engineering. 625-0705 (Mechanical Engineering) Institute of Technology

FIRST TERM

83201. MECHANICAL ENGINEERING SYSTEMS ANALYSIS. (186229) (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.

83301. THERMODYNAMICS. (286231) (4 cr; limited to 50 students; prereq IT or ForP stu, Chem 1014 or Phys 1281, Math 3221 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.

83702. BASIC MEASUREMENTS LABORATORY II. (2 crs; 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, (988242) 1030-1230 MW, MechE 370

Lab 2, (788243) 1415-1615 TTh, MechE 370

87770. MECHANICAL ENGINEERING RESEARCH. (385233) (prereq Δ ; Cr and hrs ar; limited to 10 students)

87771. MECHANICAL ENGINEERING RESEARCH. (087891) (prereq 8770, Δ ; Cr and hrs ar; limited to 10 students)

87772. MECHANICAL ENGINEERING RESEARCH. (185234) (prereq 8771, Δ ; Cr and hrs ar; limited to 10 students)

8777. THESIS CREDITS: MASTERS. (189297) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889299) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS:

TEN-WEEK COURSES (Register once in Term I)

83741. INDUSTRIAL ASSIGNMENT. (486230) (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.

83742. INDUSTRIAL ASSIGNMENT. (588244) (2 cr; limited to 90 students; prereq 3741) Marple See 3741.

83743. INDUSTRIAL ASSIGNMENT. (785214) (2 cr; limited to 90 students; prereq 3742) Marple See 3741.

85190. ADVANCED ENGINEERING PROBLEMS. (186232) (2-4 cr; limited to 20 students; open to upper division students; prereq submission of approved dept permission form) Special investigations in various fields of mechanical engineering and related areas including an independent study project.

85460. INTERNAL COMBUSTION ENGINES. (990492) (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.

85741. INDUSTRIAL ASSIGNMENT AND DESIGN PROJECT. (185069) (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.

85742. INDUSTRIAL ASSIGNMENT AND DESIGN PROJECT. (388245) (4 cr; limited to 80 students; 5741-5742+ prereq, 5741) Marple See 5741.

SECOND TERM

83205. ENGINEERING SYSTEMS DESIGN. (188814) (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.

83303. APPLIED THERMODYNAMICS. (387001) (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.

85260. ENGINEERING MATERIALS AND PROCESSING. (4 cr; each section limited to 12 students; prereq mech engr upper div, Phys 1291, Chem 1014, AEM 3016, Mats 3400, CSci 3101 or a similar course in an engr computer lang (FORTRAN), safety glasses required; lect 0915-1050 MWF; MechE 212) Introduction to materials and processing including physical and metallurgical properties, consolidation, etc. Material processing including machining, welding, and deformation processes.

Lab 1, (887004) 1100-1255 MW, MechE 70

Lab 2, (687005) 0800-0955 TTh, MechE 70

Lab 3, (785293) 1030-1225 TTh, MechE 70

Lab 4, (988676) 1415-1610 TTh, MechE 70

85342. HEAT TRANSFER. (187008) (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) Scott 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.

87770. MECHANICAL ENGINEERING RESEARCH. (485272) (prereq Δ ; Cr and hrs ar; limited to 10 students)

87771. MECHANICAL ENGINEERING RESEARCH. (285273) (prereq 8770, Δ ; Cr and hrs ar; limited to 10 students)

87772. MECHANICAL ENGINEERING RESEARCH. (185274) (prereq 8771, Δ ; Cr and hrs ar; limited to 10 students)

8777. THESIS CREDITS: MASTERS. (489533) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289534) (1-36 cr [max 11 cr per summer term])

Medical Technology (MedT)

15-170 Phillips-Wangensteen Building. 625-9490 Medical School

FIRST TERM

5082. APPLIED CLINICAL CHEMISTRY. (688820) (4 cr; prereq 5113; S-N only) Application of basic methods and techniques in chemistry in the clinical laboratory.

5084. APPLIED CLINICAL VIROLOGY. (988824) (1 cr; prereq 5100, 5102; S-N only) Application of basic methods and techniques in the virology laboratory.

5085. APPLIED CLINICAL HEMATOLOGY. (488821) (4 cr; prereq 5077, 5078, 5765, 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. (288822) (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. (188823) (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.

5090. SPECIAL LABORATORY METHODS. (686677) (2 cr; prereq #) Special assignment on an individual basis in a special area of experience within the clinical laboratory; field experience.

5120. SEMINAR. (486518) (1-3 cr)

SECOND TERM

5082. APPLIED CLINICAL CHEMISTRY. (088815) (4 cr; prereq 5113; S-N only) See First Term.

5084. APPLIED CLINICAL VIROLOGY. (288819) (1 cr; prereq 5100, 5102; S-N only) See First Term.

5085. APPLIED CLINICAL HEMATOLOGY. (888816) (4 cr; prereq 5077, 5078, 5765, CLS 5765; S-N only) See First Term.

5086. APPLIED CLINICAL IMMUNOHEMATOLOGY. (688817) (4 cr; prereq 5064, 5065; S-N only) See First Term.

5088. APPLIED DIAGNOSTIC MICROBIOLOGY. (488818) (4 cr; prereq 5100, 5102; S-N only) See First Term.

5090. SPECIAL LABORATORY METHODS. (787318) (2 cr; prereq #) See First Term.

5120. SEMINAR. (190250) (1-3 cr)

Medicinal Chemistry (MedC)

8-101 Health Sciences Unit F.
624-9919
College of Pharmacy

FIRST TERM

8777. THESIS CREDITS: MASTERS. (389301) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189302) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189535) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989536) (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. (189664) (1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (989665) (Cr ar; prereq #)

SECOND TERM

5970. DIRECTED STUDIES. (789666) (1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (589667) (Cr ar; prereq #)

Medicine (Med)

14-110A Phillips-Wangensteen
Building, 625-9975
Medical School

Elective Courses for Graduate Students

8201. CLINICAL MEDICINE. (086708) (Cr and hrs ar) Ferris, staff

8202. CLINICAL CONFERENCE. (886709) (1 cr; hrs ar) Ferris, staff

8203. CLINICAL RADIOLOGY CONFERENCE. (186710) (1 cr; hrs ar) Ferris, staff

8204. PATHOLOGY CONFERENCE. (086711) (1 cr; hrs ar) Ferris, staff

SECOND TERM

8201. CLINICAL MEDICINE. (488544) (cr and hrs ar) Ferris, staff

8202. CLINICAL CONFERENCE. (288545) (1 cr; hrs ar) Ferris, staff

8203. CLINICAL RADIOLOGY CONFERENCE. (188546) (1 cr; hrs ar) Ferris, staff

8204. PATHOLOGY CONFERENCE. (988547) (1 cr; hrs ar) Ferris, staff

Medieval Studies (MeSt)

304 Walter Library, 626-0805
College of Liberal Arts

FIRST TERM

3970. DIRECTED STUDIES. (289906) (1-5 cr; prereq #)
Guided individual reading or study in some area of medieval studies.

5970. DIRECTED STUDIES. (189907) (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. (389668) (1-5 cr; prereq #)
Guided individual reading or study in some area of medieval studies.

5970. DIRECTED STUDIES. (389072) (1-5 cr; prereq #)
Qualified senior and graduate students may register for work on a tutorial basis; guided individual reading or study.

Microbial Engineering (MicE)

240 Gortner Laboratory
624-6774
College of Biological Sciences

FIRST TERM

8777. THESIS CREDITS: MASTERS. (489306) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389539) (1-16 cr [max 11 cr per summer term])

Microbiology (MicB)

1460 Mayo, 624-6190
Medical School

FIRST TERM

5970. DIRECTED STUDIES. (088247) (Cr ar; prereq #, Δ) Rogers, staff

5990. DIRECTED RESEARCH. (888248) (Cr ar; prereq #, Δ) Rogers, staff

8777. THESIS CREDITS: MASTERS. (889304) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689305) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH IN MICROBIOLOGY. (686727) (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. (688249) (Cr ar; prereq #, Δ) Rogers, staff

5990. DIRECTED RESEARCH. (088250) (Cr ar; prereq #, Δ) Rogers, staff

8777. THESIS CREDITS: MASTERS. (789537) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589538) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH IN MICROBIOLOGY. (987320) (Cr and hrs ar; prereq microbiol grad stu or #)
Schlievert, staff
See First Term.

Middle Eastern Studies (MidE)

232A Social Sciences, 624-8543
(*South Asian and Middle Eastern Studies*)
College of Liberal Arts

See also *Religious Studies*

FIRST TERM

3303. ARABIC DRAMA IN TRANSLATION. (892171) (4 cr; limited to 10 students; \$5503, Arab 3303/5503; 1115-1315 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, Indris, al-Maghut, al-Ani, Wannus, and al-Madani. Plays discussed in cultural and historical context. Theoretical and critical essays. All readings in English.

3505. SURVEY OF THE MIDDLE EAST. (590494) (4 cr, \$5505, Hist 3505; 0900-1130 MW, RarigC 610) Farah
Cultural, religious, and scholarly achievements of Middle Eastern peoples from pre-Islamic times to the present. Meets with 5505, Hist 3505.

5503. ARABIC DRAMA. (892185) (4 cr; limited to 10 students; \$3303, Arab 3303/5503; 1115-1315 TTh; BlegH 245) AshShareef
See 3303. Meets with 3303, Arab 3303/5503.

5505. SURVEY OF THE MIDDLE EAST. (390495) (4 cr, \$3505, Hist 3505; 0900-1130 MW, RarigC 610) Farah
See description for 3505. Meets with 3505, Hist 3505.

SECOND TERM

1536. THE RELIGION OF ISLAM. (589958) (4 cr, \$RelS 1036; 1000-1230 TTh; FolH 234) Barker
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, RelS 3036, 1036.

3036. THE RELIGION OF ISLAM. (891666) (4 cr; \$5036, RelS 1036, 3036, 5036; 1000-1230 TTh; FolH 234) Barker

The evolution of Islam in historical context; institutions that made for diversity and continuity; traditions; law and observances of faith; sectarian movements; philosophical and theological trends; modern movements: reformist, revolutionary, and militant. Meets with 1536, RelS 1036, 3036.

Military Science (Mil)

108 Armory, 624-7300

FIRST TERM

3970. DIRECTED STUDIES. (085266) (prereq #, Δ; 1-3 cr; hrs ar; A-F only)

SECOND TERM

3970. DIRECTED STUDIES. (287783) (prereq #, Δ; 1-3 cr; hrs ar; A-F only)

Mortuary Science (Mort)

A275 Mayo, 624-6464

FIRST TERM

3080. FUNERAL SERVICE PRACTICUM. (387399) (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. (485532) (1-3 cr; prereq regis in mortuary science;) Staff

SECOND TERM

3080. FUNERAL SERVICE PRACTICUM. (786377) (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. (285533) (1-3 cr; prereq regis in mortuary science;) Staff

Music (Mus)

100 Ferguson Hall, 624-5740
(*School of Music*)
College of Liberal Arts

FIRST TERM

1001. FUNDAMENTALS OF MUSIC. (390254) (4 cr; limited to 126 students; 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.

1051. PIANO CLASS FOR NONMUSIC 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 (090256) 1030-1200 TTh, FergH 259

Sec 2 (590799) 1300-1430 TTh, FergH 259

1160. VOICE: CLASS LESSONS. (890257) (2 cr; limited to 10 students; 1530-1730 MTh; FergH 90) Ware. Fundamentals of vocal production—posture, respiration, phonation; articulation.

3970. DIRECTED STUDIES. (385717) (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.

5330. CONCERTO GROSSO ENSEMBLE. (291543) (1 cr; prereq #; arr) Kim

Study and performance of string orchestra and small chamber orchestra literature.

5375. VOCAL PEDAGOGY I. (591547) (2 cr; prereq upper div voice major or #; 1300-1515 MTh; 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.

5384. CHORAL CONDUCTING. (191549) (4 cr; prereq #; must register concurrently with 5490; 1030-1130 MTWThF; FergH 90) Lancaster. Choral conducting—hand techniques, sound control, articulation, breath control, intonation.

5399. PERFORMANCE IN CONDUCTING. (990041) (4 cr; prereq 5388 or 5385, #; hrs ar) Lancaster. Preparation and conducting, with documentation of an ensemble program.

5490. CHAMBER SINGERS. (586378) (1 cr; prereq audition; 1145-1245 MTWThF; FergH 90) Lancaster. Mixed chorus of 16 to 20 voices. Performances each term.

5531. FORM AND STRUCTURE OF TONAL MUSIC. (592102) (3 cr; prereq 3531, 3511, or 1508, 1518, or placement exam; 1300-1415 MWF; FergH 149) Damschroder. Formal and structural analysis of the sonata, rondo, variation, minuet, and other standard categories of tonal composition. Exploration of text-music relationships in song, of nineteenth-century character pieces, and of motivic coherence in music. Advanced harmonic and contrapuntal procedures.

5644. STUDIES IN TWENTIETH-CENTURY AMERICAN MUSIC. (089964) (4 cr; limited to 25 students; prereq 3606, 5532, or #; A-F only; 1415-1630 MTTh; FergH 149) Hepokoski

Competing concepts of musical style and purpose in 20th century America; some stylistic and cultural bases of both "art" and "popular" music and their (often uneasy) inter-relationships. Areas covered typically include Ives, Copland, Carter, 1920's jazz. Broadway and popular song.

5804. FOLK AND TRADITIONAL MUSIC: CROSS-CULTURAL SURVEY. (891540) (4 cr; 1415-1630 MTh, 1415-1515 T; 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.

5950. TOPICS IN MUSIC: TEXT AND LANGUAGE-A SINGER'S TOOLS FOR FINDING ARTISTRY—June 16-19 and 22. (692172) (2 cr; prereq #; limited to 12 students; 1730-2000 June 16, 17, 18, 19 and 22; 225 FergH) Maurice

The course will focus on understanding the text; using language effective in communicating the meaning of the text; and discovering how the musical setting defines the interpretation of the text. Vocal performance will be required.

5970. DIRECTED STUDIES. (586526) (1-5 cr; prereq #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (989312) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789313) (1-36 cr [max 11 cr per summer term])

8990.* SPECIAL PROBLEMS. (185718) (2-12 cr; prereq Δ; hrs ar; FergH 100) Staff

8999. RECITAL CREDITS: DOCTORAL. (491542) (5 cr; prereq DMA student) 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

1001. FUNDAMENTALS OF MUSIC. (990251) (4 cr; limited to 126 students; prereq non-music majors; 1145-1400 MWF; FergH 225) Damschroder

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. (491556) (5 cr, §3021; 0915-1130 MWF; FergH 225) Baldwin.

Music in the repertoire of our culture—forms and styles from 17th to 20th centuries. Aural analyses, relationships of large units of musical form.

3970. DIRECTED STUDIES. (790039) (1-15 cr; prereq #, Δ, □; hrs ar) Staff

5666. STRAVINSKY. (291574) (4 cr; prereq 12 crs. in music history, 5532; 1030-1245 TWTh; FergH 149) Jackson. Changing styles and aesthetic principles of Stravinsky as seen in representative compositions and writings; contributions to artistic life in Europe and America (particularly ballet).

5950. TOPICS IN MUSIC: OPERA IN EUROPE—1600-1800. (792101) (3 cr; 1415-1630 MTTh; FergH 149) Freeman. Historical background and cultural context; musical, dramatic, and literary analysis.

5970. DIRECTED STUDIES. (688607) (1-5 cr; prereq #, Δ, CLA approval; A-F only)

8777. THESIS CREDITS: MASTERS. (389542) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189543) (1-36 cr [max 11 cr per summer term])

8990.* SPECIAL PROBLEMS. (488608) (2-12 cr; prereq Δ; hrs ar; FergH 100) Staff

8999. RECITAL CREDITS: DOCTORAL. (691555) (5 cr; prereq DMA student) Registration for these credits coincides with the performance of a DMA recital, during the matriculation for the degree, for a total of 30 credits.

Music Education (MuEd)

100 Ferguson Hall. 624-0191
College of Education

FIRST TERM

1801. INTRODUCTION TO MUSIC THERAPY—June 16-29. (291588) (1 cr; 0915-1015 MTWThF; FergH 151) Furman

Survey exploring methods, materials, and applications of music therapy in various clinical settings with emphasis of field observations.

3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL. (885382) (4 cr; prereq Mus 1001, elementary educ major; limited to 30 students; 1030-1130 MTWThF; FergH 107; A-F only) Borg

For non-music majors; methods and materials in teaching singing, rhythm, music reading, creativity, classroom instruments, fundamentals, appreciation in K-6.

3850. FIELD EXPERIENCES: MUSIC THERAPY—June 16-29. (191589) (1 cr; prereq 3800, 3804; 1030-1130 MTWThF; FergH 151) Furman. Pre-internship experiences in health, welfare, recreational, and educational settings.

5313. INFLUENCE OF MUSIC ON YOUTH BEHAVIOR. (492173) (3 cr; 1300-1515 MTWThF; FergH 107) Haack

Study of the ways in which music functions to influence human behavior with special attention to the effects of commercial styles on children and youth; particularly appropriate for teachers and parents.

5750. WORKSHOP: MUSIC EDUCATION.

Sec 1, Techniques for Middle School/Junior High School Choirs—June 16-26. (291591) (2 cr; 0915-1130 MTWThF; FergH 105) McCoy

Research and methods pertaining to the young adolescent voice; developing student musicianship and literacy; rehearsal techniques; selecting choral literature.

Sec 2, Ethnic Music for Teachers—June 16-26. (991593) (2 cr; 1300-1515 MTWThF; FergH 107) Haack

A sampling of world musics and related cultural contexts; understanding music as an expression of socio-cultural values; cross-cultural uses of music.

Sec 3, Percussion Techniques—July 13-21. (791594) (2 cr; 0915-1130 MTWThF; FergH 95) Schultz. Current teaching and performance techniques for percussion; emphasis on pedagogical materials for elementary, junior, and senior high schools, playing of solo and ensemble repertoire.

Courses in Applied Music

Offerings 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, transfer student, and minor, as well as three levels: 1xxx (prefix 1), 3xxx (prefix 3), and graduate level (prefix 8). A student may not register for a course in applied music for credit until she or he has passed the required applied entrance examination. The examining committee will determine the mode(s) for which a student may register. Students should consult with the School of Music, 100 Ferguson Hall, regarding the mode and level of applied music appropriate for fulfillment of specific requirements for their degree program. To register for 3xxx-level credit in applied music, the student must have completed 12 credits at the 1xxx level on the appropriate instrument and must pass a qualifying examination.

Courses in applied music carry 2 credits (minimum of 5 hours of private lessons) per summer term. 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 MM and D.M.A. students taking applied music at the B3xx level. Majors at the x5xx, x6xx, or x7xx level pay \$45 for 2 credits.

The music fees are treated as course fees; that is, they are applied in addition to tuition for all students in each summer term.

Call numbers for courses in applied music must be listed on the Course Request form and are available in 100 Ferguson Hall.

FIRST
AND SECOND
TERM COURSES
IN
APPLIED MUSIC
(MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Transfer Student	Minor	Instructor
Fee	\$115	—	—	—	\$ 45	\$ 45	\$ 45		\$ 45	
Piano	1101	1201	1301	1401	1501	1601	1701	1901		Ar
Harpsichord	1102	1202	1302	1402	1502	1602	1702	1902		Ar
Organ	1103	1203	1303	1403	1503	1603	1703	1903		Ar
Voice	1104	1204	1304	1404	1504	1604	1704	1904		Ar
Violin	1105	1205	1305	1405	1505	1605	1705	1905		Ar
Viola	1106	1206	1306	1406	1506	1606	1706	1906		Ar
Cello	1107	1207	1307	1407	1507	1607	1707	1907		Ar
Double Bass	1108	1208	1308	1408	1508	1608	1708	1908		Ar
Flute	1109	1209	1309	1409	1509	1609	1709	1909		Ar
Oboe	1111	1211	1311	1411	1511	1611	1711	1911		Ar
Clarinet	1112	1212	1312	1412	1512	1612	1712	1912		Ar
Saxophone	1113	1213	1313	1413	1513	1613	1713	1913		Ar
Bassoon	1114	1214	1314	1414	1514	1614	1714	1914		Ar
French Horn	1115	1215	1315	1415	1515	1615	1715	1915		Ar
Trumpet	1116	1216	1316	1416	1516	1616	1716	1916		Ar
Trombone	1117	1217	1317	1417	1517	1617	1717	1917		Ar
Baritone	1118	1218	1318	1418	1518	1618	1718	1918		Ar
Tuba	1119	1219	1319	1419	1519	1619	1719	1919		Ar
Percussion	1121	1221	1321	1421	1521	1621	1721	1921		Ar
Harp	1122	1222	1322	1422	1522	1622	1722	1922		Ar
Guitar	1123	1223	1323	1423	1523	1623	1723	1923		Ar
Accordion					1524					Ar
Sitar					1525					Ar
Piano	3101	3201	3301	3401	3501	3601	3701		3801	Ar
Harpsichord	3102	3202	3302	3402	3502	3602	3702		3802	Ar
Organ	3103	3203	3303	3403	3503	3603	3703		3803	Ar
Voice	3104	3204	3304	3404	3504	3604	3704		3804	Ar
Violin	3105	3205	3305	3405	3505	3605	3705		3805	Ar
Viola	3106	3206	3306	3406	3506	3606	3706		3806	Ar
Cello	3107	3207	3307	3407	3507	3607	3707		3807	Ar
Double Bass	3108	3208	3308	3408	3508	3608	3708		3808	Ar
Flute	3109	3209	3309	3409	3509	3609	3709		3809	Ar
Oboe	3111	3211	3311	3411	3511	3611	3711		3811	Ar
Clarinet	3112	3212	3312	3412	3512	3612	3712		3812	Ar
Saxophone	3113	3213	3313	3413	3513	3613	3713		3813	Ar
Bassoon	3114	3214	3314	3414	3514	3614	3714		3814	Ar
French Horn	3115	3215	3315	3415	3515	3615	3715		3815	Ar
Trumpet	3116	3216	3316	3416	3516	3616	3716		3816	Ar
Trombone	3117	3217	3317	3417	3517	3617	3717		3817	Ar
Baritone	3118	3218	3318	3418	3518	3618	3718		3818	Ar
Tuba	3119	3219	3319	3419	3519	3619	3719		3819	Ar
Percussion	3121	3221	3321	3421	3521	3621	3721		3821	Ar
Harp	3122	3222	3322	3422	3522	3622	3722		3822	Ar
Guitar	3123	3223	3323	3423	3523	3623	3723		3823	Ar
Accordion					3524					Ar
Piano	5101	8201	8301	8401	8501	8601	8701			Ar
Harpsichord	5102	8202	8302	8402	8502	8602	8702			Ar
Organ	5103	8203	8303	8403	8503	8603	8703			Ar
Voice	5104	8204	8304	8404	8504	8604	8704			Ar
Violin	5105	8205	8305	8405	8505	8605	8705			Ar
Viola	5106	8206	8306	8406	8506	8606	8706			Ar
Cello	5107	8207	8307	8407	8507	8607	8707			Ar
Double Bass	5108	8208	8308	8408	8508	8608	8708			Ar
Flute	5109	8209	8309	8409	8509	8609	8709			Ar
Oboe	5111	8211	8311	8411	8511	8611	8711			Ar
Clarinet	5112	8212	8312	8412	8512	8612	8712			Ar
Saxophone	5113	8213	8313	8413	8513	8613	8713			Ar
Bassoon	5114	8214	8314	8414	8514	8614	8714			Ar
French Horn	5115	8215	8315	8415	8515	8615	8715			Ar
Trumpet	5116	8216	8316	8416	8516	8616	8716			Ar
Trombone	5117	8217	8317	8417	8517	8617	8717			Ar
Baritone	5118	8218	8318	8418	8518	8618	8718			Ar
Tuba	5119	8219	8319	8419	8519	8619	8719			Ar
Percussion	5121	8221	8321	8421	8521	8621	8721			Ar
Harp	5122	8222	8322	8422	8522	8622	8722			Ar
Guitar	5123	8223	8323	8423	8523	8623	8723			Ar
Accordion					8524					Ar
Sitar					8525					Ar

5970. INDEPENDENT STUDY. (1-4 cr; prereq education or graduate student; hrs ar; FergH 100; A-F only) An independent study project organized by the student with the appropriate instructor.

Sec 21, (989925) Borg
Sec 22, (685657) Schultz
Sec 23, (587885) Furman
Sec 24, (988886) Haack
Sec 25, (392103) McCoy

8990. RESEARCH PROBLEMS. (1-12 cr; prereq knowledge of elem statistics; hrs ar; FergH 100)

Sec 21, (485658) Borg
Sec 22, (285659) Schultz
Sec 23, (387886) Furman
Sec 24, (788887) Haack
Sec 25, (192104) McCoy

SECOND TERM

5217. HISTORICAL FOUNDATIONS OF MUSIC EDUCATION—July 23-August 12. (891585) (3 cr; prereq #: 1030-1245 MTWThF; FergH 151) Furman

Analysis and interpretation of important elements in modern music teaching derived from the past.

5666. MICROCOMPUTERS IN THE MUSIC CLASSROOM—July 23-August 4. (491587) (3 cr; limited to 12 students; 1300-1600 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 data base for music libraries, instrument inventories, budgets.

5750. WORKSHOP: MUSIC EDUCATION.

Sec 1, Movement-based Methods for Music Education—July 23-August 27. (789960) (3 cr; prereq music or music educ major or #; 0800-1015 MTWThF; FergH 85) McCoy
Participation in movement activities for teaching music concepts; study of Dalcroze philosophy and techniques; review of relevant research.

5970. INDEPENDENT STUDY. (1-4 cr; prereq education or graduate student; hrs ar; FergH 100; A-F only) An independent study project organized by the student with the appropriate instructor.

Sec 21, (789926) Borg
Sec 22, (589927) Schultz
Sec 23, (389928) Furman
Sec 24, (189929) Haack
Sec 25, (092105) McCoy

8990. RESEARCH PROBLEMS. (1-12 cr; prereq knowledge of elem statistics; hrs ar)

Sec 21, (588888) Borg
Sec 22, (388889) Schultz
Sec 23, (788890) Furman
Sec 24, (588891) Haack
Sec 25, (892106) 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. (390044) (prereq jr or sr, #; 4 cr, arranged; A-F only) Soil science and forest resources staff. Students are required to obtain professional experience in a field setting.

3225. DIRECTED STUDY EXPERIENCE. (190880) (prereq fr or soph, 1-5 cr, arranged) 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 his or her project.

5225. DIRECTED STUDY EXPERIENCE. (990881) (prereq jr or sr or grad stu, 1-5 cr, arranged) See 3225.

SECOND TERM

3050. EXPERIENCE AND TRAINING IN A FIELD SETTING. (190045) See First Term.

3225. DIRECTED STUDY EXPERIENCE. (790882) See First Term.

5225. DIRECTED STUDY EXPERIENCE. (590883) See First Term.

Neurology (Neur)

12-100 Phillips-Wangensteen Building.
625-9900
Medical School

FIRST TERM

5599. SUBINTERNSHIP IN CLINICAL NEUROLOGY. (692107) (Cr ar; prereq 5510, Course Director recommendation, med stu; S-N only) Davenport

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

5122. PEDIATRIC NEUROLOGY: HEALTH CARE PSYCHOLOGY INTERNS. (387953) (Cr and hrs ar; prereq #)

8200. CLINICAL NEUROLOGY. (786735) (Cr ar) Price, staff

8201. CLINICAL PEDIATRIC NEUROLOGY. (586736) (Cr ar) Swaiman, staff

8202. RESEARCH IN NEUROLOGY. (386737) (Cr ar) Price, staff

8203. APPLIED ELECTROENCEPHALOGRAPHY. (186738) (Cr ar) Torres

8204. APPLIED ELECTROMYOGRAPHY. (086739) (Cr ar) Kennedy

8205. APPLIED NEUROPATHOLOGY. (386740) (Cr ar) Sung

8236. RESEARCH IN NEUROPATHOLOGY. (186741) (Cr ar) Sung

8705. NEUROLOGICAL-NEUROSURGICAL CONFERENCE. (086742) (1 cr, \$Rad 0124, \$Surg 8318) Staff

8777. THESIS CREDITS: MASTERS. (589314) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189316) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5599. SUBINTERNSHIP IN CLINICAL NEUROLOGY. (492108) (Cr ar; prereq 5510, course director recommendation, med stu; S-N only) Davenport

8777. THESIS CREDITS: MASTERS. (089544) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889545) (1-36 cr [max 11 cr per summer term])

Neuroscience (NSc)

6-255 Millard Hall. 624-7660
Graduate School

FIRST TERM

5100. INTRODUCTORY NEUROBIOLOGY LABORATORY AT ITASCA—June 16-July 7. (189669) (5 cr; limited to 12 students; prereq junior or senior in biological or physical sciences; introductory biology and chemistry; instructor consent required; A-F only; hrs ar; taught at Lake Itasca Forestry and Biological Station) 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 17.

8888. THESIS CREDITS: DOCTORAL. (889318) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5550. ITASCA CELL AND MOLECULAR NEUROBIOLOGY LABORATORY—July 26-August 30. (785651) (6 cr; limited to 12 students; prereq enrolled in neurosci grad prog or consent of neurosci prog; S-N only; hrs ar; taught at Itasca) 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. See page 18

8888. THESIS CREDITS: DOCTORAL. (689546) (1-36 cr [max 11 cr per summer term])

Neurosurgery (NSu)

B-590 Mayo. 624-6666
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (089320) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689322) (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. (587191) (2 cr; hr ar; prereq psych fellow spec or #) Meier

5532. CLERKSHIP IN NEUROPSYCHOLOGICAL ASSESSMENT. (387192) (1-4 cr; hr ar; prereq psych fellow spec or #) Meier

5533. CASE CONFERENCE IN NEUROPSYCHOLOGY. (187193) (1 cr; hr ar; prereq psych fellow spec or #; S-N only) Meier

5534. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (087194) (3 cr; hr ar; prereq psych fellow spec or #; S-N only) Meier

5535. CASE CONFERENCE IN CLINICAL PSYCHOLOGY. (887195) (1-2 cr; hr ar; prereq psych fellow spec) Meier

5536. SEMINAR IN CLINICAL PSYCHOLOGY. (687196) (1-2 cr; prereq psych fellow spec) Meier

5537. PSYCHOLOGY INTERNSHIP. (487197) (4-8 cr; prereq psych fellow spec) Meier

5550. NEUROPHYSIOLOGICAL LITERATURE SEMINAR. (386754) (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. (186755) (4 cr; MTWThF; Mayo B524) Heros, Seljeskog, Erickson, Maxwell, Haines, Hall, Cox
Neurosurgical fellow assists in instruction of clinical clerks and interns, studies problems in diagnosis at University and affiliated hospitals.

8308. NEUROSURGICAL PROBLEMS AND MANAGEMENT. (086756) (4 cr; MTWThF; Mayo B401) Heros, Seljeskog, Erickson, Maxwell, Haines, Hall, Cox
Neurosurgical fellow acts as house surgeon at University and affiliated hospitals.

8311. OPERATIVE NEUROSURGERY. (886757) (4 cr; MTWThF; Mayo B401) Heros, Seljeskog, Erickson, Maxwell, Haines, Hall, Cox
Neurosurgical fellow acts as first assistant for operations at University and affiliated hospitals and later may be permitted to operate.

8316. NEUROSURGICAL RESEARCH. (486759) (6 cr; MTWThF; Diehl F109-110 and G134-144) Ebner
Problems in experimental or clinical surgery.

8318. NEURORADIOLOGICAL CONFERENCE. (886760) (1 cr; 1325-1415 F; Mayo C231-Todd Amph) Heros, Seljeskog, Erickson, Maxwell, Haines, Cox
A review of X-ray films and case histories on neurosurgical service.

8320. NEUROSURGICAL CONFERENCE. (286763) (2 cr; 0800-1100 Sat) Heros, Seljeskog, Ebner, Erickson, Maxwell, Haines, Hall, Cox
In-depth review of selected topics in basic and clinical neurosurgery.

8322. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART I. (386771) (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. (586770) (1 cr; prereq 8322; T; offered F and S) Staff
Advanced review and discussion of topics.

8330. NEUROSURGERY LITERATURE SEMINAR. (586767) (2 cr; 1st and 2nd Th evenings) Heros, Haines, Seljeskog, Ebner, Erickson, Maxwell, Hall, Cox
Review and discussion of current literature relating to neurosurgery and the neurosciences.

SECOND TERM

8777. THESIS CREDITS: MASTERS. (489547) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289548) (1-36 cr [max 11 cr per summer term])

Norwegian (Nor)

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)

1101-1102-1103. BEGINNING NORWEGIAN. (15 cr for both terms; limited to 20 students; 0915-1245 MTWThF; FolH 246) Mishler

R1101, Sec 5, (391596) June 16-July 6, 5 cr

R1102, Sec 5, (191597) July 9-August 3, 5 cr

R1103, Sec 5, (091598) August 4-26, 5 cr

Nursing (Nurs)

6-101 Health Sciences Unit F.
624-9600

FIRST TERM

5240. CORE CONCEPTS IN CRITICAL CARE. (989696) (6 cr; prereq 5140, 5141, 5142; 1030-1515 MTh, 1030-1245 TW; MoosT 2620) Stenberg, Fairbanks
Provides core knowledge underlying nursing of critically ill children or adults, including technological life support.

5450. INTRODUCTION TO COMMUNITY HEALTH. (888573) (3 cr; prereq nursing student or Δ; 0800-1015 MWTh; MoosT 2620)
Study of concepts and theories foundational to community health.

5620. INDEPENDENT STUDY IN NURSING TOPICS. (491119) (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. (187400) (Cr ar; prereq #) Staff
Opportunity for students to engage in learning experiences not provided for in established nursing elective courses.

5820. DECISION MAKING IN HEALTH CARE. (190488) (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.

5947. PHARMACOTHERAPEUTICS FOR THE ELDERLY. (xxxxxx) (2 cr; prereq 5940; 0915-1400 W) Cipolle
Examination of pharmacological actions of prescription and over-the-counter

medications used by the elderly, recognition of and interventions of adverse drug effects, side effects, drug incompatibilities and iatrogenic problems, assessment of drug misuse and/or abuse.

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (987480) (Cr ar; prereq Δ) Staff
Various learning experiences planned to meet individual needs.

8009. SPECIAL TOPICS. (587482) (Cr ar; prereq #) Staff

8060. ADVANCED CLINICAL NURSING. (986538) (3-9 cr; prereq #, Δ) Staff

8509. SPECIAL TOPICS: NURSING EDUCATION. (786539) (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION. (186540) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (489323) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289324) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS:
TEN-WEEK COURSES (Register once in Term I)

8014. RESEARCH IN NURSING. (388830) (3 cr; prereq inferential statistics; limited to 25 students; 1645-2030 W; HSUnitF 4150/4176) Feldman
Research processes and methodologies appropriate to nursing. Analysis of research reports.

8030. NURSING INTERVENTION MODELS. (8 cr; prereq 8011 or 8011, 8012, #)
Developing, providing and evaluating nursing intervention with a specified client population.
Sec 1, (789697) 1300-1745 T, HSUnitF 4155/4157, Gordon, (Psych cln ar)

8050. PROBLEMS IN NURSING. (1-9 cr; prereq #; S-N only) Staff
Individual study of a problem.

Sec 1, (487488) ar, Alaniz
Sec 2, (186389) ar, Bull
Sec 3, (486390) ar, Burns
Sec 4, (286391) ar, Corcoran-Perry
Sec 5, (186392) ar, Crisham
Sec 6, (986393) ar, De Hart
Sec 7, (786394) ar, Dineen
Sec 8, (586395) ar, Donaldson
Sec 9, (386396) ar, Duckett
Sec 10, (186397) ar, Edwardson
Sec 11, (086398) ar, Egan
Sec 12, (886399) ar, Feldman
Sec 13, (885463) ar, Gordon
Sec 14, (685464) ar, Gross
Sec 15, (485465) ar, Gustafson
Sec 16, (285466) ar, Josten
Sec 17, (185467) ar, Krichbaum
Sec 18, (985468) ar, Lindquist
Sec 19, (785469) ar, Newman
Sec 20, (185470) ar, Pederson
Sec 21, (985471) ar, Ryden
Sec 22, (785472) ar, Sime
Sec 23, (585473) ar, Snyder
Sec 24, (589698) ar, Sodergren
Sec 25, (990489) ar, Tomlinson
Sec 26, (391405) ar, Leonard
Sec 27, (292109) ar, Ar

8111. MORAL AND ETHICAL DEVELOPMENT IN NURSING SCIENCE. (188571) (4 cr; prereq 8011 or equivalent, Δ; 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. (088572) (8-10 cr; prereq 8314; 0915-1400 W; HSUnitF 4150/4176) Dineen
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.

SECOND TERM

5241. PRACTICUM: CRITICALLY ILL INFANTS, CHILDREN, OR ADULTS. (7 cr; prereq 5240)

Provides experience in caring for critically ill children or adults under supervision of a preceptor.
Lect 0800-1245 M, Owre 2210
Sem 1010-1205 M, HSUnitF 4151, 4153, 4155, 4157, 4150, 4176, 4154, 4172
Clinical 1, (891845) ar
Clinical 2, (691846) ar
Clinical 3, (491847) ar
Clinical 4, (291848) ar
Clinical 5, (191849) ar
Clinical 6, (491850) ar
Clinical 7, (291851) ar
Clinical 8, (191852) ar

5620. (591404) (cr ar; prereq #) Staff
See First Term.

5799. SELF-DIRECTED STUDY AS A MEANS OF ACCOMPLISHING NURSING ELECTIVES. (690504) (Cr ar; prereq #) Staff
See First Term.

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (687604) (Cr ar; prereq Δ) Staff
See First Term.

8009. SPECIAL TOPICS. (287606) (Cr ar; prereq #) Staff

8051. SPECIAL TOPICS IN NURSING RESEARCH. (087874) (1-9 cr) Staff
Seminar and/or individual study in nursing research.

8060. ADVANCED CLINICAL NURSING. (787755) (3-9 cr; prereq Δ, #) Staff

8509. SPECIAL TOPICS: NURSING EDUCATION. (587756) (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION. (387757) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (189549) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489550) (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. (789327) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589328) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (988435) (2-5 cr; prereq #)

SECOND TERM

8777. THESIS CREDITS: MASTERS. (289551) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189552) (1-36 cr [max 11 cr per summer term])

8990. GRADUATE RESEARCH. (288433) (2-5 cr; prereq #)

O**Obstetrics and Gynecology (Obst)**

12-280 Moos Tower. 626-3503
Medical School

SPECIAL TERMS: JUNE 12-JULY 20 AND JULY 23-AUGUST 31

Elective Courses for Undergraduate Students

5520. OBSTETRICS AND GYNECOLOGY EXTERNSHIP IN CLINICAL PRACTICE. (786783) (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. (586784) (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. (386785) (Cr ar; prereq 5500) Twiggs, staff
Topics selected for each student, or chosen by the student.

5575. GYNECOLOGICAL PATHOLOGY AND DIAGNOSTIC CYTOLOGY. (186786) (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. (086787) (9 cr; prereq 5500) Twiggs
Full-time preceptorship in clinical obstetrics and gynecology, offered by AHEC. Similar to 5520.

Courses for Graduate Students

8222. GYNECOLOGICAL ONCOLOGY. (386897) (Cr ar; prereq 8221) Twiggs, staff

8223. GYNECOLOGICAL ONCOLOGY. (086899) (Cr ar; prereq 8222) Twiggs, staff

8224. GYNECOLOGICAL ENDOCRINOLOGY—PART I. (586901) (Cr ar; prereq 8223) Twiggs, staff

8225. GYNECOLOGICAL ENDOCRINOLOGY—PART II. (086904) (Cr ar; prereq 8224) Twiggs, staff

8230. RESEARCH IN REPRODUCTION. (986913) (Cr ar; prereq 8229) Twiggs, staff

8777. THESIS CREDITS: MASTERS. (189333) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (589555) (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 page 27.

FIRST TERM

3000. INTRODUCTION TO OPERATIONS MANAGEMENT. (489712) (4 cr; limited to 30 students; A-F only; 1300-1430 MTWTh; BlegH 125)

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 MANAGEMENT. (289713) (Cr ar; prereq #, grad SMgmt approval; A-F only)

8995. GRADUATE RESEARCH IN OPERATIONS AND MANAGEMENT SCIENCE. (189714) (Cr ar; prereq #, grad SMgmt approval; A-F only)

FIRST AND SECOND TERMS: TEN-WEEK**COURSES (Register once in Term I)**

1020. DATA ANALYSIS AND STATISTICAL INFERENCE FOR MANAGERS. (4 cr, \$MSCI 1020, DSCI 1050; prereq IDSc 1010, Math 1111, Math 1131 recommended; limited to 45 students, A-F only)

Lect 1, 0900-1015 TTH, BlegH 125
Lab 1, (689711) 0915-1015 F, BlegH 125

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.

8051. MANAGEMENT OF SERVICE OPERATIONS. (791000) (4 cr; prereq MBA 8050 or OMS 3000 or #; limited to 15 students, A-F only; 1730-2100 T; HHHCtr 20)

Decision making for production of services and the improvement of productivity and quality in service firms. Specific topics include: measurement of service output, defining customer contact, classification of services, designing service delivery systems, capacity management in service firms, automation of services, and quality improvement of services. Lecture and case studies are used.

SECOND TERM

3000. INTRODUCTION TO OPERATIONS MANAGEMENT. (789716) (4 cr; limited to 30 students; A-F only; 1300-1430 MTWTh; BlegH 125)
See First Term.

8990. READINGS IN OPERATIONS MANAGEMENT. (589717) (Cr ar; prereq #, grad SMgmt approval; A-F only)

8995. GRADUATE RESEARCH IN OPERATIONS AND MANAGEMENT. (389718) (Cr ar; prereq #, grad SMgmt approval; A-F only)
See First Term.

Ophthalmology (Oph)

9th floor, Phillips-Wangensteen Building. 625-4400
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (089334) (1-16 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

5100. INTRODUCTION TO ANATOMY, HISTOLOGY, AND EMBRYOLOGY. (586915) (1 cr; prereq physician or vet med student; 0715-0830 Th; PWB 9335) Cameron

8101. CLINICAL OPHTHALMOLOGY. (186917) (8 cr; 0800-1700 MTWThF; PWB 9100) Knobloch, staff

8106. STRABISMUS MANAGEMENT. (688655) (1 cr; prereq grad physician or grad in veterinary science; 0730-0830 M; PWB 9339) Letson

8131. PRACTICAL OCULAR SURGERY. (086918) (3 cr; 0800-1200 MTWThF) Knobloch, staff

8142. OPHTHALMIC PATHOLOGY LABORATORY. (186920) (2 cr; 1330-1530 M; PWB 9335) Cameron

8152. OPHTHALMOLOGY LABORATORY. (086921) (15 cr) Knobloch

8155. SPECIAL TOPICS IN OPHTHALMOLOGY. (686923) (1-3 cr; prereq #) Staff

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389556) (1-16 cr [max 11 cr per summer term])

Oral and Maxillofacial Surgery (OSur)

7-174 Moos Tower. 624-7133
School of Dentistry

FIRST TERM

5257. AMBULATORY GENERAL ANESTHESIA. (986569) (1 cr)
A clinical rotation involving experience in outpatient management utilizing intravenous sedation and general anesthesia.

5270. ORAL AND MAXILLOFACIAL RADIOLOGY REVIEW. (190210) (1 cr)
Weekly review and discussion of radiographs taken at University Hospitals relating to oral surgery procedures.

5275. ORAL PATHOLOGY REVIEW. (087843) (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. (090211) (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. (690891) (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, scase 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, facial trauma, etc.

8250. ADVANCED ORAL AND MAXILLOFACIAL SURGERY. (286570) (cr ar)

Assigned clinics in University Hospitals, Veterans Administration Medical Center, Hennepin County Medical Center, and School of Dentistry.

8251. SEMINAR: ORAL SURGERY.

(890209) (1 cr)
Topics in oral surgery.

8252. RESEARCH IN ORAL AND MAXILLOFACIAL SURGERY. (186571) (Cr ar)

Research in fields related to oral and maxillofacial surgery.

8253. PROBLEMS IN ORAL AND MAXILLOFACIAL SURGERY. (986572) (cr ar)

Current literature review.

8255. GENERAL SURGERY. (786573) (cr ar)

Clinical rotation on the general surgical service at Fairview Hospital, Minneapolis. Includes seminars, clinics, and operating room experience.

8258. ANESTHESIA II SEMINAR.

(586574) (1 cr)
Outpatient general anesthesia topics and related subjects.

8280. ORAL AND MAXILLOFACIAL SURGERY CLINICAL PATHOLOGY CONFERENCE. (890212) (1 cr)

Evaluation and discussion of clinical, radiographic, and microscopic aspects of oral and perioral diseases and neoplasms. Individual participation in seminar format.

SECOND TERM**5257. AMBULATORY GENERAL ANESTHESIA.** (387290) (1 cr)

See First Term.

5270. ORAL AND MAXILLOFACIAL RADIOLOGY REVIEW. (490214) (1 cr)

See First Term.

5275. ORAL PATHOLOGY REVIEW.

(887844) (1 cr)
See First Term.

5276. MEDICINE FOR THE ORAL SURGEON. (290215) (2 cr)

See First Term.

5277. PHYSICAL DIAGNOSIS FOR ORAL AND MAXILLOFACIAL SURGERY RESIDENTS. (286522) (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. (490892) (1 cr; S-N only)

See First Term.

8250. ADVANCED ORAL AND MAXILLOFACIAL SURGERY. (187291) (cr ar)

See First Term.

8251. SEMINAR: ORAL SURGERY.

(690213) (1 cr)
See First Term.

8252. RESEARCH IN ORAL AND MAXILLOFACIAL SURGERY. (087292) (Cr ar)

See First Term.

8253. PROBLEMS IN ORAL AND MAXILLOFACIAL SURGERY. (887293) (cr ar)

See First Term.

8255. GENERAL SURGERY. (687294) (1 cr)

See First Term.

8258. ANESTHESIA II SEMINAR.

(487295) (1 cr)
See First Term.

8280. ORAL AND MAXILLOFACIAL SURGERY CLINICAL PATHOLOGY CONFERENCE. (190216) (1 cr)

See First Term.

Oral Biology (OBio)

17-252 Moos Tower. 624-9123
School of Dentistry

FIRST TERM**8001. RESEARCH IN ORAL BIOLOGY.**

(486566) (Cr ar)

8002. TUTORIAL IN ORAL BIOLOGY.

(286567) (Cr ar [may be repeated for cr]; 2 hrs per wk = 1 cr)

8024. TOPICS IN ORAL BIOLOGY.

(289663) (1-3 cr [may be repeated for cr]; prereq #)

8777. THESIS CREDITS: MASTERS.

(789330) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL.

(389332) (1-36 cr [max 11 cr per summer term])

SECOND TERM**8001. RESEARCH IN ORAL BIOLOGY.**

(387287) (Cr ar)

8002. TUTORIAL IN ORAL BIOLOGY.

(187288) (Cr ar [may be repeated for cr]; 2 hrs per wk = 1 cr)

8777. THESIS CREDITS: MASTERS.

(989553) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL.

(789554) (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.**

(189719) (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. (186464) cr ar

8004. HISTOPATHOLOGY. (186568) (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. (589720) (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. (589930) (1 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.**

(689076) (Cr ar)
See First Term.

8001. RESEARCH IN ORAL PATHOLOGY. (086465) cr ar

8004. HISTOPATHOLOGY. (087289) (2 cr)

See First Term.

8006. CURRENT LITERATURE REVIEW. (389721) (1 cr)

See First Term.

8011. SURGICAL ORAL PATHOLOGY. (389931) (Cr ar)

See First Term.

Orthodontics (Otho)

6-320 Moos Tower. 625-5110
School of Dentistry

FIRST TERM**Required Courses for Graduate Students****5004. CLINICAL ORTHODONTICS.** (386575) (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. (688641) (Cr ar)**8203. GROWTH AND DEVELOPMENT.** (186576) (Cr ar)

Head growth, development, osteology and myology. Includes both normal and abnormal morphology and function; cephalometric methods.

8207. ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING.

(086577) (Cr ar)
Etiology, treatment, and prognosis of clinical orthodontic patients.

8211. ORTHODONTIC SEMINAR.

(886578) (Cr ar)
Review of current literature and discussion of current research and its implications.

8219. TOPICS IN ORTHODONTICS.

(686579) (Cr ar)
Studies in special topics for advanced students.

SECOND TERM**5004. CLINICAL ORTHODONTICS.**

(187297) (Cr ar)
See First Term.

8001. RESEARCH IN ORTHODONTICS. (188711) (Cr ar)**8203. GROWTH AND DEVELOPMENT.** (987298) (Cr ar)

See First Term.

8207. ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING.

(787299) (Cr ar)
See First Term.

8211. ORTHODONTIC SEMINAR.

(487300) (Cr ar)
See First Term.

8219. TOPICS IN ORTHODONTICS.

(287301) (Cr ar)
See First Term.

Orthopaedic Surgery (OrSu)

Bridge Area, 5th floor Boynton Health Service. 625-1177
Medical School

FIRST TERM**8777. THESIS CREDITS: MASTERS.**

(189106) (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.**

(986944) (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. (288948) (5 cr)

Gustilo, staff
Orthopaedic fellow acts as house surgeon on the fracture service at Hennepin County Medical Center.

8405. ORTHOPAEDIC DIAGNOSIS.

(086949) (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 the University Hospitals.

8407. PEDIATRIC ORTHOPAEDICS.

(186951) (5 cr) Staff
Orthopaedic fellow acts as house surgeon at Gillette Children's Hospital.

8408. ORTHOPAEDIC PROBLEMS AND MANAGEMENT. (086952) (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. (486955) (5 cr)

Aamoth
Orthopaedic fellow acts as house surgeon on the orthopaedic service at Fairview Hospital.

8410. ORTHOPAEDIC PATHOLOGY.

(186957) (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. (986961)
(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. (186965) (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. (886967) (5 cr) Thompson, House, Robinson, Craig, Ogilvie, Arendt
Problems in experimental or clinical surgery, University Hospitals.

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189194) (1-16 cr [max 11 cr per summer term])

Otolaryngology (Otol)

8-240 Phillips-Wangensteen Building.
625-3200
Medical School

SPECIAL TERMS: THREE-, SIX-, AND TWELVE-WEEK COURSES

5970. DIRECTED STUDIES. (585389)
(Cr ar; prereq #)

8250. ADVANCED BIOCHEMISTRY OF THE AUDITORY SYSTEM. (189722)
(2 cr; prereq MdBc 5100, MdBc 5101 or #) Juhn

FIRST TERM

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])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189199) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589202) (1-36 cr [max 11 cr per summer term])

P

Pathobiology (Path)

D-242 Mayo. 625-9171
(Laboratory Medicine and Pathology)
Medical School

FIRST TERM

8888. THESIS CREDITS: DOCTORAL. (689109) (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 CHRONIOBIOLOGY. (186996) (Cr ar; prereq #) Halberg

8201. RESEARCH. (086997) (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. (889206) (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. (086580)
(Cr ar; prereq #)
Assignment of patients for treatment of difficult or unusual pedodontic problems under direct faculty supervision.

8001. RESEARCH. (886581)
(Cr ar)

8290. HOSPITAL PEDODONTICS I. (686582) (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. (486583) (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. (388617) (2 cr)
In-depth literature review and seminar discussion of specific pedodontic topics.

8294. PEDODONTIC DIAGNOSIS AND TREATMENT PLANNING. (286584) (Cr ar)
Systematic approach to diagnosis and treatment planning for various pedodontic problems.

SECOND TERM

5414. ADVANCED CLINICAL PEDODONTICS. (987303)
(Cr ar)
See First Term.

8001. RESEARCH. (787304)
(Cr ar)

8290. HOSPITAL PEDODONTICS I. (387306) (Cr ar; S-N only)
See First Term.

8291. HOSPITAL PEDODONTICS II. (187307) (Cr ar; S-N only)
See First Term.

8293. ADVANCED PEDODONTIC TECHNIQUES. (087308) (Cr ar)
Description and exercises in advanced pedodontic skills and techniques.

8295. INDEPENDENT PEDODONTIC STUDY. (187310)
(Cr ar)
Review of pertinent literature and preparation of a position paper on an assigned topic.

8298. INTERDISCIPLINARY CARE OF THE CLEFT PALATE PATIENT. (587174)
(1 cr S-N only)
Comprehensive surgical, dental, and 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

8220. TOPICS IN CONSCIOUS SEDATION. (189672) (2 cr)
Seminar course designed to evaluate current literature in areas of conscious sedation. Topics to be covered include patient selection and evaluation, approaches in oral, inhalation, and intravenous sedation, and management of medical emergencies for dental patients.

8250. SUPPORTING STRUCTURES OF THE TEETH. (888640) (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)

8000. ADVANCED CLINICAL PERIODONTOLOGY. (186585) (Cr ar)
Clinical training in examination, diagnosis, treatment planning, and various phases of prevention and treatment of patients with periodontal disease.

8200. LECTURES. (986586) (Cr ar)
Clinical cases are discussed from a diagnostic, treatment planning, and therapeutic viewpoint.

8300. SEMINAR: PERIODONTOLOGY. (786587) (Cr ar)
Discussion of assigned weekly literature reviews. Preparation of assigned formal literature reviews.

SECOND TERM

8220. TOPICS IN CONSCIOUS SEDATION. (388648) (2 cr)
See Term I

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. (289114) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189115) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389251) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889254) (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. (887178)
(1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (687179)
(Cr and hrs ar; prereq #)

SECOND TERM

5970. DIRECTED STUDIES. (087180)
(1-5 cr; prereq #)

5999. SPECIAL PROBLEMS. (887181)
(Cr and hrs ar; prereq #)

Pharmacology (Phcl)

3-249 Millard Hall. 625-9997
Medical School

FIRST TERM

5109. PROBLEMS IN PHARMACOLOGY. (687022) (Cr and hrs ar; prereq grad or upper div stu or #) Loh, staff

8203. RESEARCH IN PHARMACOLOGY. (691409) (Cr and hrs ar; prereq #) Loh, staff

8777. THESIS CREDITS: MASTERS. (089110) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889111) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5109. PROBLEMS IN PHARMACOLOGY. (287329) (Cr and hrs ar; prereq grad or upper div stu or #) Loh, staff

8203. RESEARCH IN PHARMACOLOGY. (891408) (Cr and hrs ar; prereq #) Loh, staff

8777. THESIS CREDITS: MASTERS. (889237) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489239) (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. (392098) (2 cr, \$HSU 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 rm 5120 H5UnitF before first day of class.

5286. COMMUNITY DRUG INFORMATION. (091116) (1-3 cr; prereq third yr Phar student; #) Green

5290. SPECIALTY CLERKSHIPS. (385037) (1-16 cr)
Practice experience with specialized populations.

5291. SPECIALTY EXTERNSHIP. (089723) (1-12 cr)
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 22-SEPTEMBER 13

Register once in Term I

5550. PHARMACY PRACTICE CLERKSHIP: ACUTE CARE. (287184) (4-12 cr; prereq Pharm.D. IV student; S-N only)

5551. PHARMACY PRACTICE CLERKSHIP: CLINICAL PHARMACOKINETICS. (187185) (4 cr; prereq Pharm.D. IV student; S-N only)

5552. PHARMACY PRACTICE CLERKSHIP: PEDIATRICS. (987186) (4 cr; prereq Pharm.D. IV student; S-N only)

5553. PHARMACY PRACTICE CLERKSHIP: CLINICAL ELECTIVE I. (787187) (4-12 cr; prereq Pharm.D. IV student; S-N only)

5554. PHARMACY PRACTICE CLERKSHIP: SPECIAL ELECTIVE I. (587188) (4-12 cr; prereq Pharm.D. IV student; S-N only)

5555. PHARMACY PRACTICE CLERKSHIP: CLINICAL ELECTIVE II. (588566) (4-12 cr; prereq Pharm.D. IV student; S-N only)

5556. PHARMACY PRACTICE CLERKSHIP: CLINICAL ELECTIVE III. (388567) (4-12 cr; prereq Pharm.D. IV student; S-N only)

5557. PHARMACY PRACTICE CLERKSHIP: SPECIAL ELECTIVE II. (188568) (4-12 cr; prereq Pharm.D. IV student; S-N only)

5558. PHARMACY PRACTICE CLERKSHIP: SPECIAL ELECTIVE III. (088569) (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 22-August 16. (687182) (4-8 cr; prereq Pharm.D. III student; S-N only)

5393. PHARM.D. HOSPITAL EXTERNSHIP—June 22-August 16. (487183) (4-8 cr; prereq Pharm.D. III student; S-N only)

SECOND TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (192099) (2 cr, \$HSU 5210) McKennell
See First Term.

5286. COMMUNITY DRUG INFORMATION. (891117) (1-3 cr; prereq third yr Phar student; #) Green

5290. SPECIALTY CLERKSHIPS. (585036) (Cr ar)
See First Term.

5291. SPECIALTY EXTERNSHIP. (489726) (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. (885804) (5 cr; 1030-1130 MTWThF; FordH 115) Lewis
Application of formal techniques for evaluating arguments.

1002. INTRODUCTION TO PHILOSOPHY. (688834) (5 cr; 0840-1015 TWTh; BlegH 420) Hopkins
Problems, principal methods, and schools of philosophy; historical and contemporary views.

3001. GENERAL HISTORY OF WESTERN PHILOSOPHY. (091603) (5 cr; 1030-1210 MWF; FordH 175) Dahl

3302. MORAL PROBLEMS OF CONTEMPORARY SOCIETY. (290506) (5 cr; 0915-1055 TWTh; FordH 120) Root
Selected problems of current interest.

3970. DIRECTED STUDIES. (685805) (1-5 cr; prereq #, Δ , \square) Staff

5970. DIRECTED STUDIES AND RESEARCH. (285807) (1-5 cr; prereq #, Δ , CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (689112) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489113) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDY AND RESEARCH. (285810) (1-4 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

SECOND TERM

1001. INTRODUCTION TO LOGIC. (986832) (5 cr; 0915-1015 MTWThF; FordH 150) Hanson
See First Term.

1003. INTRODUCTION TO ETHICS. (891604) (5 cr; 0915-1055 TWTh; FordH 115) Wallace
Problems that arise when human beings attempt to think systematically about conduct and value.

3305. MEDICAL ETHICS. (588843) (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 containment in medicine. Analysis of connections between individual decision-making and institutional policies.

3311. INTRODUCTION TO ETHICAL THEORY. (691605) (4 cr; 0915-1045 TWTh; FordH 170) Anderson
Nature and justification of moral judgements and moral principles, analysis of representative moral views.

3502. INTRODUCTION TO AESTHETICS. (791868) (4 cr; 1030-1200 TWTh; AmundH 162) Gunderson

3970. DIRECTED STUDIES. (686842) (1-5 cr; prereq #, Δ , \square) Staff

5970. DIRECTED STUDIES AND RESEARCH. (486843) (1-5 cr; prereq #, Δ , CLA approval) Staff

8777. THESIS CREDITS: MASTERS. (289243) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989245) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDY AND RESEARCH. (186845) (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

#1007. SWIMMING. (685660) (1 cr; limited to 22 students; prereq nonswimmer; 0915-1015 MTWTh; NorrisH 58)
Course for nonswimmers includes aquatic breathing, floating, bobbing, treading, finning, human stroke, elementary backstroke, sidestroke, front crawl.

#1014. CONDITIONING. (1 cr; each section limited to 40 students;)

Sec 1, (191608) 0800-0900 MTWTh, St. Paul Gym

Sec 2, (990508) 0915-1015 MTWTh, Fieldhouse

Improvement of physical fitness through running, circuit training, and progressive exercises.

#1015. WEIGHT TRAINING. (1 cr; each section limited to 30 students)
Fundamentals including techniques, theory, and individualized exercise prescription.

Sec 1, (991609) 0915-1015 MTWTh, St. Paul Gym

Sec 2, (388473) 1030-1130 MTWTh, CookeH 5

#1038. TENNIS. (1 cr; each section limited to 24 students)
Fundamental strokes of service, forehand and backhand, drives and volley; court positions and strategy for singles and doubles; rules, terminology, and etiquette.

Sec 1, (485661) 0800-0900 MTWTh, Fieldhouse, Tennis Courts

Sec 2, (285662) 1030-1130 MTWTh, Fieldhouse, Tennis Courts

Sec 3, (185663) 1300-1400 MTWTh, Fieldhouse, Tennis Courts

#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, (587109) 0800-0900 MTWTh, CMU B55

Sec 2, (385474) 0915-1015 MTWTh, CMU B55

#1050. GOLF. (1 cr; moderate intensity; each section limited to 21 students)
Fundamentals; stance, and swing; etiquette and rules.

Sec 1, (985664) 0915-1015 MTWTh, Golf Course

Sec 2, (585666) 1030-1130 MTWTh, Golf Course

#1074. VOLLEYBALL. (889707) (1 cr; limited to 36 students; 1030-1130 MTWTh; CookeH 325)
Fundamental skills and rules of volleyball; basic team play and strategy.

#1107. SWIMMING. (185475) (1 cr; limited to 24 students; prereq ability to swim 100 yards; 1030-1130 MTWTh; NorrisH 58)
Deep water skills, elementary back stroke, side stroke, front crawl, back crawl, elementary diving, and distance swimming.

SECOND TERM

1007. SWIMMING—July 23-August 19. (1 cr; prereq nonswimmer; each section limited to 22 students)
See First Term.

Sec 1, (686551) 0800-0900
MTWThF, NorrisH 58
Sec 2, (689708) 1030-1130
MTWThF, NorrisH 58

1014. CONDITIONING—July 23-August 19. (987110) (1 cr; limited to 40 students; 0800-0900 MTWThF; Field Hse)
See First Term.

1015. WEIGHT TRAINING—July 23-August 19. (486552) (1 cr; limited to 30 students; 0915-1015 MTWThF; CookeH 5)
See First Term.

1038. TENNIS—July 23-August 19. (1 cr; each section limited to 24 students)
See First Term.

Sec 1, (286553) 0800-0900
MTWThF, Fieldhouse, Tennis Courts
Sec 2, (186554) 0915-1015
MTWThF, Fieldhouse, Tennis Courts
Sec 3, (986555) 1030-1130
MTWThF, Fieldhouse, Tennis Courts

1041. CYCLING—July 23-August 19. (790509) (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.

1050. GOLF—July 23-August 19. (1 cr; moderate intensity; each section limited to 21 students)

Sec 1, (787111) 0915-1015
MTWThF, Golf Course
Sec 2, (588471) 1030-1130
MTWThF, Golf Course

See First Term.

1067. BASKETBALL—July 23-August 19. (489709) (1 cr; limited to 30 students; 0915-1015 MTWThF; Fieldhouse)
Fundamentals of offense and defense; elementary team play and game strategy.

1107. SWIMMING—July 23-August 19. (686419) (1 cr; limited to 24 students; prereq ability to swim 100 yards; 0915-1015 MTWThF; NorrisH 58)
See First Term.

1138. TENNIS—July 23-August 19. (086420) (1 cr; limited to 24 students; prereq 1038 or equiv; 1300-1400 MTWThF; Fieldhouse, Tennis Courts)
See First Term.

1205. SCUBA AND SKIN DIVING. (686422) (1 cr; limited to 18 students; prereq 1107 or equiv; 0800-1000 TTh; CookeH 15, 214) Whortenburg

Physical Medicine and Rehabilitation (PMed)

860 Mayo. 626-5961
Medical School

FIRST TERM

5396. FIELD WORK EDUCATION IN OCCUPATIONAL THERAPY. (587028) (Cr ar; prereq regis OT; S-N only) Berkeland, Meyers

5397. FIELD WORK EDUCATION IN OCCUPATIONAL THERAPY. (787030) (Cr ar; prereq 5396; S-N only) Berkeland, Meyers

5398. FIELD WORK EDUCATION IN OCCUPATIONAL THERAPY. (787173) (1 cr; prereq regis OT; S-N only) Meyers

5410. ADULT REHABILITATION MEDICINE. (187901) (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. (485207) (4.5-9 cr; prereq regis med)

5416. PHYSICAL MEDICINE AND REHABILITATION AT ST. PAUL RAMSEY. (285208) (Cr ar; prereq regis med)

5441. ADULT PHYSICAL MEDICINE AND REHABILITATION: HEALTH CARE PSYCHOLOGY INTERNS. (885236) (Cr ar; prereq #)

5817. SPECIAL TOPICS IN PHYSICAL THERAPY. (785391) (1-3 cr) DiFabio, Staff

8103. CLINIC. (587031) (Cr ar; prereq regis PT) Ellingham

8130. SEMINAR: CURRENT LITERATURE IN PHYSICAL THERAPY. (588180) (1 cr) Scudder, DiFabio

8170. SPECIAL TOPICS IN PHYSICAL THERAPY. (587014) (1 cr; prereq #) DiFabio, Staff

8185. PROBLEMS IN PHYSICAL THERAPY. (387015) (Cr ar; prereq regis PT) DiFabio, Staff

8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (187016) (Cr ar; prereq 8192 or #) DiFabio, Staff

8195. RESEARCH IN PHYSICAL THERAPY. (887018) (Cr ar; prereq #) DiFabio, Staff

8200. PHYSICAL MEDICINE AND REHABILITATION SERVICE. (287024) (Cr and hrs ar) Awad, Staff

8205. READINGS IN PHYSICAL MEDICINE AND REHABILITATION. (987026) (1-2 cr |max 2 cr); 0900-0955 M) Dykstra

8206. CONFERENCE ON PHYSICAL MEDICINE AND REHABILITATION. (685142) (2 cr; 0800-0900 F) Dykstra

8207. BASIC AND APPLIED PHYSIATRY. (887875) (2 cr; 0800-0900 M) Staff

8210. RESEARCH IN PHYSICAL MEDICINE. (085008) (ar cr; limited to 10 students)

8212. ELECTROMYOGRAPHY. (885009) (Cr and hrs ar; limited to 10 students; prereq #) Dykstra

8214. READINGS IN ELECTROMYOGRAPHY. (587143) (1 cr; max 3 cr; prereq #: 0900-1000 F) Dykstra

8220. SEMINAR IN PHYSICAL MEDICINE AND REHABILITATION. (485143) (Cr ar; 0800-0900 W) Dykstra

8777. THESIS CREDITS: MASTERS. (689191) (1-16 cr |max 11 cr per summer term)

8888. THESIS CREDITS: DOCTORAL. (289193) (1-36 cr |max 11 cr per summer term)

SECOND TERM

5255. CLINICAL EDUCATION IN PHYSICAL THERAPY. (188179) (Cr ar; regis PT) Ellingham
Five weeks of supervised practice at affiliated hospitals.

5817. SPECIAL TOPICS IN PHYSICAL THERAPY. (585392) (1-3 cr) DiFabio

8103. CLINIC. (687330) (Cr ar; prereq regis PT) Ellingham

8130. SEMINAR: CURRENT LITERATURE IN PHYSICAL THERAPY. (338178) (1 cr) Scudder, DiFabio

8170. SPECIAL TOPICS IN PHYSICAL THERAPY. (487331) (1 cr; prereq #) DiFabio, Staff

8185. PROBLEMS IN PHYSICAL THERAPY. (287332) (Cr ar; prereq regis PT) DiFabio, Staff

8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (187333) (Cr ar; prereq 8192 or #) DiFabio, Staff

8195. RESEARCH IN PHYSICAL THERAPY. (987334) (Cr ar; prereq #) DiFabio, Staff

8777. THESIS CREDITS: MASTERS. (089365) (1-16 cr |max 11 cr per summer term)

8888. THESIS CREDITS: DOCTORAL. (889366) (1-36 cr |max 11 cr per summer term)

Physics (Phys)

148 Physics. 624-7375
Institute of Technology

FIRST TERM

1041. INTRODUCTORY PHYSICS. (888265) (4 cr |no cr for IT students except arch, pre-arch, environmental design), 5 other introductory physics courses; prereq high school algebra and plane geometry; 0800-1015 MWF, 0800-0900 TTh; Phys 170; limited to 140 students)
Lectures and problem sessions. Primarily for students interested in topics useful in technical areas. Mechanics, fluids and gases, heat, waves.

1045. INTRODUCTORY PHYSICS LABORATORY. (1 cr |no cr for IT students except arch, pre-arch, environmental design); prereq 1041 or 11041; 4 lab hrs per wk; S-N only; each section limited to 16 students)
Laboratory experiments offered in conjunction with 1041.
lab 1, (688266) 1030-1245 MF
lab 2, (289937) 1300-1515 MF
lab 3, (189938) 0915-1130 TTh
lab 4, (989939) 1145-1400 TTh

3970. DIRECTED STUDIES. (185024) (1-5 cr; prereq #, Δ)
Independent directed study in areas arranged by the student and a faculty member.

5124. EXPERIMENTAL PROJECT. (487216) (Cr ar; prereq 5123, #)
Research project in some aspect of contemporary physics. Project must be approved by faculty coordinator prior to registration.

5940. PHYSICS FOR HIGH SCHOOL TEACHERS: Experimental Foundations of Optics—June 24-July 17. (386382) (4 cr; |no cr for physics grad students or grad minors in physics); prereq general physics, #; may be repeated for credit. Qualified students may register for graduate credit at the University of Minnesota; 0800-1600 MTWThF; offered at Bakken Library.) Kipnis
For teachers of physics and physical science. Historical approach is combined with an investigative experimentation. Repeating historical experiments with simple apparatus in a laboratory setting gives all students an opportunity to improve their understanding of scientific concepts and make learning enjoyable.

5970. DIRECTED STUDIES. (485224) (1-5 cr; prereq #, Δ)
Independent, directed study in physics in areas arranged by the student and a faculty member.

5990. DIRECTED RESEARCH. (087860) (Cr ar; prereq 3rd yr, Δ)
Problems, experimental or theoretical, of special interest to students. Written reports.

8500. PLAN B PROJECT. (089737) (4 cr |no cr toward PhD); prereq #: 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. (589118) (1-16 cr |max 11 cr per summer term)

8888. THESIS CREDITS: DOCTORAL. (389119) (1-36 cr |max 11 cr per summer term)

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

1251. GENERAL PHYSICS I. (4 cr; prereq Math 1211 or 11211; limited to 64 students; lecture 0800-0900 MTWF; Phys 133)

lab 1, (891991) 0915-1130 M
lab 2, (691992) 1300-1515 T
lab 3, (491993) 0915-1130 Th
lab 4, (291994) 1300-1515 Th

1252. GENERAL PHYSICS II. (4 cr; prereq Math 1221 or 11221, Phys 1251; limited to 64 students; lecture 0915-1015 MTWF; Phys 133)

lab 1, (991996) 1030-1245 M
lab 2, (791997) 1300-1515 T
lab 3, (591998) 1030-1245 Th
lab 4, (391999) 1300-1515 Th

1253. GENERAL PHYSICS III. (4 cr; prereq Math 1241 or 1241, Phys 1252; limited to 64 students; lecture 1030-1130 MTWF; Phys 170)

lab 1, (192001) 1300-1515 M
lab 2, (992002) 0800-1015 T
lab 3, (792003) 1300-1515 Th
lab 4, (592004) 1300-1515 F
lab 5, (392005) 0800-1015 F

SECOND TERM

1042. INTRODUCTORY PHYSICS. (488267) (4 cr; [no cr for IT students except arch, pre-arch, environmental design], 5 other introductory physics courses; prereq 1041, high school algebra and plane geometry; 0800-1015 MWF, 0800-0900 TTh; Phys 170; limited to 140 students) Lectures and problem sessions. Primarily for students interested in topics useful in technical areas. Electricity and magnetism, light, optical instruments, atoms and spectra, nuclei, radioactivity.

1046. INTRODUCTORY PHYSICS LABORATORY. (1 cr; [no cr for IT students except arch, pre-arch, environmental design]; prereq 1042 or 1042, 1045; 4 lab hrs per wk; S-N only; each section limited to 16 students)

Laboratory experiments offered in conjunction with 1042.

lab 1, (288268) 1030-1245 MF
lab 2, (289940) 1300-1515 MF
lab 3, (189941) 0915-1130 TTh
lab 4, (989942) 1145-1400 TTh

3970. DIRECTED STUDIES. (085025) (1-5 cr; prereq #, Δ) See First Term.

5124. EXPERIMENTAL PROJECT. (186383) (Cr ar; prereq 5123, #) See First Term.

5970. DIRECTED STUDIES. (285225) (1-5 cr; prereq #, Δ) See First Term.

5990. DIRECTED RESEARCH. (687859) (Cr ar; prereq 3rd yr, Δ) See First Term.

8500. PLAN B PROJECT. (889738) (4 cr [no cr toward Ph.D.]; prereq #; S-N only) See First Term

8777. THESIS CREDITS: MASTERS. (189350) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889352) (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. (087020) (Cr and hrs ar; prereq #) Staff Topics assigned for laboratory study; conferences and readings.

5552. READINGS IN PHYSIOLOGY. (887021) (Cr and hrs ar) Staff Topics selected for each student; written reviews prepared and discussed.

5553. RESEARCH IN PHYSIOLOGY. (487023) (Cr and hrs ar) Staff

8113. PROBLEMS IN PHYSIOLOGY. (187025) (Cr and hrs ar; prereq #) Staff Topics assigned for laboratory study; conferences and readings.

8202. READINGS IN PHYSIOLOGY. (387029) (Cr and hrs ar) Staff Topics selected for each student; written reviews prepared and discussed.

8203. RESEARCH IN PHYSIOLOGY. (787027) (Cr and hrs ar) Staff

8777. THESIS CREDITS: MASTERS. (989116) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789117) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5552. READINGS IN PHYSIOLOGY. (187758) (Cr and hrs ar) Staff See First Term.

5553. RESEARCH IN PHYSIOLOGY. (087759) (Cr and hrs ar) Staff

8202. READINGS IN PHYSIOLOGY. (387760) (Cr and hrs ar) Staff See First Term.

8203. RESEARCH IN PHYSIOLOGY. (187761) (Cr and hrs ar) Staff

8777. THESIS CREDITS: MASTERS. (289257) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289260) (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 xx.)

FIRST TERM

5801. PLAINS AND BOREAL FLORA—June 16-July 2. (192130) (5 cr; limited to 20 students; prereq course in taxonomy; 0800-1700 WS; Itasca) Collins 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. (989682) (1-5 cr per qtr; prereq Δ) Individual research for undergraduates and graduates. Taught at Itasca, see page x.

5970. DIRECTED STUDIES. (189681) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (289680) (Cr ar; prereq #, Δ) Staff Laboratory or field investigation of selected areas of research.

8777. THESIS CREDITS: MASTERS. (789182) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189347) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (989679) (Cr ar; prereq #, Δ) Staff

SECOND TERM

5970. DIRECTED STUDIES. (789683) (Cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (589684) (Cr ar; prereq #, Δ) Staff See First Term.

8777. THESIS CREDITS: MASTERS. (589281) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589412) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (389685) (Cr ar; prereq #) Staff

Plant Breeding (PIBr)

411 Borlaug Hall, St. Paul. 625-7773
(Agronomy and Plant Genetics)
College of Agriculture

FIRST TERM

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])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (489354) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189356) (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. (885270) (Cr ar; prereq 1001 or equiv or #) Staff

5102. FUNGAL ECOLOGY—June 16-July 6, Monday/Thursday. (891425) (3 cr; MTh; limited to 20 students; prereq 5 credits botany or permission of the instructor. Instructor to be named; emphasis on ecological studies and identification of fungi. Lectures include topics on fungal symbioses, morphology, coevolution, and applicable ecological theory. Students teams will determine species richness in an aquatic, grassland, and forest habitat.

8090. ADVANCED PROCEDURES AND RESEARCH IN PLANT PATHOLOGY. (985325) (Cr ar) Staff Special assignment in laboratory and field problems in pathological research.

8095. ADVANCED PROCEDURES AND RESEARCH IN MYCOLOGY. (987950) (1-6 cr) Stewart Special assignment of work in laboratory and field problems in mycological research.

8500. RESEARCH IN PLANT PATHOLOGY. (691426) (1-8 cr; S-N only) Staff Laboratory or field research in selected areas of plant pathology.

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])

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register once in Term I)

5000. PROFESSIONAL EXPERIENCE PROGRAM. (788453) (4 cr; prereq #; ar) Percich

5650. FIELD PLANT PATHOLOGY. (490195) (2 cr; prereq 5002 or #; A-F only; 0900-1630 Th, BorH 491) 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. (685271) (Cr ar; prereq 1001 or equiv or #) Staff

8090. ADVANCED PROCEDURES AND RESEARCH IN PLANT PATHOLOGY. (386379) (Cr ar) Staff See First Term.

8095. ADVANCED PROCEDURES AND RESEARCH IN MYCOLOGY. (187073) (1-6 cr) Stewart See First Term.

8500. RESEARCH IN PLANT PATHOLOGY. (091424) (1-8 cr; S-N only) Staff Laboratory or field research in selected areas of plant pathology.

8777. THESIS CREDITS: MASTERS. (589359) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789361) (1-36 cr [max 11 cr per summer term])

Plant Physiology (PIPh)

220 Biological Sciences Center.
625-4222
College of Agriculture

FIRST TERM

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])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389363) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189364) (1-36 cr [max 11 cr per summer term])

Political Science (Pol)

1414 Social Sciences. 624-4144
College of Liberal Arts

FIRST TERM

1001. AMERICAN GOVERNMENT AND POLITICS. (385829) (5 cr; 0800-0930 MTWThF; AndH 330) Flanigan

Principles, organization, processes, functions of government, and the interplay of political forces in the United States. Attention throughout to current issues.

1026. AMERICAN FOREIGN POLICY. (390321) (4 cr; 1030-1130 MTWThF; BlegH 10) Nair

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.

3070. DIRECTED FIELD STUDIES. (685240) (1-4 cr; prereq #, Δ; A-F only)

3080. INTERNSHIP. (185041) (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. (787934)

(1-6 cr [6 cr max]; open only to political science honors program majors; prereq 3109H)

Individual research and writing of departmental honors thesis.

3331. MINNESOTA GOVERNMENT AND POLITICS. (691619) (4 cr; limited to 50 students; 1001 recommended; 1030-1130 MTWThF; HHCtr 25) Backstrom

The Minnesota political system; demographic and cultural setting, political and governmental processes, contemporary policies.

3661. DEMOCRATIC THEORY. (091620) (4 cr; prereq 3051 or 9 cr in social science or #; 0915-1015 MTWThF; BlegH 155) Baum

Postulates and implications; moral foundations; democratic theory and the economic order; liberty and authority; equality; representation; participation; majority rule; critics of democracy; social science and democratic theory.

3739. THE POLITICS OF ETHNIC COMMUNITIES. (890324) (4 cr; limited to 75 students; prereq 6 cr in social sciences; 1145-1245 MTWThF; BlegH 150) Nimt

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. (690325) (4 cr; 0915-1015 MTWThF; BlegH 350) Weldes

Structure of international system; balance of power, bi-polar and other international systems; theories of stability, change, conflict, and cooperation.

3970. DIRECTED STUDIES. (185265) (1-6 cr; prereq #, Δ, □)

5479. LATIN AMERICAN GOVERNMENT AND POLITICS. (891621) (5 cr; \$LAS prereq 3051 or non-political science grad or #; 1030-1200 MTWThF; BlegH 135) Selbin

Latin American political heritage, political processes, contemporary public policy issues; problems of social, economic, and political change in selected countries.

5610. TOPICS IN POLITICAL THEORY: FEMINIST POLITICAL THEORY. (391629) (4 cr; limited to 50 students; qualified graduate students may register for graduate credit at the University of Minnesota; 1145-1245 MTWThF; BlegH 120) Disch

The emergence of arguments for liberal, participatory, and social democracy within feminist theory through texts drawn from a variety of disciplines including political theory, anthropology, history, philosophy, psychology, and literature. Authors include Virginia Woolf, Michelle Rosaldo, Susan Okin, Marilyn Frye, Joan Scott, bell hooks, Martha Minnow, Elizabeth Spelman, and Toni Morrison.

8777. THESIS CREDITS: MASTERS. (689126) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489127) (1-36 cr [max 11 cr per summer term])

SECOND TERM

1025. WORLD POLITICS. (387144) (4 cr; 1030-1130 MTWThF; BlegH 145) Freeman

Contemporary international relations; forms of state interaction; problem of conflict and cooperation.

1061. INTRODUCTION TO POLITICAL THOUGHT. (791630) (4 cr; limited to 50 students; 0800-0900 MTWThF; HHCtr 25) Gerencser

Major concepts, ideas, and arguments concerning topics such as liberty, justice, obligation, consent, authority, violence.

3051. INTRODUCTION TO POLITICAL ANALYSIS. (190328) (5 cr; 0830-1015 MTWThF; BlegH 215) Steiner

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. (285242) (1-4 cr; prereq #, Δ)

3080. INTERNSHIP. (785052) (4 cr [max 8 cr]; prereq Δ; S-N only)

See First Term.

3110H. HONORS WORK IN SELECTED FIELDS. (187145)

(1-6 cr [6 cr max]; open only to political science honors program majors; prereq 3109H)

3309. JUDICIAL PROCESS. (990329) (4 cr; limited to 60 students; prereq 1001 or equiv or #; 1030-1130 MTWThF; BlegH 230) McGuire

Structure of American judiciary; selection of judges; process of litigation; influences on judicial decisions; impact of and compliance with decisions; role of Supreme Court in American political system.



3323. CIVIL LIBERTIES IN AMERICA. (290330) (4 cr; limited to 75 students; prereq 1001 or equiv or #; 0915-1015 MTWThF; BlegH 230) Sullivan Political importance of civil liberties in American society. Tolerance as a social phenomenon; issues such as free speech, religion, media control, and effects of campaigning.

3477. POLITICAL DEVELOPMENT. (591631) (4 cr; prereq 1054 or 3051 or #; 0915-1015 MTWThF; BlegH 250) Duvall 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.

3836. FOREIGN POLICY DECISION MAKING. (190331) (4 cr; \$5876; limited to 60 students; 1145-1245 MTWThF; BlegH 220) Tuchman Theories and examples of foreign policy decision-making processes, including policy formation and implementation. Examples drawn from various foreign policy issues.

8777. THESIS CREDITS: MASTERS. (689367) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489368) (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. (285631) (1-5 cr per qtr [15 cr max]; prereq #, Δ, CLA approval) Staff Guided individual reading or study.

5990. DIRECTED RESEARCH. (190197) (1-5 cr per qtr; prereq #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (289128) (1-16 cr [max 11 cr per summer term])

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (788498) (Cr ar) Staff Rigorously supervised readings in aspects of Luso-Brazilian language, literature, and cultural history. Readings dependent on student needs and generally do not duplicate material of regular courses.

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.

1001-1002-1003. BEGINNING PORTUGUESE. (15 cr for both terms; limited to 23 students; 0800-1130 MTWThF; KoltH S134) 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.

1001, Sec 5, (686341) June 16-July 9, 5 cr

1002, Sec 5, (486342) July 10-August 3, 5 cr

1003, Sec 5, (286343) August 4-26, 5 cr

SECOND TERM

85970. DIRECTED READINGS. (185632) (1-5 cr per qtr [15 cr max]; prereq #, Δ, CLA approval) Staff See First Term.

5990. DIRECTED RESEARCH. (290196) (1-5 cr per qtr; prereq #, Δ, CLA approval)

8777. THESIS CREDITS: MASTERS. (289369) (1-16 cr [max 11 cr per summer term])

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (988497) (Cr ar; Δ) Staff See First 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. (189686) (1 cr; prereq grad stu in prosthodontics; S-N only) For Prosthodontic residents interested in learning basic principles of art as related to prosthodontics. It will include understanding of color concepts, manipulating of light and its effect on color, physical principles of color theory and practical application using the vehicle of oil painting in still life settings.

8006. ADVANCED CLINICAL PROSTHODONTICS II. (586588) (Cr ar [may be repeated for cr]; prereq #) Experience in prosthodontic treatment of patients having systemic complications.

8034. ADVANCED CLINICAL MAXILLOFACIAL PROSTHETICS. (386589) (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. (086000) (5 cr; 0800-1000 MTWThF; SciCB 375) Introduction to study of human behavior. Prerequisite for all advanced courses in psychology.

1004. INTRODUCTORY LABORATORY PSYCHOLOGY. (4 cr; each section limited to 20 students; 1004-1005+; prereq soph, 1001 or 11001)

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, (886001) 0915-1215 MF, 0915-1115 W, EltH 150

Sec 2, (686002) 0915-1215 MF, 0915-1115 W, EltH 160

Sec 3, (486003) 1300-1600 MF, 1300-1500 W, EltH 150

Sec 4, (187162) 1300-1600 MF, 1300-1500 W, EltH 160

3011. INTRODUCTION TO PSYCHOLOGY OF LEARNING. (286004) (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. (386401) (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. (190894) (4 cr; \$5061; prereq 1005 or Biol 1009 or #; 1300-1400 MTWThF, EltH N119) Neural mechanisms of motivation, emotion, sleep-wakefulness cycle, learning, and communication in animals and humans.

3101. INTRODUCTION TO PERSONALITY. (489905) (4 cr, \$5101; prereq 1001; 0915-1015 MTWThF; BuH 125) Concepts and issues in personality, personality theory, personality research, and personality assessment.

3604. INTRODUCTION TO ABNORMAL PSYCHOLOGY. (285452) (4 cr, \$5604H; prereq 1001; 0915-1015 MTWThF; WullH 230) Surveys the field of abnormal psychology. Etiologies of behavioral disorders; available treatment.

3617. INTRODUCTION TO CLINICAL PSYCHOLOGY. (185453) (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. (588499) (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. (788629) (1-8 cr; prereq #, Δ, □)

3990. DIRECTED RESEARCH. (188630) (1-8 cr; prereq #, Δ, □)

5205. APPLIED SOCIAL PSYCHOLOGY. (388634) (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, advertising, victimology, juvenile delinquency, institutions, and energy conservation programs.

8519. PRACTICUM IN REHABILITATION COUNSELING. (186005) (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. (986006) (1-12 cr; prereq #; hrs ar)

8620. PRACTICUM IN CLINICAL PSYCHOLOGY. (786007) (1-6 cr; prereq #; hrs ar; S-N only) Field experience in professional work in clinical settings.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (586008) (2-4 cr; prereq Ph.D. candidate in clinical psychology program and consent of director of clinical psychology training program; hr ar)

8777. THESIS CREDITS: MASTERS. (189129) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489130) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (188683) (prereq #; 1-6 cr). Staff

TEN-WEEK COURSE

3902. MAJOR PROJECT IN PSYCHOLOGY. (386463) (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. (786850) (5 cr; 0800-1000 MTWThF; SciCB 125) See First Term.

1005. INTRODUCTORY LABORATORY PSYCHOLOGY. (4 cr; each section limited to 20 students; 1004-1005+; prereq soph, 1004) See 1004 First Term.

Sec 1, (386852) 0915-1215 MF, 0915-1115 W, EltH 50

Sec 2, (186853) 0915-1215 MF, 0915-1115 W, EltH 60

Sec 3, (086854) 1300-1600 MF, 1300-1500 W, EltH 60

3201. INTRODUCTION TO SOCIAL PSYCHOLOGY. (990895) (4 cr; prereq 1001; 1030-1130 MTWThF; EltH N119) Fleming

Theories and research in social psychology. Effects upon the individual's attitudes and behavior of other persons, mass communications, and group membership.

3607. SURVEY OF CLINICAL INTERVENTION METHODS. (089740) (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 with focus 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. (186402) (4 cr; prereq 1001 or equiv; 1300-1500 MW, 1300-1400 F; EltH N119) O'Dell

Quantification in research problems in psychology. Descriptive and inferential statistics, hypothesis testing, nonparametric statistics. Examples from various areas in psychology.

3970. DIRECTED STUDIES. (988631) (1-8 cr; prereq #, Δ, □)

3990. DIRECTED RESEARCH. (788632) (1-8 cr; prereq #, Δ, □)

5054. PSYCHOLOGY OF LANGUAGE. (490536) (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. (388844) (4 cr; prereq 3201 or #; 1145-1245 MTWThF; EltH N119) Bull-Kovera

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. (686856) (3 cr; prereq 8503, #; hrs ar) Athelstan
See First Term.

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (186859) (1-12 cr; prereq #; hrs ar)

8620. PRACTICUM IN CLINICAL PSYCHOLOGY. (286861) (1-6 cr; prereq #; hrs ar; S-N only)
See First Term.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (186862) (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. (489371) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189373) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH PROBLEMS. (388682) (1-6 cr; prereq #) Staff

Public Affairs (PA)

230 Humphrey Center. 625-9505
Humphrey Institute of Public Affairs

FIRST TERM

8910. INDEPENDENT STUDY. (986345) (Cr ar; prereq #)
Individual reading or research project.

SECOND TERM

8910. INDEPENDENT STUDY. (586347) (Cr ar; prereq #)
See First Term.

SPECIAL TERM: AUGUST 10-SEPTEMBER 11

Econ 3101. MICROECONOMIC THEORY. (4 cr; §3105; limited to 45 students; prereq Econ 1101, 1102, 1 qtr calculus, Humphrey Institute Students only, or equiv) 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.

Sec 2, (686761) 0915-1015
MTWThF, HHCtr 30

Public Health (PubH)

A302 Mayo. 624-6669
School of Public Health

FIRST TERM

3001. PERSONAL AND COMMUNITY HEALTH. (887245) (3 cr, §3004, 5022, 5023, GC 3114; meets with 3003, 3004, 5022, 5023; limited to 50 students; 1030-1245 MWF; MoosT 2650) Rothenberger
Fundamental principles of health conservation and disease prevention.

3003. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE. (087129) (2 cr, §3004, 5003, 5023; meets with 3001, 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.

3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH. (687246) (5 cr, §3001, 3003, 5003, 5022, 5023, GC 3114; meets with 3001, 3003, 5003, 5022, 5023; 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 alcohol.

3034. TOPICS IN ALCOHOL AND DRUG PROBLEMS. (688705) (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.

5003. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE. (089043) (2 cr; §3003, 3004, 5023; meets with 3001, 3003, 3004, 5022, 5023; limited to 25 students; 1030-1245 TTh; MoosT 2650) Rothenberger

Lecture, discussion, and special readings on the scientific, socio-cultural, and attitudinal aspects of alcohol and other drug abuse problems, with special emphasis on incidence, prevalence, high risk populations, prevention, and intervention.

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. (487247) (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. (287248) (Cr ar; prereq #) Staff
Individualized, directed instruction. Selected readings in interdisciplinary studies with discussion based on these readings.

5022. PERSONAL AND COMMUNITY HEALTH. (389041) (3 cr, §3001, 3004, 5023, GC 3114; meets with 3001, 3003, 3004, 5003, 5023; limited to 25 students; 1030-1245 MWF; MoosT 2650) Rothenberger
Fundamental principles of health conservation and disease prevention.

5023. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH. (189042) (5 cr, §3001, 3003, 3004, 5003, 5022, GC 3114; meets with 3001, 3003, 3004, 5003, 5022; limited to 25 students; 1030-1245 MTWThF; MoosT 2650) Rothenberger
Introduction to scientific, sociocultural, and attitudinal aspects of communicable and degenerative diseases, environmental and occupational health hazards, and alcohol and drug problems. Emphasis on role of education in health conservation, disease control, and drug abuse.

5084. INTERNSHIP IN HEALTH EDUCATION PRACTICE I. (485479) (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. (885480) (Cr ar; prereq health educ maj and community health educ maj or #; S-N only) Staff
See 5084.

5090. RESEARCH TOPICS IN HEALTH EDUCATION. (187882) (2-8 cr; prereq health education maj and community health educ maj or #) Staff
Scholarly review of health education research and experience in a selected area for a Plan B project.

5096. TOPICS: RESEARCH. (987883) (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. (787884) (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, (787254) Staff
Sec 2, (990816) McGovern
Sec 3, (790817) Olson

5154. PRACTICUM IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (486406) (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.

5166. EMPLOYEE HEALTH SERVICES AND COST CONTAINMENT. (590818) (3 cr; §5592; prereq occupational health nursing stu; 1145-1515 TTh, Mayo 1250) McGovern
Examine trends in corporate health cost containment for implications regarding planning and financing of health care for employees and families. Analyze associated role development of occupational health nurse specialists.

5197. TOPICS: INJURY PREVENTION IN THE WORKPLACE, COMMUNITY, AND HOME. (390819) (1-3 cr; §5597; prereq #) Gerberich
Selected projects: Students pursue projects relevant to injury problems.

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (185095) (Cr ar; prereq VPH or Epi major or #)
Research in the relationship of animal health to human health.

5330. EPIDEMIOLOGY I. (088619) (4 cr; prereq basic courses in microbiology and statistics, preferably biostatistics; lec 1145-1340 MWF; lab 1400-1540 MW; MoosT 2530) Severson
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.

5391. INTRODUCTION TO BEHAVIORAL EPIDEMIOLOGY. (589040) (3 cr; limited to 20 students; prereq #: 0915-1200 TTh; MoosT 2580) Lando
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.

5450. BIOSTATISTICS I. (989729) (4 cr; \$5414, prereq Math 1111 or 1201; \$5414; limited to 45 students 0830-1000 MTWThF; MoosT 2571, 2585) Boen
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.

5456. BIOSTATISTICS CONSULTING SEMINAR. (187249) (3 cr; prereq biostatistics or statistics grad stu; S-N only) Boen, staff
Consultant and client interaction; communication and formulation of the biostatistical problem. Role and responsibility of the biostatistician. Robustness and relevance of frequently used analytical techniques.

5470. TOPICS IN BIOSTATISTICS. (487250) (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, (387130) Aroskar
Sec 2, (187131) Froberg
Sec 3, (087132) McGovern
Sec 4, (887133) Olson
Sec 5, (687134) Ostwald
Sec 6, (487135) Spradley

5530. PUBLIC HEALTH NURSING PRACTICUM. (285094) (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. (390917) (1-4 cr; prereq #: S-N only) Staff

5575. TOPICS: PUBLIC HEALTH NURSING. (687263) (Cr ar; prereq #) Staff
Individualized learning experiences arranged with Public Health Nursing faculty.

5614. FIELD EXPERIENCE IN MATERNAL AND CHILD HEALTH. (887259) (Cr ar; prereq MCH grad student; S-N only) Leland
Field experiences are selected by the student to meet career goals.

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. (490827) (3 cr; prereq 5330, 5625, 5414 or 5450, 5806, 5621 or equivalent, #: public health students only) Leland
Sec 2, Perinatal Topics: Secondary Data Analysis. (491184) (3 cr; prereq 5330, 5625, 5414, or 5450, 5806, 5621 or equivalent, #: public health students only) Alexander
Sec 3 (192006) Alexander
Sec 4 (092007) Froberg
Sec 5 (892008) Leland
Sec 6 (692009) Leonard
Sec 7 (092010) Patterson
Sec 8 (892011) Story
Sec 9 (692012) ten Bensel

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, (187260) Alexander
Sec 2, (387905) Froberg
Sec 3, (685545) Leland
Sec 4, (485546) Leonard
Sec 5, (285547) Patterson
Sec 6, (588504) Story
Sec 7, (189731) ten Bensel

5651. CRITICAL READINGS IN ADOLESCENT HEALTH SEMINAR. (891098) (2 cr; prereq #: A-F only; 1030-1245 MW, Mayo A269) Resnick

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (087261) (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 and 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, (887262) Block
Sec 2, (385586) Dornblaser
Sec 3, (185587) Gordon
Sec 4, (085588) Johnson
Sec 5, (885589) Litman
Sec 6, (185590) Ostwald
Sec 7, (085591) Resnick
Sec 8, (885592) Spradley
Sec 9, (685593) Veninga
Sec 10, (485594) Weckwerth

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, (085090) Block
Sec 2, (190538) Ostwald
Sec 3, (690812) Spradley
Sec 4, (490813) Veninga
Sec 5, (290814) Staff

5723. ADMINISTRATIVE RESIDENCY. (388262) (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.

5738. TOPICS: ADULT HEALTH. (190815) (1-3 cr; \$5513, prereq #: S-N only) Ostwald

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (885091) (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 22-July 10. (485093) (4 cr; prereq 5757; MHA or PHA stu; 1700-2200 TTh; 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, (885088) 1315-1700 TTh, MoosT 2520 (June 22-July 10), Weckwerth, staff
Sec 2, (188403) ar

5774. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE AMBULATORY CARE FACILITY—July 13-24. (588423) (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 13-24. (685089) (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 13-24. (187257) (15 cr; prereq present employment as administrator of patient care [director of nursing or equivalent], 5778, #: 0800-1700 MTWThF) Madden, staff

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 the research projects they have prepared with their peers.

5786. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN MENTAL HEALTH RELATED ORGANIZATIONS—July 13-24. (685125) (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.

5906. FIELD EXPERIENCE: PUBLIC HEALTH NUTRITION. (989732) (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, (088684) Brown
Sec 2, (888685) Buzzard
Sec 3, (688686) Himes
Sec 4, (488687) Krinke
Sec 5, (985647) Kushi
Sec 6, (785648) Splett
Sec 7, (788940) Story
Sec 8, (790896) Staff

5933. NUTRITION: HEALTH/DISEASE RELATIONSHIPS—June 15-July 2. (686517) (3 cr; prereq FScN 5622 or MdBC 5201 or equiv and PubH 5330 or equiv, or #: 0915-1100 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.

8150. RESEARCH: ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (587255) (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. (790820) (3-6 cr; prereq #) Gerberich

8330. RESEARCH: IN EPIDEMIOLOGY. (387256) (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 IN EPIDEMIOLOGY. (588857) (1-4 cr; prereq Epi major and #) Staff Readings in current research studies in epidemiology.

8400. SEMINAR IN BIOSTATISTICS. (287251) (Cr ar; prereq biostat maj; or #) Staff

8449. TOPICS IN BIOSTATISTICS. (187252) (Cr ar; prereq 5450, #) Staff Studies in special topics for advanced students.

8450. RESEARCH IN BIOSTATISTICS. (987253) (Cr ar) Staff Opportunities for qualified students to pursue research work.

8763. EXTERNAL FORCES AFFECTING HEALTH SERVICES DELIVERY.

(287136) (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.

(187137) (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. (289131) (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, (785245) Litman, Weckwerth
Sec 2, (987138) Weckwerth, Litman

8796. TOPICS IN HEALTH ECONOMICS—June 22-July 10.

(087258) (3 cr; limited to 35 students; prereq hospital administration student or #; 0800-1205 MWF; MoosT 2-520) Dahl General principles of health economics applied to current issues in health. Implications for health policy derived and discussed.

8888. THESIS CREDITS: DOCTORAL. (189132) (1-36 cr [max 11 cr per summer term])

FIRST AND SECOND TERMS: TEN-WEEK COURSES (Register Once in Term I)

5746. CLERKSHIP. (685092) (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

83034. TOPICS IN ALCOHOL AND DRUG PROBLEMS. (488706) (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.

85005. TOPICS IN PUBLIC HEALTH. (487264) (Cr ar; prereq advanced proposal and #; limited to 20 students) Staff See First Term.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (287265) (Cr ar; prereq #) Staff See First Term.

5084. INTERNSHIP IN HEALTH EDUCATION PRACTICE I. (685481) (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. (485482) (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. (387113) (2-8 cr; prereq health education maj and community health educ maj or #) Staff See First Term.

5096. TOPICS: RESEARCH. (187114) (Cr ar; prereq health education student and community health educ maj or #) Staff See First Term.

85097. TOPICS: SELECTED READINGS. (087969) (Cr ar; limited to 5 students; prereq health science grad student) Staff See First Term.

5150. TOPICS: ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (Cr ar; prereq #)

Sec 1, (587272) Staff
Sec 2, (190832) McGovern
Sec 3, (990833) Olson

See First Term.

5154. PRACTICUM IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (986409) (1-6 cr; prereq env health maj; S-N only) Staff See First Term.

5197. TOPICS: INJURY PREVENTION IN THE WORKPLACE, COMMUNITY, AND HOME. (790834) (1-3 cr; \$5597; prereq #) Gerberich

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (987284) (Cr ar; prereq VPH or Epi major or #) Staff See First Term.

5456. BIOSTATISTICS CONSULTING SEMINAR. (987267) (3 cr; prereq biostatistics or statistics grad stu; S-N only) Boen See First Term.

5470. TOPICS IN BIOSTATISTICS. (787268) (Cr ar; prereq #) Staff See First Term.

5510. RESEARCH METHODOLOGY IN PUBLIC HEALTH NURSING. (1-3 cr; prereq #; S-N only) Staff
Sec 1, (087115) Aroskar
Sec 2, (887116) Froberg
Sec 3, (786427) McGovern
Sec 4, (487118) Olson
Sec 5, (287119) Ostwald
Sec 6, (687120) Spradley
See First Term.

5530. PUBLIC HEALTH NURSING PRACTICUM. (690924) (1-4 cr; prereq #; S-N only) Staff

5531. PUBLIC HEALTH NURSING PRACTICUM. (187266) (1-4 cr; prereq #; hr ar; S-N only) See First Term.

5575. TOPICS: PUBLIC HEALTH NURSING. (187283) (cr ar; prereq #) Staff

5614. FIELD EXPERIENCE IN MATERNAL AND CHILD HEALTH. (287279) (Cr ar; prereq MCH grad student; S-N only) Leland See First Term.

5648. TOPICS IN MATERNAL AND CHILD HEALTH. (cr ar; sections 3-8 prereq #) See First Term.

Sec 1, Adolescent Health Topics: Secondary Data Analysis. (690843) (3 cr; prereq 5330, 5625, 5414 or 5450, 5806, 5621 or equivalent, #; public health students only) Leland

Sec 2, Perinatal Topics: Secondary Data Analysis. (791210) (3 cr; prereq 5330, 5625, 5414, or 5450, 5806, 5621 or equivalent; public health students only, #) Alexander
Sec 3, (292014) Alexander
Sec 4, (192015) Froberg
Sec 5, (992016) Leland
Sec 6, (792017) Patterson
Sec 7, (592018) Story
Sec 8, (392019) ten Bensel

5649. MATERNAL AND CHILD HEALTH RESEARCH. (Cr ar; prereq #) See First Term.

Sec 1, (687280) Alexander
Sec 2, (187906) Froberg
Sec 3, (785553) Leland
Sec 4, (585554) Patterson
Sec 5, (385555) Story
Sec 6, (688509) ten Bensel

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (487281) (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, (287282) Block
Sec 2, (285595) Dornblaser
Sec 3, (185596) Gordon
Sec 4, (985597) Johnson
Sec 5, (785598) Litman
Sec 6, (585599) Ostwald
Sec 7, (285600) Resnick
Sec 8, (185601) Spradley
Sec 9, (985602) Veninga
Sec 10, (785603) Weckwerth

5707. INDEPENDENT STUDY: PUBLIC HEALTH ADMINISTRATION. (1-12 cr; prereq public health administration student or #; S-N only) See First Term.

Sec 1, (785097) Block
Sec 2, (290540) Ostwald
Sec 3, (190829) Spradley
Sec 4, (490830) Veninga
Sec 5, (290831) Staff

5723. ADMINISTRATIVE RESIDENCY. (088264) (Cr ar; prereq public health administration student or #; S-N only) See First Term.

5738. TOPICS: ADULT HEALTH. (890842) (1-3 cr; \$5513, prereq #; S-N only) Ostwald

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (585098) (Cr ar; prereq student in public health administration or #) Staff See First Term.

5770. TOPICS: HOSPITAL AND HEALTH CARE ADMINISTRATION. (185282) (Cr ar; prereq hospital administration student or #) See First Term.

85773. MANAGEMENT AND ORGANIZATION WITHIN THE AMBULATORY CARE FACILITY—July 19-31. (388424)

(15 cr; prereq current employment as ambulatory care administrator and #; limited to 40 students; 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.

85775. MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES—July 19-31. (687277) (15 cr; prereq current employment as health care facility administrator or #; limited to 40 students; 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 10-21. (487278) (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.

85778. PATIENT CARE MANAGEMENT AND ORGANIZATION WITHIN THE HOSPITAL AND HEALTH CARE ORGANIZATION—July 19-31. (985096) (15 cr; prereq present employment as administrator of patient care [director of nursing or equivalent] or #; limited to 40 students; 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 19-31.

(485126) (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. (687215) (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, (188263) Brown
Sec 2, (185556) Buzzard
Sec 3, (085557) Himes
Sec 4, (885558) Krinke
Sec 5, (685559) Kushi
Sec 6, (085560) Splett
Sec 7, (388620) Story
Sec 8, (590897) Staff

5936. MANAGEMENT AND ORGANIZATION OF NUTRITION PROGRAMS—July 19-31. (885561) (15 cr; prereq present employment in nutrition mgmt program or #; A-F only) Splett

A 12-month program consisting of on-campus residential (two weeks) and off-campus independent study that includes a fall seminar and monthly classes under program preceptors. Theoretical and conceptual basis for management and its application to nutrition program delivery. Topics include management process, organizational behavior, nutrition executive, problem solving, computers, financial management, human resource management, quality assurance, nutrition service delivery and communications.

5937. FORCES AFFECTING NUTRITION PROGRAM ADMINISTRATION—July 13-24.

(685562) (15 cr; prereq 5936; A-F only) Splett
A 12-month program consisting of on-campus residential (two weeks) and off-campus independent study that includes a spring seminar and monthly classes under program preceptors. Examines nutrition programs as a part of the health care system. Food and nutrition policy, legislation, management of change, marketing, evaluation, finance, strategic planning, grantsmanship, public relations and applied nutrition research are addressed..

8150. RESEARCH: ENVIRONMENTAL AND OCCUPATIONAL HEALTH. (387273) (1-6 cr; prereq #; S-N only) Staff

8191. RESEARCH: INJURY PREVENTION IN THE WORKPLACE, COMMUNITY, AND HOME. (590835) (3-6 cr; prereq #; S-N only) Gerberich

8330. RESEARCH: IN EPIDEMIOLOGY. (187274) (1-8 cr; prereq epidemiology maj; #) Staff
See First Term.

8332. READINGS IN EPIDEMIOLOGY. (288707) (1-4 cr; limited to 10 students; prereq Epi major and #) Staff
See First Term.

8400. SEMINAR IN BIOSTATISTICS. (587269) (Cr ar; prereq biostat maj or #) Staff

8449. TOPICS IN BIOSTATISTICS. (987270) (Cr ar; prereq 5450 and #) Staff
See First Term.

8450. RESEARCH IN BIOSTATISTICS. (787271) (Cr ar) Staff
See First Term.

8763. EXTERNAL FORCES AFFECTING HEALTH SERVICES DELIVERY. (287122) (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. (187123) (3 cr; prereq 8763; S-N only) Weckwerth
See First Term.

8777. THESIS CREDITS: MASTERS. (789375) (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, (885298) Litman, Weckwerth
Sec 2, (987124) Weckwerth, Litman

8888. THESIS CREDITS: DOCTORAL. (389377) (1-36 cr [max 11 cr per summer term])

R

Radiology (Rad)

2-349 UMHC. 626-5529
Medical School

FIRST TERM

8777. THESIS CREDITS: MASTERS. (989133) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (089379) (1-16 cr [max 11 cr per summer term])

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. (886273) (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. (686274) (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. (486275) (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. (591600) (3-9 cr; \$Kin 5695, PE 5695; 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. (891599) (4 cr; \$Kin 5860; prereq 3550 or 5460 or Kin 3143; 0915-1115 MWF; Cooke Hall 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.

5983. READINGS: RECREATION. (286276) (1-3 cr; prereq MEd or grad student or Δ; hrs ar; A-F only) Schultz
Independent study under tutorial guidance.

8380. ADMINISTRATIVE PROBLEMS IN RECREATION AND PARKS. (492139) (3 cr; prereq 3550 or equiv) Schultz

8777. THESIS CREDITS: MASTERS. (789134) (1-16 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (089687) (Cr ar; prereq 8980 or #; S-N only) Schultz
Individual problems.

SECOND TERM

3700. SENIOR INTERNSHIP. (786556) (1-15 cr; prereq sr, recreation major or minor, Δ; hrs ar; S-N only) Schleien
See First Term.

3900. DIRECTED STUDY. (488835) (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 23-August 7. (790204) (3 cr, \$Kin 5460; prereq Rec or Kin major or #; 0915-1130 MTWThF; Cooke Hall 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. (586557) (3-9 cr; prereq recreation MEd or graduate student; hrs ar; S-N only) Schleien
See First Term.

5640. PRACTICUM: LEISURE SERVICES. (386558) (3-9 cr; prereq recreation MEd or graduate student; hrs ar; S-N only) Schleien
See First Term.

5695. PRACTICUM: SPORT MANAGEMENT. (391601) 3-9 cr; \$Kin 5695, PE 5695; prereq Δ; A-F only) Schleien
See First Term.

5981. PROBLEMS. (288836) (cr ar; prereq MEd or MA student or Δ; A-F only) Schleien
Focus on conduct of recreation programs.

5983. READINGS: RECREATION. (186559) (1-3 cr; prereq MEd or grad student or Δ; hrs ar; A-F only) Schleien
See First Term.

8777. THESIS CREDITS: MASTERS. (189381) (1-16 cr [max 11 cr per summer term])

8981. RESEARCH PROBLEMS. (188473) (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. (188837) (4 cr, 0915-1130 MW; FolH 148) Zahavy
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. (190577) (4 cr, \$SoAs 1504; 0900-1130 TTh; FolH 138) Malandra
Introduction to Hinduism, Buddhism, and Jainism. Meets with SoAs 1504.

1034. INTRODUCTION TO JUDAISM. (988838) (4 cr; \$3034, \$JwSt 1034, \$JwSt 3034; 0915-1130 TTh; FolH 134) Zahavy
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.

3034. INTRODUCTION TO JUDAISM. (090578) (4 cr, §1034, §JwSt 1034, §JwSt 3034; 0915-1130 TTh; FolH 134) Zahavy
Additional written assignments and reading. Meets with 1034 and JwSt 1034, 3034.

3072. THE NEW TESTAMENT. (491606) (4 cr; §Clas 3072; 0915-1145 TTh; FolH 419) Sellow
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 Clas 3072.

5072. THE NEW TESTAMENT. (291607) (4 cr; §Clas 5072; 0915-1145 TTh; FolH 419) Sellow
Meets with 3072. Additional work for graduate credit.

8777. THESIS CREDITS: MASTERS. (589135) (1-16 cr [max 11 cr per summer term])

SECOND TERM

1036. THE RELIGION OF ISLAM. (789957) (4 cr, §3036, 5036, SoAs 3036, 5036, §MidE 1536, 3036; 1000-1230 TTh; FolH 234) Barker
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 3036, MidE 1536, 3036.

3036. THE RELIGION OF ISLAM. (191611) (4 cr; §5036, §MidE 3036, MidE 5036; 1000-1230 TTh; FolH 234) Barker
Additional written assignments and readings. Meets with 1036 and MidE 1536.

3201. THE BIBLE: NARRATIVE TEXTS. (192127) (4 cr; §ANE 1001, ANE 3001; 0900-1130 MW; FolH 306) Paradise
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. (890579) (4 cr; §5413, §SoAs 3413, §SoAs 5413; 1000-1230 TTh, FolH 50) 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. (992176) (4 cr; 1000-1230 TTh; FolH 50) Junghare
See 3413. Meets with 3413, SoAs 3413, 5413.

8777. THESIS CREDITS: MASTERS. (689384) (1-16 cr [max 11 cr per summer term])

Rhetoric (Rhet)

202 Haecker Hall, St. Paul. 624-3445
College of Agriculture

FIRST TERM

1104. LIBRARY RESEARCH METHODS. (588521) (1 cr; limited to 30 students; S-N only; microcomputer card required; lab 1030-1200 T; CentLib 2) 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.

1151. WRITING IN YOUR MAJOR. (587076) (4 cr; limited to 20 students; computer assisted instruction; prereq soph, completion of fr communication requirements, 1104 [or for College of Natural Resources student only; FR 1104 or ForP 1104 or FW 1104]; 0915-1100 MWF; HckrH 302) Walzer
Students investigate and write on subjects related to their majors. Emphasis on gathering, evaluating, synthesizing, and summarizing information; adapting it for various audiences. Assignments include literature review, abstract, fact sheet, instructions, and feature article.

1222. PUBLIC SPEAKING. (4 cr; limited to 18 students; prereq completion of fr communication requirements)

Sec 1, (785326) 0915-1030
MTWThF, CentLib 6

Sec 2, (290909) 1030-1245 TWTh;
CentLib 4, Bennett

A practical course in the fundamentals of effective speechmaking. Emphasis on researching and organizing a speech and communicating with an audience.

3266. COMMUNICATION, DISCUSSION IN SMALL GROUP DECISION-MAKING. (491427) (4 cr; limited to 20 students; prereq 1222 or #; 0915-1100 MTWTh; HckrH 209) Wharton

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. (687960) (1-2 cr; prereq #, Δ) Ferguson, Scanlan, others
Primarily for supervised reading and research on topics not covered in regularly scheduled humanities offerings.

3562. WRITING IN YOUR PROFESSION. (4 cr; each section limited to 23 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.

Sec 1, (585327) 0915-1015
MTWThF, CentLib 4, Scanlan

Sec 2, (287878) 1030-1210 MWF,
HckrH 111, Ferguson

5100. TECHNICAL COMMUNICATION: SPECIAL PROBLEMS. (185217) (Cr ar; prereq #, Δ) Connolly, McDowell, others
Designed for supervised reading, research, and work on advanced technical communication projects not covered in regularly scheduled courses.

5180. INTERNSHIP IN TECHNICAL COMMUNICATION. (085218) (2-6 cr; prereq #, 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. (588678) (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. (389136) (1-16 cr [max 11 cr per summer term])

SECOND TERM

1104. LIBRARY RESEARCH METHODS. (388522) (1 cr; S-N only; limited to 30 students; microcomputer card required; 1030-1200 T; CentLib 2) Richardson
See First Term.

1222. PUBLIC SPEAKING. (988841) (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. (087079) (1-2 cr; prereq #, Δ) Horberg, others
See First Term.

3562. WRITING IN YOUR PROFESSION. (4 cr; each section limited to 23 students; prereq jr or sr; completion of fr communication requirements, 1151; A-F only)
See First Term.

Sec 1, (687876) 1030-1130
MWTWThF, HckrH 111

Sec 2, (487877) 0915-1100 MWF,
HckrH 312

5100. TECHNICAL COMMUNICATION: SPECIAL PROBLEMS. (885219) (Cr ar; prereq #, Δ) Schuelke, others
See First Term.

5180. INTERNSHIP IN TECHNICAL COMMUNICATION. (185220) (2-6 cr; prereq #, Δ) Connolly, McDowell, others
See First Term.

8180. DESIGN PROJECT. (388679) (8 cr req, 4 cr per qtr; prereq MS student in sci and tech comm plan B) McDowell
See First Term.

8777. THESIS CREDITS: MASTERS. (289386) (1-16 cr [max 11 cr per summer term])

Russian (Russ)

253 Elliott Hall. 625-9870
(Russian and East European Studies)
College of Liberal Arts

FIRST TERM

8777. THESIS CREDITS: MASTERS. (189137) (1-16 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 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.

1101-1102-1103. BEGINNING RUSSIAN. (15 cr for both terms; each section limited to 40 students; 0800-1100 MTWThF; sec 5, WullH 130) Staff
Speaking, reading, and understanding Russian through acquisition of basic patterns of speech.

1101, Sec 5, (686100) June 16-July 9,
5 cr

1102, Sec 5, (486101) July 10-August 3,
5 cr

1103, Sec 5, (286102) August 4-26,
5 cr

1104-1105-1106. INTERMEDIATE RUSSIAN. (12 cr for both terms; 0800-1100 MTWThF; SmithH 121)
Expansion of experience in speaking, reading, and understanding Russian; reading contemporary texts.

1104, Sec 5, (188621) June 16-July 9,
4 cr

1105, Sec 5, (088622) July 10-August 3,
4 cr

1106, Sec 5, (888623) August 4-26,
4 cr

SECOND TERM

8777. THESIS CREDITS: MASTERS. (989388) (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

3618. SCANDINAVIAN DRAMA, 1870-1940. (692110) (4 cr; limited to 25 students; 0915-1015 MTWTh; CivMinE 214) Stockenström
Plays viewed in context of modern theatre, with emphasis on different critical methods of interpretation.

3970. DIRECTED STUDIES. (387077) (1-5 cr; prereq #, Δ, □)

5970. DIRECTED STUDIES. (187078) (1-15 cr per qtr; prereq #, Δ, CLA approval)

8888. THESIS CREDITS: DOCTORAL. (889142) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3970. DIRECTED STUDIES. (386348) (1-5 cr; prereq #, Δ, □)

5970. DIRECTED STUDIES. (186349) (1-15 cr; prereq #, Δ, CLA approval)

8888. THESIS CREDITS: DOCTORAL. (189395) (1-36 cr [max 11 cr per summer term])

Science in Agriculture (ScAg)

FIRST TERM

5009. UNDERGRADUATE SENIOR THESIS: SCIENCE IN AGRICULTURE. (991089) (1-5 cr; not for graduate cr; prereq #; A-F only)

Secondary Education (SeEd)

125 Peik Hall. 625-6372
(Curriculum and Instruction)
College of Education

FIRST TERM

3600.¹ STUDENT TEACHING. (085381) (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. (091701) (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.

5176. CLASSROOM RESEARCH IN ENGLISH EDUCATION AND READING. (391680) (3 cr; limited to 25 students; 0915-1130 MW; PeikH 155; A-F only) Graves
Review and analysis of current studies; design and analysis for school-based research.

5179. FOUNDATIONS OF THE TEACHING OF ENGLISH. (091682) (3 cr; limited to 25 students; 0800-0900 MTWThF; PeikH 155; A-F only) Kegler
Historical and philosophical aspects of the development of the English curriculum in American schools.

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, (787867) Jorstad
Sec 22, (587871) Lange
Sec 23, (191687) Paige
Sec 24, (991688) Tedick
Sec 25, (791689) Walker

5191. WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES. (1-10 cr [max 10 cr]; A-F only)

Related specifically to the needs of the inservice teacher.

Sec 1, Integrating the Elementary Classroom for Second Language Acquisition—July 6-21. (691684) (Limited to 30 students; 1145-1515 MTWThF; PeikH 215; A-F only) Jorstad

Intended for elementary school teachers and prospective teachers. Immersion teachers, ESL teachers, and regular classroom teachers will be able to explore integration of the curriculum for second language acquisition by means of thematic and other types of units, children's literature, journals, drama, etc. to permit progress in reading, writing, listening, and speaking. Offered for 3 credits.

Sec 2, Instructional Design for Cross-Cultural Learning—June 16-July 9. (891683) (Limited to 25 students; 1145-1630 TTh; PeikH 315; A-F only) Paige
Intended for teachers, trainers, and human resource specialists working with multicultural audiences and issues. Review major concepts and theories regarding cross-cultural learning phenomena; examine alternative instructional methods to utilize promotion of cross-cultural learning in the cognitive, behavioral, and affective domains; discuss overall curriculum design issues, and develop a cross-cultural curriculum for a target audience. Offered for 3 credits.

5225. THE MULTICULTURAL GENDER-FAIR CURRICULUM—June 17-July 20. (592052) (1-6 cr [max 6 cr]; limited to 20 students; 1145-1515 MW; PeikH 165; A-F only) Avery, 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.

5350. CURRENT DEVELOPMENTS IN ENGLISH EDUCATION. (491685) (1-6 cr [max 12 cr]; limited to 25 students; 0915-1130 TTh; EdHAn 62; A-F only) Graves
New instructional approaches, new materials, current issues, and problems in English and language arts education. This 3-credit offering will focus on using computers in the English classroom.

5351. DIRECTED STUDY. (Cr ar [max 6 cr]; prereq education or graduate student; S-N optional)

Sec 21, (989746) Paige
Sec 22, (187887) Jorstad
Sec 23, (787870) Lange
Sec 24, (191690) Tedick
Sec 25, (390545) Avery
Sec 27, (190546) Walker
Sec 28, (991691) Graves

5382. SECOND LANGUAGE TESTING, ASSESSMENT, AND EVALUATION—June 16-29. (291686) (3 cr; limited to 25 students; 0800-1130 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 aptitude measurement.

5390. CURRENT DEVELOPMENTS IN SECONDARY SCHOOL SCIENCE TEACHING—June 16-July 1. (690549) (3 cr; prereq 3356, 3357 or equiv undergrad courses or exper in tchg science; 0830-1115 MTWThF; PeikH 365; A-F only) Finley
Curricula, methods, materials of instruction, evaluation,

5395. SCHOOL BASED PROJECTS IN SCIENCE EDUCATION. (090550) (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. (1-6 cr [max 6 cr]; A-F only; prereq MEd student in English education)
Individual or group work on curricular, instructional, or evaluation problems and projects applicable to school situations.

Sec 21, (191700) Graves
Sec 23, (489743) Kegler

8801. PROBLEMS: TEACHING SOCIAL STUDIES. (891702) (3-9 cr; prereq 5150, 5152, 5156, 8104 or #; hrs ar) Avery
Individual research.

8871. PROBLEMS: CURRICULUM CONSTRUCTION. (691703) (Cr and hrs ar; prereq #) Finley

8894. PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION. (Cr ar [max 8 cr])
Individual research.

Sec 21, (587868) Jorstad
Sec 22, (387872) Lange
Sec 23, (791692) Paige
Sec 24, (591693) Tedick
Sec 25, (391694) Walker

8895. READINGS IN ENGLISH EDUCATION. (1-3 cr)
Readings in secondary school English curriculum and instruction.

Sec 21, (191695) Graves
Sec 23, (289744) Kegler

8896. PROBLEMS: TEACHING ENGLISH. (Cr and hrs ar)

Sec 21, (091696) Graves
Sec 23, (189745) Kegler

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, (387869) Jorstad
Sec 22, (187873) Lange
Sec 23, (891697) Paige
Sec 24, (691698) Tedick
Sec 25, (491699) Walker

SECOND TERM

5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (190572) (1-12 cr [max 12 cr]; limited to 8 students; A-F only) Avery
See First Term.

5185. SCHOOL AND PROFESSIONAL BASED EXPERIENCES IN SECOND LANGUAGES AND CULTURES. (091715) (1-12 cr [max 12 cr]; prereq MEd students; A-F only) Lange
See First Term.

5227. TEACHING ABOUT THE NEWSPAPER IN THE CLASSROOM—July 27-August 7. (191714) (1-3 cr [max 4 cr]; §Elem 5227; limited to 20 students; 1145-1515 MTWThF; PeikH 165; 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.

5322. TEACHING WRITING—July 23-August 18. (591712) (3 cr; limited to 25 students; 0915-1030 MTWThF; PeikH 215; 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.

5323. DIAGNOSING AND ASSESSING WRITING IN SECONDARY SCHOOLS—July 23-August 18. (391713) (3 cr; limited to 25 students; prereq educ jr or sr or grad stu; 1100-1215 MTWThF; PeikH 215; 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.

5350. CURRENT DEVELOPMENTS IN ENGLISH EDUCATION. (090564) (1-6 cr [max 12 cr]; limited to 25 students; 0800-0900 MTWThF; PeikH 155; A-F only) Kegler
This 3 credit offering will focus on collecting and teaching multicultural materials.

5351. DIRECTED STUDY. (Cr ar [max 6 cr]; S-N optional; prereq education or graduate student)
Sec 24, (688848) Lange
Sec 26, (789747) Avery

5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS. (1-6 cr [max 6 cr]; prereq MEd student in English education; A-F only)
See First Term.

Sec 21, (991707) Beach
Sec 22, (389752) Kegler

¹Student 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.

8801. PROBLEMS: TEACHING SOCIAL STUDIES. (389749) (3-9 cr; prereq 5150, 5152, 5156, 8104 or #) Avery
See First Term.

8894. PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION. (791708) (Cr ar [max 8 cr]) Lange
See First Term.

8895. READINGS IN ENGLISH EDUCATION. (1-3 cr)

Sec 21, (591709) Beach
Sec 22, (189753) Kegler

8896. PROBLEMS: TEACHING ENGLISH. (Cr and hrs ar)

Sec 21, (991710) Beach
Sec 22, (089754) Kegler

8898. READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION. (791711) (1-3 cr) Lange
See First Term.

Small Animal Clinical Sciences (SACS)

C-339 Veterinary Hospital, St. Paul.
625-7744
College of Veterinary Medicine

FIRST TERM

5000. CLINICAL SMALL ANIMAL MEDICINE. (586414) (12 cr; prereq #; S-N only; arranged MTWThFS; VetTchHo) Hardy, Klausner, Polzin, S. Johnston, Osborne, Ogburn, others
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences to the diagnosis, prognosis, treatment, prevention, and eradication of disease in companion animals.

5002. CLINICAL SMALL ANIMAL SURGERY. (386415) (8 cr; prereq #; S-N only; arranged MTWThFS; VetTchHo) Wallace, Caywood, Lipowitz, others

The application of principles and techniques of the basic and surgical sciences used in the University Veterinary Teaching Hospitals for the diagnosis, prognosis, and surgical management of certain diseases of the body systems in companion animals.

5004. CLINICAL SMALL ANIMAL SPECIALTIES. (886418) (4 cr; prereq #; S-N only; arranged MTWThFS; VetTchHo) Bistner, McKeever, others

Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences with emphasis in cardiology, dermatology, and ophthalmology.

5006. CLINICAL ANESTHESIOLOGY. (186416) (4 cr; prereq #; S-N only; arranged MTWThFS; VetTchHo) E. Robinson, Raffe, others
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences in anesthesiology.

5008. CLINICAL RADIOLOGY. (086417) (4 cr; prereq #; S-N only; arranged MTWThFS; VetTchHo) Feeney, G. Johnston, Walter
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences in radiology.

5398. INDEPENDENT RESEARCH IN VETERINARY ANESTHESIOLOGY. (585649) (1-6 cr; prereq regis vet med or grad student or #; limited to 10 students) Raffe, 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 15-July 13. (485580) (1 cr; prereq regis vet med, 3rd or 4th yr or grad student or #; S-N only; 1500-1650 M; AnScVM 135) Walter, Feeney, G. Johnston
Roentgen signs of common bone diseases of large animals. Primary emphasis on the horse.

5455. ROENTGENOLOGY BONE—SMALL ANIMALS—July 20-August 17. (985616) (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. (186254) (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. (086255) (Cr ar; prereq grad student, #) McKeever
Individual study involving a research study of a selected dermatologic problem.

8200. DIRECTED STUDIES IN VETERINARY COMPARATIVE DERMATOLOGY. (488849) (2 cr; prereq grad, #; A-F only) McKeever
Assigned readings and literature review of veterinary comparative dermatology.

8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES. (288688) (1 cr; prereq 5172, LACS 5162, #) Staff
Detailed examination, discussions, and treatment of cases of animal diseases.

8293. MEDICAL CONFERENCE. (785570) (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. (787142) (Cr ar; prereq 5360, 5365, or equiv, #) Caywood, Lipowitz, Wallace

8391. ADVANCED SMALL ANIMAL SURGERY. (886256) (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 GASTROINTESTINAL SYSTEM. (287864) (Cr ar; prereq LACS 5160 or #) Lipowitz, Caywood

8398. RESEARCH IN VETERINARY ANESTHESIA. (786525) (2-4 cr; prereq grad of professional veterinary curriculum, 8396, LACS 8397 or equiv, #) 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.

8410. SURGICAL PHYSIOLOGY. (187865) (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. (987866) (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 CARDIOVASCULAR 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. (686257) (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. (590060) (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 radiotopes in medicine.

FIRST AND SECOND TERMS: TEN-WEEK COURSE (Register once in Term I)

85802. RESIDENCY IN VETERINARY DERMATOLOGY. (291056) (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

5398. INDEPENDENT RESEARCH IN VETERINARY ANESTHESIOLOGY. (985650) (1-6 cr; prereq regis vet med or grad student or #) Raffe, E. Robinson
See First Term.

85812. COMPANION ANIMAL ONCOLOGY. (191429) (2 cr; prereq DVM or equivalent degree; limited to 10 students; S-N only) Klausner
Principles of veterinary oncology and the biologic behavior, treatment, and prognosis of various neoplastic disorders.

8197.* ADVANCED DERMATOLOGIC CLINICS. (587224) (4 cr; prereq grad student, #; A-F only) McKeever
See First Term.

8198.* PROBLEMS IN VETERINARY COMPARATIVE DERMATOLOGY. (387225) (Cr ar; prereq grad student, #) McKeever
See First Term.

8200. DIRECTED STUDIES IN VETERINARY COMPARATIVE DERMATOLOGY. (888850) (2 cr; prereq grad, #; A-F only) McKeever
See First Term.

8293. MEDICAL CONFERENCE. (385569) (Cr ar; prereq 5172, LACS 5162, #) Staff
See First Term.

8390. SEMINAR: VETERINARY SURGERY. (787139) (Cr ar; prereq 5360, 5365, or equiv, #) Caywood, Lipowitz, Wallace

8391. ADVANCED SMALL ANIMAL SURGERY. (187226) (Cr ar; prereq CVM 5350 or equiv, #) Lipowitz, Wallace, Caywood
See First Term.

8394. SURGERY OF THE GASTROINTESTINAL SYSTEM. (887861) (Cr ar; prereq LACS 5160 or #) Lipowitz, Caywood, Wallace

8399. SEMINAR: VETERINARY ANESTHESIA. (489077) (1 cr; prereq grad of professional vet curriculum, 8396, LACS 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. (687862) (2 cr; prereq 8391, #) Wallace
See First Term.

8420. NEUROSURGERY. (487863) (3 cr; prereq 8391 or equiv, #; A-F only) Wallace
See First Term.

8430. THORACIC AND CARDIOVASCULAR SURGERY. (987141) (3 cr; prereq 8391, #; lect 0800-1300 MTWThF, Vet Tch Hos 350; lab 1400-1700 MTWThF, VetTchHos 350) Caywood

8490. ADVANCED VETERINARY RADIOLOGY. (087227) (1-2 cr; prereq 5450, 5451, 5452 or equiv, #; A-F only) Feeney, others
See First Term.

8491. FUNDAMENTALS OF NUCLEAR MEDICINE. (390061) (1 cr; 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.
(187856) (Cr ar)

8400. SPECIAL CLINICAL PROBLEMS.
(985227) (Cr ar)

8777. THESIS CREDITS: MASTERS.
(089138) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL.
(889139) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8200. RESEARCH PROBLEMS.
(185279) (Cr ar)

8400. SPECIAL CLINICAL PROBLEMS.
(785228) (Cr ar)

8777. THESIS CREDITS: MASTERS.
(989391) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL.
(789392) (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.
(189154) (1-16 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS.
(889420) (1-16 cr [max 11 cr per summer term])

Social Work (SW)

00 Ford Hall. 624-5888
College of Human Ecology

FIRST TERM

8970. DIRECTED STUDY. (085221)
-15 cr; limited to 10 students)

8990. DIRECTED RESEARCH.
(85456) (ar cr; limited to 10 students; prereq #)

9010. SEMINAR: SPECIAL TOPICS. (3 each section)

Sec 1, Life-Cycle Therapy—June 23, 24, 25, 26, 29. (385457) 3 cr; limited to 25 students; 0900-1630 MTWThF; FordH 160) Kivnick
Eight psychosocial themes as a lens for viewing behaviors, experiences,

feelings, thoughts, and attitudes. Translating life experience into psychosocial themes, charting the life cycles of individual clients, and developing client psychosocial profiles.

Sec 2, Social Work Practice in the American Indian Community—June 30, July 1, 2, 6, 7. (889755) 3 cr; limited to 25 students; 0900-1630 MTWThF; FordH 160, Carter

Practice issues and situations in service delivery to American Indians in urban and rural settings. Includes presentations by American Indian practitioners in health, mental health, and child welfare services, among others.

Sec 3, Issues and Interventions in Child Sexual Abuse—July 8-10, 13-14. (688851) 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.

Sec 4, Physical Assault of Women—July 15, 16, 17, 20, 21. (791014) 3 cr, limited to 25 students, 0900-1630 MTWThF, FordH 160, Edleson
Current theories, research and social work practice in the area of physical assault of women.

85026. MEDIATION AND CONFLICT RESOLUTION—June 16, 17, 18, 19, 22. (491430) (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 offers.

8020. FIELD INSTRUCTION II. (986104) (4 cr or cr ar by #; prereq 8010; seminar meets weekly for 69 cr. students; S-N only) Sullivan

8030. FIELD INSTRUCTION IN SOCIAL WORK III. (185458) (Cr ar; prereq 8020; hrs ar; S-N only) Sullivan

8888. THESIS CREDITS: DOCTORAL. (289159) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDY. (185212) (ar cr; prereq #)

8990. RESEARCH PROJECTS. (887102) (ar cr; [max 6 cr])

SECOND TERM

8970. DIRECTED STUDY. (885222) (1-15 cr)

8990. DIRECTED RESEARCH. (985454) (ar cr; prereq #)

9010. SEMINAR: SPECIAL TOPICS.

Sec 1. Social Work Practice: Psychopathology and Intervention. (087101) 3 cr, limited to 20 students, 0915-1215 MW, FordH 175, Abramson
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 2. Social Group Work. (790574) 3 cr, limited to 30 students, 1300-1600 MW, FordH 175, Macek

Principles of social group work practice applicable to a variety of task and treatment groups. Small groups as a social process to achieve task and treatment goals, communication in groups, decision-making, self-help, and therapeutic groups. Stages of group development and termination.

Sec 3. Supervision and Consultation in Social Work Practice. (590575) 3 cr, limited to 20 students, 0915-1215 TTh, FordH 175, Sullivan

Examination of principles and practice of the three aspects of first-line supervision in direct practice systems—administration, education, and support. Consideration of principles and methods of consultation and staff development.

Sec 4, Social Work Practice with the Elderly. (191017) 3 cr; limited to 30 students; 1300-1600 TTh; FordH 175, Quam
Clinical practice issues in working with older clients individually, with their families, and in groups; differences between work with the well elderly and with the frail elderly.

8020. FIELD INSTRUCTION II. (586879) (4 cr or cr ar by #; prereq 8010; seminar meets weekly for 69 cr. students; S-N only) Sullivan

8030. FIELD INSTRUCTION IN SOCIAL WORK III. (785455) (Cr ar; prereq 8020; hrs ar; S-N only) Sullivan

8888. THESIS CREDITS: DOCTORAL. (189431) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED STUDY. (585277) (ar cr; prereq #)

8990. RESEARCH PROJECTS. (588258) (ar cr; [max 6 cr])

Sociology (Soc)

909 Social Sciences. 624-4300
College of Liberal Arts

FIRST TERM

81001. INTRODUCTION TO SOCIOLOGY. (486163) (4 cr; limited to 125 students; 1145-1245 MTWThF; BlegH 10) Bian

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) and their patterns of interrelation and processes of change.

83101. INTRODUCTION TO AMERICAN CRIMINAL JUSTICE. (286410) (4 cr, §CJS 3101; limited to 125 students; 0800-0900 MTWThF; BlegH 10) Staff
Components and dynamics as well as philosophical underpinnings of the criminal justice system.

83405. INEQUALITY: INTRODUCTION TO STRATIFICATION. (591614) (4 cr; limited to 60 students; prereq 1001; 0915-1015 MTWThF; BlegH 230) Brustein
Inequality—causes, dimensions, and consequences. Inequality in American society—class, gender, and race; cross-national patterns of inequality; relationship between economic and political inequality; role of schools in transmission of inequality; public policies affecting inequality.

3970. DIRECTED STUDIES. (286164) (1-15 cr per term; prereq #, Δ, □) Staff
Guided individual reading or study.

8162. CRIMINAL PROCEDURE IN AMERICAN SOCIETY. (290263) (4 cr, §CJS 5102; limited to 60 students; 0915-1015 MTWThF; Humphrey 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.

85705. BACKGROUNDS OF MODERN SOCIAL THOUGHT. (391615) (4 cr; limited to 40 students; prereq 8 cr in social science or #; 1030-1130 MTWThF; BlegH 420) 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.

5960. TOPICS IN SOCIOLOGY: QUALITATIVE METHODS IN LIFE COURSE RESEARCH. (191616) (4 cr; limited to 50 students; prereq 1001 or #; 0930-1200 TTh; BlegH 130) Heinz
Qualitative research methods in life course research assess the biographical and phenomenological construction of life. They elucidate the subjective meanings, categorizations, and evaluations of "career stages" with respect to particular institutional participation as well as life as a whole. These methods include in-depth interviewing, observation, and content analysis of narratives, diaries, letters, and other records.

5970. DIRECTED STUDIES. (186165) (1-15 cr per term; prereq #, Δ, CLA approval) Staff
Guided individual reading or study.

8090. TOPICS IN SOCIOLOGY. (585120) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (189146) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989147) (1-36 cr [max 11 cr per summer term])

SECOND TERM

1001. INTRODUCTION TO SOCIOLOGY. (986880) (4 cr; limited to 125 students; 1145-1245 MTWThF; BlegH 10) Kennedy
See First Term.

13102. INTRODUCTION TO CRIMINAL BEHAVIOR AND SOCIAL CONTROL. (186411) (4 cr, \$3103; prereq 3101; limited to 45 students; 0800-0900 MTWThF; BlegH 115) Staff
Basic issues in criminology and the sociology of law and social control organizations.

13401. PRINCIPLES OF SOCIAL ORGANIZATION. (5 cr; prereq 1001, 3801; limited to 20 students; lec; 1145-1245 MTWThF; BlegH 225) Staff
How and why social organization is possible. Major concepts and theories of social structure, primary forms of social organization (groups, communities, networks, formal organizations), basic social processes (integration, differentiation, regulation, change), and how social organization evolves from individual decision making. Course content varies.

lab 1, (291624) 0915-1015 MW,
BlegH 210

13501. THE FAMILY SYSTEM. (991626) (4 cr; prereq 1001 or #; limited to 60 students; 1030-1130 MTWThF; BlegH 435) 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.

3551. WORLD POPULATION PROBLEMS. (791627) (4 cr; limited to 60 students; 0915-1015 MTWThF; BlegH 435) Kennedy
Population growth and natural resources, population dynamics, fertility and mortality in less developed nations, population forecasts, population policies to reduce fertility.

3960. TOPICS IN SOCIOLOGY: CONTEMPORARY CONFLICTS. (591628) (4 cr; limited to 50 students; prereq 1001 or #; 1030-1130 MTWThF; BlegH 415) 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. (786881) (1-15 cr per term; prereq #, Δ, □) Staff
See First Term.

15161. CRIMINAL LAW IN AMERICAN SOCIETY. (390268) (4 cr, \$CJS 5101; limited to 60 students; 0915-1015 MTWThF; BlegH 415) Samaha
Purposes and principles of criminal law; proper limits of criminal sanction and suggested reforms in existing criminal law.

5970. DIRECTED STUDIES. (886886) (1-15 cr per term; prereq #, Δ, CLA approval) Staff
See First Term.

8090. TOPICS IN SOCIOLOGY. (686887) (Cr ar; prereq #) Staff

8777. THESIS CREDITS: MASTERS. (089401) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189406) (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. (385328) (1-5 cr per qtr [max 10 cr]; prereq 1122 or #) Baker, Bloom, Malzer, Graham, Rust, Grigal, Cooper
Research, readings, instruction.

8124.* RESEARCH PROBLEMS IN SOILS. (185329) (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. (789148) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589149) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5114.* SPECIAL PROBLEMS IN SOILS. (586297) (1-5 cr per qtr [max 10 cr]; prereq 1122 or #) Baker, Bloom, Malzer, Graham, Rust, Grigal
See First Term.

8124.* RESEARCH PROBLEMS IN SOILS. (386298) (2-5 cr; hrs ar) Baker, Bloom, Graham, Malzer, Rust, Grigal
See First Term.

8777. THESIS CREDITS: MASTERS. (989410) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789411) (1-36 cr [max 11 cr per summer term])

South Asian Studies (SoAs)

232A Social Sciences. 624-8543
(South Asian and Middle Eastern Studies)
College of Liberal Arts

FIRST TERM

1504. INTRODUCTION TO THE RELIGIONS OF SOUTH ASIA. (590205) (4 cr, \$RelS 1031; 0900-1130 TTh; FolH 138) Malandra.
Introduction to Hinduism, Buddhism, and Jainism. Meets with RelS 1031.

3414. COMPARATIVE RELIGIONS OF SOUTH ASIA. (991612) (4 cr; 1000-1230 TTh; FolH 214) Junghare
Compare and contrast basic philosophical concepts, literatures, ideologies, and ritualistic practices of Hinduism, Buddhism, and Jainism with those of Islam and Sikhism. Meets with 5414.

3501. THE HERITAGE OF INDIA. (188854) (4 cr; 0915-1015 MTWThF; FolH 114) Staneslow
Contemporary civilization in light of its development Hindu, Muslim, and Buddhist contributions.

5414. COMPARATIVE RELIGIONS OF SOUTH ASIA. (791613) (4 cr; 1000-1230 TTh; FolH 214) Junghare
See 3414. Meets with 3414.

8777. THESIS CREDITS: MASTERS. (689143) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289145) (1-36 cr [max 11 cr per summer term])

SECOND TERM

3413. BUDDHISM. (190207) (4 cr; \$5413 and RelS 3413; RelS 5413; 1000-1230 TTh; FolH 50) Junghare
Historical account of the Buddhist religion in terms of its 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, RelS 3413, 5413.

5413. BUDDHISM. (090208) (4 cr; \$3413, RelS 3413, RelS 5413; 1000-1230 TTh; FolH 50) Junghare
See 3413. Meets with 3413, RelS 3413, 5413.

8777. THESIS CREDITS: MASTERS. (089396) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489399) (1-36 cr [max 11 cr per summer term])

Spanish (Span)

34 Folwell Hall. 625-5858
(Spanish and Portuguese)
College of Liberal Arts

FIRST TERM

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 cultural readings.

Sec 1, (986166) 0800-1015
MTWThF, VinH 1

Sec 2, (385619) 0800-1015
MTWThF, FordH 175

Sec 3, (988855) 0800-1015
MTWThF, FordH 60

1102. BEGINNING SPANISH. (786167) (5 cr, limited to 23 students; prereq 1101; 0800-1015 MTWThF; VinH 213)
See 1101.

1103. BEGINNING SPANISH. (586168) (5 cr, limited to 23 students; prereq 1102; 0915-1130 MTWThF; EE/CSci 2260)
See 1101.

1104. INTERMEDIATE SPANISH. (386169) (5 cr; limited to 23 students; prereq 1103 or 3 yrs high school Spanish; 0915-1130 MTWThF; FordH 70)

Speaking and comprehension; development of reading and writing skills based on materials from Spain and Spanish America. Grammar review; compositions and short presentations.

1105. INTERMEDIATE SPANISH. (391646) (5 cr; limited to 23 students; prereq 1104 or 4 yrs high school Spanish; 0915-1130 MTWThF; Arch 15)
See 1104.

1106. INTERMEDIATE SPANISH. (490035) (5 cr; limited to 23 students; prereq 1105 or 5 years; high school Spanish; 0915-1130 MTWThF; PeikH 225)
See 1104.

3005. ORAL COMMUNICATION: SPEAKING AND LISTENING. (191647) (4 cr; limited to 15 students; prereq 1106 or equiv; 1030-1200 MTWThF; FolH 114) Ocampo
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.

3104. THE ART OF READING LITERARY TEXTS. (188577) (4 cr; limited to 15 students; \$LAS 3104, Spn 3104; prereq 3002; 0800-1030 TTh; FolH 142) Spadaccini
Critical reading of Spanish and Spanish-American texts; works representing principal genres—novel, drama, poetry, essay; diverse approaches to literature. Terminology of criticism; literary problems and techniques.

3512. SPANISH-AMERICAN CIVILIZATION: MODERN LATIN AMERICA. (788856) (5 cr; limited to 30 students; \$LAS 3513; prereq 3002; 1300-1400 MTWThF; FolH 138)
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. (687117) (1-5 cr per term; prereq #, Δ, □)
Guided individual reading or study.

3973. MAJOR PROJECT. (787951) (2 cr; A-F only)
Guided individual project for Spanish majors. Used to fulfill graduation requirements. Office of Undergraduate Studies has details.

5910. TOPICS IN SPANISH PENINSULAR LITERATURE. (089785) (4 cr; prereq 3104 or SpPt 3104 or Δ ; 1300-1500 T, 1300-1600 Th; FolH 419) Zahareas

Important groups, movements, trends, methods, genres. Topics may include *conversos*; mysticism, *poesia tradicional*; essay and enlightenment; *novela realista*; and *avant-garde*.

5920. TOPICS IN SPANISH-AMERICAN LITERATURE. (889786) (4 cr; prereq 3104 or SpPt 3104 or Δ ; 1300-1500 M, 1300-1600 W; FolH 340) Vidal
Important groups, movements, trends, methods, genres.

5970. DIRECTED READINGS. (786170) (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. (190085) (1-5 cr per qtr; prereq #, Δ , CLA approval)

8777. THESIS CREDITS: MASTERS. (989150) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789151) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (586171) (Cr and hrs ar; prereq Δ ; mainly for Ph.D. 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.

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, AmundH 124, sec 6, KoltH 5136)
See 1101 First Term.

1101, Sec 5, (386172) June 16-July 9, 5 cr

1102, Sec 5, (186173) July 10-August 3, 5 cr

1103, Sec 5, (086174) August 4-26, 5 cr

1101, Sec 6, (886175) June 16-July 9, 5 cr

1102, Sec 6, (686176) July 10-August 3, 5 cr

1103, Sec 6, (486177) August 4-26, 5 cr

1104-1105-1106. INTERMEDIATE SPANISH. (15 cr for both terms, each section limited to 23 students; 0800-1130 MTWThF; sec 5, FolH 218, sec 6, KoltH 5133)
See 1104 First Term

1104, Sec. 5 (085476) June 16-July 9, 5 cr

1105, Sec. 5 (885477) July 10-August 3, 5 cr

1106, Sec. 5 (685478) August 4-26, 5 cr

1104, Sec. 6, (091648) June 16-July 9, 5 cr

1105, Sec. 6 (891649) July 10-August 3, 5 cr

1106, Sec. 6 (191650) August 4-26, 5 cr, Ramos-Garcia

SECOND TERM

1102. BEGINNING SPANISH. (5 cr, each section limited to 23 students; prereq 1101)
See 1101 First Term.

Sec 1 (286889) 0800-1015 MTWThF, FordH 285

Sec 2 (388858) 0800-1015 MTWThF, KoltH 5132

1103. BEGINNING SPANISH. (486891) (5 cr, limited to 23 students; prereq 1102; 0800-1015 MTWThF; FolH 240)
See 1101 First Term.

1104. INTERMEDIATE SPANISH. (291655) (5 cr; limited to 23 students; prereq 1103 or 3 yrs high school Spanish; 0915-1130 MTWThF; CivMinE 213)
See First Term.

1105. INTERMEDIATE SPANISH. (186898) (5 cr; limited to 23 students; prereq 1104 or 4 yrs high school Spanish; 0915-1130 MTWThF; AmundH 158)
See 1104 First Term.

1106. INTERMEDIATE SPANISH. (191656) (5 cr; limited to 23 students; prereq 1105 or 5 yrs high school Spanish; 0915-1130 MTWThF; FolH 134)
See First Term.

3002. READING FOR SPEED AND COMPREHENSION. (289789) (4 cr; limited to 30 students; prereq 1106 or equiv; 0915-1015 MTWThF; FolH 214)
Sousa

Sharpen reading skills, expand vocabulary, improve comprehension. Variety of practical and literary materials will be read; class time will focus on discussion of readings, brief student presentations; short papers to be written at home on topics related to readings.

3104. THE ART OF READING LITERARY TEXTS. (990539) (4 cr; limited to 15 students \S LAS 3104, Spn 3104; prereq 3002; 1300-1400 MTWThF; FolH 138) Reis
See First Term.

3970. DIRECTED STUDIES. (187963) (1-5 cr per term; prereq #, Δ , \square)
Guided individual reading or study.

3973. MAJOR PROJECT. (587952) (2 cr; A-F only)
See First Term.

5950. FIGURES IN SPANISH-AMERICAN LITERATURE. (991657) (4 cr; prereq 3104 or SpPt 3104 or Δ ; 1300-1500 M, 1300-1600 W; FolH 344) Jara
One major writer or group of writers whose work has had an impact on thought, literature, or social problems.

5970. DIRECTED READINGS. (486907) (1-5 cr per qtr [max 15 cr]; prereq #, Δ , CLA approval; hrs ar) Staff
See First Term.

5990. DIRECTED RESEARCH. (789067) (1-5 cr per qtr; prereq #, Δ , CLA approval)

8777. THESIS CREDITS: MASTERS. (389413) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189414) (1-36 cr [max 11 cr per summer term])

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (186909) (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

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, (286178) 0800-0900 MTWThF, FolH 318

Sec 2, (186179) 0915-1015 MTWThF, FolH 318

1313. ANALYSIS OF ORAL ARGUMENT. (187879) (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.

3201. INTRODUCTION TO BROADCASTING PRODUCTION. (586381) (4 cr; limited to 16 students; 0915-1245 TTh; RarigC 610)
Practice and theory. Projects in performance and scripting; studio equipment and procedures.

3401. THEORIES OF PERSON TO PERSON COMMUNICATION. (891716) (4 cr; prereq 1102 or #, Psy 1001; 0915-1130 MTW; FolH 208) Hewes
Social scientific perspectives on talk. Review of variable analytic, covering-law, pragmatic, and rule-based theories of conversation.

3411. SMALL GROUP COMMUNICATION PROCESSES. (4 cr, \$3641; 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, (185461) 0800-1015 MWF; FolH 419

Sec 2, (488673) 1030-1245 MWF; FolH 419

3451. INTERCULTURAL COMMUNICATION: THEORY AND PRACTICE. (487880) (4 cr, \S JUC 3701; 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. (488866) (4 cr; prereq 1101; 0800-0900 MTWThF; FolH 306) 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. (486180) (Cr ar [cr does not count toward speech-communication major]; prereq at least one course in speech-communication, #, Δ , \square)
Individual study projects in speech-communication. Consultation with an instructor who agrees to supervise the project is required.

3980. DIRECTED INSTRUCTION. (286181) (1-4 cr per term [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ , \square)
Students work with an instructor in planning and teaching an undergraduate course.

5403. THE THEORY OF CONSTRUCTION AND ANALYSIS IN COMMUNICATION. (691717) (4 cr; limited to 20 students; prereq 3401 or #; 1145-1400 MTW; FolH 208) Hewes
Problems in development of communication theory. Analysis of existing theory. Relationship of theory to research.

5411. SMALL GROUP COMMUNICATION THEORY. (491718) (4 cr; limited to 20 students; prereq 3411 or #; 1145-1245 MTWThF; FolH 318) Bormann
Theories of communication within the small, task-oriented group. Group cohesiveness, leadership, role structure, information processing, decision making.

5412. GROUP AND ORGANIZATIONAL COMMUNICATION. (291722) (4 cr; limited to 20 students; prereq 5411; 1030-1130 MTWThF; FolH 318; S-N only) Bormann
Intragroup and intergroup communication. Communication of small task-oriented groups in organizational context. Small group and organizational communication.

♣5414. **AUTHORITY AND POWER IN TASK-ORIENTED COMMUNICATION—June 16-28.** (188868) (4 cr; limited to 36 students; S-N only; prereq 3411 or #; 1615-1815 MTWThF; 0900-1700 Sat Sun; 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.** (186182) (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ, CLA approval)
Directed reading and preparation of reports on selected subjects.

8130. **SEMINAR: ADVANCED SPEECH PROBLEMS.** (191723) (3 cr; prereq undergrad degree in spch-comm or equiv; 1300-1515 MW; FolH 426) Scott
Evaluation of research methods in speech and communication.

8777. **THESIS CREDITS: MASTERS.** (589152) (1-16 cr [max 11 cr per summer term])

8888. **THESIS CREDITS: DOCTORAL.** (389153) (1-36 cr [max 11 cr per summer term])

8990. **RESEARCH.** (986183) (Cr ar; prereq #, Δ)
Open to graduate students engaged in research on special problems.

SECOND TERM

♣1101. **FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION.** (186912) (4 cr, limited to 22 students; 0800-0900 MTWThF; FolH 419)
See First Term.

1102. **FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS.** (789781) (4 cr; 0915-1015 MTWThF; FolH 419)
Introduction to communication theory and research focusing on interpersonal, intercultural, group, and family settings.

♣1313. **ANALYSIS OF ORAL ARGUMENT.** (287881) (4 cr; limited to 22 students; 1030-1130 MTWThF; FolH 318)
See First Term.

3211. **DETERMINANTS OF BROADCAST PROGRAMMING.** (891733) (4 cr; 0800-1015 MTW; FolH 208) Browne
Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. Problem areas in programming.

♣3411. **SMALL GROUP COMMUNICATION PROCESSES.** (4 cr each section \$3641; limited to 22 students; prereq 1101 or #)

Sec 1, (085462) 0800-1015 MWF; FolH 334

Sec 2, (889061) 1030-1245 MWF; FolH 419

See First Term.

♣3441. **COMMUNICATING IN ORGANIZATIONS.** (589782) (4 cr; prereq 1101 or 1102 or equiv; limited to 22 students; 1145-1245 MTWThF; FolH 340) Poole

Theory and practice of communicating in organizations. How communication creates, maintains, and changes organizational culture. Role of individual communicator in organizational culture.

♣3451. **INTERCULTURAL COMMUNICATION: THEORY AND PRACTICE.** (389783) (4 cr; \$UC 3701; prereq planning an intercultural experience; limited to 20 students; 0915-1015 MTWThF; FolH 318)
See First Term.

3970. **DIRECTED STUDIES.** (186926) (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.** (786928) (1-4 cr per term [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ, □)
See First Term.

♣5405. **NONVERBAL COMMUNICATION: THEORY AND RESEARCH—July 23-August 7.** (691734) (4 cr; limited to 20 students; 1145-1315 MTWThF; FolH 318) Sykes
Nonverbal interpersonal communication. Nonverbal categories: gesture, facial expression, posture, clothing, environment.

♣5441. **COMMUNICATION IN HUMAN ORGANIZATIONS.** (190541) (4 cr; prereq 3401 or 8 cr in social science, 3441 or #; limited to 25 students; 1030-1215 MTWTh; FolH 334) Poole

Communication in organizational settings. Organizational structure and dynamics and their effect upon the communication process. Individual projects.

5970. **DIRECTED READINGS.** (986930) (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ, CLA approval)
See First Term.

8110. **SEMINAR: ADVANCED SPEECH PROBLEMS.** (790543) (3 cr; prereq undergrad degree in speech-comm or equiv; 0800-1015 MTh; FolH 426) Sykes
Evaluation of research methods in speech and communication.

8777. **THESIS CREDITS: MASTERS.** (889416) (1-16 cr [max 11 cr per summer term])

8888. **THESIS CREDITS: DOCTORAL.** (489418) (1-36 cr [max 11 cr per summer term])

8990. **RESEARCH.** (186934) (Cr ar; prereq #, Δ)
See First Term.

Statistics (Stat)

270 Vincent Hall. 625-8046
College of Liberal Arts

FIRST TERM

♣3011. **STATISTICAL ANALYSIS.** (688574) (4 cr; limited to 50 students; prereq college algebra; 1030-1230 MWF, 1030-1130 TTh; Phys 210
Descriptive statistics; elementary probability; estimation; one- and two-sample tests; introduction to regression and ANOVA.

♣3091. **INTRODUCTION TO PROBABILITY AND STATISTICS.** (185081) (4 cr, \$5121, \$5131; limited to 40 students; prereq differential and integral calculus; 1030-1230 MW, 1145-1245 TThF; VinH 113)
Elementary probability and probability distributions, sampling and elements of statistical inference.

♣5021. **STATISTICAL ANALYSIS.** (388259) (5 cr, \$3012; limited to 40 students; prereq college algebra; limited to 40 students; 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.** (786184) (5 cr, \$5131; prereq Math 1241 or Math 1331 or Math 1621; 0915-1015 MWTh, 0915-1115 TF; Arch 40)
Univariate and multivariate distributions, law of large numbers, sampling, likelihood methods, estimation and hypothesis testing.

♣5302. **APPLIED REGRESSION ANALYSIS.** (190563) (5 cr, \$5161; prereq 3012 or 5021 or 5133 or #; limited to 40 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.** (287928) (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.** (089155) (1-16 cr [max 11 cr per summer term])

8888. **THESIS CREDITS: DOCTORAL.** (889156) (1-36 cr [max 11 cr per summer term])

SECOND TERM

♣1001. **INTRODUCTION TO IDEAS OF STATISTICS.** (488575) (4 cr; limited to 40 students; prereq high school algebra; 1030-1230 MWF, 1030-1130 TTh, VinH 113)
Controlled vs. observational studies; presentation and description of data; correlation and causality; sampling, accuracy of estimates; tests.

♣3012. **STATISTICAL ANALYSIS.** (4 cr; each section 1 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, (288576), 0915-1015 MWTh, 0915-1115 TF; VinH 203
Sec 2, (890064), 1015-1215 MTh, 1115-1215 TWF; VinH 203

♣3091. **INTRODUCTION TO PROBABILITY AND STATISTICS.** (686937) (4 cr, \$5121, \$5131; limited to 40 students; prereq differential and integral calculus; 0915-1015 MWF, 0915-1115 TTh; Arch 5)
See First Term.

♣5122. **THEORY OF STATISTICS.** (286942) (5 cr; prereq 5121; limited to 35 students; 0915-1015 MWF, 0915-1115 TTh; VinH 207)
Confidence intervals, testing hypotheses, regression, analysis of variance and covariance, distribution-free methods.

♣5301. **DESIGNING EXPERIMENTS.** (890565) (5 cr, \$5163; limited to 40 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.** (989083) (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.** (189423) (1-16 cr [max 11 cr per summer term])

8888. **THESIS CREDITS: DOCTORAL.** (989424) (1-36 cr [max 11 cr per summer term])

Surgery (Surg)

11-100 Phillips-Wangenstein 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.** (689935) (1 cr; prereq acceptance MS program NSS diet or Kellogg follow; S-N only; 1300-1430 Th; PWB 11-157) Shronts

5527. **HOSPITAL NUTRITION SUPPORT.** (489936) (9 cr; prereq acceptance to MS program NSS diet; S-N only) Shronts

Required Courses for Graduate Students

8200. **CLINICAL SURGICAL PROBLEMS IN MANAGEMENT.** (187372) (5 cr; ar) Najarian, staff

8201. SURGERY-ROENTGENOLOGICAL CONFERENCE. (087373) (1 cr; 1600-1730 F; Mayo C321-Todd Amph) Najarian

8202. SURGICAL RESEARCH. (887374) (5 cr; ar; Sur Res Lab) Staff

8203. SURGERY COMPLICATIONS AND RESEARCH CONFERENCE. (687375) (1 cr; 1630-1730 T; PWB 11-157) Najarian, staff

8207. TRANSPLANTATION AND BONE MARROW CONFERENCE. (487376) (1 cr; 1630-1730 Th; PWB 11-157) Najarian

FIRST TERM

8777. THESIS CREDITS: MASTERS. (689157) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489158) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389327) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (089429) (1-36 cr [max 11 cr per summer term])

Theatre Arts (Th)

208 Middlebrook Hall. 625-6699
College of Liberal Arts

FIRST TERM

r1101. INTRODUCTION TO THE THEATRE. (791675) (4 cr; limited to 60 students; 1300-1515 TWTh; RarigC 185) Norwood
History and theory of plays and playwrights.

r1102. DRAMA AND MEDIA—June x-July x. (888864) (4 cr; limited to 35 students; 0915-1130 MTWThF; Rarig 185) Neely
Study of dramatic form in contrasting media: theatre, film, and television. Lectures and film showings. Theatre attendance required.

r1321. BEGINNING ACTING. (391677) (4 cr; limited to 18 students; prereq 1101, 1504; 1030-1245 MTWTh; RarigC 210) Reid
Beginning techniques and exercises leading to performance, monologues, and scenes.

r3515. TECHNICAL THEATRE PRODUCTION II. (191678) (5 cr; limited to 40 students; prereq 1504; 1030-1245 MTWThF; Rarig 275) Montgomery, Egan
Theory and practice in design and execution of stage lighting and costuming. Laboratory.

r3803. PLATFORM PERFORMANCE. (591676) (4 cr; limited to 20 students; prereq management major; 0915-1130 MTWTh; RarigC 20) Norwood
Reading and analyzing selected poems, plays, and stories; interpreting literary insights through solo and group performance.

5100. THEATRE PRACTICUM. (586185) (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. (386186) (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.

r5314-5315. STAGE COMBAT—June 22-July 16. (492111) (291112) (2 cr per course; prereq 1326 or grad or #; limited to 30 students; 5314 and 5315 must be taken concurrently. 5314: Unarmed Combat. 5315: Armed Combat. 0800-1130 MTWTh; Rarig 190 & 90) David Doersch
History, techniques and aesthetics of staging physical combat.

r5540. SCENE PAINTING TECHNIQUES. (192113) (4 cr; limited to 10 students; prereq 3513 or #; 0800-1130 MTWTh; RarigC 130) Brockman
Materials, layout, and painting techniques used in the theatre. Painting styles and texturing techniques.

5720. PLAYS IN PRODUCTION AND PERFORMANCE. (985082) (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. (785083) (1-3 cr [max 6 cr for undergrads]; prereq 5716 or 15716 and written permission) Staff
Practical experience in stage management for specific productions of the University Theatre with emphasis on rehearsal and performance.

r5930. TOPICS IN THEATRE: Dance for Musical Theatre. (992114) (2 cr [max 12 cr]; limited to 30 students; 1030-1230 TTh; Norris 67) Command
Musical-theatre dance for less-experienced as well as experienced performers. A practical approach to necessary skills, including dance audition techniques.

r5940. TOPICS IN THEATRE: The Complete Musical Theatre Performer. (792115) (4 cr [max 12 cr]; limited to 30 students; 1330-1630 MWF, RarigC 190 and 20) Command, Ruth
Intensive course encompassing the various aspects of music-theatre performance: acting, singing and dance. For actors, singers, dancers, directors, choreographers who would like to expand their skills. Includes scene work, song interpretation, audition techniques, dance numbers. Th 5930 concurrently is recommended.

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, (086188)
Sec 2, (890081)

8777. THESIS CREDITS: MASTERS. (689160) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489161) (1-36 cr [max 11 cr per summer term])

8990. RESEARCH. (186187) (Cr ar; prereq #, Δ) Staff
Open to graduate students engaged in research on special problems.

SECOND TERM

3711. BEGINNING STAGE DIRECTION. (089771) (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.

5950. TOPICS IN THEATRE: Arts, Entertainment and Popular Culture in Victorian United States—July 27-August 12. (191681) (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 page 12.

8777. THESIS CREDITS: MASTERS. (889433) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489435) (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. (885043) (3 cr; prereq 3121)

3151. RADIATION ONCOLOGY TREATMENT PLANNING. (685044) (4 cr; prereq #)

FIRST AND SECOND TERMS: TEN-WEEK

COURSES (Register once in Term I)

5508. SPECIAL PROBLEMS IN RADIATION BIOLOGY. (987379) (Cr ar)

5512. DOSIMETRY OF INTERNAL AND EXTERNAL RADIATION EMITTERS. (287380) (1 cr; 0730-0830 W; UHosp 1243) Khan, Werner, Deibel, Gerbi

8310. FUNDAMENTALS OF RADIATION THERAPY. (787383) (1 cr; 1600-1700 M; UHosp 1243)

8315. RADIATION THERAPY PATHOLOGY. (587384) (1 cr)

8410. SEMINAR: RADIATION BIOLOGY. (887388) (1 cr; prereq #) Song, others

8450. RESEARCH IN RADIATION BIOLOGY. (687389) (Cr ar) Song, others

8550. RESEARCH OF RADIATION PHYSICS. (087390) (Cr ar) Khan

8777. THESIS CREDITS: MASTERS. (289162) (1-16 cr [max 11 cr per summer term])

SECOND TERM

3122. RADIATION PHYSICS. (485045) (3 cr; prereq 3121)

3151. RADIATION ONCOLOGY TREATMENT PLANNING. (285046) (4 cr; prereq #)

3152. RADIATION ONCOLOGY TREATMENT PLANNING. (885057) (4 cr; prereq 3151)

3170. RADIUM THERAPY. (685058) (4 cr; prereq #)

8777. THESIS CREDITS: MASTERS. (989438) (1-16 cr [max 11 cr per summer term])

Therigenology (Tgen)

FIRST TERM

8777. THESIS CREDITS: MASTERS. (089561) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889562) (1-36 cr [max 11 cr per summer term])

T

Textiles and Clothing (TexC)

240 McNeal Hall, St. Paul. 624-9700
(Design, Housing, and Apparel)
College of Home Economics

FIRST TERM

13621. TEXTILES. (291431) (5 cr; limited to 22 students; prereq soph, Chem 1002, Chem 1003 or Chem 1005 or #; 0800-1130 MTWThF; McNH 122)

Basic physical, chemical, and biological characteristics of fiber, yarn, and fabric structures; interrelationship with choice, maintenance, and performance of consumer textiles.

1661. READINGS IN CLOTHING.

(090273) (1-3 cr; prereq minimum 12 cr in textiles and clothing courses, #)
Independent study; survey of literature on selected areas related to human behavioral aspects of clothing and textiles. Written reports.

1663. PROBLEMS: CLOTHING AND TEXTILES.

(890274) (3-9 cr per qtr [max 1 cr]; prereq #)
Independent study in the human behavioral aspects of clothing or textiles.

SECOND TERM

8777. THESIS CREDITS: MASTERS. (689563) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489564) (1-36 cr [max 11 cr per summer term])

U**University College (UC)**

12 Morrill Hall. 624-2022

FIRST TERM

3075. INDEPENDENT STUDY. (386253) (Cr ar; prereq Δ)

SECOND TERM

3075. INDEPENDENT STUDY. (487474) (Cr ar; prereq Δ)

Urban Studies (Urbs)

348 Social Sciences. 626-1626
College of Liberal Arts

SECOND TERM

3900. INTERNSHIP. (688865) (1-6 cr per term [max 12 cr]; prereq jr or sr, #; A-F only; 1730-1930 T; SocSci 101) DeMontille

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. (288867) (2-6 cr; prereq #, Δ, □) Martin

Urologic Surgery (Urol)

A-597 Mayo. 625-9933
Medical School

FIRST TERM**Required Courses for Graduate Students**

8250. UROLOGICAL SURGERY. (687392) (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. (487393) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others
Urological fellow performs cystoscopies and other diagnostic procedures.

8252. UROLOGICAL CONFERENCE. (287394) (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. (187395) (4 cr) Fraley, others
Problems in experimental and clinical surgery.

8254. UROLOGICAL SEMINAR. (987396) (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (787397) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (587398) (3 cr; 1645-1745 W; Mayo A503) Fraley, others

8257. SELECTED TOPICS: ON THE GENITOURINARY SYSTEM. (588227) (2 cr) Li, Bronson

8777. THESIS CREDITS: MASTERS. (189163) (1-16 cr [max 11 cr per summer term])

SECOND TERM**Required Courses for Graduate Students**

8250. UROLOGICAL SURGERY. (387774) (4 cr; 0900-1200 MTThF; Mayo OR-H) Fraley, others
See First Term.

8251. CYSTOSCOPY AND UROLOGICAL DIAGNOSIS. (887780) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others
See First Term.

8252. UROLOGICAL CONFERENCE. (487765) (4 cr; 1600-1700 F, Ward Rds, Sta 57; 0900-1100 S, Sta 57 Conf Rm) Fraley, others
See First Term.

8253. RESEARCH: UROLOGY. (987771) (4 cr) Fraley, others
See First Term.

8254. UROLOGICAL SEMINAR. (187775) (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (487779) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (187980) (3 cr; 1645-1745 W; Mayo A503) Fraley, others

8777. THESIS CREDITS: MASTERS. (989441) (1-16 cr [max 11 cr per summer term])

V**Veterinary Biology (VB)**

295K Animal Science, St. Paul.
624-2700
College of Veterinary Medicine

FIRST TERM

5149.* TOPICS OF ORGANOLGY. (486258) (1-5 cr [may be repeated for cr]; prereq 5104, #)
Lecture and laboratory presentation of selected organ systems of domestic and laboratory animals.

8111. HISTOLOGIC AND ULTRAHISTOLOGIC TECHNIQUES. (187954) (3 cr; prereq 5106, #)
Principles and methods in preparing animal tissues for histological and ultrahistological observation.

8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY. (286259) (686260) (486261) (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. (286262) (186263) (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. (986264) (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. (786265) (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. (586266) (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. (386267) (Cr ar; prereq 5401, #) A. Larson, Brown

8550. SEMINAR: VETERINARY BIOLOGY. (986412) (1 cr; A-F only; prereq #) Gallant

8777. THESIS CREDITS: MASTERS. (989164) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789165) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5149.* TOPICS OF ORGANOLGY. (887228) (1-5 cr [may be repeated for cr]; prereq 5104, #)
See First Term.

8111. HISTOLOGIC AND ULTRAHISTOLOGIC TECHNIQUES. (387080) (3 cr; prereq 5106, #)
See First Term.

8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY. (687229) (887230) (887231) (2 cr per qtr; prereq #) Staff
See First Term.

8134-8135. COMPARATIVE VETERINARY NEUROLOGY. (687232) (487233) (4 cr per qtr; prereq 5100, #) Fletcher, Beitz
See First Term.

8136. EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY. (287234) (3 cr, \$NSc 8136; prereq 8135, #) Fletcher, Beitz
See First Term.

8150. RESEARCH PROBLEMS IN VETERINARY ANATOMY. (187235) (1-5 cr; prereq 8149, #) Staff
See First Term.

8349. RESEARCH IN PHYSIOLOGY. (887236) (Cr ar; prereq #) Duke
See First Term.

8448. PROBLEMS IN VETERINARY PHARMACOLOGY. (787237) (Cr ar; prereq 5401, #) A. Larson, Brown

8550. SEMINAR: VETERINARY BIOLOGY. (786413) (1 cr; A-F only; prereq #) Gallant

8777. THESIS CREDITS: MASTERS. (789442) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (589443) (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

5000. DIAGNOSTIC MEDICINE. (591435) (2 cr; prereq #; S-N only; arranged MTWThF; VetTchHos) Staff
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences to veterinary diagnostic medicine.

5521. SURGICAL PATHOLOGY. (391436) (3 cr; prereq #; A-F only)
Preparation and interpretation of surgical and necropsy specimens.

5522. DIAGNOSTIC PATHOLOGY. (191437) (5 cr; prereq #; A-F only)
Barnes, others
History, necropsy lesions, laboratory results, and histopathology in the diagnosis of animal diseases.

5620. SCIENTIFIC WRITING AND SPEAKING. (891439) (2 cr; prereq #; limited to 10 students; A-F only; 0900-1100 T) Goyal
For graduate students in health sciences. Techniques of writing and publishing scientific papers and thesis including manuscript preparation, submission and review process, and proofreading and publishing process. Oral and poster presentations at scientific meetings will also be covered.

5622. PROBLEMS IN DIAGNOSTIC VIROLOGY. (091438) (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. (191432) (3 cr; prereq #; A-F only)
Barnes, others
See First Term.

5522. DIAGNOSTIC PATHOLOGY. (991433) (5 cr; prereq #; A-F only)
See First Term.

5622. PROBLEMS IN DIAGNOSTIC VIROLOGY. (791434) (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. (188448) (4 cr; prereq #; S-N only; 0800-1630 MTWThF; VetTchHos) 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. (589166) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (389184) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389444) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189445) (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. (289503) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (989505) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (689515) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489516) (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. (389508) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189509) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (989519) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (289520) (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

5000. VETERINARY HOSPITAL NECROPSY. (486423) (2 cr; prereq #; S-N only; arranged MTWThF; VetTchHos) Hayden, others
Necropsy techniques, examination of tissue for diagnosis, submission of tissue for laboratory analysis, and preparation of reports and records.

5001. CLINICAL HEMATOLOGY AND CYTOLOGY. (286424) (2 cr; prereq #; S-N only; arranged MTWThF; VetTchHos) Perman, others
Laboratories devoted to the application of principles and techniques of the basic and clinical medical sciences in hematology and cytology.

5002. CLINICAL MICROBIOLOGY. (186425) (2 cr; prereq #; S-N only; arranged MTWThF; VetTchHos) Ward
Laboratories devoted to the application of principles and techniques of veterinary clinical and diagnostic microbiology.

5523. PATHOLOGY OF SPONTANEOUS DISEASES OF LABORATORY ANIMALS. (985129) (2-3 cr; prereq #) Gunther
Gross and microscopic pathology of laboratory animals.

5748. PROBLEMS IN VETERINARY MICROBIOLOGY AND PUBLIC HEALTH. (785049) (Cr ar; prereq 5703 or equiv, #)

8530. ONCOLOGY. (191440) (4 cr; prereq #; offered alt yrs) Hayden, staff
Spontaneous and induced mammalian neoplasms with emphasis on diagnosis.

8531. HOSPITAL PATHOLOGY. (085445) (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. (186268) (Cr ar; prereq #) Johnson, others

8534. PROBLEMS: CLINICAL PATHOLOGY. (086269) (Cr ar; prereq #) Perman, Weiss

8648. PROBLEMS IN VETERINARY PARASITOLOGY. (386270) (Cr ar; prereq 5602 or equiv, #) Stromberg

8720. ADVANCED VETERINARY MICROBIOLOGY. (186271) (Cr ar; prereq #) Staff
Special topics, techniques, collateral reading, and conferences.

8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY. (086272) (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. (485286) (2 cr; prereq #) Gunther
See First Term.

5533. DIRECTED STUDIES IN VETERINARY PATHOLOGY. (189079) (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. (885446) (1-2 cr; prereq 5501, 5502, 5503, #) Hayden, others
See First Term.

8533. PROBLEMS: PATHOLOGY. (587238) (Cr ar; prereq #) Johnson, others

8534. PROBLEMS: CLINICAL PATHOLOGY. (387239) (Cr ar; prereq #) Perman, Weiss

8648. PROBLEMS IN VETERINARY PARASITOLOGY. (787240) (Cr ar; prereq 5602 or equiv, #) Stromberg

8720. ADVANCED VETERINARY MICROBIOLOGY. (587241) (Cr ar; prereq #) Staff
See First Term.

8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY. (387242) (Cr ar; prereq #) Ward
See First Term.

8725. CELL CULTURE TECHNIQUES. (087082) (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. (389511) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189512) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (189521) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (789523) (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. (089513) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (889514) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (389525) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (189526) (1-36 cr [max 11 cr per summer term])

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: Teaching for Thinking—June 17-July 6. (189767) (1-6 cr [max 9 cr]; prereq #; 1245-1700 MWF; VoTech R370; S-N optional)
Anderson and Thomas
Information processing, knowledge structure, and dispositions as underlying factors in complex thinking; types of complex thinking relevant to vocational education, including problem solving, critical thinking, and decision making; approaches to teaching that facilitate thinking. This offering for 4 credits.

5101. SPECIAL TOPICS IN CURRICULUM: School to Work: Instructional Strategies—June 16-26. (391730) (1-6 cr [max 9 cr]; 1630-1930 MTWThF; VoTech R280; S-N optional) Brown
Educational practices for enhancing the transition of at-risk learners from school to the adult community/work place. This offering for 3 credits.

5750. TRAINING IN INDUSTRY AND BUSINESS—June 16-26. (685416) (3 or 4 cr; limited to 25 students; 0800-1225 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.

5770. TRAINING AND DEVELOPMENT: Wellness as an Organization Development Intervention. (191731) (4 cr; limited to 25 students; 1730-2030 MW; VoTech R285; S-N optional) Reardon
Developments related to programs; practices; programs; methodologies in training and development. Identifying key issues related to the perception of individual health and organization well-being in business and industry. Developing creative interventions to maximize organizational potential and effect positive cultural change.

5780. INTERNSHIP: TRAINING AND DEVELOPMENT. (185072) (Cr ar [max 15 cr]; limited to 15 students; prereq 5750; hrs ar; S-N optional) Seltz
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.

5790. STRATEGIC PLANNING: TRAINING AND DEVELOPMENT. (091732) (3 or 4 cr, prereq VoEd 5750 or VoEd 5760; limited to 25 students; 1730-2130 TTh; VoTech R285; A-F only) Torrace
Human capital as a component of industry and business strategic planning; analysis and articulation of practices. This offering for 4 credits.

5900. USING VOCATIONAL EDUCATION RESEARCH—June 16-19, 23-26. (988869) (3 cr; prereq admission to graduate-level program or #; limited to 30 students; 0915-1230 MTWThF; VoTech R385; A-F only) Wardlow
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.

5920. INDEPENDENT STUDY. (192183) (1-6 cr; A-F or S-N; Δ)

8888. THESIS CREDITS: DOCTORAL. (889187) (1-36 cr [max 11 cr per summer term])

SECOND TERM

5101. SPECIAL TOPICS IN CURRICULUM. (1-6 cr [max 9 cr]; prereq #; S-N optional)

Sec 1, Vocational Education in the Developing World—July 20-30. (790283) (1300-1600 MTWThF; VoTech R385) Persons

Philosophy, organization, management, and implementation of vocational education and training in Third World settings. Emphasis on the economic, social, cultural, traditional, and family influences in vocational education systems. Comparisons and contrasts between Third World and First World systems of education and training. This offering for 3 credits.

Sec 2, Current Issues in Vocational Technical Education—August 18-21. (491735) (Cr ar TWThF; 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 dissemination or call 624-1221.

5102. SPECIAL TOPICS IN ADMINISTRATION: Student Retention in Vocational Education: Issues, Barriers, and Intervention Strategies—July 20-30. (889769) (1-6 cr; max 9 cr; prereq #; 0915-1215 MTWThF; VoTech R285; S-N optional) Schwartz

Addresses the issues of student "dropouts" in secondary and postsecondary vocational education. Examines models of student persistence/attrition and analyzes the factors which influence student non-completion. Explores intervention strategies to minimize the attrition potential of students. This offering for 3 credits.

5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—AUGUST 3-13. (190281) (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 3-13. (990282) (3 or 4 cr; BME 5352, HEEd 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; purposes and management of the program. This course meets vocational licensure requirements. This offering for 3 credits.

5760. ORGANIZATION DEVELOPMENT IN INDUSTRY AND BUSINESS—July 27-August 7. (189770) (4 cr; limited to 25 students; 0800-1200 MTWThF; VoTech R280; A-F only) Introduction to major concepts, skills, and techniques. This offering for 4 credits.

5762. MANAGEMENT OF CONFLICT—August 1, 8, 15 & 22. (291736) (2 cr; limited to 25 students; 0800-1300 Sat; VoTech R285; A-F only) Conbere
Types, sources, and diagnosis of conflict styles; skills and strategies for managing interpersonal, intergroup, and intragroup conflict.

5780. INTERNSHIP: TRAINING AND DEVELOPMENT. (387855) (Cr and hrs ar [max 15 cr]; limited to 15 students; prereq 5750; S-N optional) McLean
See First Term.

5920. INDEPENDENT STUDY. (092184) (1-6 cr; A-F or S-N; Δ)

8888. THESIS CREDITS: DOCTORAL. (089446) (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

1001. INTRODUCTION TO WOMEN'S STUDIES. (685447) (4 cr; limited to 40 students; 0900-1130 MW; FordH 170) Potter
Brief history of feminism; overview of issues related to the current and rapidly changing role and status of women.

3204. SEXUALITY AND SELF-IMAGE. (792177) (4 cr; prereq 1001, 1002 or #; 0900-1130 TTh; AmundH 158) Pibbs
Social attitudes toward sexuality and how they influence our sense of self. Focus on art, pornography, sexual violence, psychosexual development, sexual identity, and political economy.

3970. DIRECTED STUDIES. (988256) (1-15 cr; prereq #, Δ, □)

3980. DIRECTED INSTRUCTION. (788257) (1-5 cr; prereq #, Δ, □)

5100. SUMMER INSTITUTE FOR TEACHERS: Gender and Sexuality in a Multicultural World—June 22-July 2. (592178) (4 cr; 0900-1200 MTWThF; Arch 30) Zita
See page 11 for details.

5103. FEMINIST PEDAGOGY. (190286) (4 cr; limited to 20 students; prereq 8 cr in women's studies or #; 1000-1230 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. (985230) (1-5 cr [max 12 cr]; prereq #, Δ, CLA approval)

8970. DIRECTED STUDY. (687103) (1-8 cr; prereq completion of courses approved by faculty supervisor and DGS)

SECOND TERM

3307. MODERN FEMINIST NOVEL. (091651) (4 cr; limited to 40 students; 0930-1130 TTh; Ford 120) Marquit
Analysis of fiction written by women that addresses questions of women's identity and the diversity of women's experience.

3308. WOMEN WRITERS OF AFRICA AND LATIN AMERICA. (592116) (4 cr; prereq introductory work in African and/or Latin American literature; limited to 40 students; 0900-1130 TTh; Ford 349) O'Connell
Women writers and critics of African and Latin American literature about women.

3400. WOMEN AND POPULAR AMERICAN CULTURE. (090287) (4 cr [max 12 cr]; limited to 40 students; 0900-1130 MW; FordH 120) Katz
Explores the roles and realities of women within and outside mainstream North American culture through film, video, music, and literature.

3970. DIRECTED STUDIES. (185296) (1-15 cr; prereq #, Δ, □)

3980. DIRECTED INSTRUCTION. (085283) (1-5 cr; prereq #, Δ, □)

5970. DIRECTED STUDIES. (785231) (1-5 cr; max 12 cr; prereq #, Δ, CLA approval)

8970. DIRECTED STUDY. (487104) (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. (085378) (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. (286682) (Cr ar [max 12 cr per qtr]; prereq #; hrs ar) Beker, Staff
See First Term.

Zoology (Zool)

109 Zoology. 625-4466
College of Biological Sciences

FIRST TERM

8777. THESIS CREDITS: MASTERS. (689188) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (489189) (1-36 cr [max 11 cr per summer term])

SECOND TERM

8777. THESIS CREDITS: MASTERS. (889450) (1-16 cr [max 11 cr per summer term])

8888. THESIS CREDITS: DOCTORAL. (689451) (1-36 cr [max 11 cr per summer term])

BUILDING ABBREVIATIONS AND BUILDING ACCESSIBILITY INFORMATION

MINNEAPOLIS

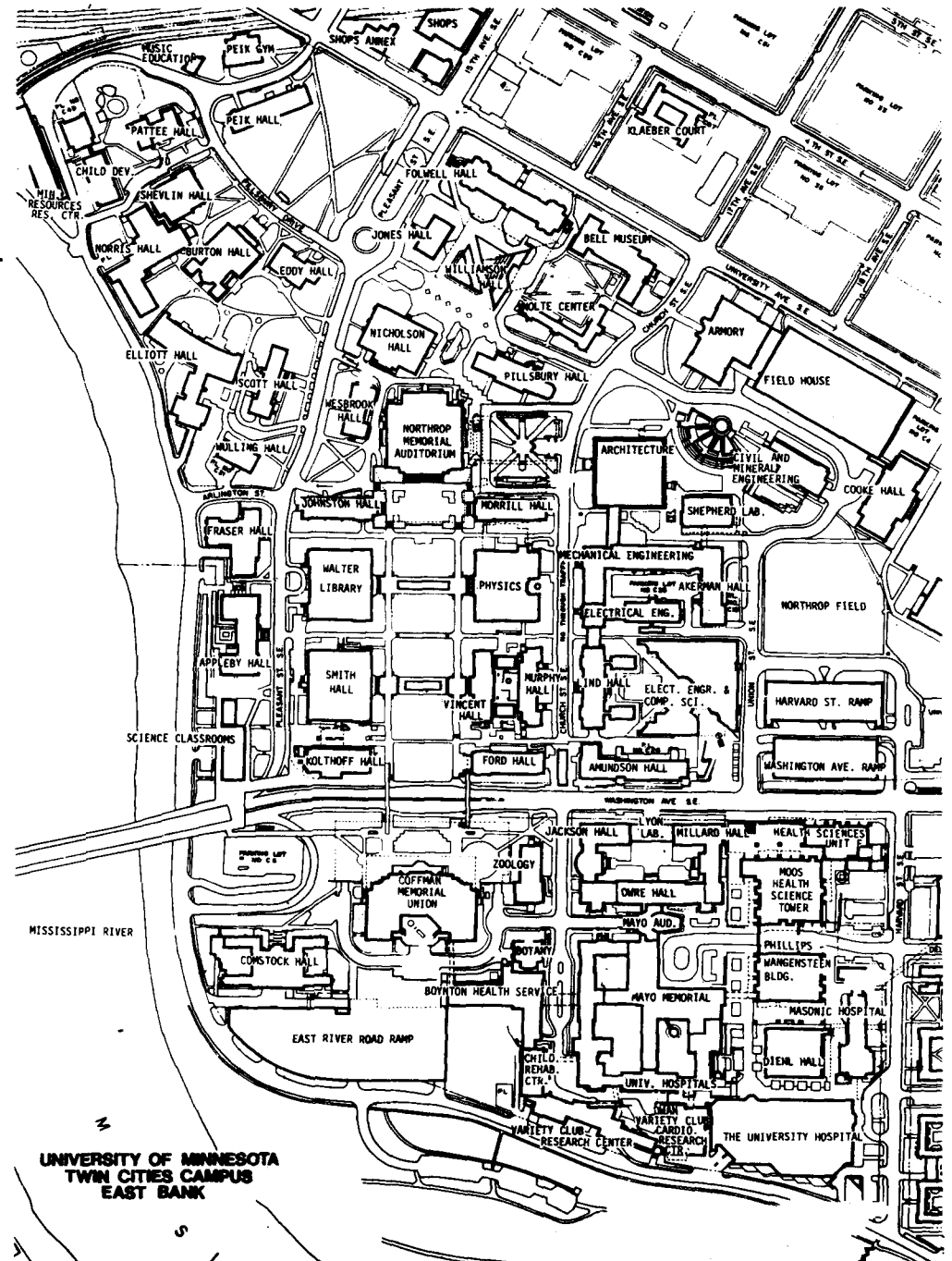
East Bank

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 ◌*
 CivMinE, Civil and Mineral Engineering ◌*
 CMU Coffman Memorial Union ◌* L
 ComH, Comstock Hall □
 CookeH, Cooke Hall ■
 DiehH, 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 □
 EITH, 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 ◌*
 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 ◌*
 Pih, 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
 WmsnH, Williamson Hall ◌* L
 WullH, Wulling Hall □*
 Zoology ◌* L

CODES:

- ◌ = accessible building
- = partially accessible
- = inaccessible building
- * = elevator
- L = adapted restroom



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BUILDING ABBREVIATIONS AND BUILDING ACCESSIBILITY INFORMATION

MINNEAPOLIS

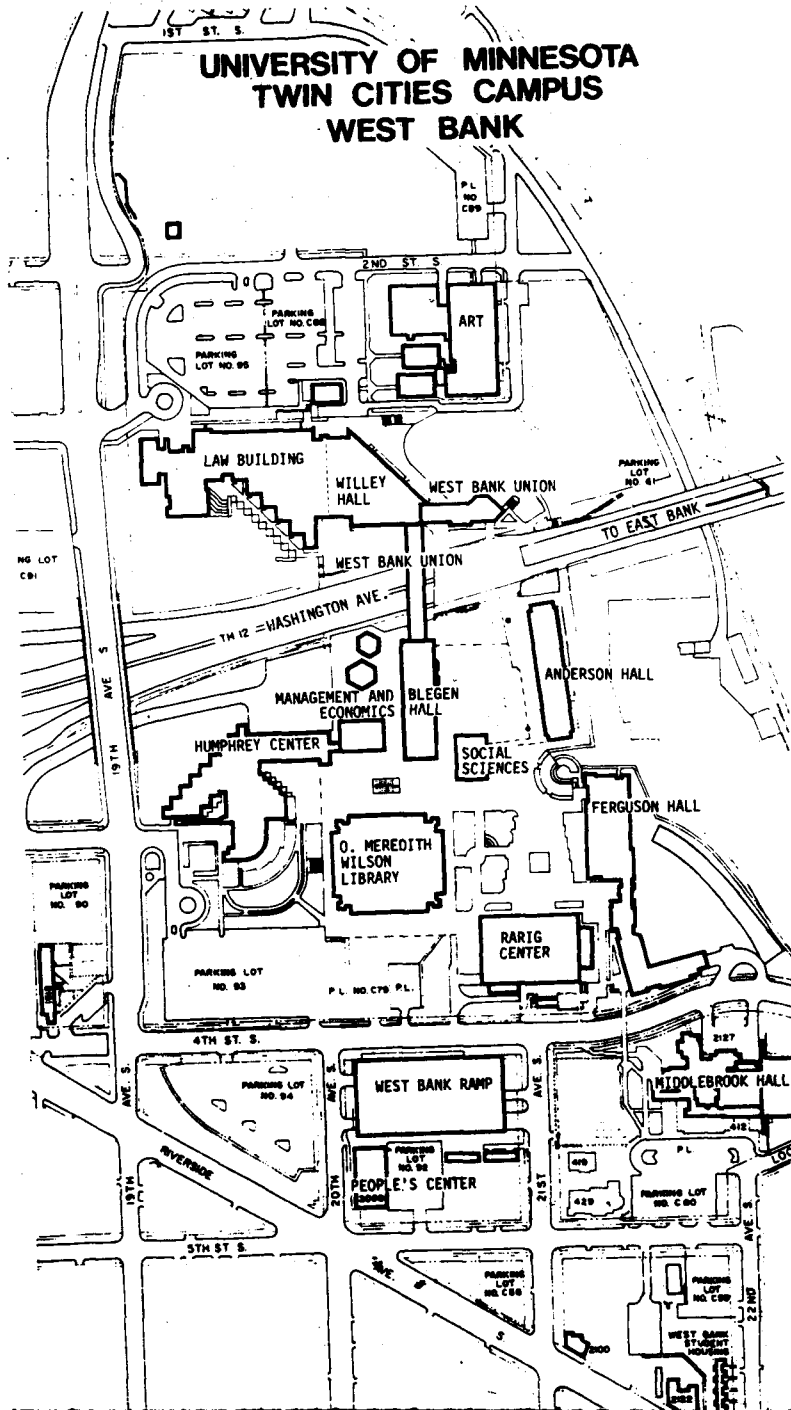
West Bank

- 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

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BUILDING ABBREVIATIONS AND BUILDING ACCESSIBILITY INFORMATION

ST. PAUL

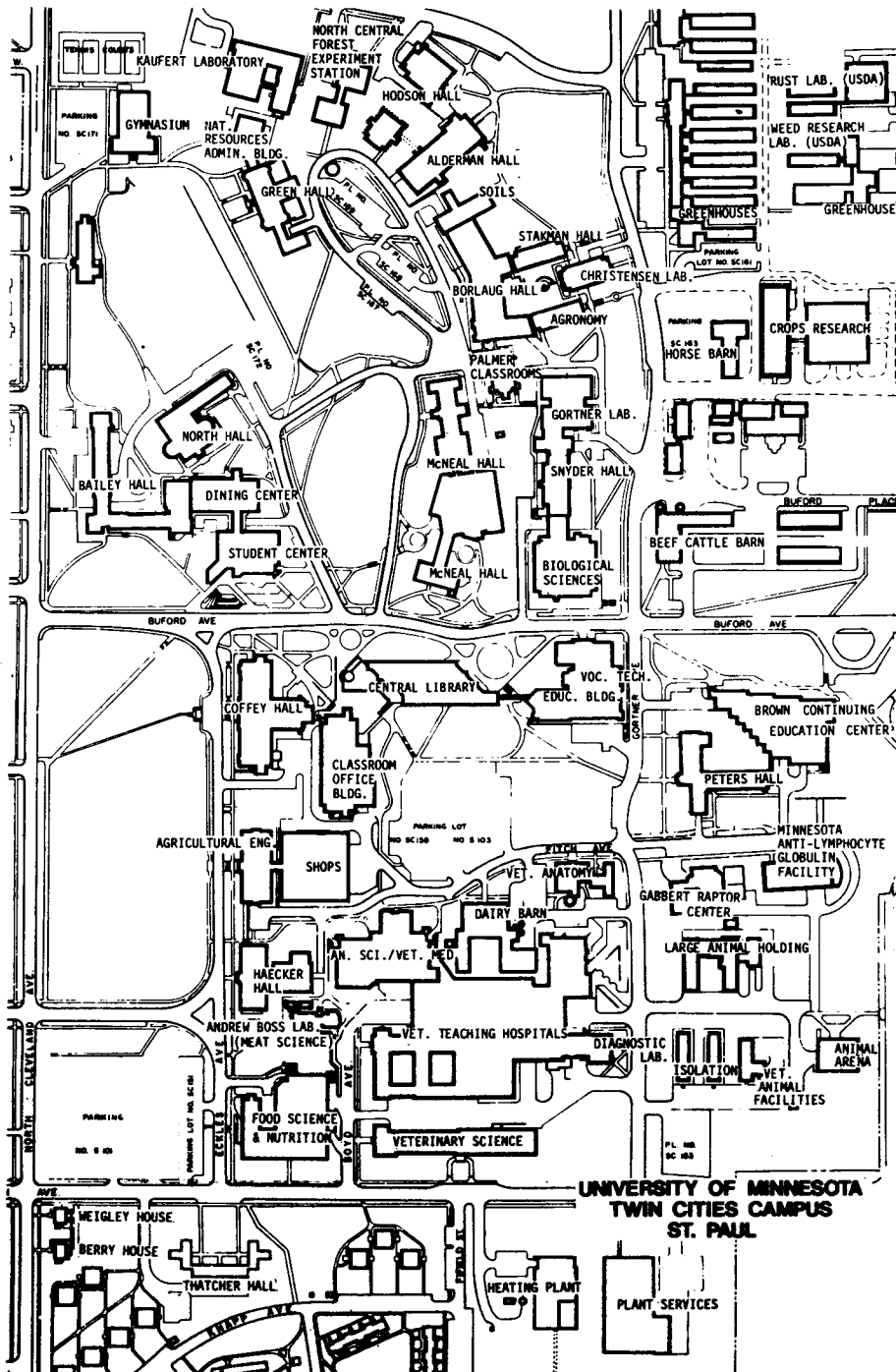
ABLMS, Andrew Boss Laboratory-Meat Science ♂*
 AgEng, Agricultural Engineering ☐*
 AgEngShop, Agriculture Engineering Shop ♂
 Agr, Agronomy ■
 AgGhCl, Agronomy Greenhouse Classroom ♂
 AgrPGGH, Agronomy/Plant Genetics Greenhouse
 AlderH, Alderman Hall ♂*
 AnAren, Animal Arena
 AnScVM, Animal Science, 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 ♂* L
 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
 NorH, North Hall ■
 PetH, Peters Hall ☐
 PISci, 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:

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Lake Itasca Field Biology Program Bulletin

UNIVERSITY OF MINNESOTA
Summer Session



Itasca State Park, where the Mississippi River begins

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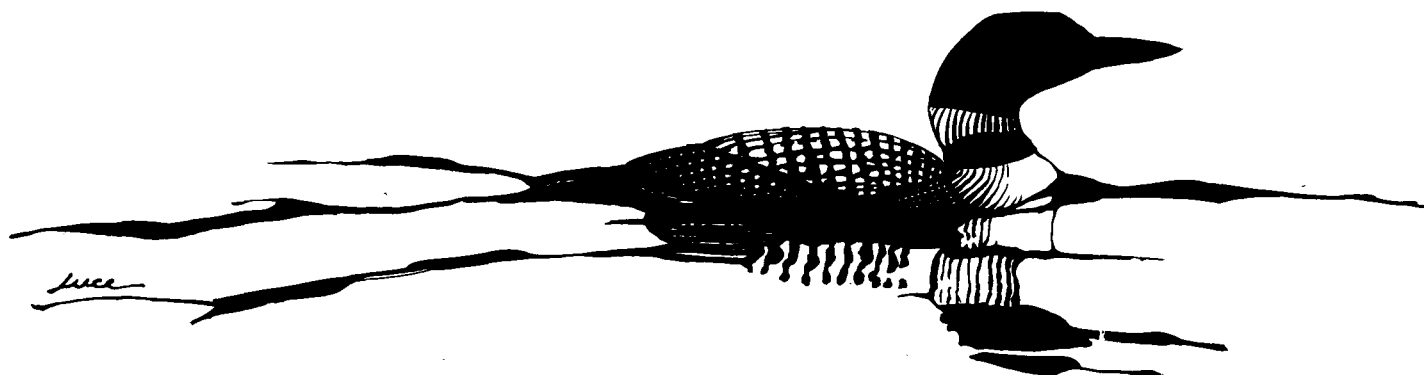
Postal Statement

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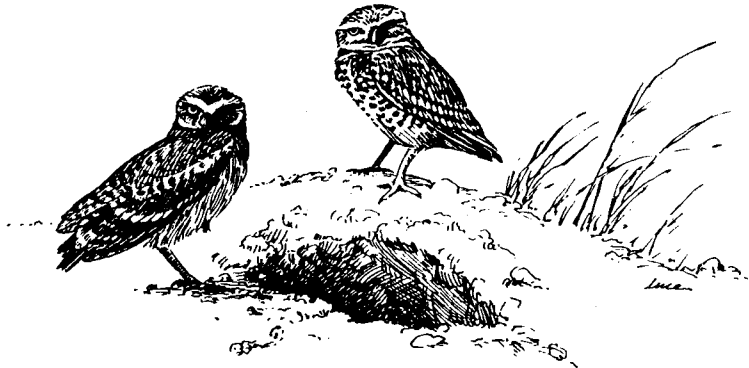
Lake Itasca Biology Program

FIRST TERM
JUNE 16-JULY 21, 1992

SECOND TERM
JULY 23-AUGUST 26, 1992

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Map of Itasca Forestry and Biological Station.....	<i>inside back cover</i>



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 fields. The forests of the park are unique. Here the northern coniferous and deciduous types of the central hardwood region meet. In addition, the many bog areas provide a wide variety of plant communities for study. Itasca's forests have been protected for over a half century, and many 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 closely during June and July are particularly outstanding. An abundance of interesting animals, such as nesting bald eagles, breeding loons, beaver, raccoons, and deer, affords many striking 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.

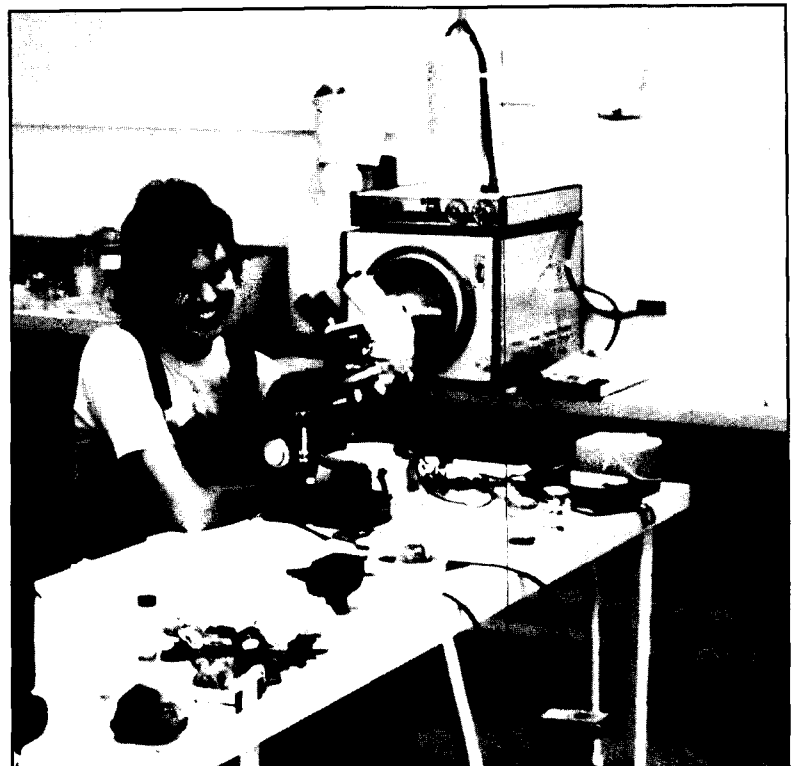
A freshwater algal culture collection consisting of about 60 species found within Itasca State Park is available for students and researchers.

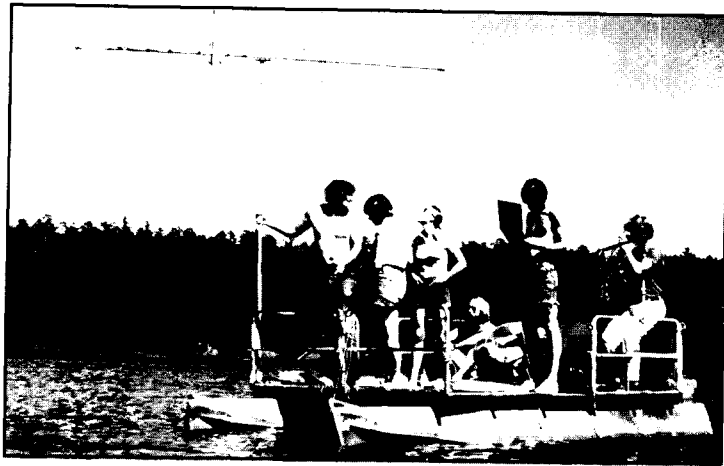
The station equipment includes necessary compound and dissecting microscopes, collecting apparatus, various types of nets, boats and other accessories for instruction and research.

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 7, 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 page 5.

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, 307 Johnston Hall, University of Minnesota, 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, 422 Johnston Hall, University of Minnesota, 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, 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, 305 Zoology Building, 318

Church Street S.E., University of Minnesota, Minneapolis, MN 55455. 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 Siniff, program director, Itasca Biology Program, 305 Zoology Building, University of Minnesota, 318 Church Street S.E., Minneapolis, MN 55455. The deadline for application is April 10.

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, 305 Zoology Building, 318 Church Street S. E., University of Minnesota, Minneapolis, MN 55455. 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 15, for the first term, and Wednesday, July 22, 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, 305 Zoology Building, 318 Church Street S.E., University of Minnesota, Minneapolis, MN 55455, or deliver it personally to the office. Students may register for 3-10 credits per term. Mail registration must be received by June 12, 1992 for Term I. Mail registration for Term II after June 12 should be sent to the Itasca Biology Program, Lake Itasca Forestry and Biological Station, HCO5, Box 7, Lake Itasca, MN 56460, in order to insure registration before classes begin. After June 12 registration will be at Itasca on June 15 and July 22.



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 15

9:00-11:30 a.m.

1:30-4:00 p.m.

Term II-July 22

9:00-11:30 a.m.

1:30-4:00 p.m.

It is important that all students be at the station on June 15 (Term I) and July 22 (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 25. 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.

Academic year students registered at the University during the previous year and with resident status will be charged a per-credit rate of \$70.00. Non-resident students will be charged a per-credit rate of \$206.50.

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.

Graduate Students registering through the Graduate School pay Itasca Biology Program tuition at the rate of \$139.50 per credit for residents and \$279.00 per credit for non-residents.

Student Services and Lab Fee. All students pay a lab fee of \$10 per term, and those who take 3 or more credits pay a student services fee of \$30.40 per term.

Room and Board. There is a service charge of \$65 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
- Intermittent Type
- Maintained Gravel
- Road
- Foot Road
- Trail
- Trail Number
- All Weather
- Gravel Road

TRAILS

SELF GUIDING NATURE TRAILS
 No. Trail Name Length in Miles Location
 1 Dr. Roberts 1.6 S.N.

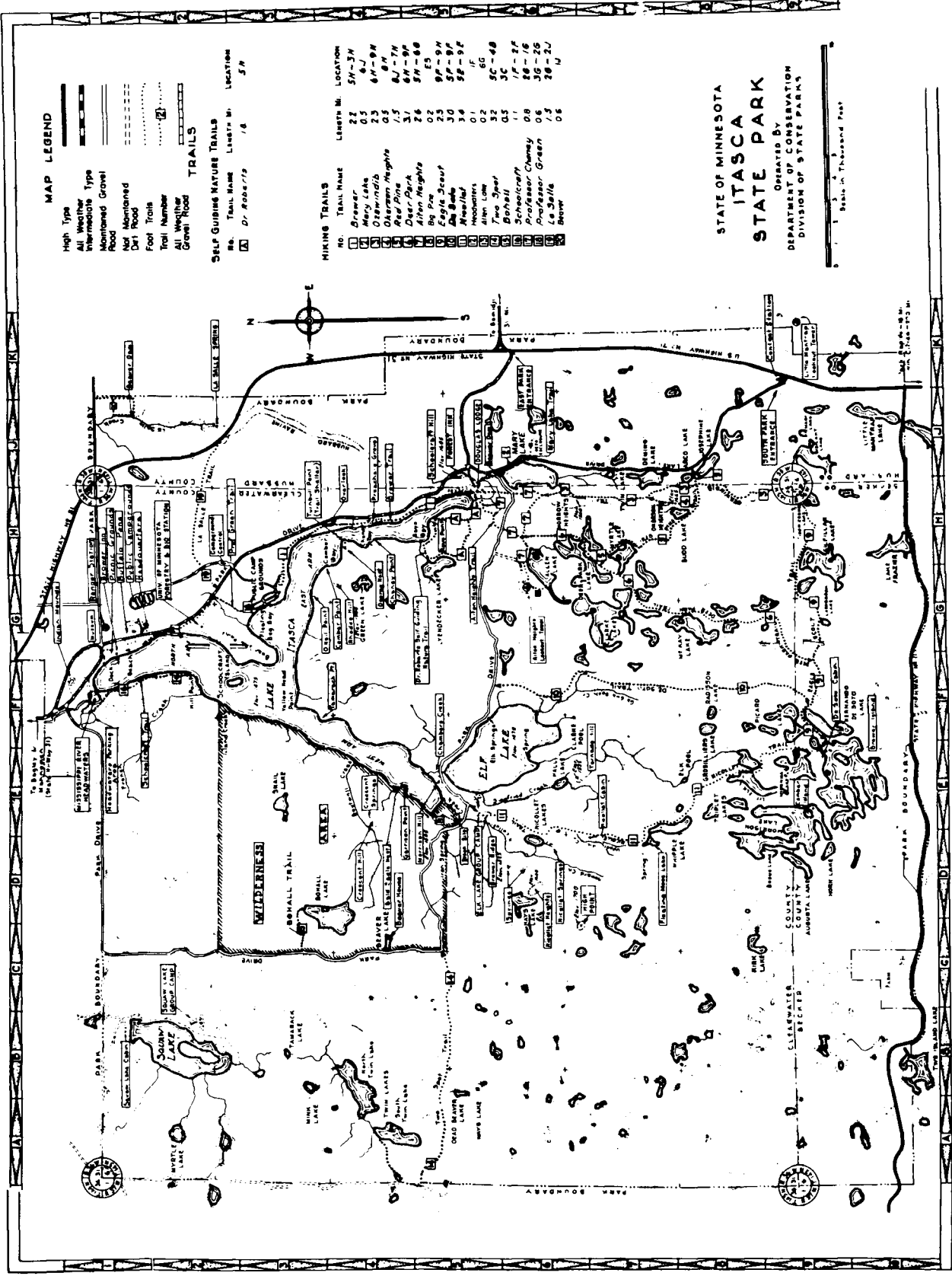
HIKING TRAILS

NO.	TRAIL NAME	LENGTH IN MILES	LOCATION
22	Greener	2.2	SH-3N
23	Mary Lake	0.5	6J
24	Ostwald	2.3	6N-9N
25	Ostwald Heights	0.3	8V
26	Red Pine	1.5	6J-7N
27	Deer Park	2.1	8N-8S
28	Allen Heights	0.9	8E3
29	Big Lake Scout	2.5	9P-9N
30	Deer Park	3.0	5P-9P
31	Needle	3.4	5P-9P
32	Needles	0.1	IF
33	Allen Lake	0.2	6G
34	Two Spear	3.2	5C-4B
35	Behall	0.5	5C-3F
36	Schercroft	0.8	16-16
37	Professor Cheney	0.6	16-16
38	Professor Green	1.5	3G-2G
39	La Salle	0.6	28-2J
40	Brown	0.6	1J

STATE OF MINNESOTA
ITASCA STATE PARK

OPERATED BY
 DEPARTMENT OF CONSERVATION
 DIVISION OF STATE PARKS

Scale in Thousand Feet



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 12 you may telephone or write the Itasca Program office. After June 12 you may telephone the Itasca office (218) 266-3302 or write to the University of Minnesota Forestry and Biological Station, HCO5, Box 7, 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 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 7, 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 1992**TERM I- TUESDAY, JUNE 16-TUESDAY, JULY 21****Biol 5816. Field Biology Photography, June 16-July 4, Wednesday/Saturday**

(185484) 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.

Biol 5850. Special Topics in Biology.**Sec 1. Measurements of Plant Environments. June 16-July 6; Monday/Thursday**

(886466) 3 cr; limited to 20 students; prereq course in ecology; 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).

Sec 2, Field Studies in Mammalogy, June 16-July 17, Tuesday/Friday

(686467) 5 cr; limited to 20 students; 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.

Sec 3, Peatland Ecosystems and Climate Change, July 3-21, Tuesday/Friday

(486468) 3 cr; limited to 12 students; A/F only; Janssens

This course covers boreal peatland ecology, peatland change related to Holocene climate change, and autecology of peatland plants. The Itasca area has a large diversity of boreal peatlands within easy reach. The course will include morning lectures, half-day and full-day field trips to peatlands, and the study of the peatland flora, both vascular plants and bryophytes (field characteristics and laboratory identification techniques), plant autecology, peatland ecosystem gradients, such as hydrology and water chemistry, and peat stratigraphy as a guide to paleoenvironmental reconstruction, interpreted in light of Holocene climate change.

Sec 4, Advanced Field Biology Photography, July 8-18, Wednesday/Saturday

(488723) 2 cr, limited to 20 students; prereq Field Biology Photography; A/F only; Rubbelke

A course designed to introduce students to more advanced photographic application, including high resolution black and white photomacrography, ultraviolet photography, and infra-red technology for remote documentation. Students will be charged for the darkroom supplies that they use.

Biol 5890. Research Problems at Itasca.

(685335) 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 16-July 21, Monday/Thursday

(189888) 5 cr; limited to 15 students; prereq course in general biology including study of zoology, department permission; Blockstein

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.

NSc 5100. Introductory Neurobiology Laboratory at Itasca, June 16-July 3

(189669) 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 16-July 21, Wednesday/Saturday

(192130) 5 cr; limited to 20 students; prereq course in taxonomy, departmental permission; Collins

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, June 16-July 6, Monday/Thursday

(891425) 3 cr; limited to 20 students; prereq 5 credits botany or permission of the instructor; A/F only; Instructor to be named.

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 23-WEDNESDAY, AUGUST 26

Biol 3812. Plant Biology, July 23-August 26, Tuesday/Friday, (190586) 5 cr; limited to 20 students; prereq general courses in biology and chemistry; Biesboer and Wick

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 23-August 26, Wednesday/Saturday

(188991) 5 cr; limited to 20 students; prereq course in calculus, course in plant biology and/or animal biology; 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 5, Behavior/Telemetry, July 23-August 10, Monday/Thursday

(091259) 3 cr; limited to 20 students; 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; processing data from radio-fixes; telemetry of further behavioral and physiological information.

Sec 6, Ecological Genetics, July 23-August 24, Monday/Thursday

(188482) 5 cr; limited to 15 students; A/F only; Curtsinger

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.

Sec 7, Conservation Biology, July 23-August 26, Wednesday/Saturday

(988483) 5 cr, limited to 20 students; A/F only; Lowman

Introduction to basic concepts of conservation biology including island biogeography, habitat fragmentation, metapopulations, biotic reserves, stochastic threats to small populations, and conservation genetics. Case studies emphasize critically-threatened species. Field projects designed to reinforce conservation biology principles. Laboratory projects utilize computer population simulations to model demographic, genetic, and environmental factors affecting small populations.

Biol 5890. Research Problems at Itasca. (585411) See Term I.**EEB 5814. Plant Community Ecology, July 23-August 26, Monday/Thursday** (192063) 5

cr, limited to 20 students; prereq course in ecology; A/F only; Webb

Communities represented in Itasca Park and vicinity, with emphasis on vegetation. Patterns of distribution of the communities, their interaction with the environment, and their dynamic relationships. Methods of community description and analysis.

EEB 5817. Vertebrate Ecology, July 23-August 26, Tuesday/Friday. (589894) 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.

NSc 5550. Itasca Cell and Molecular Neurobiology Laboratory, July 27-August 28.

(785651) 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**Biol 5850-1
EEB 5834
PIPa 5102**TUESDAY**Biol 5850-2
Biol 5850-3**WEDNESDAY**Biol 5816
Biol 5850-4
PBio 5801**THURSDAY**Biol 5850-1
EEB 5834
PIPa 5102**FRIDAY**Biol 5850-2
Biol 5850-3**SATURDAY**Biol 5816
Biol 5850-4
PBio 5801Biol 5890 (arranged)
NSc 5100 (arranged)**TERM II****MONDAY**Biol 5850-5
Biol 5850-6
EEB 5814**TUESDAY**Biol 3812
EEB 5817**WEDNESDAY**Biol 5841
Biol 5850-7**THURSDAY**Biol 5850-5
Biol 5850-6
EEB 5814**FRIDAY**Biol 3812
EEB 5817**SATURDAY**Biol 5841
Biol 5850-7Biol 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)

David E. Blockstein, National Institutes for the Environment, studies ecology and conservation of doves and pigeons on tropical islands. (EEB 5834)

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. (Biol 5850)

Scott L. Collins, Associate Professor, University of Oklahoma, has research interests in plant community dynamics, ordination and classification of communities, forest island ecology, and the role of disturbance in plant community structure. He has been particularly active in grassland ecology. (PBio 5801)

James W. Curtsinger, Associate Professor, University of Minnesota, does experimental and theoretical work in population and quantitative genetics, with an emphasis on insect populations. (Biol 5850)

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)

Jan A. Janssens, Research Associate, University of Minnesota, has research interests that include the development of quantitative paleoecological reconstruction techniques, fossil mosses and bryophyte autecology, peatland change throughout the Quaternary, and the differentiation of allogenic and autogenic mechanisms in peatland development. His current research involves the establishment of a network of peatland sites throughout the state for long-term monitoring of climate change, stratigraphical analysis of peat profiles to gauge the sensitivity of peatlands to climate change, and the production of a checklist and flora to the mosses of Minnesota.

Margaret D. Lowman, Assistant Professor, Williams College, Massachusetts, is interested in conservation biology, particularly as it relates to tropical rain forests. She has worked extensively on the biological and applied aspects of deforestation, and on plant-insect relationships in forest canopies of Australia, Africa, and the United States. (Biol 5850)





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

Donald L. Rubbelke, Instructor, Biology, University of Minnesota, Crookston, is currently interested in developing and applying new methods in biological photography. (Biol 5816, Biol 5850)

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

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)

Sara L. Webb, Associate Professor, Drew University, has research interests focusing on forest dynamics, with recent work on the ecological consequences of windstorms, acid rain, and non-native plant invasions. (EEB 5814)

Susan M. Wick, Associate Professor, University of Minnesota, does research on higher plant development and morphogenesis, especially as it is regulated at the cellular level. Recent projects include a study of ryegrass pollen development and the use of immunochemical procedures to examine the roles of microtubules and actin microfilaments in control of the plane of cell division, to characterize microtubule initiation sites, and to determine if there is differential usage of tubulin isotypes in tissues and throughout development in *Zea* and *Arabidopsis*. (Biol 3812)

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.

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.

Brown, N.K. 1984. The occurrence and cause of midsummer zooplankton declines: cyanobacteria and the implication for freshwater ecology. Ph.D. Thesis. U. of M.

Clark, J.S. 1988a. Effect of climate change on fire regimes in northwestern Minnesota. *Nature* 334 (6179):233-235.

Clark, J.S. 1988b. Particle motion and the theory of charcoal analysis: source, area, transport, deposition, and sampling. *Quaternary Res.* 30:67-80.

Clark, J.S. 1988c. Stratigraphic charcoal analysis on petrographic thin section: application to fire history in northwestern Minnesota. *Quaternary Res.* 30:81-91.

Coleman, R.W., and S.L. Welsh. 1981. Plants from northern Manitoba Canada, and their substrates. Abstracts of papers, 93rd Session, Iowa Acad. Sci. p. 56.

Collins, S.L. 1981a. A comparison of nest-site and perch-site vegetation structure for seven species of warblers. *Wilson Bull.* 93(4):542-547.

Collins, S.L. 1981b. Habitat relationships and habitat variability of the wood warblers (Parulidae). Ph.D. Thesis. U of Ok.

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 desertations. *Condor* 90:942-945.

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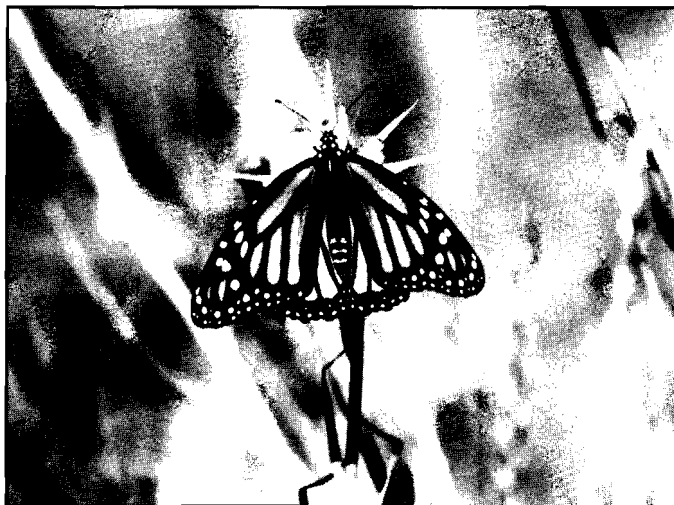
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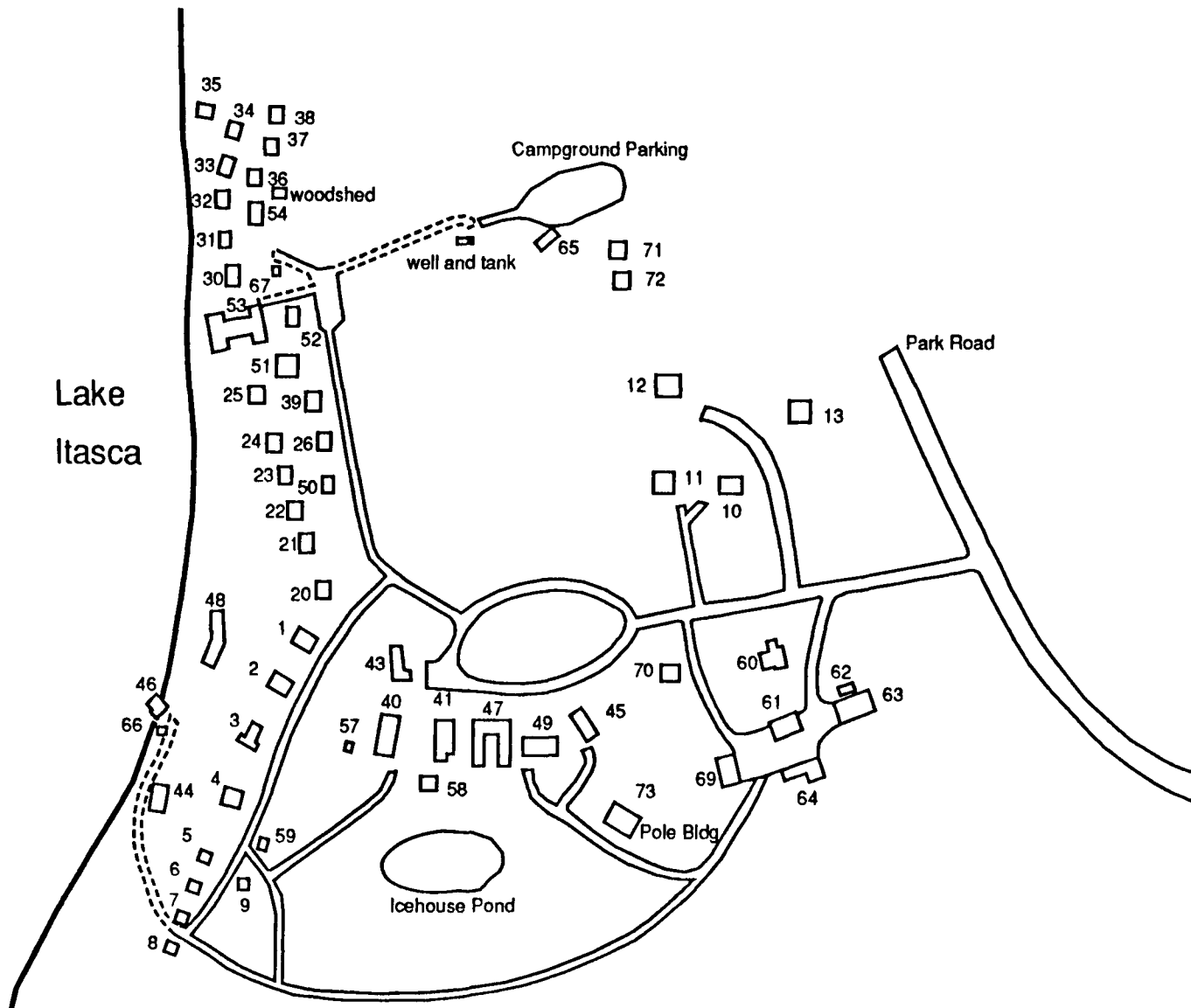
Itasca Biology Program Registration Form

Student Information	Name (last, first, middle)	Soc Sec No.	Univ. of MN I.D. No.	
	Current Street Address	Home phone		
	City	State	Zipcode	Work phone
	Permanent Street Address			
	City	State	Zipcode	
	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 1992		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 16-July 21				
	Term II July 23-August 26				

Hospitalization insurance	Student Hospitalization Insurance University of Minnesota	
	Summer Term I _____	Summer Term II _____
	Name (last, first, middle)	U of M I.D. Number
	If you are taking 3 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.	
	_____ 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.)	
	Name of insurance company or HMO	Policy Number
_____ 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 student service fee.		
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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- 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

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