



UNIVERSITY OF MINNESOTA

Board of Regents

The Honorable Wenda Moore, Minneapolis, Chairman; The Honorable Lauris D. Krenik, Madison Lake, Vice Chairman; The Honorable Charles H. Casey, West Concord; The Honorable William B. Dosland, Moorhead; The Honorable Willis K. Drake, Edina; The Honorable Erwin L. Goldfine, Duluth; The Honorable David M. Lebedoff, Minneapolis; The Honorable Verne Long, Pipestone; The Honorable Charles F. McGuiggan, Marshall; The Honorable David K. Roe, St. Paul; The Honorable Mary T. Schertler, St. Paul; The Honorable Michael W. Unger, St. Paul.

Administrative Officers

C. Peter Magrath, President
Frederick M. Bohlen, Vice President for Finance and Operations
Lyle A. French, Vice President for Health Sciences
Nils Hasselmo, Vice President for Administration and Planning
Stanley B. Kessler, Vice President for Institutional Relations
Kenneth H. Keller, Vice President for Academic Affairs
Frank B. Wilderson, Vice President for Student Affairs
Willard L. Thompson, Director, Summer Session

See Course Enrollment Form, page 248

Cover by David William Krummel

Volume LXXXV, Number 5

March 19, 1982

UNIVERSITY OF MINNESOTA BULLETIN
(USPS 651-720)

Published by the University of Minnesota, Office of Admissions and Records, 150 Williamson Hall, 231 Pillsbury Drive S.E., Minneapolis, Minnesota 55455, monthly January, February, semimonthly May, June, November, four times in March, August, and five times in July. Second-class postage paid at Minneapolis, Minnesota. POSTMASTER: Send address changes to University of Minnesota Bulletin, Summer Session, 135 Johnston Hall, 101 Pleasant Street S.E., Minneapolis, Minnesota 55455.

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



UNIVERSITY OF MINNESOTA

Summer Session 1982



SUMMER SESSION INFORMATION

(612) 373-2925

or write

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

Calendar

May 17	Graduate School application deadline for first term admission.
May 24-28	Advance registration, limited to day school students formally admitted to and currently registered in or previously enrolled during any academic year in a Twin Cities college of the University.
June 1-4, 14	Summer-only day school students and new students may register at this time only. (See section on "Admission" for details.) Open registration for other students as well.
June 7-11	Registration closed.
June 8	Last day to pay graduation fees for first term.
June 15	FIRST TERM CLASSES BEGIN. <i>Note:</i> First Term classes begin on a Tuesday. Graduate School application deadline for second term admission.
June 18	Thesis registration deadline for graduate students.
July 5	Holiday.
July 15, 16, 19	Registration period for second term.
July 16	Last day of class for first term. Last day to pay graduation fee for second term.
July 19	Final Oral Exam Report and all other forms due (graduate students only). SECOND TERM CLASSES BEGIN. <i>Note:</i> Second term classes begin on a Monday.
July 30	Two bound copies of master's or doctoral thesis due.
August 20	Last day of class for second term.

LATE FEES

Late fees are assessed for both late registration and late payment.

Late Registration—No registration will be accepted after June 14 (first term) or July 19 (second term) without payment of the late registration fee, as follows:

June 15-18 or July 20-23	\$10
Thereafter	\$20

Late Payment—A fee of \$20 is charged if tuition and fees are paid after the student's due date, as indicated on the fee statement at the time of registration and on the following chart:

<i>Registration Period</i>	<i>Tuition and Fees Due Date</i>
Through June 14 or July 19	5 workdays after registration
June 15-18 or July 20-22	June 21 or July 23
Thereafter	1 workday after registration

Table of Contents

A Guide to the Summer Session Bulletin	4
Admission and Registration	
Admission	6
Registration, Tuition, Fees	12
University Services, Cultural and Recreational Opportunities	
Services	22
Cultural and Recreational Opportunities	29
Special Programs and Workshops	
College of Education	34
College of Liberal Arts	41
School of Management	45
Department of Military Science	45
School of Public Health	45
Institute of Technology	46
Committee on Institutional Cooperation	46
Summer Arts Study Center	48
Course Descriptions	57
Maps and Building Abbreviations	238
Index	243
Course Enrollment Request	248

Equal Opportunity

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap. In adhering to this policy, the University abides by the requirements of Title IX of the Education Amendments of 1972, by Sections 503 and 504 of the Rehabilitation Act of 1973, and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Lillian H. Williams, Director, Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 100 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, (612) 373-7969, or to the Director of the Office of Civil Rights, Department of Education, Washington, D.C. 20202, or to the Director of the Office of Federal Contract Compliance Programs, Department of Labor, Washington, D.C. 20210.

Access to Student Educational Records

In accordance with regents' policy on access to student records, information about a student generally may not be released to a third party without the student's permission. The policy also permits students to review their educational records and to challenge the contents of those records.

Some student information—name, address, telephone number, dates of attendance, college and class, major, adviser, and degrees earned—is considered public or directory information. To prevent release of such information outside the University while in attendance at the University, at student must notify the records office on his or her campus.

Students are notified annually of their right to review their educational records. The regents' policy, including a directory of student records, is available for review at the information booth in Williamson Hall, Twin Cities campus/Minneapolis, and at records offices on other campuses of the University. Questions may be directed to the Office of the Coordinator of Student Support Services, 260E Williamson Hall, (612) 373-2106.

A Guide to the Summer Session Bulletin

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

- * Courses in which graduate students may prepare Plan B projects.
- † All courses preceding the dagger must be completed before credit will be granted for any quarter of the sequence.
- § Credit will not be granted if the equivalent course listed after the section mark has been taken for credit.
- ¶ Concurrent registration is allowed (or required) in the course listed after the paragraph mark.
- # Consent of instructor is required prior to registration.
- ∇ Consent of division, department, or school offering course is required prior to registration.
- ** A special fee is charged. See section on Course Fees.
- R The letter **R** preceding a course number indicates limited enrollment.

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, as follows: freshman, 0-38 credits; sophomore, 39-89 credits; junior, 90-134 credits; senior, 135 or more credits.

Class standing requirements, unless otherwise noted, are indicated by the course number as follows:

0000 to 0998	no credit
1000 to 1998	primarily for freshmen and sophomores
3000 to 3998	primarily for juniors, seniors, and fifth-year students
5000 to 5998	for juniors, seniors, fifth-year students, graduate students, and professional students
8000 to 8998	for graduate students only

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 lieu of that prerequisite. Instructors may also, at their discretion, waive prerequisites.

Hours and Days—The starting and ending times for classes listed in the Course Descriptions section of this bulletin are indicated in 24-hour clock time. Refer to the table below for help in interpreting these times.

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 = 4:15 p.m.).

Conversion Table

24-hour clock	0800	0900	1000	1100	1200
Standard Time	8:00 a.m.	9:00 a.m.	10:00 a.m.	11:00 a.m.	12:00 noon
24-hour clock	1300	1400	1500	1600	1700
Standard Time	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.	5:00 p.m.

Classes generally last for 50 minutes, beginning and ending at the following times: 0800-0850; 0905-0955; 1010-1100; 1115-1205; 1220-1310; 1325-1415; 1430-1520; 1535-1625. Converting to standard time, a class meeting 1325-1415, for example, begins at 1:25 p.m. and ends at 2:15.

Many classes, especially those in the School of Management meet for more than 50 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 are listed in the Course Descriptions section with an **R** before the course number.

Missing Information—When hours, days, or places of meeting are not listed, consult the instructor or department offering the course.

Changes made subsequent to the printing of this bulletin are published in the *Minnesota Daily*. Lists of changes are also available in the Summer Session office, 135 Johnston Hall

—IMPORTANT—

All students are expected to comply with the regulations and procedures stated in this bulletin.

Please note that first term classes begin on TUESDAY, JUNE 15 EXCEPT where a Monday starting date is specified, and second term classes on MONDAY, JULY 19.

All students not regularly enrolled spring quarter 1982 may be asked to show their United States Social Security numbers.

Admission and Registration

Admission

Summer Session courses are open to a wide range of those who wish to study at the University of Minnesota in the summer—all high school graduates, students with previous college work, high school students between their junior and senior year who have special abilities and interests that can be satisfied by attending college before high school graduation. Summer session students fall into two major categories:

Currently or Previously Enrolled University of Minnesota Twin Cities Campus Students

- Students who have been formally admitted to and are currently enrolled in a degree program on the Twin Cities campus.
- Former University of Minnesota day-school students who were at any time formally admitted to and enrolled in any college of the University of Minnesota, Twin Cities campus. For continuing students, appropriate credits earned in the Summer Session apply to degree programs.
- Students who are graduates of the University of Minnesota, Twin Cities campus, and are returning for summer study.

Summer-Only Students

Students who have never been formally admitted to and enrolled in any Twin Cities college of the University of Minnesota. Included are:

- High school graduates.
- Students from other campuses, colleges, and universities.
- Those whose application and formal admission to Graduate School or any other college of the University of Minnesota is pending or who have been admitted for fall 1982.
- Others who have the approval of the Office of Admissions, including high school students between their junior and senior years.

Summer-only students may register for University classes without formally applying to a University college or program. However, attendance as a summer-only student does not guarantee admission to a regular degree program at the University of Minnesota. If you later apply and are admitted to a degree program, however, appropriate credits you have earned as a summer-only student can be transferred to your degree program. If you plan to take a Graduate School degree, see current Graduate School bulletin for limitations on transfer regulations.

ADMISSION TO DEGREE PROGRAMS FOR THE SUMMER SESSION

Application to a degree program and registration for classes are two separate procedures. If you intend to receive a degree from the University of Minnesota, you must file an application, any necessary credentials, and a credentials examination fee in order to be formally admitted to a college of the University.

You should consult the *General Information Bulletin* and the appropriate college bulletin or brochure for detailed requirements governing admission and granting of

degrees. Most University bulletins may be obtained by writing to the Office of Admissions and Records, 110 Williamson Hall, 231 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455, or by calling (612) 373-2153. Zip codes MUST accompany requests for bulletins and brochures.

Entering Freshmen

Summer session offers high school graduates an opportunity to begin college work without the usual summer delay. Not all freshman-admitting colleges admit freshmen to their programs in the summer. Those that do, however, will accept high school graduates for admission in either term.

Of the six freshman-admitting colleges on the Twin Cities campus, three—the General College, Institute of Technology, and College of Liberal Arts—do not admit new freshmen to begin degree programs in the summer. If you plan to enter a degree program in one of these colleges, you should apply for fall quarter admission. However, you may take summer courses under summer-only status and apply them for degree credit upon admission to the college and registration in a regular quarter of the academic year. If admitted, you will attend the orientation-registration program with other students entering the college fall quarter.

To be assured full consideration in time for summer admission to a degree program (for all freshman-admitting colleges except GC, IT, and CLA) and registration for summer session, your freshman application must be received by May 1 in the Office of Admissions, 240 Williamson Hall, 231 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455. With your completed application form, you must present transcripts from the last high school and all colleges that you have attended, and a \$10 credentials examination fee. Most colleges require ACT or PSAT test scores, and some have other special admission requirements (see the *General Information Bulletin* or the appropriate college bulletin).

Undergraduate Applicants With Previous College Work

Students who have previously completed college work at another institution or as summer-only students may be admitted to degree programs of most colleges and schools of the University of Minnesota during the summer session. In addition, University of Minnesota students wishing to change their college of enrollment (e.g., from CLA to Education) may be admitted to the new college during the summer session. The General College, School of Management, Institute of Technology, College of Liberal Arts, and some professional and paraprofessional programs that begin course sequences during a specified term do not, however, admit new students for the summer session. If you plan to enter a degree program in one of these units, you should apply for fall quarter admission and register for one or both summer terms under summer-only status. Appropriate courses completed satisfactorily during the summer will be accepted for degree credit when you have been admitted to the unit and have registered for one of the regular quarters of the school year.

May 1 is the last date for application with assurance of full consideration for summer admission to most colleges. Applications, with the \$10 credentials examination fee and the necessary credentials, should be sent to the Office of Admissions, 240 Williamson Hall, 231 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

High School Students

Outstanding high school students who have special interests that can be satisfied by attending college before high school graduation may apply for summer session admission

Admission and Registration

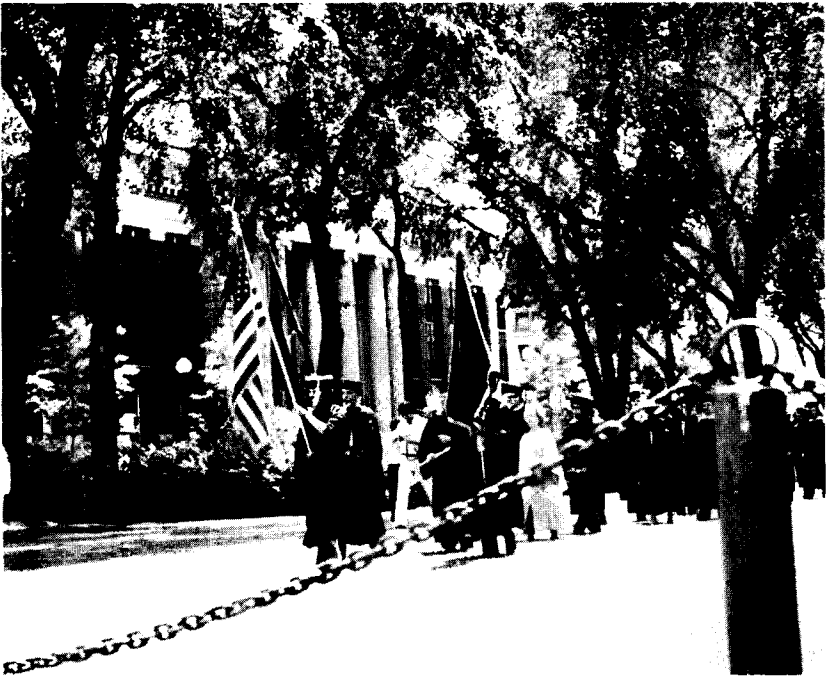
to take work between their junior and senior years in high school. Registration is usually restricted to courses at the 1000 level. Credits earned will be counted toward graduation if the student later enrolls in the University.

Interested students must apply through the Office of Admissions by June 1. Applications must be accompanied by a copy of the high school transcript and a written recommendation from the high school counselor.

Senior Citizen Education Program

Minnesota residents age 62 and over who meet academic prerequisites may register for University classes tuition free when space is available after tuition-paying students have been accommodated. Under the Senior Citizen Education Program, they may audit courses free of charge or may take courses for credit at \$6 per credit. (Auditors prepare daily assignments and participate in class discussions but do not take examinations or receive grades, and no official record is kept of their work.) Senior citizens do not pay the student services fee but must pay any required laboratory or materials fees.

Registration for the Senior Citizen Education Program will be held on June 16 for first term courses and on July 20 for second term courses. Persons who wish to register should come to 202 Fraser Hall (150 Williamson Hall for those with mobility impairments, or 130 Coffey Hall for St. Paul-based students) and bring identification to verify age and Minnesota residency.



GRADUATE STUDENTS

The Graduate School offers opportunities for advanced study and research in many fields. It brings together in a single academic unit graduate programs and offerings of all units of the University. Degrees offered include the master of arts, master of science, doctor of philosophy, doctor of education, doctor of musical arts, and the specialist certificate in education and in library science.

Any student with a bachelor's degree or its foreign equivalent from a recognized college or university may apply to the dean of the Graduate School for admission. Applicants with the necessary background for their chosen major field, an excellent scholastic record, and appropriate professional qualifications may be admitted for graduate work on recommendation of the graduate faculty in the proposed major field and approval of the dean of the Graduate School.

Acceptance for a summer institute offering course work at the graduate level does not, in itself, establish permission for registration in the Graduate School. Normal procedures for admission to the Graduate School must be followed.

Graduate Student Admission

Students planning to apply credits earned in summer session toward graduate degrees or who expect to receive graduate credit for such work should apply for admission directly to the Graduate School. Applications must be submitted *complete in every detail*—one official transcript from each college attended, the credentials examination fee, and test results if required—by May 17, 1982 for first term admission and June 15, 1982 for second term admission.

Transient Graduate Students

A student currently enrolled in an advanced degree program of a graduate school 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 credentials examination fee or supporting materials are required for the transient student forms. Permission to register as a transient student will be granted, to the applicant who qualifies, for one summer session (first and/or second term) 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, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Students with bachelor's degrees who are not interested in earning graduate credit do not register in the Graduate School. Instead they may apply for admission as adult special students or register as special summer-only students. If they plan to subsequently apply for admission to the Graduate School, they should consult the current *Graduate School Bulletin* or contact the Graduate School for transfer regulations. Only graduate-level courses taught by members of the graduate faculty may be transferred.

It should be noted that courses numbered 8000 and above are open only to students registered in the Graduate School.

Graduate Student Registration New Students

- If you are registering for the first time in the Graduate School, you must obtain your registration materials in 316 Johnston Hall.
- If your bachelor's degree is pending, report to 307 Johnston Hall.

Graduate Student Registration Previously Registered Students

- To clear any Graduate School holds take the following steps:

MAST PGM	Bring signed master's program to 316 Johnston Hall.
DOCT PGM	Bring signed doctoral program to 316 Johnston Hall.
SPEC PGM	Bring signed specialist program to 316 Johnston Hall.
THES TITLE	Bring signed thesis title to 316 Johnston Hall.
TRANSCRIPT	Bring bachelor's transcript, showing degree awarded, to 306 Johnston Hall.
PROJ TITLE	Bring project title to 316 Johnston Hall.
GPA	Bring letter releasing hold from major field director of graduate studies to 316 Johnston Hall.
INCOMPLETE	Bring letter releasing hold from major field director of graduate studies to 316 Johnston Hall.
DEAN'S HLD	Come to 306 Johnston for explanation and instructions for clearing.
DOCT CAND	Come to 316 Johnston for explanation and instructions for clearing.
- Read pages 13.
- Have your adviser sign your Course Enrollment Request.
- Pay your fees. *Graduate students are subject to the same deadlines for registration and fee payment as undergraduates and will be assessed the same penalties for failure to meet those deadlines. See pages 2.*

Official Doctoral Candidates—If an official doctoral candidate (one who has passed the preliminary oral examination) wishes to register during the summer, registration materials may be obtained in 316 Johnston Hall.

Maximum Credits—The maximum credit load for a summer term is 10. Refer questions to an Assistant to the Dean, 306 Johnston Hall.

Grading Option—Two grading systems, A-B-C-D-N and S-N, are used in the Graduate School. You must designate your grading option for each course at registration. However, if either A-N only or S-N only is printed after the prerequisite statement for a course, you *must* register for that grading system.

Graduate Student Commencement Deadlines

Thesis Registration: Plan A Master's, master of engineering, D.M.A., Ed.D., and Ph.D. students <i>must</i> register a typed draft of the thesis (or project) with the Graduate School approximately one month before the examination.	June 18
Final Examination Report and all other forms and fees submitted.*	July 16
Bound thesis or project (2 copies) submitted to Graduate School (Plan A Master's, master of engineering, D.M.A., Ed.D., and Ph.D.).	July 30
Degree Award Date	August 20

For ALL degree candidates: Application for Degree submitted to and diploma fee assessed at the Registration Center, 202 Fraser Hall (or 150 Williamson Hall for students with mobility impairments); Commencement Attendance Card filed with the Graduate School Office, 316 Johnston Hall.

*For D.M.A., Ed.D., and Ph.D. students only: Thesis Release Card, Survey of Earned Doctorates, 2 copies of Thesis Abstract, microfilming forms and fee, continuous registration fee, final quarter fee.

If you have questions on the above deadline, call (612) 373-5129.

Doctoral Oral Examinations—You must schedule your preliminary and final oral examination *at least one week in advance* in 316 Johnston (373-7912). These examinations will not be scheduled from the beginning of second term of summer session to the opening of fall quarter unless members of the assigned committee can be assembled without substitution.

Candidacy for a Degree

Admission to the Graduate School does not admit a student to candidacy for a degree. Admission to such candidacy is contingent upon the judgment by members of the graduate faculty that the student shows sufficient promise to be permitted to proceed toward a degree.

Following registration for at least one term, the student who expects to obtain a master's degree must present the program and thesis title (for Plan A) or program (for Plan B) for the adviser's recommendation and for referral to the Graduate School for action by the appropriate unit committee. Approval by the Graduate School confirms the student's admission to candidacy for the degree.

Requirements for Advanced Degrees

For information concerning requirements for graduate degrees, refer to the current *Graduate School Bulletin*.

Registration, Tuition, Fees

So that students will receive maximum benefit from the short summer session terms and late entrants will not disrupt courses in progress, students are expected to complete their registration during the specified registration periods.

All students not regularly enrolled during spring quarter 1982 may be asked to show their United States Social Security number.

Registration will not be open between June 7 and June 11.



COLLEGE OFFICES

Agriculture, 277 Coffey Hall (St. Paul) 373-0921
Biological Sciences, 223 Snyder Hall (St. Paul) 373-3648
Dental Hygiene, Health Sciences Unit A 5-164 373-3271
Dentistry, Health Sciences Unit A 15-106 373-3454
Education, ECDO, 1425 University Avenue S.E. 373-2257
Forestry, 10 Green Hall (St. Paul) 373-0842
General College, 10 Nicholson Hall
Graduate School, 316 Johnston Hall 373-2952

(Students registered in the Graduate School in spring quarter may obtain registration materials in the office of their major department.)

Home Economics, 32 McNeal Hall (St. Paul) 373-0933
Liberal Arts

Regular students: college offices
Summer-only students: 18 Johnston Hall (373-2877)

School of Management, 225 Management/Economics (West Bank) 373-3701
Medical Technology, 3-170 Jackson Hall 373-9670
Medicine, 3-105 Owre Hall 373-7690
Military Science, 108 Armory Building
Mortuary Science, 114 Vincent Hall 373-3870
Nursing, 5-140 Health Sciences Unit F 373-8208, 373-3462
Pharmacy, 5-110 Health Sciences Unit F 373-7997
Physical and Occupational Therapy, 271 Children's Rehabilitation Center 373-9024
Public Health, 1360 Mayo Memorial Building 373-8060
Institute of Technology, 105 Lind Hall 373-3227, 373-3228
University College, Inter-College Program, 213 Temporary North of Appleby (376-1256),
University Without Walls, 201 Wesbrook (373-3919)
Veterinary Medicine, 301 Veterinary Science Building (St. Paul) 376-3886

REGISTRATION PROCEDURE

Steps in the registration procedure vary slightly depending upon whether you are a regular University of Minnesota student or a summer-only student. The definitions of these two categories are outlined on page 6.

Currently or Previously Enrolled University of Minnesota Twin Cities Campus Students. First term registration dates are May 24-28, June 1-4, and June 14. Second term registration dates are July 12-16, and July 19.

1. College of Liberal Arts students may go directly to the Registration Center at 202 Fraser Hall to complete their registration.
Graduate School students see page 10 for additional information.
2. Students in all other colleges should go first to their college office (college office addresses and telephone numbers are listed above) for instructions and registration materials. Complete the registration form using the information in the Course Descriptions section of this bulletin.
3. Obtain approval of your study program at your college office. (departmental office in I.T.) if required.
4. Turn in your completed registration materials and obtain your computer-printed schedule and fee statement. The Registration Center on the Minneapolis campus is

Admission and Registration

located in 202 Fraser Hall (150 Williamson Hall for mobility-impaired students) and in 130 Coffey Hall for St. Paul-based students. The Registration Centers are open 8:15 to 4:15.

5. Pay fees at the Bursar's Office in Williamson Hall, at the West Bank Bursar's Office, at the Cashier's Office in Coffey Hall, or by mail. The hours are 8:15 a.m. to 3:30 p.m. Monday through Friday. If mailed, fees must be paid or postmarked no later than Monday, June 14 for first term, or Monday, July 19 for second term.
6. Attend the first class meeting. If you miss the first meeting, you may lose your place in class to another student, unless you notify the instructor in advance of an unavoidable absence.

Summer-Only Students. First Term Registration Dates Are June 1-4, and June 14. Second term Registration Dates Are July 15, 16, 19.

1. Please go directly to the office of the college offering the instruction. College offices are listed on page 13. Complete your registration forms using the information found in the *Course Descriptions* section of this bulletin.
2. Obtain approval of your study program at the college office (departmental office in I.T.).
3. Turn in your completed registration materials and obtain your computer-printed schedule and fee statement. The Registration Center on the Minneapolis campus is located in 202 Fraser Hall (150 Williamson Hall for mobility-impaired students), and in 130 Coffey Hall on the St. Paul campus. Registration Centers are open 8:15-4:15.
4. Pay fees at the Bursar's Office in Williamson Hall, at the West Bank Bursar's Office, at the Cashier's Office in Coffey Hall, or by mail. The hours are 8:15 a.m. to 3:30 p.m. Monday through Friday. If mailed, fees must be paid or postmarked no later than Monday, June 14 for first term, or Monday, July 19 for second term.
5. Attend the first class meeting. If you miss the first meeting, you may lose your place in class to another student, unless you notify the instructor in advance of an unavoidable absence.

COLLEGE OF EDUCATION STUDENTS

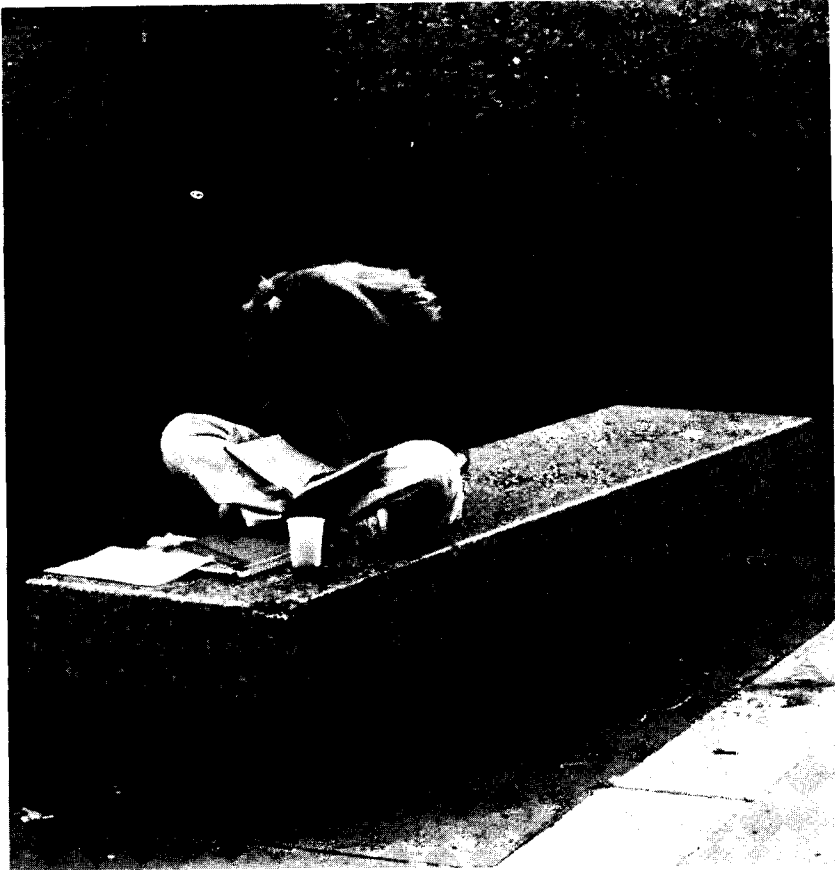
Mail Registration—Students registering in the College of Education (B.S., M.Ed., adult special, or summer-only) may register by mail. Registration materials can be obtained by completing the request form found at the back of this bulletin and sending it to the Summer Session office. (*Note:* This does not apply to students registering in the Graduate School.) For more information, see the College of Education section of this bulletin.

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, see the current *General Information Bulletin*, check with your college office, or call or visit a Student Relations staff member in the Office of Registration, Student Records, and Scheduling, 150 Williamson Hall (376-1680).

CHANGES IN REGISTRATION: CANCELLATIONS, ADDITIONS

If you decide to stop attending class, you *must officially cancel* by submitting to the Registration Center a properly approved form; simple failure to attend class does not, by itself, constitute cancellation. Most colleges require special approval for cancellations after the end of the second week. Graduate students may not change their registration after the last day of classes of either term. For regulations governing cancellations and additions in your college, check with your college office.



TUITION AND INCIDENTAL FEES¹

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

TUITION²

Per term; per credit\$26.50

STUDENT SERVICES FEE³

Per term; not included in tuition fee\$34.25

Exceptions—Tuition for students in medicine, nursing, dentistry, veterinary medicine, physical therapy, occupational therapy, pharmacy, and those taking MBA courses is the same as it is during the regular academic year plus a 15 percent increase. Special tuition is collected for the Itasca Biology Session.

Regents' Scholarships—University staff members employed during the summer session are entitled to the same tuition privileges in the summer as during the academic year. Regents' scholarship applicants should check with the Human Resources Development Division for limitations.

Health Coverage

The student services fee includes prepayment for outpatient care at the Boynton Health Service. It does not include hospitalization or surgical benefits. Instead, the Board of Regents requires that all students have hospital insurance protection. Students who do not have private hospitalization insurance must apply for University sponsored accident and sickness coverage at the time of registration, and an additional fee will be charged. The fees for accident and sickness single coverage are: First Term (5-week coverage)—\$17.00; Second Term including interim, (9-week coverage)—\$30.00; Total for both terms (14-week coverage)—\$47.00. Dependent coverage is also available. Further information concerning accident and sickness coverage can be obtained from the Student Insurance Office of the Boynton Health Service, W227A Boynton, and by calling 379-9259.

Students With Other Coverage For Outpatient Health Services—Students who belong to a health maintenance organization (HMO) which provides outpatient services duplicating those of Boynton Health Service, may apply for a refund of \$17.50 per 5-week term from the student services fee. They may also apply for a refund if they are covered by an insurance policy with a deductible clause pertaining to outpatient services and the deductible amount has been satisfied. Students who receive a refund for this portion of the fee waive all outpatient benefits offered by the Boynton Health Service. To qualify for a refund, proof of coverage and a paid fee statement must be presented to the cashier in Room W220 of the Health Service no later than the end of the first week of the applicable term. A refund check will be sent through the mail.

Students who do not pay the Health Service fee may use the Health Service on a fee-for-service basis.

For further information, contact Boynton Health Service, Room W220, telephone 373-3780.

Minnesota Public Interest Research Group (MPIRG)

MPIRG is a nonprofit, nonpartisan, student-controlled corporation representing student interests in areas such as environmental quality, consumer protection, resource planning, health care delivery, occupational safety, community housing problems, race and sex discrimination, corporate and governmental agency review, and similar matters of urgent and long-range concern.

¹Tuition and fees are subject to change.

²Tuition includes a 15 percent increase associated with a state revenue shortfall.

³All students registering for three credits or more must pay this fee.

A fee of 85¢ per term is charged to support MPIRG programs and operations. A student may decline to pay the fee at the time of registration or may obtain a refund at a location and date that will be announced in the college newspaper *Minnesota Daily*.

COURSE FEES

(All fees are per term unless otherwise indicated. Fees are subject to change.)

Students will pay the following course fees in addition to tuition:

HEALTH SERVICE (field trips and foreign study)

Required of students on University field trips such as those in anthropology, civil engineering, geology, mines, and other courses—\$17.50 per summer term (covers outpatient medical care for emergency illness or accident at the nearest medical facility on approval of the person in charge of the group, up to a maximum of \$50 per visit).

Students on University field trips and in University-sponsored foreign travel groups are required to sign up for University-sponsored hospital insurance if they do not have private coverage.

ITASCA BIOLOGICAL STATION

Laboratory Fee—\$8.50

Research Fee—minimum \$2.50 per week¹

MATHEMATICS

Math 0009—\$85.00²

COMPOSITION

Comp 0001—\$85.00²

MODERN LANGUAGES

German—\$425 for program in Munich, Germany

MUSIC

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: \$96 for 0 to 2 credits. Music and music education majors who have passed the entrance examination take applied courses without fee. M.F.A. and D.M.A. students at the 83xx level also take applied courses without fee. Music and music education majors taking extra credits or taking lessons on a second instrument pay \$32 per 2 credits.

PHARMACY

Phar 0295—\$30

Phar 0399—\$35²

PUBLIC HEALTH

PubH 5755 (Administrative Residency)—\$200

SOIL SCIENCE

Soil 3520, 5510—\$15

Soil 5565—\$25

STUDIO ARTS³

ArtS 1101, 1102, 1105, 1701, 1702, 3110, 3120, 3140, 3160, 3710, 3720, 5110, 5120, 5160, 5190, 5710, 5740, 5790—\$15

ArtS 1510, 1520, 1530, 1811, 1812, 3510, 3520, 3530, 5510, 5520, 5530, 5590—\$30

ArtS 3810—\$35

ArtS 1301, 1302, 3301, 3302, 3304, 3305, 3410, 5310, 5320, 5340, 5350, 5390, 5410, 5810—\$40

ArtS 3303, 5330—\$50

ArtS 3970, 3980, 5970, 8000-level courses—Arranged

¹In lieu of tuition. Researchers must also pay the \$8.50 laboratory fee.

²In lieu of tuition.

³Materials fee collected by the Department of Studio Arts.

Admission and Registration

SPECIAL FEES

MUSIC PRACTICE ROOM

5 hours per week for 5 weeks—\$1.75 per term
10 hours per week for 5 weeks—\$3 per term (50c per hour for each additional hour per week)
Organ—25c per hour

PHYSICAL EDUCATION¹

Cooke Hall

Locker and Towel Fee—\$.50 per day, \$.7 per one or both summer terms
Gym Clothing Rental Fee—\$10

Norris Hall, St. Paul Gymnasium

Locker and Towel Fee—\$.7

SPEECH AND HEARING CLINIC

University of Minnesota students, staff members, and faculty members are not charged for clinical services provided in the Speech and Hearing Clinic.

Outpatients:

Speech Pathology, Clinical Management—\$.2 per session
Audiologic Evaluation—\$.25
Audiologic Evaluation for Senior Citizens—\$.15
Audiology Screening—\$.2
Audiology Screening Follow-up—\$.5

MISCELLANEOUS

International Student Aid Fee—\$.2 per term (required of all nonresident noncitizens; optional for resident noncitizens)
Credentials Examination Fee—\$.10 (\$.15 for Graduate School, School of Dentistry, Law School, Medical School, and College of Veterinary Medicine [\$5 if previously granted or currently completing a baccalaureate degree at the University])

Graduation Fee (each degree)—\$.12.50 for small diploma; \$.20 for large diploma

Overseas Diploma Mailing Fee—\$.3 for small diploma; \$.6 for large diploma (charged if student wants diploma sent air mail to address outside the United States, Canada, or Mexico)

Special Examination—\$.30

Record Service Fee—\$.6 (required of all new students; provides three certified copies of student records; \$.1 charged for each additional copy requested)

Orientation Fee—\$.8.50 required of all new students (except graduate students who attended the Twin Cities campus as undergraduates); not required for students in law, medicine, veterinary medicine, dentistry, or public health or in M.Ed. or M.Ag. programs.

DEPOSIT CARDS

Deposit cards may be purchased from the bursar (or from the cashier, Coffey Hall, for biochemistry courses in the College of Biological Sciences). Chemistry cards are \$20; pharmacy cards are \$10; biochemistry (College of Biological Sciences and Medical School) and art cards are \$5.

Laboratory materials and breakage will be charged against the student's deposit card. Any unused balance will be refunded at the end of the course.

The student must present a deposit card to be assigned a laboratory desk.

¹Fees are the same whether locker and towels or gym clothes are rented for one or both terms.

REFUND OF FEES

Students who *officially cancel* their summer session registration without attending class will be granted a 100 percent refund of fees. After classes begin, a student can receive a 100 percent refund *only* with a signed statement from the instructor(s) testifying that the student *never* attended class. Students who *officially cancel* after having attended class will be granted a refund of fees on the following basis:

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

AUDITORS

Fees for auditors are the same as for students registered for credit. Permission to attend a class as an auditor may be granted by the dean of the college or school offering the course, with the consent of the department concerned. The procedure for registration as an auditor is the same as for registration for credit, except that "auditor" should be indicated on the registration form in the credits column.

AMOUNT OF WORK

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

FINAL EXAMINATIONS

Final examinations are normally held during the last scheduled class hour for each course. A student who misses the final exam in a course will generally receive a grade of I (incomplete), in accordance with the instructor's announced policies for making up work.

GRADING

Academic achievement of Twin Cities campus students is evaluated according to two grading systems: A-B-C-D-N and S-N. The S indicates satisfactory work based on standards announced by the instructor; the N indicates no credit. There is no F grade; a student who is not doing satisfactory work will generally receive an N.

A good explanation of the system appears in the current *College of Liberal Arts Bulletin*. Graduate students should consult the *Graduate School Bulletin* section on grading.

If either A-N only or S-N only is printed after the prerequisite statement for a course, students must register for that grading system. If no grading system is listed, either A-N or S-N may be acceptable. For information on courses offered for S-N grading and any degree or quarter limits on credits taken under this system, students should consult both their own college office and the college offering the course. Grading options may not be changed after the second week of classes.

REGULATIONS GOVERNING GRANTING OF DEGREES

The Board of Regents will confer the degree appropriate to the course of study pursued, subject to the following conditions:

1. Completion of Curriculum Requirements—Certification by the University Records Office of the completion of all requirements of the course of study as outlined in the college bulletin, or their equivalent as determined by the faculty of the college.

2. Recommendation by the faculty.

3. Satisfaction of the Residence Requirement—The student must complete at least one year (45 credits) in residence at this University. If the term of residence is only one year, that year must be the senior year. In any case, the student must spend two quarters of the senior year in residence. This last requirement may be waived by individual colleges. In addition, special residence requirements must be met in several of the schools and colleges. Extension courses (not correspondence courses) may apply toward the residence requirement.

4. Payment or satisfactory arrangement for payment of all financial obligations to the University.

5. Payment of Graduation Fee—(each degree)—\$12.50 for small diploma; \$20 for large diploma.

Attendance at commencement is optional. There is no commencement during the summer; students planning to graduate during the summer may attend commencement in June or December.

6. Payment of Placement Service Fee—Required of candidates earning degrees from:

College of Education (except recreation, park and leisure studies majors) \$20



University Services, Cultural and Recreational Opportunities



Services

HOUSING

Minneapolis Residence Halls

All of Centennial Hall and a small number of spaces in Middlebrook Hall have been reserved for summer session students for 1982. Centennial Hall is a coeducational non-air-conditioned residence hall on the East Bank in close proximity to the Health Sciences. Most of Centennial's rooms are singles. A seven day per week (19 meal) food service program under the direction of a professional food manager is part of the contract and will be provided in a newly remodeled food service.

Middlebrook Hall is a coeducational, air-conditioned residence hall on the West Bank. Most of its rooms are doubles. A food service program similar to that offered in Centennial will be provided in Middlebrook.

For both summer terms in Centennial and Middlebrook, meal service begins on the first day of class.

Applications for residence will be filled in order of date received. To assure a choice of rooms, applications should be submitted as early as possible. For information and application forms write to: Housing Office, Comstock Hall, 210 Delaware Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. The Housing Office telephone number is (612) 373-7542.

St. Paul Residence Hall

Bailey Hall will be open as a conference facility during the summer of 1982. Depending on demand by summer session students for space in Bailey Hall, a few spaces for students may be available. Special arrangements may be required for food service. If Bailey is open for students during either summer term, accommodations will be in non-air-conditioned double rooms.

Off-Campus Housing—Private Residence

Apartments, houses, duplexes, sublets, and rooms in private homes, rooming houses, cooperatives, fraternities, and sororities are listed by the Housing Office. Most units are listed about a month before they become available for rental.

Information about housing facilities and assistance in locating off-campus residence accommodations may be secured from the Housing Office, Comstock Hall, 210 Delaware Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, for Minneapolis; or 190 Coffey Hall, 1420 Eckles Avenue, University of Minnesota, St. Paul, Minnesota 55108, for St. Paul. The telephone number of the Minneapolis Housing Office is (612) 373-7542; the number of the St. Paul office is (612) 373-0822.

UNIVERSITY CHILD CARE CENTER

The University Child Care Center, designed as a model facility with several unique features, provides care for infants and toddlers as well as preschool children. The center is open Monday through Friday throughout the year from 7:30 a.m. to 5:30 p.m. Children are divided by age and individual needs into three groups: infant (3-15 months), toddler (16-30 months), and preschool (30 to 60 months). Fees for care are charged on a sliding scale based on ability to pay. For further information visit the University Child Care Center, 1818 4th Street South, Minneapolis, Minnesota 55454; or call 376-5265. A limited number of summer-only placements are available.

UNIVERSITY POST OFFICE

Many post office services are available at the University contract stations located on the ground floor of Coffman Memorial Union in Minneapolis (telephone 373-2432) and in Coffey Hall in St. Paul (telephone 373-1612). Both locations are open Monday through Friday, 8:00 a.m. to 4:10 p.m. in Minneapolis and 9:00 a.m. to 4:15 p.m. in St. Paul.

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

STUDENT COUNSELING BUREAU

The Student Counseling Bureau, 101 Eddy Hall (373-4193), offers counseling on a year-round basis. This service is available to students in all of the University's colleges and schools and at any stage of academic progress, from beginning freshmen to students at graduate and professional levels. The range of concerns brought to the Student Counseling Bureau is wide, including career choice, educational planning, reading and study skills improvement, interpersonal relationships, and personal development. Tests and inventories are often used to assist in the counseling process. Referrals are sometimes made to appropriate University and community resource organizations. There is no fee for students, and counseling and testing information is confidential.

Counselors are available from 8:00 a.m. to 4:30 p.m. Monday through Friday. Walk-in counseling is available for crisis or emergency situations. Students may call or visit the reception desk, 101 Eddy Hall (373-4193) on the Minneapolis campus; the St. Paul Student Counseling Bureau, 190 Coffey Hall (373-1140); or any of the other services described below.

Campus Assistance Center—This center furnishes information or referral concerning any problem or question about the University, whether academic, administrative, or personal. Both walk-in and telephone service is available (101 and 209 Eddy Hall, telephone 373-1234).

Digital Information Access Line (DIAL)—This program is a call-in service offering over 300 taped messages on a wide range of topics, including career planning, social and recreational activities, student services, legal problems, health care, child care, and academic matters. Interested persons may call 373-1857 between 8 a.m. and 5 p.m. Monday through Friday to request a tape on a particular topic or to request a brochure listing tapes by subject.

Reading and Study Skills Center—Students may visit this center for assistance with reading, note taking, effective study, and other academic skills (104 Eddy Hall, telephone 373-4193).

Occupational Information Library—Educational catalogs and occupational descriptions are available for students who need information to help them in planning their careers (9 Eddy Hall).

Disabled Student Counseling and Information Office—Counseling, information, problem solving, academic assistance, and referral services are provided for students and prospective students with physical or learning disabilities (113 Eddy Hall, telephone 373-3714 Voice or TTY, N105 Elliott for mobility impaired students). Assistance includes sign language interpreters for students with hearing impairments.

OFFICE OF STUDENT EMPLOYMENT (OSE)

The Office of Student Employment (OSE) Room 6, Morrill Hall, assists students seeking part-time work either with the University or with private or public employers.

To be eligible for summer employment on student status, people **MUST** be enrolled and have paid fees for a minimum number of credits for either spring quarter or the summer session. More information on minimum credits is available from the OSE.

OSE is a referral service, not a placement service. Students apply in person for vacancies posted on the OSE bulletin board. If an individual is eligible for student status and fulfills the minimum qualifications for a job, a referral is issued to the student, who contacts the hiring department or employer for an interview appointment. Chances of finding a summer job depend on the number of jobs available and the student's qualifications and hours available. Most vacancies are 29 hours per week or less and are maintenance or clerical jobs. OSE does not handle graduate academic positions.

OSE also has a temporary placement service for students who want to work a flexible schedule in temporary jobs at the University. For information contact the Student Emergency Service.

CAMPUS BUS SERVICE

Detailed information about 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 at the following locations: Coffman Union, West Bank Union, Williamson Hall, the St. Paul Student Center, Coffey Hall, the Housing Offices in Comstock and Coffey Halls, and the Transit Services Office at 2818 Como Ave S.E., Mpls., Mn. 55414.

Information about city bus routes serving the University area, including semi-express bus service between the campus and selected Twin Cities residential areas (Route 52), also is available at the above locations, or from the Metropolitan Transit Commission, 827-7733.

Schedules and fares are subject to change; call the Transit Services Office at 373-0374 for current information.

Note: There is **no** campus bus service during the summer months on Saturdays, Sundays, or on official University holidays.

Intercampus Bus—Routes 13-G, 13-J, 13-L, 13-N, 13-S, and 13-U

Free transportation between the Minneapolis and St. Paul campuses is available Monday through Friday on special buses labeled "Route 13—University of Minnesota."

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

7:05 a.m. to 1:25 p.m.—every 10 minutes

1:25 p.m. to 5:25 p.m.—every 15 minutes

Buses that leave at 25 and 55 minutes after each hour between 7:25 a.m. and 4:55 p.m. travel via University Avenue (Route 13-U). The other buses travel via Como Avenue.

Bus schedules are subject to change. Current schedules and route maps are available at the information centers listed above. Schedules also are posted at each bus stop along the route.

Route Key:

- Route 13-A: Travels from Blegen Hall on the West Bank to Jones Hall on the East Bank (and vice versa) with stops at Lind Hall and the Architecture Building. **This bus is wheelchair accessible.**
- Route 13-G: Travels from Blegen Hall on the West Bank to the St. Paul Student Center (and vice versa) via Jones Hall and Como and Larpenteur Avenues. ("Grove" bus)
- Route 13-J: Travels *only* from Jones Hall to the St. Paul Student Center (and vice versa) via Como and Larpenteur Avenues.
- Route 13-L: Travels from Blegen Hall on the West Bank to the St. Paul Student Center (and vice versa) via Jones Hall and Como and Larpenteur Avenues.
- Route 13-N: Travels from Blegen Hall on the West Bank to the St. Paul Student Center and Northern portions of the St. Paul campus via Jones Hall and Como and Larpenteur Avenues.
- Route 13-S: Travels from Blegen Hall on the West Bank to the St. Paul Student Center and northern portions of the St. Paul campus, (and vice versa) via Jones Hall and Como and Larpenteur Avenues. **This bus is wheelchair accessible.**
- Route 13-U: Travels from Blegen Hall on the West Bank to the St. Paul Student Center (and vice versa) via Washington and University Avenues.

There is no charge to ride the intercampus buses, provided you board and exit at on-campus stops. If you board or exit at an off-campus stop, the fare is 60¢ or one punch of a special reduced-fare discount card. These discount cards, which allow 20 rides for \$10, can be purchased at any University bursar or cashier office. (Note: Fares are subject to change.)

East-West Bank Bus—Routes 13-A, 13-B, 13-G, 13-L, 13-N, 13-S, and 13-U

Free bus service also is available Monday through Friday between the East and West banks at 10-minute intervals between 7:05 a.m. and 1:25 p.m., and at 15 and 30 minute intervals between 1:25 and 5:25 p.m. Routes 13-B, 13-G, 13-L, 13-N, and 13-S travel between Blegen Hall and Jones Hall. Route 13-A travels between Blegen Hall and Jones Hall with stops at Lind Hall and the Architecture Building. **This bus is wheelchair accessible.** Route 13-U travels between Blegen Hall and Lyon Laboratory/Amundson Hall.

Como Avenue Park-and-Ride Complex

Free parking is available for 700 cars at the Como Avenue park-and-ride complex, located near the intersection of Como and 29th Avenues S.E. (just a few blocks west of Highway 280). Follow the "U of M Parking" signs in the area. A 25¢ fare (50¢ per round trip) is charged to ride the campus buses between the complex and the St. Paul or Minneapolis campus. Bus service to and from either campus is frequent: every 10 minutes between 7:10 a.m. and 1:30 p.m. and every 30 minutes between 1:30 and 5:30 p.m. The bus trip to either campus takes approximately 5 minutes. For those not wishing to worry about having the correct change, bus fare cards offering 20 rides for \$5 can be purchased at any University bursar or cashier office. (Note: Fares are subject to change.)

BOYNTON HEALTH SERVICE

Outpatient services—The Boynton Health Service provides outpatient services during the summer session on a basis similar to that during the academic year. Physicians, dentists, and nurses are on duty. General and specialist outpatient services are provided without charge to all students who have paid the full student services fee. A student who attends and pays the full student services fee for both summer terms is eligible for regular outpatient benefits without extra charge until Monday of Welcome Week in the fall. Fees are charged for certain services and products, such as dental work, prescription drugs, eye glasses, and routine physical examinations.

Health Service Fee Refund—A student who belongs to a health maintenance organization (HMO) which provides outpatient services duplicating those of Boynton Health Service may apply for a refund of the Health Service portion of the student services fee in the amount of \$17.50 per 5-week term. Proof of HMO membership and a paid fee statement must be presented to the cashier in room W220 of the Health Service no later than the end of the first week of the applicable summer term. A refund check will be sent through the mail.

Students who do not pay the Health Service fee may use the Boynton Health Service on a fee-for-service basis. HMOs usually do not reimburse members for nonurgent services obtained away from the HMO.

Hospitalization and Surgical Benefits—The Health Service portion of the student services fee does not provide any hospitalization or surgical benefits. Instead, the Board of Regents requires that all students have hospitalization insurance protection. If not already insured, students must purchase University sponsored accident and sickness insurance at the time of registration.

Those students who have private insurance, or who are eligible for Medicaid, need not purchase the University sponsored accident and sickness insurance. The name of the insurance company and the policy number must be presented at registration time to avoid the additional charge for University sponsored coverage.

For Further Information—see the General Information Bulletin, or contact Boynton Health Service, room W220 (telephone 373-3780).

UNIVERSITY LIBRARIES—TWIN CITIES

The University Libraries—include almost 50 service units located on the Minneapolis and St. Paul campuses. They have collections totaling more than three- and one-half million cataloged volumes as well as substantial holdings of government publications, manuscripts, archives, and other materials. The University Libraries—collections rank 13th in size among American university libraries, and include particular areas of strength in Asian studies, children's literature, exploration and travel, history of medicine, immigration, European history, Latin American studies, American and Western European literatures, science journals, and social welfare.

The University Libraries—collections are organized into the following major units, each housing collections related to a substantial discipline or cluster of disciplines:

Bio-Medical Library in Diehl Hall (373-5585) supports the programs in the health sciences and has extensive holdings in the biological sciences. The Natural History Library, 301 Museum of Natural History (373-5584), is physically separate but affiliated with the Bio-Medical Library.

Institute of Technology Libraries (376-2932) includes the following seven physically separate libraries, located on the East Bank of the Minneapolis campus, and supports the programs of the Institute of Technology: Architecture Library, 160 Architecture Building (373-2203); Chemistry Library, 4 Walter Library (373-2375); Engineering Library, 128 Lind Hall (373-2957); Geology Library, 204 Pillsbury Hall (373-4052); Mathematics Library, 310

Vincent Hall (376-7207); Mines, Metallurgy, and Chemical Engineering Library, 132 Amundson Hall (373-2313); Physics Library, 260 Physics (373-3362).

Law Library, 120 Law (373-2737), supports the programs of the Law School.

St. Paul Campus Libraries (373-0903) support programs in agriculture, biological sciences, and veterinary medicine. In addition to a major Central Library, the St. Paul Campus Libraries include the following physically separate service units: Andersen Horticultural Library, 3675 Aboretum Drive, Box 39, Chanhassen, MN (443-2460); Biochemistry Library, 406 Biological Sciences Center (373-1582); Entomology Library, 375 Hodson Hall (373-1741); Forestry Library, 203 Green Hall (373-1407); Plant Pathology Library, 202 Stakman Hall (373-1669); Tennant Memorial Library at the Freshwater Biological Institute, Navarre, MN (471-7755); Veterinary Medical Library, 450 Veterinary Science (373-1455).

Walter Library (376-2931) on the East Bank Mall of the Minneapolis campus, supports programs in education and a number of humanities and social science disciplines, including art history, library science, music, and psychology. Walter Library also includes the following physically separate service units: Immigration History Archives, 826 Berry Street, Minneapolis (373-0066); Journalism Library, 121 Murphy Hall (373-3174); Manuscripts Collection, 826 Berry Street, Minneapolis (376-7271); Social Welfare History Archives, 2520 Broadway Drive, Lauderdale (373-4420).

Wilson Library, on the West Bank of the Minneapolis campus, (373-5370), supports most of the humanities and social sciences programs as well as those of business administration. The Wilson Library also includes the following specialized service units: Ames Library of South Asia, S10 Wilson (373-2890); Business Reference Service, 2nd Floor Wilson (373-4109); East Asian Library, S30 Wilson (373-3737); Government Publications, 409 Wilson (373-7813); James Ford Bell Library; 462 Wilson (373-2888); Maps, S76 Wilson (373-2825); Middle East Library, S50 Wilson (373-7804); Periodicals/Newspapers, 65 Wilson (373-2887); Public Administration Library, 365 Blegen Hall (373-2892); Special Collections/Rare Books, 466 Wilson (373-2897).

Union Catalog. A union catalog, listing the cataloged holdings of the University Libraries, Twin Cities, is located on the main floor of Wilson Library. Assistance in using this catalog, or information about the libraries' holdings, can be obtained from the Catalog Information Desk, located next to the union catalog. Telephone service is also provided by the Catalog Information Desk (373-9985).

Circulation of Materials. Information regarding student, faculty, and staff circulation privileges can be obtained from any library unit. (e.g., reserves, placement of holds, recalls)

Library Hours. Information regarding library hours can be obtained from any library service unit.

Specialized Services. The University Libraries provide a number of specialized services, including in-depth reference service, library orientation, bibliographic instruction, access to machine-readable data bases, interlibrary borrowing, and photocopying. Information regarding these services, some of which are self-supporting and involve modest charges, can be secured from any library unit.

THE MINNESOTA UNION

All Twin Cities campus students, through payment of the student services fee, become members of the Minnesota Union, an association of students, faculty, staff, and alumni. The Minnesota Union Coordinating Board sets goals and allocates resources for the intellectual, cultural, social, and recreational services, programs, and activities offered by the member unions.

Three organizations make up the Minnesota Union: Coffman Memorial Union, the West Bank Union, and the St. Paul Student Center.

University Services, Cultural and Recreational Opportunities

Coffman Memorial Union

Coffman Memorial Union (CMU) is a center of campus life for the East Bank. The union offers a wide variety of social, recreational, and cultural facilities, services, and programs designed to serve the many educational and leisure-time needs of students, faculty, and staff.

Throughout the year, CMU presents a variety of films, concerts, dances, trips, lectures, art exhibits, and cultural programs and a series of over seventy minicourses.

CMU houses a campus Information Center, the Student Organization Development Center (SODC), and more than 40 student organizations representing student governance and social, cultural, political, religious, recreational, and special interest areas. In addition, the union provides facilities and services to accommodate the multiple needs of more than 500 campus organizations.

CMU has lounges, study carrels, dining facilities, a recreation/games complex, an art/craft studio, and a music listening center, providing members of the University community with places to meet, study, eat, learn, and relax. Meeting and dining rooms, lecture halls, and theatre facilities are available by reservation for group rental. In addition, Coffman Union also houses art galleries, MSA Student Store, University YWCA, a post office, newsstands, the campus Lost and Found Office, the Locker Rental Service, WMMR radio station, the International Study and Travel Center, ISTA Agency, and the Golden Razor Barber and Beauty Salon.

Summer hours for CMU are 7 a.m. to 10 p.m. Monday through Friday. Consult the *CMU Prevue*, the *Minnesota Daily*, or *Socially Speaking* for specific program events, times, and dates. For further information about programs, services, and facilities at Coffman Union, call 373-2403 during building hours.

West Bank Union

The West Bank Union (WBU) plans programs that provide learning opportunities; promote interaction with students, faculty, and staff; and offer entertainment. Activities are organized by those interested, with assistance from an elected student board and staff advisers. Ideas and assistance in planning and presenting programs are welcome; interested students should stop in at 130 WBU Skyway.

West Bank Union facilities include common rooms in Anderson Hall for lounging, listening to music, reading, and playing table games; a common room in Blegen Hall for study, conversation, and playing chess; and the service centers in Anderson Hall, Social Science Building, and the WBU Skyway, offering program information, locker rentals, and general assistance.

The WBU Gallery exhibits artworks by University studio arts students and faculty members on the lower concourse of Willey Hall.

WBU Bijou films are shown weekly, once in the afternoon and once in the evening. The film schedule is available in the WBU office, 130 WBU Skyway.

Recent construction on the West Bank has resulted in expanded facilities and the WBU Skyway, which connects Blegen Hall and Willey Hall, and houses a service center and several offices. The new WBU Program Hall, adjacent to Willey Hall houses a general purpose lounge and program area as well as a large theater/lecture hall.

Summer hours for WBU are 7:30 a.m. to 4:30 p.m. Monday through Friday. For information about programs, consult the *Minnesota Daily* or call 373-5058 during business hours.

St. Paul Student Center

The air-conditioned St. Paul Student Center is open during the 1982 summer session from 7:00 a.m. to 10:00 p.m. Monday through Friday. The center offers a variety of services and programs to ensure that your summer on campus is an enjoyable one.

Cultural and Recreational Opportunities

The Terrace Cafe provides breakfast, lunch, and snacks from 7:00 a.m. to 4:00 p.m. with both indoor and outdoor seating available. Books Underground, the campus bookstore, is open weekdays 8:00 a.m. to 4:30 p.m. and carries course texts, books for leisure reading, school supplies and U of M souvenirs. For questions concerning campus and Student Center facilities and activities, stop by Information Services on the lower level or call 373-1046. Information Services also sells magazines, candy, tobacco, MTC bus passes, and movie discount tickets.

The Graphics Communication Center, also on the lower level, provides a self-service copy machine and a complete graphics service including typesetting, illustration, keylining, camera work, and printing. Next door, the Cooperative Outdoor Adventure (COA) Resource Center supplies outdoor enthusiasts with space and informational materials to plan their outings. COA also provides free publicity for outings so that planners can involve others in their outdoor experiences. Equipment for canoeing, camping, and backpacking can be rented or purchased at the Outdoor Store next to COA. The store also sells clothing and accessories for campus and outdoor recreation use.

For relaxing music and opportunity to view art exhibits, visit the Gallery and Music Listening Center near the lower level lobby.

Campus groups in need of meeting or entertainment space may use any of the Student Center's several meeting rooms; reservations and information regarding such use can be acquired by calling 373-1046. Facilities for indoor recreation, including bowling, billiards, table tennis, and pinball are available in the Games Room, which is open from 11:30 a.m. to 10:00 p.m. The Student Center also has a number of lounges for relaxation, reading, and television viewing.

Cultural and Recreational Opportunities

The University of Minnesota, aware of the need for relaxation during the intensive, accelerated summer academic program, plans a variety of recreational and cultural activities on campus at little or no cost to the student. Campus activities are listed—along with summer schedules for Twin Cities theatres, museums, and other groups—in *Socially Speaking*, a special publication for summer session students. The large metropolitan area boasts many lakes, swimming beaches, picnic grounds, evening outdoor concerts, art galleries, excellent stores and restaurants, and other entertainment opportunities.

CAMPUS SPORTS FACILITIES

Recreational sports are available during the two five-week summer terms. Students may sign up individually or in teams for golf, softball, tennis, and soccer. Rec Sports also promotes a large softball tournament each summer, open to community slow-pitch teams, with cash prizes. For people seeking individual exercise experiences, Rec Sports offers the very popular aerobic dance for a small fee.

Gymnasiums and swimming pools for men and women in Cooke Hall, Norris Hall, and the St. Paul Gymnasium. Swimming pools in all three buildings are open for recreational swimming weekdays during scheduled hours. The Bierman Field Athletic Building gymnasium is also available for student use.

Baseball and softball diamonds at Bierman Field, West Bank Field, golf course fields, and soccer fields on the St. Paul campus.

An 18-hole golf course, a 9-hole (par 3) golf course, and tennis courts that may be used by regularly enrolled summer session students upon presentation of a fee statement and a nominal fee. The golf courses can be reached by intercampus bus.

Complete information on sports programs is available from Cooke Hall Recreational Sports, 373-4200. The Pool Update Line is 373-4234.

CONCERTS AND LECTURES

Through the Department of Concerts and Lectures, the Summer Session provides a variety of free entertainment. The summer program features blues, jazz, folk, opera, symphonic, modern, and chamber music as well as classical, modern, and folk dance. Many of these informal programs are held outdoors. Most programs are free; a small admission is charged for the others. Watch Northrop Auditorium bulletin boards, campus posters, and the *Minnesota Daily* for announcements about scheduled performances.

UNIVERSITY GALLERY

The University Gallery, located on the third and fourth floors of Northrop Memorial Auditorium, presents frequently changing exhibitions of photographs, paintings, sculpture, prints, and decorative arts.

Gallery facilities supplement classroom, studio, and library experience in the arts. Individual works of art and specialized materials from the gallery's collection are available for study by appointment.

Framed original paintings and prints are available for rental to University departments. Call 373-5685 for rental information.

Gallery hours are 11 a.m. to 4 p.m. Monday, Wednesday, Friday; 11 a.m. to 8 p.m. Tuesday, Thursday; and 2 to 5 p.m. Sunday. The gallery is closed on Saturday and University holidays. Admission is free. The main office is located in 110 Northrop Memorial Auditorium (telephone 373-3424).

BELL MUSEUM OF NATURAL HISTORY

The James Ford Bell Museum of Natural History features exhibits on Minnesota wildlife and plants, the Touch and See Room, the Jaques Gallery of natural history art, the Blue Heron Bookshop, education programs for the public, research programs, and the University's natural history library.

Animal skins, teeth, tree trunks, horns and antlers, mineral specimens, bones and more may be handled and investigated by visitors to the Touch and See Room. Trained guides are available to help. Children are especially invited to investigate the specimens.

The Blue Heron bookshop offers an outstanding selection of books on natural history, records of animal sounds, cards, stationery, and loon T-shirts.

Special educational programs are scheduled throughout the year for visitors of all ages and interests.

Located at 17th and University Avenues, S.E. on the Minneapolis campus, the museum offers free admission and is open from 9 a.m. to 5 p.m. Tuesday through Saturday, and from 1 to 5 p.m. on Sundays. All exhibit areas of the museum are accessible to the handicapped. Call 373-2423 for tour reservations and information on gallery shows and education programs. Mailing address: 10 Church Street S.E., University of Minnesota, Minneapolis, MN 55455.

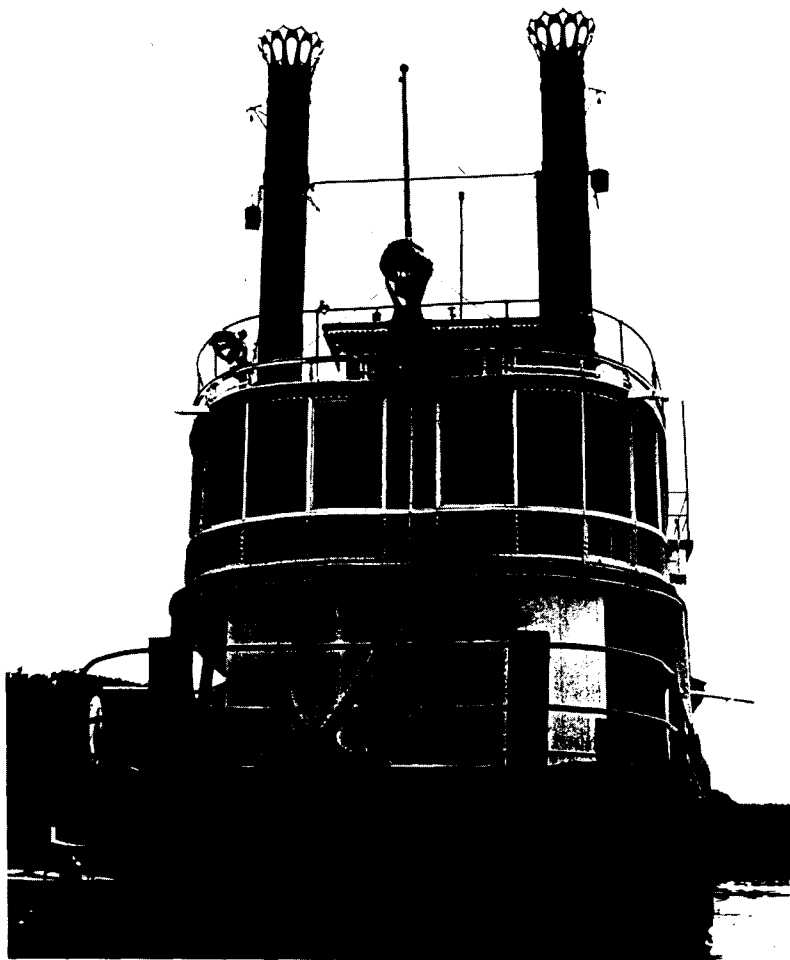
UNIVERSITY THEATRE

When the Twin Cities were younger, citizens saw melodramas, musicals, and comedies aboard riverboats. The University Theatre preserves that heritage by offering theatre productions each summer aboard the Minnesota Centennial Showboat. The Showboat, a real-sternwheel riverboat moored on the Mississippi River, will offer audiences family entertainment in air-conditioned comfort from June through August.

Robert Moulton, artistic director of the University Theatre, will direct the 1982 play recalling the traditional Showboat style with light entertainment spiced with song and dance. Ticket information is available by calling 373-2337.

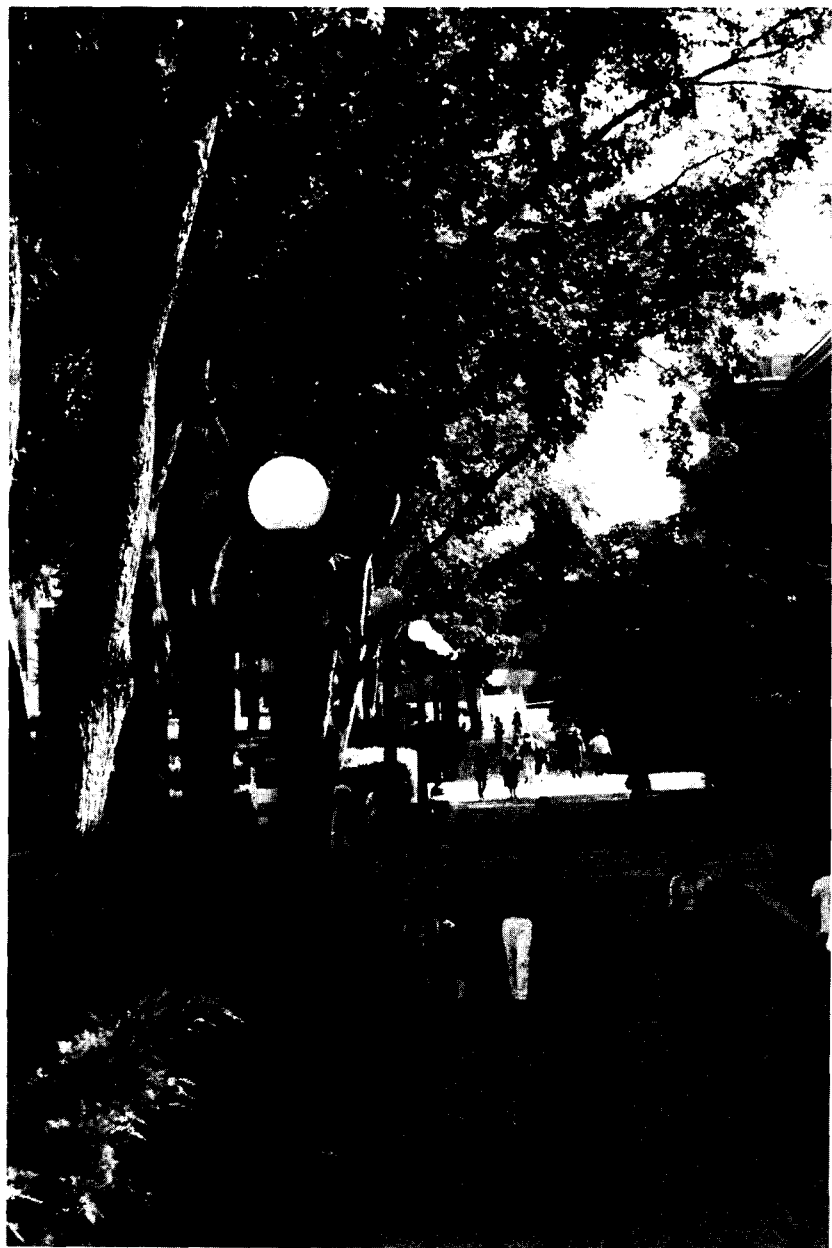
Cultural and Recreational Opportunities

The summer playbill also will feature the Peppermint Tent theatre for children. Plays for children ages 4-8 will be offered in the comfortable Stoll Thrust Theatre of Rarig Center. Ticket information is available by calling 373-2337.





Special Programs and Workshops



College of Education

MAIL REGISTRATION FOR STUDENTS IN THE COLLEGE OF EDUCATION

Students registering in the College of Education as B.S., M.Ed., adult special, and summer-only students may register by mail. Teachers registering for courses in any department of the University, as well as other students taking professional education courses, should register through the College of Education and thus are entitled to register by mail. Mail registration is *not* permitted in the Graduate School, for 8000-level courses, or for courses and workshops listed in this bulletin that have special registration instructions.

Qualified students may obtain registration materials from the Summer Session Office, either by telephoning 373-2925 or by sending in the request card found at the back of this bulletin. All mail registrations *must be received by May 18* in order to be processed in time for the start of the summer session. Any student who registers and then decides not to attend classes should notify the Education Career Development Office, 1425 University Avenue S.E., as early as possible so that an official cancellation can be processed.

MEDIA GENERALIST LICENSURE PROGRAM

The media generalist licensure program is offered cooperatively by the College of Education and the Library School. Licensed school teachers interested in media applications in schools who wish to apply for licensure as media generalists should write for program and application information to Robert D. Tennyson, Director, Media Generalist Program, College of Education, 250 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

INSTITUTE OF CHILD DEVELOPMENT

The Institute of Child Development is one of the country's oldest and best known centers for research and training in child psychology. The institute offers graduate and undergraduate courses and conducts a nursery school for demonstration, student teacher training, and research during the summer terms.

Nursery School—The Nursery School will be in session from 8:45 a.m. to 11:45 a.m. Monday through Friday, from Wednesday, June 16, to Friday, July 16. Applications for the enrollment of children will be accepted at the office of the Nursery School, 184 Child Development Building, 51 East River Road, University of Minnesota, Minneapolis, Minnesota 55455; telephone 373-9853. Tuition is \$96 for the summer term. Parents are responsible for transporting their children to and from the school.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

The third annual Chase Lecture, with an emphasis on Creative Writing For and By Children, will be presented Tuesday, June 22, at 3:30 in the Theatre Lecture Hall of Coffman Memorial Union. The lecture, open to the public, 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." This year's guest lecturer is Natalie Babbitt, distinguished writer and lecturer whose work has been acclaimed nationally and internationally. Other distinguished guests who will be lecturers for the creative writing course (Elem 5318) are Jane Resh Thomas, Stephen Krensky, and Steven Gammell. Questions about the course or the Chase Lecture may be directed to Department of Elementary Education, 214 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Art Education

Art Media Techniques—ArEd 5001 is offered in a series of six workshops designed in the reduced-term intensive-study format and focused on a selection of topics especially for persons who work with children grades K through 12. The workshops focus on drawing, jewelry, mixed-media techniques, art resources in the Twin Cities, printmaking, and art projects for elementary schools. They will meet in two-week blocks of time during first and second summer terms, coordinated for maximum convenience of students.

ArEd 5302—Curriculum Innovations, a workshop for educators interested in art curriculum development, is offered June 15-29.

A one-week workshop, ArEd 5386—Improving Art Programs in the Schools, meeting August 12-18, will continue this series with emphasis on museums as resources for educators.

For more information about these offerings, contact Michael Day, 135 Wulling Hall, 86 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

For Mathematics and Science Educators—All Levels

Credit earned in workshops and special courses scheduled for elementary, middle, or secondary school teachers may be applied to M.A. or M.Ed. degree programs with approval of the student's adviser. For information on any of these listings, you may call Robert Jackson (373-2275) or the Curriculum and Instruction Department office (373-3300), 148 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Elementary and Middle School Teachers—Eight modules of the mathematics education workshop (MthE 5102) and five science education workshops (Elèm 5347 and SeEd 5394) are strategically scheduled in the second term. Four of the modules are first time offerings for one or two credits examining motivational topics found in recreational mathematics adaptable to intermediate and middle school mathematics curriculum. Several topics revised from previous summers are also offered: using microcomputers and calculators as learning facilitators, science concepts found in childrens' toys, and zoo curricula for example. Check course descriptions for topics and dates.

Middle and Secondary School Teachers—The science education workshop (SeEd 5394) in first term will focus on teaching and the development of reasoning; environmental issues with the subject of water quality and acid precipitation; and laboratory investigations integrating science and mathematics in a joint listing with MthE 5102.

Mathematics and Special Education Teachers—Two first term courses are especially useful to teachers at all levels. MthE 5355 attends to needs of teachers of slow learning children; MthE 5345 examines topics suitable for gifted elementary and middle school students.

Special Programs and Workshops

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND HIGHER EDUCATION

Educational Administration Two-Year and Doctoral Programs

The department offers programs leading to the specialist certificate, Ed.D. and Ph.D. degrees for administrators in elementary and secondary schools and educational agencies. These programs emphasize a breadth of preparation in education and related fields and include concentrations in the history and philosophy of education, social psychology, and curriculum and instruction.

Brochures describing the programs are available from the Department of Educational Administration and Higher Education, 225 Health Service, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Special Workshops

Administrator Development Seminar—Applicants for admission to degree programs in educational administration are encouraged to participate in a seminar combining registration in EdAd 5130 and EdAd 5139. Assessment and counseling, skill development, and contemporary issues in the field are topics of the second term seminar. See the Course Descriptions section for registration requirements. Registration in both courses for a total of six credits is mandatory, and preapplication is required. Inquiries should be addressed to the Department of Education Administration and Higher Education, 225 Health Service, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Policy Development for School Managers—EdAd 5127, which meets June 15-30, is a workshop designed to help management personnel use new minicomputer technology in instructional management, personnel administration, fiscal control, and policy evaluation in education and human services. Emphasis is placed on commercially available software and its utility for major management problems and functions.

School Personnel Management—EdAd 5128, which meets July 19-30, will focus on the processes of bargaining, mediation, and arbitration, through a series of simulated activities. Also in the second term, EdAd 8227, provides an overview of the personnel management function and the critical personnel management needs of school systems of the 1980's, through a review of research, examination of existing policies and procedures, and issues involved.

Post-Secondary Administration—A joint offering of EdAd 5274 and VoEd 5274, (June 15-30) extends to students an opportunity to become familiar with organization, programming, and developmental trends in institutions such as area vocational-technical schools and community or junior colleges.

Special Education Administration—Supervision and Administration of Special Education, offered under EdAd 5103 or PsyS 5160, provides an opportunity for teachers and administrators to study contemporary management issues in special education, including implementation of such new mandates as Public Law 94-142.

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION

Physical Education and Dance

Gladys Bailin, a visiting artist and former member of the Nicholais Dance Theatre and of Murray Louis Dance Company, currently a member of the dance faculty at Ohio University in Athens, will teach courses in advanced modern dance technique and improvisation, and dance repertory theater (Dnce 3396, 5701). For further information, see the Course Descriptions section of this bulletin or contact Professor Nadine Jette, 159 Norris Hall, 172 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 376-3211.

Workshop: Dance Education—Dnce 5700 will be offered as a concentrated three-week workshop (June 15-July 2) with the focus on creative dance for children.

Practicum: Prevention and Care of Athletic Injuries—PE 5620 will be offered first term as a concentrated two-week practicum (June 21 through July 2). Instructors for the course will be Jeffrey Monroe, assistant athletic trainer, and James Marshall, athletic trainer, University of Minnesota.

Athletics in Contemporary Society: Legal Issues and Liability—In the first term (June 15-July 1) this section will focus on problems dealing with these issues in the fields of physical education and athletics. (See PE 5750.)

In the second term the offering of PE 5750 (July 19-August 4) will focus on contemporary issues in international and comparative sport.

Curriculum Development—PE 5152 (July 19-August 4) includes instruction in development of materials in physical education and sport for use with microcomputers.

Recreation, Park, and Leisure Studies

Contemporary Issues in Leisure Services—Rec 5900 offers an interdisciplinary approach to use of leisure and educational resources of a wild river, with emphasis on preparation for leadership in outdoor recreation and education. The workshop, scheduled June 14 through 18, will be held in a variety of settings. Some formal classes will be conducted at Cooke Hall on campus June 14, followed by a five-day canoe trip down the Namekagon and St. Croix Rivers, part of the federal wild and scenic rivers systems. The workshop will stress the practical application of outdoor education methods, group leadership practices in outdoor settings, management of state and federal wild rivers systems, and the availability of and the impact of humankind upon the recreational, educational, historical, and cultural resources of the wild river environment. The workshop is open to college juniors, seniors, and graduate students with basic canoeing experience. An information sheet is available from Leo McAvoy, 209 Cooke Hall, 1900 University Avenue S.E., University of Minnesota, Minneapolis, Minnesota 55455. In addition to tuition, there will be a charge of \$40 for canoe and equipment rental and transportation plus \$20 for food. The deadline for preregistration and payment of all fees is June 9.

School Health Education

Death Education in Contemporary Society—This course, scheduled June 15 through July 1, is a joint offering of the School of Public Health, the Department of Mortuary Science, and the School Health Education Division of the School of Physical Education, Recreation, and School Health Education. It is designed to prepare education seniors,

Special Programs and Workshops

teachers, school nurses, and mortuary science majors to manage the problem of death education in their specific areas. The course aims to (a) provide basic background information on concepts and attitudes toward death, grief, and bereavement including instructional aspects for elementary and secondary schools; (b) analyze motivations toward suicide and suicide attempts; and (c) examine the schools' role in suicide prevention. (See Hlth 5402 and PubH 5040 for course description)

DEPARTMENT OF PSYCHOEDUCATIONAL STUDIES

Career Development of Women and Men—In the first term, PsyS 5300 is designed as a two-week, six-credit workshop (June 21-July 2) for counselors, teachers, career development and other specialists, training and development personnel and human resource workers interested in updating skills. Topics are planning models and concepts, individual and group techniques, employment outlook and labor market trends, change process and organization intervention, and reduction of career-related stereotyping using videotapes, training manuals, and materials created in Project BORN FREE. Information and applications may be obtained from Professor L. Sunny Hansen, 139 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-0202.

Ethical and Legal Issues in Counseling and Psychotherapy—Section 2 of PsyS 5300 (June 21-25) is a one-week, two-credit workshop for counselors, psychologists, social workers and persons preparing to enter a helping profession. See the course description for topics to be dealt with, including client access to records, privileged communication, mandated disclosures, and malpractice. For information contact Professor W. Wesley Tennyson, 137 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-2239.

Counseling Adults in Transition—PsyS 5300 offered in the second term in workshop format focuses upon transitions which occur over the adult life span, with consideration of strategies for assisting individuals to deal with the impact of changing roles. The course content is directed to counselors, adult educators, health and recreation professionals, human resource development specialists, and those who work in a helping capacity with adults. For further information contact Professor W. Wesley Tennyson, 137 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-2239.

Workshop: Special Education—In second term, nonvocal communication concepts and techniques will be examined in PsyS 5302. Focus will be on designing programs for non-vocal individuals based upon current research and school-based practices using manual communication, Bliss-symbols, communication boards, and relevant experimental communication systems. Advance application is required. Requests for information should be directed to Special Education Programs, 101 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Teaching Exceptional Children (SLBP Resource or Clinical Teacher Sequence)
—The six credits earned in a combined first-term offering of PsyS 5610 and 5611 may be applied to SLBP: LD teacher licensure or to a graduate degree by those students admitted to the Graduate School. Institute participants will work with learning-disabled children, concentrating on the remediation of academic problems and the quality of interaction between teacher and learner. Enrollment is limited to those who have completed PsyS 5113 and 5114 during the academic year 1981-82. Advance application is required. Requests should be directed to Professor Virginia Bruininks Walter, 13 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Teaching Children With Emotional Disturbances—The eight credits earned in PsyS 5601, section 1, a workshop scheduled during a six-week period from June 14 through July 23, may be applied to SLBP:ED licensure or to a graduate degree with consent of the adviser. Priority will be given to those seeking licensure, but teachers, administrators, and other professionals in the field are encouraged to apply for admission. Advance application is required. Requests should be directed to Professor Frank H. Wood, 106 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

DEPARTMENT OF SOCIAL, PSYCHOLOGICAL, AND PHILOSOPHICAL FOUNDATIONS OF EDUCATION

This department offers graduate study and professional preparation in several areas leading to the M.A. and Ph.D. degrees in educational psychology: psychology, methodology, and social and philosophical foundations of education. Students planning to major or minor in one of these areas should apply for admission to the Graduate School and to the Department of Social, Psychological, and Philosophical Foundations of Education. Program information is available from the departmental office, 204 Burton Hall, 178 Pillsbury Drive, S.E., University of Minnesota, Minneapolis, Minnesota 55455.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Vocational Education

Philosophy and Practice of Vocational Education—VoEd 5300, required for vocational licensure in Minnesota, is scheduled twice during the summer (June 14-25 and July 19-23). The first-term offering is coordinated with Ind 5310, Coordination, so that students may register for both courses and to facilitate the licensure of WE/CEP, WE/Disadvantaged, and WE/Handicapped coordinators.

Training in Business and Industry—Three courses are provided in the first term for students preparing to be trainers in business and industry: VoEd 5750, Training in Industry and Business (June 14-18), VoEd 5760, Organizational Development in Industry and Business (June 21-25), and VoEd 5780, Internship: Training and Development.

Administration—Vocational administrators and those preparing for administrative roles will be especially interested in three courses: VoEd 5600, Planning Vocational Education (July 5-16), VoEd 5102, Special Topics in Administration: Legal Aspects of Managing Vocational Education (July 19-23), and VoEd 5500, Introduction to Vocational Education Administration (July 26-30).

Individualizing Instruction—Many vocational teachers are increasingly personalizing instruction. VoEd 5100, Special Topics in Instruction: Individualizing Instruction (June 14-18) is designed to provide teachers with methods and techniques for dealing with students on a one-to-one basis.

Business and Distributive Education

Business Observation and Seminar—In BDE 5361, offered July 12-16 for three credits, business and distributive education teachers and teacher/coordinators will participate in planned on-site experiences at selected business firms and in related seminars. Participants will investigate job opportunities and requirements, job performance standards with implications for curriculum revision, and current training practices.

Special Programs and Workshops

Program Developments—Several short-term sections are scheduled: BDE 5360 (July 6-9) will emphasize teaching visual merchandising and includes field trips, contact with display experts, and the latest information on constructing displays.

A section of BDE 5360 in second term (August 2-6) focuses on using the microcomputer in distributive education with applications of the Apple II in model/school store situations, including using the equipment as a cash register.

BDE 5390 in the second term (July 19-23) offers microcomputer basics for the nonvocational educator, 2 credits. A section of BDE 5370 scheduled July 26-30 focuses on use of the microcomputer in office procedures and the model office and procedures for integrating microcomputers into regular classes, preparing supplementary instructional materials and evaluating learning outcomes.

Home Economics Education

Workshop: Contemporary Problems in Home Economics Education —HEED 5430 is listed in several sections: Section 2 is a three-credit course (July 6-16) emphasizing stages of work-related stress, and sources and strategies for managing teacher stress. Challenges involved in teaching and ways to experience greater satisfaction with one's work will be examined.

Section 3 (June 28-July 2) is a two-credit offering concentrating on working with adolescents in child development and parenting education. Tuition scholarships may become available. For information, see course description section.

In the second term, section 1 of HEED 5430 (July 19-23) is a two-credit offering to provide hands-on experience with home economics computer programs. The course is intended for persons who wish to develop knowledge and skill in use of the microcomputer in home economics applications.

Section 2 (July 26-August 6) is a four-credit offering focusing on planning and developing home economics programs to meet the unique needs of middle school students.

Industrial Education

Occupational Experience—Those interested in gaining work experience for industrial arts or vocational licensure may earn the equivalent of two hours of work experience for each hour on the job through registration in Ind 5100, 5101, 5102, and 5103. One credit is earned for each 100 hours of work. Individuals are responsible for securing their own employment and must have their work station approved by the program coordinator prior to registration.

Graphic Communications:—Specialization—Ind 5122 offered in the first term will concentrate on photography as creative communication. See course description for information on topics.

College of Liberal Arts

FOREIGN TRAVEL AND STUDY

SPAN Study Abroad

SPAN, the Student Project for Amity Among Nations, sponsors independent study with the goal of enhancing international friendship and understanding. The program is a cooperative effort of the University of Minnesota and 15 other Minnesota colleges. Its 1982 student groups will study in Greece, Spain, Java, and Cameroon.

The SPAN program involves extensive preparation, eight to ten weeks abroad, and production of a research paper. Preparation, during the year preceding the summer abroad, includes study of the language, history, social and political ambiance, and culture of the area to be visited. Each "country group" of about a dozen students meets regularly with a faculty adviser. During their period of study abroad, students conduct interviews, visit appropriate institutions, use libraries and other research facilities, and often live with local families. Upon return, they complete their SPAN paper, a major academic report growing from their study at home and abroad. Upon satisfactory completion of the preparation year and of the paper the student earns 12 quarter credits in the Foreign Studies Seminar, FoSt 5960.

Students must apply for SPAN appointments by the fall quarter preceding the summer abroad. Information about 1983 applications may be obtained from the SPAN Office, 103 Nolte Center, 315 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 376-5219.

Summer Term in Germany

College students or high school graduates who have completed at least four quarters of college or four years of high school German are invited to take part in a summer program using the facilities of Ludwig-Maximilians-Universität in Munich, Germany, during second term. CLA credit courses to be offered (in German) include conversation and composition on various levels, contemporary Germany, and modern German literature. Secondary education credit is available under SeEd 5192; contact Professor Dale Lange (373-5198) prior to departure. Permission of the German department is required. Consult the Summer Session office or Professor Frank Hirschbach, Department of German, 219 Folwell Hall, 9 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, for further information.

Nankai Institute

The third Minnesota-Nankai Summer Intensive Chinese Language Institute will be held at Nankai University, Tianjin, People's Republic of China, June 14 to August 20, with an associated tour from August 20 to 29. Applications for the institute were accepted until February 19, 1982. For further information, write to Professor Mei-Ling Hsu, China Center, 348A Social Sciences Building, 267 19th Avenue South, University of Minnesota, Minneapolis, Minnesota 55455.

FIELDWORK OPPORTUNITIES

Field Experience Learning

Students who have arranged a volunteer or salaried summer project in an appropriate setting may often register under a directed studies course number to receive credit in conjunction with their work. Those who have planned a project or would like to do so may consult an adviser in the appropriate department or in the Office for Special Learning Opportunities (220 Johnston Hall, 373-7550) about earning credit for such a project.

Registration for these projects, when approved, is usually under departmental course numbers 3970 or 5970, or appropriate interdepartmental directed studies number 3970 (see page 174).

Anthropology-Archaeology Field Research

The Department of Anthropology will offer an opportunity to participate in archaeological field research in the first term this summer. Excavations will be conducted at the Little Rapids site in Scott County, Minnesota. This will be the second field season at this important historic place, which is the location of Dakota Indian habitation and fur trading activities. This course is offered as Anth 3376 for 10 credits. Students can obtain further information and application forms from the anthropology office, 215 Ford Hall, 225 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, (612) 373-2601. Permission to register is required from Professor Janet Spector.

INTENSIVE LANGUAGE STUDY

Beginning Arabic, French, German, Biblical Hebrew, Italian, Japanese, Russian, Spanish, and Portuguese will be taught in intensive 10-week courses, each offered for 15 credits for the equivalent of three quarters of study.

For information about the language study and individual departmental requirements, see the Course Descriptions section of this bulletin or consult the appropriate department.

Classics: Latin

Intensive beginning Latin (Lat 3001) is offered during the first term in a 10-credit course equivalent to the full regular elementary sequence (Lat 1101-03). Students will rapidly master the fundamentals of Latin grammar and will begin reading Latin authors at the intermediate level. Further reading is offered in Lat 3104 (5 cr) during the second term.

Biblical Hebrew

The Old Testament is the most widely read book on earth. For some, it is a classic example of the artistic genius of the ancient Hebrews. For others, the Hebrew Bible carries the authority of revealed Scripture. Whatever the reason may be, the 1980s are seeing a resurgence of interest in the Bible and in its language: Hebrew.

To meet the growing demand, Summer Session is offering for the first time a full year of Biblical Hebrew taught over the two terms—June 15 to August 20. Students will master the Hebrew alphabet, the fundamentals of grammar, and the vocabulary necessary to read Biblical narratives. In gradual steps students will progress from short sentences to the ability to read selections from the Book of Genesis, and passages from the Psalms and the Prophets.

This course is designed especially for students with *no prior knowledge of the Hebrew language*. It is intended for those who would like to read the Old Testament in the original language and to lay the groundwork for further study of the Bible.

For further information and a free *Beginners Guide to the Hebrew Alphabet*, write Program in Ancient Near Eastern and Jewish Studies, 178 Klaeber Court, 320 16th Avenue S.E., University of Minnesota, Minneapolis, MN. Telephone: 612/376-4866.

OTHER SPECIAL OPPORTUNITIES

Historical Archaeology

Historical Archaeology (ArH 5122) will include theoretical information and practical experience involving registration of monuments, excavation, conservation, and restoration. The course will make use of outstanding local resources that can be best utilized during the summer months.

Journalism and Mass Communication

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.

Project Literacy will be offered for high school instructors teaching English/Composition using journalistic techniques. For more information, contact NSPA, 720 Washington Avenue S.E., Suite 205, Minneapolis, Minnesota 55414.

Workshops for high school newspaper and yearbook staff members are offered by the SJMC July 18 through July 30. Details may be obtained from the MHSPA, 720 Washington Avenue S.E., Suite 205, University of Minnesota, Minneapolis, Minnesota 55414. These workshops do not offer college credit.

Linguistics: English as a Second Language

An intensive English language and orientation program will be offered July 23 through September 10. The program will focus on English language instruction and orientation to U.S. life and education. It will include 25 hours per week of classroom instruction in listening, speaking, grammar, reading, and writing. In addition, there will be language laboratory practice, field trips, out-state visits, and an American in-home experience.

Applications for the program can be obtained by contacting the Coordinator of Admissions, Intensive English Language and Orientation Program, 717 East River Road, University of Minnesota, Minneapolis, Minnesota 55455.

Small Group Communication Workshops

Direct experience as a teaching-learning device in leadership situations will be provided in Spch 5414. Experiences will deal with the nature of authority, power, and interpersonal and intergroup problems.

Spch 5441 examines the role of communication in building the culture of organizations. It covers the theory of communicating in organizing, the analysis of organizational cultures, and changing organizational cultures. Both workshops meet June 15-27 (see the listing in the Course Descriptions section for a schedule).

Minnesota History Workshop

Designed for upper elementary and secondary school teachers, the Minnesota History Workshop (July 19-30) is an intensive, two-week, all-day introduction to state and local history, and to the collections of the Minnesota Historical Society. This year's workshop examines two topics. The Great Lakes Fur Trade examines the cultural and social exchanges that resulted from a system of commerce established in the North American continent between 1600 and 1850. The Home Front: Waging War in the Twentieth Century, studies the impact of the war effort on local communities and its effects on family life.

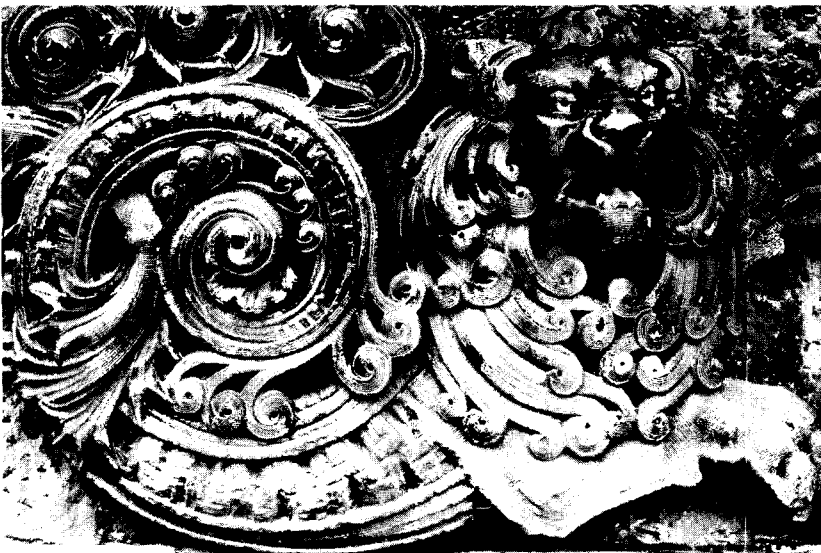
The workshop, held at the Minnesota Historical Society in St. Paul, includes lectures by university and historical society faculty, field trips, and small group sessions. These sessions introduce methodology and social history, and examine the development of curriculum materials from the collections of historical societies and archival repositories. Those not enrolled in previous workshops may register for five credits in History 5381; students wishing to register for a second time may also take the workshop for five credits, but should register for History 5970, section 2. Further information is available from the Summer Session office, 135 Johnston Hall, (612) 373-2925.

FOR HIGH SCHOOL STUDENTS

High School Musicians Honors Program

The School of Music will invite 160 qualified high school musicians to spend two weeks on the University campus to participate in its annual music honors program. The program, June 20 through July 2, will include intensive band, orchestra, chorus, and jazz ensemble rehearsals and concert performances; music theory and music styles analysis; vocal repertoire classes; instrument master classes; solo recitals; and social and recreational activities.

Auditions for admission to the program are open to high school students in the Midwest. Information and application forms should be requested from Professor Richard Massmann, 106 Scott Hall, 72 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.



School of Management

MASTER OF BUSINESS ADMINISTRATION (MBA) PROGRAM

Students may start the full-time accelerated MBA program in the Summer Session. The accelerated program is designed for students with an undergraduate degree in business, and can be completed in four quarters (summer through the following spring). As part of the admissions process, prospective students need to take the Graduate Management Admission Test, which is typically offered in January, March, June and October each year. The regular MBA program, for students with little or no undergraduate background in business, is six quarters in length, and starts in fall quarter each year.

For further details about the MBA program, contact the Graduate School of Management, 334 Management/Economics Building, 271 19th Avenue South, University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-5505.

Department of Military Science

UNIVERSITY ARMY ROTC SUMMER PROGRAM

University of Minnesota students have the opportunity to qualify for commissions as lieutenants in the U.S. Army by enrolling in the Army ROTC program. The Department of Military Science will offer its World Military History (Mil 1014) and Foundations of National Power (Mil 1024) courses to interested students during the summer terms. No military obligation is incurred by students taking these courses. These preprofessional courses are offered for credit and are open to men and women.

For details, contact the Department of Military Science, 108 Armory, 15 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone 373-2212 or 373-2213.

School of Public Health

Educational Aspects of Drug Use and Abuse, offered in cooperation with the College of Education, is listed under School Health Education in this section of the bulletin and in the Public Health and School Health Education listings in the Course Descriptions section of this bulletin.

EPIDEMIOLOGY

An intensive program in epidemiology will be offered by the School of Public Health and the Department of Conferences June 20 through July 9. This program, which carries graduate credit, is designed for, but not limited to, teachers of preventive medicine in medical schools. *Registration is limited and cannot be made through regular Summer Session channels.* Inquiries should be addressed to the Program in Epidemiology, School of Public Health, 1-117 Health Sciences Unit A, 515 Delaware Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Institute of Technology

AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY SCHOOL TEACHERS

This workshop for elementary and secondary school teachers, AEM 5001, will be held in Minneapolis from July 6 to 16. Offered through the cooperation of the National Aeronautics and Space Administration (Lewis Center), Civil Air Patrol Liaison Personnel (U.S. Air Force), Minnesota Department of Aeronautics, and Department of Aerospace Engineering and Mechanics of the University of Minnesota, the workshop is designed to provide teachers with a background in recent discoveries in the space sciences that can be used as the basis for new or existing classroom programs. Enrollment will be limited to 30 participants. Further information may be obtained from the Aerospace Workshop Coordinator, 107 Akerman Hall, 110 Union Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

See the listing under Aerospace Engineering and Mechanics for a description of the course content.

GEOLOGY FIELD STUDY

Fieldwork in geologic mapping (Geo 5110) will be conducted in a special term in the Sawatch Mountains near Gunnison, Colorado. The course is restricted to geology and geophysics majors who have satisfactorily completed the core sequence of Geo 1111 (or 1001), 3101, 3102, 3103, 3112, and 3401. A major paper is required.

Committee on Institutional Cooperation

The University of Minnesota cooperates with the universities of Iowa and Wisconsin to sponsor a summer geology field camp. The camp provides 53 students with an opportunity to pursue field research. Students pay regular summer session tuition fees at their home campuses, and special expenses of the camp are met by per capita payments from the participating universities. Further information is available from Professor Charles L. Matsch, Department of Geology, University of Minnesota, Duluth, Minnesota 55812.

Doctoral candidates interested in educational opportunities at other institutions may participate in the CIC Traveling Scholar Program by applying through the Graduate School Fellowship Office.



Summer Arts Study Center

- One and two week workshops in the arts at Quadna Mountain Resort in Minnesota's beautiful north woods.
- Over thirty workshops to choose from. Graduate and undergraduate credit available. Opens June 13, 1982 and runs for nine weeks.
- A natural place to go to make art.

The Artists

The artists-in-residence at Summer Arts are nationally recognized practicing professionals with many publications, exhibitions, and awards to their credit. They are also accomplished teachers, able to direct beginners and challenge advanced students.

The Work

Summer Arts provides an uninterrupted time and space for you to work on your art and a supportive community in which you can nourish your art spirit. If you have never taken a class in the arts before, this is the place to start. If you've already studied in the arts, this is the place for you to deepen and broaden your interests. Workshops in many different art forms and media are available, and in each you'll create a work of your own: a story, a photograph, a piece of jewelry, a memoir, a song, a quilt, pottery, an instant self-portrait, a poem, a dulcimer, a painting, a handmade book, a diary of words, a diary of drawings, and many more.

The Choices

Summer Arts offers drawing, fiction writing, ceramics, swimming, dulcimers, hiking, diaries and journals, nature photography, fishing, quilting, bookmaking, working, fibers, painting, playing, jewelry, poetry, tennis, photography, watercolor, thinking, instant art, and much, much more.

Quadna Mountain Resort

The natural beauty of the Summer Arts setting at Quadna—with acres of woods, hiking paths, a clear lake, and camping, motel, and townhouse facilities—enhances your work.

Credit

Most workshops are available for graduate and undergraduate credit, and enable you to get two credits for one week. Of course you may take any workshop without credits or grades.

COMPLETE INFORMATION

For complete information on classes, fees, and schedule, call or write for your copy of the 1982 Summer Arts Study Center brochure.

By phone: Call the Summer Arts Study Center at 373-4947.

By mail: Fill out the request form and mail it to us. Your request will be filled promptly.

Please send me my copy of the 1982 Summer Arts Study Center brochure.

Name _____

Address _____

City, State, Zip _____

Mail to: Summer Arts Study Center
320 Wesbrook Hall
77 Pleasant Street South East
University of Minnesota
Minneapolis, MN 55455



COURSE CODES (Minneapolis-St. Paul)

Acct	Accounting	DH	Dental Hygiene
AdPy	Adult Psychiatry	Dnce	Dance
AEM	Aerospace Engineering and Mechanics	Dsgn	Design
		Dtch	Dutch
Afro	Afro-American Studies		
AgEc	Agricultural Economics		
AgEd	Agricultural Education	EAS	East Asian Studies
AgEn	Agricultural Engineering	EBB	Ecology and Behavioral Biology
AgET	Agricultural Engineering Technology	Econ	Economics
AgJo	Agricultural Journalism	EdAd	Educational Administration
Agri	Agriculture	Educ	Adult and Teacher Education
Agro	Agronomy and Plant Genetics	EE	Electrical Engineering
Air	Aerospace Studies	Elem	Elementary Education
Akka	Akkadian	Endo	Endodontics
Amln	American Indian Studies	Engl	English Language and Literature
AmSt	American Studies	Ent	Entomology
Anat	Anatomy	ESL	English as a Second Language
ANEJ	Ancient Near Eastern and Jewish Studies		
Anes	Anesthesiology	Fin	Finnish
AnSc	Animal Science	ForP	Forest Products
AnSt	Ancient Studies	FoSt	Foreign Study
Anth	Anthropology	FPAAd	Family Planning Administration
Arab	Arabic	FPCHe	Family Practice and Community Health
Arch	Architecture	FR	Forest Resources
ArEd	Art Education	Fren	French
Arm	Aramaic	Frlt	French and Italian
Arth	Art History	FScN	Food Science and Nutrition
ArtS	Art Studio	FSoS	Family Social Science
Ast	Astronomy	FW	Fisheries and Wildlife
BA	Business Administration		
BDE	Business and Distributive Education	GC	General College
Ben	Bengali	GCB	Genetics and Cell Biology
BFin	Finance	Geo	Geology and Geophysics
BGS	Business, Government and Society	GeoE	Geo-Engineering
BioC	Biochemistry (Biol Sci)	Geog	Geography
Biol	Biology	Ger	German
BLaw	Business Law	Grk	Greek
Bot	Botany		
BPhy	Biophysical Sciences	HCol	Honors Colloquium
		HE	Home Economics
CAPy	Child and Adolescent Psychiatry	Hebr	Hebrew
CDis	Communication Disorders	HEEd	Home Economics Education
CE	Civil Engineering	HiEd	Higher Education
Chem	Chemistry	Hist	History
ChEn	Chemical Engineering	Hlth	School Health Education
Chic	Chicano Studies	HMed	History of Medicine
Chn	Chinese	Hndi	Hindi
CHS	College Honors Seminar	Hort	Horticultural Science
CISy	Curriculum and Instruction Systems	HSci	History of Science & Technology
		HSU	Health Science Units
		Hum	Humanities
Clas	Classics		
CICv	Classical Civilization	ID	Interdepartmental Study
CLit	Comparative Literature	IEOR	Industrial Engineering: Operations Research
Comm	Communications		
Comp	English Composition	Ind	Industrial Education
CPsy	Child Psychology	InMd	Interdisciplinary Medicine
CSci	Computer Science	Ins	Insurance
CVM	College of Veterinary Medicine	Intr	International Relations
		IoIT	Institute of Technology
DA	Dental Assisting	IR	Industrial Relations
Dan	Danish	Ital	Italian
Dent	Dentistry		
Derm	Dermatology		

Jour	Journalism and Mass Communication	Phcl	Pharmacology
Jpn	Japanese	Phil	Philosophy
JwSt	Jewish Studies	Phm	Pharmaceutics
LA	Landscape Architecture	Phsl	Physiology
LACS	Large Animal Clinical Sciences	Phys	Physics
LaMP	Laboratory Medicine and Pathology	PIPa	Plant Pathology
LAS	Latin American Studies	PIPh	Plant Physiology
Lat	Latin	Pish	Polish
Law	Law	PMed	Physical Medicine and Rehabilitation
LFA	Literature and Fine Arts	PO	Personal Orientation
Lib	Library School	Pol	Political Science
Ling	Linguistics	Port	Portuguese
LMed	Laboratory Medicine	Pros	Prosthodontics
Luch	Luchuan	Psy	Psychology
Mar	Marathi	PsyF	Psychological Foundations
Math	Mathematics	PsyS	Psychoeducational Studies
MatS	Materials Science	PubH	Public Health
MBA	Master of Business Administration	QA	Quantitative Analysis
MdBc	Biochemistry (Medical)	Rad	Radiology
MdGk	Modern Greek	RCD	Resource and Community Development
ME	Mechanical Engineering	Rec	Recreation, Park, and Leisure Studies
Med	Medicine	RelS	Religious Studies
MedC	Medicinal Chemistry	Rhet	Rhetoric
MedT	Medical Technology	Russ	Russian
MetE	Metallurgical Engineering	SACS	Small Animal Clinical Sciences
Mgmt	Management	SAPh	Social and Administrative Pharmacy
MicB	Microbiology	Scan	Scandinavian
MidE	Middle Eastern Studies	SeEd	Secondary Education
Mil	Military Science	Serb	Serbo-Croatian
MinE	Mining Engineering	Skt	Sanskrit
MIS	Management Information Systems	Slav	Slavic
Mktg	Marketing	SoAS	South Asian Studies
Mort	Mortuary Science	Soc	Sociology
MthE	Mathematics Education	Soil	Soil Science
MuEd	Music Education	Span	Spanish
Mus	Music	Spch	Speech-Communication
MusA	Music Applied	SPFE	Social and Philosophic Foundations of Education
Nav	Naval Science	SpPt	Spanish-Portuguese
Neur	Neurology	SSci	Social Science
Nor	Norwegian	Stat	Statistics
NSci	Natural Science	Sum	Sumarian
NSu	Neurosurgery	Surg	Surgery
Nurs	Nursing	SW	Social Work
Nutr	Nutrition	Swed	Swedish
OBio	Oral Biology	TexC	Textiles and Clothing
Obst	Obstetrics and Gynecology	Th	Theatre Arts
OM	Operations Management	Thai	Thai
OPat	Oral Pathology	Tib	Tibetan
Oph	Ophthalmology	TRad	Therapeutic Radiology
ORad	Oral Radiology	Tran	Transportation
OrSu	Orthopaedic Surgery	Turk	Turkish
Otho	Orthodontics	UC	University College
OSur	Oral and Maxillofacial Surgery	UrBS	Urban Studies
Otol	Otolaryngology	Urdu	Urdu
PA	Public Affairs	Urol	Urologic Surgery
Path	Pathology	VB	Veterinary Biology
PE	Physical Education	VoEd	Vocational Education
Ped	Pediatrics	VPB	Veterinary Pathobiology
Pedo	Pediatric Dentistry		
Per	Persian		
Pero	Periodontics		
Phar	Pharmacy		
Phcg	Pharmacognosy		

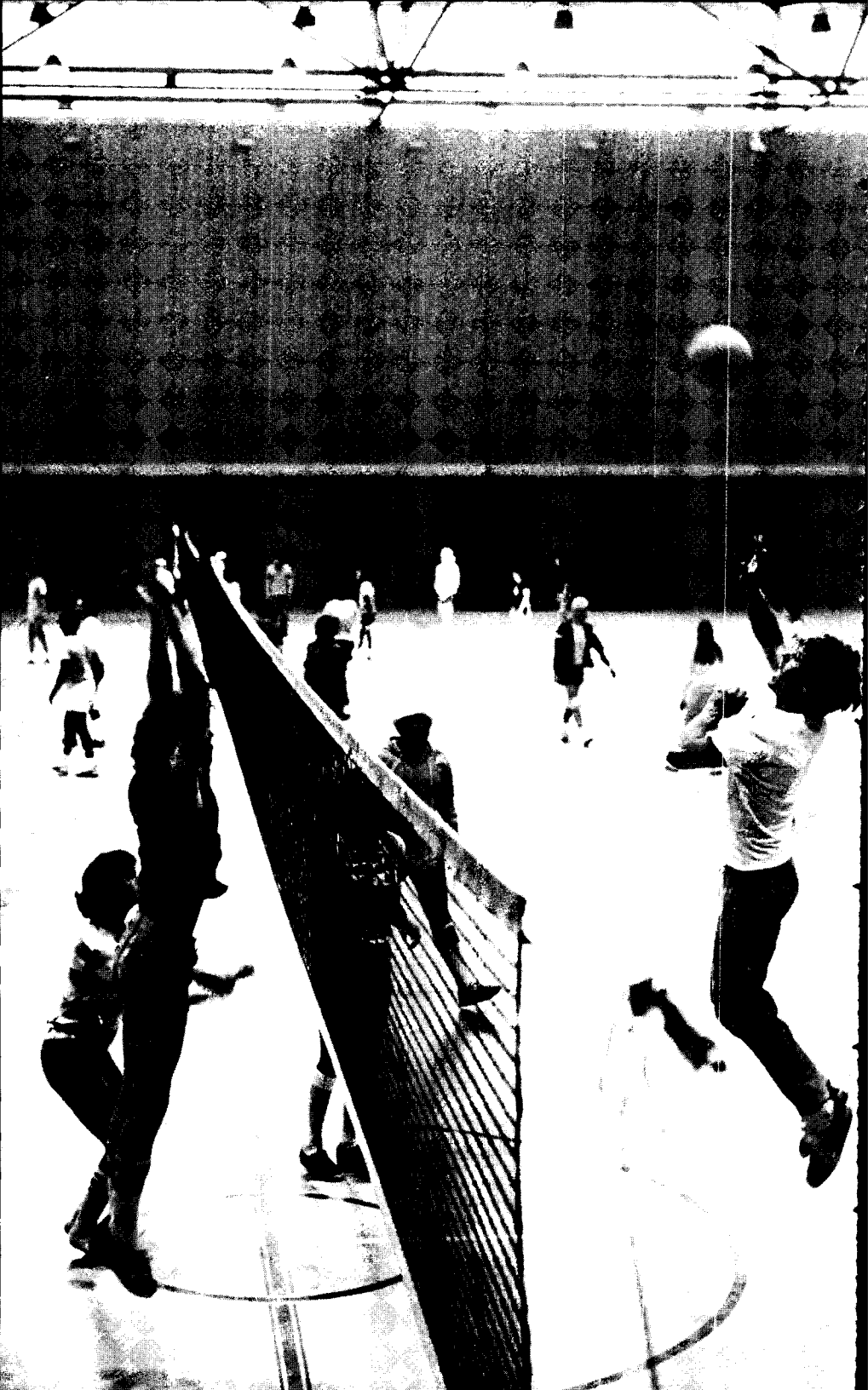
- WoSt Women's Studies
- YoSt Youth Development and Research
- Zool Zoology



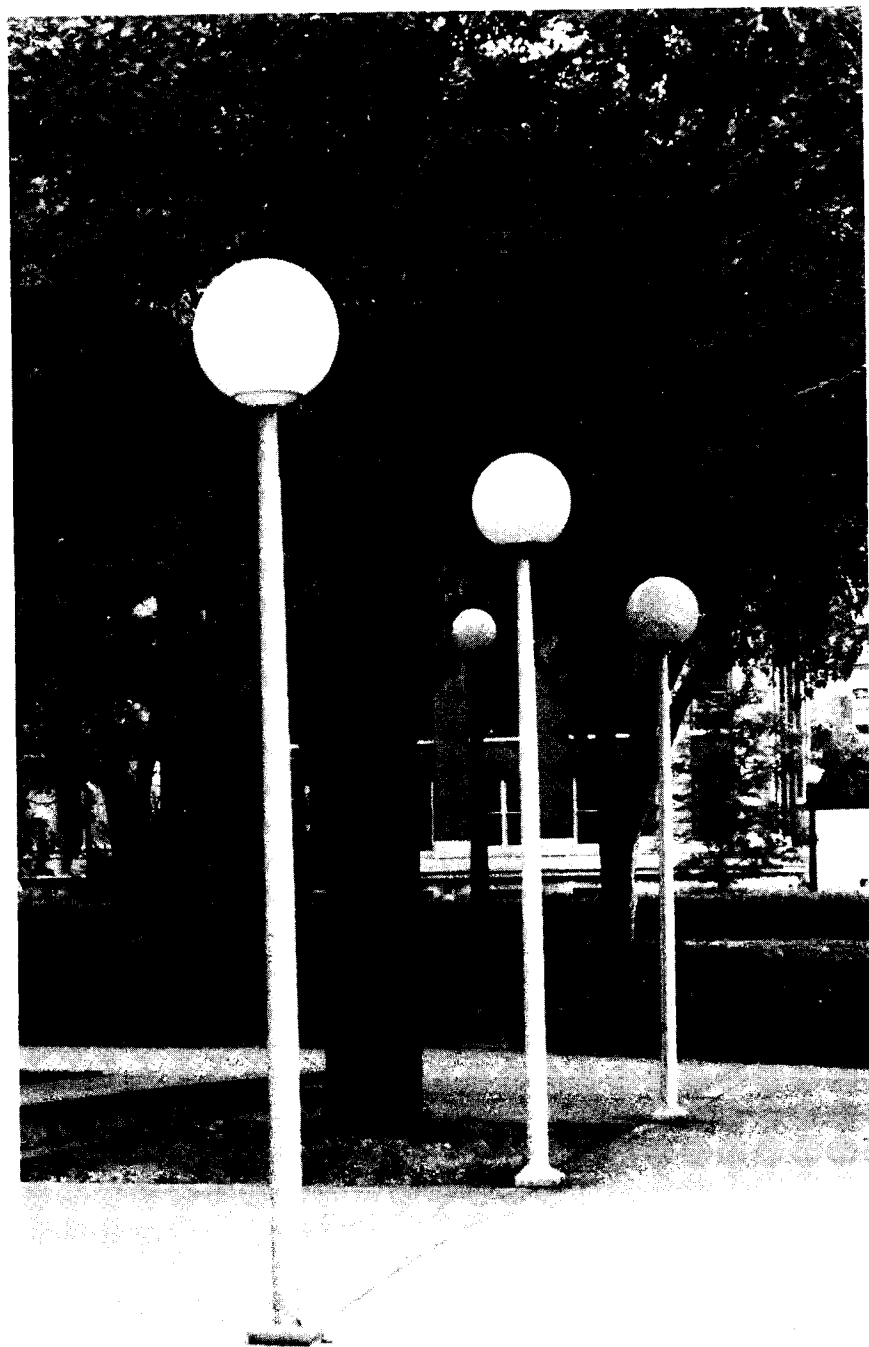
DIRECTORY FOR DEPARTMENTAL OFFICES

Admissions and Records, Office of:		Dermatology	Mayo C396
Minneapolis Campus		Design	McNH 240
Admissions	WmsonH 240	East Asian Languages	FoIH 321
Records	WmsonH 150	Ecology and Behavioral	
St. Paul Campus	CofH 130	Biology	Zoology 108
Adult and Teacher Education	PeiKH 175	Economics	Mgm/Econ 1035
Aerospace Engineering and		Educational Administration	HS 225
Mechanics	AkerH 107	Electrical Engineering	ElectE 139
Aerospace Studies	Armory 3	Elementary Education	BuH 214
Afro-American Studies	SocSci 214	Engineering Graphics	MechE 142
Agricultural and		English	LindH 207
Applied Economics	ClaOff 231	Entomology, Fisheries and	
Agricultural Education	VoTech 320	Wildlife	HodsonH 219
Agricultural Engineering (IT)	AgEng 213	Family Practice,	
Agricultural Engineering (Agri)	AgEng 213	Community Health	PWB 6-240
Agricultural Journalism	HckrH 326	Family Social Science	McNH 290
Agronomy and Plant Genetics	Agr 303	Food Sciences, Nutrition	FScN 225
American Indian Studies	SocSci 812	Forest Products	KaufL 203
American Studies	LindH 225	Forest Resources	GrnH 110
Anatomy	Jach 4-135	French and Italian	FoIH 200
Anesthesiology	Mayo B515	General College	NichH 106
Animal Science	PetH 120	Genetics and Cell Biology	BioSci 250
Anthropology	FordH 215	Geography	SocSci 414
Architecture	Arch 110	Geology and Geophysics	PillsH 106
Art Education	WullH 135	German	FoIH 219
Art History	Jones 107	Higher Education	BuH 105
Art, Studio	ArtB 208	History	SocSci 614
Astronomy	Phys 356	History of Science & Technology	Phys 428
		Home Economics	McNH 32
Biochemistry (BioC)	Gor 140	Home Economics Education	VoTech 325
Biochemistry (Med)	MlrDH 4-225	Horticultural Science	AlderH 305
Biological Sciences	SnH 123	Humanities	FordH 314
Biology	SnH 223	Industrial Education	VoTech 425
Biophysics	TNCE 200	Interdepartmental Study	JohH 220
Botany	BioSci 220	Journalism, Mass	
Business and Distributive		Communication	MurH 111
Education	VoTech 420	Laboratory Medicine	Mayo C205
Chemical Engineering and		Large Animal Clinical Science	VetHos C339
Materials Science	AmundH 151	Law School	Law 285
Chemistry	SmithH 139	Library School	WaLib 419
Chicano Studies	FordH 489	Linguistics	KlaCt 142
Child Psychology	ChDev 158	Management, School of	Mgmt/Econ 225
Civil and Mineral Engineering	MinMet 112	Mathematics	VinH 127
Classics	FoIH 310	Mathematics Education	PeiKH 148
Communications	KlaCt 116	Mechanical Engineering	MechE 125
Communication Disorders	ShevH 115	Medical Technology	Jach 3-170
Computer Science	LindH 136	Medicine	Mayo C309
Counseling, Student		Microbiology	Mayo 1060
Personnel Psychology	BuH 139A	Middle Eastern Languages	KlaCt 164
Cross-Disciplinary Sequences	JohH 220	Hebraic	KlaCt 178
Curriculum and Instructional		Islamic	KlaCt 164
Systems	BuH 250		
Dance	NorrisH 159		
Dental Assisting	HSUnitA 5-164		
Dental Hygiene	HSUnitA 5-164		
Dentistry	HSUnitA 15-209		

Military Science	Armory 106	Scandinavian Languages	FolH 210
Mining Engineering	MinMet 112	School Health Education	NorrisH 101
Mortuary Science	VinH 114	School Psychology	EiTH N548
Music	ScottH 106	Secondary Education	PeiK 148
Music Education	ScottH 104	Slavic Languages	EiTH 253
		Small Animal Clinical Science	VetHos C306
Naval Science	Armory 203	Social, Psychological and Philosophic Foundations of Educ	BuH 204
Neurology	PWB 12-100	Social Science	JohH 220
Nursing	HSUnitF 5-140	Social Work	FordH 400
		Sociology	SocSci 1114
Obstetrics and Gynecology	HSUnitA 12-211	Soil Science	Soils 125
Ophthalmology	PWB 9th floor	South Asian Languages	KlaCl 192
Otolaryngology	PWB 8-240	Spanish and Portuguese	FolH 4
		Special Education	PIH 101
Pathology	JacH 184	Speech	FolH 317
Pediatrics	Mayo 1460	Statistics	VinH 270
Pharmacology	MlrDH 3-260	Surgery	PWB 11-100
Pharmacy	HSUnitF 5-130		
Philosophy	FordH 355	Textiles and Clothing	McNH 364
Physical Education	CookeH 224	Theatre Arts	MdbH 208
Physical Medicine and Rehabilitation	Mayo 860		
Physics	Phys 148	Veterinary Biology	AnScVM 295K
Physiology	MlrDH 6-255	Veterinary Pathobiology	VetS 205g
Plant Pathology	StakH 304	Vocational Education	VoTech 210
Plant Physiology	BioSci 644		
Political Science	SocSci 1414	Women's Studies	FordH 492
Psychiatry	Mayo A605	Youth Development and Research	McNH 48
Psychoeducational Studies	BuH 249		
Psychological Foundations	BuH 330	Zoology	Zoology 108
Psychology	EiTH N218		
Public Affairs	SocSci 909		
Public Health	Mayo 1360		
Radiology	Mayo B238		
Recreation, Park, and Leisure Studies	CookeH 203		
Rhetoric	HckrH 202		



Course Descriptions



College of Agriculture

The College of Agriculture offers many courses during the summer, primarily for graduate students. Most departments correlate thesis and problem work with work at the Agricultural Experiment Station. In addition to regularly scheduled classes, the summer program includes readings, seminars, special problems, and concentrated courses.

High school teachers of agriculture may take advanced courses in those agricultural areas required for degrees in the Department of Agricultural Education (see College of Education section).

Information concerning admission to the Graduate School should be obtained from the Dean of the Graduate School, 322 Johnston Hall, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. Students wishing information regarding courses at the graduate level should confer with the graduate staff of the department in which they will be working.

Agricultural and Applied Economics (AgEc)

FIRST TERM

3990. PROBLEMS OR INDEPENDENT STUDY. (385457) (Cr ar; prereq #) Staff
Independent study, supervised reading, or research on agricultural economics problems not covered in regularly offered courses.

8200. GENERAL SEMINAR: AGRICULTURAL ECONOMICS. (385460) (3 cr; prereq #: hrs ar) Staff
Special problems for individual work by qualified students.

SECOND TERM

3990. PROBLEMS OR INDEPENDENT STUDY. (387113) (Cr ar; prereq #) Staff
See First Term.

8201. GENERAL SEMINAR: AGRICULTURAL ECONOMICS. (187114) (3 cr; prereq #: hrs ar) Staff
See 8200 First Term.

Agricultural Engineering

Agricultural Engineering Technology (AgET)

FIRST TERM

1020. AGRICULTURAL SHOP—METALWORK. (085462) (4 cr; prereq Chem 1004 or #: 2 lect and 6 lab hrs per wk; lect 0800-0850 MTWTh, AgEng 42; lab 0905-1100 MTWTh, 0800-1205 F. AgEng 20) Bohn
Arc and oxyacetylene welding, soldering, use and conditioning of metalworking tools, and the identification and characteristics of metals used in farm machinery.

5000. PROFESSIONAL EXPERIENCE PROGRAM. (885463) (4 cr [not for grad cr]; prereq 12 cr in agricultural engineering technology and #) Flikke
Up to 12 weeks of planned experience in a selected position in an industry or public agency; evaluative reports and consultations with faculty advisers and employers.

5034. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—NATURAL RESOURCES DEVELOPMENT AND MANAGEMENT. (389962) (1-3 cr; prereq 5020 or #: special problems ar; AgEng 218) Bear
Principles and practices in the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment for the instructional program.

SECOND TERM

5000. PROFESSIONAL EXPERIENCE PROGRAM. (087115) (4 cr [not for grad cr]; prereq 12 cr in agricultural engineering technology and #) Flikke
See First Term.

5020. PROGRAM PLANNING AND INSTRUCTIONAL METHODS IN AGRICULTURAL MECHANICS—July 19-23. (887116) (4 cr; prereq 10 cr in agricultural engineering technology, AgEd 3031 or *AgEd 3031; 0800-1205 and 1325-1730 MTWThF; AgEng 218) Bear

Planning and designing high school vocational agriculture facilities, organizing equipment, tools, supplies, and storage as demanded by the instructional program. Administering the agricultural mechanics program. Developing techniques and programs for student supervised study programs.

5035. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—METAL FABRICATION MATERIALS AND TECHNIQUES. (189963) (1-3 cr; prereq 5020 or #: special problems ar; AgEng 218) Bear

Principles and practices in the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment for the instructional program.

Agriculture (Agri)

FIRST TERM

1000. ACADEMIC ENRICHMENT AND HONORS PROGRAM: SPECIAL PROJECTS. (485465) (1-15 cr; S-N only; prereq acceptance for Special Opportunity Grant, agriculture major only, #) Wharton

An alternative to regular classroom activities. Students submit a project proposal to pursue a special interest in depth. This includes a description of the project, an estimation of its duration, and a tentative expense budget. For further information check with the college office.

SECOND TERM

1000. ACADEMIC ENRICHMENT AND HONORS PROGRAM: SPECIAL PROJECTS. (687120) (1-15 cr; S-N only; prereq acceptance for Special Opportunity Grant, agriculture major only, #) Wharton

See First Term.

Agronomy and Plant Genetics (Agro)

Agronomy

FIRST TERM

1020. SPECIAL PROBLEMS. (185467) (1-3 cr; prereq #) Smith, Cardwell

In-depth research or studies in agronomy. Intended for students who wish to pursue aspects of agronomy in greater depth than that offered in formal courses or who wish to investigate areas not presently offered in courses. Tutorial instruction under staff guidance.

5000. PROFESSIONAL EXPERIENCE PROGRAM. (985468) (4 cr [not for grad cr]; prereq #) Smith, Cardwell

Supervised practical experience in agronomic industries and farm enterprise systems; studies of various aspects of the industry and related fields.

5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS. (785469) (1-5 cr; prereq #) 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 formal courses or who wish to investigate areas not presently offered in courses. Independent study and research under staff guidance.

8010.* RESEARCH IN AGRONOMY. (185470) (Cr ar; prereq #) Staff

Problems in physiology and production of crop plants.

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

8320.* ORIENTATION TO AGRONOMY AND SOILS FIELD RESEARCH TECHNIQUES. (089964) (1 cr; S-N; prereq 5040 or #) Goodding

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. (287122) (1-3 cr; prereq #) Smith, Cardwell

See First Term.

Course Descriptions

5000. PROFESSIONAL EXPERIENCE PROGRAM. (187123) (4 cr [not for grad cr]; prereq #) Smith, Cardwell
See First Term.

5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS. (987124) (1-5 cr; prereq #) Smith, Cardwell
See First Term.

8010.* RESEARCH IN AGRONOMY. (787125) (Cr ar; prereq #) Staff
See First Term.

Plant Breeding

FIRST TERM

8330.* RESEARCH IN PLANT GENETICS. (985471) (Cr ar) Staff

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

8310.* ORIENTATION TO FIELD CROP BREEDING. (785472) (1 cr; prereq 5020 or #) Stuthman
Field study of plant breeding programs and techniques.

SECOND TERM

8330.* RESEARCH IN PLANT GENETICS. (690583) (Cr ar) Staff

Animal Science (AnSc)

FIRST TERM

5413. RUMINANT NUTRITION—June 14-25. (889965) (3 cr, \$5403; prereq 3401; 0900-1145 MTWThF; PetH 108)
Goodrich, Otterby
Nutrient requirements of ruminants (beef and dairy cattle, sheep); nutrient content of feedstuffs, primarily forages; protein and nonprotein nitrogen utilization; nutritional disorders; and formulation of adequate rations. Nutrition of horses considered also.

5710. SPECIAL PROBLEMS. (385474) (Cr ar; open to students who have completed appropriate prereqs with #; PetH 108) Staff
Research in an area of animal science under the supervision of a staff member. A written report on the research is required.

8750. CONCEPTS AND DEVELOPMENTS IN MEAT SCIENCE AND TECHNOLOGY. (185475) (1 cr [may be repeated once for cr]; prereq #) C Allen
Review and evaluation of pertinent scientific literature.

8810.* RESEARCH IN ANIMAL SCIENCE. (085476) (Cr and hrs ar; prereq #; PetH 108) 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. (885477) (Cr and hrs ar; prereq #; PetH 108) Staff
Research in quantitative genetics, cytogenetics, and other areas related to animal breeding.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (685478) (Cr and hrs ar; prereq #; PetH 108) 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. (485479) (Cr and hrs ar; prereq #; PetH 108) Staff
Research in selected areas of animal nutrition. Topics and species studied determined by consultation with adviser.

8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY. (885480) (Cr and hrs ar; prereq #; PetH 108) Staff
Individual, original research, under staff direction, on selected problems involving the chemical, biochemical, and physiological aspects of muscle and meat technology. The topic may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.

SECOND TERM

5614. DAIRY FARM MANAGEMENT—July 19-30. (689966) (3 cr, \$5604; prereq 5403 or #...3220 recommended; 0945-1145 MTWThF; HckrH 100) Young, Otterby, Hansen
Application of the principles of animal breeding, nutrition, physiology, and economics to the planning and management of the dairy farm; genetic influences, housing requirements, health programs for large herds, feed budgets, and record analysis emphasized.

5710. SPECIAL PROBLEMS. (387127) (Cr ar; open to students who have completed appropriate prereqs with #: PetH 108) Staff
See First Term.

8750. CONCEPTS AND DEVELOPMENTS IN MEAT SCIENCE AND TECHNOLOGY. (187128) (1 cr [may be repeated once for cr]; prereq #) C Allen
See First Term.

8810.* RESEARCH IN ANIMAL SCIENCE. (087129) (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.

8820.* RESEARCH IN ANIMAL GENETICS. (387130) (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (187131) (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.

8840.* RESEARCH IN ANIMAL NUTRITION. (087132) (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.

8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY. (887133) (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.

Entomology, Fisheries, and Wildlife

(See also *Lake Itasca Biology Session*)

Ample opportunity for research work in various phases of entomology, fishery biology, and wildlife biology is available to properly qualified students on an individual basis.

Entomology (Ent)

FIRST TERM

3100. ENTOMOLOGICAL TECHNIQUES. (685481) (Cr ar; prereq 3175 or equiv. #) Staff
Practical laboratory instruction in dealing with entomological materials.

5901. SPECIAL PROBLEMS IN ENTOMOLOGY. (485482) (Cr ar; prereq #) Staff
Individual field, laboratory or library studies in various areas of entomology.

8500.* RESEARCH IN ENTOMOLOGY. (285483) (Cr ar; prereq #) Staff

SECOND TERM

3100. ENTOMOLOGICAL TECHNIQUES. (687134) (Cr ar; prereq 3175 or equiv. #) Staff
See First Term.

5901. SPECIAL PROBLEMS IN ENTOMOLOGY. (487135) (Cr ar; prereq #) Staff
See First Term.

8500.* RESEARCH IN ENTOMOLOGY. (287136) (Cr ar; prereq #) Staff

Fisheries and Wildlife (FW)

FIRST TERM

5393. SPECIAL PROBLEMS IN FISHERY BIOLOGY. (185484) (Cr ar; prereq #) Staff
Individual field, library and laboratory research in various areas of fishery biology.

5398. SPECIAL PROBLEMS IN WILDLIFE BIOLOGY. (985485) (Cr ar; prereq #) Staff
Individual field, library and laboratory research in various areas of wildlife biology.

8364.* RESEARCH IN FISHERY BIOLOGY. (785486) (Cr ar; prereq #) Staff

8377.* RESEARCH IN WILDLIFE BIOLOGY. (585487) (Cr ar; prereq #) Staff

SECOND TERM

5393. SPECIAL PROBLEMS IN FISHERY BIOLOGY. (187137) (Cr ar; prereq #) Staff
See First Term.

Course Descriptions

5398. **SPECIAL PROBLEMS IN WILDLIFE BIOLOGY.** (987138) (Cr ar; prereq #) Staff
See First Term.

8364.* **RESEARCH IN FISHERY BIOLOGY.** (787139) (Cr ar; prereq #) Staff

8377.* **RESEARCH IN WILDLIFE BIOLOGY.** (187140) (Cr ar; prereq #) Staff

Food Science and Nutrition (FScN)

FIRST TERM

3600. PRINCIPLES OF NUTRITION. (385488) (4 cr; limited to 25 students; prereq Biol 1011 and Chem 1004 or equiv; 0800-0955 MWF, 0905-0955 TTh; FScN 15)

Fundamental principles of nutrition, including the essentiality and metabolism of nutrients and results of nutritional deficiencies or excesses. Presented in the context of personal, national, and global aspects of human nutrition.

3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE. (185489) (5 cr; prereq 3760, sr in hospitality and food service management or #; hrs ar) Staff

Planned management experience in a selected food service or hospitality business, including understanding of the operation, planning, purchasing, personnel management, financial management, supervision, and related functions.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (585490) (1-5 cr [may be repeated for cr]; prereq Δ ; hrs ar) Staff

Individual laboratory or library research in some area related to food chemistry, food processing, nutrition, food service, or hospitality management.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (385491) (1-5 cr; prereq sr, Δ ; hrs ar) Staff

Laboratory or library research on problems related to the microbiology of dairy and food products.

5404. CURRENT ISSUES IN FOOD AND NUTRITION—June 28-July 9. (185492) (3 cr; limited to 25 students; prereq 15 or in food science and nutrition or #; 0905-1205 MTWThF; ABLMS 125) Levine

Evaluation of popular and scientific literature that 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. (085493) (1-5 cr; prereq #; hrs ar) Staff

Independent study and written reports.

8621. INDEPENDENT STUDY: NUTRITION. (885494) (1-9 cr; prereq Δ ; hrs ar) Staff

Independent study and written reports.

SECOND TERM

1102. TECHNOLOGY OF FOOD PROCESSING. (987141) (4 cr; prereq high school chemistry and biology; 0800-0955 MWF, 0905-0955 TTh; ABLMS 125) Schellhaass

Introduction to the technology of processing and distributing foods with reference to the prevention of biological, physical, and chemical deterioration. Changes in food composition, microbiological safety, food laws and regulations, technologies of the major food processes such as canning, freezing, drying, and cereal and oilseed processing.

3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE. (787142) (5 cr; prereq 3750, sr in hospitality and food service management or #; hrs ar) Staff

See First Term.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (587143) (1-5 cr [may be repeated for cr]; prereq Δ ; hrs ar) Staff

See First Term.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (387144) (1-5 cr; prereq sr, Δ ; hrs ar) Staff

See First Term.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (187145) (1-5 cr; prereq Δ ; hrs ar) Staff

See First Term.

8621. INDEPENDENT STUDY: NUTRITION. (087146) (1-9 cr; prereq #; hrs ar) Staff

See First Term.

Plant Pathology (PIPa)

(See also *Lake Itasca Biology Session*)

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

5650. CLINICAL PLANT PATHOLOGY. (685495) (6 cr; prereq 1001, 8 cr plant pathology; StakH 105) Staff

Laboratory and clinical experience in Plant Disease Clinic in diagnosis, treatment, and control of plant diseases of field crops, vegetable crops, turf, ornamentals, and trees.

8090.* RESEARCH IN PLANT PATHOLOGY. (485496) (Cr ar) Staff
Special assignment in laboratory and field problems in pathological research.

Rhetoric (Rhet)

FIRST TERM

R 1147. EFFICIENT READING. (285497) (4 cr; limited to 30 students; 0905-1100 TWTh; FordH 115) Bennett
The adult reading process is explored with emphasis on comprehension, speed, and vocabulary development. For persons of average or above-average reading ability who wish to develop and refine college-level reading skills. Not a basic course. Meets concurrently with 5147.

R 1222. PUBLIC SPEAKING. (985499) (4 cr; limited to 18 students; prereq soph, completion of fr communication requirements; 1115-1205 MTWThF; HckrH 222) McBride
A practical course in the fundamentals of speechmaking. Emphasis upon organizing and delivering the speech.

R 3551. PROFESSIONAL WRITING. (4 cr; each section limited to 23 students; prereq jr, completion of fr communication requirements)
Projects and reports in professional communication: the résumé, application letter, interview; study of professional journals; the review of literature; specialized bibliographic tools; the feature article.

Sec 1, (485501) 0905-0955 MTWThF, HckrH 111, Walzer
Sec 2, (285502) 1010-1100 MTWThF, HckrH 111, Wright

R 3562. SCIENTIFIC AND TECHNICAL WRITING. ((185503) (4 cr; limited to 23 students; prereq jr, completion of fr communication requirements; 0800-0850 MTWThF; HckrH 111) Ferguson
Methods of exposition in scientific and technical writing; types of reports; audience analysis; continuous practice in report writing; the résumé, application letter, and interview.

R 5147. EFFICIENT READING. (785505) (4 cr; limited to 10 students; 0905-1100 TWTh; FordH 115) Bennett
The adult reading process is explored with emphasis on comprehension, speed, and vocabulary development. For persons of average or above-average reading ability who wish to develop and refine college-level reading skills. An evaluative paper is required. Meets concurrently with 1147.

SECOND TERM

R 1147. EFFICIENT READING. (887147) (4 cr; limited to 30 students; 0905-1100 TWTh; FordH 115) Bennett
See First Term.

R 1222. PUBLIC SPEAKING. (687148) (4 cr; limited to 18 students; prereq soph, completion of fr communication requirements; 1115-1205 MTWThF; HckrH 222) Wendt
See First Term.

R 3551. PROFESSIONAL WRITING. (4 cr; each section limited to 23 students; prereq jr, completion of fr communication requirements)
See First Term.

Sec 1, (487149) 0905-0955 MTWThF, HckrH 111, Somers
Sec 2, (887150) 1010-1100 MTWThF, HckrH 111, Horberg

R 5147. EFFICIENT READING. (489967) (4 cr; limited to 10 students; 0905-1100 TWTh; FordH 115) Bennett
See First Term.

Soil Science (Soil)

(See also Lake Itasca Biology Session)

FIRST TERM

5114.* SPECIAL PROBLEMS IN SOILS. (385507) (1-5 cr per qtr [max 10 cr]; prereq 1122 or #) Adams, Baker, Blake, Farnham, Rust, Schmidt, Grava, Grigal, Swan, Cooper
Research, readings, instruction.

R 5565. FIELD COURSE—SOIL SURVEY. (185508) (8 cr; limited to 20 students; prereq 5512 and #: \$25 course fee; 0800-1830 MTWThF; Soils 215) Anderson, Rust
Principles of soil survey including description of soils in acceptable terms, mapping soils on airphoto base, interpretative groupings of soils, descriptive legend development, classification of soils according to soil taxonomy.

Course Descriptions

8124.* RESEARCH PROBLEMS IN SOILS. (085509) (2-5 cr; hrs ar) Adams, Baker, Blake, Farnham, Rust, Schmidt, Grava, 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.

SECOND TERM

5114.* SPECIAL PROBLEMS IN SOILS. (687151) (1-5 cr per qtr [max 10 cr]; prereq 1122 or #) Adams, Baker, Blake, Farnham, Rust, Schmidt, Grava, Grigal, Cooper
See First Term.

8124.* RESEARCH PROBLEMS IN SOILS. (487152) (2-5 cr; hrs ar) Martin, Adams, Baker, Blake, Farnham, Rust, Schmidt, Grava, Grigal
See First Term.

College of Biological Sciences

The College of Biological Sciences coordinates basic instruction in the biological sciences throughout the University. Information concerning its undergraduate programs is presented in the *College of Biological Sciences Bulletin* or may be obtained from the college office in 223 Snyder Hall.

The college is composed of the Departments of Biochemistry, Biology, Botany, Ecology and Behavioral Biology, and Genetics and Cell Biology, as well as the Dight Institute for Human Genetics, James Ford Bell Museum of Natural History, and Gray Freshwater Biological Institute. The course offerings listed are available on the Twin Cities campus to eligible students in all colleges of the University.

Many summer courses in the biological sciences are offered through the Biology Session held at the Lake Itasca Forestry and Biological Station. Students interested in studying at the field station should refer to the section in this bulletin on the Biology Session and to the *Lake Itasca Biology Session Bulletin*, available upon request from: Summer Session, 135 Johnston Hall, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Biochemistry (BioC)

FIRST TERM

3990. UNDERGRADUATE RESEARCH. (385510) (1-3 cr; prereq sr biochemistry major, B avg or #, and Δ) Staff Research problems for the B.S. thesis (optional).

8290. CURRENT RESEARCH TECHNIQUES. (185511) (1-3 cr; prereq grad major in biochemistry, #) 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.

8990. GRADUATE RESEARCH. (085512) (2-5 cr; prereq #) Graduate faculty Research problems in various fields in biochemistry represented by staff interest.

SECOND TERM

3990. UNDERGRADUATE RESEARCH. (287153) (1-3 cr; prereq sr biochemistry major, B avg or #, and Δ) Staff See First Term.

8290. CURRENT RESEARCH TECHNIQUES. (187154) (1-3 cr; prereq grad major in biochemistry, #) Graduate faculty See First Term.

8990. GRADUATE RESEARCH. (987155) (2-5 cr; prereq #) Graduate faculty See First Term.

Biology (Biol)

(See also *Lake Itasca Biology Session*)

FIRST TERM

R 1011. GENERAL BIOLOGY. (685514) (5 cr; lect 1010-1120 MTWThF, AndH 210; lab 1150-1340 MTWTh, KoltH S160 and ar) Kerr, Kirkwood, others
An introduction to the principles of biology. The cell, metabolism, heredity, reproduction, ecology, and evolution. Closed-circuit TV and multimedia presentation of lectures.

R 3011. ANIMAL BIOLOGY. (5 cr; limited to 48 students; prereq 1011, Chem 1005; lect 1215-1330 MTWTh; McNH 33)
Comparison of ways different phyla have solved similar physiological problems. Laboratory includes survey of major animal groups and physiological experiments.

Lab 1, (285516) 0900-1200 TTh, BioSci 245

Lab 2, (185517) 1340-1630 TTh, BioSci 245

Course Descriptions

3041. ECOLOGY. (4 cr; limited to 60 students; prereq Math 1231 or #; lect 0815-0955 TWTh; Zoology 313) Tilman
Interactions of plant and animal populations and their environments. Organization, functioning, and development of
ecological systems: population growth and regulation. Human impact on the biosphere in modern times.

Rec 1, (189972) 1000-1100 TTh, Zoology 102
Rec 2, (989973) 1100-1200 TTh, Zoology 102

3112. BIOLOGICAL RHYTHMS—June 14-July 9. (4 cr, §5112; prereq 1011 or #: 1105-1210 MTWThF; ClaOff B45)
Koukkari
Timing mechanisms and rhythms of organisms in physiological processes; ecological adaptation, and health; current
hypothesis concerning their cellular and molecular nature.

5001. BIOCHEMISTRY. (785519) (4 cr, §3021, §BioC 5001; prereq 1011, 12 cr organic chemistry or #: 0825-0945
MTWThF; ClaOff B35) Jenness
Biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular
constituents, and cellular regulatory mechanisms.

5112. RHYTHMS AND CIRCADIAN REGULATION—June 14-July 9. (5 cr, §3112; primarily for grad students; prereq
15 cr biology, 10 cr chemistry or #: 1105-1210 MTWThF; ClaOff B45) Koukkari
See 3112. Laboratory experience arranged.

SECOND TERM

1011. GENERAL BIOLOGY. (587157) (5 cr; limited enrollment; lect 1010-1120 MTWThF. AndH 210; lab 1150-1340
MTWTh, KoltH S160 and ar) Kerr, Kirkwood, others
See First Term.

1103. GENERAL BOTANY. (5 cr, §3012; limited to 50 students; prereq 1011; students who plan to major in biology in
CLA or any bioscience major in CBS should take 3012; lect 1215-1315 MTWThF; BioSci 12)
Levels of organization of plants, plant functions, plant growth and development, plant reproduction.

Lab 1, (187159) 0905-1205 TTh, BioSci 182
Lab 2, (587160) 1325-1625 TTh, BioSci 182

1106. GENERAL ZOOLOGY. (5 cr; limited to 72 students, prereq 1011; 0815-0915 MTWThF; Botany B6) Underhill
Survey of animal phyla: structure, function, behavior, adaptation, and evolutionary relationships.

Lab 1, (187162) 1325-1625 MW, KoltH P168
Lab 2, (087163) 1325-1625 TTh, KoltH P168

3051. BIOLOGY AND THE FUTURE OF MAN. (887164) (4 cr; S-N only; limited to 100 students, 1220-1310 MTWThF;
AndH 210)
Nontechnical discussion of biological factors affecting the quality of life—pollution, chemical and biological warfare,
population growth, food supply, resource sufficiency, value of wilderness, genetics and eugenics, public health, aging,
behavior control, and biological aspects of ethics, morals, and societal organizations.

5003. GENETICS. (687165) (4 cr, §GCB 3022, §GCB 5022; prereq 5001; 1105-1205 MTWThF and 1 hr ar; 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.

5004. CELL BIOLOGY. (487166) (3 cr; prereq 5001; 0955-1055 MTWThF; ClaOff B25)
Structures and functions of membranes, organelles and other macromolecular aggregates found in plant, animal and
bacterial cells. Cell form and movement, intercellular communication, transport, and secretion.

Botany (Bot)

(See also Lake Itasca Biology Session)

FIRST TERM

3131. SURVEY OF PLANT PHYSIOLOGY. (785522) (4 cr, §5131, §PIPh 3131, §PIPh 5131; prereq Biol 1103 or 3012,
BioC 1302 or BioC 1302 or Biol 5001; 1105-1210 MTWThF; BioSci 6) Soulen
Physiological principles underlying processes that occur in living plants with emphasis on higher plants. Growth and
development, mineral nutrition, transport, water relations and metabolism, especially emphasizing photosynthesis and
nitrogen assimilation.

3990. RESEARCH PROBLEMS. (585523) (1-5 cr; prereq #) Staff
Individual research for undergraduates.

5131. SURVEY OF PLANT PHYSIOLOGY. (385524) (4 cr, §3131, §PIPh 3131, §PIPh 5131; prereq Biol 1103 or 3012, BioC 1302 or *BioC 1302 or Biol 5001; 1105-1210 MTWThF, 1240-1400 W; BioSci 6) Soulen
See 3131. Includes a weekly discussion section.

8990. RESEARCH PROBLEMS. (185525) (Cr ar; prereq #) Staff

SECOND TERM

3990. RESEARCH PROBLEMS. (287167) (1-5 cr; prereq #) Staff
See First Term.

8990. RESEARCH PROBLEMS. (187168) (Cr ar; prereq #) Staff

Ecology and Behavioral Biology (EBB)

(See also *Lake Itasca Biology Session*)

FIRST TERM

5970. DIRECTED STUDIES. (085526) (Cr ar; prereq Δ) Staff

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (885527) (Cr ar; prereq #) Staff

SECOND TERM

5113. BIOLOGY OF LOCAL INVERTEBRATES—July 20-August 6. (089978) (5 cr; limited to 15 students; prereq Biol 1011 or 1106 or equiv; 0800-1700 TWThF; Zoology 101A) Gilbertson
Taxonomic and ecological survey of local invertebrates. Emphasis on aquatic species in their natural environment. Includes field trips from Metcalf Center; transportation costs will be assessed.

5970. DIRECTED STUDIES. (587174) (Cr ar; prereq Δ) Staff

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (387175) (Cr ar; prereq #) Staff

Genetics and Cell Biology (GCB)

FIRST TERM

3022. GENETICS. (685528) (4 cr, §Biol 5003; not intended for biology majors; prereq Biol 1011; 1000-1100 MTWThF plus 1 hr ar; ClaOff B35)
Mechanisms of heredity; their implications for biological populations, and applications to practical problems.

3970. INDEPENDENT STUDY. (485529) (Cr ar; prereq #, Δ) Staff

Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature.

3990. LABORATORY RESEARCH. (885530) (Cr ar; prereq #, Δ) Staff

Individual projects on selected topics and problems.

5022. GENETICS. (685531) (3 cr, §3022, §Biol 5003; not open to grad students in genetics; 1000-1100 MTWThF plus 1 hr ar; ClaOff B35)
See 3022.

5610. LABORATORY IN ELECTRON MICROSCOPY. (485532) (2-5 cr; S-N only; prereq 5606 or *5606, #; SnH 35) Johnson

Practical application of laboratory techniques in biological electron microscopy through an independent research project. Intended primarily for graduate students who will use electron microscopy in their thesis research. Approximately 20 hours of microscope time must be paid for through hourly charges.

8970. DIRECTED STUDIES. (285533) (Cr ar; prereq #) Staff

8990. RESEARCH. (185534) (Cr ar; prereq #) Staff

SECOND TERM

3970. INDEPENDENT STUDY. (187176) (Cr ar; prereq #, Δ) Staff
See First Term.

3990. LABORATORY RESEARCH. (087177) (Cr ar; prereq #, Δ) Staff
See First Term.

Course Descriptions

5610. LABORATORY IN ELECTRON MICROSCOPY. (887178) (2-5 cr; S-N only; prereq 5606 or *5606. #: SnH 35)
Johnson
See First Term.

8970. DIRECTED STUDIES. (687179) (Cr ar; prereq #) Staff

8990. RESEARCH. (087180) (Cr ar; prereq #) Staff

Biology Session

Held at the Lake Itasca Forestry and Biological Station

(See also Forest Resources, page 110)

During two five-week terms of the summer session (June 13 through July 17 and July 18 through August 21), opportunities for fieldwork in terrestrial and freshwater biology in its most fundamental aspects are available at Itasca State Park, approximately 220 miles northwest of the Twin Cities.

Classes are conducted cooperatively by various departments in the College of Agriculture and the College of Biological Sciences. The following opportunities will be offered:

1. Instruction in field biology for college undergraduates, graduate students, high school and nature study teachers, and others interested.
2. Biological investigation in the lakes, prairies, or forests of the area for graduate students.
3. Facilities for guest investigators working on independent research in terrestrial and freshwater biology.

For the *Lake Itasca Biology Session Bulletin*, which describes in detail the opportunities and facilities available at the station, write to: Director of Summer Session, 135 Johnston Hall, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

ADMISSION AND REGISTRATION

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

Course work taken at the Itasca Biology Session may be considered for resident requirements at the University of Wisconsin upon recommendation of the department concerned.

Reservations for housing and course work should be made as early as possible. A special Request for Reservation form for this purpose is included in the *Lake Itasca Biology Session Bulletin*. This form should be mailed to: Chairman of Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. Assignments to classes will be verified by April 10 for early applicants. Late applications will be accepted for classes that are not closed, up to the time of registration. The necessary class reservation cards will be held with the reservation request and are to be turned in by the student when he or she registers at the station on June 13 or July 18.

TUITION AND FEES

Tuition and fees are payable each five-week term by every regular registrant. They are due on or before June 13 for first term or July 18 for second term.

	5 credits per term	10 credits per term
Tuition	\$132.50	\$265.00
Student Services Fee	20.00	20.00
Laboratory Fee	8.50	8.50
	<hr/>	<hr/>
	\$161.00	\$293.50

Course Descriptions

Graduate students may register for thesis-only upon payment of \$65 tuition per term and required student services and laboratory fees.

Independent investigators will pay a research fee based on facilities, equipment, and services required; the minimum fee is \$2.50 per week.

On the basis of the experience of other groups of students, it is estimated that board—which is determined on an actual cost basis—will be approximately \$225 for the five-week period. A charge of \$30 per term is made for room in the cabins of the station and is to be paid to the chairman during the first week of each term.

The laboratory fee covers the use of microscopes, nets, boats, and various kinds of equipment and supplies.

The estimated cost of \$420 (5 credits) or \$550 (10 credits) for each five-week term does not include books, class supplies, traveling expenses including class field trips, clothing, laundry, and incidental personal expenses.

Tuition and fees are payable on or before June 13 and July 18. Late fees are assessed for both late registration and late payment.

Late Registration—No registration will be accepted after June 13 or July 18 without the approval of the chairman of the Field Biology Program and payment of the late registration fee, as follows:

June 14-18 or July 19-23	\$10
Thereafter	\$20

Late Payment—A fee of \$20 is charged if tuition and fees are paid after the student's due date, as indicated on the fee statement at the time of registration and on the following chart:

<i>Registration Period</i>	<i>Tuition and Fees Due Date</i>
Through June 13 or July 18	Five workdays after registration
June 14-17 or July 19-22	June 18 or July 23
Thereafter	One workday after registration

Biology (Biol)

FIRST TERM

5870. ITASCA SEMINAR. (985535) (1 cr; prereq Δ) Parmelee

5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY. (785536) (Cr ar; prereq #, Δ) Staff

SECOND TERM

5870. ITASCA SEMINAR. (887181) (1 cr; prereq Δ) Parmelee

5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY. (687182) (Cr ar; prereq #, Δ) Staff

Botany (Bot)

FIRST TERM

R 5801. PLAINS AND BOREAL FLORA. (185539) (5 cr; limited to 20 students; prereq course in taxonomy, Δ; 0800-1700 MTh) Morley

R 5811. FRESHWATER ALGAE. (585540) (5 cr; limited to 20 students; prereq 10 cr in botany, biology or zoology, Δ; 0800-1700 TF) Pfiester

5890. RESEARCH PROBLEMS. (385541) (1-5 cr; prereq #, Δ) Staff

SECOND TERM

- R 5805. **AQUATIC FLOWERING PLANTS.** (487183) (5 cr; limited to 20 students; prereq course in taxonomy, Δ; 0800-1700 MTh) Kaul
- R 5821. **LICHENS.** (589975) (5 cr; limited to 20 students; prereq 10 cr in botany or zoology or #. Δ; 0800-1700 TF) Dibben
5890. **RESEARCH PROBLEMS.** (187185) (1-5 cr; prereq Δ) Staff

Ecology and Behavioral Biology (EBB)

FIRST TERM

- R 3800. **INTRODUCTION TO FIELD RESEARCH.** (185542) (10 cr; limited to 20 students; prereq 2 courses in biology, Δ; hrs ar) Barnwell
- R 5812. **AQUATIC ECOLOGY.** (389976) (5 cr; limited to 20 students; prereq 15 cr biology, 5 cr chemistry, Δ; 0800-1700 WS) Whiteside
- R 5815. **FIELD ETHOLOGY.** (085543) (10 cr; limited to 20 students; prereq course in behavior, Δ; hrs ar) Green and visiting faculty
- R 5834. **FIELD ORNITHOLOGY.** (885544) (5 cr; limited to 15 students; prereq Biol 1106, Δ; 0800-1700 TF) Owre

SECOND TERM

- R 5812. **AQUATIC ECOLOGY.** (987186) (5 cr; limited to 20 students; prereq 15 cr biology, 5 cr chemistry, Δ; 0800-1700 WS) Megard
- R 5814. **COMMUNITY STRUCTURE AND FUNCTIONING.** (787187) (5 cr; limited to 20 students; prereq course in ecology, Δ; 0800-1700 TF) Christensen
- R 5817. **VERTEBRATE ECOLOGY.** (189977) (5 cr; limited to 15 students; prereq course in ecology, #, Δ; 0800-1700 WS) Seabloom
- R 8800. **ADVANCED FIELD ECOLOGY.** (587188) (10 cr; limited to 20 students; prereq admission to a grad program and Δ; hrs ar) Strong (Coordinator), Tilman, Morrow, Willson, Alstad

Entomology (Ent)

FIRST TERM

- R 5020. **FIELD ENTOMOLOGY.** (685545) (5 cr; limited to 15 students; prereq introductory biology; 0800-1700 MTh) Elzinga

Fisheries and Wildlife (FW)

SECOND TERM

- R 5456. **FIELD ECOLOGY OF FISHES.** (387189) (5 cr; limited to 15 students; prereq course in ecology; 0800-1700 TF) Ross

Plant Pathology (PIPa)

SECOND TERM

- R 5102. **FIELD MYCOLOGY.** (787190) (5 cr; limited to 15 students; prereq 6 cr in botany; 0800-1700 MTh) Stewart

Soil Science (Soil)

FIRST TERM

- R 5532. **SOILS AND THE ECOSYSTEM.** (289968) (5 cr; limited to 20 students; prereq course in ecology; 0800-1700 WS) Nimlos

College of Education

Those expecting to become candidates for the bachelor's or M.Ed. degree should apply for admission as regular students in the College of Education by filling out the application form in the Office of Admissions and Records and filing in that office any credentials necessary to support their request for advanced standing. Students interested in specific degree programs are encouraged to immediately contact the Education Career Development Office (ECDO), 1425 University Avenue S.E., to learn when students are accepted and the deadline for application for those programs. *The College of Education Bulletin* provides current information about programs and requirements.

Summer session students who do not expect to become candidates for undergraduate or graduate degrees do not need to present credentials (see section on Admission and Registration); they are classified as "summer-only" students. Those wishing to enter the Graduate School should apply for admission to the Graduate School (see Admission section).

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

Although normally classes are *not* scheduled on the final registration day (June 14), some College of Education short-term workshops *will* meet on that date.

MAIL REGISTRATION

Students registering in the College of Education as B.S., M.Ed., adult special, and summer-only students may register by mail. Teachers registering for courses in any department of the University, as well as other students taking professional education courses, should register through the College of Education and thus are entitled to register by mail. Mail registration is not permitted in the Graduate School, for 8000-level courses, or for courses and workshops listed in this bulletin that have special registration instructions.

Qualified students may obtain registration materials from the Summer Session Office, either by telephoning 373-2925 or by sending in the request card found at the back of this bulletin. All mail registrations *must be received by May 28* in order to be processed in time for the start of the summer session. Any student who registers and then decides not to attend classes should notify the Education Career Development Office as early as possible so that an official cancellation can be processed.

COUNSELING SERVICES

The staff of the Education Career Development Office of the College of Education will be available during both terms for consultation concerning admission, information about requirements of the teaching profession, and counseling. Appointments should be made at 1425 University Avenue S.E.

STUDENT PROGRESS COMMITTEE

Undergraduate and master of education students with questions concerning program adjustments and substitutions for required work should consult their adviser or a representative of the Student Progress Committee at 1425 University Avenue S.E.

GRADUATE CREDIT FOR WORKSHOPS

The amount of graduate credit in workshops that may be applied toward a master's degree program is limited. Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

STUDENT TEACHING

Student teaching during the summer is open *only* to those students completing programs in the College of Education who are regularly approved applicants for student teaching in the nursery school-kindergarten program, and to some students in special education. Because of limited facilities, it is *not* possible to offer student teaching to students completing programs at other institutions.

INSTITUTE OF CHILD DEVELOPMENT

Child Psychology (CPsy)

FIRST TERM

1301. INTRODUCTORY CHILD PSYCHOLOGY. (385636) (4 cr. §5301: prereq 5 cr introductory psychology: 1220-1310 MTWThF: WullH 230) DeHart

Introduction to science of child behavior: review of theories and research.

3302. INFANCY. (185637) (4 cr. prereq 1301 or #: 0905-0955 MTWThF: ChDev 105) Sroufe

Perceptual, motor, emotional, social, and cognitive development during the first two years of life: the developing infant in its social and physical environment.

3303. ADOLESCENT PSYCHOLOGY. (085638) (4 cr. §5303: prereq 5 cr introductory psychology: 0905-0955 MTWThF: PeikH 315) Bobbitt

Physical, cognitive, and social development during adolescence. Meets with 5303.

3311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (185640) (4 cr. §5311: prereq 1301 or equiv: 1010-1100 MTWThF: Pth 214) Reed

Description, etiology, development of behavioral and emotional problems of children: treatment where germane. Excluded are problems deriving primarily from sensory or physical handicap, mental retardation, or neurological impairment. Meets with 5311.

3331. PROCESSES OF SOCIALIZATION OF CHILDREN. (885642) (4 cr. §5331: prereq 1301 or equiv: 1115-1205 MTWThF: WullH 130) Motti

Processes of social learning: identification, social influence, imitation, reward and punishment, internalization, object choice. Meets with 5331.

3980. DIRECTED INSTRUCTION. (485644) (1-4 cr [max 4 cr]: S-N only: prereq #) Collins

Undergraduates serve as teaching assistants in courses they have successfully completed for credit.

5301. ADVANCED CHILD DEVELOPMENT. (390058) (4 cr. §1301, §8301: prereq 5 cr introductory psychology: 0800-0850 MTWThF: ChDev 105) Charlesworth

Theory and research in child development with emphasis on perception, language, learning, cognition, personality, and social development in children. Primarily for nonmajors.

5303. ADOLESCENT PSYCHOLOGY. (285645) (4 cr. §3303: prereq 5 cr introductory psychology: 0905-0955 MTWThF: PeikH 315) Bobbitt

Physical, cognitive, and social development during adolescence. Meets with 3303.

5311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (185646) (4 cr. §3311: prereq 1301 or equiv: 1010-1100 MTWThF: Pth 214) Reed

Description, etiology, development of behavioral and emotional problems of children: treatment where germane. Excluded are problems deriving primarily from sensory or physical handicap, mental retardation, or neurological impairment. Meets with 3311.

5315. INTRODUCTION TO MENTAL RETARDATION. (785648) (4 cr. §SpEd 5120, §PsyS 5120: prereq 1301 or equiv: 1010-1100 MTWThF: Pth 111) Turnure

Psychological and educational problems related to the mentally retarded. Meets with PsyS 5120.

5331. PROCESSES OF SOCIALIZATION OF CHILDREN. (985650) (4 cr. §3331: prereq 1301 or equiv: 1115-1205 MTWThF: WullH 130) Motti

Processes of social learning: identification, social influence, imitation, reward and punishment, internalization, object choice. Meets with 3331.

5339. PARENT-CHILD RELATIONS. (590060) (4 cr: prereq 3331 or 5331: 1220-1310 MTWThF: ChDev 105) Tapp

Discussion of parent-child relationships and evaluation of relevant research (e.g., cross-cultural child rearing perspectives, alternative parenting roles, economics of parent-child relations, rights of parents and children).

5341. PERCEPTUAL DEVELOPMENT. (390061) (4 cr: prereq 1301 or #: 1115-1205 MTWThF: ChDev 105) Salapatek

Perceptual learning and the development of sensory and perceptual processes.

Course Descriptions

5970. DIRECTED STUDY IN CHILD PSYCHOLOGY. (785651) (Cr ar; prereq #) Collins
Independent reading.

5990. DIRECTED RESEARCH IN CHILD PSYCHOLOGY. (585652) (Cr ar; prereq #) Collins
Individual empirical investigation.

8970. INDEPENDENT STUDY. (385653) (Cr ar; prereq #) Collins
Independent reading.

8990. RESEARCH PROBLEMS. (185654) (Cr ar; prereq #) Collins
Individual empirical investigation.

SECOND TERM

1301. INTRODUCTORY CHILD PSYCHOLOGY. (787268) (4 cr, §5301; prereq 5 cr introductory psychology; 1010-1100 MTWThF; ChDev 216) McGurk
See First Term.

3303. ADOLESCENT PSYCHOLOGY. (587269) (4 cr, §5303; prereq 5 cr introductory psychology; 1115-1205 MTWThF; ChDev 216) Dolgin
See First Term. Meets with 5303.

3311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (987270) (4 cr, §5311; prereq 1301 or equiv; 0905-0955 MTWThF; ChDev 218) Robb
See First Term. Meets with 5311.

3313. PSYCHOLOGY OF ATYPICAL CHILDREN. (290070) (4 cr, §5313; prereq 1301 or equiv; 0800-0850 MTWThF; ChDev 218) 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.

3980. DIRECTED INSTRUCTION. (787271) (1-4 cr [max 4 cr]; S-N only; prereq #) Collins
See First Term.

5303. ADOLESCENT PSYCHOLOGY. (587272) (4 cr, §3303; prereq 5 cr introductory psychology; 1115-1205 MTWThF; ChDev 216) Dolgin
See First Term. Meets with 3303.

5311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (387273) (4 cr, §3311; prereq 1301 or equiv; 0905-0955 MTWThF; ChDev 218) Robb
See First Term. Meets with 3311.

5313. PSYCHOLOGY OF ATYPICAL CHILDREN. (990072) (4 cr, §3313; prereq 1301 or equiv; 0800-0850 MTWThF; ChDev 218) 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.

5335. PEER RELATIONS. (590074) (4 cr; prereq 3331 or 5331; 1010-1100 MTWThF; ChDev 218) LaFreniere
Peer influences, social interactions, and social relations; developmental changes.

5343. COGNITIVE DEVELOPMENT. (887276) (4 cr; prereq 1301 or #; 1220-1310 MTWThF; ChDev 218) Maratsos
Development of cognitive processes; discussion of relevant theory, research literature, and methodology.

5970. DIRECTED STUDY IN CHILD PSYCHOLOGY. (487278) (Cr ar; prereq #) Collins
See First Term.

5990. DIRECTED RESEARCH IN CHILD PSYCHOLOGY. (287279) (Cr ar; prereq #) Collins
See First Term.

8970. INDEPENDENT STUDY. (687280) (Cr ar; prereq #) Collins
See First Term.

8990. RESEARCH PROBLEMS. (487281) (Cr ar; prereq #) Collins
See First Term.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Art Education (ArEd)

FIRST TERM

R 3001. SURVEY OF ART ACTIVITIES—June 15-29. (085655) (4 cr; not open to art education majors; limited to 35 students; 1230-1530 MTWThF; WullH 220) Day
Introduction to pictorial expression, design, and the function of art in the school environment.

R 5001. ART MEDIA TECHNIQUES. (1-12 cr [max 12 cr]; each section limited to 35 students)
Lectures, demonstrations, discussions, critique sessions exploring techniques and processes in creativity; handling specific media; each offering focuses on a single topic.

Sec 1, Basic Drawing, July 6-16, (885656) 3 cr. 0830-1130 MTWThF. WullH 220. Day
Focuses on the fundamentals of drawing, including composition, proportion, shading, and perspective with suggestions for teaching drawing to children at various age levels. No art background is required.

Sec 2, Art Projects for Elementary Schools, July 6-16, (685657) 3 cr. 1230-1530 MTWThF, WullH 240. DiBlasio
Development of art curriculum projects for use in the elementary classroom; innovative media and techniques surveyed. Appropriate for elementary teachers as well as art specialists.

R 5302. CURRICULUM INNOVATIONS IN ART EDUCATION—June 15-29. (190104) (4 cr; limited to 35 students; 0830-1130 MTWThF; WullH 240) DiBlasio
Study and analysis of innovations, evaluation of materials for teaching units and projects.

R 5605. PRACTICUM. (3-9 cr; each section limited to 5 students; prereq #)
Independent project under direction; gathering data, developing proposals, experimenting with evaluating innovative practices.

Sec 21. (285659) Day

Sec 22. (685660) DiBlasio

R 5900. PROFESSIONAL PROBLEMS. (3 cr; each section limited to 5 students; prereq MEd student; hrs ar)
Independent study for M.Ed. candidates integrating learning from art education, art, and education.

Sec 21. (485661) Day

Sec 22. (285662) DiBlasio

R 8900.* PROBLEMS: ART EDUCATION. (Cr ar; each section limited to 5 students; prereq #; hrs ar)
Independent projects under staff guidance; may include advanced studio practice or technical problems requiring experimental or library research.

Sec 21. (185663) Day

Sec 22. (985664) DiBlasio

SECOND TERM

R 3001. SURVEY OF ART ACTIVITIES—July 19-30. (590107) (4 cr; not open to art education majors; limited to 35 students; 0830-1130 MTWThF and 4 hrs lab ar; WullH 220) Olson
See First Term.

R 5001. ART MEDIA TECHNIQUES. (1-12 cr [max 12 cr]; each section limited to 35 students)
See First Term.

Sec 1, Jewelry Making, August 2-12, (187283) 3 cr. 1230-1530 MTWThF. WullH 220. Olson
Basic nonsoldering techniques of working in a variety of media adaptable to young people of elementary school age using limited budgets and minimum equipment. Knowledge of or experience in jewelry-making not required.

Sec 2, Mixed Media Techniques, July 19-30, (987284) 3 cr. 1230-1530 MTWThF, WullH 120. Slettehaug
Combinations of two- and three-dimensional art experiences to produce constructions for use in the schools; emphasis on creative awareness and the individual's potential as a generator of new information.

Sec 3, Art Resources in the Twin Cities Area, August 2-12, (787285) 3 cr. 0830-1130 MTWThF. WullH 120, Slettehaug
Local art resources that can be utilized in the schools will be developed through visits, lectures, and demonstrations in various locations in the metropolitan area; cultural and art centers emphasized.

R 5386. IMPROVING ART PROGRAMS IN THE SCHOOLS—August 12-18. (387287) (4 cr; limited to 50 students; prereq tchg exper or #; 0900-1630 MTWThF; WullH 240) Day
Critical examination of present art programs in the schools. Emphasis on museums as resources for educators. For prerequisite reading list, contact the Art Education Program, 373-4050.

R 5605. PRACTICUM. (3-9 cr; each section limited to 5 students; prereq #; hrs ar)
See First Term.

Sec 21. (187288) Day

Sec 23. (387290) Slettehaug

Sec 22. (087289) Olson

Course Descriptions

5900. PROFESSIONAL PROBLEMS. (3 cr; each section limited to 5 students; prereq MEd student; hrs ar)
See First Term.

Sec 21, (187291) Day
Sec 22, (087292) Olson

Sec 23, (390108) Slettehaug

8900.* PROBLEMS: ART EDUCATION. (Cr ar; each section limited to 5 students; prereq #; hrs ar)
See First Term.

Sec 21, (390111) Day

Sec 22, (590110) Slettehaug

Curriculum and Instructional Systems (CISy)

FIRST TERM

5000. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL SYSTEMS. (785665) (1 cr, §SeEd 5000, §SeEd 5102; 0810-0900 MW; EdHAn 64) Carrier
Introduction to use of technology in instruction; self-instructional, computer-managed module.

5002. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL EQUIPMENT RESOURCES. (790395) (1 cr, §SeEd 5002, §SeEd 5102; 0810-0900 TT; EdHAn 64) Carrier
Introduction to use of technology in instruction; self-instructional, computer-managed module.

5003. EDUCATIONAL TECHNOLOGY: COMPUTERS IN THE CLASSROOM. (585666) (1 cr, §SeEd 5003, §SeEd 5102; limited to 25 students; 0910-1000 MW; PeikH 335) Philipson
Introduction to the use of computer technology in instruction; self-instructional, computer-managed module.

5006. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL COMPUTER PROGRAMMING. (385667) (1 cr; 0910-1000 TT; PeikH 335) Philipson
Introduction to designing computer-based instructional programs using software languages most used in learning environments (BASIC and PILOT). Students need not have mathematics or science background.

5209. PRINCIPLES AND PROCEDURES IN DESIGNING INSTRUCTION—June 14-July 2. (385670) (4 cr; prereq 5000; 0910-1130 MTWThF; EdHAn 64) Carrier
Major models of instructional development; generic components; design models; review of instructional design and learning environments.

5216. INSTRUCTIONAL SIMULATIONS AND LEARNING GAMES: DEVELOPMENT AND CLASSROOM USE. (590396) (3 cr, §SeEd 5131; limited to 25 students; 1200-1300 MWF; EdHAn 64)
Background, development factors, subject-matter models, procedures for use of material; analysis of value of such materials.

5509. DIRECTED INDIVIDUAL STUDY. (1-6 [max 6 cr]; each section limited to 5 students; prereq Δ)
Review of literature in research and theory of instructional systems.

Sec 21, (085672) Carrier

Sec 22, (885673) Philipson

8501.* PROBLEMS: INSTRUCTIONAL SYSTEMS. (Cr ar; each section limited to 5 students; prereq Δ)
Individual empirical investigation.

Sec 21, (485675) Carrier

Sec 22, (285676) Philipson

SECOND TERM

5003. EDUCATIONAL TECHNOLOGY: COMPUTERS IN THE CLASSROOM. (687294) (1 cr, §SeEd 5003, §SeEd 5102; limited to 25 students; 0810-0900 MW; EdHAn 64) Philipson
See First Term.

5201. SYSTEMS APPROACH TO DESIGN OF INSTRUCTION. (490083) (3 cr, §SeEd 5201; prereq 5000 or SeEd 5000 or #; 1230-1430 MWF; EdHAn 64) R Tennyson
Instructional materials design in accordance with systems principles including design of a specific unit of courseware.

5203. RESOURCE MANAGEMENT IN INSTRUCTIONAL PROGRAMS. (990086) (3 cr, §SeEd 5203; prereq 5000 or SeEd 5000 or #; 0910-1010 MTWThF; EdHAn 64) Philipson
Processes an instructor or media generalist employs in integrating resources into a planned program; introduction to facilities planning, discussion of environmental health and safety.

5205. APPLICATIONS OF COMPUTERS IN EDUCATION. (487295) (3 cr, §SeEd 5205; prereq 5003 or SeEd 5003; 1015-1215 MWF; EdHAn 64) R Tennyson
Computer uses in education and training; instructional applications; simulation, tutorial, counseling, testing, instructional management, modeling and information retrieval (including data base inquiry). Computer-managed course includes criteria for selection, evaluation, and examination of on-line examples.

5509. DIRECTED INDIVIDUAL STUDY. (1-6 cr [max 6 cr]; each section limited to 5 students; prereq Δ)
See First Term.

Sec 21, (390089) Philipson

Sec 22, (390092) R Tennyson

R 5600. INTRODUCTION TO CURRICULUM SYSTEMS—July 19-August 6. (690096) (3 cr, §SeEd 5113, limited to 40 students; 1010-1205 MTWThF; PeikH 325) Kimpston
Exploration of forces influencing goals and curriculum planning, trends and issues, traditional and emergent curricular designs, current proposals for change; a model for curriculum planning.

R 5605. PRINCIPLES AND PROCEDURES IN DESIGNING CURRICULUM—July 19-August 6. (187297) (3 cr, §SeEd 5114; limited to 40 students; 1300-1500 MTWThF; PeikH 325) Kimpston
Systematic curriculum planning; students develop models for planning, formulate plans, outline a curriculum design for an educational setting.

R 8501.* PROBLEMS: INSTRUCTIONAL SYSTEMS. (Cr ar; each section limited to 5 students; prereq Δ)
See First Term.

Sec 21, (987298) Philipson
Sec 22, (787299) R Tennyson

Sec 23, (290098) Kimpston

8700. CURRICULUM AND INSTRUCTIONAL SYSTEMS FIELD EXPERIENCE. (487300) (3-6 cr [max 6 cr]; prereq #; hrs ar) Kimpston
Internship experience in an educational setting; planning, implementing, and supervising curriculum and/or instructional change.

Education: Adult and Teacher (Educ)

SECOND TERM

5103. ADULT EDUCATION WORKSHOP: Assessing Organizational Needs for Adult Education—July 19-August 13. (190748) (1-12 cr [max 12 cr]; prereq practicing adult educator or #; 1010-1235 TTh; P#H 102) Williams
Study of topic appropriate to the activities and interests of the participants. This offering for 3 credits.

5204. READING IN WORK SETTINGS—July 19-30. (190085) (3 cr, §VoEd 5204; 1500-1800 MTWThF; PeikH 225) Park

Overview of concepts involved in integrating reading instruction into vocational training programs and work settings; diagnosis and methods of assessing needs of vocational students and workers on a job, and techniques for building needs into training programs.

R 5205. FIELD EXPERIENCES IN ADULT EDUCATION. (4-8 cr [max 8 cr]; each section limited to 3 students; prereq #)

Sec 21, (287301) Williams

Sec 22, (187302) Park

5401. ADULT LEARNING AND DEVELOPMENT THROUGH THE LIFE SPAN—July 19-August 13. (787304) (3 cr; 1010-1235 MW; ChDev 105) Williams

Physiological, social, and cultural bases of adult behavior; motivation, socialization, personality change as applied to education of adults.

R 8302.* PROBLEMS: ADULT EDUCATION. (3-9 cr; each section limited to 3 students; prereq #)

Individual research in areas of adult education.

Sec 21, (587305) Williams

Sec 22, (387306) Park

Elementary Education (Elem)

FIRST TERM

3604.¹ STUDENT TEACHING IN THE NURSERY SCHOOL. (685688) (3-6 cr; S-N only; prereq approval of major adviser and director of student tchg; hrs ar) Adoll, Clark

R 5100. ELEMENTARY SCHOOL CURRICULUM—July 1-16. (485689) (3 cr; limited to 40 students; prereq 3101; 1115-1310 MTWThF; ChDev 218) Howey

R 5300. LITERATURE FOR THE ELEMENTARY SCHOOL. (485692) (3 cr; limited to 40 students; 0905-0955 MTWThF; BuH 123) Odland

R 5305. SURVEY OF SPECIAL COLLECTIONS IN CHILDREN'S LITERATURE. (285693) (3 cr; limited to 20 students; prereq 5300 or #; 0800-0850 MTWThF; BuH 123) Odland

Content and accessibility of collections that relate to the creation of books, emphasis on possibilities and methods for interpreting the content of the collections to children.

¹Open only to students admitted to the Nursery School Licensure Program or Early Education-Special Education Program.

Course Descriptions

- # 5317. MATERIALS LABORATORY FOR TEACHING ENGLISH IN ELEMENTARY SCHOOLS—July 1-16.** (790400) (3 cr; limited to 40 students; prereq 3316 or elem tchg exper; 1010-1205 MTWThF; BuH 120)
Examination and evaluation of textbooks, programmed materials, and audiovisual resources for elementary school language arts instruction.
- # 5318. CREATIVE WRITING FOR AND BY CHILDREN—June 15-30.** (985695) (3-6 cr [max 6 cr]; limited to 40 students; prereq 3300 or 3336 or elem tchg exper and #: 1010-1205 MTWThF; BuH 120) Odland
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 this offering for 3 credits.
- # 5319. TEACHING SECOND LANGUAGES AND CULTURES IN ELEMENTARY SCHOOL—June 15-July 2.** (590401) (3 cr; limited to 35 students; 1010-1205 MTWThF; PeikH 215) Jorstad
Methods and materials; alternatives in program format; choice of preparation; teaching the four skills; community involvement; cross-cultural activities; testing and evaluation; use of children's literature, games, and songs; developing units and lessons.
- # 5336. CLINICAL PRACTICE IN REMEDIAL TEACHING.** (890758) (3 cr; limited to 30 students; prereq 5334 or 5107 and #: 0905-1100 MTWTh; off campus) Taylor
Remedial tutoring of individual children who have difficulty in school learning. Students will be informed of where class will meet upon registration.
- # 5338. TEACHING READING IN THE INTERMEDIATE GRADES.** (190403) (3 cr; limited to 40 students; prereq 3331 and #: 1115-1205 MTWThF; PtH 111) Taylor
For teachers and specialists interested in problems of teaching reading beyond the decoding stage; emphasis on comprehension strategies, basic study skills, reading in the content area.
- # 5339.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL READING—June 14-17.** (185699) (1-9 cr [max 9 cr]; limited to 40 students; prereq elem tchg exper or #: 1300-1600 MTWTh; off campus) Taylor
This 1-credit offering focuses on analysis of new instructional materials, techniques, recent trends, and innovations by reading staff members Graves, Manning, Schreiner.
- # 5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES.** (985700) (3 cr; limited to 30 students; prereq 5349; 1325-1520 MWF; PeikH 385)
Experiences in the use of educational materials and media common to teaching modern elementary school science.
- # 5361. TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL—June 15-30.** (785701) (3 cr; limited to 40 students; prereq 3101 or equiv; 1115-1310 MTWThF; PeikH 165) Ellis
Content and organization of social studies programs; programs of understanding, improving the learning situation, and effective use of materials.
- # 5363.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES.** (Cr ar [max 9 cr]; each section limited to 35 students; prereq elem tchg exper and #)
Analysis of new instructional materials and recent curriculum developments in the field; training in innovative instructional procedures.
- Sec 1, (085705) The Use of Museums in Elementary Social Studies, June 15-30, 3 cr, 1330-1600 MTWThF, Minnesota Science Museum, 10th and Wabasha, St. Paul, MN, Ellis**
Designed to acquaint teachers with facilities and educational uses of Twin Cities museums. Using the Minnesota Science Museum as a model, participants will explore it and other area museums as resources for the development of museum related field trips and social studies units.
- Sec 2, (285712) Elementary Economics Education, June 14-18, 3 cr, 0800-1700 MTWThF, Rochester Extension Center, 2120 East Center Street, Rochester, MN, Cogan**
Focuses on economics education programs, materials, and teaching methods in the elementary school with special attention to the "Trade Offs" program recently developed for elementary school students. A limited number of tuition scholarships will be available to in-service elementary or middle school teachers who meet specified criteria. For information, contact Bruce Dalgaard, Center for Economic Education, 1169 Business Administration Building, 271 19th Avenue South, University of Minnesota, Minneapolis, MN 55455, or call (612) 373-4469. Advance application is required; deadline for application is April 28, 1982.
- # 5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION.** (185718) (3 cr; limited to 40 students; prereq tchg exper in kindergarten or primary school or #: 0905-0955 MTWThF; PtH 214) Hansen
Continuing needs of children in our changing culture; current practices and recent research.
- # 5377. EARLY CHILDHOOD EDUCATION: MATERIALS AND RESOURCES.** (385720) (3 cr; limited to 40 students; prereq 3377 or 5376 and tchg exper; 1115-1310 MWF; PtH 215) Hansen
Experience in the selection and use of commercial and teacher-made education materials common to early childhood education programs.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

R 5602. PRACTICUM: IMPROVEMENT OF TEACHING. (3 cr; each section limited to 5 students; prereq MEd student in elem education, #: S-N only; hrs ar)

Sec 21, (085722) Howey	Sec 26, (185730) Ellis
Sec 22, (685724) Stochl	Sec 27, (785732) Cogan
Sec 23, (485725) Odland	Sec 28, (585733) Hansen
Sec 24, (185727) Taylor	Sec 29, (385734) Dykstra
Sec 25, (785729) Post	

R 8300. RESEARCH IN SPECIAL COLLECTIONS OF CHILDREN'S LITERATURE. (685741) (1-3 cr [max 6 cr]; limited to 15 students; 1325-1520 TTh; BuH 120) Odland
This offering for 3 credits will provide comparative study of national and international special collections of original manuscripts, artwork, first editions, and other bases for collection of children's books; research in University Libraries Special Collections or other accessible collections.

R 8916.* PROBLEMS: TEACHING ENGLISH. (090404) (Cr and hrs ar; limited to 5 students; prereq #) Dykstra

8931.* PROBLEMS: TEACHING READING. (090404) (Cr and hrs ar; each section limited to 5 students; prereq 5331 or SeEd 5344 and #)

Sec 21 (185744) Odland	Sec 22, (985745) Taylor
------------------------	-------------------------

R 8961.* PROBLEMS: TEACHING SOCIAL STUDIES. (Cr and hrs ar; each section limited to 5 students; prereq 5361 or SeEd 5155 or 8104 and #)

Sec 21, (185752) Ellis	Sec 22, (885754) Cogan
------------------------	------------------------

R 8976. PROBLEMS: TEACHING KINDERGARTEN. (685755) (3 cr; limited to 5 students; prereq #; hrs ar) Hansen

R 8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION. (Cr and hrs ar; each section limited to 5 students; prereq #)

Sec 21, (985759) Howey	Sec 26, (885768) Ellis
Sec 22, (585764) Stochl	Sec 27, (685769) Cogan
Sec 23, (385765) Odland	Sec 28, (085770) Hansen
Sec 24, (185766) Taylor	Sec 29, (685772) Dykstra
Sec 25, (085767) Post	

SECOND TERM

R 5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 19-August 6. (887309) (3 cr; limited to 40 students; 0800-0955 MTWThF; ChDev 216) Park

R 5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL—July 19-August 6. (390402) (3 cr; limited to 40 students; prereq 3316 or elem tchg exper; 1015-1205 MTWThF; PTH 215)
Improvement of instruction, study of trends in English education.

R 5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL—July 19-August 6. (890405) (3 cr; limited to 40 students; prereq 9 cr in education; 0800-0955 MTWThF; PTH 102) Taylor
For graduate students and summer students who hold a bachelor's degree.

R 5334. READING DIFFICULTIES—July 19-August 6. (087311) (3 cr; limited to 40 students; prereq 5331 or SeEd 5344; 1015-1205 MTWThF; BuH 120) Schreiner

R 5339.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL READING: Use of Computers in Teaching Elementary Reading—July 19-August 6. (687313) (1-9 cr [max 9 cr]; limited to 40 students; prereq elem tchg experience or #: 1325-1520 MTWThF; BuH 123) Schreiner
See First Term. This offering for 3 credits focuses on computerized learning devices.

R 5347.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SCIENCE. (1-6 cr; each section limited to 35 students; prereq elem tchg exper)
Offered in summers with focus on a single program for each offering: treating concept foundations, goals, and teaching and evaluation procedures.

Sec 1, Kindergarten and Primary Grade Science, July 19-23, (690406) 1 cr, 0800-0955 MTWThF, PeikH 385, Humphreys

Selected science instructional materials and involvement in classroom science demonstrations and activities.

Sec 2, School Gardening, August 2-13, (190409) 2 cr, 1300-1600 MW and 4 hr ar, University of Minnesota Landscape Arboretum, Chaska, MN, Humphreys

Development of instructional packages; topics include selection of hardy vegetables and flowers, starting plants in classrooms, plot preparation, food preservation; opportunities to work with naturalists and botanists and to explore the specialized arboretum gardens.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

Sec 3. Zoo Curriculum Development, August 2-13. (490410) 2 cr. 1325-1640 TTh, Minnesota Zoological Gardens, 12101 Johnny Cake Ridge Rd., Apple Valley, MN, Humphreys

A survey of existing zoo curriculum materials, development of new exploration packages, opportunities to work closely with zoo naturalists and to take guided tours of the several environmental areas of the zoo. Meets concurrently with SeEd 5394, section 3.

Sec 4. Teaching Environmental Issues: Water Quality and Acid Precipitation, July 19-30. (290411) 3 cr. 1300-1600 MTWThF, PeikH 375, R Johnson

This workshop on curriculum in environmental education, emphasizing water, includes examination of curricula developed under Sea Grant for use in the elementary school, curricula from other sources, and selected field trips to provide ideas for classroom use.

¶ 5363.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES—Global Education—August 9-13. (190412) (3 cr; limited to 20 students; prereq elem tchg exper; 0800-1700 MTWThF; PeikH 165) Cogan

See First Term. This workshop will analyze existing instructional materials in the areas of global education (K-12); help teachers select appropriate units, lessons, etc., for use in their classrooms; help teachers develop specialized materials in the area of global education appropriate to their instructional situation. Focuses on economic consequences of governmental decisions on a global scale. A limited number of tuition scholarships will be available to in-service teachers who meet specified application criteria. For information, contact John Cogan, 152A Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis 55455, or call (612) 373-5629. Advance application is required; deadline for application is April 28, 1982. Meets concurrently with SeEd 5153, section 3.

¶ 5602. PRACTICUM: IMPROVEMENT OF TEACHING. (3 cr; each section limited to 5 students; prereq MEd student in elem education. #; S-N only; hrs ar)

Sec 21. (487314) Jackson

Sec 22. (287315) Post

Sec 23. (187316) Taylor

Sec 24. (987317) Schreiner

Sec 25. (787318) Dykstra

¶ 8916.* PROBLEMS: TEACHING ENGLISH. (990413) (Cr and hrs ar; limited to 5 students; prereq #) Dykstra

¶ 8931.* PROBLEMS: TEACHING READING. (Cr and hrs ar; each section limited to 5 students; prereq 5331 or SeEd 5344 and #)

Sec 21. (587322) Taylor

Sec 22. (387323) Schreiner

¶ 8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION. (Cr and hrs ar; each section limited to 5 students; prereq #)

Sec 21. (087235) Jackson

Sec 22. (887326) Post

Sec 23. (687327) Taylor

Sec 24. (487328) Schreiner

Sec 25. (287329) Dykstra

Mathematics Education (MthE)

FIRST TERM

¶ 5101.¹ WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS. (785777) (1-12 cr [max 12 cr]; limited to 35 students; not open to majors in mathematics education; prereq #: 0800-0955 MWF; PeikH 375) Stochl
Modern trends, methods, and materials used to convey mathematical ideas. This offering for 3 credits.

¶ 5102.¹ WORKSHOP: MATHEMATICS EDUCATION: (Interaction of Mathematics and the Sciences). (585778) (1-12 cr [max 12 cr]; limited to 35 students; 1220-1520 MTh; PeikH 365) House
Issues, materials, and instructional techniques, focusing on a single current topic of particular relevance to secondary school and college mathematics teachers. This 3-credit offering covers laboratory investigations of mathematical patterns, relationships, and principles embodied in phenomena commonly studied in secondary school physical science courses. Activities focus on patterns, variables, and functions; classes of functions; measurement; ratio and proportion; spatial relationships; and modeling, predicting, and decision making. Meets concurrently with SeEd 5394, section 3.

5312. TEACHING AND SUPERVISION OF MATHEMATICS IN THE SECONDARY SCHOOL. (690390) (3 cr; prereq mathematics tchg exper or #: 0800-0850 MTWThF; PeikH 315) House
Methods, materials, and curriculum development; principles of learning; review or research; preparation and evaluation of tests, units, and materials of instruction.

5345. MATHEMATICS FOR GIFTED CHILDREN. (490391) (3 cr; prereq 5311 or Elem 3391 Cr #; 1115-1205 MTWThF; PeikH 315) Stochl
Curriculum and methods of instruction for academically talented children; development of enrichment units; source materials for teachers.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

¶ 5355. MATHEMATICS FOR SLOW LEARNING CHILDREN. (485790) (3 cr; limited to 35 students; prereq 5311 or Elem 3391 or #: 1010-1100 MWF; PeikH 315) Post
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]; each section limited to 5 students; prereq #)
Supervised experience in teaching or related work in school.

Sec 21, (085798) Stochl
Sec 22, (885799) Post

Sec 23, (585800) House

¶ 5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; each section limited to 5 students; prereq #)
Survey of recent literature; design and preparation of reports on special problems.

Sec 21, (390397) Stochl
Sec 22, (190398) Post

Sec 23, (090399) House

¶ 8680. INTERNSHIP: MATHEMATICS EDUCATION. (Cr ar; each section limited to 5 students)
Participation in supervision, instruction, curriculum development, or research to gain in-service experience in a leadership role; includes a seminar, related project; required for the specialist certificate in mathematics education.

Sec 21, (290392) Stochl
Sec 22, (190393) Post

Sec 23, (990394) House

¶ 8980.* PROBLEMS: MATHEMATICS EDUCATION. (Cr ar; each section limited to 5 students; prereq 8500 or 8570)

Sec 21, (385801) Stochl
Sec 22, (185802) Post

Sec 23, (085803) House

SECOND TERM

¶ 5102.¹ WORKSHOP: MATHEMATICS EDUCATION. (1-12 cr [max 12 cr]; each section limited to 30 students; not open to majors in mathematics education; prereq #)
See First Term and Special Programs section.

Sec 1, Using Hand-Held Calculators in the Elementary School, July 19-30, (487331) 2 cr, 0800-0955 MTWThF, PeikH 375, Jackson
Instructional activities involving the calculator as an integral component to make teaching more effective and relevant to children.

Sec 2, Topics in Recreational Mathematics, July 26-August 6, (287332) 2 cr, 1010-1205 MTWThF, PeikH 315, Jackson
Recreational mathematics topics useful in improving problem solving, attitude and skill development. Topics from arithmetic, number theory, geometry and topology including cryptarithms, alphametics, geometric puzzles, curves of constant width, polyminoes and tessellations.

Sec 3, Improving Computational Skills, August 2-6, (187333) 1 cr, 0800-0955 MTWThF, PeikH 375, Jackson
Teaching procedures, materials, and techniques to aid in maintenance and improvement of computational skills. Materials and instructional organizations to improve concept and fact memory.

Sec 4, Using Teacher-Made and Commercial Games in the Mathematics Classroom, July 19-23, (987334) 1 cr, 1010-1205 MTWThF, PeikH 315, Jackson
Classification of mathematical games, procedures for effective use of developmental, strategic, practice, and problem-solving games in an instructional setting; principles of game construction; evaluation of teacher-made and commercial games.

Sec 5, Issues in Teaching and Learning Rational Number Concepts, July 19-30, (787335) 2 cr, 1010-1205 MTWThF, PeikH 375, Post
The nature of difficulties children encounter learning rational number concepts. Activities dealing with part-whole, measure, decimal, quotient, ratio, and operator interpretations of rational number. Curriculum materials examined.

Sec 6, Mathematics in an Interdisciplinary Setting, August 2-6, (587336) 1 cr, 1010-1205 MTWThF, PeikH 375, Post
Designed for the teacher of grades 4-8. The role and potential of mathematics for helping children to better understand the world around them.

Sec 7, Use of the Microcomputer in the Elementary Classroom, July 19-30, (387337) 2 cr, 0800-0955 MTWThF, PeikH 355, EdHAn 54, Stochl
Using the microcomputer to enhance instruction in language arts, mathematics, science, and social studies; evaluation of existing programs.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

Sec 8, Data Representation and Interpretation: Tables, Charts, and Graphs, July 19-23, (187338) 1 cr, 1220-1415 MTWThF, PeikH 375, House
Techniques of collecting, organizing, summarizing, and representing data; construction and interpretation of tables, charts, graphs, and maps; drawing inferences from data; applications of data analysis and statistics to selected topics (codes, music, reading, queues, weather, newspaper reports, personal finances)

R 5680. PRACTICUM IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; each section limited to 5 students; prereq #)
See First Term.

Sec 21, (187341) Jackson

Sec 22, (087342) Post

R 5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; each section limited to 5 students; prereq #)

See First Term.

Sec 21, (887343) Jackson

Sec 22, (687344) Post

R 8680.* INTERNSHIP: MATHEMATICS EDUCATION. (Cr ar; each section limited to 5 students)
See First Term.

Sec 21, (490407) Jackson

Sec 22, (290408) Post

R 8980.* PROBLEMS: MATHEMATICS EDUCATION. (Cr ar; each section limited to 5 students; prereq 8500 or 8570)

Sec 21, (487345) Jackson

Sec 22, (287346) Post

Secondary Education (SeEd)

FIRST TERM

3600.¹ STUDENT TEACHING. (885804) (Cr ar; prereq Δ) E Anderson

Supervised teaching for students wishing to elect credits in student teaching in addition to regular requirements.

5122. STRATEGIES FOR TEACHING CULTURE IN THE SECOND LANGUAGE CLASSROOM. (390156) (4 cr; 0905-0955 MTWThF; PeikH 215) Walker

Analysis of other cultures; generation of learning materials for developing understanding of other cultures; sections conducted in French, Spanish, and Hebrew.

5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (685805) (1-12 cr [max 12 cr]) Mackey
Opportunity to work individually or in teams on curricular, instructional, or evaluation problems within the school.

R 5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES. (1-3 cr [max 12 cr]; each section limited to 40 students)
Mackey

Issues, materials, and instructional techniques related to topics of particular relevance to social studies teachers.

Sec 1, Teaching About the Newspaper in the Classroom, June 21-July 2, (485806) 3 cr, 1300-1600 MTWThF, BioSci 12

Use of the newspaper as an instructional tool; original teaching activities for both elementary and secondary teachers.

Sec 2, Economic Geography, July 6-9, (285807) 3 cr, 0800-1600 MTWThF, Coon Rapids Senior High School, 2340 Northdale Blvd, Coon Rapids, MN

Use of economic content to improve the teaching of geography and history in secondary schools. A limited number of tuition scholarships will be available to inservice secondary teachers who meet specified criteria. For information, contact James Mackey, 152 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, MN 55455 or call (612) 373-9721. Advance application is required; deadline for application is June 1, 1982.

5175. SECONDARY REMEDIAL READING INSTRUCTION. (185808) (3 cr; prereq 5344 or Elem 5331 or #; 1115-1205 MTWThF; PeikH 225) Graves

Principles and techniques for developing and conducting programs for secondary students seriously deficient in reading skills.

R 5191². WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES. (1-10 cr [max 10 cr]; each section limited to 35 students)

Related specifically to the needs of the in-service teacher; topics, location, and duration highly flexible.

Sec 1, Classroom Organization in a Bilingual/Multicultural Setting, July 6-16, (190157) 2 cr, 1300-1500 MTWThF, PeikH 215, Walker

Development and management of instruction for students with varied levels of English proficiency as well as multiple language groups within one classroom. Management strategies that can effectively integrate school, community, and district support service for LEP students. Intended for bilingual and ESL teachers and resource personnel.

¹Student teaching is open only to students in regular degree programs of the College of Education. Application must be made by May 14. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

²Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Sec 2, Teaching Reading to the Second-Language Learner in the Elementary School, June 15-July 2, (090158) 3 cr. 1300-1500 MTWThF. PeikH 215, Jorstad
Intended for teachers in bilingual, ESL, and foreign-language programs; approaches to teaching reading in a language that is not the students' mother tongue; prereading for oral language and concept development.

¶ 5349.¹ WORKSHOP: SECOND READING INSTRUCTION. (890159) (1-12 cr [max 12 cr]; prereq #: 0905-0955 MTWThF; PeikH 225) Graves

Principles, instructional techniques, and materials for teaching reading in secondary schools. This 3-credit offering intended as a follow-up for students who have taken SeEd 3331, 5175, or 5344. Designed to improve comprehension and study skills instruction by giving teachers an opportunity to develop teaching procedures and materials consistent with current findings about the reading process and effective instruction. Building students' background knowledge before they read a selection, previewing fiction and nonfiction selections, teaching concepts, and monitoring student comprehension. Effective instructional strategies such as active teaching, modeling, highlighting, fading, and prompting.

¶ 5351. DIRECTED STUDY. (985812) (Cr ar [max 6 cr]; limited to 3 students; S-N optional; prereq #) Gennaro
Individual or group work on curricular, instructional, or evaluation problems.

¶ 5371. CURRICULUM WORKSHOP: Teaching Environmental Issues, Water Quality and Acid Precipitation—July 6-16. (190160) (1-3 cr per qtr; limited to 30 students; prereq 5113 or Elem 5100 or CISy 5600 or #: 0905-1205 MTWThF; PeikH 365) Glenn

Workshops pertaining to curriculum and instruction with specific topic to be identified at the time workshop is listed for offering. This 3-credit offering will teach strategies for treating environmental issues with emphasis on water quality and acid precipitation, societal problems of great concern. Curricular materials examined and used particularly valuable for middle school teachers, junior high science teachers, and senior high teachers of biology and chemistry. Meets concurrently with SeEd 5394, section 2.

¶ 5394.¹ WORKSHOP: SCIENCE EDUCATION. (1-12 cr [max 12 cr]; section 1 limited to 20 students, section 2 limited to 30 students; section 3 limited to 35 students)

Analysis of issues, materials, and instructional techniques related to current topics of relevance to secondary school and college science teachers.

Sec 1, Science Teaching and the Development of Reasoning—June 15-25,(185816) 3 cr, 0905-1205 MTWThF, PeikH 365, Gennaro

Concepts, text, laboratory work, and evaluation instruments used by science teachers will be examined for the level of reasoning needed by students to successfully complete science course requirements; results of junior/senior high school students on Piagetian reasoning tasks will be explored.

Sec 2, Teaching Environmental Issues: Water Quality and Acid Precipitation, July 6-16,(085817) 3 cr. 0905-1205 MTWThF, PeikH 365, Gennaro

Strategies for treating environmental issues with emphasis on water quality and acid precipitation, societal problems of great concern. Curricular materials examined and used particularly valuable for middle school teachers, junior high science teachers, and senior high teachers of biology and chemistry. Meets concurrently with SeEd 5371.

Sec 3, Interaction of Mathematics and the Sciences. (190751) 3 cr. 1220-1520 MTh, PeikH 365, House
Laboratory investigations of mathematical patterns, relationships, and principles embodied in phenomena commonly studied in secondary school physical science courses. Activities focus on patterns, variables, and functions; classes of functions; measurement; ratio and proportion; spatial relationships; and modeling, predicting, and decision making. Meets concurrently with MthE 5102.

5395. SCHOOL BASED PROJECTS IN SCIENCE EDUCATION. (885818) (1-12 cr [max 12 cr]); prereq MEd student in science education) Gennaro

Individual or group work on curricular, instructional, or evaluation problems and projects applicable to school situations.

5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS. (685819) (1-12 cr [max 12 cr]; prereq MEd student in English education) Graves

Individual or group work on curricular, instructional, or evaluation problems and projects applicable to school situations.

¶ 8801.* PROBLEMS: TEACHING SOCIAL STUDIES. (3-9 cr; each section limited to 3 students; prereq 5150, 5152, 5156, 8104 or #: hrs ar)

Individual research.

Sec 21, (085820) Mackey

Sec 22, (885821) Glenn

8871.* PROBLEMS: CURRICULUM CONSTRUCTION. (685822) (Cr and hrs ar; prereq #) Gennaro

¶ 8894.* PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION. (Cr ar [max 8 cr]); each section limited to 3 students)

Individual research.

Sec 21, (490164) Walker

Sec 22, (890162) Jorstad

¶ 8896.* PROBLEMS: TEACHING ENGLISH. (Cr and hrs ar; each section limited to 3 students)

Sec 21, (985826) Graves

Sec 22, (785827) Piche

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

R 8998. READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION. (1-3 cr; each section limited to 3 students)
Readings in development, research, curriculum, instruction, evaluation, culture, teacher education, as needed by the student.

Sec 21, (290165) Walker

Sec 22, (690163) Jorstad

SECOND TERM

R 5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (187347) (1-12 cr [max 12 cr]; limited to 5 students) Glenn
See First Term.

R 5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES. (1-3 cr [max 12 cr]; sections 1 and 2 limited to 40 students)
See First Term.

Sec 1, Teaching Social Studies in the Junior High and Middle School, July 19-30, (987348) 3 cr, 1300-1600 MTWThF, PeikH 165. Glenn

Sec 2, Using the Computer in the Social Studies Classroom, August 2-13, (090175) 3 cr, 1300-1600 MTWThF, PeikH 165. Glenn

Sec 3, Global Education, August 9-13, (990833) 3 cr, 0800-1700 MTWThF, PeikH 325. Cogan
Analysis of existing instructional materials in the areas of global education (K-12). Selection of appropriate units and lessons for classroom use and development of specialized materials in the area of global education appropriate to teaching situations. Focuses on economic consequences of governmental decisions on a global scale. A limited number of tuition scholarships will be available to in-service teachers who meet specified application criteria. For information contact John Cogan, 152A Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis 55455, or call (612) 373-5629. Advanced application is required; deadline for application is April 28, 1982. Meets concurrently with Elem 5363.

5185. SCHOOL AND PROFESSIONAL BASED EXPERIENCES IN SECOND LANGUAGES AND CULTURES. (787349) (1-12 cr [max 12 cr]; prereq MEd students only) Lange
Opportunity for teachers to work together on curricular, instructional, or evaluation problems; internship experience; participation in professional activities.

R 5191.¹ WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES. (1-10 cr [max 10 cr]; each section limited to 25 students) Lange
See First Term

Sec 1, The Multilevel Foreign Language Classroom, August 2-12, (187350) 2 cr, 1300-1500 MTWThF, PeikH 215

Organization, time, materials, resources, and approaches to language instruction as means of resolving problems of foreign language use in classrooms with more than one level.

Sec 2, Using Oral Interviews and Self-Evaluation in the Second Language Classroom, August 16-20, (690177) 1 cr, 1300-1500 MTWThF, PeikH 215

Examination of the Foreign Service Oral Interview and other oral evaluation instruments; other self-evaluation procedures; classroom and program applications of such procedures.

R 5350. CURRENT DEVELOPMENTS IN ENGLISH AND SPEECH EDUCATION: Teaching Writing—July 19-August 13, (987351) (1-6 cr [max 12]; limited to 40 students; 0915-1200 MTWThF; PeikH 225) Beach

New instructional approaches, new materials, current issues and problems in English and language arts education. A 6-credit offering on current theory and methods of writing instruction in all subject areas; the composing process and development of writing ability; devising writing assignments; criteria and techniques for teacher, peer, and self evaluation; stimuli for writing; use of sentence-combining exercises; talk-write activities; writing fiction, poetry, and autobiography; sentence structure; uses of free-writing; incentives for revising; establishing a writing lab; assessing growth in writing.

R 5351. DIRECTED STUDY. (787352) (Cr ar [max 6 cr]; limited to 3 students; S-N optional; prereq #) Lange
See First Term.

R 5394.¹ WORKSHOP: SCIENCE EDUCATION. (1-12 cr [max 12 cr]; each section limited to 35 students) Humphreys
See First Term.

Sec 1, Teaching Intermediate and Middle School Science Through Toys, July 26-30, (387354) 1 cr, 0805-0955 MTWThF, PeikH 385

Designed for intermediate grades, middle school, and junior high school teachers. Science principles illustrated, demonstrated, and applied through explanations of workings of a variety of toys.

Sec 2, Energy Education, July 19-30, (187355) 2 cr, 1010-1205 MTWThF, PeikH 385 and University of Minnesota Arboretum

A survey of national, state, and commercial energy curriculum materials. Topics include home and school energy audits, energy conservation, world resources, and alternative renewable energy sources.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Sec 3, Zoo Curriculum Development, August 2-13, (290179) 2 cr. 1325-1640 TTh, Minnesota Zoological Gardens, 12101 Johnny Cake Ridge Rd, Apple Valley, MN.
Survey of existing zoo curricular materials; development of new exploration packages; opportunities to work closely with zoo naturalists and to take guided tours of the several environmental areas of the Minnesota Zoo. Meets concurrently with Elem 5347, section 3.

5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS. (087356) (1-12 cr [max 12 cr]; prereq MEd student in English education) Beach
See First Term.

R 8801*. PROBLEMS: TEACHING SOCIAL STUDIES. (3-9 cr; each section limited to 5 students; prereq 5150, 5152, 5156, 8104 or #)
See First Term.

Sec 21, (990170) Glenn

Sec 22, (590172) Gardner

R 8894.* PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION. (390173) (Cr or [max 8 cr]; limited to 3 students; prereq #) Lange
See First Term.

8895. READINGS IN ENGLISH EDUCATION. (887360) (1-3 cr) Beach

8896.* PROBLEMS: TEACHING ENGLISH. (687361) (Cr and hrs ar) Beach

R 8898. READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION. (487362) (1-3 cr; limited to 3 students) Lange
See First Term.

DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND HIGHER EDUCATION

Educational Administration (EdAd)

FIRST TERM

R 5127. WORKSHOP: POLICY DEVELOPMENT FOR SCHOOL MANAGERS—June 15-30. (385829) (3 cr; limited to 25 students; 1325-1520 MTWThF; BioSci 70) Ammentorp
Elements of feedback control applied to policy development and implementation in education; policies for instructional management, personnel administration, and fiscal control; implementation plans and procedures for analysis of policy impact. See Special Programs section.

5167. THE AMERICAN MIDDLE SCHOOL. (585831) (3 cr; 1010-1205 MWF; EdHAn 64) Popper
Sources of the movement; purposes, functions and limitations, fundamental problems, types, and curricular implications of reorganization.

5200. DESIGN AND MANAGEMENT OF EDUCATION SERVICES. (190071) (3 cr; 1115-1205 MTWThF; ClaOff B42) 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.

5274. TWO-YEAR POSTSECONDARY INSTITUTIONS—June 15-30. (385832) (3 cr. §VoEd 5274; 1430-1520 MTWThF; ClaOff 27) Morgan
Present status, development, functions, organization, curriculum, and trends of postsecondary but nonbaccalaureate institutions. Meets with VoEd 5274.

8202. POLITICS OF EDUCATION. (790073) (3 cr. §SPFE 8202; 1010-1100 MTWThF; BioSci 12) Mazzoni
Social science findings, concepts, and methods used to consider the political context of educational administration; emphasis on public school policy by local and state governments; role of administrators. Meets with SPFE 8202.

8210. FINANCING ELEMENTARY AND SECONDARY SCHOOLS. (185833) (3 cr; 0800-0955 MWF; ClaOff B36) 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.

Course Descriptions

8215. THE ELEMENTARY SCHOOL PRINCIPALSHIP—June 15-30. (085834) (3 cr; prereq 8201 and 8202 or #: 1010-1205 MTWThF; BioSci 115) Lambert

Problems in elementary school administration and the principal's role of leadership.

8220. QUANTITATIVE FOUNDATIONS FOR MANAGEMENT METHODS. (885835) (3 cr; 0905-0955 MTWThF; ClaOff B42) Hendrix

Quantitative techniques for research and analysis of policy, program, and management problems and decision situations in administration of educational organizations; includes computer usage.

8224. LEGAL IMPLICATIONS OF ACTS BY SCHOOL BOARDS, ADMINISTRATORS, AND TEACHERS. (685836) (3 cr; 1220-1500 MW; Law 15) Hooker

Constitutional, statutory, and common law bases of school administration; principles growing out of fundamental legal procedures.

8225. EDUCATIONAL POLICY AND THE LAW. (390075) (3 cr; prereq 8224 or #: 1220-1500 TTh; Law 15) Hooker
Analysis of court decisions, statutes, and administrative regulations related to equality of educational opportunity and equal protection under the law.

8238. SEMINAR: THEORY AND RESEARCH. (190076) (3 cr; prereq 8218 and 8235, educational administration major or #: 1220-1415 MWF; ClaOff 27) Mazzoni

Research design involving thesis or field project; includes interrelatedness of formulation of conceptual framework and the analytical process; clinical and research problems.

8270.* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION. (490097) (Cr and hrs ar; limited to 5 students; prereq #) Lambert

8271.* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION. (185842) (Cr and hrs ar; prereq #) Popper

8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term; each section limited to 5 students; hrs ar)
For superintendents and principals qualified to make intensive studies of a school system.

Sec 21, (985843) Ammentorp

Sec 25, (185847) Mueller

Sec 22, (785844) Popper

Sec 26, (085848) Lambert

Sec 23, (585845) Morgan

Sec 27, (885849) Hendrix

Sec 24, (385846) Mazzoni

Sec 28, (185850) Hooker

8273. FIELD STUDY. (0-10 cr; each section limited to 5 students; prereq #: hrs ar)

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, (890078) Ammentorp

Sec 25, (790087) Mueller

Sec 22, (690079) Popper

Sec 26, (790090) Lambert

Sec 23, (890081) Morgan

Sec 27, (090094) Hendrix

Sec 24, (290084) Mazzoni

Sec 28, (890095) Hooker

SECOND TERM

5103. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION. (187364) (3 cr, §SpEd 5160, §PsyS 5160; 0800-0955 MWF; BioSci 115) Trepanier

Procedures for establishing and improving educational programs for exceptional children. Meets with PsyS 5160.

5128¹. WORKSHOP: EDUCATIONAL ADMINISTRATION (Collective Bargaining Workshop)— July 19-30. (987365) (1-6 cr; S-N optional; 1220-1625 MTWThF; BioSci 70) Alkire

This offering for 3 credits. See Special Programs section.

8130. ADMINISTRATOR DEVELOPMENT SEMINAR. (787366) (3-9 cr [max 9 cr]; limited to 25 students; 1010-1520 MTWThF; BioSci 58) Nickerson

Assessment and development of skills required of the administrator in the areas of planning, decision making, and human relations; introduction to contemporary issues in educational administration; polling community opinions on educational issues confronting schools in urban areas. Initial course for students pursuing professional licensure programs. Participants will register concurrently for 3 credits in EdAd 5130 and 3 credits in EdAd 5139. Preapplication is required. See Special Programs section.

8139. LABORATORY IN DECISION MAKING. (587367) (1-4 cr per qtr; limited to 25 students; 1010-1520 MTWThF; BioSci 58) 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 will register concurrently for 3 credits in EdAd 5130 and 3 credits in EdAd 5139. Preapplication is required. See Special Programs section.

8203. THE COMMUNITY SCHOOL. (990105) (3 cr; 1010-1205 MWF; ClaOff B42) Popper

Changing structure and process in school organization; the evolving team model; multiple-skill process in socialization.

8227. PUBLIC SCHOOL PERSONNEL PROGRAMS. (790106) (3 cr; 0800-0955 TWTh; ClaOff B42) Alkire

Selection, assignment, evaluation, and development of school personnel; salary and conditions of service; policies for administrative, instructional, and noninstructional personnel.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

8234. SEMINAR: EDUCATIONAL FINANCE. (190109) (3 cr; prereq 8210 or #: 1010-1205 MWF; ClaOff B30) Mueller
Economic setting, sources and allocation of education finances; evaluation of local, state, and federal educational finance systems with reference to analysis of foundation aid formulas.

8270.* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION. (087373) (Cr and hrs ar; prereq #) Alkire

R 8271.* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION. (Cr and hrs ar; each section limited to 5 students; prereq #)

Sec 21, (887374) Nickerson Sec 22, (687375) Popper

R 8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term; each section limited to 5 students; hrs ar)
See First Term.

Sec 21, (487376) Alkire Sec 23, (187378) Mueller
Sec 22, (287377) Nickerson Sec 24, (987379) Popper

R 8273. FIELD STUDY. (0-10 cr; each section limited to 5 students; prereq #: hrs ar)
See First Term.

Sec 21, (987382) Alkire Sec 23, (587384) Mueller
Sec 22, (787383) Nickerson Sec 24, (387385) Popper

Higher Education (HiEd)

FIRST TERM

5250. AMERICAN HIGHER EDUCATION. (690065) (4 cr, §Educ 5250; S-N optional; 1010-1205 MWF; PIH 102) Clark
Higher and postsecondary educational systems and institutions, purposes and functions, governance and organization, instructional programs and outcomes.

R 8228.* PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar; each section limited to 3 students; prereq #)
Selected topics on college programs, instruction, organization, and administration.

Sec 21, (585683) Clark Sec 23, (890064) Lewis
Sec 22, (385684) Kellogg

8252. EFFECTIVE COLLEGE TEACHING. (890565) (3 cr, §Educ 8252; prereq 8250, yr of grad study in any field or 18 cr in education; 1010-1205 TTh; PIH 102)
Teaching-learning relationship; study and appraisal of methods employed to encourage, guide, and appraise students' learning.

SECOND TERM

R 8228.* PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar; each section limited to 3 students; prereq #)
See First Term.

Sec 21, (490066) Kellogg Sec 22, (290067) Lewis

MUSIC EDUCATION (MuEd)

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

FIRST TERM

R 3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL. (885852) (4 cr; prereq Mus 1001 or exemption; limited to 30 students; 1010-1100 MTWThF; ScottH 4) Caswell
For non-music majors; methods and materials in teaching singing, rhythm, music reading, creativity, classroom instruments, fundamentals, appreciation in K-6.

3851-3852. INTERNSHIP: MUSIC THERAPY. (485854) (285855) (6 cr each; S-N only; prereq #: hrs ar; MusEd 2) Jellison
Six-month resident internship in music therapy at an affiliated, approved hospital or clinic.

5603. TECHNIQUES AND MATERIALS: ORFF-SCHULWERK APPROACH—June 28-July 16. (290117) (3 cr; 1325-1520 MTWThF; ScottH 4) Caswell
Demonstration and class practice in teaching and performance skills; the recorder; movement, improvisation, singing, and creation of musical forms; techniques to encourage children to create and improvise songs, instrumental music, and related bodily movement; class exercises in adapting indigenous and ethnic musical material for school use.

5645. TECHNIQUES AND MATERIALS: BRASS—June 15-July 2. (190118) (3 cr, §5525; prereq #: 0905-1100 MTWThF; NMA 4) Turrentine
Practical performance with lectures and discussions of research in performance techniques.

Course Descriptions

5657. TECHNIQUES AND MATERIALS: INSTRUMENTAL CONDUCTING—June 15-July 2. (990119) (3 cr; 1220-1415 MTWThF; NMA 4) Schultz
Basic conducting and rehearsal techniques for school bands and orchestras; selection of instrumental materials; organization of school ensembles, elementary and secondary.

5665. MUSIC FOR EXCEPTIONAL CHILDREN—June 15-25. (585859) (3 cr; prereq #: 0905-1205 MTWThF; MusEd 103) Jellison

Trends, methods and materials for a functional program of singing, playing, rhythm, listening, and creative activities for mentally and physically handicapped and gifted pupils.

5750.¹ WORKSHOP: MUSIC EDUCATION (Individualizing Music Materials for Handicapped Children)—June 28-July 9. (290120) (1-12 cr [max 12 cr]; 0905-1205 MTWThF; MusEd 103) Jellison

Selected topics in music education. Strategies for selecting, preparing, and effectively using instructional music materials and objects; consideration of functional use in music environments; utilization of school, home, and community resources. This offering for 3 credits.

8970. INDEPENDENT STUDY. (1-4 cr; each section limited to 5 students; prereq consent of adviser and of dept; hrs ar; ScottH 104)

An independent study project organized by the student with the appropriate instructor.

Sec 21, (985860) Caswell

Sec 22, (785861) Jellison

8990.* RESEARCH PROBLEMS. (4-12 cr; each section limited to 5 students; prereq knowledge of elem statistics; hrs ar; ScottH 104)

Sec 21, (585862) Caswell

Sec 22, (385863) Jellison

SECOND TERM

8911. TEACHING MUSIC IN THE ELEMENTARY SCHOOL. (887388) (4 cr; limited to 30 students; prereq Mus 1001 or exemption: 1010-1100 MTWThF; ScottH 4) Borg
See First Term.

5615. TEACHING MUSIC READING—July 19-August 6. (190121) (3 cr; prereq #: 1325-1520 MTWThF; ScottH 4) Borg

Objectives: materials, research, teaching procedures, evaluation; class and individual projects; emphasis on general music class approach.

5647. TECHNIQUES AND MATERIALS: PERCUSSION—July 19-30. (990122) (3 cr, \$5534; 0905-1200 MTWThF; ScottH 108) Schultz

Contemporary approaches to teaching in elementary, junior high, and senior high school; emphasis on performing techniques; playing of teaching materials, solo and ensemble repertoire.

5970. INDEPENDENT STUDY. (887391) (1-4 cr; prereq consent of adviser and of dept; hrs ar; ScottH 104) Borg
See First Term.

8990.* RESEARCH PROBLEMS. (687392) (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScottH 104) Borg

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION

Physical Education (PE) and Dance (Dnce)

Students interested in meeting a college requirement for physical education or in taking activity courses for elective credit may register for PE 1007, 1014, 1015, 1036, 1038, 1050, 1073, 1306, and Dnce 1022, 1024, 1124.

Professional Physical Education—Courses are offered at the undergraduate and graduate levels in physical education. Many of these courses apply toward the licensure requirements for teaching physical education in the state of Minnesota. Courses are also offered that will apply toward the athletic coaching credential requirements for men and women. Courses applicable toward requirements in the various programs that are offered this summer include the following:

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

1. An Advanced Degree in Physical Education — PE 5101, 5110, 5120, 5122, 5134, 5152, 5620, 5720, 5740, 5750, 5980, 5981, 5983, 8980, 8981
2. Undergraduate Major in Physical Education—PE 3110, 3111, 3113, 3115, 3130, 3143
3. State of Minnesota Coaching Credential—PE 3110, 3111, 3113, 3115, 3130, 3143, 5620

Elementary School Majors—PE 3327 is offered to accommodate elementary education majors and classroom teachers.

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.

PHYSICAL ACTIVITY PROGRAM COURSES (PE)

(Open to all students)

FIRST TERM

PE 1007. SWIMMING. (1 cr; each section limited to 22 students) Cushman

Course for nonswimmers includes aquatic breathing, floating, bobbing, treading, finning, human stroke, elementary backstroke, sidestroke, front crawl.

Sec 1, (185864) 0905-0955 MTWTh, NorrisH 58

Sec 2, (085865) 1010-1100 MTWTh, NorrisH 58

PE 1014. CONDITIONING. (1 cr; each section limited to 40 students) Lin

Improvement of physical fitness and general appearance through the use of running, circuit training, and progressive exercises of various types.

Sec 1, (185900) 0800-0850 MTWTh, StadS 264, Northrop Field, FieldHse

Sec 2, (085901) 0905-0955 MTWTh, StadS 264, Northrop Field, FieldHse

PE 1015. WEIGHT TRAINING. (1 cr; each section limited to 30 students) Wolfe

Emphasizes the fundamentals of weight training including skills, techniques, individualized exercise prescription, and theory.

Sec 1, (885866) 0800-0850 MTWTh, StadN 202

Sec 2, (685867) 0905-0955 MTWTh, StadN 202

PE 1036. RACQUETBALL. (485868) (1 cr; limited to 24 students; 0800-0850 MTWTh; StadN 208) Gauthier

Basic fundamentals of skills and shots; rules and game strategy are stressed.

PE 1038. TENNIS. (1 cr; sections 1, 2, and 4 limited to 28 students, section 3 limited to 18 students)

Includes fundamental strokes such as service, forehand and backhand, drives and volley; court positions and strategy for singles and doubles; rules, terminology, and etiquette.

Sec 1, (885902) 0905-0955 MTWTh, BFAB 101, Tennis Courts, Doliszny

Sec 2, (685903) 1010-1100 MTWTh, BFAB 101, Tennis Courts, MacGowan

Sec 3, (485904) 1115-1205 MTWTh, St. Paul Gym, Tennis Courts, Doliszny

Sec 4, (285905) 1115-1205 MTWTh, BFAB 101, Tennis Courts, MacGowan

PE 1050. GOLF. (1 cr; moderate intensity; each section limited to 24 students) Duoos-Asche

Emphasizes fundamentals of grip, stance, and swing in addition to etiquette and rules.

Sec 1, (085915) 1010-1100 MTWTh, StadS 267, Golf Course

Sec 2, (685917) 1115-1205 MTWTh, StadS 267, Golf Course

PE 1073. SOFTBALL. (485918) (1 cr; limited to 40 students; 0905-0955 MTWTh; FieldHse, Northrop Field) Gauthier

Fundamental skills and tactics of softball; throwing, catching, batting, running, basic conditioning, and game play.

PROFESSIONAL COURSES (PE)

FIRST TERM

PE 3110. HUMAN ANATOMY. (285869) (3 cr; limited to 35 students; 1220-1310 MTWThF; CookeH 215) Serfass

Emphasizes bones, nerves, and muscles and their significance in physical education.

Course Descriptions

R 3113. MOTOR LEARNING AND MOTOR DEVELOPMENT—June 15-July 9. (490147) (4 cr; limited to 35 students; 0800-0955 MTWThF; CookeH 215) R Johnson
Motor growth and development of children, adolescents, and adults with emphasis on sociopsychological factors.

R 3115. PHYSIOLOGICAL APPLICATION TO SPORTS. (290148) (3 cr, \$PubH 3385, \$PubH 3386; limited to 40 students; 1115-1205 MTWThF; CookeH 214) Alexander
Muscular contraction for strength development programs; contributions of training programs to endurance, speed, and skill acquisition; influence of training on the cardiovascular system; fatigue and recovery; early season training, pregame meals and ergogenic aids in athletics. Required for the Minnesota Coaching Endorsement.

R 3130. HISTORY OF PHYSICAL EDUCATION AND SPORT. (490813) (3 cr; limited to 35 students; 1010-1100 MTWThF; CookeH 206) Struna
Introductory description and interpretation of influence of past socio-cultural events upon development of physical education and sport from primitive to 20-century civilization.

5101. PHYSICAL EDUCATION ACTIVITIES FOR THE HANDICAPPED. (190149) (3 cr; prereq 5100 or SpEd 5101 or PsyS 5101; 1220-1310 MTWThF; CookeH 214) Breihan
Adaptation of methods, materials, and physical activities to meet the needs of the physically, mentally, or emotionally atypical student applied to specific handicaps in selected activity areas.

5122. APPLIED PHYSIOLOGY. (985874) (3 cr; prereq PubH 3386 or PhsI 3051 or equiv; 1010-1100 MTWThF; CookeH 215) Serfass
Application of concepts in human physiology to exercise physiology, sports training, and physical activities with particular reference to respiratory and cardiovascular systems.

R 5620. PRACTICUM: PREVENTION AND CARE OF ATHLETIC INJURIES—June 21-July 2. (385877) (3 cr; limited to 50 students; prereq Anat 1027 or equiv; 1330-1600 MTWThF; BFAB 285, 144) Marshall, Monroe
An overview of problems (recognition, principles, and responsibilities) related to athletic injuries in secondary and college programs; demonstration and practice in training techniques and familiarity with the use of instruments for athletic rehabilitation. See Special Programs section.

5750. ATHLETICS IN CONTEMPORARY SOCIETY: LEGAL ISSUES AND LIABILITY—June 15-July 1. (490150) (3-9 cr; prereq sr or grad student; 1010-1205 MTWThF; BFAB 285) Jaeger
Contemporary issues; background on organizational and management problems of interscholastic and intercollegiate athletics. This offering for 3 credits. See Special Programs section.

5980. RESEARCH METHODOLOGY. (085879) (3 cr, \$Hlth 5980; prereq #: 0905-0955 MTWThF; CookeH 214) Shick
Methods and design for research in health, physical education, and recreation. Meets with Hlth 5980.

R 5981. PROBLEMS. (Cr and hrs ar; each section limited to 5 students; prereq MEd candidate, #)
Focus on teaching of physical education.

Sec 21, (385880) ar, Alexander	Sec 26, (485885) ar, Serfass
Sec 22, (185881) ar, Breihan	Sec 27, (285886) ar, Shick
Sec 23, (085882) ar, Jaeger	Sec 28, (290151) ar, Struna
Sec 24, (885883) ar, Jette	Sec 29, (190152) ar, Stull
Sec 25, (685884) ar, R Johnson	

R 5983. READINGS: PHYSICAL EDUCATION. (Cr ar [max 9 cr]; each section limited to 5 students; prereq #)
Independent study under tutorial guidance.

Sec 21, (185887) ar, Alexander	Sec 26, (785892) ar, Serfass
Sec 22, (985888) ar, Breihan	Sec 27, (585893) ar, Shick
Sec 23, (785889) ar, Jaeger	Sec 28, (990153) ar, Struna
Sec 24, (185890) ar, Jette	Sec 29, (790154) ar, Stull
Sec 25, (985891) ar, R Johnson	

8980.* RESEARCH PROBLEMS. (590155) (1 cr [max 2 cr]; prereq 5980, PsyF 5110 or #; S-N only; 0800-0850 TTh; CookeH 226) Shick
Designing and reporting on individual problems. Required of all M.A. and Ph.D. candidates. Meets with Hlth 8980.

R 8981.* RESEARCH PROBLEMS. (Cr and hrs ar; each section limited to 5 students; prereq 8980 or #; S-N only)
Individual problems.

Sec 21, (385894) ar, Alexander	Sec 24, (885897) ar, Shick
Sec 22, (185895) ar, Jaeger	Sec 25, (685898) ar, Stull
Sec 23, (085896) ar, Serfass	

PHYSICAL ACTIVITY PROGRAM COURSES (PE)

(Open to all students)

SECOND TERM

R 1007. SWIMMING. (1 cr; each section limited to 22 students) Winters
See First Term.

Sec 1, (487393), 0800-0850 MTWTh, NorrisH 58
Sec 2, (190322), 0905-0955 MTWTh, NorrisH 58

R 1014. CONDITIONING. (1 cr; each section limited to 40 students)

See First Term.

Sec 1, (287394) 0800-0850 MTWTh, Stads 264, Northrop Field, FieldHse, Heinert
Sec 2, (187395) 0905-0955 MTWTh, Stads 264, Northrop Field, FieldHse, Waters

R 1015. WEIGHT TRAINING. (987396) (1 cr; limited to 30 students; 1010-1100 MTWTh; StadN 202) Heinert

See First Term.

R 1036. RACQUETBALL. (787397) (1 cr; limited to 24 students; 1115-1205 MTWTh; StadN 208) Kablaoui

See First Term.

R 1038. TENNIS. (1 cr; each section limited to 28 students)

See First Term.

Sec 1, (587398) 0800-0850 MTWTh, BFAB 101, Tennis Courts, Janzen
Sec 2, (387399) 0905-0955 MTWTh, BFAB 101, Tennis Courts, Janzen
Sec 3, (187400) 1010-1100 MTWTh, BFAB 101, Tennis Courts, Stirdivant
Sec 4, (987401) 1115-1205 MTWTh, BFAB 101, Tennis Courts, Stirdivant

R 1050. GOLF. (1 cr; moderate intensity; each section limited to 24 students) Larson

See First Term.

Sec 1, (787402) 0905-0955 MTWTh, Stads 267, Golf Course
Sec 2, (587403) 1010-1100 MTWTh, Stads 267, Golf Course

R 1306. ADVANCED LIFESAVING. (790168) (1 cr; prereq ability to swim 440 yds; limited to 25 students; 1115-1205 MTWTh; CookeH 10) Waters

PROFESSIONAL COURSES (PE)

SECOND TERM

R 3111. MECHANICS OF MOVEMENT. (190166) (3 cr; limited to 35 students; prereq Anat 1027, Phys 1061; 1115-1205 MTWThF; CookeH 215) Stoner

Structure of the body, principles and mechanics of bodily movements.

R 3143. ORGANIZATION AND MANAGEMENT OF SPORT. (087406) (3 cr; limited to 40 students; prereq 2 cr coaching course; 0800-0850 MTWThF; CookeH 215) French

Principles, policies, and procedures involved in the coaching of interscholastic sports.

R 3327. TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL. (990167) (3 cr, \$1560, \$3325, \$Hlth 3325; prereq elem education major; limited to 35 students; 0800-0850 MTWThF; NorrisH M153, M153A) Lampe
An 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.

5110. SUPERVISION OF PHYSICAL EDUCATION. (590169) (3 cr; prereq #: 1010-1100 MTWThF; CookeH 214) French

Functions; adaptations of accepted procedures for observation, guidance, and training of physical educators.

5120. ADVANCED BIOMECHANICS/KINESIOLOGY. (790171) (4 cr; prereq undergrad kinesiology or #: 1325-1520 MTWThF; CookeH 215, S-7) Stoner

Principles of mechanics applied to human movement, analysis of motor skills, application to individual projects.

5134. PERCEPTUAL-MOTOR DEVELOPMENT IN CHILDHOOD—July 19-August 4. (287427) (3 cr; prereq 3113 or #: 0800-0955 MTWThF; CookeH 214) Plack

The motoric dimension of perception; emphasis on developmental tenets of perception, diagnosis and remediation of perceptual-motor deficiencies and related research.

5152. CURRICULUM DEVELOPMENT—July 19-August 4. (990184) (3 cr; prereq 5151 or equiv; 0800-0955 MTWThF; BFAB 285) Young

Trends, issues, and problems at selected levels of interest: elementary, secondary, junior college; for experienced teachers. See Special Programs section.

5720. TOPICS IN PHYSICAL EDUCATION: Motor Development—July 19-August 4. (290876) (1-12 cr [max 12 cr]; prereq #: 1115-1310 MTWThF; CookeH 214) Plack

Current issues as they relate to physical education and sport. This offering for 3 credits.

5750. ATHLETICS IN CONTEMPORARY SOCIETY: International and Comparative Sport—July 19-August 4. (790185) (3-9 cr; prereq sr or grad student; 1010-1205 MTWThF; BFAB 285) Krottee

Contemporary issues; background on organizational and management problems of interscholastic and intercollegiate athletics. This offering for 3 credits. See Special Programs section.

Course Descriptions

¶ 5981. PROBLEMS. (Cr and hrs ar; each section limited to 5 students; prereq MEd candidate, #)
See First Term.

Sec 21, (887407) ar, French	Sec 25, (687411) ar, Stoner
Sec 22, (687408) ar, Jaeger	Sec 26, (487412) ar, Stull
Sec 23, (487409) ar, Krotee	Sec 27, (287413) ar, Young
Sec 24, (887410) ar, Plack	

¶ 5983. READINGS: PHYSICAL EDUCATION. (Cr ar [max 9 cr]; each section limited to 5 students; prereq #)
See First Term.

Sec 21, (987415) ar, French	Sec 25, (187419) ar, Stoner
Sec 22, (787416) ar, Jaeger	Sec 26, (587420) ar, Stull
Sec 23, (587417) ar, Krotee	Sec 27, (490181) ar, Young
Sec 24, (387418) ar, Plack	

¶ 8981.* RESEARCH PROBLEMS. (Cr and hrs ar; each section limited to 5 students; prereq 8980 or #; S-N only)
See First Term.

Sec 21, (387421) ar, French	Sec 24, (887424) ar, Stoner
Sec 22, (187422) ar, Jaeger	Sec 25, (687425) ar, Stull
Sec 23, (087423) ar, Plack	Sec 26, (190183) ar, Young

DANCE (Dnce)

Courses numbered below 1500 are open to all students.

Professional Dance—Courses are offered at the undergraduate and graduate levels in dance. Courses applicable toward requirements in the dance programs that are offered this summer include:

1. Undergraduate Major in Dance—Dnce 1022, 3396
2. Undergraduate Minor in Dance—Dnce 1022, 5700

All dance 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.

FIRST TERM

¶ 1022. BALLROOM DANCE. (1 cr; each section limited to 25 students) Jette
Elementary steps and variations of the foxtrot, waltz, tango, samba, cha-cha, rumba, and swing.

Sec 1, (986930) 1115-1205 MTWTh, NorrisH M153, M153A (men only)
Sec 2, (786931) 1115-1205 MTWTh, NorrisH M153, M153A (women only)

¶ 1024. MODERN DANCE. (586932) (1 cr; limited to 30 students; 1010-1100 MTWTh; NorrisH M153, M153A) Jette
Introduction to fundamental techniques of modern dance.

¶ 3396. DANCE REPERTORY THEATRE. (186934) (3 cr [max 9 cr]; limited to 20 students; prereq audiotape or #; 1325-1520 MTWThF; NorrisH M151) Bailin
Technique and improvisation in the construction and performance of a dance theatre work under the direction of a guest choreographer; professionally oriented dance experience for advanced students. See Special Programs section.

5700.¹ WORKSHOP: DANCE IN EDUCATION (Creative Dance for Children)—June 15-July 2. (790381) (Cr ar [max 12 cr]; 0800-0955 MTWThF; NorrisH 67) Jette
History, principles, instructive techniques, and materials for teaching dance in schools and recreational agencies. This offering for 4 credits. See Special Programs section.

5701.¹ WORKSHOP: DANCE PERFORMANCE (Advanced Modern Dance Technique and Improvisation). (690812) (1-12 cr [max 12 cr]; S-N optional; prereq #: 1010-1205 MTWThF; NorrisH M151) Bailin
Principles of technique, improvisation, choreography, music, production, notation, history, philosophy, and criticism as they relate to dance performance. This offering for 3 credits. See Special Programs Section.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

SECOND TERM

R 1022. BALLROOM DANCE. (1 cr; each section limited to 25 students) Jette
See First Term.

Sec 1, (390383) 1010-1100 MTWTh, NorrisH M151 (men only)
Sec 2, (190384) 1010-1100 MTWTh, NorrisH M151 (women only)

R 1024. MODERN DANCE. (890386) (1 cr; limited to 30 students; 0800-0850 MTWTh, NorrisH M151) Jette
See First Term.

R 1124. MODERN DANCE. (490388) (1 cr; prereq 1024 or equiv; limited to 30 students; 0905-0955 MTWTh; NorrisH M151) Jette
Basic techniques of modern dance and improvisation.

Recreation, Park, and Leisure Studies (Rec)

FIRST TERM

3700. SENIOR INTERNSHIP. (686937) (1-15 cr; prereq sr, recreation major or minor, Δ; S-N only; hrs ar) Chapman
Supervised experiences in selected agencies.

R 5240. RECREATION FOR THE AGING—June 21-July 16. (190457) (3 cr; limited to 35 students; prereq 3540 or 5100 or Δ; 0745-0850 MTWThF; CookeH 206) Chapman
Leisure problems of the aging citizen; modification of program activities; investigation of community resources; trends and developments in recreation planning.

5630. PRACTICUM: THERAPEUTIC RECREATION. (786945) (3-9 cr; prereq 12 cr in recreation; hrs ar) Chapman
Supervised experiences in program operation; administrative and supervisory duties.

5640. PRACTICUM: PUBLIC RECREATION AND PARKS. (586946) (3-9 cr; prereq 12 cr in recreation; hrs ar) Chapman
Supervised experiences in program operation; administrative and supervisory duties.

R 5900.¹ WORKSHOP: CONTEMPORARY ISSUES IN LEISURE SERVICES—June 14-18. (086949) (1-12 cr [max 12 cr]; limited to 18 students; prereq Δ; 0800-1200 M, June 14, CookeH 206, and field trip through 2200, June 18) McAvoy
Contemporary issues emphasizing administrative and supervisory functions for recreation and allied professionals; individual offerings focus on special issues and/or professional groups. This 3-credit offering will focus on the leisure and educational resources of a wild and scenic river. Preregistration is required; see Special Programs section.

5983. READINGS: RECREATION. (886953) (1-3 cr; prereq MEd or grad student or Δ; hrs ar) Chapman
Independent study under tutorial guidance.

8981.* RESEARCH PROBLEMS. (486955) (Cr and hrs ar; prereq 8980 or #; S-N only) Chapman
Individual problems.

SECOND TERM

3700. SENIOR INTERNSHIP. (187431) (1-15 cr; prereq sr, recreation major or minor, Δ; S-N only; hrs ar) Schultz
See First Term.

R 5250. FINANCING PUBLIC RECREATION AND PARKS. (690454) (3 cr; limited to 35 students; prereq 3550 or Δ; 0800-0850 MTWThF; CookeH 206) Schultz
Methods and techniques of financing operations and capital improvements in public park and recreation agencies; legal basis, fiscal policy, federal and state aids, revenue sharing and budgeting procedures.

5630. PRACTICUM: THERAPEUTIC RECREATION. (587434) (3-9 cr; prereq 12 cr in recreation; hrs ar) Schultz
See First Term.

5640. PRACTICUM: PUBLIC RECREATION AND PARKS. (387435) (3-9 cr; prereq 12 cr in recreation; hrs ar) Schultz
See First Term.

5981. PROBLEMS. (187436) (Cr and hrs ar; prereq MEd candidate, #) Schultz
Focus on conduct of recreation programs.

5983. READINGS: RECREATION. (087437) (1-3 cr; prereq MEd or grad student or Δ; hrs ar) Schultz
See First Term.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

School Health Education (Hlth)

Teaching Requirements for School Health Education—Courses applicable toward requirements for teaching school health education in the state of Minnesota that are offered this summer include:

1. Undergraduate Major in School and Community Health Education—Hlth 1500, 3300, 5150, and 5402
2. Advanced and Graduate Degrees in School Health Education—Hlth 5150, 5500, 5685, 5980, 5981, 5983, 8980, and 8981

FIRST TERM

1500. AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY. (986958) (2 cr; limited to 35 students; 0905-0955 MTWThF; NorrisH 201) Vokaty
Lectures, demonstrations, and practice in first aid and personal safety; ARC Standard First Aid and Personal Safety Certificate awarded upon recommendation of the instructor.

3300. INSTRUCTOR'S COURSE IN STANDARD FIRST AID AND PERSONAL SAFETY. (190143) (3 cr; limited to 30 students; prereq ARC First Aid and Personal Safety Certificate or Advanced Certificate: 1010-1100 MTWThF; NorrisH 201) Vokaty
Preparation to teach the ARC basic first aid and standard first aid and personal safety courses.

5150. FAMILY LIFE AND SEX EDUCATION IN THE SECONDARY SCHOOLS. (090144) (3 cr; prereq FSoS 5001 or #: 1115-1205 MTWThF; NorrisH 3) Cobb
Concepts, appropriate materials, and methods for teaching in the junior and senior high schools.

5402. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 15-July 2. (786976) (3 cr, \$PubH 5040, \$Mort 5040; limited to 20 students; prereq education senior, licensed teacher, health science major, mortuary science major, school or public health nurse or #: 1330-1600 MTWThF; HSUnitF 2-110, 2-140) Rothenberger, Slater
Basic background information on concepts and attitudes toward death, grief, and bereavement with emphasis on instructional aspects for the elementary and secondary schools; role of the school in suicide prevention.

5685. SCHOOL-BASED PROJECTS IN SCHOOL HEALTH EDUCATION. (686968) (1-12 cr [max 12 cr]; prereq #: hrs ar) Cobb
Individual or group projects applicable to local school situations, such as curricular, instructional, or evaluative problems.

5980. INTRODUCTION TO RESEARCH. (886970) (3 cr, \$PE 5980; prereq #: 0905-0955 MTWThF; CookeH 214) Shick
Methods and design for research in health, physical education, and recreation. Meets with PE 5980.

5981. PROBLEMS. (586977) (Cr and hrs ar; prereq #) Cobb
Focus on teaching school health education.

5983. READINGS: HEALTH EDUCATION. (386978) (1-3 cr; prereq sr honor or grad student, #: hrs ar) Cobb
Independent study under tutorial guidance.

8980.* RESEARCH PROBLEMS. (890145) (1 cr; prereq 5980, PsyF 5110 or #: S-N only; 0800-0850 TTh; CookeH 226) Shick
Designing, reporting on individual problems; required of all M.A. and Ph.D. candidates. Meets with PE 8980.

8981.* RESEARCH PROBLEMS. (690146) (Cr ar; prereq 8980 or #: S-N only) Cobb

SECOND TERM

5500. STUDENTS, DRUGS, AND THE SCHOOLS—July 20-August 3. (990136) (3 cr; limited to 40 students; prereq PubH 3004; 0900-1200 MTWThF; NorrisH 3) Rothenberger
Use and abuse of drugs by elementary and secondary school students; analysis of patterns of use, physiological and psychological effects, academic issues, alternatives.

5981. PROBLEMS. (Cr and hrs ar; prereq #)
See First Term.

Sec 21, (790137) ar, Jaeger Sec 22, (590138) ar, Stull

5983. READINGS: HEALTH EDUCATION. (1-3 cr; prereq sr honor or grad student, #: hrs ar)
See First Term.

Sec 21, (390139) ar, Jaeger Sec 22, (790140) ar, Stull

8981.* RESEARCH PROBLEMS. (Cr ar; prereq 8980 or #: S-N only)

Sec 21, (590141) ar, Jaeger Sec 22, (390142) ar, Stull

DEPARTMENT OF PSYCHOEDUCATIONAL STUDIES (PsyS)

FIRST TERM

3106. EXCEPTIONAL STUDENTS IN REGULAR CLASSES. (086935) (2 cr, §5106; 1300-1500 MW; BuH 123) Staff Policies and procedures for teaching handicapped and gifted students in regular school settings; exposure to special curriculum adaptations; collaborative roles of regular and special education teachers, parents, pupil personnel workers, and other educators. Meets with 5106.

5100. CHILDHOOD LANGUAGE DEVELOPMENT: CLASSROOM IMPLICATIONS. (886936) (3 cr, §SpEd 5100; 0905-0955 MTWThF; P1H 111) Mercaldo
Recent trends and findings in the study of language acquisition; classroom implications for the education of exceptional children.

R 5104. SOCIAL AND VOCATIONAL DEVELOPMENT OF HANDICAPPED STUDENTS. (286939) (4 cr, §SpEd 5104; limited to 35 students; prereq #: 1115-1310 TTh; BuH 125) W Tennyson
Organization and designing of training programs to promote independent living, vocational and community adjustment of handicapped persons; curriculum materials and methods at adolescent and adult levels.

5106. EXCEPTIONAL STUDENTS IN REGULAR CLASSES. (486941) (2 cr, §3106; 1300-1500 MW; BuH 123)
Policies and procedures for teaching handicapped and gifted students in regular school settings; exposure to special curriculum adaptations; collaborative roles of regular and special education teachers, parents, pupil personnel workers, and other educators. Meets with 3106.

R 5110. COUNSELING PROCEDURES. (186943) (3 cr, §CSPP 5110; limited to 35 students; 1010-1205 TTh, 1 hr ar; BuH 123) Shaffer
For persons whose professional work includes counseling and interviewing; not for licensure as school counselors. Emphasis on counseling relationship and principles of interviewing; utilizes case studies, role playing, and demonstration.

R 5111. COUNSELING PROCEDURES II. (386947) (3 cr; prereq 5110; limited to 35 students; 1325-1520 TTh, 1 hr ar; BuH 123) Shaffer
Analysis of type of client and stage of counseling; isolation of chain of interactions between client and counselor described and practices; appropriate techniques.

5120. INTRODUCTION TO MENTAL RETARDATION. (186948) (4 cr, §SpEd 5120, §CPsy 5315; prereq 5101 or SpEd 5101 or #: 1010-1100 MTWThF; P1H 111) Turnure
Issues that relate to educational practices; community planning; educational philosophy, administration and organization, and programming. Meets with CPsy 5315.

5140. PSYCHOSOCIAL AND EDUCATIONAL ASPECTS OF DEAFNESS. (186951) (3 cr, §SpEd 5140; 1115-1205 MTWThF; P1H 214) Mercaldo
Historical and current societal perceptions of the deaf; analysis of effects and patterns of auditory impairment in children and adults, intelligence, personal and social adjustment, effect of the psychological processes on acquisition of language, speech, and speechreading skills.

5143. TEACHING LANGUAGE TO THE HEARING IMPAIRED I. (186957) (3 cr, §SpEd 5143; prereq 5140 or SpEd 5140; 0800-0850 MTWThF; P1H 102) Klansek
Survey of the language curricula and teaching techniques in infant, nursery, preschool, and beginning primary programs for the deaf; overview of language development in the deaf and the hearing child in the primary years.

5145. TEACHING SPEECH TO THE HEARING IMPAIRED I. (190126) (3 cr, §SpEd 5145; prereq #: 1325-1415 MTWThF; P1H 102)
Survey of speech methodologies in teaching auditory impaired children; major emphasis on techniques in teaching specific sounds, articulation, voice, and sentence rhythm, stressing intelligibility of speech. Demonstration and practice with individual and groups of auditory impaired children.

R 5151. MANAGING PROBLEM BEHAVIOR IN THE CLASSROOM. (186960) (3 cr, §SpEd 5151; limited to 40 students; 1325-1615 TTh; P1H 111) Wood
Typical patterns of problem behavior in classroom settings; relationships to teacher mental health; simulation of methods of prevention and management.

5190. EDUCATION OF THE GIFTED AND TALENTED. (586963) (3 cr, §SpEd 5190; 1010-1100 MTWThF; P1H 215) Rubin
Origin and development of terms such as giftedness, creativity, genius, talent, and intelligence; implications for educational practice; current issues and trends.

R 5300.¹ WORKSHOP: COUNSELING PSYCHOLOGY. (1-6 cr [max 12 cr]; section 1 limited to 30 students, section 2 limited to 35 students; prereq #)
For counselors, teachers, administrators; aspects of intervention theory in relation to psychological principles; counseling, career development, assessment, psychological education, and consultation.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

Sec 1, Career Development of Women and Men—June 21-July 2, (086966) 6 cr, 0800-1300 MTWThF, 4 hrs ar, Law 30, 1, 3, L Hansen

This offering will interest human service workers involved in career development and career counseling in colleges, schools, community agencies, CETA programs, business, government, and industry: life-span development and changing roles of women and men provide a framework for learning new goals and strategies for career guidance; focus on knowledge, attitudes and skills in career program development, sex-role socialization, employment outlook and labor market trends, new multimedia resources, and reducing career-related stereotyping. Preapplication required. See Special programs section.

Sec 2, Ethical and Legal Issues in Counseling and Psychotherapy—June 21-25, (690129) 2 cr, 1325-1625 MTWThF, BuH 125, W Tennyson

This workshop addresses such questions as: What are the major ethical dilemmas facing professionals who engage in counseling or psychotherapy? How does one decide which ethical judgments are acceptable? What major legal issues are being raised in counseling and psychotherapy? How does one decide which ethical judgments are acceptable? What are some legal pitfalls in therapy? Topics, dealt with in some detail, include competence, informed consent, privileged communication, and malpractice. Illustrative ethical situations and dilemmas presented, and several landmark cases examined. Note: Ethical and legal issues are generally covered in licensure examinations. See Special Programs section.

5305. BEHAVIOR ANALYSIS PROCEDURES WITH MILDLY AND MODERATELY HANDICAPPED PEOPLE. (486969) (4 cr, §SpEd 5301, §SpEd 5303; PsyF 5149 or Psy 5017 recommended; 0905-0955 MTWThF; PIH 215) Behavioral approaches to improving the academic and personal-social behavior of mildly and moderately handicapped people in mainstream and resource programs.

R 5501. INTRODUCTION TO RESEARCH IN SPECIAL EDUCATION—June 23-29. (890128) (2 cr, §SpEd 5501; limited to 30 students; S-N only; 1300-1630 MTWThF; ClaOff B30) Force, Rubin
Issues in special education; critique of research with exceptional children.

R 5601. PRACTICUM: SPECIAL EDUCATION. (Cr ar; section 1 limited to 25 Institute participants, other sect ons limited to 10 students; S-N optional; prereq #)

Supervised experience in teaching or related work in schools or other agencies serving exceptional children. Prior application required for section 1. See Special Programs section.

Sec 1, Teaching Children With Emotional Disturbances—June 14-July 23, (486972) 8 cr, 0800-1520 MTWThF, off campus, Wood

Sec 21, (686971) Force	Sec 24, (186974) Turnure
Sec 22, (090127) Mercaldo	Sec 25, (986975) Wood
Sec 23, (286973) Rynders	

R 5610. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY I. (186979) (3 cr, §SpEd 5160; limited to 90 students; S-N optional; prereq # 5113 and #: hrs ar off-campus; June 14 only 1600-2000; BuH 120) Walter
Clinical practice in prescriptive teaching using a selected range of techniques presented in 5113. Prior application required; limited to Institute participants only. See Special Programs section.

R 5611. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY II. (586980) (3 cr, §SpEd 5611; limited to 90 students; S-N optional; prereq 5610 or SpEd 5610, # 5114, #: hrs ar off campus; June 14 only 1600-2000; BuH 120) Walter

Clinical practice in prescriptive teaching using a selected range of techniques presented in 5114 or SpEd 5111.

R 5900. INDEPENDENT STUDY. (Cr ar [max 12 cr]; each section limited to 10 students; prereq #: hrs ar)

Sec 21, (386981) special education majors only, Force
Sec 22, (186982) special education majors only, Mercaldo
Sec 23, (086983) special education majors only, Rynders
Sec 24, (886984) special education majors only, Turnure
Sec 25, (686985) special education majors only, Walter
Sec 26, (486986) special education majors only, Wood
Sec 27, (286987) counseling majors only, L Hansen
Sec 28, (186988) counseling majors only, Shaffer
Sec 29, (986989) counseling majors only, Snoko
Sec 30, (186991) counseling majors only, Tennyson

R 8601. ADVANCED PRACTICUM. (Cr ar; each section limited to 10 students; prereq #: hrs ar)

Experience planned with supervising professor in college teaching, supervision of student teachers, or other forms of advanced professional practice; usually taken by advanced graduate students.

Sec 21, (986922) Force	Sec 23, (586994) Turnure
Sec 22, (786993) Rynders	Sec 24, (386995) Wood

8701. INTERNSHIP: COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY. (186996) (0-6 cr per qtr [max 9 cr for MA and specialist students, max 18 cr for PhD students], §CSPP 8701) Snoko

Supervised employment at departmentally approved sites.

R 8900. RESEARCH PROBLEMS. (Cr ar; each section limited to 10 students; prereq #: hrs ar)

Sec 21, (086997) special education majors only, Force
Sec 22, (886998) special education majors only, Mercaldo
Sec 23, (686999) special education majors only, Rynders
Sec 24, (587000) special education majors only, Turnure
Sec 25, (387001) special education majors only, Walter

- Sec 26. (287007) special education majors only. Wood
 Sec 27. (487006) counseling majors only. L Hansen
 Sec 28. (687005) counseling majors only. Shaffer
 Sec 29. (887004) counseling majors only. Snoko
 Sec 30. (087003) counseling majors only. W Tennyson

SECOND TERM

5101. EDUCATION OF EXCEPTIONAL CHILDREN. (487443) (4 cr. §SpEd 5101; 0905-0955 MTWThF; P1H 111) Force
 Introduction to field special education for classroom teachers and other school personnel.

R 5110. COUNSELING PROCEDURES. (287444) (3 cr. §CSPP 5110; limited to 35 students; 1010-1205 TTh, 1 hr ar; BuH 123) Shaffer
 See First Term.

5112. EDUCATION OF LEARNING-DISABLED CHILDREN. (187445) (3 cr. §SpEd 5112; 1010-1100 MTWThF; P1H 111) Balow
 Analysis of considerations in design and conduct of services for learning-disabled children; approaches to the education of such children.

5141. METHODS OF TEACHING SCHOOL SUBJECTS TO THE HEARING IMPAIRED. (787447) (3 cr. §SpEd 5141; prereq #: 1115-1205 MTWThF; P1H 111) Mercaldo
 Adaptation of materials and teaching methods for hearing impaired children in reading, mathematics, social studies, and science.

5144. TEACHING LANGUAGE TO THE HEARING IMPAIRED II. (790123) (3 cr. §SpEd 5144; prereq #: 0905-0955 MTWThF; P1H 214) Mercaldo
 Devising language curricula and teaching techniques in primary, intermediate, and advanced programs for the deaf; comparative study of the language development of the deaf and hearing.

R 5151. MANAGING PROBLEM BEHAVIOR IN THE CLASSROOM. (587448) (3 cr. §SpEd 5151; limited to 40 students; 1325-1615 TTh; P1H 111) Wood
 See First Term.

5155. PSYCHOEDUCATION INTERVENTIONS: PSYCHOTIC CHILDREN. (387449) (3 cr. §SpEd 5155; prereq 12 cr in psychology, child psychology or special education; 1115-1205 MTWThF; P1H 214)
 Introduction to psychopathology of children with psychotic characteristics; emphasis on psychoeducational intervention programs and teaching strategies.

5160. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION. (787450) (3 cr. §EdAd 5103, §SpEd 5160; prereq #: 0800-0955 MWF; BioSci 115) Trepanier
 Procedures for establishing and improving educational programs for exceptional children. Meets with EdAd 5103.

R 5300.¹ WORKSHOP: COUNSELING PSYCHOLOGY—Counseling Adults in Transition. (587451) (1-6 cr [max 12]; limited to 35 students; prereq #: 0905-1100 TTh; BuH 125) W Tennyson
 This 3-credit workshop focuses on transitions that occur over the adult life span: individual adult experiences and developmental competencies associated with work, leisure, family, and individualized life-style. Workshop participants examine processes for identifying transitional problems, explore personal styles for managing the stress involved in transition, and investigate psychosocial dimensions that distinguish successful adaptive behavior. Strategies for assisting individuals to deal with the impact of changing roles and to resolve problems. Identification of counseling components to meet specific needs of adults in transition, technique options, and alternative procedures to accomplish agreed-upon objectives suggested. See Special Programs section.

R 5302.¹ WORKSHOP: SPECIAL EDUCATION (Nonvocal Communication). (187453) (Cr ar; limited to 30 students; prereq #: 0800-0955 TTh; P1H 215)
 Laboratory approach provides opportunities for school personnel to study specific problems related to special education. This offering for 2 credits requires prior application. See Special Programs section.

5340. CLINICAL AND EDUCATIONAL PROCEDURES FOR PRESCHOOL AND PRIMARY HEARING IMPAIRED CHILDREN. (590124) (6 cr. §SpEd 5340; prereq tchr of hearing impaired or #: 1300-1500 MW; P1H 214) Klansek
 Overview of education of the deaf; practical application to guided clinical experience with hearing impaired children ages one through six; for professionals working with the hearing impaired.

R 5601. PRACTICUM: SPECIAL EDUCATION. (Cr and hrs ar; each section limited to 10 students; S-Nonp1onal; prereq #)
 See First Term. See also section 1 listed under Six-Week Courses.

- | | |
|---------------------------|--------------------------|
| Sec 21, (087454) Force | Sec 23, (687456) Rynders |
| Sec 22, (887455) Mercaldo | Sec 24, (487457) Wood |

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

R 5900. INDEPENDENT STUDY. (Cr ar [max 12 cr]; each section limited to 10 students; prereq #; hrs ar)

- Sec 21, (787464) special education majors only, Balow
- Sec 22, (587465) special education majors only, Force
- Sec 23, (387466) special education majors only, Mercado
- Sec 24, (187467) special education majors only, Rynders
- Sec 25, (087468) special education majors only, Wood
- Sec 26, (887469) counseling majors only, Shaffer
- Sec 27, (187470) counseling majors only, Snoke
- Sec 28, (087471) counseling majors only, W Tennyson

R 8601. ADVANCED PRACTICUM. (Cr ar; each section limited to 5 students; prereq #: hrs ar) Force, Wood
See First Term.

- Sec 21, (187459) Balow
- Sec 22, (487460) Force
- Sec 23, (287461) Rynders
- Sec 24, (187462) Wood

8701. INTERNSHIP: COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY. (987463) (0-6 cr per qtr [max 9 cr for MA and specialist students, max 18 cr for PhD students]) Snoke
See First Term.

R 8900. RESEARCH PROBLEMS. (Cr ar; each section limited to 10 students; prereq #; hrs ar)

- Sec 21, (687473) special education majors only, Balow
- Sec 22, (487474) special education majors only, Force
- Sec 23, (287475) special education majors only, Mercado
- Sec 24, (187476) special education majors only, Rynders
- Sec 25, (987477) special education majors only, Wood
- Sec 26, (787478) counseling majors only, Shaffer
- Sec 27, (587479) counseling majors only, Snoke
- Sec 28, (987480) counseling majors only, W. Tennyson

DEPARTMENT OF SOCIAL, PSYCHOLOGICAL, AND PHILOSOPHICAL FOUNDATIONS OF EDUCATION

Psychological Foundations (PsyF)

FIRST TERM

R 3380. INTRODUCTION TO HUMAN RELATIONS—June 21-July 16. (286942) (3 cr; limited to 30 students; prereq education sr; S-N only: 0900-1100 MTWTh; Arch 45) McArthur
Based on small-group training theory and methods; designed to help the student develop an understanding of his or her own behavior, the behavior of other individuals, and group and organizational behavior.

R 5110. INTRODUCTORY STATISTICAL METHODS. (4 cr; each section limited to 40 students)
Techniques for organizing and presenting data; descriptive indices of central tendency, variability, and bivariate correlation/regression; procedures for making inferences concerning means and proportions.

- Sec 1, (386950) 0800-0850 MTWThF, E1H N647, Terwilliger
- Sec 2, (686954) 0905-0955 MTWThF, E1H N647, Davison

5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM. (286956) (4 cr; 0905-0955 MTWThF; BuH 125)
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.

5121. BASIC PRINCIPLES OF MEASUREMENT. (786959) (3 cr; prereq 5110 or 8110 or Psy 3801 or equiv; 1010-1100 MTWThF; BuH 125) Davison

Fundamental concepts, principles, and methods in educational and psychological measurement; educationally useful properties of tests; types and uses of derived scores; factors influencing reliability and validity.

5162. PERSONALITY AND SOCIAL DEVELOPMENT. (786962) (3 cr; prereq 5 cr introductory psychology; 1010-1100 MTWThF; ChDev 105)

Major concepts and research findings in adjustment and development with emphasis on educational implications.

R 5172. STRUCTURING LEARNING: SOCIAL PSYCHOLOGICAL APPROACHES. (290134) (3 cr; limited to 60 students; June 14-25, 1300-1600 MTWThF, and July 16 1300-1500; PIH 214; and hrs ar off campus)

How to use cooperation, competition, and individualization to affect learning climate and cognitive and affective outcomes of instruction.

5182. PSYCHOLOGY OF STUDENT LEARNING. (186965) (3 cr; 0905-0955 MTWThF; PeiH 215) Samuels
Survey of psychological methods and principles; models of the learner; topics in development, creativity, intelligence, and motivation; implications for teaching and curriculum design in preschool, elementary, and secondary education; professional training with children and adolescents as clients.

R 5305.¹ WORKSHOP IN HUMAN RELATIONS—June 21-July 16. (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; limited to 25 students; S-N only; 0900-1300 MTWTh; Arch 60) Oden
 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. This offering for 6 credits.

5330. COMPUTER PROGRAMMING. (187008) (3 cr; prereq sr; 1010-1100 MTWTh; EItH N647) D Anderson
 Computer as a tool for research in the behavioral sciences; computer systems, language, and development of specific programs that demonstrate computer characteristics; laboratory experience.

5333. INTRODUCTION TO COMPUTER OPERATIONS: U OF M SYSTEMS, SPSS—June 16-24. (490133) (1 cr; S-N only; 1220-1310 MTWTh; EItH N647) D Anderson
 Procedures for operation of batch and interactive computers; emphasis on SPSS statistical programs; laboratory experience.

5900. DIRECTED STUDY. (987009) (Cr ar; prereq #: hrs ar) MacEachern

8110. STATISTICAL METHODS. (287010) (3 cr; prereq 5110 or Psy 3801 or equiv; 0800-0850 MTWThF; BuH 120) MacEachern
 Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

8120. METHODS IN EDUCATIONAL RESEARCH. (090130) (3 cr; 1115-1205 MTWTh; EItH N647) D Anderson
 Methods and techniques employed in investigation and report of educational problems. Suggested for all candidates for degrees.

R 8900.* RESEARCH PROBLEMS. (Cr ar; each section limited to 5 students; prereq #: hrs ar)

- | | |
|-----------------------------|------------------------------|
| Sec 21, (187011) D Anderson | Sec 24, (587014) Samuels |
| Sec 22, (987012) Davison | Sec 25, (690132) Terwilliger |
| Sec 23, (787013) MacEachern | |

R 8910.* PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY. (Cr ar; each section limited to 5 students; hrs ar)
 Recent developments in statistical science: applications to educational and psychological problems.

- | | |
|-----------------------------|------------------------------|
| Sec 21, (387015) D Anderson | Sec 23, (087017) Terwilliger |
| Sec 22, (187016) MacEachern | |

R 8920.* PROBLEMS: MEASUREMENT. (1-3 cr [max 9 cr]; each section limited to 15 students; hrs ar)
 Intensive study and individual research.

- | | |
|--------------------------|------------------------------|
| Sec 21, (887018) Davison | Sec 22, (687019) Terwilliger |
|--------------------------|------------------------------|

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

8112. STATISTICAL METHODS (PARTS I AND II). (087020) (3 cr total for both parts; prereq 8111; 0905-0955 MWF; BuH 120) MacEachern
 Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

SECOND TERM

R 3380. INTRODUCTION TO HUMAN RELATIONS—July 19-August 13. (587482) (3 cr; limited to 30 students; prereq education sr; S-N only; 0900-1100 MTWTh; Arch 45) McArthur
 See First Term.

R 5110. INTRODUCTORY STATISTICAL METHODS. (4 cr; each section limited to 40 students)
 See First Term.

- | |
|---|
| Sec 1, (387483) 0800-0850 MTWThF, BuH 123, Merwin |
| Sec 2, (187484) 0905-0955 MTWThF, EItH N647, D Anderson |

5125. PRINCIPLES AND METHODS OF EVALUATION. (087485) (3 cr; 0905-0955 MTWThF; BuH 123) Merwin
 Introductory course in program evaluation; theory; practical examples; purpose, roles, program descriptions, and evaluation strategies.

5153. INTRODUCTION TO THE PSYCHOLOGY OF INSTRUCTION. (887486) (3 cr; 0905-0955 MTWThF; PeikH 215) Ar
 Survey of psychological factors in design of instruction; performance criteria, strategy, and sequence in the context of research; development and implementation activities in instructional techniques, technologies, and delivery systems; psychological processes relevant to measures of effectiveness in the teaching-learning environment.

R 5305.¹ WORKSHOP IN HUMAN RELATIONS—July 19-August 13. (687487) (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; limited to 25 students; S-N only; 0900-1300 MTWTh; Arch 60) Oden
 See First Term. This offering for 6 credits.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

5900. DIRECTED STUDY. (487488) (Cr ar; prereq #; hrs ar) MacEachern

8111. STATISTICAL METHODS. (287489) (3 cr; prereq 8110; 0800-0850 MTWThF; EItH N647) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

8130. COMPUTER APPLICATION TO STATISTICAL ANALYSES. (687490) (3 cr; prereq 8112 or equiv; 1010-1100 MTWTh; EItH N647) D Anderson
Use of computer to analyze data from the behavioral sciences; interpretation of results; attention to large scale problems.

R 8900.* RESEARCH PROBLEMS. (Cr ar; each section limited to 5 students; prereq #; hrs ar)

Sec 21, (487491) D Anderson

Sec 23, (187493) Merwin

Sec 22, (287492) MacEachern

R 8910.* PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY. (Cr and hrs ar; each section limited to 5 students)
See First Term.

Sec 21, (787495) D Anderson

Sec 22, (587496) MacEachern

8920.* PROBLEMS: MEASUREMENT. (190135) (1-3 cr [max 9 cr]; hrs ar) Merwin
See First Term.

8921.* PROBLEMS: EVALUATION. (387497) (Cr and hrs ar; prereq 5621 or 8525) Merwin
Designing, implementing, and analyzing strategies; students work on their own problems, on evaluation problems in school of the area, or on problems associated with national curriculum projects.

Social and Philosophical Foundations of Education (SPFE)

FIRST TERM

R 3090. THE SCHOOL AND SOCIETY. (887021) (3 cr; limited to 45 students; prereq education sr; 0800-0850 MTWThF; PTH 214)

Readings in social science and philosophy give the student opportunity to integrate points of view concerning the role of the school in present-day society.

3099. DIRECTED STUDY. (190174) (1-6 cr; prereq #; hrs ar) Clark
Independent readings with guidance of the faculty.

5099. DIRECTED STUDY. (890176) (Cr ar [max 9 cr]; S-N optional; prereq #) Clark
Individual or group work on topics or problems in social or philosophical foundations of education.

5125. YOUTH IN MODERN SOCIETY. (490178) (4 cr, §Soc 5952; 0905-0955 MTWThF; ChDev 218) Clark
Youth in advanced societies and as a social entity; functions and roles in industrial society, family, education, politics and government, economy and work, welfare and religion; organizations, social movements, and subcultures; empirical research and cross-cultural perspectives. Meets with Soc 5952.

8202. POLITICS OF EDUCATION. (690180) (3 cr, §EdAd 8202; 1010-1100 MTWThF; BioSci 12) Mazzoni
Social science findings, concepts, and methods used to consider the political context of educational administration, emphasis on public school policymaking by local and state governments; role of administrators. Meets with EJAd 8202.

8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (290182) (Cr ar; prereq #; hrs ar) Clark
For graduate students interested in research and original work in these areas.

SECOND TERM

R 3090. THE SCHOOL AND SOCIETY. (187579) (3 cr; limited to 45 students; prereq sr; 0800-0850 MTWThF; BuH 120) Harkins
See First Term.

3099. DIRECTED STUDY. (587580) (1-6 cr; prereq #; hrs ar) Harkins

5099. DIRECTED STUDY. (387581) (Cr ar [max 9 cr]; S-N optional; prereq #) Harkins
See First Term.

5210. SOCIAL FORECASTING AND EDUCATIONAL FUTURES. (590186) (3 cr; 1010-1100 MTWThF; WullH 130) Harkins
Application of social sciences in their academic and applied dimensions to formal education, including the social-scientific and systems orientation toward communities; emphasis on short-range social and educational planning—near present to a few years hence.

8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (887584) (Cr ar; prereq #; hrs ar) Harkins
See First Term.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Agricultural Education (AgEd)

FIRST TERM

5027. PRACTICUM: PLACEMENT FOR EXTENSION EXPERIENCES. (487023) (2-9 cr [max 9 cr], §HEEd 3605, §HEEd 5027; S-N optional; prereq #: hrs ar; off campus) Norenberg
Observation of the activities of county extension staff; familiarization with staff, program planning and development, county committee, youth activities and office activities, with opportunity to participate in the functions of an extension educator.

5080. ORGANIZATION AND MANAGEMENT—June 21-25. (190099) (3 cr; prereq #: hrs ar; off campus) Leske
Administrative structure and function of subcollegiate programs. Preapplication required for this multistate travel course. Contact Gary Leske, 320 Vocational and Technical Education Building, 1954 Buford Avenue, University of Minnesota, St. Paul, MN 55108, (612) 373-1020.

R 5090. INDEPENDENT STUDY. (1-3 cr; each section limited to 5 students; prereq sr; hrs ar)
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, (787027) Bear	Sec 24, (787030) R Peterson
Sec 22, (587028) Leske	Sec 25, (587031) Persons
Sec 23, (387029) Marvin	

R 5095. INDEPENDENT STUDY. (3 cr; each section limited to 5 students; prereq MEEd student in agricultural education; hrs ar)

Preparation of a paper dealing with studies in agricultural education applied to professional responsibilities.

Sec 21, (087034) Bear	Sec 24, (487037) R Peterson
Sec 22, (887035) Leske	Sec 25, (287038) Persons
Sec 23, (687036) Marvin	

R 8001.* RESEARCH IN AGRICULTURAL EDUCATION. (Cr ar; each section limited to 5 students; prereq 15 cr in education)

Selecting problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts.

Sec 21, (287041) Bear	Sec 24, (787044) R Peterson
Sec 22, (187042) Leske	Sec 25, (587045) Persons
Sec 23, (987043) Marvin	

R 8091. FIELD PROBLEMS. (3 cr; each section limited to 5 students; hrs ar)

Making investigations, gathering data, and formulating plans regarding agricultural education.

Sec 21, (087048) Bear	Sec 24, (087051) R Peterson
Sec 22, (887049) Leske	Sec 25, (887052) Persons
Sec 23, (187050) Marvin	

SECOND TERM

5072. PRACTICUM: AGRICULTURAL BUSINESS AND INDUSTRY—August 9-13. (287587) (1-3 cr [max 9 cr]; prereq 5071 or #: 0800-1205 and 1325-1625 MTWThF and hrs ar; off campus) Leske
Observation, study, and experience in agricultural business and industry; application to educational programs in agriculture. This offering for 3 credits.

R 5090. INDEPENDENT STUDY. (1-3 cr; each section limited to 10 students; prereq sr; hrs ar)
See First Term.

Sec 21, (187588) Bear	Sec 24, (187591) R Peterson
Sec 22, (987589) Leske	Sec 25, ((987592) Persons
Sec 23, (287590) Marvin	

R 5095. INDEPENDENT STUDY. (3 cr; each section limited to 10 students; prereq MEEd student in agricultural education; hrs ar)

See First Term.

Sec 21, (387595) Bear	Sec 24, (887598) R Peterson
Sec 22, (187596) Leske	Sec 25, (687599) Persons
Sec 23, (087597) Marvin	

Course Descriptions

8001.* RESEARCH IN AGRICULTURAL EDUCATION. (Cr ar; each section limited to 10 students; prereq 15 cr in education)

See First Term.

Sec 21, (687604) Bear

Sec 22, (487605) Leske

Sec 23, (287606) Marvin

Sec 24, (187607) R Peterson

Sec 25, (987608) Persons

8091. FIELD PROBLEMS. (3 cr; each section limited to 10 students; hrs ar)

See First Term.

Sec 21, (587613) Bear

Sec 22, (387614) Leske

Sec 23, (187615) Marvin

Sec 24, (887617) R Peterson

Sec 25, (687618) Persons

Business and Distributive Education (BDE)

FIRST TERM

1501.¹ BEGINNING TYPEWRITING. (287055) (3 cr, §BsEd 1501; limited to 25 students; S-N optional for nonmajors; 1115-1205 MTWThF; VoTech 240) Okafor

Emphasis on correct typewriting techniques; letter styles; manuscripts; simple tabulations; proofreading.

1502.¹ INTERMEDIATE TYPEWRITING. (187056) (3 cr, §BsEd 1502; limited to 5 students; prereq 1501 or proficiency exam; 1115-1205 MTWThF; VoTech 240) Okafor

Speed and accuracy building; carbons, tabulations, simple manuscripts, rough drafts, additional letter styles, interoffice memoranda, office forms, outlines and enumerations.

1503.¹ ADVANCED TYPEWRITING. (987057) (3 cr, §BsEd 1503; limited to 5 students; prereq 1502 or proficiency exam; 1115-1205 MTWThF; VoTech 240) Okafor

Proficiency in typing complex manuscripts, footnotes, bibliographies, additional letter styles, complex tabulations.

5159. WORD PROCESSING CONCEPTS AND TEACHING METHODS—June 15-25. (190112) (4 cr; limited to 25 students; 0800-1100 MTWThF and hrs ar; VoTech 230) Lambrecht

Personnel and organization in industry; input and output hardware; implementing word processing systems; instructional implications.

5160. WORD PROCESSING PRACTICUM—June 15-25. (090113) (2 cr; limited to 25 students; 1220-1415 MTWThF and hrs ar; VoTech 230) Lambrecht

Participation in office simulation using input and output hardware; center operation and supervision; procedures for originating communications.

5353. CURRICULUM CONSTRUCTION IN BUSINESS AND DISTRIBUTIVE EDUCATION—June 28-July 9. (987060) (4 cr, §BsEd 5108, §DE 5110, §DE 5111; 0800-1100 MTWThF and ar; VoTech R285) Hopkins

Content identification, program organization, preparation of instructional objectives, guidelines for selection and development of instructional materials.

5359. OCCUPATIONAL EXPERIENCE. (787061) (1-18 cr; limited to 20 students; prereq #: S-N optional; 1800-2000 T and hrs ar; VoTech 420C) Hopkins, Lambrecht

Observation and employment experiences in business offices or distributive 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.

5360. PROGRAM DEVELOPMENTS IN BUSINESS AND DISTRIBUTIVE EDUCATION: Teaching Visual Merchandising—July 6-9. (890114) (1-6 cr; 1325-1625 MTWThF and hrs ar; VoTech 220)

Developments emerging from research and local, state, and national programs and projects. This 2-credit offering will involve class members in field trips, contact with display experts, and classroom sessions to acquire the latest information on constructing displays and teaching others how to do so.

5361. BUSINESS OBSERVATION AND SEMINAR—July 12-16. (587062) (3-9 cr, §DE 5325; limited to 30 students; prereq Δ: 0800-1205, 1325-1535 MTWThF and hrs ar; VoTech 285) Hopkins

Current operating practices and career opportunities in business and industry combining planned experience in work environments and related seminars. This offering for 3 credits will provide the opportunity to participate in planned on-site experience in selected metropolitan area business firms and related seminars to investigate entry-level job opportunities and requirements; job performance standards with implications for curriculum revision; current training practices and media; and ways in which business and distributive educators can work together.

5600. SCHOOL-BASED PROJECTS IN BUSINESS AND DISTRIBUTIVE EDUCATION. (1-12 cr [max 12 cr]; each section limited to 10 students; prereq #: hrs ar)

Individual or group work on curricular, instructional, developmental, or evaluation problems and projects applicable to local school situations.

Sec 21, (387063) Hopkins

Sec 22, (187064) Lambrecht

¹These courses meet concurrently. A total of 35 students will be accepted in the three courses.

R 5900. DIRECTED STUDY IN BUSINESS AND DISTRIBUTIVE EDUCATION. (1-6 cr [max 6 cr]; each section limited to 10 students; S-N optional; prereq Δ ; hrs ar)
Opportunity for individual learning experiences not covered by regular courses.

Sec 21, (087065) Hopkins

Sec 22, (887066) Lambrecht

R 8900.* PROBLEMS: BUSINESS AND DISTRIBUTIVE EDUCATION. (1-9 cr [max 9 cr]; each section limited to 10 students; prereq #; hrs ar)
Individual research.

Sec 21, (687067) Hopkins

Sec 22, (487068) Lambrecht

SECOND TERM

5352. COORDINATION TECHNIQUES IN BUSINESS AND DISTRIBUTIVE EDUCATION—JULY 19-30. (987639) (4 cr, \S BsEd 5104, \S DE 5105, \S DE 5106; 0800-1100 MTWThF and hrs ar; VoTech 220) Ashmun
The cooperative program in distributive and office education; program establishment; guidance, selection, and placement of students; work adjustment; student objectives; evaluation; labor laws; public relations.

R 5360. PROGRAM DEVELOPMENTS IN BUSINESS AND DISTRIBUTIVE EDUCATION: Using the Microcomputer in Distributive Education—August 2-6. (287640) (1-6 cr; limited to 20 students; 0800-1205 MTWThF and hrs ar; VoTech 230) Ashmun

Developments emerging from research and local, state, and national programs and projects. This 2-credit offering will introduce class members to applications of the Apple II in model school store situations, including using the equipment as a cash register.

R 5370. SPECIAL TOPICS IN INSTRUCTION: Using the Microcomputer in Office Procedures and in the Model Office—July 26-30. (990377) (1-6 cr; limited to 20 students; 1220-1620 MTWThF and hrs ar; VoTech 230) Lambrecht
Topics will vary with each offering; content planning, providing, evaluating instruction. This 2-credit offering involves the use and evaluation of microcomputer programs for office education courses. Procedures for integrating microcomputers into regular classes, preparing supplementary instructional materials, and evaluating learning outcomes.

R 5390. SPECIAL TOPICS IN TECHNICAL UPDATING: Microcomputer Basics for the Nonvocational Educator—July 19-23. (790378) (1-6 cr; limited to 20 students; 1220-1620 MTWThF and hrs ar; VoTech 230) Lambrecht

Topics will vary with each offering; content technological and procedural changes in business. This 2-credit offering is an introduction to instructional use of microcomputers. A variety of computer programs for the Apple II used and evaluated. No previous use of microcomputers is required.

R 5600. SCHOOL-BASED PROJECTS IN BUSINESS AND DISTRIBUTIVE EDUCATION. (590379) (1-12 cr [max 12 cr]; limited to 20 students; prereq #; hrs ar) Ashmun
See First Term.

R 5900. DIRECTED STUDY IN BUSINESS AND DISTRIBUTIVE EDUCATION. (990380) (1-6 cr [max 6 cr]; S-N optional; limited to 10 students; prereq Δ ; hrs ar) Ashmun
See First Term.

R 8900.* PROBLEMS: BUSINESS AND DISTRIBUTIVE EDUCATION. (590382) (1-9 cr [max 9 cr]; limited to 10 students; prereq #; hrs ar) Ashmun
See First Term.

Home Economics Education (HEEd)

FIRST TERM

5003. COOPERATIVE EDUCATION PROGRAM: INTERNSHIP. (090077) (3 cr [max 9 cr]; S-N only; prereq HE 1003, 1500; hrs ar) Rossmann

Planned work experience focusing on educational competencies in nonschool settings. Students assume defined responsibilities of the position. A maximum of 3 credits may be used in M.A. and M.Ed. programs. For information, contact Marilyn Rossmann, 325 Vocational and Technical Education Building, 1954 Buford Avenue, University of Minnesota, St. Paul, MN 55108, (612) 373-1525.

R 5405.¹ WORKSHOP: CHILD DEVELOPMENT AND FAMILY RELATIONS—June 15-25.(487071) (1-4 cr [max 12 cr]; limited to 50 students; 0830-1200 MTWThF; VoTech R380) Thomas

Recent emphasis on growth and guidance of individuals; materials and techniques for high school and adult levels to attain better understanding. This offering for 3 credits. Concurrent registration in section 1 of HEEd 5430 is required.

5407. FAMILY LIFE EDUCATION: CURRICULUM, METHODS AND MATERIALS—July 6-16. (287072) (1-3 cr [max 12 cr]; 0830-1200 MTWThF and hrs ar; VoTech R380) Rossmann

Materials, curriculum articulation, teaching techniques, evaluation for high school and adult levels; theoretical foundations for preparation and critique of curriculum. This offering for 3 credits.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Course Descriptions

5410.¹ WORKSHOP: FOODS AND NUTRITION—June 15-25. (187073) (1-4 cr [max 12 cr]; 0830-1200 MTWThF; VoTech R380) Parsons
Problems in teaching at high school and adult levels; use of new materials and techniques; group and individual projects for experienced teachers. This offering for 3 credits.

R 5430.¹ WORKSHOP: CONTEMPORARY PROBLEMS IN HOME ECONOMICS EDUCATION. (1-6 cr [max 12 cr]; section 1 limited to 50 students, section 2 limited to 25 students, section 3 limited to 20 students)
Consideration of topic of current concern in home economics education.

Sec 1, Parenting Education, June 15-25, (987074) 3 cr, 1300-1630 MTWThF, VoTech R380, Thomas
Participants will apply concepts and methods learned in HEEEd 5405 to individual situations. Small group minisessions will address specific problems. Concurrent registration in HEEEd 5405 is required.

Sec 2, The Teaching Experience: Its Stresses and Satisfactions, July 6-16, (787075) 3 cr, 1300-1630 MTWThF, VoTech R370, Plihal
Focus on stages of work-related stress and sources and strategies for managing teacher stress; examination of challenges of teaching and ways to experience greater satisfaction with one's work.

Sec 3, Working With Adolescents in Child Development and Parenting Education, June 28-July 2, (090080) 2 cr, 0900-1600 MTWThF, McNH 375, Cooke
Strategies for helping adolescents understand themselves, human development processes, and caregiving roles through working with children; experiences in planning, observing, and supervising adolescents' work with children and providing feedback. Tuition scholarships may be available. Preapplication required. For information, contact Ruth Thomas, 325 Vocational and Technical Education Building, 1954 Buford Avenue, University of Minnesota, St. Paul, MN 55108.

R 5900. READINGS IN HOME ECONOMICS EDUCATION. (1-3 cr [max 12 cr]; each section limited to 10 students; prereq #: hrs ar)
Independent study under tutorial guidance.

Sec 21, (587076) Rossmann
Sec 22, (387077) Thomas

Sec 23, (590091) Plihal

8300. RESEARCH METHODS—June 21-July 2. (590088) (3 cr; prereq 5315, #; 1300-1600 MTWThF; VoTech R355) Plihal
Methods of inquiry; descriptive and causal-comparative methods, with attention to experimentation.

R 8900.* PROBLEMS: HOME ECONOMICS EDUCATION. (1-9 cr; each section limited to 10 students; prereq 8300, #; hrs ar)
Independent study of current educational problems.

Sec 21, (387080) Rossmann
Sec 22, (187081) Thomas

Sec 23, (190093) Plihal

SECOND TERM

R 5430.¹ WORKSHOP: CONTEMPORARY PROBLEMS IN HOME ECONOMICS EDUCATION. (1-6 cr [max 12 cr]; section 1 limited to 20 students; section 2 limited to 30 students)
See First Term.

Sec 1, Microcomputer Applications in Home Economics, July 19-23, (087650) 2 cr, 0800-1200 MTWThF, VoTech 230, McClelland
Hands-on experience with home economics computer programs; use of microcomputers for instruction and management of home economics programs. Concurrent registration in BDE 5390 or basic microcomputer operating skills required.

Sec 2, Developing Home Economics Programs in Middle School, July 26-August 6, (887651) 4 cr, 0800-1200 MTWThF, VoTech R380, McClelland
Planning to meet the unique needs of middle school students; development of individual and group projects.

5900. READINGS IN HOME ECONOMICS EDUCATION. (187655) (1-3 cr [max 12 cr]; prereq #: hrs ar) McClelland
See First Term.

8900.* PROBLEMS: HOME ECONOMICS EDUCATION. (890100) (1-9 cr; prereq 8300, #; hrs ar) McClelland
See First Term.

¹Graduate students planning to register for any workshop should consult their adviser concerning the possibility of using credit for the workshop in their graduate program.

Industrial Education (Ind)

FIRST TERM

3110. CONSTRUCTION: INTERMEDIATE. (087082) (3 or 6 or 9 cr; prereq 1612, #: hrs ar) Bjorkquist
Individualized technical skill development in areas of house framing, concrete work, domestic wiring, plumbing, surveying, painting, paper hanging, and basic construction codes.

3111. CONSTRUCTION: ADVANCED. (887083) (3 or 6 or 9 cr; prereq 3110, #: hrs ar) Bjorkquist
Individualized advanced skill development in areas of forming, block and brick, commercial plumbing, industrial circuitry, landscaping, finishing, and advanced construction codes.

3120. GRAPHIC COMMUNICATIONS: INTERMEDIATE. (687084) (3 or 6 or 9 cr; prereq 1622, #: hrs ar) Bjorkquist
Individualized technical skill development in areas of offset printing, technical illustrating, machine and architectural drafting, photography.

3121. GRAPHIC COMMUNICATIONS: ADVANCED. (487085) (3 or 6 or 9 cr; prereq 3120, #: hrs ar) Bjorkquist
Individualized advanced skill development in areas of color separation, web press operation, drafting design, color renditions, air brush.

3130. MANUFACTURING: INTERMEDIATE. (287086) (3 or 6 or 9 cr; prereq 1632, #: hrs ar) Bjorkquist
Individualized technical skill development in areas of welding, lathe operation, milling machine operation, sheet metal construction.

3131. MANUFACTURING: ADVANCED. (187087) (3 or 6 or 9 cr; prereq 3130, #: hrs ar) Bjorkquist
Individualized advanced skill development in areas of numerical control and machine setup inspection, electric discharge machining, TIG welding.

3140. POWER AND ENERGY: INTERMEDIATE. (987088) (3 or 6 or 9 cr; prereq 1642, #: hrs ar) Bjorkquist
Individualized technical skill development in areas of digital, hydraulic and pneumatic control systems, and radio and TV repair.

3141. POWER AND ENERGY: ADVANCED. (787089) (3 or 6 or 9 cr; prereq 3140, #: hrs ar) Bjorkquist
Individualized advanced skill development in areas of digital, hydraulic, and pneumatic system design, electronic maintenance and repair, and alternative energy sources.

3150. TRANSPORTATION: INTERMEDIATE. (187090) (3 or 6 or 9 cr; prereq 1652, #: hrs ar) Bjorkquist
Individualized technical skill development in areas of small gas and marine engine repair, automotive tuneup, cooling systems, brakes, and autobody repair.

3151. TRANSPORTATION: ADVANCED. (987091) (3 or 6 or 9 cr; prereq 3150, #: hrs ar) Bjorkquist
Individualized advanced skill development in areas of diesel engine repair, auto engine overhaul, front end repair, automatic transmission, aircraft engine maintenance, chassis straightening.

R 3900. INDEPENDENT STUDY. (3 cr per qtr; each section limited to 5 students; prereq jr or #: hrs ar)
Self-directed study, preceded by classroom instruction in basic research procedures.

Sec 21, (787092) Bjorkquist	Sec 24, (187095) Pucel
Sec 22, (587093) Brown	Sec 25, (087096) Smith
Sec 23, (387094) Moss	

R 3901. INDEPENDENT STUDY. (3 cr per qtr; each section limited to 5 students; prereq jr or #: hrs ar)
Self-directed study, preceded by classroom instruction in basic research procedures.

Sec 21, (590754) Bjorkquist	Sec 24, (087101) Pucel
Sec 22, (487099) Brown	Sec 25, (887102) Smith
Sec 23, (187100) Moss	

R 3902. INDEPENDENT STUDY. (3 cr per qtr; each section limited to 5 students; prereq jr or #: hrs ar)
Self-directed study, preceded by classroom instruction in basic research procedures.

Sec 21, (487104) Bjorkquist	Sec 24, (987107) Pucel
Sec 22, (287105) Brown	Sec 25, (787108) Smith
Sec 23, (187106) Moss	

R 5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE. (987110) (1-5 cr [max 15 cr]; limited to 10 students; prereq #: hrs ar) Bjorkquist
Structured/supervised employment in the communications industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.

R 5101. PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE. (787111) (1-5 cr [max 15 cr]; limited to 10 students; prereq #: hrs ar) Bjorkquist
Structured/supervised employment in the production/manufacturing industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.

Course Descriptions

R 5102. POWER/ENERGY OCCUPATIONAL EXPERIENCE. (587112) (1-5 cr [max 15 cr]; limited to 10 students; prereq #: hrs ar) Bjorkquist

Structured/supervised employment in the power energy industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.

R 5103. CONSTRUCTION OCCUPATIONAL EXPERIENCE. (387192) (1-5 cr [max 15 cr]; limited to 10 students; prereq #: hrs ar) Bjorkquist

Structured/supervised employment in the construction industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.

R 5112. CONSTRUCTION SPECIALIZATION. (187193) (1-9 cr; limited to 5 students; prereq Δ ; hrs ar) Bjorkquist
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

R 5122. GRAPHIC COMMUNICATIONS: SPECIALIZATION. (1-9 cr; section 1 limited to 25 students, section 21 limited to 5 students; prereq Δ)

Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

Sec 1, (690101) 3 cr. 0800-0850 MTWThF, VoTech 110, Weber

Photography as creative communication; fundamentals of photography. 35 mm camera operation, darkroom procedures, product and portrait photography and color slide processing.

Sec 21, (490102) cr and hrs ar, Bjorkquist

R 5132. MANUFACTURING: SPECIALIZATION. (887195) (1-9 cr; limited to 5 students; prereq Δ ; hrs ar) Bjorkquist
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

R 5142. POWER AND ENERGY: SPECIALIZATION. (687196) (1-9 cr; limited to 5 students; prereq Δ ; hrs ar) Bjorkquist
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

R 5152. TRANSPORTATION: SPECIALIZATION. (487197) (1-9 cr; limited to 5 students; prereq Δ ; hrs ar) Bjorkquist
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5310. COORDINATION—June 14-25. (887200) (3 cr; 0905-1205 MTWThF; VoTech R280) Brown
Duties and responsibilities of coordinators in trade schools, part-time programs and comprehensive high schools.

5325. FOUNDATIONS OF INDUSTRIAL EDUCATION—July 6-16. (290103) (3 cr; 1325-1625 MTWThF; VoTech R280) Smith

History, objectives, development, and current practices of the field.

R 5900. SCHOOL-BASED PROJECT IN INDUSTRIAL EDUCATION. (1-6 cr [max 12 cr]; each section limited to 5 students; S-N optional; prereq 5305, 5325. MEd students only; hrs ar)
Independent or team project designed to study, improve, evaluate, or develop curriculum or instructional materials to improve quality of instruction.

Sec 21, (687201) Bjorkquist

Sec 24, (187204) Pucel

Sec 22, (487202) Brown

Sec 25, (987205) Smith

Sec 23, (287203) Moss

R 8900. RESEARCH PROBLEMS. (3-6-9 cr per qtr; each section limited to 5 students; prereq approval of candidacy; hrs ar)
Individual conferences.

Sec 21, (587207) Bjorkquist

Sec 24, (587210) Pucel

Sec 22, (387208) Brown

Sec 25, (387211) Smith

Sec 23, (187209) Moss

R 8901. RESEARCH PROBLEMS. (3-6-9 cr per qtr; each section limited to 5 students; prereq approval of candidacy; hrs ar)
Individual conferences.

Sec 21, (087213) Bjorkquist

Sec 24, (987219) Pucel

Sec 22, (687215) Brown

Sec 25, (287220) Smith

Sec 23, (287217) Moss

R 8902. RESEARCH PROBLEMS. (3-6-9 cr per qtr; each section limited to 5 students; prereq approval of candidacy; hrs ar)
Individual conferences.

Sec 21, (887214) Bjorkquist

Sec 24, (987222) Pucel

Sec 22, (487216) Brown

Sec 25, (787223) Smith

Sec 23, (187218) Moss

SECOND TERM

3110. CONSTRUCTION: INTERMEDIATE. (787657) (3 or 6 or 9 cr; prereq 1612, #: hrs ar) Kavanaugh
See First Term.

- 3111. CONSTRUCTION: ADVANCED.** (587658) (3 or 6 or 9 cr; prereq 3110, #: hrs ar) Kavanaugh
See First Term.
- 3120. GRAPHIC COMMUNICATIONS: INTERMEDIATE.** (387659) (3 or 6 or 9 cr; prereq 1622, #: hrs ar) Kavanaugh
See First Term.
- 3121. GRAPHIC COMMUNICATIONS: ADVANCED.** (787660) (3 or 6 or 9 cr; prereq 3120, #: hrs ar) Kavanaugh
See First Term.
- 3130. MANUFACTURING: INTERMEDIATE.** (587661) (3 or 6 or 9 cr; prereq 1632, #: hrs ar) Kavanaugh
See First Term.
- 3131. MANUFACTURING: ADVANCED.** (690387) (3 or 6 or 9 cr; prereq 3130, #: hrs ar) Kavanaugh
See First Term.
- 3140. POWER AND ENERGY: INTERMEDIATE.** (187663) (3 or 6 or 9 cr; prereq 1642, #: hrs ar) Kavanaugh
See First Term.
- 3141. POWER AND ENERGY: ADVANCED.** (087664) (3 or 6 or 9 cr; prereq 3140, #: hrs ar) Kavanaugh
See First Term.
- 3150. TRANSPORTATION: INTERMEDIATE.** (887665) (3 or 6 or 9 cr; prereq 1652, #: hrs ar) Kavanaugh
See First Term.
- 3151. TRANSPORTATION: ADVANCED.** (687666) (3 or 6 or 9 cr; prereq 3150, #: hrs ar) Kavanaugh
See First Term.
- R 3900. INDEPENDENT STUDY.** (3 cr per qtr; each section limited to 5 students; prereq jr or #: hrs ar)
See First Term.
 Sec 21, (487667) Bjorkquist Sec 23, (187669) Moss
 Sec 22, (287668) Kavanaugh Sec 24, (487670) Pucel
- R 3901. INDEPENDENT STUDY.** (3 cr per qtr; each section limited to 5 students; prereq jr or #: hrs ar)
See First Term.
 Sec 21, (187672) Bjorkquist Sec 23, (787674) Moss
 Sec 22, (987673) Kavanaugh Sec 24, (587675) Pucel
- R 3902. INDEPENDENT STUDY.** (3 cr per qtr; each section limited to 5 students; prereq jr or #: hrs ar)
See First Term.
 Sec 21, (187677) Bjorkquist Sec 23, (887679) Moss
 Sec 22, (087678) Kavanaugh Sec 24, (187680) Pucel
- R 5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE.** (887682) (1-5 cr [max 15 cr]; limited to 10 students;
prereq #: hrs ar) Kavanaugh
See First Term.
- R 5101. PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE.** (687683) (1-5 cr [max 15 cr]; limited to
10 students; prereq #: hrs ar) Kavanaugh
See First Term.
- R 5102. POWER/ENERGY OCCUPATIONAL EXPERIENCE.** (487684) (1-5 cr [max 15 cr]; limited to 10 students; prereq
#: hrs ar) Kavanaugh
See First Term.
- R 5103. CONSTRUCTION OCCUPATIONAL EXPERIENCE.** (287685) (1-5 cr [max 15 cr]; limited to 10 students; prereq
#: hrs ar) Kavanaugh
See First Term.
- R 5112. CONSTRUCTION: SPECIALIZATION.** (290389) (1-9 cr; limited to 5 students; prereq Δ; hrs ar) Kavanaugh
See First Term.
- 5122. GRAPHIC COMMUNICATIONS: SPECIALIZATION.** (187686) (1-9 cr; limited to 5 students; prereq Δ; hrs ar)
Kavanaugh
See First Term.
- R 5132. MANUFACTURING: SPECIALIZATION.** (987687) (1-9 cr; limited to 5 students; prereq Δ; hrs ar) Kavanaugh
See First Term.
- R 5142. POWER AND ENERGY: SPECIALIZATION.** (787688) (1-9 cr; limited to 5 students; prereq Δ; hrs ar) Kavanaugh
See First Term.
- R 5152. TRANSPORTATION: SPECIALIZATION.** (587689) (1-9 cr; limited to 5 students; prereq Δ hrs ar) Kavanaugh
See First Term.
- 5305. CRITICAL ISSUES IN INDUSTRIAL EDUCATION—July 19-30.** (090385) (3 cr; 0905-1205 MTWThF; VoTech
R280) Kavanaugh
Identification, analysis, and discussion of major current problems in the field.

Course Descriptions

R 5900. SCHOOL-BASED PROJECT IN INDUSTRIAL EDUCATION. (1-6 cr [max 12 cr]; each section limited to 5 students; S-N optional; prereq 5305, 5325, MEEd students only; hrs ar)
See First Term.

Sec 21, (987690) Bjorkquist	Sec 23, (587692) Moss
Sec 22, (787691) Kavanaugh	Sec 24, (387693) Pucel

R 8900. RESEARCH PROBLEMS. (3-6-9 cr per qtr; each section limited to 5 students; prereq approval of candidacy; hrs ar)
See First Term.

Sec 21, (087695) Bjorkquist	Sec 23, (687697) Moss
Sec 22, (887696) Kavanaugh	Sec 24, (487698) Pucel

R 8901. RESEARCH PROBLEMS. (3-6-9 cr per qtr; each section limited to 5 students; prereq approval of candidacy; hrs ar)
See First Term.

Sec 21, (087700) Bjorkquist	Sec 23, (687702) Moss
Sec 22, (887701) Kavanaugh	Sec 24, (487703) Pucel

R 8902. RESEARCH PROBLEMS. (3-6-9 cr per qtr; each section limited to 5 students; prereq approval of candidacy; hrs ar)
See First Term.

Sec 21, (187705) Bjorkquist	Sec 23, (787707) Moss
Sec 22, (987706) Kavanaugh	Sec 24, (587708) Pucel

Vocational Education (VoEd)

FIRST TERM

5100. SPECIAL TOPICS IN INSTRUCTION: Individualizing Instruction—June 14-18. (387225) (1-6 cr max 9 cr); prereq #: 0905-1205, 1325-1625 MTWThF and hrs ar; VoTech R375) Peterson
Topics will vary with each offering but course covers planning, providing, and/or evaluating instruction. This 3-credit course will analyze the methods and techniques for personalizing instruction in vocational classrooms and laboratories.

5274. TWO-YEAR POSTSECONDARY INSTITUTIONS—June 15-30. (087227) (3 cr, \$EdAd 5274, \$EdAd 8274; 1430-1520 MTWThF; ClaOff 27) Morgan
Present status, development, functions, organization, curriculum, and trends in postsecondary but non-baccalaureate institutions. Meets with EdAd 5274.

R 5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—June 14-25. (887228) (3 cr; limited to 60 students; 1325-1625 MTWThF; VoTech R385) G Swanson
Interpretation of the purposes of vocational education in varying socioeconomic contexts; analysis of vocational fields in regard to recipients, practices, legislation, and funding.

5600. PLANNING VOCATIONAL EDUCATION—July 6-16. (090211) (3 cr; 0905-1205 MTWThF; VoTech F270) Copa
Context, definition, methods, and information needs in planning at national, state, and local education agency levels.

5750. TRAINING IN INDUSTRY AND BUSINESS—June 14-18. (690213) (3 or 4 cr; 0905-1205, 1325-1625 MTWThF and hrs ar; VoTech R280) R Swanson
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 3 credits.

5760. ORGANIZATIONAL DEVELOPMENT IN INDUSTRY AND BUSINESS—June 21-25. (090225) (3 or 4 cr; 0905-1205, 1325-1625 MTWThF and hrs ar; VoTech R285) McLean
Introduction to major concepts, skills, and techniques. This offering for 3 credits.

5780. INTERNSHIP: TRAINING AND DEVELOPMENT. (890226) (Cr ar [max 15 cr]; S-N optional; prereq 5750; hrs ar) R Swanson, McLean
Students apply and contract for training positions in industry and business; individual contracts describe the period of internship; may be used to meet a portion of student teaching requirement at program discretion providing student will still be qualified to teach in public school.

SECOND TERM

5102. SPECIAL TOPICS IN ADMINISTRATION: Legal Aspects of Managing Vocational Education—July 19-23. (587711) (1-6 cr [max 9 cr]; prereq #: 0905-1205, 1325-1625 MTWThF and hrs ar; VoTech R285) Kneak
Topics will vary with each offering but will deal with leadership and management of vocational education programs. This 3-credit offering will aid managers of vocational education to understand laws affecting their job responsibilities.

R 5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—July 19-23. (387712) (3 cr; limited to 60 students; 0905-1205, 1325-1625 MTWThF and hrs ar; VoTech R380) Rossmann
See First Term.

5500. INTRODUCTION TO VOCATIONAL EDUCATION ADMINISTRATION—July 26-30. (390240) (3 cr; 0905-1205, 1325-1625 MTWThF and hrs ar: VoTech R275) Knaak
Basic concepts of structure, financing, program planning and evaluation, law and liability, personnel policies, and management of vocational education programs.

College of Forestry

Undergraduate forestry field studies are offered for both resident and transfer students, at the Lake Itasca Forestry and Biological Station, Itasca State Park, during the four weeks immediately preceding the opening of the fall quarter. This fieldwork is required of all students majoring in forest resources and forest science. Required courses offered at Itasca are FR 3100, Important Forest Plants (two credits); FR 3101, Field Forest Ecology (three credits); and FR 3201, Field Forest Measurements (one credit). The intensive field training provides all students entering forestry courses in the junior year with an introduction to forestry in an excellent field setting. It is timed to interfere as little as possible with summer employment.

About one-half of the nonforestry courses required for graduation in all College of Forestry curricula are available during the summer session on the Twin Cities campus through the various colleges. Students with deficiencies, or those desiring to graduate early, can effectively utilize the summer session to complete required courses in the biological and physical sciences, mathematics, social sciences, communications and other areas.

OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION¹

(SPECIAL TERM FOR FORESTRY STUDENTS—AUGUST 31-SEPTEMBER 23)

The field training session, required of all forest resources and forest science majors, must be completed between the freshman and sophomore or sophomore and junior years. Students must have completed a course in trigonometry and college-level courses in botany and inorganic chemistry with grades of C or better. A minimum grade point average of 2.00 and a minimum of 45 credits are required before the student can attend the Itasca Forestry Session. Nonforestry students who have completed the prerequisites and who have an interest in forestry, outdoor education, or plant ecology also may attend the session. Registration for Itasca is administered through the College of Forestry, Office of Student Services, during early August. The Itasca session occupies the student's full time for six days per week. Most of the time is spent in forest laboratories.

Forest Resources (FR)

FR 3100. IMPORTANT FOREST PLANTS. (2 cr; prereq *3101, *3201, Biol 1103) Scholten, B Brown
Identification of forest plants as related to forest types.

FR 3101. FIELD FOREST ECOLOGY. (3 cr; prereq *3100, *3201, general chemistry) Kurmis, Sucoff
Field examination of succession, soils, silvical characteristics, tree classification, stand structure, and the ecology of regeneration.

FR 3201. FIELD FOREST MEASUREMENT. (1 cr; prereq *3100, *3101, Math 1008) Splett
Introduction to and use of instruments in forest mensuration.

¹For additional courses, see Biology Session.

OFFERED ON THE ST. PAUL CAMPUS

Forest Products (ForP)

FIRST TERM

- 8300.* RESEARCH PROBLEMS. (787738) (Cr ar) Staff
- 8301.* RESEARCH PROBLEMS. (587739) (Cr ar) Staff
- 8302.* RESEARCH PROBLEMS. (987740) (Cr ar) Staff

SECOND TERM

- 8300.* RESEARCH PROBLEMS. (187713) (Cr ar) Staff
- 8301.* RESEARCH PROBLEMS. (087714) (Cr ar) Staff
- 8302.* RESEARCH PROBLEMS. (887715) (Cr ar) Staff

Forest Resources (FR)

FIRST TERM

- 8100.* RESEARCH PROBLEMS IN SILVICULTURE. (787741) (Cr ar) B Brown, Scholten, Alm
- 8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY. (587742) (Cr ar) Sucoff, G Brown
- 8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS. (387743) (Cr ar) Mohn
- 8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY. (187744) (Cr ar) Brooks
- 8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT. (087745) (Cr ar) B Brown, Ek, Irving, Hallgren, Rose
- 8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS. (887746) (Cr ar) Skok, Ellefson, Gregersen
- 8202.* RESEARCH PROBLEMS IN FOREST BIOMETRY. (687747) (Cr ar) Ek, Meyer, Rose
- 8203.* RESEARCH PROBLEMS IN FOREST RECREATION. (487748) (Cr ar) Merriam, Knopp
- 8204.* RESEARCH PROBLEMS IN FOREST POLICY. (287749) (Cr ar) Irving, Merriam, Skok, Ellefson, Gregersen, Hallgren
- 8205.* RESEARCH PROBLEMS IN REMOTE SENSING. (687750) (Cr ar) Meyer, Lillesand

SECOND TERM

- 8100.* RESEARCH PROBLEMS IN SILVICULTURE. (687716) (Cr ar) B Brown, Scholten, Alm
- 8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY. (487717) (Cr ar) Sucoff, G Brown
- 8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS. (287718) (Cr ar) Mohn
- 8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY. (187719) (Cr ar) Brooks
- 8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT. (487720) (Cr ar) B Brown, Ek, Irving, Hallgren, Rose
- 8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS. (287721) (Cr ar) Skok, Ellefson, Gregersen
- 8202.* RESEARCH PROBLEMS IN FOREST BIOMETRY. (187722) (Cr ar) Ek, Meyer, Rose
- 8203.* RESEARCH PROBLEMS IN FOREST RECREATION. (987723) (Cr ar) Merriam, Knopp
- 8204.* RESEARCH PROBLEMS IN FOREST POLICY. (787724) (Cr ar) Irving, Merriam, Skok, Ellefson, Gregersen, Hallgren
- 8205.* RESEARCH PROBLEMS IN REMOTE SENSING. (587725) (Cr ar) Meyer, Lillesand

OFFERED AT CLOQUET FORESTRY CENTER

Forest Resources (FR)

FIRST TERM

8105. ADVANCED FIELD SILVICULTURE. (487751) (3 cr; prereq 5101, #) B Brown
Selected current silvicultural problems and research. Plant-soil relationships with particular reference to forest soils. Methods of forest soil investigations in the field and the laboratory. Offered alternate years.

General College

The General College (GC) is the University's open-admission, general education college. It offers two-year and four-year degree programs for students who wish to combine general education courses with career-related studies; seek one of the college's occupational certificates; or want to fulfill general education requirements for transfer to a four-year professional or liberal arts program by taking courses not available elsewhere in the University.

Admission Requirements—All graduates of accredited Minnesota high schools (and many nongraduates) who demonstrate an interest in college work are eligible for admission to the General College.

Career Development and Certificate Granting Programs—Currently 10 programs are offered: aging studies, aviation studies, fire service, human services generalist, law enforcement/corrections, legal assistant, marketing, open learning for the fire service, radiologic technology, and vocational teacher education.

More Information—For additional information about General College degrees, programs, or services, stop by or call the GC Counseling and Student Development office, 10 Nicholson Hall, 376-2950.

General College (GC)

FIRST TERM

R 1166. PHYSICAL SCIENCE: PRINCIPLES OF CHEMISTRY. (490326) (5 cr; limited to 40 students; 1010-1205 MTWThF; SciCB 175) Uthe

Fundamental principles and laws, stressing development and application of theories and their roots in experience. Topics and demonstrations deal with classification of matter, reactions, elements, atomic and molecular structure, chemical bonding theory, and other subjects that may vary from quarter to quarter. Students gain general understanding of both content and process of the science of chemistry.

R 1230. UNITED STATES: RECENT HISTORY. (185704) (4 cr; limited to 50 students; 0800-0955 MTWTh; NichH 213) Moen

Focuses on 20th-century American history from a pluralistic point of view; lives of minority and bypassed citizens as well as those of leaders and members of dominant groups. Historical roots of problems of the '50s, '60s, '70s, and '80s (e.g., foreign policy, energy sources, voter participation, ecological dangers, difficult social mobility) and, in some instances, possibilities for resolution.

R 1264. CURRENT HISTORY: PRESENT PROBLEMS AND FUTURE PROJECTIONS. (490861) (4 cr; limited to 50 students; 1010-1205 MTWTh; NichH 213) Hathaway

Past origins, present status, and future possibilities of such contemporary concerns as energy, famine, overpopulation, and alienation.

R 1311. ART: GENERAL ARTS. (990329) (4 cr, §3311; limited to 40 students; 1010-1100 MTWThF; NichH 111) Gates
Examines representative works of art from genres of painting, sculpture, architecture, literature, and music to discover how and why art is created and to enable students to formulate and evaluate ideas and attitudes about it. Meets with 3311.

R 1411. FUNDAMENTALS OF USAGE AND STYLE. (190331) (3 cr, §1405 completed prior to September 1981; limited to 30 students; 0905-0955 MTWThF; NichH 209) Behling

Students practice principles of grammar, usage, and style through exercises and writing sentences and paragraphs.

R 1421. WRITING LABORATORY: PERSONAL WRITING. (4 cr; limited to 25 students)

Students read and write descriptive narratives, characterizations, and autobiographical sketches. Personal help with writing problems in laboratory. Emphasis is on clear and effective written expression.

Sec 1. (285709) 0800-0955 TWThF, NichH 216, Stockdale

Sec 2. (685710) 1010-1205 TWThF, NichH 216, Rathburn

R 1433. FUNDAMENTAL COLLEGE MATHEMATICS. (485711) (1-10 cr; initial registration should be for 1-3 cr; limited to 35 students; prereq GCPP math level A or B or C or 1431 or 1434 or Δ ; 0800-0850 MTWThF; EIH N391, N395) Denny
For students with limited background in arithmetic or elementary algebra who want to study this material at their own pace in a classroom setting using a semiprogrammed text. With aid of instructor, students select topics from the following:

Course Descriptions

whole numbers, fractions, decimals, percents, signed numbers, formulas, simple graphs, ratio and proportion, sets, properties, equations, inequalities, rectangular graphs, polynomials, factoring, rational expressions, and radicals. Students may not receive credit in 1433 for equivalent work done in any other math course

R 1511. INTRODUCTION TO MODERN BUSINESS. (985714) (5 cr; limited to 40 students; 1010-1205 MTWThF; NichH 207) Kroll

Intended for both business and general education students; overview of economic environment in which business operates. Topics include production, finance, personnel, and marketing. Useful introductory course for students planning further study in business fields; also recommended for those who want to survey field without studying it in detail.

R 1534. PRACTICAL LAW. (785715) (5 cr; limited to 50 students; 0800-0955 MTWThF; NichH 207) Hower
Common legal problems; formation and discharge of contracts, torts (personal injury and property damage suits), criminal law, bailments, nature and classification of real and personal property, and joint ownership and tenancy.

R 3311. ART: GENERAL ARTS. (990332) (4 cr, §1311; limited to 40 students; 1010-1100 MTWThF; NichH 111) Gates
Examines representative works of art from genres of painting, sculpture, architecture, literature, and music to discover how and why art is created and to enable students to formulate and evaluate ideas and attitudes about it. Meets with 1311.

R 3464. COMMUNICATION IN ORGANIZATIONS. (590334) (4 cr; prereq 1461 or 1465, 5 cr in psychology; limited to 25 students; 1010-1205 TWThF; NichH 122) Amram

For managers, supervisors, and others who directly control quality of life of persons in organizations; focuses on processes and problems involved in working and communicating with people in organizational settings and on knowledge, attitudes, and skills that underlie effective behavior in organizational relationships.

R 3531. WRITING FOR BUSINESS AND THE PROFESSIONS. (190336) (4 cr; prereq 1412 or 1421...1425 or 1531 recommended; limited to 25 students; 0800-0955 TWThF; NichH 122) Adamson

Students write letters, informal and formal reports, recommendations, proposals, summaries, memos—i.e., forms of writing used in business, in health, education, and welfare; and in legal professions. Content adapted to vocational needs of students enrolled. Form, clarity, economy of expression, and suitable tone stressed. *Typed final drafts required.*

R 3725. INDIVIDUAL SEXUALITY AND SOCIETY. (585716) (4 cr; limited to 50 students; 1010-1205 MTWTh; NichH 109) Latts

Three independently varying components of human sexuality and development: sexual anatomy, physiology, and reproduction; sex-role learning behavior; and sexual preferences and behavior. Focuses on what is known about sexuality rather than feelings about it, and on the individual's role as both actor and reactor.

SECOND TERM

R 1132. BIOLOGICAL SCIENCE: THE HUMAN BODY. (187753) (5 cr; limited to 75 students; 0800-0955 MTWThF; SciCB 125) Dearden

Problems of physical, mental, and social health are related to anatomy, physiology, and needs of the human organism. Films, televised dissections, and demonstrations supplement lectures.

R 1212. URBAN PROBLEMS. (090340) (5 cr; limited to 50 students; 0800-0955 MTWThF; NichH 213) F Johnson

Using problem-solving, interdisciplinary approach, students examine some major urban problems, such as social class and poverty, social change, crime, and education. Emphasizes practical activities through fieldwork or community activities.

R 1235. UNITED STATES: LAW IN SOCIETY. (987754) (5 cr; limited to 50 students; 1010-1205 MTWThF; NichH 207) Kahn

The role of law in our changing society; legal aspects of current topics. Students select topics for study from the following: courts and court systems, corrections, police-community relations, environmental problems, drug problems, welfare and domestic problems, wills and probate, insurance, and consumer rights.

R 1237. UNITED STATES: JUVENILE DELINQUENCY. (290862) (4 cr, limited to 50 students; 1010-1205 MTWTh; NichH 109) F Harris

Juvenile delinquency in our society; its nature and extent, causes, and efforts to cope with it. Emphasis on the family, schools, and courts as factors in both cause and control of delinquency.

R 1403. READING, COMPREHENSION, AND STUDY SKILLS. (190863) (3 cr; limited to 20 students; 0905-0955 MTWThF; NichH 209) Koch

Physical and mental skills involved in helping students comprehend, retain, and evaluate what they read and in enabling them to read at adequate rate of speed. Basic textbook, machines, tapes, and timed readings provide practice in reading for factual information, main ideas, concepts, and implications. Work by whole-class method, in small groups, and individually.

R 1422. WRITING LABORATORY: COMMUNICATION IN SOCIETY. (187758) (4 cr; §1423; prereq 1421; limited to 25 students; 0800-0955 MTWTh; NichH 216) Miller

How people communicate in society, and how they perceive and think, write, and talk about events. Assumptions, inferences, and distortions involved in thinking; habits and processes of observation; factual and slanted reporting; persuasive devices; and cultural and cross-cultural communication. Primarily a writing course but also involves reading and discussion.

R 1445. MATHEMATICS: INTERMEDIATE ALGEBRA. (087759) (5 cr; limited to 60 students; §1443, 1444; prereq GCPP math level D or 1435; 1010-1205 MTWThF; EIH N391, N395) Policoff

Concepts and manipulative skills necessary for college algebra. The real number system, special products and factoring, exponents and radicals, linear equations in one and two variables, quadratic equations in one variable, progressions, inequalities, variation, and logarithms. Prospective students may have to give evidence of adequate preparation.

R 1465. ORAL COMMUNICATION: INTERPERSONAL COMMUNICATION. (490343) (3 cr; limited to 25 students; 0905-0955 MTWThF; NichH 107) Hansen

Students examine their own communication patterns—verbal, nonverbal, and vocal—and try to discover why they are effective or ineffective communicators, to uncover some origins of their communicative behavior, and to understand means we use to relate to each other and ways we alienate ourselves from each other. Course asks students to begin or deepen their search for identity and to aid others in their search.

R 3531. WRITING FOR BUSINESS AND THE PROFESSIONS. (187761) (4 cr; prereq 1412 or 1421...1422 or 1425 or 1531 recommended; limited to 25 students; 1010-1205 MTWTh; NichH 216) Gidmark

See First Term.

R 3726. DYNAMICS OF FAMILY INTERACTION. (4 cr; limited to 50 students; 1010-1205 MTWTh; NichH 213) Thoen
Relationships found within family unit. Emphasis on relationship between individual and family behavior. Structural characteristics of relationships, neurotic interactions, family conflict and problem solving, interaction in times of crisis, and interaction in exceptional cases.

Health Sciences

SCHOOL OF DENTISTRY

Dentistry (Dent)

FIRST TERM

5054. DENTAL AUXILIARY UTILIZATION CLINIC (DAU I, II). (187498) (2 cr total) DiAngelis
Clinical experience designed to help students develop specific skills in sit-down, four-handed dentistry with emphasis on the efficient utilization of chairside assistants. Through seminars, demonstrations, and clinical practice, students work daily with trained dental assisting teaching specialists in providing restorative dental services.

5060. GENERAL DENTISTRY CLINIC (TEAM II). (087499) (2 cr; elective) DiAngelis
Experience in managing patients in a manner similar to private practice. Under guidance of experienced dental practitioners, students acquire skills in performing initial exams, developing treatment plans, completing treatment, working and communicating with dental laboratories, and determining appropriate recall intervals for patients. Students provide routine restorative, endodontic, and periodontic care in the clinic.

5070. HEALTH ECOLOGY ELECTIVE. (787500) (1 cr) Martens

5075. RURAL DENTAL PRECEPTORSHIP PROGRAM. (587501) (2 cr; two 5-week assignments; elective)
Focuses on advantages of a rural practice and on career opportunities available in rural areas. Opportunities for students to gain experience in a rural practice and to develop and maintain rural ties.

5999. DENTAL CLINIC. (387502) (Cr ar) Jensen

SECOND TERM

5054. DENTAL AUXILIARY UTILIZATION CLINIC (DAU I, II). (888685) (2 cr total) DiAngelis
See First Term.

5060. GENERAL DENTISTRY CLINIC (TEAM II). (688686) (2 cr; elective) DiAngelis
See First Term.

5070. HEALTH ECOLOGY ELECTIVE. (488687) (1 cr) Martens

5075. RURAL DENTAL PRECEPTORSHIP PROGRAM. (288688) (2 cr; two 5-week assignments; elective)
See First Term.

5080. DENTAL AUXILIARY UTILIZATION CLINIC. (188689) (1 cr; prereq 5054; 35 clinic hrs; elective) DiAngelis
Students train a dental auxiliary student in effective chairside assisting with emphasis on sit-down, four-handed dentistry techniques. Through clinic and evaluation sessions supervised by experienced DAU personnel, students develop a structured method to efficiently train auxiliaries.

Endodontics (Endo)

FIRST TERM

5303. ADVANCED CLINICAL ENDODONTICS. (187503) (1 cr) Jensen
Diagnosis and treatment of clinical cases. Students assigned complex cases and explore new and unique techniques.

5313. ENDODONTIC EMERGENCY PROBLEMS. (087504) (1 cr) Jensen
Each student is responsible for all emergencies in the Endodontic Clinic during an assigned 1-week period (8 hours a day).

5323. TREATMENT PLANNING. (887505) (1 cr) Jensen
Students are assigned to the Admissions, Treatment Planning area as part of a total treatment planning team with members drawn from other clinical divisions. Students share in the decisions of the overall treatment planning of clinical cases as they are processed in the School of Dentistry and observe how the other disciplines function in this capacity.

5333. REVIEW OF CASES. (687506) (1 cr) Jensen
Students present cases from the previous quarter for review by endodontic faculty and graduate students.

8004. RESEARCH IN ENDODONTICS. (487507) (1 cr) Jensen

Organized literature review in areas of specific interest to student, selection of this project, and completion of research and thesis.

8323. ADVANCED ENDODONTIC LECTURES. (287508) (1 cr) Jensen

Pulpal and periapical pathology, diagnosis, and treatment planning.

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

8313. SEMINAR: ENDODONTICS. (187509) (2 cr) Jensen

Organized literature review in areas of interest to student, selection of a project, and completion of research and a thesis.

SECOND TERM

5303. ADVANCED CLINICAL ENDODONTICS. (288691) (1 cr) Jensen

See First Term.

5313. ENDODONTIC EMERGENCY PROBLEMS. (188692) (1 cr) Jensen

See First Term.

5323. TREATMENT PLANNING. (988693) (1 cr) Jensen

See First Term.

5333. REVIEW OF CASES. (588695) (1 cr) Jensen

See First Term.

8004. RESEARCH IN ENDODONTICS. (388696) (1 cr) Jensen

See First Term.

8323. ADVANCED ENDODONTIC LECTURES. (188697) (1 cr) Jensen

See First Term.

Oral and Maxillofacial Surgery (OSur)

FIRST TERM

5257. AMBULATORY GENERAL ANESTHESIA. (887519) (1 cr) Gatto and staff

A clinical rotation involving experience in outpatient management utilizing intravenous sedation and general anesthesia.

5258. CLINICAL DENTAL PHYSIOLOGY I. (187520) (1 cr) Leonard

Physiological concepts to explain the physical evaluation course and medical instruction comprehensible.

8250. ADVANCED ORAL SURGERY. (087521) (1 cr) Waite

Assigned clinics in University Hospitals, Veterans Administration Hospital, Hennepin County Medical Center, St. Paul-Ramsey Medical Center, and School of Dentistry; 4-month rotation in general anesthesiology at University Hospitals; 4-month rotation in general surgery at Fairview Hospital.

8251. SEMINAR: ORAL SURGERY. (887522) (1 cr) Lehnert

Oral surgical subjects on a seminar basis.

8252. RESEARCH IN ORAL SURGERY. 687523) (Cr ar) Lehnert, Leonard

Research in fields related to oral surgery.

8253. PROBLEMS IN ORAL SURGERY. (487524) (1 cr) Waite

Current literature review.

8254. TOPICS. (287525) (1 cr) Bevis, Lehnert

Surgical orthodontic techniques on seminar basis.

8255. GENERAL SURGERY. (187526) (1 cr) Winter and staff

Clinical rotation on the general surgical service at Fairview Hospital, Minneapolis. Includes seminars, clinics, and operating room experience.

8258. ANESTHESIA II SEMINAR. (987527) (1 cr) Gatto and staff

Outpatient general anesthesia topics and related subjects.

SECOND TERM

5257. AMBULATORY GENERAL ANESTHESIA. (288710) (1 cr) Gatto and staff

See First Term.

8250. ADVANCED ORAL SURGERY. (188711) (1 cr) Waite

See First Term.

8251. SEMINAR: ORAL SURGERY. (988712) (1 cr) Lehnert

See First Term.

Course Descriptions

8252. RESEARCH IN ORAL SURGERY. (788713) (Cr ar) Lehnert, Leonard

See First Term.

8253. PROBLEMS IN ORAL SURGERY. (388715) (1 cr) Waite

See First Term.

8254. TOPICS. (188716) (1 cr) Bevis, Lehnert

See First Term.

8255. GENERAL SURGERY. (088717) (1 cr) Winter and staff

See First Term.

8258. ANESTHESIA II SEMINAR. (888718) (1 cr) Gatto and staff

See First Term.

Oral Biology (OBio)

FIRST TERM

8001. RESEARCH IN ORAL BIOLOGY. (487510) (Cr ar) Shapiro

8002. TUTORIAL IN ORAL BIOLOGY. (287511) (Cr ar [may be repeated for cr]; 2 hrs per wk = 1 cr) Shapiro

8024. TOPICS IN ORAL BIOLOGY. (187512) (1-3 cr [may be repeated for cr]; prereq #)

SECOND TERM

8001. RESEARCH IN ORAL BIOLOGY. (088698) (Cr ar) Shapiro

8002. TUTORIAL IN ORAL BIOLOGY. (588700) (Cr ar [may be repeated for cr]; 2 hrs per wk = 1 cr) Shapiro

8024. TOPICS IN ORAL BIOLOGY. (388701) (1-3 cr [may be repeated for cr]; prereq #)

Oral Pathology (OPat)

FIRST TERM

8004. HISTOPATHOLOGY. (987512) (2 cr) Vickers

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. (787514) (1 cr) Vickers

8014. EXFOLIATIVE CYTOLOGY OF THE ORAL MUCOSA. (587515) (2 cr) Witkop

Comparative histology of skin and normal mucosa; cytology maturation of oral mucosa compared to vaginal mucosa, techniques, stains, and smears, menstrual cycle; benign lesions of oral mucosa, toothbrushing effects; introduction to grading system for malignant lesions; X-ray and drug effects on oral mucosa; oral squamous cell carcinoma; in situ and basal cell carcinoma.

SECOND TERM

8004. HISTOPATHOLOGY. (188702) (2 cr) Vickers

See First Term.

8006. CURRENT LITERATURE REVIEW. (088703) (1 cr) Vickers

8013. PHYSICAL DIAGNOSIS AND THE MEDICAL EVALUATION OF THE PATIENT. (888704) (1 cr) King

Lectures and patient demonstrations to elucidate importance of medical history, physical examination, and diagnostic, clinical, and laboratory procedures, etc., used in treating the whole patient.

8014. EXFOLIATIVE CYTOLOGY OF THE ORAL MUCOSA. (688705) (2 cr) Witkop

See First Term.

Oral Radiology (ORad)

FIRST TERM

8100. ORAL RADIOLOGY SEMINAR. (387516) (1 cr; prereq #) Kuba

8200. ADVANCED ORAL ROENTGENOGRAPHIC TECHNIQUE. (187517) (2 cr; prereq #) Kuba
Theory and principles involved in intraoral and dentally significant extraoral roentgenographic techniques, including temporomandibular joint roentgenographic techniques, temporomandibular joint roentgenography, sialography, panoramic roentgenography, laminography, cineroentgenography, and cephalometric roentgenography; topics selected according to needs and interests of students.

8800. TEACHING ORAL RADIOLOGY. (889979) (4 cr; prereq 8400) Kuba
Challenge and problems of teaching oral radiology to dental auxiliaries, dental students, graduate and postgraduate students. Development and evaluation of oral radiology curricula, development and construction of course objectives, teaching methods, and testing and evaluation. University of Minnesota oral radiology program and traditional undergraduate programs analyzed.

8900. ORAL RADIOLOGY RESEARCH. (087518) (Cr ar; prereq #) Kuba

SECOND TERM

8100. ORAL RADIOLOGY SEMINAR. (288707) (1 cr; prereq #) Kuba

8900. ORAL RADIOLOGY RESEARCH. (188708) (Cr ar; prereq #) Kuba

Orthodontics (Otho)

FIRST TERM

Required Courses for Graduate Students

5004. CLINICAL ORTHODONTICS. (787528) (Cr ar; prereq #) Staff
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.

8203. GROWTH AND DEVELOPMENT. (587529) (Cr ar; prereq #) Staff
Head growth, development, osteology and myology. Includes both normal and abnormal morphology and function; cephalometric methods.

8207. DIAGNOSIS AND TREATMENT PLANNING. (987530) (Cr ar; prereq #) Staff
Etiology, treatment, and prognosis of clinical orthodontic patients.

8211. ORTHODONTIC SEMINAR. (787531) (Cr ar; prereq #) Staff
Review of current literature and discussion of research and its implications.

8215. RESEARCH IN ORTHODONTICS. (587532) (Cr ar; prereq #) Staff

8219. TOPICS IN ORTHODONTICS. (387533) (Cr ar; prereq #) Staff
Studies in special topics for advanced students.

SECOND TERM

5004. CLINICAL ORTHODONTICS. (088720) (Cr ar; prereq #) Staff
See First Term.

8203. GROWTH AND DEVELOPMENT. (688722) (Cr ar; prereq #) Staff
See First Term.

8207. DIAGNOSIS AND TREATMENT PLANNING. (488723) (Cr ar; prereq #) Staff
See First Term.

8211. ORTHODONTIC SEMINAR. (188725) (Cr ar; prereq #) Staff
See First Term.

8215. RESEARCH IN ORTHODONTICS. (988726) (Cr ar; prereq #) Staff
See First Term.

8219. TOPICS IN ORTHODONTICS. (788727) (Cr ar; prereq #) Staff
See First Term.

Pediatric Dentistry (Pedo)

FIRST TERM

5414. ADVANCED CLINICAL PEDODONTICS. (187534) (Cr ar; prereq #) Till, others
Assignment of patients for treatment of difficult or unusual pedodontic problems under direct faculty supervision.

Course Descriptions

8001. RESEARCH IN PEDIATRIC DENTISTRY. (087535) (Cr ar; prereq #) Messer, others

8290. HOSPITAL PEDODONTICS I. (887536) (Cr ar; prereq #) Walker, others
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. (687537) (Cr ar; prereq #) Till, others
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.

8294. PEDODONTIC DIAGNOSIS AND TREATMENT PLANNING. (487538) (Cr ar; prereq #) Till, others
Systematic approach to diagnosis and treatment planning for various pedodontic problems.

SECOND TERM

5414. ADVANCED CLINICAL PEDODONTICS. (388729) (Cr ar; prereq #) Till, others
See First Term.

8001. RESEARCH IN PEDIATRIC DENTISTRY. (788730) (Cr ar; prereq #) Messer, others

8290. HOSPITAL PEDODONTICS I. (388732) (Cr ar; prereq #) Walker, others
See First Term.

8291. HOSPITAL PEDODONTICS II. (188733) (Cr ar; prereq #) Till, others
See First Term.

8293. ADVANCED PEDODONTIC TECHNIQUES. (088734) (Cr ar; prereq #) Till, others
Description and exercises in advanced pedodontic skills and techniques.

8295. INDEPENDENT PEDODONTIC STUDY. (688736) (Cr ar; prereq #) Till, others
Review of pertinent literature and preparation of a position paper on an assigned topic.

Periodontology (Pero)

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

8000. ADVANCED CLINICAL PERIODONTOLOGY. (287539) (Cr ar) Pihlstrom
Practical work in clinic in examination, diagnosis, treatment planning, and various phases of treatment of patients with periodontal disease.

8100. RESEARCH IN PERIODONTOLOGY. (687540) (Cr ar) Bandt, Herzberg
Opportunity to take part in many phases of laboratory work under way in periodontal research.

8200. LECTURES IN PERIODONTOLOGY. (487541) (Cr ar) Pihlstrom
Tissues involved in periodontal disease. Etiology and treatment of periodontal disease.

8300. SEMINAR: PERIODONTOLOGY. (287542) (Cr ar) Pihlstrom
Basic structural components of the periodontium as well as fundamental periodontal treatment procedures. The epithelial attachment, periodontal ligament, cementum, alveolar bone, and periodontal pathology. Oral hygiene and scaling and root planing. Literature reviews are required of each student. Second-year students present case reports.

Prosthodontics (Pros)

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

8001. RESEARCH IN PROSTHODONTICS. (187543) (Cr ar [may be repeated for cr]) Goodkind
Arranged with individual students upon application, after completion of a critical review of current and historical literature pertaining to the problem.

8006. ADVANCED CLINICAL PROSTHODONTICS II. (987544) (Cr ar [may be repeated for cr]; prereq #) Goodkind
Experience in prosthodontic treatment of patients having systemic complications.

8034. ADVANCED CLINICAL MAXILLOFACIAL PROTHESIS. (587546) (Cr ar) Goodkind, Yeh
Factors involved in diagnosis and organization of a treatment plan for the maxillofacial patient and practical experience in associated clinical and laboratory procedures.

SECOND TERM

8030. INTRODUCTION TO COMPREHENSIVE MAXILLOFACIAL CARE. (090542) (Cr ar: prereq #) Moller
Milestones in development of maxillofacial prosthetics and interdisciplinary relationships in treatment of the maxillofacial patient.

MEDICAL SCHOOL

Complete listings of courses offered by departments of the Medical School for undergraduate (prebaccalaureate) students, allied health students, medical students (pre-M.D.), and graduate students (postbaccalaureate in basic health science fields or post-M.D. in clinical fields) can be found in the *Medical School Bulletin*, *Graduate Programs in the Health Sciences Bulletin*, *Graduate School Bulletin*, or bulletin of allied health programs. For further information on specific courses, write or call the appropriate health science departmental office. In general, admission to courses offered in the medical student curriculum (pre-M.D.) or in residency training programs in clinical fields (post-M.D.) is restricted to students previously admitted to and enrolled in those programs.

Anatomy (Anat)

FIRST TERM

3970. SPECIAL PROBLEMS. (387547) (2 cr; prereq #) Staff
Guided individual reading or study.

8156. ADVANCED ANATOMY. (187548) (2-6 cr; prereq #) Staff
Individual problems in gross anatomy, embryology, histology, or neuroanatomy.

8204. RESEARCH IN ANATOMY. (087549) (2-10 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.

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

5301. SURGICAL ANATOMY FOR ORAL SURGEONS. (890811) (5 cr; prereq participation in the Oral Surgery Residency program, 5304) Robertson

5304. HEAD AND NECK ANATOMY FOR MEDICAL/DENTAL RESIDENTS. (387550) (5 cr; prereq participation in a residency in the Medical School or School of Dentistry) Robertson and staff

5500. GENERAL GROSS ANATOMY. (187551) (3-4½ cr; prereq Phase D) Robertson

5501. THE EXTREMITIES. (087552) (3-4½ cr; prereq Phase D) Robertson

5502. HEAD AND NECK. (887553) (3-4½ cr; prereq Phase D) Robertson

5508. THE THORAX. (687554) (3-4½ cr; prereq Phase D) Robertson

5509. THE ABDOMEN. (487555) (3-4½ cr; prereq Phase D) Robertson

5510. PERINEUM, GENITAL-URINARY SYSTEM AND PELVIS. (287556) (3-4½ cr; prereq Phase D) Robertson

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

8141. NEUROANATOMICAL METHODS. (790459) (2 cr; prereq #; special course fee of \$30) Elde
Introduction to contemporary morphological techniques applicable to investigation of the nervous system. Theoretical basis of these techniques and practical aspects related to their use. Laboratory experience with selected techniques.

SECOND TERM

3970. SPECIAL PROBLEMS. (488740) (2 cr; prereq #) Staff
See First Term.

8156. ADVANCED ANATOMY. (288741) (2-6 cr; prereq #) Staff
See First Term.

8204. RESEARCH IN ANATOMY. (188742) (2-10 cr; prereq #) Staff
See First Term.

Course Descriptions

Anesthesiology (Anes)

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

Elective Courses

5181. EXTERNSHIP IN CLINICAL PRACTICE OF ANESTHESIOLOGY. (187557) (9 cr; University Hospitals; MTWThF; Mayo B515) Buckley, staff
Primarily for family practice and surgery tracks, although open to others in limited number. Fundamentals of clinical anesthesia with emphasis on airway and ventilatory management, resuscitation, evaluation of the unconscious patient, choice of agents and techniques, practice administration of general and regional anesthesia, pre- and post-anesthetic management.

Required Courses for Graduate Students

8265. GENERAL ANESTHESIA. (987558) (12 cr; MTWThF; Mayo B515) Buckley, staff
Instruction and experience in general anesthesia.

8266. REGIONAL ANESTHESIA. (787559) (4 cr; MTWThF; Mayo B515) Buckley, staff
Observation, instruction, and administration in all types of local, regional, and spinal anesthesia.

8267. PRE- AND POST-ANESTHETIC EVALUATION. (187560) (2 cr; 1430-1520 MTWThF; Mayo B580) Buckley, staff
Selection of proper anesthetic agent and technique, premedication and observation of recovery from anesthesia.

8268. SEMINAR: ANESTHESIOLOGY. (987561) (2 cr; Mayo B580) Buckley, staff
Review of literature, reporting of case problems, and discussion of research work in progress within the department.

8269. RESEARCH IN ANESTHESIA. (787562) (Cr and hrs ar) Buckley, staff
Anesthesia problems in experimental laboratory or in hospital.

Biochemistry (MdBc)

Elective Courses

FIRST TERM

5053. PROBLEMS IN BIOCHEMISTRY. (587563) (Cr and hrs ar; may be taken one or both terms; prereq 5100 or 5751) Staff
Special work arranged with qualified students.

8290. CURRENT RESEARCH TECHNIQUES. (387564) (1-3 cr; prereq major in biochemistry, #)

8300. RESEARCH IN BIOCHEMISTRY. (187565) (Cr and hrs ar) Staff

SECOND TERM

5053. PROBLEMS IN BIOCHEMISTRY. (788744) (Cr and hrs ar; may be taken one or both terms; prereq 5100 or 5751) Staff
See First Term.

8290. CURRENT RESEARCH TECHNIQUES. (588745) (1-3 cr; prereq major in biochemistry, #)

8300. RESEARCH IN BIOCHEMISTRY. (388746) (Cr and hrs ar) Staff

Dermatology (Derm)

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

5181. CLINICAL PROBLEMS. (087566) (4.5 cr; 0900-1500 MTWThF, Mayo D230-Eust's Amph; 1500-1630 W, HSUnitA 2520) Dahl, Gentry, Goltz, Manick, others

5182. DERMATOLOGY EXTERNSHIP. (887567) (Cr ar; prereq regis med) Dahl, Gentry, Goltz, Manick, others

5183. ADVANCED DERMATOLOGY. (687568) (Cr ar; prereq 5182) Dahl, Gentry, Goltz, Manick, others

5184. SPECIAL COURSE. (487569) (Cr ar) Manick

5185. RESEARCH IN DERMATOLOGY. (887570) (9 cr) Dahl

8225. CLINICAL DERMATOLOGY. (687571) (Cr ar; 0800-1625 MTWThF) Dahl, Gentry, Goltz, others

- 8226. CLINICAL SEMINAR.** (487572) (Cr ar; 1300-1630 WF; Mayo D230-Eustis Amph) Goltz, Gentry, others
Conference twice weekly on diagnosis and treatment of skin conditions.
- 8227. HISTOLOGY OF THE SKIN.** (287573) (Cr ar; 1400-1530 M, 1500-1630 W; Mayo D230-Eustis Amph) Goltz, Orkin,
others
Includes histopathology, histochemistry, and fluorescence microscopy.
- 8228. RESEARCH IN DERMATOLOGY.** (187574) (Cr ar) Goltz, Dahl, others
- 8229. ELECTRON MICROSCOPY IN DERMATOLOGY.** (987575) (Cr ar) Zelickson, others
- 8230. FUNCTIONAL BIOLOGY OF THE SKIN.** (787576) (Cr ar) Goltz, Dahl, others
- 8231. CLINICS: DERMATOLOGY: NONDERMATOLOGISTS.** (587577) (Cr ar) Goltz, others
- 8232. SEMINAR: DERMATOLOGIC HISTOPATHOLOGY, MYCOLOGY.** (387578) (Cr ar) Goltz, others

Family Practice and Community Health (FPCH)

SPECIAL TERM: JULY 1-SEPTEMBER 30

Required Courses

- 8201. CLINICAL FAMILY MEDICINE.** (087616) (9 cr; hrs ar) Ciriacy, staff
- 8208. FAMILY MEDICINE CONFERENCE.** (887620) (1 cr; hrs ar) Ciriacy, staff
- 8210. FAMILY MEDICINE GRAND ROUNDS.** (487622) (0-1 cr; hrs ar) McConnell
- 8212. CLINICAL PSYCHIATRY ROUNDS.** (287623) (1 cr; hrs ar) Kelly, staff

Elective Courses

- 5504. MEDICAL ETHICS.** (187624) (2 cr; 1400-1530 W; PWB 6-240) Nelson
Seminar on six current ethical issues confronting physicians in contemporary primary care medicine. The student will assess relevant multiple orientations, values, social and religious factors, and countervailing judgment. Regular attendance and participation in class sessions and discussions is expected. Each week a case study and readings will be assigned. The student will write a brief outline of an issue of interest.
- 5516. RESEARCH IN HUMAN SEXUALITY.** (987625) (Cr ar; prereq #) Staff
Clinical and/or laboratory research related to human sexuality; adapted to interests of student and faculty. Involves ongoing research projects in areas such as incest, rape, transsexualism, results of penile implantation, prostitution, sex offenses and sexual dysfunction. Contact: Sharon Satterfield, M.D. (376-7520), to make arrangements.
- 5585. SEXUAL PROBLEMS IN CLINICAL PRACTICE.** (787626) (Cr ar; prereq med students only; #; hrs ar) Satterfield, staff
- 5590. EMERGENCY MEDICINE FOR FAMILY PHYSICIANS.** (390853) (9 cr) Lijja
- 5951. RESEARCH IN HUMAN SEXUALITY.** (387628) (Cr ar; prereq #; hr ar) Satterfield, staff
- 5955. DIRECTED STUDY—June 28-August 21.** (187629) (1-15 cr; prereq #; qualified students may register with # for work on a tutorial basis) Staff
- 8207. SEMINAR: COMMON DISEASES SEEN IN FAMILY PRACTICE.** (587630) (1 cr; hrs ar) Ciriacy, staff
- 8209. FAMILY MEDICINE X-RAY CONFERENCE.** (387631) (1 cr; hrs ar) Ciriacy, staff
- 8253. RESEARCH PROBLEMS.** (187632) (Cr ar; prereq #; hrs ar) O'Leary, staff

Interdisciplinary Medicine (InMd)

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

- 5227. SKIN.** (087633) (2 cr; prereq regis med; HSUnitA 2-650) Manick, staff
- 5228. EAR, NOSE, THROAT.** (887634) (2 cr; prereq regis med; HSUnitA 2-650) Adams, staff
- 5229. EYE.** (698635) (2 cr; prereq regis med; HSUnitA 2-650) Cantrill, staff
- 5232. BONES, JOINTS, AND CONNECTIVE TISSUE.** (487636) (4 cr; prereq regis med; HSUnitA 2-650) House, staff

Laboratory Medicine (LMed)

FIRST TERM

- 5139. **ADVANCED MICROBIOLOGY.** (987768) (Cr ar; prereq #) Balfour, Ederer
- 5140. **CLINICAL VIROLOGY SEMINAR.** (787769) (1 cr; prereq #) Balfour
- 5169. **RESEARCH: HUMAN GENETICS.** (187770) (Cr ar; prereq #) Eaton
- 5170. **ADVANCED PROBLEMS: MEDICAL GENETICS.** (787772) (Cr ar; prereq #) Eaton
- 5179. **CHEMISTRY SEMINAR.** (587773) (Cr ar; prereq #) Steffes
- 5180. **ADVANCED CHEMISTRY.** (387774) (Cr ar; prereq #) Benson, staff
- 5273. **ADVANCED IMMUNOLOGY.** (187775) (Cr ar; prereq #) Azar
- 5768. **ADVANCED HEMATOLOGY.** (087776) (Cr ar; prereq #) Brunning
- 8235. **ADVANCED CLINICAL LABORATORY MEDICINE.** (687778) (Cr ar; prereq #) Benson
- 8236. **RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (487779) (Cr ar; prereq #) Benson

SECOND TERM

- 5139. **ADVANCED MICROBIOLOGY.** (188747) (Cr ar; prereq #) Balfour, Ederer
- 5140. **CLINICAL VIROLOGY SEMINAR.** (088748) (1 cr; prereq #) Balfour
- 5169. **RESEARCH: HUMAN GENETICS.** (888749) (Cr ar; prereq #) Eaton
- 5170. **ADVANCED PROBLEMS: MEDICAL GENETICS.** (188750) (Cr ar; prereq #) Eaton
- 5179. **CHEMISTRY SEMINAR.** (088751) (Cr ar; prereq #) Steffes
- 5180. **ADVANCED CHEMISTRY.** (888752) (Cr ar; prereq #) Benson, staff
- 5273. **ADVANCED IMMUNOLOGY.** (688753) (6 cr; prereq #) Azar, Dalmaso
- 5768. **ADVANCED HEMATOLOGY.** (488754) (Cr ar; prereq #) Brunning
- 8235. **ADVANCED CLINICAL LABORATORY MEDICINE.** (288755) (Cr ar; prereq #) Benson, Azar
- 8236. **RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (188756) (Cr ar; prereq #) Benson, Azar

Laboratory Medicine and Pathology (LaMP)

Courses for Medical and Undergraduate Students

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

- 5113. **SURGICAL PATHOLOGY.** (887780) (Cr ar; prereq Phase B) Rosai
- 5114. **SURGICAL PATHOLOGY (Hennepin County Medical Center).** (487782) (Cr ar; prereq Phase B) Anderson
- 5115. **SURGICAL PATHOLOGY (Veterans Hospital).** (287783) (Cr ar; prereq Phase B) Limas
- 5118. **ENDOCRINE PATHOLOGY (St. Paul-Ramsey Medical Center).** (187784) (Cr ar; prereq Phase B) Haus, Lakatua
- 5125. **CHRONOBIOLOGY.** (787786) (Cr ar; prereq Phase B, #) Halberg
- 5141. **PROBLEMS: EXPERIMENTAL PATHOLOGY.** (587787) (Cr ar; prereq Phase B, #) Staff
- 5150. **ANATOMIC PATHOLOGY (University Hospitals).** (387788) (Cr ar) Burke
- 5151. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (Hennepin County Medical Center).** (187739) (Cr ar) Anderson
- 5152. **ANATOMIC PATHOLOGY (Veterans Hospital).** (587790) (Cr ar; prereq Phase B) Staff
- 5153. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (St. Paul-Ramsey Medical Center).** (387791) (Cr ar; prereq Phase B) Posalaky
- 5158. **CARDIAC PATHOLOGY (Miller Hospital).** (187792) (Cr ar; prereq Phase B, #) Edwards
- 5181. **LABORATORY AND CLINICAL HEMATOLOGY.** (087793) (Cr ar; prereq #) Brunning
- 5182. **LABORATORY STUDIES OF GENETIC DISORDERS.** (887794) (Cr ar; prereq #) J Yunis

5184. **IMMUNOHEMATOLOGY IN BLOOD BANKING.** (687795) (Cr ar; prereq #) McCullough
5190. **LABORATORY MEDICINE IN A COMMUNITY HOSPITAL (Duluth).** (487796) (Cr ar; prereq Phase D) Larson
5192. **LABORATORY MEDICINE FOR PRIMARY CARE (Virginia).** (287797) (Cr ar; prereq Phase D) Knabe
5193. **CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital).** (187798) (Cr ar; prereq #) Nollet, Blomberg
5194. **COMPUTER APPLICATIONS IN MEDICINE.** (189980) (Cr ar; prereq #) Ellis
5195. **COMPUTER APPLICATIONS IN MEDICAL RESEARCH.** (089981) (Cr ar; prereq #) Ellis
5203. **CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank).** (987799) (Cr ar; prereq Phase D) Polesky

Medical Technology (MedT)

FIRST TERM

5082. **APPLIED CLINICAL CHEMISTRY.** (487801) (4 cr; prereq 5063, 5111, #)
Application of basic methods and techniques in chemistry in the clinical laboratory.
5085. **APPLIED CLINICAL HEMATOLOGY.** (187803) (4 cr; prereq 5067, 5076, #)
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.** (987804) (4 cr; prereq 5066, #)
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.** (787805) (4 cr; prereq 5102, #)
Identification of bacteria by microscopic techniques. Correlation with clinical cases. Identification of parasites and fungi.
5090. **SPECIAL LABORATORY METHODS.** (387807) (2 cr; prereq #)
Special assignment on an individual basis in a special area of experience within the clinical laboratory; field experience.

SECOND TERM

5082. **APPLIED CLINICAL CHEMISTRY.** (988757) (4 cr; prereq 5063, 5111, #)
See First Term.
5085. **APPLIED CLINICAL HEMATOLOGY.** (788758) (4 cr; prereq 5067, 5076, #)
See First Term.
5086. **APPLIED CLINICAL IMMUNOHEMATOLOGY.** (588759) (4 cr; prereq 5066, #)
See First Term.
5088. **APPLIED DIAGNOSTIC MICROBIOLOGY.** (988760) (4 cr; prereq 5102, #)
See First Term.
5090. **SPECIAL LABORATORY METHODS.** (588762) (2 cr; prereq #)
See First Term.

Medicine (Med)

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5500. **ADVANCED INTERNAL MEDICINE.** (087809) (9 cr and hrs ar) Ferris
5501. **MEDICAL ONCOLOGY INTERNSHIP IN MEDICINE.** (187811) (9 cr and hrs ar) Kennedy
5502. **MEDICINE EXTERNSHIP I.** (887813) (9 cr and hrs ar) Ferris
5503. **MEDICINE EXTERNSHIP II.** (687814) (9 cr and hrs ar) Rosborough
5504. **MEDICINE EXTERNSHIP.** (487815) (9 cr and hrs ar) Wang
5505. **INFECTIOUS DISEASE RESEARCH.** (287816) (9 cr and hrs ar) Sabath
5509. **RESEARCH IN RHEUMATOLOGY.** (987818) (9 cr and hrs ar) Handwerger, Messner
5511. **RESEARCH IN GASTROENTEROLOGY.** (187820) (9 cr and hrs ar) Levitt

Course Descriptions

5512. **RESEARCH IN HEMATOLOGY.** (987821) (9 cr and hrs ar) Jacob
5518. **RESEARCH IN ENDOCRINOLOGY.** (787822) (9 cr and hrs ar) Oppenheimer
5521. **INFECTIOUS DISEASES, CLINICAL ASPECTS.** (387824) (9 cr and hrs ar) Sabath
5522. **GASTROENTEROLOGY.** (187825) (Cr and hrs ar) Olson
5523. **MEDICAL ENDOCRINOLOGY AND METABOLISM.** (087826) (9 cr and hrs ar) Barbcosa
5525. **CARDIOVASCULAR MEDICINE.** (887827) (9 cr and hrs ar) Bache
5527. **CONTEMPORARY PROBLEMS IN INVESTIGATIVE CARDIOLOGY.** (687828) (9 cr and hrs ar) Bache
5528. **CLINICAL HEMATOLOGY.** (487829) (9 cr and hrs ar) Howe
5531. **CLINICAL RHEUMATOLOGY.** (887830) (Cr and hrs ar) Hathaway
5532. **PULMONARY DISEASE.** (487832) (9 cr and hrs ar) Kronenberg
5533. **CLINICAL ALLERGY.** (187834) (Cr and hrs ar) Blumenthal
5542. **RESEARCH IN PULMONARY DISEASE.** (987835) (9 cr and hrs ar) Kronenberg
5548. **CLINICAL GENETICS.** (787836) (9 cr and hrs ar) King
5554. **FLUID, ELECTROLYTE, ACID-BASE METABOLISM.** (587837) (9 cr and hrs ar) Ma
5556. **MEDICAL NEPHROLOGY.** (187839) (9 cr and hrs ar) Ferris
5557. **RESEARCH IN NEPHROLOGY.** (587840) (18 cr and hrs ar) Ferris
5562. **NEPHROLOGY.** (187842) (9 cr and hrs ar) Rao
5570. **CLINICAL MEDICINE IN THE GENERAL CLINICAL RESEARCH CENTER.** (087843) (3 cr and hrs ar) Bantle
5572. **AMBULATORY INTERNAL MEDICINE.** (887844) (9 cr and hrs ar) Spilane
5573. **EXTERNSHIP IN GERIATRIC MEDICINE AT ST. PAUL-RAMSEY MEDICAL CENTER.** (687845) (9 cr and hrs ar) Irvine
5574. **CRITICAL CARE IN INTERNAL MEDICINE AT HENNEPIN COUNTY MEDICAL CENTER.** (889982) (9 cr per period; hrs ar) Schultz
5575. **AMBULATORY CARE MEDICINE AT HENNEPIN COUNTY MEDICAL CENTER.** (689983) (9 cr per period; hrs ar) Bloss
5583. **DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER.** (287847) (9 cr and hrs ar) Ramsay
5589. **MEDICINE EXTERNSHIP II AT ST. LUKE'S HOSPITAL.** (187848) (9 cr and hrs ar) Goldish
5590. **PRECEPTORSHIPS IN INTERNAL MEDICINE.** (287850) (9 cr and hrs ar) Murray
5592. **RURAL PHYSICIANS ASSOCIATE PROGRAM IN MEDICINE.** (187851) (9 cr and hrs ar) Howe
5594. **PSYCHIATRY IN MEDICINE: CONSULTATION-LIAISON.** (987852) (9 cr and hrs ar) Popkin
5595. **PSYCHOLOGICAL ASPECTS OF MEDICAL PRACTICE.** (787853) (9 cr and hrs ar) Nesheim
5597. **RESEARCH IN OCCUPATIONAL HEALTH.** (387855) (9 cr and hrs ar) Johnson

Elective Courses for Graduate Students

8201. **CLINICAL MEDICINE.** (887875) (Cr and hrs ar) Ferris, staff
8202. **CLINICAL CONFERENCE.** (687876) (1 cr and hrs ar) Ferris, staff
8203. **CLINICAL RADIOLOGY CONFERENCE.** (287878) (1 cr and hrs ar) Ferris, staff
8204. **PATHOLOGICAL CONFERENCE.** (187879) (1 cr and hrs ar) Ferris, staff
8205. **ELECTROCARDIOGRAPHIC CONFERENCE.** (287881) (1 cr and hrs ar) Tuna
8206. **NEPHROLOGY SEMINAR.** (987883) (3 cr and hrs ar) Ferris, staff
8209. **TUMOR CLINICAL CONFERENCE.** (787884) (1 cr and hrs ar) Kennedy, staff
8210. **INFECTIOUS DISEASE SEMINAR.** (387886) (Cr and hrs ar) Sabath, staff
8211. **DISEASES OF THE CARDIOVASCULAR SYSTEM.** (187887) (Cr and hrs ar) Cohn, staff
8212. **DISEASES OF THE CHEST.** (087888) (Cr and hrs ar) Kronenberg, staff
8213. **DISEASES OF THE KIDNEY.** (187890) (Cr and hrs ar) Ferris, staff

- 8214. DISEASES OF DIABETES, ENDOCRINOLOGY, AND METABOLISM.** (087891) (Cr and hrs ar) Oppenheimer, staff
- 8215. DISEASES OF HEMATOLOGY.** (687893) (Cr and hrs ar) Jacob, staff
- 8216. DISEASES OF GASTROENTEROLOGY.** (487894) (Cr and hrs ar) Wilson, staff
- 8217. DISEASES OF ONCOLOGY.** (287895) (Cr and hrs ar) Kennedy, staff
- 8220. RESEARCH IN MEDICINE.** (187896) (Cr and hrs ar) Ferris, staff
- 8221. TOPICS IN MEDICINE.** (787898) (Cr and hrs ar) Ferris, staff
- 8223. TOPICS IN RELATED BASIC SCIENCE.** (287900) (Cr and hrs ar) Ferris, staff

Microbiology (MicB)

SPECIAL TERM: May 31-JULY 30

5206. MICROBIOLOGY FOR MEDICAL STUDENTS. (4 cr; prereq regis med fr...# for others; must be taken with 5205; lect 0915-1000 MTWThF; PWB 2-470) Brand, staff
(Continuation of 5205) Basic medical aspects of immunology, parasitology, mycology, and medical bacteriology, virology with emphasis on pathogenesis. Principles and techniques enabling diagnosis, treatment (especially chemotherapy), and prevention of infectious disease.

Lab A, (587918) 1015-1200 M, 1415-1600 W Lab B, (387919) 1415-1600 M, 1015-1200 W

5226. MICROBIOLOGY FOR MEDICAL STUDENTS. (387922) (4 cr; prereq microbiology grad student or #; 0915-1000 MTWThF; PWB 2-470) Brand, staff
Meets with 5206 but without laboratory.

FIRST TERM

- 3970. DIRECTED STUDIES.** (987902) (Cr ar; prereq #) Rogers, staff
- 3990. UNDERGRADUATE RESEARCH.** (587904) (Cr ar; prereq #) Rogers, staff
- 8990. RESEARCH IN MICROBIOLOGY.** (387905) (Cr and hrs ar) Cleary, staff
Graduate students with the requisite preliminary training may elect research project outside their thesis work.

SECOND TERM

- 3970. DIRECTED STUDIES.** (388763) (Cr ar; prereq #) Rogers, staff
- 3990. UNDERGRADUATE RESEARCH.** (188764) (Cr ar; prereq #) Rogers, staff
- 8990. RESEARCH IN MICROBIOLOGY.** (888766) (Cr and hrs ar) Cleary, staff
See First Term.

Neurology (Neur)

SPECIAL TERMS: SIX- AND TWELVE-WEEK COURSES

- 5120. SELECTED PROBLEMS IN NEUROLOGY.** (187923) (Cr ar; prereq regis med) Staff
- 5510. EXTERNSHIPS IN CLINICAL NEUROLOGY.** (087924) (Cr ar; prereq regis med) Klassen, staff
- 5541. PEDIATRIC NEUROLOGY—NEUROCHEMISTRY.** (887925) (Cr ar; prereq regis med) Swaiman
- 5544. CLINICAL ELECTROENCEPHALOGRAPHY.** (687926) (Cr ar; prereq regis med) Torres
- 5545. ELECTROMYOGRAPHY.** (287928) (Cr ar; prereq regis med) Kennedy
- 5570. IMMUNOLOGY.** (187929) (Cr ar; prereq regis med) Ansari

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

- 8200. CLINICAL NEUROLOGY.** (487930) (Cr ar) Resch, staff
- 8201. CLINICAL PEDIATRIC NEUROLOGY.** (287931) (Cr ar) Swaiman, staff
- 8202. RESEARCH.** (187932) (Cr ar) Resch, staff
- 8203. APPLIED ELECTROENCEPHALOGRAPHY.** (987933) (Cr ar) Torres

Course Descriptions

- 8204. APPLIED ELECTROMYOGRAPHY.** (787934) (Cr ar) Kennedy
8205. APPLIED NEUROPATHOLOGY. (387936) (Cr ar) Sung, Mastro
8236. RESEARCH: NEUROPATHOLOGY. (087938) (Cr ar) Sung, Mastro
8705. NEUROLOGICAL-NEUROSURGICAL CONFERENCE. (187940) (1 cr, §Rad 5163, §Surg 8318) Staff

Neurosurgery (NSu)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

- 5500. NEUROSURGERY EXTERNSHIP (University Hospitals).** (087941) (4.5 or 9 cr; prereq regis med; MTWThF) Chou, French, Seljeskog, Erickson, Maxwell, Haines, Turner
5510. NEUROSURGERY EXTERNSHIP (Veterans Administration Hospital). (487944) (4.5 or 9 cr; prereq regis med; MTWThF) Maxwell
5511. NEUROSURGERY EXTERNSHIP (Hennepin County Medical Center). (987947) (4.5 or 9 cr; prereq regis med; MTWThF) Rockswold
5512. NEUROSURGERY EXTERNSHIP (St. Paul-Ramsey Medical Center). (787948) (4.5 or 9 cr; prereq regis med; MTWThF) Thienprasit
5520. NEUROSURGERY INVESTIGATION. (787951) (9 cr; prereq regis med; MTWThF; Diehl F109-110 and G134-144) Bloedel
5530. NEUROPSYCHOLOGY. (187954) (9 cr; prereq regis med; ar; Mayo C667) Meier
5550. NEUROPHYSIOLOGICAL LITERATURE SEMINAR. (887956) (1 cr; prereq Medical School course in physiology or equiv with #, hrs ar) Bloedel
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.** (687957) (4 cr; MTWThF; Mayo B524) Chou, French, Seljeskog, Erickson, Maxwell, Haines, Turner
Neurosurgical fellow assists in instruction of clinical clerks and interns, studies problems in diagnosis at University and affiliated hospitals.
8308. NEUROSURGICAL PROBLEMS AND MANAGEMENT. (487961) (4 cr; MTWThF; Mayo B401) Chou, French, Seljeskog, Erickson, Maxwell, Haines, Turner
Neurosurgical fellow acts as house surgeon at University and affiliated hospitals.
8311. OPERATIVE NEUROSURGERY. (787965) (4 cr; MTWThF; Mayo B401) Chou, French, Seljeskog, Erickson, Maxwell, Haines, Turner
Neurosurgical fellow acts as first assistant for operations at University and affiliated hospitals and later may be permitted to operate.
8316. NEUROSURGICAL RESEARCH. (387967) (6 cr; MTWThF; Diehl F109-110 and G134-144) Chou, French, Seljeskog, Bloedel, Erickson, Haines, Turner
Problems in experimental or clinical surgery.
8318. NEURORADIOLOGICAL CONFERENCE. (187968) (1 cr; 1325-1415 F; Mayo C231-Todd Amph) Chou, French, Seljeskog, Erickson, Maxwell, Haines, Turner
A review of X-ray films and case histories on neurosurgical service.
8320. NEUROSURGICAL CONFERENCE. (187971) (2 cr; 0800-1100 Sat; Mayo B507) Chou, French, Seljeskog, Bloedel, Erickson, Maxwell, Haines, Turner
In-depth review of selected topics in basic and clinical neurosurgery.
8322. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART I. (887987) (1 cr; 0800-0850 T; offered Su and W; Sta 51, Mayo 524) Staff
Review and discussion of topics.
8323. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART II. (087986) (1 cr; prereq 8322; T; offered F and S) Staff
Advanced review and discussion of topics.
8324. READINGS: NEUROBIOLOGY. (887990) (1 cr; 1600-1800 Th; DVCCRC 114) Bloedel
8330. NEUROSURGERY LITERATURE SEMINAR. (787979) (2 cr; 1st and 2nd Th evenings) Staff
Review and discussion of current literature relating to neurosurgery and the neurosciences.

Obstetrics and Gynecology (Obst)

SPECIAL TERMS: JUNE 21-JULY 30 AND AUGUST 2-SEPTEMBER 10

Elective Courses for Undergraduate Students

5500. EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY. (088040) (Cr ar; prereq Phase D) Foreman, staff
Clinical experience that includes total care of inpatients and outpatients on obstetrics and gynecology service at Hennepin County Medical Center, North Memorial Hospital, St. Joseph's Hospital, St. Mary's Hospital, St. Paul-Ramsey Medical Center, United Hospitals, Group Health, Fairview Hospital, University Hospitals, and St. Luke's Hospital, Duluth. Emphasis on medical aspects of obstetrics and gynecology.

5520. OBSTETRICS AND GYNECOLOGY EXTERNSHIP IN CLINICAL PRACTICE. (688042) (Cr ar; prereq Phase D) Foreman, 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.

5540. ADVANCED EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY. (788047) (Cr ar; prereq 5500) Foreman, staff
Full-time clinical experience as acting intern on obstetrical and gynecological service at Hennepin County Medical Center, St. Paul-Ramsey Medical Center, or University Hospitals.

5550. PSYCHIATRIC ASPECTS OF OBSTETRICS AND GYNECOLOGY. (788050) (Cr ar; prereq Phase D) Foreman, Bernstein
Clinical course. Psychiatric problems relating to reproductive system.

5560. RESEARCH IN REPRODUCTION. (388052) (Cr ar; prereq Phase D) Foreman, staff
Topics selected for each student.

5575. GYNECOLOGICAL PATHOLOGY AND DIAGNOSTIC CYTOLOGY. (888055) (Cr ar; prereq 5500) Foreman, 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. (288058) (Cr ar; prereq 5500) Foreman
Full-time preceptorship in clinical obstetrics and gynecology, in outstate Minnesota, offered by AHEC. Student will receive per diem expenses. Similar to 5520, but in smaller community.

Courses for Graduate Students

8201. ADVANCED OBSTETRICS AND GYNECOLOGY. (388245) (Cr ar) Prem, staff

8205. ADVANCED OBSTETRICS AND GYNECOLOGY. (888248) (Cr ar) Prem, staff

8209. ADVANCED OBSTETRICS AND GYNECOLOGY. (688249) (Cr ar) Prem, staff

8210. ADVANCED OBSTETRICS AND GYNECOLOGY. (088250) (Cr ar) Prem, staff

8213. ADVANCED OBSTETRICS AND GYNECOLOGY. (388259) (Cr ar) Prem, staff

8217. SEMINAR IN OBSTETRICS AND GYNECOLOGY. (588261) (Cr ar) Prem, staff

8221. SEMINAR IN OBSTETRICS AND GYNECOLOGY. (188263) (Cr ar) Prem, staff

8222. GYNECOLOGICAL ONCOLOGY. (888265) (Cr ar) Prem, staff

8223. GYNECOLOGICAL ONCOLOGY. (488267) (Cr ar) Prem, staff

8224. GYNECOLOGICAL ENDOCRINOLOGY—PART I. (488270) (Cr ar) Prem, staff

8225. GYNECOLOGICAL ENDOCRINOLOGY—PART II. (588275) (Cr ar) Prem, staff

8226. OBSTETRICAL PHYSIOLOGY AND ANESTHESIOLOGY. (688283) (Cr ar) Prem, staff

8230. RESEARCH IN REPRODUCTION. (188286) (Cr ar) Prem, staff

Ophthalmology (Oph)

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

5100. INTRODUCTION TO OPHTHALMOLOGIC PATHOLOGY. (588289) (1 cr) Cameron

8101. CLINICAL OPHTHALMOLOGY. (588292) (8 cr) Staff

8131. PRACTICAL OCULAR SURGERY. (388293) (3 cr) Staff

8142. PATHOLOGY LABORATORY. (888296) (2 cr) Cameron

8152. OPHTHALMOLOGY LABORATORY. (688297) (15 cr) Staff

8155. SPECIAL TOPICS. (288299) (Cr ar) Staff

Orthopaedic Surgery (OrSu)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

- 5180. ORTHOPAEDICS I.** (188313) (Cr ar; prereq regis med)
- 5185. ORTHOPAEDICS II.** (888315) (Cr ar; prereq regis med)
- 5186. RESEARCH PROBLEMS IN ORTHOPAEDIC SURGERY.** (288318) (Cr ar; prereq regis med)
- 5187. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES.** (188319) (Cr ar; prereq regis med)
St. Paul-Ramsey Medical Center.
- 5188. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES.** (188322) (Cr ar; prereq regis med)
Gillette Children's Hospital, St. Paul.
- 5189. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES.** (988323) (Cr ar; prereq regis med)
St. Luke's Hospital, Duluth.
- 5190. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES.** (588325) (Cr ar; prereq regis med)
Veterans Hospital.
- 5191. ORTHOPAEDIC EXTERNSHIP AT HENNEPIN COUNTY MEDICAL CENTER.** (188327) (Cr ar; prereq regis med)

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

Required Courses for Graduate Students

- 8401. ORTHOPAEDIC CONFERENCE.** (088328) (3 cr) Thompson, Bradford, House, Premer, Robinson, Hunter
Review of X-ray films and case histories of patients on the orthopaedic inpatient or outpatient service.
- 8403. FRACTURES.** (988337) (5 cr) Gustilo, staff
Orthopaedic fellow acts as house surgeon on the fracture service at Hennepin County Medical Center.
- 8404. FRACTURES.** (788338) (5 cr) Comfort, staff
Orthopaedic fellow acts as house surgeon on the fracture service at St. Paul-Ramsey Medical Center.
- 8405. ORTHOPAEDIC DIAGNOSIS.** (988340) (3 cr) Thompson, Bradford, House, Robinson, Hunter
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.** (588342) (5 cr) Vanden Brink, staff
Orthopaedic fellow acts as house surgeon at Gillette Children's Hospital.
- 8408. ORTHOPAEDIC PROBLEMS AND MANAGEMENT.** (388343) (5 cr) Thompson, Bradford, House, Premer, Robinson, Hunter
Orthopaedic fellow acts as house surgeon at University and Veterans Hospitals.
- 8409. ORTHOPAEDIC PROBLEMS AND MANAGEMENT.** (288349) (5 cr) Winter, Lonstein
Orthopaedic fellow acts as house surgeon on the orthopaedic service at Fairview Hospital.
- 8410. ORTHOPAEDIC PATHOLOGY.** (288352) (2 cr) Thompson, Bradford, House, Premer, Robinson, Hunter
Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities.
- 8411. ORTHOPAEDIC OPERATIVE SURGERY.** (588356) (5 cr) Thompson, Bradford, House, Premer, Robinson, Hunter
Orthopaedic fellow acts as first assistant at operations at University and affiliated hospitals and later may be permitted to operate.
- 8412. ORTHOPAEDIC ANATOMY.** (388360) (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.** (088362) (5 cr) Thompson, Bradford, House, Robinson, Hunter
Problems in experimental or clinical surgery, University Hospitals.

Otolaryngology (Otol)

SPECIAL TERMS: THREE-, SIX-, AND TWELVE-WEEK COURSES

- 5500. GENERAL—ENT ELECTIVE.** (788372) (4.5 cr)
- 5501. ACTING INTERNSHIP—ENT ELECTIVE.** (388374) (9 cr)

5503. RESEARCH: BASIC SCIENCE—ENT ELECTIVE. (188375) (9 or 18 cr)

SPECIAL TERM: EIGHT-WEEK COURSES

8220. RESEARCH. (088376) (18 cr)

8230. CLINICAL OTORHINOLARYNGOLOGY. (688378) (6 cr)

8231. SURGERY OF EAR, NOSE, THROAT. (888380) (4 cr)

8232. MAXILLOFACIAL SURGERY. (688381) (1 cr)

8233. PLASTIC, RECONSTRUCTIVE SURGERY: HEAD, NECK. (288383) (1 cr)

8234. ANATOMY: HEAD, NECK, TEMPORAL BONE DISSECTION. (188384) (2 cr)

8235. ROENTGENOLOGY OF HEAD, NECK. (788386) (2 cr)

8236. PHARMACOLOGY. (588387) (2 cr)

8237. ENDOSCOPY. (188389) (2 cr)

8238. PATHOLOGY OF EAR, NOSE, THROAT. (388391) (2 cr)

8239. OTONEUROLOGY. (088393) (2 cr)

8240. ALLERGY. (888394) (2 cr)

8241. TUMOR CLINIC. (488396) (1 cr)

8242. AUDIOLOGY, SPEECH PATHOLOGY. (288397) (2 cr)

8243. INTRODUCTION: RESEARCH METHODOLOGY. (988399) (2 cr)

8244. SEMINAR: CURRENT LITERATURE. (688400) (1 cr)

8245. MASTER'S THESIS RESEARCH. (288402) (Cr ar)

8246. PH.D. THESIS RESEARCH. (988404) (Cr ar)

8248. RESEARCH. (788405) (Cr ar)

Pathology (Path)

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

Courses for Graduate Program

5104. AUTOPSIES. (388407) (Cr ar; prereq Phase B or equiv) Staff

5106. DISEASES OF THE HEART. (088409) (1 cr; prereq Phase B or equiv) Edwards

5111. AUTOPSY SLIDE CONFERENCE. (188411) (Cr ar; prereq regis grad med or #) Staff

5113. SURGICAL PATHOLOGY. (888413) (Cr ar; prereq Phase B or equiv) Rosai

5140. SEMINAR: EXPERIMENTAL CHRONOBIOLOGY. (288416) (1 cr; prereq #) Halberg

5141. PROBLEMS IN EXPERIMENTAL AND CLINICAL CHRONOBIOLOGY. (988418) (Cr ar; prereq #) Halberg

5169. RESEARCH: HUMAN GENETICS. (788419) (Cr ar; prereq #) Eaton

5170. ADVANCED PROBLEMS IN MEDICAL GENETICS. (188420) (Cr ar; prereq #) Eaton, staff

8200. ADVANCED PROBLEMS IN PATHOLOGY. (988421) (Cr ar; prereq #) Benson, staff

8201. RESEARCH. (788422) (Cr ar; prereq #) Benson, staff

Students with the necessary preliminary training may elect research either as a major or minor in pathology.

8207. RESEARCH IN EXPERIMENTAL AND CLINICAL CHRONOBIOLOGY. (588423) (Cr ar; prereq #) Halberg

8273. ADVANCED IMMUNOBIOLOGY. (888427) (Cr ar; prereq #) Kersey or Azar

Pediatrics (Ped)

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

Elective Courses

5501. PEDIATRIC CLERKSHIP (University Hospitals, Hennepin County Medical Center, St. Paul-Ramsey Medical Center, St. Paul Children's Hospital). (688428) (Cr ar) Satran

Course Descriptions

5503. **PEDIATRIC CLERKSHIP WITH OUTSTATE CLINICIANS.** (488429) (Cr ar; prereq #) Satran
5512. **PEDIATRIC ACTING INTERNSHIP (University Hospitals, St. Paul Children's Hospital, Hennepin County Medical Center).** (688431) (Cr ar) Satran
5514. **CHILD CARE CLINIC PROGRAM.** (488432) (Cr ar) Fisch
5515. **CHILD DEVELOPMENT AT ST PAUL-RAMSEY MEDICAL CENTER.** (288433) (Cr ar) Davis
5520. **PEDIATRIC OUTPATIENT.** (188434) (Cr ar; prereq #) Satran
5522. **AMBULATORY PEDIATRICS AT HENNEPIN COUNTY MEDICAL CENTER.** (788436) (Cr ar) Tobin
5523. **OUTPATIENT EXTERNSHIP AT COMMUNITY UNIVERSITY HEALTH CARE CENTER.** (588437) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Smelker
5532. **CLINICAL ALLERGY AND IMMUNOLOGY AT UNIVERSITY HOSPITALS.** (188439) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Page
5534. **PEDIATRIC CARDIOLOGY AT UNIVERSITY HOSPITALS.** (388441) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Moller
5535. **INFECTIOUS DISEASE.** (888444) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Ferrieri
5536. **PEDIATRIC HEMATOLOGY-ONCOLOGY AT UNIVERSITY HOSPITALS.** (488446) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Nesbit
5538. **PEDIATRIC GASTROENTEROLOGY.** (988449) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Sharp
5539. **NEONATAL MEDICINE EXTERNSHIP.** (288450) (Cr ar; prereq 5501, 5502 or Med 5502) Boros or Thompson
5540. **PEDIATRIC NEUROLOGY.** (188451) (Cr ar) Swaiman
5543. **PEDIATRIC NEPHROLOGY.** (988452) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Michael
5544. **PULMONARY DISEASE IN PEDIATRICS.** (788453) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Warwick
5545. **DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER.** (588454) (Cr ar) Ramsay
5548. **PEDIATRIC GENETICS.** (388455) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Pierpont
8200. **GRADUATE SEMINAR: PEDIATRICS.** (188456) (1.5 cr) Staff
8202. **PEDIATRICS CLINICS.** (088457) (Cr ar; prereq #) Staff
8204. **RESIDENCY IN PEDIATRICS.** (888458) (Cr ar; prereq #) Staff
8206. **PEDIATRIC SPECIAL INTEREST.** (688459) (Cr ar; for grad students who have completed at least 1½ yrs of general grad pediatric training; prereq #) Staff
8208. **PEDIATRIC RESEARCH.** (088460) (Cr ar; prereq #) Krivit, staff

Pharmacology (Phcl)

FIRST TERM

5109. **PROBLEMS IN PHARMACOLOGY.** (888461) (Cr and hrs ar; prereq #) Shideman, staff
8203. **RESEARCH IN PHARMACOLOGY.** (688462) (Cr and hrs ar; prereq #) Shideman, staff

SECOND TERM

5109. **PROBLEMS IN PHARMACOLOGY.** (088782) (Cr and hrs ar; prereq #) Shideman, staff
8203. **RESEARCH IN PHARMACOLOGY.** (888783) (Cr and hrs ar; prereq #) Shideman, staff

Physical Medicine and Rehabilitation (PMed)

SPECIAL TERM: JULY 1-SEPTEMBER 30

8200. **PHYSICAL MEDICINE SERVICE.** (488463) (Cr and hrs ar) Staff
8205. **READINGS.** (288464) (1 cr; 0800-0955 M; Mayo 825) Kottke
8206. **CONFERENCE ON PHYSICAL MEDICINE AND REHABILITATION.** (290926) (Cr and hrs ar) Staff
8220. **SEMINAR IN PHYSICAL MEDICINE AND REHABILITATION.** (190927) (Cr and hrs ar) Staff

Occupational Therapy

FIRST TERM

5396, 5397. FIELDWORK EDUCATION. (788467) (588468) (Cr ar; for sr OT students) Eliason
Six months of supervised training in affiliated hospitals and community centers.

Physical Therapy

FIRST TERM

- 8103. PHYSICAL THERAPY CLINIC.** (788470) (Cr ar; prereq physical therapy) Staff
8130. CURRENT LITERATURE SEMINAR IN PHYSICAL THERAPY. (189986) (1 cr; prereq #) Staff
8170. SPECIAL TOPICS. (588471) (1 cr; prereq #) Staff
8185. PROBLEMS IN PHYSICAL THERAPY. (388472) (Cr ar; prereq physical therapy) Staff
8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (188473) (Cr ar; prereq physical therapy) Staff
8195. RESEARCH IN PHYSICAL THERAPY. (088474) (Cr ar; prereq #) Kottke, Amundsen, staff

SECOND TERM

- 5255. CLINICAL TRAINING.** (289985) (3 cr; limited to PT students in the professional program; hrs ar at affiliated hospitals) Ellingham
Five weeks of supervised practice at affiliated hospitals.
8103. PHYSICAL THERAPY CLINIC. (688784) (Cr ar; prereq physical therapy) Staff
8130. CURRENT LITERATURE SEMINAR IN PHYSICAL THERAPY. (489984) (1 cr; prereq #) Staff
8170. SPECIAL TOPICS. (488785) (1 cr; prereq #) Staff
8185. PROBLEMS IN PHYSICAL THERAPY. (288786) (Cr ar; prereq physical therapy) Staff
8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (188787) (Cr ar; prereq physical therapy) Staff
8195. RESEARCH IN PHYSICAL THERAPY. (988788) (Cr ar; prereq #) Kottke, Amundsen, staff

Physiology (Phsl)

FIRST TERM

- 3051. HUMAN PHYSIOLOGY.** (188482) (5 cr; primarily for baccalaureate nursing students and physical therapy students; prereq biology and 1 yr college chemistry; 1325-1415 MW, 1115-1205 and 1430-1625 TTh, 1325-1520 F, HSUnitA 2-530; lab 1430-1730 MW, HSUnitA 3-110) Staff
Introduction to human physiology.
5113. PROBLEMS IN PHYSIOLOGY. (888475) (Cr and hrs ar) Staff
Topics assigned for laboratory study; conferences and readings.
5552. READINGS IN PHYSIOLOGY. (688476) (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
5553. RESEARCH IN PHYSIOLOGY. (488477) (Cr and hrs ar) Staff
8113. PROBLEMS IN PHYSIOLOGY. (288478) (Cr and hrs ar) Staff
Topics assigned for laboratory study; conferences and readings.
8202. READINGS IN PHYSIOLOGY. (488480) (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
8203. RESEARCH IN PHYSIOLOGY. (188479) (Cr and hrs ar) Staff

SECOND TERM

- 5552. READINGS IN PHYSIOLOGY.** (589510) (Cr and hrs ar) Staff
See First Term.
5553. RESEARCH IN PHYSIOLOGY. (389511) (Cr and hrs ar) Staff
8202. READINGS IN PHYSIOLOGY. (189512) (Cr and hrs ar) Staff
See First Term.
8203. RESEARCH IN PHYSIOLOGY. (089513) (Cr and hrs ar) Staff

Psychiatry

Adult Psychiatry (AdPy)

SPECIAL TERM: JUNE 21-SEPTEMBER 10

5109. ADULT PSYCHIATRY. (988662) (9 cr per period; prereq med student) Olson

Clinical exposure to psychiatric problems in the general practice of psychiatry in acute care hospital and community settings. Experience in clinical evaluation and follow-up of patients with acute illness. Contact Arthur Auferheide, M.D., St. Luke's Hospital, 915 East First Street, Duluth; telephone (218) 727-6636, ext. 660.

5110. CONTEMPORARY HOSPITAL PSYCHIATRY. (188666) (9 cr per period; prereq med student) Cowan

Experience with evaluation and treatment techniques currently practiced in a general hospital mental health center. The student will be assigned two or three new patients per week, having primary responsibility for care under the supervision of the attending physician and working with the multidisciplinary treatment staff. Contact Arthur Auferheide, M.D., at St. Luke's Hospital, 915 East First Street, Duluth; telephone (218) 727-6636, ext. 660.

5120. LEARNING PSYCHIATRY: DIAGNOSIS, MANAGEMENT, AND TREATMENT (Veterans Administration Medical Center). (888668) (9 cr per period; prereq med student) Murtaugh

Clinical experience in working with psychiatric patients, emphasizing the development of interviewing and diagnostic skills, knowledge of appropriate treatment modalities, programming treatments, and use of the multidisciplinary team approach in overall treatment.

5222. PRECEPTORSHIPS IN PSYCHIATRY. (688672) (9 cr per period; prereq med student) Erickson, Tuason

A number of preceptorships in outstate areas in Minnesota are available for students interested in full-time tutorial experience with a psychiatrist in private practice serving smaller communities. Preceptorships in the Twin Cities are also available to give students the opportunity to function as primary physicians (with supervision by a psychiatrist) in an inpatient psychiatry service in a downtown metropolitan medical complex.

5500. COMBINED INPATIENT AND CRISIS INTERVENTION CENTER (Hennepin County Medical Center). (488690) (9 cr per period; prereq med student) Dean

Experience on Adult Inpatient Unit; emphasizes diagnosis and team treatment. This is combined with work in the emergency room of the Crisis Intervention Unit; includes rapid evaluation, prompt psychosocial intervention, home visits, suicide phone experience, agency contacts, individual patient responsibility, and seminars.

5501. CLINICAL PSYCHIATRY (St. Paul-Ramsey Medical Center). (788694) (9 cr per period; prereq med student) Tuason

Identifying various psychiatric disorders; their natural history, course, and therapeutic treatment. Students will be involved in the operations of adult inpatient psychiatry, under direct staff supervision as a key member of a psychiatric team.

5506. ADULT OUTPATIENT PSYCHIATRY (University Hospitals, Outpatient Psychiatry Department). (888699) (9 cr per period; prereq med student; Mayo A682) Mitchell, Pyle

Students will function as part of a mental health team in an outpatient psychiatric clinic focusing on psychiatric evaluation, short-term treatment of psychiatric problems, and psychopharmacology. Emphasis on psychiatry for the primary care physician.

5507. CLINICAL RESEARCH IN PSYCHIATRY (University Hospitals, Station 61). (488706) (9 cr per period; prereq med student) Heston

General adult psychiatry with emphasis on pharmacological treatment and research. Work with inpatients and outpatients.

5508. ADULT GENERAL PSYCHIATRY (University Hospitals, Station 60). (988709) (9 cr per period; prereq med student) Kroll

General adult psychiatry with emphasis on acutely ill patients and outpatient follow-up.

5510. INTERDISCIPLINARY CLINICAL TEAM SERVICES FOR THE AGING. (588714) (Cr ar; prereq med student) Garetz, Meier

As members of interdisciplinary clinical teams, students will provide services designed to maintain realistic levels of health in the frail and well elderly in nontraditional community sites in which the elderly are served, including senior citizens centers, day care centers, and congregate living complexes.

5511. PSYCHIATRY IN MEDICINE: CONSULTATION-LIAISON (University Hospitals). (688719) (9 cr per period; prereq med student) Popkin, Mackenzie

Students assist in psychiatric consultation to other services in University Hospitals under direct supervision of staff.

5512. PSYCHOLOGIC ASPECTS OF MEDICAL PRACTICE (Veterans Administration Medical Center). (888721) (9 cr per period; prereq med student) Heefner, Nesheim

Emphasis on practical management of common medical and psychosomatic problems. Particularly suited to students entering a primary care discipline or those wishing a survey exposure to the psychological aspects of day-to-day medical practice.

5513. ST. MARY'S REHABILITATION CENTER—ADULT CHEMICAL DEPENDENCY PROGRAM (St. Mary's Rehabilitation Center). (288724) (4.5 or 9 cr per period; prereq med student) Mann
Involvement in inpatient service and outpatient follow-up program.

5515. NEUROPSYCHOLOGY (University Hospitals). (588728) (9 cr per period; prereq med student) Meier
Screening for impairments of higher cortical functionings as a basis for differentiating functional from organic determinants of behavior change. Fundamental clinical competencies in application of screening battery established.

5516. ST. MARY'S REHABILITATION CENTER—ADULT CHEMICAL DEPENDENCY PROGRAM (St. Mary's Rehabilitation Center). (588731) (4.5 or 9 cr per period; prereq med student) Mann
As a member of a multidisciplinary treatment team, the student becomes a cofacilitator of patient and family group therapy sessions; involvement in inpatient service and outpatient program.

5518. COMMUNITY PSYCHIATRY (Five-County Human Development Program, Inc., Braham). (888735) (9 cr per period; prereq med student) Kollmorgen, staff
Participation as a physician member of a multidisciplinary team composed of health science students and mental health professionals.

5519. CLINICAL PSYCHIATRY (Abbott-Northwestern Hospital). (488737) (9 cr per period; prereq med student) Mayberg
Training and supervision in individual therapy, psychiatric hospital management, community psychiatry, group therapy, and an innovative program in the use of some newer techniques of psychiatric intervention such as movement therapy and Gestalt programs.

5521. COMMUNITY PSYCHIATRY (Dakota County Mental Health Center). (288738) (9 cr per period; prereq med student) Nagobads
Experience in outpatient community psychiatry. Useful for students considering family practice.

5530. INDEPENDENT STUDY. (188739) (Up to 9 cr per period; prereq med student; hrs ar) Heston
Completion of individual projects or study courses in psychiatry or basic sciences.

5602. CLINICAL PSYCHOPHARMACOLOGY SEMINAR. (988743) (1 cr; prereq #; hrs ar) Abuzzahab
Structured discussion of current problems in clinical psychopharmacology.

SPECIAL TERM: JUNE 28-SEPTEMBER 10

5800. CASE CONFERENCE; PSYCHIATRY IN MEDICINE. (788761) (1 cr; prereq MD or #) Popkin, MacKenzie, and Brantner

5801. CONSULTATION-LIAISON PSYCHIATRY. (088765) (Cr ar; prereq MD) Popkin, MacKenzie, and staff

5810. ALCOHOL, DRUG ABUSE. (688767) (3 cr; prereq #) Westermeyer

8201. CLINICAL PSYCHIATRY. (488768) (Up to 12 cr per qtr; hrs ar) Staff

8203. ADVANCED CLINICAL PSYCHIATRY. (288769) (Up to 12 cr per qtr; hrs ar) Staff

8205. SPECIAL ASSIGNMENTS. (088779) (Up to 12 cr per qtr; hrs ar) Staff

8206. RESEARCH. (388780) (Up to 12 cr per qtr; hrs ar) Staff

8208. SURVEY OF PHYSIOLOGICAL TREATMENTS. (388777) (2 cr; hrs ar) Eckert

8221. SEMINAR: CURRENT LITERATURE (Hennepin County Medical Center). (188781) (1 cr; hrs ar) Simon

8265. READINGS, PSYCHOSOMATIC MEDICINE, CONSULTATION-LIAISON PSYCHIATRY. (988774) (Cr ar [max 3]; prereq MD, #) Popkin, MacKenzie

8970. DIRECTED STUDY. (488771) (Up to 9 cr per qtr; hrs ar) Staff

Child and Adolescent Psychiatry (CAPy)

FIRST TERM

5203. CHILD AND ADOLESCENT OUTPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS. (188800) (Cr ar; prereq #) Erbaugh
Experience in assessment and therapeutic interventions with children, adolescents, and families in an outpatient child and adolescent psychiatric setting.

5204. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (088801) (1 cr; prereq med student, #; hrs ar) Erickson
Multidisciplinary evaluations of children, adolescents, and their families are presented for discussion, dynamic and diagnostic formulations, and disposition planning in conference setting.

5206. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (888802) (1 cr; prereq med student, #; hrs ar) Lawton, staff
Therapeutic techniques utilized in child, adolescent, and family psychiatry are reviewed through presentation and discussion of ongoing cases.

Course Descriptions

- 5500. PEDIATRIC PSYCHIATRY LIAISON.** (688803) (9 cr; prereq med student, #) Pearson
Supervised consultation, diagnostic, and short-term therapy experience in pediatrics and pediatric neurology.
- 5522. CLINICAL INPATIENT ADOLESCENT PSYCHIATRY.** (488804) (9 cr per period; prereq med student; hrs ar) Erickson, staff
Supervised diagnostic and therapeutic experiences in an inpatient, multidisciplinary adolescent psychiatry unit with an emphasis on group and milieu therapies.
- 5602. INTRODUCTORY READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (288805) (1 cr; hrs ar) Miner, staff
Assigned readings and discussions with faculty. A survey course; includes child development, diagnostic and therapeutic techniques, and psychopathology.
- 5603. INPATIENT CLINICAL CHILD PSYCHIATRY.** (188806) (9 cr per term; prereq med student; hrs ar) Moore
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.** (988807) (1 cr; 1 hr ar; prereq MD, course in basic psychopathology or equiv, current supervision of treatment cases, and #) Miner, staff
Introduction to the ideas and treatment approaches of some of the major figures in the current clinical practice of psychotherapy with families: Carl Whitaker, Salvador Minuchin, Lyman Wynne, Jay Haley, Murray Bowen, Virginia Satir and others; practice training experience in problems and techniques for beginning family therapists through review and discussion of videotapes of current treatment cases of course participants.
- 5609. CHILD DEVELOPMENT PRACTICUM.** (788808) (Cr ar; 2½ hrs ar; prereq MD and or #) Josephson
Observation conducted at the University Child Care Center consisting of three sessions with infants, three sessions with toddlers, and four sessions with preschoolers. Each session consists of one hour of observation of unstructured activities under the guidance of faculty members, one hour of group discussion with child psychiatry and child development faculty members, and one hour of demonstration illustrating the characteristic behaviors of each age group.
- 8100. READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (588809) (1 cr; hrs ar) Greenberg, staff
Comprehensive review of the classical and contemporary literature in the field of child, adolescent, and family psychiatry including growth and development, diagnostic and therapeutic techniques, and psychopathology, with supplemental course work in other departments and schools.
- 8110. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (988810) (1 cr; hrs ar) Greenberg, staff
See 5204.
- 8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (788811) (1 cr; hrs ar) Stocking
See 5206.
- 8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY.** (588812) (3 cr; 15-30 hrs per wk) Jensen
Supervised diagnostic and therapeutic experiences in an outpatient setting.
- 8212. CLINICAL INPATIENT CHILD PSYCHIATRY.** (388813) (3 cr; 15-30 hrs per wk) Moore, staff
Supervised diagnostic and therapeutic experiences in an inpatient, multidisciplinary child psychiatry unit with an emphasis on group and milieu therapies.
- 8214. INPATIENT CLINICAL ADOLESCENT PSYCHIATRY.** (188814) (3 cr; hrs ar) Erickson, staff
Supervised diagnostic and therapeutic experiences in an inpatient, multidisciplinary adolescent psychiatry unit with an emphasis on group and milieu therapies.
- 8216. PEDIATRIC—PSYCHIATRY LIAISON.** (088815) (3 cr; prereq med student, #; hrs ar) Pearson, Jensen
See 5500.
- 8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY.** (888816) (1 cr; hrs ar) Greenberg, Yellin
Research design, methodology, and current research projects are reviewed with faculty members and invited guests.

SECOND TERM

- 5203. CHILD AND ADOLESCENT OUTPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS.** (889514) (Cr ar; prereq #) Erbaugh
See First Term.
- 5204. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (689515) (1 cr; prereq med student, #; hrs ar) Erickson
See First Term.
- 5206. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (489516) (1 cr; prereq med student, #; hrs ar) Lawton, staff
See First Term.
- 5500. PEDIATRIC—PSYCHIATRY LIAISON.** (289517) (9 cr; prereq med student, #) Pearson
See First Term.

- 5522. CLINICAL INPATIENT ADOLESCENT PSYCHIATRY (University Hospitals, Station 62).** (189518) (9 cr per period; prereq med student; hrs ar) Erickson
See First Term.
- 5602. INTRODUCTORY READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (989519) (1 cr; hrs ar) Miner, staff
See First Term.
- 5603. INPATIENT CLINICAL CHILD PSYCHIATRY.** (289520) (9 cr per term; prereq med student; hrs ar) Moore
See First Term.
- 5608. INTRODUCTION TO FAMILY THERAPY: THEORY AND PRACTICE.**(189521) (1 cr; 1 hr ar; prereq MD, course in basic psychopathology or equiv, current supervision treatment cases, and #) Miner, staff
See First Term.
- 5609. CHILD DEVELOPMENT PRACTICUM.**(989522) (Cr ar; 2½ hrs ar; prereq MD and/or #) Josephson
See First Term.
- 8100. READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (789523) (1 cr; hrs ar) Greenberg, staff
See First Term.
- 8110. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (589524) (1 cr; hrs ar) Greenberg, staff
See 5204 First Term.
- 8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (389525) (1 cr; hrs ar) Stocking
See 5206 First Term.
- 8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY.** (189526) (3-6 cr; 15-30 hrs per wk) Jensen
See First Term.
- 8212. CLINICAL INPATIENT CHILD PSYCHIATRY.** (089527) (Cr ar; 15-30 hrs per wk) Moore, staff
See First Term.
- 8214. INPATIENT CLINICAL ADOLESCENT PSYCHIATRY.** (889528) (Cr and hrs ar) Erickson, staff
See First Term.
- 8216. PEDIATRIC—PSYCHIATRY LIAISON.** (689529) (3 cr; prereq med student, #; hrs ar) Pearson
See First Term.
- 8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY.** (089530) (1 cr; hrs ar) Yellin
See First Term.

Radiology (Rad)

SPECIAL TERM: THREE-WEEK COURSES

Elective Courses for Third- and Fourth-Year Students

- 5101. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (University Hospitals).** (988824) (Cr and hrs ar; prereq regis med) Gedgaudas, staff
- 5102. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Veterans Administration Hospital).** (688817) (Cr and hrs ar; prereq regis med) Reinke
- 5103. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Hennepin County Medical Center).** (488818) (Cr and hrs ar; prereq regis med) Tsai
- 5104. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Paul-Ramsey Medical Center).** (288819) (Cr and hrs ar; prereq regis med) Johnson
- 5105. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Luke's Hospital, Duluth).** (688820) (Cr and hrs ar; prereq regis med) Ahrens, staff
- 5140. SPECIAL PROBLEMS: ROENTGENOLOGY.** (488821) (Cr and hrs ar; prereq regis med) Gedgaudas, staff
- 5240. SPECIAL PROBLEMS: NUCLEAR MEDICINE.** (288822) (Cr and hrs ar; prereq regis med) Loken, staff
- 5530. EXTERNSHIP: NUCLEAR MEDICINE.** (188823) (Cr and hrs ar; prereq regis med) Loken, staff

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

Required Courses for Graduate Students

- 0121. MEDICAL ROENTGENOLOGIC CONFERENCE.** (488835) (No cr; 1130-1200 T; Mayo C321-Todd Amph) Gedgaudas, staff
Weekly meetings with the medical staff at which all the important medical cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.

Course Descriptions

0122. PEDIATRIC ROENTGENOLOGIC CONFERENCE. (988838) (No cr; 0930-1000 MTWThF; Mayo B167-Rigler Library) L'Heureux
Daily meetings with the pediatric staff at which all the important pediatric cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.

0123. SURGICAL ROENTGENOLOGIC CONFERENCE. (188840) (No cr; 0905-0955 S; Mayo C321-Todd Amph) Amplatz
Weekly meetings with the surgical staff at which all the important surgical cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.

0124. NEUROSURGICAL ROENTGENOLOGIC CONFERENCE. (788842) (No cr; 1325-1415 F; Mayo C321-Todd Amph) Gold
Weekly meetings with the neurosurgical staff at which all the important neurosurgical cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.

0125. CARDIOVASCULAR ROENTGENOLOGIC CONFERENCE. (588843) (No cr; 1200-1300 Th; Mayo E167-Rigler Library) Amplatz

8100. GASTROINTESTINAL ROENTGENOLOGY. (388844) (Cr ar; prereq #) Feinberg

8101. UROLOGIC ROENTGENOLOGY. (188845) (Cr ar; prereq #) Goldberg

8102. NEUROLOGICAL ROENTGENOLOGY. (088846) (Cr ar; prereq #) Gold

8103. CARDIOVASCULAR ROENTGENOLOGY. (688848) (Cr ar; prereq #) Amplatz

8104. PEDIATRIC ROENTGENOLOGY. (488849) (Cr ar; prereq #) L'Heureux

8105. PULMONARY ROENTGENOLOGY. (888850) (Cr ar; prereq #) Gedgaudas, staff

8150. RESEARCH: ROENTGENOLOGY. (688851) (Cr ar) Gedgaudas, staff
Problems in roentgen diagnosis.

8200. NUCLEAR MEDICINE. (488852) (Cr ar) Loken, staff

8450. RESEARCH: RADIATION BIOLOGY, NUCLEAR MEDICINE. (188828) (Cr ar) Staff

Surgery (Surg)

SPECIAL TERMS: JUNE 21-JULY 30 AND AUGUST 2-SEPTEMBER 10

Elective Courses for Undergraduate Students

5500. EXTERNSHIP IN GENERAL SURGERY (University and Affiliated Hospitals). (288853) (Cr ar; prereq regis med) Najarian, staff

5523. EXTERNSHIP IN COLON AND RECTAL SURGERY (Veterans Administration Hospital). (188E54) (4.5 cr; offered all periods except 5; prereq regis med; 3 weeks) Goldberg

SPECIAL TERMS: JUNE 28-AUGUST 6 AND AUGUST 9-SEPTEMBER 17

Required Courses for Graduate Students

8200. CLINICAL SURGICAL PROBLEMS AND MANAGEMENT. (988855) (5 cr; ar MTWThF) Najarian, staff

8201. SURGERY-ROENTGENOLOGY-PATHOLOGY CONFERENCE. (788856) (1 cr; 1600-1730 F; Mayo C321-Todd Amph) Najarian

8202. SURGICAL RESEARCH. (588857) (5 cr; ar MTWThF; Sur Res Lab) Staff

8203. SURGERY COMPLICATIONS AND RESEARCH CONFERENCE. (388858) (1 cr; 1630-1730 T; PWB 11-167) Najarian, staff

8207. TRANSPLANTATION AND BONE MARROW CONFERENCE. (188859) (1 cr; 1630-1730 Th; PWB 11-167) Surgery and Pathology staffs

Therapeutic Radiology (TRad)

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

5340. SPECIAL PROBLEMS IN RADIATION THERAPY. (588860) (Cr ar; prereq regis med)

5505. EXTERNSHIP IN RADIATION THERAPY. (690809) (Cr ar; prereq regis med) Levitt Kim, Lee, Potish

5506. **CANCER DIAGNOSIS AND TREATMENT.** (090810) (Cr ar; prereq regis med) Levitt, Kim, Lee, Potish
5507. **ADVANCED EXTERNSHIP IN RADIATION THERAPY.** (088863) (Cr ar; prereq regis med) Levitt, Jones, Kim, Lee, Potish
5508. **SPECIAL PROBLEMS IN RADIATION BIOLOGY.** (888864) (Cr ar)
5512. **DOSIMETRY OF INTERNAL AND EXTERNAL RADIATION.** (688865) (1 cr; 0830-0930 W; B141 Mayo) Khan, Werner, Deibel
5540. **SPECIAL PROBLEMS IN RADIOLOGICAL PHYSICS.** (488866) (Cr ar; prereq regis med) Khan, Loken
8300. **RADIATION THERAPY.** (288867) (Cr ar)
8310. **FUNDAMENTALS OF RADIATION THERAPY.** (188868) (1 cr; 1600-1700 M; B141 Mayo)
8315. **RADIATION THERAPY PATHOLOGY.** (988869) (1 cr)
8320. **RADIATION THERAPY TREATMENT PLANNING PROBLEMS.** (288870) (1 cr)
8325. **RADIATION THERAPY PEDIATRICS ONCOLOGY.** (188871) (1 cr)
8350. **RESEARCH IN RADIATION THERAPY.** (988872) (Cr ar)
8410. **SEMINAR: RADIATION BIOLOGY.** (788873) (1 cr; prereq #) Song, Buchsbaum, Rappaport
8450. **RESEARCH IN RADIATION BIOLOGY.** (588874) (Cr ar) Song, Buchsbaum, Rappaport
8550. **RESEARCH IN RADIOLOGICAL PHYSICS.** (388875) (Cr ar) Khan, Loken

Urologic Surgery (Urol)

FIRST TERM

5180. **EXTERNSHIP IN UROLOGY.** (188876) (Cr and hrs ar) Staff

Required Courses for Graduate Students

8250. **UROLOGICAL SURGERY.** (088877) (4 cr; 0900-1200 MTThF; Main 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.** (888878) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others
Urological fellow performs cystoscopies and other diagnostic procedures.
8252. **UROLOGICAL CONFERENCE.** (688879) (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.** (088880) (4 cr) Fraley, others
Problems in experimental and clinical surgery.
8254. **UROLOGICAL SEMINAR.** (888881) (3 cr) Fraley, others
8255. **UROLOGICAL-RADIOLOGICAL CONFERENCE.** (688882) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others
8256. **UROLOGICAL-PATHOLOGICAL CONFERENCE.** (488883) (3 cr; 1640-1700 W; Mayo A503) Fraley, others

SECOND TERM

5180. **EXTERNSHIP IN UROLOGY.** (489533) (Cr and hrs ar) Staff

Required Courses for Graduate Students

8250. **UROLOGICAL SURGERY.** (189535) (4 cr; 0900-1200 MTThF; Main OR-H) Fraley, others
See First Term.
8251. **CYSTOSCOPY AND UROLOGICAL DIAGNOSIS.** (589538) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others
See First Term.
8252. **UROLOGICAL CONFERENCE.** (389542) (4 cr; 1600-1700 F, Ward Rds, Sta 57; 0900-1100 S, Sta 57 Conf Rm) Fraley, others
See First Term.

Course Descriptions

8253. RESEARCH: UROLOGY. (889545) (4 cr) Fraley, others
See First Term.

8254. UROLOGICAL SEMINAR. (489547) (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (189549) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (289551) (3 cr; 1630-1700 W; Mayo A503) Fraley, others

DEPARTMENT OF MORTUARY SCIENCE

Mortuary Science (Mort)

FIRST TERM

8 5040. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 15-July 2.(189504) (3 cr, §PubH 5040, HSU 5040, §Hlth 5402; limited to 100 students; prereq mortuary science major, education sr, certified teacher, health science major, school or public health nurse or #: 1330-1600 MTWThF; HSUnitF 2-110, 2-140) Rothenberger, Slater, Burger
Basic background information on concepts and attitudes toward death, grief, and bereavement with emphasis on instructional aspects for the elementary and secondary schools and the role of the school in suicide prevention.

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

3080. PRACTICUM IN FUNERAL SERVICE. (288884) (15 cr; prereq 3001, 3010, 3030, 3040, 3050, 3060, 3070, 3071, 3270, 3271, LaMP 3050, minimum of 8 nondepartmental upper division cr. Δ; S-N grading)

Practical experience in a funeral home as assigned by the department; reports and assigned readings in funeral service literature.

SCHOOL OF NURSING

Nursing (Nurs)

FIRST TERM

8 5711. MAN AS A SPIRITUAL BEING. (190871) (3 cr; prereq 5611, 5612, 5613, 5614; lect 1215-1400 MW, clinical work ar) Gustafson

Designed to focus on man as a spiritual being and the relationship of this to the nursing process.

5718. CONTEMPORARY PUBLIC HEALTH NURSING. (790770) (6 cr; prereq 5611, 5612, 5613, 5614, PubH 5006; seminar 1415-1600 TTh, clinical work ar) Ernestvedt

Opportunity to broaden and refine skills in meeting identified health needs of a specified community. Focusing on health promotion concepts, family-centered nursing, community assessment skills, helping relationship skills and peer review, continuity of care, and caseload management skills.

8 5725. LEGAL PARAMETERS OF NURSING PRACTICE. (190935) (2 cr; prereq completion of two Level II synthesis courses or RN with abnormal psychology, 5409; seminar 1215-1400 F) Accola

Sec 2. Designed to increase the student's knowledge of legal terminology, and ability to provide high quality nursing care and prevent malpractice suits, especially in suit-prone clients. Content applicable to normal and emergency situations and to employers as well as employees.

8 5730. NURSING AND DRUG THERAPY I. (389184) (3 cr; prereq any two of the following: 5611, 5612, 5613, 5614...or RN; seminar 1415-1600 M) Accola

Reviews common drugs affecting the cardiovascular, renal, endocrine, and autonomic nervous systems. Builds on the students' past knowledge in physiology, pathophysiology, pharmacology and synthesis. Emphasis on assessing the desired effects, side effects, and interactions of common drugs; determining appropriate nursing interventions related to use of the drugs; and using the nursing process and helping relationships to teach clients what they need to know about the drugs they use.

5799. SELF-DIRECTED STUDY. (188885) (Cr ar; prereq any two of the following: 5611, 5612, 5613, 5614, written contract with instructor, #: may be used to meet any portion of nursing elective cr requirement) Staff

Sec 1. Opportunity for students to engage in learning experiences not provided for in established nursing elective courses.

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (189123) (Cr ar; prereq Δ) Staff

Various learning experiences planned to meet individual needs.

8009. SPECIAL TOPICS IN NURSING. (489127) (Cr ar; prereq #) Staff

R 8010. STRUCTURE OF THE DISCIPLINE OF NURSING. (989133) (3 cr; prereq Δ : 1215-1500 TTh) Sime
The purposes, characteristics, and kinds of structures of nursing with emphasis on theories, models, and conceptual frameworks.

8060. ADVANCED CLINICAL NURSING. (289145) (Cr ar; prereq #) Staff

8509. SPECIAL TOPICS IN NURSING EDUCATION. (789148) (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION. (989150) (Cr ar) Staff

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

R 5612. SYNTHESIS INCORPORATING CONCEPTS OF STRESS AND CRISIS. (4 cr; 10 wks; prereq 5407, 5408, 5409, 5404, 5405 or ∇ 5405, abnormal psychology. Phcl 1009, LaMP 5171 or ∇ LaMP 5171; lect 1015-1200 M, JacH 2-135 [first term], HSUnitA 2-620 [second term])

Clinical course that focuses on the synthesis of systematic process, adaptation, helping relationships, and tools in care of patient/clients experiencing stress or crisis. Examines dimensions of the stress experience exemplified in patient/clients experiencing various types of crises. Emphasizes priority setting and nursing interventions for acute situations.

- Clinical ar
1. (990864) Reese
 2. (790865) Urueta

R 5614. SYNTHESIS INCORPORATING CONCEPTS OF HEALTH. (3 cr; each lab limited to 8 students; prereq 5404, 5405 or ∇ 5405, 5407, 5408, 5409, abnormal psychology. Phcl 1009, LaMP 5171 or ∇ LaMP 5171; lect 1315-1500 F; HSUnitA 2-520)

Clinical course that focuses on the synthesis of systematic process, adaptation, helping relationships, and tools in the care of recipients who are not experiencing any major disruptive life event. Some constructs used in conceptualizing health and their relationship to individual and family development. Emphasis on goals and nursing interventions aimed at promotion of health and prevention of disease.

- Clinical ar
1. (590866) Jones
 2. (390867) Jones

R 5615. SYNTHESIS IN COMPLEX NURSING SITUATIONS. (5 cr; limited to 8 students; prereq 5611, 5612, 5613, 5614, FScN 3602; seminar 1415-1600 W, JacH 2-135 [first term], HSUnitA 2-530 [second term]) Clinical course designed to allow students to synthesize the knowledge and skills acquired in the four prerequisite synthesis courses into comprehensive and effective care of individuals and groups experiencing complex disruptive life events.

- Clinical ar
1. (190868) Weisensee
 2. (090869) Canedy

R 5701. NURSING CARE OF THE EXPANDING FAMILY. (390870) (6 cr; limited to 8 students; prereq 5611, 5612, 5613, 5614; lect 1315-1500 F; clinical 0730-1200 WF) Fairbanks

Application of previous studies and the concept of primary prevention in the nursing care of families during the reproductive process. Opportunity to work with families both within and outside of the hospital.

R 5714. HEALTH ASSESSMENT. (189180) (3 cr; 0915-1100 MW) Boehm

Designed to assist the student in the development of skills utilized in systematic client assessment. Emphasis on the interpretation of normal findings, distinguishing normal from abnormal findings, and the communication of findings to appropriate health professionals. Use of conceptual framework to determine factors appropriate for nursing assessment will be included.

R 5725. LEGAL PARAMETERS OF NURSING PRACTICE. (789182) (2 cr; completion of two Level II synthesis courses or RN with abnormal psychology, 5409; seminar 1215-1300 T) Accola

Sec 1. See First Term.

5799. SELF-DIRECTED STUDY. (189185) (Cr ar; prereq any two of the following: 5611, 5612, 5613, 5614...written contract with instructor, #; may be used to meet any portion of nursing elective cr requirement) Staff

Sec 2. See First Term.

R 5816. LEADERSHIP MANAGEMENT. (6 cr; prereq 5611, 5612, 5613, 5614, FScN 3602; lect 1015-1200 M)

Clinical course introducing basic management and change theory and practice. Provides students with experience in functioning as a first-level manager within a peer group in a clinical setting.

- Clinical ar
1. (090872) Colloton
 2. (890873) Ruhland

5999. CLINICAL STUDY. (690874) (Cr ar; prereq any two of the following: 5611, 5612, 5613, 5614) Staff

Opportunity to utilize the research process in the design and implementation of a limited study that focuses on implications for nursing practice.

R 8011. MORAL AND ETHICAL POSITIONS IN NURSING. (189194) (3 cr; prereq Δ : 1615-1900 Th) Crisham

Influence of moral and ethical positions on behavior and decision making in nursing. Emphasis on bases for positions taken, such as selected moral and ethical theories, rights and responsibilities, and conflict.

Course Descriptions

NR 8014. RESEARCH IN NURSING. (189199) (3 cr; prereq inferential statistics, Δ; 0815-1100 F) Martinson
Research processes and methodologies appropriate to nursing. Analysis of research reports.

NR 8030. NURSING INTERVENTION MODELS. (8 cr; prereq 8011 or *8011, 8012)
Developing, providing and evaluating nursing intervention with a specified client population. Students register for a section that focuses on a specific population.

Sec 1, (389203) 1015-1200 TTh, Gordon
Sec 2, (489208) 1015-1200 TTh, Taylor

Sec 3, (289212) 1015-1200; 1315-1500 T, Voda

8050. PROBLEMS IN NURSING. (189140) (1-9 cr; prereq #) Staff
Individual study of a problem.

8315. NURSE MIDWIFERY MANAGEMENT. (989228) (8-10 cr; prereq 8314; 1230-1630 W) 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.

NR 8411. KNOWLEDGE DEVELOPMENT UNDERLYING NURSING THERAPY. (990766) (4-6 cr; prereq 8030; 1015-1200 T, lab ar) Sodergren
Development of nursing practice for a specified client population. Focus on one element or aspect of an intervention model to expand knowledge in that area. Relevant research literature evaluated.

NR 8415. NURSE CLINICAL ROLE DEVELOPMENT. (189249) (6-9 cr; prereq any Nursing Focus I course, a course dealing with the health care delivery system; 1615-1800 T) Schumann
Selection and development of a role, either a nurse clinician-specialist or nurse clinician-generalist. Aspects of the role may include patient care, consultation, staff development, research, coordination, and collaboration.

NR 8431. CHILDBEARING-CHILDREARING FAMILY NURSING I. (490875) (4-6 cr; prereq 8030; 1015-1200 T) Gronseth, Rode
Maintenance, promotion, improvement and restoration of health in the childbearing-childrearing family unit. Theoretical concepts related to women, children and families, and family development.

NR 8451. TEACHING NURSING. (789957) (4 cr; prereq any section of 8030, *course in learning theory and #; 1215-1400 TTh; lab 1215-1500 W) Weise
Use of theories of learning to develop an intervention model for teaching nursing. Testing the intervention model in simulated situations.

NR 8455. THE NURSE EDUCATOR IN HIGHER EDUCATION. (689272) (6 cr; prereq 8451, *course in educational measurement, #: 0915-1100 TTh) Kintgen-Andrews
Analysis of roles and responsibilities of nurse educator in higher education. Data for analysis obtained through review of relevant literature and testing of roles in an academic setting.

8600. HEALTH CARE INSTITUTIONS AND NURSING LEADERSHIP. (790767) (3 cr; prereq #: 081E-1000 MW) Duxbury
Some aspects inherent in American society (alienation, productivity, roles, youth emphasis) and their impact on health care institutions; nurse's effects upon individuals involved in these institutions.

SECOND TERM

5620. INDEPENDENT STUDY IN NURSING TOPICS. (189308) (1-9 cr; prereq #) Staff
Opportunity for students to develop and engage in learning experiences beyond those required in the program. A contract with a faculty adviser is required.

NR 5707. ORGANIZATIONAL CHANGE. (590768) (5 cr; prereq completion of Synthesis II modules, upper division, RN; limited to 15 students; lect 1315-1500 M; clinical work ar) Colleton
Basis for examining major forces affecting the nature of an organization; the phenomenon of change, the role of power in an organization, and means to effect change.

NR 5725. LEGAL PARAMETERS OF NURSING PRACTICE. (190773) (2 cr; completion of two Level II synthesis courses or RN with abnormal psychology, 5409; seminar 1215-1400 F) Accola
Sec 2. See First Term.

NR 5730. NURSING AND DRUG THERAPY I. (988841) (3 cr; prereq any two of the following: 5611, 5612, 5613, 5614...or RN; seminar 1215-1300 W) Accola
Sec 1. See First Term.

5799. SELF-DIRECTED STUDY. (189311) (Cr ar; prereq any two of the following: 5611, 5612, 5613, 5614...written contract with instructor, #: may be used to meet any portion of nursing elective cr requirement) Staff
Sec 1. See First Term.

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (589314) (Cr ar; prereq Δ) Staff
See First Term.

8009. SPECIAL TOPICS IN NURSING. (189316) (Cr ar; prereq #) Staff

NR 8012. CONCEPTUAL FRAMEWORK FOR NURSING PRACTICE. (689319) (3 cr; prereq 8010 or *8010; 1215-1500 TTh) Egan

- 8060. ADVANCED CLINICAL NURSING.** (589507) (3-9 cr; prereq Δ , #)
8509. SPECIAL TOPICS IN NURSING EDUCATION. (389508) (Cr ar; prereq #) Staff
8609. SPECIAL TOPICS IN NURSING SUPERVISION. (189509) (Cr ar) Staff

COLLEGE OF PHARMACY

Pharmacy (Phar)

FIRST TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (388911) (2 cr. §HSU 5210) Bast
 Programmed learning format to familiarize students with the language of the health sciences.

SPECIAL TERM: JUNE 15-AUGUST 21

- 5230. PHARMACY AND THE LAW.** (888931) (2 cr. 1220-1310 MW; MMA 125) Holmstrom
 Introduction to state (Minnesota) and federal laws, rules, and court decisions that affect the practice of pharmacy.
- 5280. CONTEMPORARY PHARMACY.** (188935) (2 cr; prereq 2nd- or 3rd-yr pharmacy student, #) Wertheimer
 Contemporary topics in pharmacy.
- 5290. SPECIALTY CLERKSHIPS.** (488964) (Cr ar) Staff
 Experience in community-based practice settings for specialized populations.
- 5291. HOSPITAL PHARMACY.** (788971) (2 cr for 10 wks; lect and hospital visitations; 0905-0955 TTh; MMA 125) Giese
 History, organization, and administration of pharmaceutical services in institutional settings.
- 5295. CLINICAL RESEARCH METHODS AND BIostatISTICS.** (288982) (3 cr for 10 wks; 1115-1205 TTh, 1220-1310 F; MMA 125) Anderson
 Introduction to fundamental mechanical and methodological aspects of clinical research. Development of biostatistical concepts used in clinical research.
- 5301. CLINICAL THERAPEUTICS.** (988998) (3 cr for 10 wks; prereq 5350, Phcl 5102 or #; 1010-1100 MWF; HSUnitA 2520) Canafax
 Clinical therapeutics of common disease entities.
- 5302. CLINICAL THERAPEUTICS.** (789005) (3 cr for 10 wks; prereq 5350, Phcl 5102 or #; 1115-1205 MWF; HSUnitA 2-520) Canafax
 Clinical therapeutics of common disease entities.
- 5307. CLINICAL CONFERENCES.** (389010) (2 cr; prereq 2nd-year PharmD student) Bast
- 5316. MONITORING PARAMETERS IN MEDICATED PATIENTS.** (490472) (2 cr; prereq #: ar) Toscano
 Introduction to all relevant physical assessment skills necessary to monitor patient drug therapy.
- 5390. COMMUNITY PRACTICE CLERKSHIP.** (490469) (12 cr; prereq 3rd-yr pharmacy student; 40 hrs per wk for 3 months) Benson
 Supervised and evaluated practical experience under college coordinated field preceptors.
- 5392. HOSPITAL PRACTICE CLERKSHIP** (690471) (12 cr; prereq 3rd-yr pharmacy student; 40 hrs per wk for 12 wks) Cloyd
 Supervised and evaluated practical experience under college-coordinated field preceptors.
- 5396. PHARM.D. CLERKSHIP.** (890470) (12 cr; prereq 5312 or #) Toscano
 Monitoring of patient drug therapy in University Hospitals and other affiliated institutions.
- 5670. DRUG INFORMATION RETRIEVAL AND EVALUATION.** (189017) (2 cr for 10 wks; 1010-1100 TTh; HSUnitA 2-530) Gallo, Vander Zanden
 Drug information retrieval, drug information evaluation, and pharmaceutical applications.
- 5970. DIRECTED STUDIES.** (989021) (Cr ar; prereq #)
- 5999. SPECIAL PROBLEMS.** (389024) (Cr ar; prereq #) Staff
 Research in medicinal chemistry, pharmacognosy, pharmaceuticals, social and administrative pharmacy, or clinical practice.

SECOND TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (889044) (2 cr. §HSU 5210) Bast
 Programmed learning format to familiarize students with the language of the health sciences.

SCHOOL OF PUBLIC HEALTH

Interdisciplinary Studies (PubH)

FIRST TERM

R 3001. PERSONAL AND COMMUNITY HEALTH. (188523) (3 cr. §3004. §GC 3114; meets with 3004, 3033; 1010-1205 MWF; HSUnitA 2-690) Rothenberger
Fundamental principles of health conservation and disease prevention.

R 3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH. (088524) (5 cr. §3001, §3033, §GC 3114; 1010-1205 MTWThF; HSUnitA 2-690) Rothenberger
Introduction to scientific, sociocultural, and attitudinal aspects of communicable and degenerative diseases, environmental and occupational health hazards, alcohol and drug problems; emphasis on role of education in health conservation, disease control, and drug abuse.

R 3033. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE. (888525) (2 cr. §3004; meets with 3001, 3004; 1010-1205 TTh; HSUnitA 2-690) 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.

5003. INTERDISCIPLINARY TEAM BUILDING IN COMMUNITY HEALTH PRACTICE—July 7-9 (59C897) (2 cr; prereq #: 0830-1600 WThF; HSUnitF 2-140) Reynolds, Cohn
Development of interdisciplinary team skills including resource sharing and utilization, organization and management of work teams, team-system relationships, interdisciplinary roles and leadership styles, problem solving and decision making, negotiation and power, conflict utilization, and process intervention. This offering will focus on understanding team organizational structure, team building processes, and team diagnostic and interventional skills including team development stages, interdisciplinary role behaviors and consequences, team norms related to productivity, and evaluating team effectiveness. (See also 5003 Second Term.)

5005. TOPICS IN PUBLIC HEALTH. (688526) (Cr ar; prereq advance proposal and #) Staff
Individualized, directed instruction. Selected readings in public health with discussion based on these readings.

5006. INTRODUCTION TO COMMUNITY HEALTH. (488527) (5 cr. §5016; prereq pharmacy student, nursing student, other health professional or #: 0800-0955 MTWThF; HSUnitA 2-690) Greene, Nelson
Lectures, discussions, seminars, individualized readings on critical and current issues in community health, emphasizing public health programs and controversies.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (188529) (Cr ar; prereq #) Staff
Individualized, directed instruction. Selected readings in interdisciplinary studies with discussion based on these readings.

R 5040. DYING AND DEATH IN CONTEMPORARY SOCIETY—June 15-July 2. (488530) (3 cr. §H1th 5402. §Mort 5040. §HSU 5040; prereq health science major, education senior, certified teachers, mortuary science major, public health grad student or #: 1330-1600 MTWThF; HSUnitF 2-110, 2-140) Rothenberger, Slater
Basic background information on concepts, attitudes, ethics, and life style management in relation to dying, death, grief, and bereavement. Emphasis will be placed on the educational aspects of the above topics for community health and helping professionals and educators.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (Cr ar; prereq #) Staff
Section 1 (288531)—Environmental health students only. Section 2 (188532)—Other students majoring in public health.

SECOND TERM

5003. INTERDISCIPLINARY TEAM BUILDING IN COMMUNITY HEALTH PRACTICE—July 28-30. (390898) (2 cr; prereq #: 0830-1600 WThF; HSUnitF 2-140) Reynolds, Cohn
This offering will focus on knowledge and skills for team management including using a planning process for goal setting, priority setting for and using resources, analyzing sources of power and conflict, conflict management skills, agenda setting and time management, external system expectations, and individual leadership style. (See also 5003 First Term.)

R 5005. TOPICS IN PUBLIC HEALTH. (488608) (Cr ar; prereq advance proposal and #) Staff
See First Term.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (688610) (Cr ar; prereq #) Staff
See First Term.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (288612) (Cr ar; prereq #) Staff
See First Term.

Biometry (PubH)

FIRST TERM

5400. INTRODUCTION TO QUANTITATIVE METHODS IN THE HEALTH AND LIFE SCIENCES. (988533) (4 cr; for students majoring in the biological and health sciences; prereq Biol 1011, Chem 1004, Math 1111 or 1201 or equiv or #: 0800-0930 MTWThF; HSUnitF 2-130) Le
Basic quantitative methods for the design and analysis of clinical and laboratory studies in biology and the health sciences.

5446. BIOCOMPUTING CONSULTING SEMINAR. (788534) (3 cr; prereq biometry major, 5432, 5452 or #) Staff
Overview of computer hardware, operating systems, languages, and program packages for health science applications. Case examples illustrate roles and responsibilities of the project manager in analyzing the requirements of the health science client, designing and specifying computer interfaces, and supervising the development, training, documentation, and evaluation.

5456. BIOMETRY CONSULTING SEMINAR. (588535) (Cr ar; prereq biometry major) Boen, staff
Consultant and consultee interaction; communication and formulation of the biometric problem. Role and responsibility of the biometrician. Robustness and relevance of frequently used analytical techniques. Internship experiences.

5470. TOPICS IN BIOMETRY. (388536) (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

8400. SEMINAR IN BIOMETRY. (188537) (Cr ar) Staff

8449. TOPICS IN BIOMETRY. (088538) (Cr ar; prereq 5450 and #) Staff
Studies in special topics for advanced students.

8450. RESEARCH IN BIOMETRY. (888539) (Cr ar) Staff
Opportunities for qualified students to pursue research work.

SECOND TERM

5446. BIOCOMPUTING CONSULTING SEMINAR. (188613) (3 cr; prereq biometry major, 5432, 5452 or #) Gatewood
See First Term.

5456. BIOMETRY CONSULTING SEMINAR. (988614) (Cr ar; prereq biometry major) Boen
See First Term.

5470. TOPICS IN BIOMETRY. (788615) (Cr ar; prereq #) Staff
See First Term.

8400. SEMINAR IN BIOMETRY. (588616) (Cr ar) Staff

8449. TOPICS IN BIOMETRY. (388617) (Cr ar; prereq 5450 and #) Staff
See First Term.

8450. RESEARCH IN BIOMETRY. (188618) (Cr ar) Staff
See First Term.

Dental Public Health (PubH)

FIRST TERM

5654. TOPICS: DENTAL PUBLIC HEALTH. (188540) (Cr ar; prereq student in dental public health or #) Staff
Selected readings with discussion based on these readings.

5657. INDEPENDENT STUDY: DENTAL PUBLIC HEALTH. (088541) (Cr ar; prereq student in dental public health or #)
Block, staff
Independent study, under tutorial guidance, of selected problems and current issues in the field of dental health and dental health services.

5660. FIELD EXPERIENCE: DENTAL PUBLIC HEALTH. (888542) (Cr ar; prereq student in dental public health or #)
Supervised field experience in selected community or public health agencies and institutions.

5663. ADMINISTRATIVE RESIDENCY IN DENTAL PUBLIC HEALTH. (688543) (Cr ar; prereq #) Block, staff, clinical preceptors
Eleven months of field work in an approved community or public health agency, delivery of dental services and implementation of programs, solution of management problems, and special projects. Preparation of formal report.

SECOND TERM

5654. TOPICS: DENTAL PUBLIC HEALTH. (088619) (Cr ar; prereq #) Staff
See First Term.

5657. INDEPENDENT STUDY IN DENTAL PUBLIC HEALTH. (388620) (Cr ar; prereq #) Block, staff
See First Term.

5660. FIELD EXPERIENCE: DENTAL PUBLIC HEALTH. (188621) (Cr ar; prereq #) Block, staff
See First Term.

5663. ADMINISTRATIVE RESIDENCY IN DENTAL PUBLIC HEALTH. (088622) (Cr ar; prereq #) Block, staff, clinical preceptors
See First Term.

Environmental Health (PubH)

FIRST TERM

5150. TOPICS IN ENVIRONMENTAL HEALTH. (488544) (Cr ar; prereq #) Staff
Selected readings with discussions of problems.

Course Descriptions

8150. RESEARCH: ENVIRONMENTAL HEALTH. (588552) (Cr ar) Staff

SECOND TERM

5150. TOPICS IN ENVIRONMENTAL HEALTH. (888623) (Cr ar; prereq #) Staff
See First Term.

8150. RESEARCH: ENVIRONMENTAL HEALTH. (988631) (Cr ar) Staff

Epidemiology (PubH)

See the Special Programs section for a series of courses offered through Continuing Education and Extension.

FIRST TERM

5379. TOPICS IN EPIDEMIOLOGY. (488561) (Cr ar; prereq epidemiology student or #) Staff
Selected readings with discussion based on these readings.

8330. RESEARCH: EPIDEMIOLOGY. (288562) (Cr ar) Staff
Opportunities offered by the School of Public Health and various cooperating organizations for qualified students to pursue research work.

SECOND TERM

5379. TOPICS IN EPIDEMIOLOGY. (888640) (Cr ar; prereq epidemiology student or #) Staff
See First Term.

8330. RESEARCH: EPIDEMIOLOGY. (688641) (Cr ar) Staff
See First Term.

Health Care Psychology (PubH)

FIRST TERM

5800. RESEARCH PROJECT IN HEALTH CARE PSYCHOLOGY. (188563) (1-6 cr) Staff

5801. DIRECTED STUDY IN HEALTH CARE PSYCHOLOGY. (988564) (1-4 cr) Staff

5802. SPECIAL TOPICS IN HEALTH CARE PSYCHOLOGY. (788565) (Cr ar; prereq #) Staff

5811. CLERKSHIP IN PSYCHOLOGICAL ASSESSMENT. (588566) (1-4 cr; prereq grad student in clinical psychology, school psychology or #) Staff

5812. CLERKSHIP IN NEUROPSYCHOLOGICAL ASSESSMENT. (388567) (1-4 cr; prereq #) Meier, Thomas

5813. FIELDWORK EXPERIENCE IN HEALTH CARE PSYCHOLOGY. (188568) (1-4 cr; prereq clinical psychology intern or #; observed by staff) Staff

5814. CASE CONFERENCE IN HEALTH CARE PSYCHOLOGY. (088569) (1 cr; prereq clinical psychology intern or #) Staff

5815. CASE CONFERENCE IN NEUROPSYCHOLOGY. (388570) (1 cr; prereq clinical psychology intern or #) Meier, Thomas

5820. INTERNSHIP IN CLINICAL PSYCHOLOGY. (188571) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience) Staff

5821. HEALTH CARE PSYCHOLOGY CLINIC INTERNSHIP. (088572) (1-4 cr; prereq clinical psychology intern or #) Hafner, Petzel, Quast, staff

5822. MEDICAL CONSULTATION FOR HEALTH CARE PSYCHOLOGY INTERNS. (888573) (1-4 cr; prereq clinical psychology intern or #) Brantner

5823. HEALTH CARE PSYCHOLOGY INTERNSHIP AT THE BOYNTON HEALTH SERVICE. (688574) (1-4 cr; prereq clinical psychology intern or #) Heiberg, Bugge

5824. HEALTH CARE PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD. (488575) (1-4 cr; prereq clinical psychology intern or #) Blackburn

5825. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (288576) (1-4 cr; prereq clinical psychology intern or #) Meier, Thomas

5826. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT. (188577) (1-4 cr; prereq clinical psychology intern) Meier, Thomas

- 5827. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS.** (988578) (1-4 cr; prereq clinical psychology intern or #) Morgan, staff
- 5828. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP.** (788579) (1-4 cr; prereq clinical psychology intern or #) Hanvik, Reed, staff
- 5829. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP.** (188580) (1-4 cr; prereq clinical psychology intern or #) Loper, staff
- 5830. HEALTH CARE PSYCHOLOGY OF THE ELDERLY.** (988581) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #) Anderson
- 5831. BEHAVIORAL MEDICINE.** (788582) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #) Hung
- 5840. CASE SEMINAR IN HEALTH CARE PSYCHOLOGY.** (588583) (2 cr; prereq clinical psychology intern or #) Petzel, Schofield, staff
- 5841. SUPERVISED PSYCHOLOGICAL THERAPY.** (388584) (1-4 cr; prereq #) Staff
- 8800. HEALTH CARE PSYCHOLOGY LABORATORY.** (188585) (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff

SECOND TERM

- 5800. RESEARCH PROJECT IN HEALTH CARE PSYCHOLOGY.** (488642) (1-6 cr) Staff
- 5801. DIRECTED STUDY IN HEALTH CARE PSYCHOLOGY.** (288643) (1-4 cr) Staff
- 5802. SPECIAL TOPICS IN HEALTH CARE PSYCHOLOGY.** (188644) (Cr ar; prereq #) Staff
- 5811. CLERKSHIP IN PSYCHOLOGICAL ASSESSMENT.** (988645) (1-4 cr; prereq grad student in clinical psychology, school psychology or #) Staff
- 5812. CLERKSHIP IN NEUROPSYCHOLOGICAL ASSESSMENT.** (788646) (1-4 cr; prereq #) Meier, Thomas
- 5813. FIELDWORK EXPERIENCE IN HEALTH CARE PSYCHOLOGY.** (588647) (1-4 cr; prereq clinical psychology intern or #: observed by staff) Staff
- 5814. CASE CONFERENCE IN HEALTH CARE PSYCHOLOGY.** (388648) (1 cr; prereq clinical psychology intern or #) Staff
- 5815. CASE CONFERENCE IN NEUROPSYCHOLOGY.** (188649) (1 cr; prereq clinical psychology intern or #) Meier, Thomas
- 5820. INTERNSHIP IN CLINICAL PSYCHOLOGY.** (588650) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience) Staff
- 5821. HEALTH CARE PSYCHOLOGY CLINIC INTERNSHIP.** (388651) (1-4 cr; prereq clinical psychology intern or #) Hafner, Petzel, Quast, staff
- 5822. MEDICAL CONSULTATION FOR HEALTH CARE PSYCHOLOGY INTERNS.** (188652) (1-4 cr; prereq clinical psychology intern or #) Brantner
- 5823. HEALTH CARE PSYCHOLOGY INTERNSHIP AT THE BOYNTON HEALTH SERVICE.** (088653) (1-4 cr; prereq clinical psychology intern or #) Heiberg, Bugge
- 5824. HEALTH CARE PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD.** (888654) (1-4 cr; prereq clinical psychology intern or #) Blackburn
- 5825. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT.** (688655) (1-4 cr; prereq clinical psychology intern) Meier, Thomas
- 5826. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT.** (488656) (1-4 cr; prereq clinical psychology intern) Meier, Thomas
- 5827. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS.** (288657) (1-4 cr; prereq clinical psychology intern or #) Morgan, staff
- 5828. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP.** (188658) (1-4 cr; prereq clinical psychology intern or #) Hanvik, Reed, staff
- 5829. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP.** (988659) (1-4 cr; prereq clinical psychology intern or #) Loper, staff
- 5830. HEALTH CARE PSYCHOLOGY OF THE ELDERLY.** (288660) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #) Anderson
- 5831. BEHAVIORAL MEDICINE.** (188661) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #) Hung
- 5840. CASE SEMINAR IN HEALTH CARE PSYCHOLOGY.** (788663) (2 cr; prereq clinical psychology intern or #) Petzel, Schofield, staff
- 5841. SUPERVISED PSYCHOLOGICAL THERAPY.** (588664) (1-4 cr; prereq #) Staff
- 8800. HEALTH CARE PSYCHOLOGY LABORATORY.** (388665) (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff

Course Descriptions

Hospital and Health Care Administration (PubH)

FIRST TERM

5758. HOSPITAL AND OTHER HEALTH CARE ORGANIZATIONS FINANCIAL STATE ANALYSIS. (790526) (4 cr; prereq 5757; 1800-2100 TTh; HSUnitA 2-520) 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. (890520) (2 cr; prereq 1515-1700 TTh; JacH 2135) Weckwerth, staff

Selected readings in hospital and health care with discussion based on these readings.

R 5773. FINANCIAL MANAGEMENT IN HEALTH SERVICES ORGANIZATIONS. (390903) (4 cr; prereq # 1715-1845 TTh; HSUnitA 2-560) Sattler

5776. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE HEALTH CARE FACILITY. July 12-23 (690521) (15 cr; prereq 5775) Weckwerth, staff

A 12-month program consisting of an on-campus residential session (2 weeks) 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 11-23. (488589) (Cr ar; prereq present employment as administrator of patient care [director of nursing or equivalent], 5778 and #) Weckwerth, staff

A 12-month program of an on-campus (3 weeks) and independent study which begins with a one-week introductory residential session each August. 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. EXTERNAL RELATIONSHIPS AFFECTING THE ROLE AND FUNCTION OF THE MENTAL HEALTH FACILITY—July 11-23. (090760) (15 cr; prereq 5796) 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.

8796. TOPICS IN HEALTH ECONOMICS. (288593) (3 cr; prereq one economics course and #; 0800-1205 TTh; HSUnitA 2-520) Dahl

General principles of health economics are applied to current issues in health such as insurance, licensure, family practice, malpractice, and hospital costs. Models of hospital functioning, area planning, time management, and disease intervention are presented within the framework of economic analysis and used to explain and predict health behavior. Concepts of cost benefit and cost effectiveness analysis and their application to problems in health care delivery.

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

5746. CLERKSHIP. (990525) (3 cr for 10 wks; prereq 5745) Bieter, Dornblaser, staff, clinical preceptors

Survey and solution of management problem within a local health services organization and preparation of formal report.

SECOND TERM

5755. ADMINISTRATIVE RESIDENCY.** (088667) (Cr ar; prereq 5755) Dornblaser, staff, clinical preceptors

Ten months of fieldwork in an approved health care planning or operating organization, rotation through departments, solution of management problems, and special projects. Preparation of a thesis and a formal report.

5775. MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES. (086670) (15 cr; prereq current employment as health care facility administrator or #) Weckwerth, staff

A 12-month program consisting of an on-campus residential session (July 18-30) 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. (488673) (25 cr; prereq 5776) Weckwerth, staff

A 10-month program consisting of an on-campus residential session (August 11-20) and off-campus study that includes three regional 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.

5778. PATIENT CARE MANAGEMENT AND ORGANIZATION WITHIN THE HOSPITAL AND HEALTH CARE ORGANIZATION—July 18-30. (690552) (25 cr; prereq present employment as administrator of patient care [director of nursing or equivalent] or #) Danielsen, Weckwerth, staff

A 12-month program consisting of an on-campus residential session (3 weeks), independent study.

5785. INTERNAL OPERATIONS OF A MENTAL HEALTH FACILITY—July 18-30. (890761) (15 cr; prereq 1 yr experience as mental health facility administrator or #) 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. Principles of management, organizational behavior, personnel, problem solving and decision making, financial management, mental health professionals and paraprofessionals, and mental health programs and services.

Maternal and Child Health (PubH)

FIRST TERM

5614. FIELD EXPERIENCE IN MATERNAL, CHILD HEALTH. (988595) (Cr ar; prereq 5610, 5611 or #)
Field experiences are selected by the student to meet career goals.

5649. TOPICS IN MATERNAL, CHILD HEALTH. (788596) (Cr ar; prereq #)
Selected readings in maternal and child health with discussion based on these readings.

SECOND TERM

5614. FIELD EXPERIENCE: MATERNAL, CHILD HEALTH. (188675) (Cr ar; prereq 5610, 5611 or #)
See First Term.

5649. TOPICS: MATERNAL, CHILD HEALTH. (988676) (Cr ar; prereq #)
See First Term.

Public Health Administration (PubH)

FIRST TERM

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (388598) (Cr ar; prereq student in public health administration)
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. (188599) (Cr ar; prereq student in the public health administration or #) Block
Supervised field experience at a management level in selected community or public health agencies and institutions.

5707. INDEPENDENT STUDY: PUBLIC HEALTH ADMINISTRATION. (490522) (1-12 cr; prereq public health administration student or #)
Independent study under tutorial guidance of selected problems and current issues in public health administration.

5709. MENTAL HEALTH ADMINISTRATION SEMINAR. (290523) (1 cr; restricted to and required of mental health administration training project students) Malban
Mental health services: historical overview, trends, governance, human resources issues, disability groups, treatment controversies, legal aspects, financial considerations, standards of quality assurance.

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (190524) (Cr ar; prereq #) Block
Selected readings with discussion based on these readings.

SECOND TERM

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (788677) (Cr ar; prereq student in public health administration or #)
See First Term.

5704. FIELD EXPERIENCE: PUBLIC HEALTH ADMINISTRATION. (588678) (Cr ar; prereq #) Block
See First Term.

5707. INDEPENDENT STUDY: PUBLIC HEALTH ADMINISTRATION. (490553) (1-12 cr; prereq public health administration student or #)
See First Term.

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (290554) (Cr ar; prereq #) Block
See First Term.

Public Health Nursing (PubH)

FIRST TERM

5530. SYNTHESIS OF ADVANCED PUBLIC HEALTH NURSING I. (190529) (3-4 cr; required of public health nursing grad students nearing completion of program; prereq 8530, 2nd-yr public health nursing student) Aroskar
Synthesis and application of theoretical concepts in public health, public health nursing, and subspecialty area. Practicum in education, administration, or consultation with an appropriate preceptor. Seminar promotes integration of theory and experiential learning.

5554. NURSING ADMINISTRATION SEMINAR IV. (988600) (3 cr; prereq #) Wood
Examination of theories and models relevant to nursing administration using an organizational diagnostic framework. Literature review, discussion, and analysis culminating in the development of individual frameworks for practice. Consultants and practicing professionals participate.

5555. RESEARCH METHODS. (788601) (3 cr; prereq #) Spradley
Presentation, discussion and utilization of research processes and methodologies to serve as the basis for the Plan B research project.

5572. ADULT HEALTH ASSESSMENT—June 15-July 30. (588602) (4 cr; prereq #: 1200-1600 TTh; HSUnitA 2-533) Ostwald, Shepard

Designed to prepare registered nurses to systematically collect and record an adult health data base, including history, physical examination, screening laboratory tests. Problem-oriented system used. Supervised, arranged lab clinic.

5573. HEALTH SCREENING IN PUBLIC HEALTH NURSING. (190880) (1-2 cr) Lentsch

5575. TOPICS IN PUBLIC HEALTH NURSING. (388603) (Cr ar; prereq #) Staff
Topics of interest.

SECOND TERM

5531. SYNTHESIS OF ADVANCED PUBLIC HEALTH NURSING II. (488611) (3-4 cr; required of public health nursing grad students nearing completion of program; prereq 5530, 2nd-yr public health nursing students) Aroskar, Lentsch
See 5530 First Term.

5575. TOPICS: PUBLIC HEALTH NURSING. (388679) (Cr ar; prereq #) Staff
See First Term.

Public Health Nutrition (PubH)

FIRST TERM

5600. FIELD COURSE I: PUBLIC HEALTH NUTRITION. (188604) (Cr ar; prereq public health nutrition student) Splett, Staff

Placement in approved agency with opportunity for experience in nutritional aspects of public health programs.

5601. SEMINAR: PUBLIC HEALTH NUTRITION. (088605) (Cr ar; prereq public health nutrition student) Brown, Staff

5609. TOPICS IN PUBLIC HEALTH NUTRITION. (888606) (Cr ar; prereq public health nutrition student or #) Brown, Staff
Independent study.

SECOND TERM

5600. FIELD COURSE IN PUBLIC HEALTH NUTRITION. (788680) (Cr ar; prereq #) Splett
See First Term.

5601. SEMINAR: PUBLIC HEALTH NUTRITION. (588681) (Cr ar; prereq #) Brown, Staff

5603. NUTRITIONAL ASSESSMENT. (190555) (2 cr; prereq RD, eligibility as RD or #; 1325-1415 MTh; HSUnitA 2-580) Brown

Theoretical base and application of nutritional assessment methods to communities and individuals.

5609. TOPICS: PUBLIC HEALTH NUTRITION. (388682) (Cr ar; prereq #) Brown, Staff
See First Term.

Veterinary Public Health (PubH)

FIRST TERM

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (590530) (Cr ar; prereq DVM or #) Staff
Research in the relationship of animal health to human health.

SECOND TERM

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (088684) (Cr ar; prereq DVM or #) Staff
See First Term.

College of Home Economics

Undergraduate and graduate majors in the various fields of the College of Home Economics will find a variety of courses offered by the Departments of Design, Family Social Science, Food Science and Nutrition, and Textiles and Clothing as well as by the Center for Youth Development and Research. Many of the courses will interest secondary school home economics teachers for licensure purposes. Further information may be obtained by writing Gertrude Strinden, College of Home Economics, University of Minnesota, St. Paul, Minnesota 55108. (See also Home Economics Education and Vocational and Technical Education listings under the College of Education.)

Design (Dsgn)

FIRST TERM

1501. INTRODUCTION TO DESIGN. (085719) (3 cr; 0800-0850 MTWThF; McNH 33) Miller
Awareness of design in the near environment.

1521. DESIGN PROCESS: COLOR. (185721) (4 cr; limited to 24 students; 0905-1100 MTWThF; McNH 262)
Color concepts and their applications to design.

1523. DESIGN PROCESS: VISUAL PRESENTATION. (885723) (4 cr; limited to 24 students; 1115-1310 MTWThF; McNH 258)
Development of basic drawing skills for the designer.

3580. INTERNSHIP IN HOUSING. (185735) (Cr ar [max 15]; offered S-N only; prereq completion of one-half professional sequence and #)
International, intercultural or other directed work in the community which offers a variety of housing experiences.

5531. SURFACE FABRIC DESIGN III: PHOTOS AND FABRICS—June 28-July 9. (290005) (6 cr [summer only]; prereq #; materials fee; 0905-1600 MTWThF; McNH B9) Abell, Phaedrus
Alternative photographic processes; application of imagery to textiles as surface design.

5585. PROBLEMS IN DESIGN: GENERAL—June 14-25. (190006) (4 cr; prereq # or Δ; 0905-1500 MTWThF; McNH 69) Shoemaker

5586. PROBLEMS IN DESIGN: HOUSING AND/OR INTERIORS—June 14-25. (990007) (4 cr; prereq 1552 or equiv; 0905-1600 MTWThF; McNH 216) Nagle
Current housing problems caused by changing public policy, scarce financial resources, and the energy crisis.

8585. PROBLEMS: DESIGN. (185749) (1-5 cr; prereq #) Staff

8586-8587. PROBLEMS: DESIGN. (385751) (085753) (1-5 cr prereq #; hrs ar) Staff

SECOND TERM

5518. HISTORY OF COSTUME: 19TH AND 20TH CENTURY. (790932) (4 cr; prereq 3517 or #; 0905-1100 MTWThF; McNH 212) Shenoi
Emphasis on American costume. Study of historic costumes from the Department of Design's costume collection.

Family Social Science (FSoS)

FIRST TERM

3500. CONSUMER AND THE MARKET SYSTEM. (989987) (3 cr; prereq Soc 1001, Psy 1001, AgEc 1030...3260 recommended; 0930-1100 MWF; McNH 198) Gage
Analysis of interaction of the family and marketing systems; consumer problems resulting from that interaction.

5001. HUMAN SEXUAL BEHAVIOR. (285760) (4 cr; prereq 15 cr in psychology or sociology; 0800-1000 TTh; AndH 350) Stein-Schmidt
Nature of sexual functions, sexual development, ethics and attitudes, research problems.

5025. PARENTING. (789988) (4 cr; prereq 5200 or 5202, CPsy 1301; 0900-1130 MW; BioSci 70) Budd
Parenting methods, the child's development from infancy through adolescence. Designed to help students identify differing parenting techniques, develop their own parenting approach, and conduct parenting classes.

Course Descriptions

PSY 5200. FAMILY RELATIONSHIPS. (185761) (5 cr, §Soc 5501; prereq Psy 1001 or equiv, Soc 1001 or equiv; 1400-1600 MW; BioSci 18) de Mik

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.

PSY 5202. INTRODUCTION TO SOCIAL PSYCHOLOGY WITH APPLICATIONS TO THE FAMILY. (985762) (5 cr, §Psy 5201, §Soc 5201, §PsyF 5170; prereq Psy 1001 and introductory sociology or #; 0905-0955 MTWThF; McNH 197) Rosenblatt

Introduction to social psychology with applications to courtship, marriage, and the family. Social interaction, communication, social effects, individual functioning, family as small group, social influence, social ecology, person perception, social motivation, interpersonal attraction, and other topics.

PSY 5218. THE PRINCIPLES OF FAMILY FINANCIAL MANAGEMENT—June 21-July 2. (xxxxxx) (3 cr; 0905-1205 MTWThF; BioSci 64) Guadagno

Family financial resource management; emphasis on choices faced in family financial planning: credit, savings, investments. Social Security, life/property auto/casualty insurance, taxation, estate planning, and leisure needs. Economic coping and suggestions for strengthening the family's stock of resources in periods of inflation.

PSY 5230. INDEPENDENT STUDY. (785763) (Cr ar [max 4 cr]) Staff

PSY 5240. SPECIAL TOPICS IN FAMILY SOCIAL SCIENCE: INTRODUCTION TO FAMILY THERAPY. (885771) (2-6 cr per qtr [max 16 cr]; prereq set by instructor; 1300-1600 Th; McNH 197) Maddock

Sec 1, Introduction to Family Therapy.

Therapy and techniques for counseling families from a systems perspective; emphasis on basic theories and techniques for evaluating family interaction and dysfunction. Designed for those interested in improving skills in family therapy and home economics educators interested in introduction to field. This offering for 3 credits.

PSY 5260. DYNAMICS OF FAMILY DECISION MAKING—June 14-25. (589989) (3 cr; prereq 3260 or #; 1300-1600 MTWThF; BioSci 64) Hogan

Conceptual models for decision making and resource management. Review and critique of current research and literature.

PSY 5301. THE FAMILY AND ENERGY ISSUES. (989990) (3 cr; prereq 5 cr in FSpS or #; 1300-1430 TWThF; McNH 180) Pedersen

Analysis of family behavior as it relates to energy use, the impact of scarce resources on the quality of family functioning, future family energy issues.

PSY 8251. PROBLEMS: FAMILY SOCIAL SCIENCE. (385779) (1-5 cr; prereq #; hrs ar) Staff

PSY 8252. PROBLEMS: FAMILY SOCIAL SCIENCE. (585781) (4 cr; prereq #; hrs ar) Staff

SECOND TERM

PSY 5201. FAMILY IN AMERICAN SOCIAL STRUCTURE. (887763) (4 cr; prereq 5200, 25 cr in social science courses exclusive of economics, or #; 1400-1530 TTh; McNH 179) Berry

The family as a social institution interrelated with the economic, political, and other social institutions. Sources of change in the family and effects of other subsystems or social structures on the family viewed within the framework of sociological theories useful in understanding the process of change.

PSY 5230. INDEPENDENT STUDY. (687764) (Cr ar [max 4 cr]) Staff

PSY 8251. PROBLEMS: FAMILY SOCIAL SCIENCE. (487765) (1-5 cr; prereq #; hrs ar) Staff

PSY 8252. PROBLEMS: FAMILY SOCIAL SCIENCE. (287766) (4 cr; prereq #; hrs ar) Staff

Food Science and Nutrition (FScN)

FIRST TERM

PSY 3600. PRINCIPLES OF NUTRITION. (385488) (4 cr; limited to 25 students; prereq Biol 1011 and Chem 1004 or equiv; 0800-0955 MWF, 0905-0955 TTh; FScN 15)

The fundamental principles of nutrition, including the essentiality and metabolism of nutrients and results of nutritional deficiencies or excesses. Presented in the context of personal, national and global aspects of human nutrition.

PSY 3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE. (185489) (5 cr; prereq 3760, sr in hospitality and food service management or #; hrs ar) Staff

Planned management experience in a selected food service or hospitality business, including understanding of the operation, planning, purchasing, personnel management, financial management, supervision, and related functions.

PSY 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (585490) (1-5 cr [may be repeated for cr]; prereq Δ ; hrs ar) Staff

Individual laboratory or library research in some area related to food chemistry, food processing, nutrition, food service, or hospitality management.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (385491) (1-5 cr; prereq sr, Δ; hrs ar) Staff
Laboratory or library research on problems related to the microbiology of dairy and food products.

5404. CURRENT ISSUES IN FOOD AND NUTRITION—June 28-July 9. (185492) (3 cr; limited to 25 students; prereq 15 cr in food science and nutrition or #: 0905-1205 MTWThF; ABLMS 125) 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. (085493) (1-5 cr; prereq #: hrs ar) Staff
Independent study and written reports.

8621. INDEPENDENT STUDY: NUTRITION. (885494) (1-9 cr; prereq Δ; hrs ar) Staff
Independent study and written reports.

SECOND TERM

1102. TECHNOLOGY OF FOOD PROCESSING. (987141) (4 cr; prereq high school chemistry and biology; 0800-0955 MWF; 0905-0955 TTh; ABLMS 125) Schellhaass
Introduction to the technology of processing and distributing foods with reference to the prevention of biological, physical, and chemical deterioration. Changes in food composition, microbiological safety, food laws and regulations, technologies of the major food processes such as canning, freezing, drying, and cereal and oilseed processing.

3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE. (787142) (5 cr; prereq 3760, sr in hospitality and food service management or #: hrs ar) Staff
See First Term.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (587143) (1-5 cr [may be repeated for cr]; prereq Δ; hrs ar) Staff
See First Term.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (387144) (1-5 cr; prereq sr, Δ; hrs ar) Staff
See First Term.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (187145) (1-5 cr; prereq Δ; hrs ar) Staff
See First Term.

8621. INDEPENDENT STUDY: NUTRITION. (087146) (1-9 cr; prereq #: hrs ar) Staff
See First Term.

Textiles and Clothing (TexC)

FIRST TERM

3604. FLAT PATTERN DESIGN—June 21-July 16. (189994) (3 cr; limited to 20 students; prereq soph, 1603, 3662 or Dsgn 1525; 0900-1130 MTWThF; McNH 475) Hethorn
Principles of flat pattern design: drafting and advance pattern development.

5003. COOPERATIVE EDUCATION PROGRAM. (185783) (4-8 cr. 5003-5004†; not for grad cr; S-N only; prereq sr, †5004, #, minimum GPA 2.50; hrs ar) Grindereg
A planned work experience relating activity in business, industry, or government to the student's area of study. Written consent of faculty supervisor prior to registration is required.

5004. COOPERATIVE EDUCATION INTEGRATIVE PAPER. (085784) (4 cr. 5003-5004†; not for grad cr; A-N only; prereq sr, †5003, #: hrs ar) Grindereg
Paper analyzing a problem encountered in the planned work experience in terms of the student's area of study.

5680. SPECIAL TOPICS IN TEXTILES AND CLOTHING—July 12-16. (590835) (2 cr; limited to 20 students; prereq Δ; 0830-1200, 1300-1500 MTWThF; McNH 475) Okeke
Design laboratory with Uche Okeke, visiting artist from Nigeria, who will draw upon African-based materials as inspiration for costume designers, textile designers, fiber artists, metalsmiths, art historians.

5685. INTERNATIONAL DEVELOPMENTS IN TEXTILES AND CLOTHING—June 15-July 9. (089995) (4 cr; limited to 20 students; prereq #: 1200-1430 TTh; McNH 198) Grindereg
Comparison of production, distribution, and consumption in the United States and Europe. Effects of world trade on supply and distribution.

8621. READINGS IN TEXTILES. (185789) (1-3 cr; prereq #: hrs ar) R Johnson
Independent reading useful for individual programs but not available in other course offerings.

8624. CHEMICAL METROLOGY. (889996) (5 cr; prereq #: 0830-1200 MF; McNH 363) R Johnson
Methodology and instrumentation for measurement of chemical properties of textile materials; development of perspective for standard methods; new method development.

Course Descriptions

8625. PROBLEMS; TEXTILES AND CLOTHING. (285791) (3-9 cr [max 9 cr]; prereq #; hrs ar) R Johnson
Independent study in the physical behavioral aspects of textiles and/or clothing.

8661. READINGS IN CLOTHING. (185792) (1-3 cr; prereq minimum 12 cr in TexC courses, #: hrs ar) Grindereing
Independent study; survey of literature in selected areas related to human behavioral aspects of clothing and textiles.
Written reports.

8663. PROBLEMS; CLOTHING AND TEXTILES. (985793) (3-9 cr [max 9 cr]; prereq #; hrs ar) Grindereing
Independent study in human behavioral aspects of clothing or textiles.

SECOND TERM

R 5623. THE DYEING MEDIUM AND COLOR. (689997) (3 cr; limited to 20 students; prereq 3621, Dsgn 1521 or #; 1200-1630 TTh; SnH 128) Carter
Principles of dye selection for specific fibers; precision dyeing and perceived color relationships, expanding the utility of this medium.

5626. RECYCLING PROCESSES. (489998) (3 cr; prereq 5621; 0945-1200 MF; McNH 363) R Johnson
Principles and practices in recovery of initial appearance and properties of textile products; application to restoration of historic textile materials; water pollution by effluent from wet cleaning processes.

8621. READINGS IN TEXTILES. (587806) (1-3 cr; prereq #; hrs ar) R Johnson
Independent reading useful for individual programs but not available in other course offerings.

8625. PROBLEMS; TEXTILES AND CLOTHING. (187808) (3-9 cr [max 9 cr]; prereq #; hrs ar) R Johnson
Independent study in the physical behavioral aspects of textiles and/or clothing.

8661. READINGS IN CLOTHING. (387810) (1-3 cr; prereq minimum 12 cr in TexC courses, #: hrs ar) Grindereing
Independent study; survey of literature in selected areas related to human behavioral aspects of clothing and textiles.
Written reports.

8663. PROBLEMS; CLOTHING AND TEXTILES. (087812) (3-9 cr [max 9 cr]; prereq #; hrs ar) Grindereing
Independent study in human behavioral aspects of clothing or textiles.

Center for Youth Development and Research (YoSt)

FIRST TERM

5120. INDEPENDENT STUDY IN YOUTH STUDIES. (585795) (Cr ar [max 12 cr per qtr]; prereq #; hrs ar) Seltzer, staff
Independent reading and/or research under faculty supervision.

SECOND TERM

5120. INDEPENDENT STUDY IN YOUTH STUDIES. (787819) (Cr ar [max 12 cr per qtr]; prereq #; hrs ar) Seltzer, staff
See First Term.

College of Liberal Arts

College of Liberal Arts courses primarily seek to provide knowledge and understanding of the world and of the social and intellectual problems of modern life through exploration of both historical and contemporary subject matter. Although many courses are designed for specialized or professional interests, almost all contribute to general education and broad knowledge. Courses are open not only to CLA degree candidates but also to students enrolled in other colleges inside and outside of the University. They serve students enrolled for a variety of purposes: progress toward graduate or undergraduate degrees, personal or professional enrichment, and many others.

CLA summer courses offer a wide selection from the regular curriculum. In addition, many courses from business, medical, scientific, agricultural, and other divisions of the University are open to CLA summer students who have completed the necessary prerequisites.

Summer session registration does not of itself constitute admission to CLA or to the Graduate School; students working toward degrees or wishing to attend during the regular academic year must file standard admission applications.

Students should be aware that credit, cancel-add, and other procedures in summer sometimes differ from those of the regular year. Problems or questions may be brought to the CLA summer session advising office, B18 Johnston Hall.

Afro-American Studies (Afro)

FIRST TERM

3501. AFRICAN SOCIETIES AND CIVILIZATIONS. (190188) (4 cr, §Anth 3241; 1015-1215 MTWTh; BlegH 360) Hansen
Ethnographic survey of Africa. Social, economic, political, and religious systems, and art before and after colonial contact. Contemporary problems. Significance of African studies to theory and method in anthropology.

American Indian Studies (AmIn)

SECOND TERM

3116. AMERICAN INDIAN LITERATURE. (490195) (4 cr; 1115-1205 MTWTh; BlegH 245) Vizenor
Comparative studies of oral traditions and modern tribal literature. Meets with Amst 3920.

American Studies (AmSt)

FIRST TERM

R 1102. CONSCIOUSNESS AND SOCIAL ARRANGEMENTS. (290814) (4 cr; limited to 49 students; 0800-0850 MTWThF; BlegH 155) Staff
Critical analysis of American culture.

3970. DIRECTED STUDIES. (785911) (1-15 cr; prereq #, Δ) Staff

R 8202. INTRODUCTION TO AMERICAN STUDIES. (190815) (4 cr; limited to 12 students; prereq MA candidate; 1325-1520 TF; SocSci 628) Delattre

8970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (885916) (Cr and hrs ar; prereq consent of program chair) Staff

Course Descriptions

SECOND TERM

1103. AMERICAN LIFE: ENERGY AND CULTURE. (990816) (4 cr; limited to 49 students; 0800-0850 MTWThF; BlegH 155) Staff
Critical analysis of American culture.

3920. TOPICS: ORAL AND TRIBAL LITERATURE. (790817) (4 cr; 1115-1205 MTWTh; BlegH 245) Vizenor
Meets with Amin 3116.

3970. DIRECTED STUDIES. (287833) (1-15 cr; prereq #, Δ) Staff

8970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (387838) (Cr and hrs ar; prereq consent of program chair) Staff

Ancient Near Eastern and Jewish Studies— See Near and Middle Eastern Studies

Anthropology (Anth)

FIRST TERM

1101. HUMAN ORIGINS. (5 cr, §1101H; lect 0800-0850 MTWF; FordH 285) Johnson
World prehistory as investigated by archaeologists; methods and concepts used by archaeologists in studying of prehistoric human biological and cultural development.

Rec 1, (590205) 0905-0955 Th, FordH 20

Rec 2, (190207) 0905-0955 Th, FordH 40

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (5 cr, §1115, §5102; lect 0905-0955 MTWF; FordH 285) Spencer

Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world.

Rec 1, (485921) 0905-0955 Th, FordH 15

Rec 2, (285922) 0905-0955 Th, FordH 60

3211. INDIANS OF NORTH AMERICA. (990198) (4 cr; prereq 1102 or #: 1115-1205 MTWThF; FordH 285) Spencer
Aboriginal cultures of native North America. Effects of culture contact. Contemporary problems of Indian reservations and communities.

3376. FIELD RESEARCH IN ARCHAEOLOGY. (785925) (10 cr; prereq #) Spector

Archaeological field excavation, survey, and research in prehistoric sites in Minnesota. Excavation techniques, recordation analysis, and interpretation of archaeological materials.

3970. DIRECTED STUDIES. (385927) (Cr and hrs ar; prereq #) Staff

5117. ENERGY, RESOURCE USE, AND SYSTEM CHANGE. (790199) (4 cr; 0905-0955 MTWThF; FordH 55) Gerlach
Social-cultural system factors in the development, production, control, distribution, and use of energy, water, key resources, and food in the United States and other societies. Social-cultural evolution, interaction among different societies; growth and no-growth issues; emerging global interdependence.

5151. CULTURAL CHANGE AND DEVELOPMENT. (490200) (4 cr; prereq 1102 or 5102 or #: 1010-1100 MTWThF; FordH 130) Miller

Processes of cultural change; invention, diffusion, and acculturation. Effects of colonialism, urbanization, and modernization. Analysis of developing societies. Applied anthropology.

8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (385930) (Cr and hrs ar; prereq #) Staff

8950. DIRECTED STUDIES. (185931) (Cr and hrs ar; prereq grad student, #) Staff

SECOND TERM

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (5 cr, §1115; lect 0905-0955 MTWF; FordH 55) Ingham

See First Term.

Rec 1, (487846) 0905-0955 Th, FordH 15

Rec 2, (987849) 0905-0955 Th, FordH 20

3201. METHOD AND THEORY IN CULTURAL AND SOCIAL ANTHROPOLOGY. (090208) (5 cr; prereq 1102 or #: 0905-0955 MTWThF; FordH 285) Penn

Description and explanation in anthropology. Role of theory in defining problems. Subjective and objective approaches to fieldwork.

3292. PEOPLES AND CULTURES: MELANESIA. (190210) (4 cr; prereq 1102 or #: 1010-1100 MTWThF; FordH 285) Ogan

Life in the South Pacific. Comparison of cultures in Melanesia. Impact of Western culture on island societies. Place of Oceania in anthropological thought.

3970. DIRECTED STUDIES. (087857) (Cr and hrs ar; prereq #) Staff

5141. CULTURE AND PERSONALITY. (887858) (4 cr; prereq 1102 or # [waived for majors in public health, nursing, psychology, sociology, and social work]; 1115-1205 MTWThF; FordH 285) Rowe

Role of culture in formation of personality. Problems of individual adjustments to demands of culture. Psychological approach to culture.

8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (087860) (Cr and hrs ar; prereq #) Staff

8950. ADVANCED RESEARCH. (887861) (Cr and hrs ar; prereq #) Staff

Arabic—See Near and Middle Eastern Studies

Art History (ArH)

FIRST TERM

3008. HISTORY OF ANCIENT ART. (885933) (4 cr; limited to 55 students; 1010-1100 MTWThF; JonesH 207B) McNally

Architecture, sculpture, and painting of selected early cultures; stress on those contributing to the development of Western art.

3011. HISTORY OF RENAISSANCE AND BAROQUE ART. (290764) (4 cr; limited to 144 students; 0905-0955 MTWThF; JonesH 207A) Canedy

The major monuments in architecture, sculpture, and painting from the early 14th century through the baroque period.

3013. INTRODUCTION TO FAR EASTERN ART. (690244) (4 cr, §1016; limited to 60 students; 1220-1310 MTWThF; JonesH 207B) Poor

Major themes of Far Eastern Art. The arts of China and Japan.

5122. PRINCIPLES OF HISTORICAL ARCHAEOLOGY. (xxxxxx) (5 cr; limited to 55 students; 1220-1310 MTWThF; JonesH 207A) McNally

Theoretical information and practical experience involving registration of monuments, excavation, conservation, and restoration. Local resources used.

5307. 15TH-CENTURY ITALIAN ARCHITECTURE, SCULPTURE, AND PAINTING. (490245) (4 cr; prereq 3011 or #: limited to 50 students; 1115-1205 MTWThF; JonesH 207A) Canedy

Early Renaissance art from Brunelleschi to Bellini; development of the "repertory" of monument types that survived to modern times.

5535. ART IN THE UNITED STATES. (290246) (5 cr; prereq 4 cr of art history or #: limited to 50 students; 1010-1100 MTWThF; JonesH 207A) Marling

Painting and sculpture in the United States. Key works and artists from early settlement to early 20th century.

5970. DIRECTED STUDIES. (190247) (1-5 cr; prereq sr, #) Staff

Guided individual reading or study.

8995-8996-8997. MUSEOLOGY II, III, IV. (185937) (985938) (785939) (5 cr; required for MA candidates in museology; prereq Δ) Staff

Apprenticeship program in museum practices. Four hours a day internship activity in various departments of museums participating in the program—education, conservation, curatorial.

SECOND TERM

1016. INTRODUCTION TO ASIAN ART. (990248) (4 cr, §3013; limited to 60 students; 1115-1205 MTWThF; JonesH 207B) Asher

Major themes of Indian and Far Eastern art.

3009. HISTORY OF MEDIEVAL ART. (687862) (4 cr; limited to 55 students; 0905-0955 MTWThF; JonesH 207B) Steyaert

Medieval architecture, painting, and sculpture from early Christian to Gothic period.

3465. MASTER PAINTERS OF THE 19TH CENTURY. (790249) (4 cr; limited to 55 students; 1220-1310 MTWThF; JonesH 207A) Waldfogel

European artists selected for their originality, aesthetic excellence, or subsequent influence: Goya, Constable, Cezanne, and Van Gogh.

Course Descriptions

- R 3935. ARTS OF AFRICA, OCEANIA, AND NORTH AMERICA.** (990251) (4 cr; limited to 60 students; 1010-1100 MTWThF; JonesH 207B) Smith
Traditional arts and crafts. Method, theory, and cross-cultural analysis.
- R 5443. 19TH-CENTURY GERMAN PAINTING.** (790252) (5 cr; prereq one 3xxx or 5xxx course or grad student or #; limited to 55 students; 0905-0955 MTWThF; JonesH 207A) Waldfoegel
Major movements, groups, and artists in the Germanic lands; the Nazarenes, Biedermeier, the Leibl circle, Friedrich, Menzel, Marées, Böcklin, Liebermann, Corinth.
- R 5970. DIRECTED STUDIES.** (587868) (1-5 cr; prereq #) Staff
See First Term.
- R 5991. INTRODUCTION TO MUSEOLOGY.** (190765) (4 cr; prereq sr. #; limited to 25 students; 1220-1310 MTWThF; JonesH 1) Smith
An intensive survey of the literature in museum studies and an investigation of local museums, arts centers, and historical societies.
- 8995-8996-8997. MUSEOLOGY II, III, IV.** (587871) (787870) (387869) (5 cr; required for MA candidates in museology; prereq Δ) Staff
See First Term.

Arts, Studio (Arts)

The Department of Studio Arts covers part of the cost of expendable materials by requiring students in most of its courses to purchase fee cards from the bursar by the end of the second week of classes.

FIRST TERM

- R 1101. DRAWING I.** (185940) (4 cr; limited to 28 students; 0800-0955 MTWThF; ArtB 140) Gray
Introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums.
- R 1102. DRAWING II.** (585943) (4 cr; limited to 28 students; prereq 1101; 1010-1205 MTWThF; ArtB 140) Somberg
Work from life and nature; introduction to color and pictorial structure.
- R 1104. COLOR.** (385944) (4 cr; limited to 25 students; prereq 1101; 1010-1205 MTWThF; ArtB 160) Feinberg
Color and its visual implications
- R 1105. BEGINNING PAINTING.** (185945) (4 cr; limited to 15 students; 0800-0955 MTWThF; ArtB 151) Hendler
Contemporary and traditional surfaces in oil and acrylic media. Meets with 3120.
- R 1301. SCULPTURE.** (085946) (4 cr; limited to 22 students; 1010-1205 MTWThF; ArtB 50) Baldwin
Study of structure with emphasis on form and space. Direct construction in metal.
- R 1401. INTRODUCTION TO STUDIO ARTS.** (885947) (4 cr; limited to 118 students; 1010-1205 MTWThF; Law 20) Hendler
Concepts of visual art making in their contemporary and historical context. The concerns, media, and environment of the practicing artist. Offers broad aesthetic foundation for entering beginning courses in any medium offered by the department and better understanding of the creative process, visual expression, and criteria. Lectures, demonstrations, and discussions. Strongly recommended it precede or be taken concurrently with 1xxx courses. It is a prerequisite for all 3xxx courses.
- R 1510. PRINTMAKING: INTAGLIO.** (485949) (4 cr per term [max 8 cr]; limited to 25 students; 0800-0955 MTWThF; ArtB 170) Myers
Intaglio printing processes. Intensive study of etching, engraving, and collagraphic techniques in their creative context.
- R 1520. PRINTMAKING: LITHOGRAPHY.** (390254) (4 cr per qtr [max 8 cr]; limited to 25 students; 1010-1205 MTWThF; ArtB 176) Krepps
Planographic printing processes from stones and metal plates. Image making, printing, and presentation in a creative context.
- R 1701. PHOTO MEDIUM.** (4 cr; each section limited to 20 students)
The photographic medium and its background and meaning today. Lectures on contemporary and historical use of photography. Methods of use of camera, film development, and enlarging. Emphasis on the creative process.
Sec 1, (685951) 0800-0955 MTWThF, ArtB 131, Hallman
Sec 2, (690762) 1010-1205 MTWThF, ArtB 131, Hallman
- R 1811. CERAMICS.** (190255) (4 cr per qtr [max 8 cr]; limited to 28 students; 0800-0955 MTWThF; ArtB 10) Haord
Introduction to hand-building techniques for individual creative expression.
- R 3110. DRAWING.** (285953) (4 cr per qtr [max 12 cr]; limited to 18 students; prereq 1102, 1401; 1010-1205 MTWThF; ArtB 151) Somberg
Drawing from model, still life, nature. Principles of anatomy. Meets with 5110.
- R 3120. PAINTING.** (185954) (4 cr per qtr [max 12 cr]; limited to 10 students; prereq 1105, 1401, and 4 cr of 3110 or #; 0800-0955 MTWThF; ArtB 151) Hendler
Media and problems in painting; individual projects and instruction. Meets with 1105.

R 3510. PRINTMAKING: INTAGLIO. (790297) (4 cr per qtr [max 12 cr]; limited to 15 students; prereq 1401, 4 cr of 1510 or #: 1010-1205 MTWThF; ArtB 170) Myers
Intaglio techniques on metal and collagraph. Embossing.

R 3810. CERAMIC DESIGN. (385958) (4 cr per qtr [max 12 cr]; limited to 20 students; prereq 1811, 1812, 1401 or #; 1010-1205 MTWThF; ArtB 10) Hoard
Emphasis on wheel throwing. Advanced design problems and introduction to glaze and clay experimentation. Development of personal expression in ceramic medium. Meets with 5810.

3970. DIRECTED STUDY. (185959) (1-5 cr per qtr [max 8 cr]; prereq 24 cr in studio arts and #)

3980. DIRECTED INSTRUCTION. (585960) (1-5 cr per qtr [max 8 cr]; prereq #)
Students assist in teaching a course they have completed.

R 5110. DRAWING. (385961) (4 cr per qtr [max 16 cr]; limited to 10 students; prereq 12 cr of 3110 or #: 1010-1205 MTWThF; ArtB 151) Somberg
Drawing in all mediums from life. Meets with 3110.

R 5510. PRINTMAKING: INTAGLIO. (190305) (4 cr per qtr [max 16 cr]; prereq 12 cr of 3510 or #; 1010-1205 MTWThF; ArtB 170) Myers
Color processes, intaglio and combined techniques.

R 5810. CERAMICS. (885964) (4 cr per qtr [max 16 cr]; limited to 5 students; prereq 12 cr of 3810 or #; 1010-1205 MTWThF; ArtB 10) Hoard
Aesthetic awareness and development; techniques and materials. Meets with 3810.

5970. DIRECTED STUDY. (685965) (1-5 cr per qtr [max 12 cr]; prereq 24 cr in studio arts and #)

8110. DRAWING. (485966) (3 cr per qtr [max 9 cr]; prereq #) Myers, Hendler, Somberg, Gray, Feinberg

8120. PAINTING. (285967) (3 cr per qtr [max 18 cr]; prereq #) Myers, Hendler, Somberg, Gray, Feinberg

8510. PRINTMAKING. (185968) (3 cr per qtr [max 27 cr]; prereq #) Bethke

8710. PHOTOGRAPHY. (985969) (3 cr per qtr [max 18 cr]; prereq #) Hallman

8810. CERAMICS. (285970) (3 cr per qtr [max 18 cr]; prereq #) Hoard

SECOND TERM

R 1101. DRAWING I. (4 cr; each section limited to 28 students)
See First Term.

Sec 1, (387872) 0800-0955 MTWThF, ArtB 141, Roode
Sec 2, (890310) 1010-1205 MTWThF, ArtB 150, Rowan

R 1102. DRAWING II. (187873) (4 cr; limited to 28 students; prereq 1101; 0800-0955 MTWThF; ArtB 140) Cowette
See First Term.

R 1302. SCULPTURE. (087874) (4 cr; limited to 22 students; 1010-1205 MTWThF; ArtB 65, 90) Lucey
Study of structure with emphasis on form and space. Clay, plaster, wood. Mold making and casting.

R 1530. PRINTMAKING: RELIEF. (490763) (4 cr per qtr [max 8 cr]; limited to 25 students; 0800-0955 MTWThF; ArtB 175) Bethke
Traditional and contemporary relief printing media. Lino, woodcut, cardboard, metal, and letterpress techniques, and their aesthetic applications.

R 1811. CERAMICS. (490312) (4 cr; limited to 28 students; 1010-1205 MTWThF; ArtB 10) Lane
See First Term.

R 3110. DRAWING. (887889) (4 cr per qtr [max 12 cr]; limited to 18 students; prereq 1102, 1401; 1010-1205 MTWThF; ArtB 140) Roode
See First Term. Meets with 5110.

R 3120. PAINTING. (887892) (4 cr per qtr [max 12 cr]; limited to 15 students; prereq 1105, 1401, and 4 cr of 3110 or #; 1010-1205 MTWThF; ArtB 151) Cowette
See First Term. Meets with 5120.

R 3160. WATERCOLOR. (590317) (4 cr per qtr [max 12 cr]; limited to 15 students; prereq 1101, 1104, 1401 or #: 0800-0955 MTWThF; ArtB 150) Rowan
Transparent watercolor, gouache, casein, tempera. Figure, still life, landscape, abstract design. Meets with 5160.

R 3530. PRINTMAKING: RELIEF. (190319) (4 cr per qtr [max 12 cr]; prereq 1401, 4 cr of 1530 or #: 1010-1205 MTWThF; ArtB 175) Bethke
Relief printing techniques; emphasis on color processes. Meets with 5530.

R 3710. PHOTOGRAPHY. (590320) (4 cr per qtr [max 12 cr]; limited to 20 students; prereq 1401, 1701 or Jour 3301 or #; 1010-1205 MTWThF; ArtB 131) Henkel
Photographic controls and processes. Related photosensitive media. Creative processes suited to individual interests.

Course Descriptions

- 3970. DIRECTED STUDY.** (187901) (1-5 cr per qtr [max 8 cr]; prereq 24 cr in studio arts and #)
- 3980. DIRECTED INSTRUCTION.** (787903) (1-5 cr per qtr [max 8 cr]; prereq #)
See First Term.
- # 5110. DRAWING.** (187906) (4 cr per qtr [max 16 cr]; limited to 5 students; prereq 12 cr of 3110 or #; 1010-1205 MTWThF; ArtB 140) Roode
See First Term. Meets with 3110.
- # 5120. PAINTING.** (087907) (4 cr per qtr [max 16 cr]; limited to 10 students; prereq 12 cr of 3120 or #; 1010-1205 MTWThF; ArtB 151) Cowette
Various media. Individual problems. Meets with 3120.
- # 5160. WATERCOLOR.** (390321) (4 cr per qtr [max 16 cr]; limited to 15 students; prereq 12 cr of 3160 or #; 0800-0955 MTWThF; ArtB 150) Rowan
Advanced watercolor techniques, aesthetic directions. Individual concepts and development of sensibilities. Meets with 3160.
- # 5530. PRINTMAKING: RELIEF.** (090323) (4 cr per qtr [max 16 cr]; limited to 5 students; prereq 12 cr of 3530 or #; 1010-1205 MTWThF; ArtB 175) Bethke
Relief processes. Letterpress and combined techniques. Meets with 3530.
- 5970. DIRECTED STUDY.** (887911) (1-5 cr per qtr [max 12 cr]; prereq 24 cr in studio arts and #)
- 8110. DRAWING.** (687912) (3 cr per qtr [max 9 cr]; prereq #) Roode, Cowette
- 8120. PAINTING.** (487913) (3 cr per qtr [max 18 cr]; prereq #) Roode, Cowette
- 8510. PRINTMAKING.** (287914) (3 cr per qtr [max 27 cr]; prereq #) Bethke
- 8710. PHOTOGRAPHY.** (187915) (3 cr per qtr [max 18 cr]; prereq #) Henkel
- 8810. CERAMICS.** (987916) (3 cr per qtr [max 18 cr]; prereq #) Lane

Chinese—See East Asian Languages

Classics

*Classics (Clas)*¹

FIRST TERM

- 1042. GREEK AND ROMAN MYTHOLOGY.** (990928) (4 cr; 0905-0955 MTWTh; FolH 308) Erickson
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.** (388519) (2 cr, §3045; prereq # 1048, #3048; orientation 0800-0850 T, June 15...or 1220-1310 W, June 16...or 1325-1415 Th, June 17; independent and optional assistance labs ar; FolH 308)
- 1048. TECHNICAL TERMS OF THE MEDICAL AND BIOLOGICAL SCIENCES.** (788520) (2 cr, §3048; prereq 1045 or #1045 or 3045 or #3045; orientation 0800-0850 T, June 15...or 1220-1310 W, June 16...or 1325-1415 Th, June 17; independent and optional assistance labs ar; FolH 308)
- 3007. THE WORLD OF GREECE.** (790347) (4 cr, §5007; 1115-1205 MTWTh; FolH 209) 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 golden age of Greece in the 5th century B.C.; expansion of the Greek spirit under Alexander.
- 3045. BASIC PROGRAM IN TECHNICAL TERMINOLOGY AND WORD STUDY.** (588521) (2 cr, §1045; prereq # 1048, #3048; orientation 0800-0850 T, June 15...or 1220-1310 W, June 16...or 1325-1415 Th, June 17; independent and optional assistance labs ar; FolH 308)
- 3048. TECHNICAL TERMS OF THE MEDICAL AND BIOLOGICAL SCIENCES.** (388522) (2 cr, §1048; prereq 1045 or #1045 or 3045 or #3045; orientation 0800-0850 T, June 15...or 1220-1310 W, June 16...or 1325-1415 Th, June 17; independent and optional assistance labs ar; FolH 308)
- 3072. RELIGION IN ANTIQUITY: THE NEW TESTAMENT** (988516) (4 cr, §5072; prereq jr; 0905-0955 MTWThF; FolH 207) Kraabel
First-century Israel under Roman rule. Jesus of Nazareth. Earliest Christian communities. Jewish Christianity. Mission to gentiles. Paul the apostle. Beginnings of *New Testament*.

¹Knowledge of Greek or Latin is not required.

5007. THE WORLD OF GREECE. (590348) (4 cr. §3007: 1115-1205 MTWThF: FolH 209) Sheets
Meets with 3007: requires additional work for advanced undergraduate or graduate credit.

5072. RELIGION IN ANTIQUITY: THE NEW TESTAMENT. (788517) (4 cr. §3072: prereq #: 0905-0955 MTWThF: FolH 207) Kraabel
Meets with 3072: students do additional work for graduate credit.

5120. FIELD RESEARCH IN ARCHAEOLOGY. (588518) (4 cr)
Field excavation, survey, and research. Techniques of excavation and exploration; interpretation of archaeological materials. Contact department by April 15 for further information.

SECOND TERM

3008. THE WORLD OF ROME. (090337) (4 cr. §5008: 1115-1205 MTWTh: FolH 304) Hershbell
Roman civilization from its origins to the reign of Constantine. The Roman way of life as seen in art, history, literature, and philosophy. The Etruscans and the golden age of Rome under Augustus.

3145. GREEK AND ROMAN MYTHOLOGY II: ANALYSIS AND TRADITION. (790929) (4 cr. §5145: prereq 1042 or #: 0905-0955 MTWThF: FolH 308) Solomon
The methods of interpreting Greco-Roman myth, from Homer to Freud, Jung, and Levi-Strauss: the artistic survival of classical myth in literature, painting, and music.

5008. THE WORLD OF ROME. (290344) (4 cr. §3008: 1115-1205 MTWTh: FolH 304) Hershbell
Meets with 3008: requires additional work for advanced undergraduate and graduate credit.

5145. CLASSICAL MYTHOLOGY: METHODOLOGY, INTERPRETATION, AND TRADITION. (190930) (4 cr. §3145: prereq 1042 or #: 0905-0955 MTWThF: FolH 308) Solomon
Same classwork as 3145. Independent reading and research assignments in consultation with the instructor.

Greek (Grk)

FIRST TERM

1120. INDIVIDUALIZED INTRODUCTION TO BIBLICAL GREEK. (xxxxxx) (2-5 cr per qtr, 6-10 cr with # [max 15 cr]: 1010-1100 TWTh: lab ar: FolH 304) Kraabel

Latin (Lat)

FIRST TERM

3001. BEGINNING LATIN: INTENSIVE ACCELERATED. (785973) (10 cr. §1101-1102-1103, §3051-3052: 0905-1205 MTWThF: FolH 102) Miller
Ten class hours weekly, plus individual and small group sessions. Grammar, syntax, composition, and reading. See Special Programs section.

SECOND TERM

3104. LATIN READINGS. (887942) (5 cr: prereq 1104 or equiv or #: 1010-1100 MTWThF: FolH 302) Solomon
Reading of selected Latin authors, development of reading proficiency, introduction to cultural and literary studies as in 1104, with advanced assignments. Meets with 8120.

8120. LATIN TEXT COURSE. (687943) (4 cr: prereq 3052 or #: restricted to students in depts *other* than Classics: 1010-1100 MTWThF: FolH 302) Solomon
For nonmajors who wish text work in Latin for a minor or related field. Meets with 3104. Supplementary work at the discretion of the instructor.

Communication Disorders (CDis)

FIRST TERM

R 3100. CLINICAL AND RESEARCH OBSERVATION. (585974) (2 cr: S-N only; limited to 10 students; prereq deptl written permission) Staff
Supervised observation of clinical procedures such as evaluation and treatment of persons with communication disorders or of research relating to normal and disordered communication.

Course Descriptions

3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY. (385975) (4 cr; 0905-1100 MW; FolH 303) McDermott

Concepts basic to understanding normal and abnormal speech and hearing functions. Selected communication problems. Strategies and systems of delivery of clinical services.

5900. TOPICS IN COMMUNICATION DISORDERS.

Sec 1 Stuttering, (185976) 4 cr. 0905-1100 TTh. FolH 303, Ingham

This course will consider current treatment procedures and experimental investigations in the area of stuttering. Topics such as spontaneous recovery, rhythmic stimulation, anxiety, masking and shadowing, DAF/prolonged speech, and operant conditioning will be discussed.

Sec 2 Clinical Research, (085977) 4 cr. 1325-1520 TTh. FolH 303, Ingham

This course will consider parametric and single subject research in relation to clinical populations. The design, conduct, and assessment of time-series research with persons exhibiting communication disorders and other behavioral problems will be discussed.

Sec 3 The Nature and Nurture of the Human Voice, (885978) 2 cr. 1115-1205 TTh. FolH 303, Starr

Designed for persons in the speaking professions (i.e., teachers, actors, singers, lawyers) and for those who teach others to speak or sing. The physical, acoustical, and psychological bases of voice. Medical and functional conditions associated with voice disorders. Strategies and procedures used in management and prevention of voice problems.

5970. DIRECTED STUDIES. (685979) (Cr ar [may be repeated for cr]; prereq #) Staff

Directed readings and preparation of reports on selected subjects.

8520. CLINICAL EDUCATION IN SPEECH/LANGUAGE PATHOLOGY. (885981) (2, 4, or 6 cr [may be repeated for cr]; prereq #) McDermott, Starr, Haroldson

8720. CLINICAL EDUCATION IN AUDIOLOGY. (685982) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8990. DIRECTED RESEARCH. (485983) (Cr ar [may be repeated for cr]; prereq #) Staff

Open to graduate students engaged in research.

SECOND TERM

3100. CLINICAL AND RESEARCH OBSERVATION. (287945) (2 cr; S-N only; limited to 10 students; prereq deptl written permission) Staff

See First Term.

3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY. (187946) (4 cr; 0905-1100 TTh; FolH 303)

See First Term.

5704. NOISE AND MAN. (587949) (4 cr; prereq 5301 or #: 0800-0955 MWF; 118 Medical Research [East] 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 limitators. Hearing conservation programs; preemployment testing and monitoring audiometry.

5970. DIRECTED STUDIES. (987950) (Cr ar [may be repeated for cr]; prereq #) Staff

See First Term.

8520. CLINICAL EDUCATION IN SPEECH/LANGUAGE PATHOLOGY. (587952) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

See First Term.

8720. CLINICAL METHODS AND PRACTICE IN AUDIOLOGY. (387953) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

See First Term.

8990. DIRECTED RESEARCH. (087955) (Cr ar [may be repeated for cr]; prereq #) Staff

See First Term.

Composition—See English

East Asian Languages

Chinese (Chn)

See Special Programs section for Minnesota-Nankai Summer Intensive Chinese Language Institute.

Japanese (Jpn)

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 may not enroll in other courses in the Summer Session.

1011-1012-1013†. INTENSIVE FIRST-YEAR JAPANESE. (285984) (185985) (985986) (15 qtr cr for both terms [10 semester cr])

10 hours with principal instructor; 10 hours with drillmaster.

Sec 5, 0800-1205 MTWThF, KoltH S133

Economics (Econ)

See also Public Affairs

FIRST TERM

R 1001. PRINCIPLES OF MACROECONOMICS. (4 cr, §1004, §1014, §3001, §3002; each section limited to 50 students; prereq 3rd-qr fr)

Principles underlying economic activity and the economic institutions within which economic units function. National income, money and banking, business cycles, and international trade.

Sec 1, (785987) 0800-0850 MTWThF, BlegH 130

Sec 2, (585988) 0905-0955 MTWThF, AndH 250

Sec 3, (385989) 1010-1100 MTWThF, AndH 250

Sec 4, (785990) 1115-1205 MTWThF, BlegH 215

Sec 5, (585991) 1220-1310 MTWThF, BlegH 215

R 1002. PRINCIPLES OF MICROECONOMICS. (4 cr, §1005, §1015, §3001, §3002; each section limited to 50 students; prereq 3rd-qr fr)

Demand and supply, competition and monopoly, and the distribution of income.

Sec 1, (385992) 0905-0955 MTWThF, BlegH 135

Sec 2, (185993) 1010-1100 MTWThF, AndH 330

Sec 3, (085994) 1115-1205 MTWThF, BlegH 235

R 3101. MICROECONOMIC THEORY. (885995) (4 cr, §3105, §5151; no cr SMgt student; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #: 0905-0955 MTWThF; BlegH 10)

Behavior of firms and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions.

R 3102. MACROECONOMIC THEORY. (485997) (4 cr, §5152; limited to 45 students; prereq 1001, 1002, Math 1111 or equiv or #: 1115-1205 MTWThF; BlegH 250) Simler

Determinants of national income, employment, and price level; aggregate consumption and investment.

R 3105. MANAGERIAL ECONOMICS. (190204) (4 cr, §3101, §BGS 3001; limited to 45 students; prereq 1001, 1002, 1 qtr calculus, School of Management students; 1010-1100 MTWThF; BlegH 435)

Theory of the firm; managerial decision problems. Demand theory. Production technology and cost concepts. Pricing and output decisions. Investment behavior.

R 3701. MONEY AND BANKING. (190904) (4cr, §5701, §5721; limited to 50 students; prereq 1001, 1002 or equiv; not open to economics majors; 0800-0855 MTWThF, BlegH 135)

Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system and monetary policy.

3970. DIRECTED STUDIES. (185999) (Cr ar; prereq 1002, #)

R 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD. (086000) (3 cr, §3101; limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #: 0905-0955 MTWThF; BlegH 10)

Individual decision making by households and firms under conditions of monopoly, competition; some welfare economics.

R 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT. (686002) (3 cr, §3102; limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #: 1115-1205 MTWThF; BlegH 250) Simler

Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding.

R 5301. ECONOMIC DEVELOPMENT. (486003) (4 cr, §5331; limited to 30 students; prereq 1001, 1002 or equiv; not open to economics majors; 1115-1205 MTWThF; BlegH 155) Smith

Problems of economic growth in low income countries. Theory of aggregate and per capita income growth. Role of population growth, productivity increases and capital formation. Allocation of resources between consumption and investment and among sectors. International assistance and trade. Meets with 5331.

Course Descriptions

R 5307. COMPARATIVE ECONOMIC SYSTEMS. (990203) (4 cr, \$5337; limited to 30 students; prereq 1001, 1002 or equiv; not open to Econ majors; 1010-1100 MTWThF; BlegH 250) Smith
Functions of economic systems; market economy, liberal socialism, centrally planned economy, American and Soviet economies.

R 5331. ECONOMIC DEVELOPMENT. (286004) (4 cr, \$5301; limited to 20 students; prereq 3101, 3102 or equiv or #; 1115-1205 MTWThF; BlegH 155) Smith
See 5301.

R 5337. COMPARATIVE ECONOMIC SYSTEMS. (390206) (4 cr, \$5307; limited to 20 students; prereq 3101, 3102 or #; 1010-1100 MTWThF; BlegH 250) Smith
See 5307.

R 5401. INTERNATIONAL ECONOMICS. (186005) (4 cr, \$5431; limited to 30 students; not open to economics majors; prereq 1001, 1002 or equiv; 0905-0955 MTWThF; Law 55)
The case for free trade. Effects of tariffs; protection of infant industries; common markets. Balancing international receipts and payments, the role of exchange rates, international monetary reform. Meets with 5431.

R 5431. INTERNATIONAL ECONOMICS. (986006) (4 cr, \$5401; limited to 20 students; prereq 3101, 3102 or equiv or #; 0905-0955 MTWThF; Law 55)
See 5401.

R 5721. MONEY AND BANKING. (786007) (4 cr, \$3701, \$5701; limited to 50 students; prereq 3102 or equiv; 0800-0850 MTWThF; BlegH 235)
Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system and monetary policy.

5970. DIRECTED STUDIES. (586008) (Cr ar; prereq #) Staff
Areas useful to individual programs and objectives not available in regular course offerings

8990. INDIVIDUAL GRADUATE RESEARCH. (386009) (Cr ar) Staff

SECOND TERM

R 1001. PRINCIPLES OF MACROECONOMICS. (4 cr, \$1004, \$1014, \$3001, \$3002; each section limited to 50 students; prereq 3rd-qr fr)
See First Term.

Sec 1, (487958) 0800-0850 MTWThF, BlegH 150
Sec 2, (287959) 0905-0955 MTWThF, AndH 230

R 1002. PRINCIPLES OF MICROECONOMICS. (4 cr, \$1005, \$1015, \$3001, \$3002; each section limited to 50 students; prereq 3rd-qr fr)
See First Term.

Sec 1, (687960) 0905-0955 MTWThF, BlegH 145
Sec 2, (287962) 1010-1100 MTWThF, BlegH 145
Sec 3, (187963) 1115-1205 MTWThF, BlegH 145
Sec 4, (987964) 1220-1310 MTWThF, BlegH 145

R 3101. MICROECONOMIC THEORY. (587966) (4 cr, \$3105, \$5151; no cr S Mgt student; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #; 0905-0955 MTWThF; AndH 250)
See First Term.

R 3102. MACROECONOMIC THEORY. (387970) (4 cr, \$5152; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #; 1115-1205 MTWThF; BlegH 150)
See First Term.

R 3103. WELFARE ECONOMICS. (087972) (4 cr; limited to 50 students; prereq 3101 or 3101H or equiv; 0800-0850 MTWThF; BlegH 425)
Introduction to welfare economics. Economic efficiency and the conditions necessary to sustain it. Conflicts between the efficiency and income distribution goals. How market structure and public policies increase or decrease efficiency.

R 3105. MANAGERIAL ECONOMICS. (890209) (4 cr, \$3101, \$BGS 3001; limited to 45 students; prereq 1001, 1002, 1 qtr calculus, School of Management student; 1010-1100 MTWThF; BlegH 215)
See First Term.

R 3701. MONEY AND BANKING. (687974) (4 cr, \$5701, \$5721; limited to 50 students; prereq 1001, 1002 or equiv; not open to economics majors; 1115-1205 MTWThF; BlegH 415)
See 3701 First Term.

R 3801. ELEMENTS OF PUBLIC FINANCE. (487975) (4 cr, \$5821; limited to 35 students; prereq 1001, 1002 or equiv; not open to Econ majors; 0905-0955 MTWThF; BlegH 150)
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.

3970. DIRECTED STUDIES. (287976) (Cr ar; prereq 1002, #)

¶ 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD. (187977) (3 cr, §3101; limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #: 0905-0955 MTWThF; AndH 250)
See First Term.

¶ 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT. (187980) (3 cr, §3102; limited to 10 students; prereq 1001, 1002, 1 qtr calculus, grad student or #: 1115-1205 MTWThF; BlegH 150)
See First Term.

¶ 5621. ECONOMICS OF URBAN PROBLEMS. (987981) (4 cr; limited to 50 students; prereq 1001, 1002 or equiv. 1010-1100 MTWThF; BlegH 440)
Unemployment and central city decay. Minimum guaranteed income proposals. Low income housing policies. Public policies toward health care. Financing public education. Fiscal problems of cities. Mass transit issues.

¶ 5821. ELEMENTS OF PUBLIC FINANCE. (587983) (4 cr, §3801; limited to 20 students; prereq 3101...3103 recommended; 0905-0955 MTWThF; BlegH 150)
See 3801.

5970. DIRECTED STUDIES. (387984) (Cr ar; prereq #) Staff
See First Term.

8990. INDIVIDUAL GRADUATE RESEARCH. (187985) (Cr ar) Staff

English

English Composition (Comp)

FIRST TERM

¶ 1001.¹ INTRODUCTORY COMPOSITION. (4 cr; each section limited to 28 students; prereq assignment to Category 3 or 5 or completion of 0001...# after first day of class)
Guided practice in the fundamental structural and stylistic features of exposition and argumentation. Not an introduction to literary studies or to humanities.

- Sec 1, (786024) 0905-0955 MTWThF, LindH 302, Hirsch
- Sec 2, (586025) 1010-1100 MTWThF, LindH 302, Allen
- Sec 3, (386026) 1115-1205 MTWThF, LindH 302, Haley

¶ 1002.¹ INTRODUCTORY COMPOSITION. (086028) (4 cr; limited to 28 students; prereq assignment to Category 2 or completion of 1001...# after first day of class; 1115-1205 MTWThF; LindH 303) Brown
See 1001.

¶ 1027.¹ INTERMEDIATE COMPOSITION. (086029) (4 cr; limited to 25 students; prereq soph and completion of fr English or Δ...# after first day of class; 0905-0955 MTWThF; LindH 303) Burns
Mastery of expository forms (e.g., comparison, analysis, cause-effect) and strategies of tone and diction for clear, accurate style.

3085. CONFERENCE COURSE IN ADVANCED COMPOSITION. (686033) (1-4 cr; prereq completion of fr English, Δ; hrs ar) Brown
Frequent writing conferences for individual students; lectures and discussion sessions in cooperation with major department; special arrangements for IT and CLA students.

¶ 3101. INTERMEDIATE FICTION WRITING. (086031) (4 cr; limited to 25 students; 1010-1100 MTWThF; LindH 303) Burns
For those with some experience in writing fiction. Discussion of students' works; set texts, assignments, and experiments.

SECOND TERM

¶ 1001.¹ INTRODUCTORY COMPOSITION. (088006) (4 cr; limited to 28 students; prereq assignment to Category 3 or 5 or completion of 0001...# after first day of class; 1115-1205 MTWThF; LindH 203) Bridwell
See First Term.

¶ 1002.¹ INTRODUCTORY COMPOSITION. (4 cr; each section limited to 28 students; prereq assignment to Category 2 or completion of 1001...# after first day of class)
See 1001 First Term.

- Sec 1, (888007) 0800-0850 MTWThF, LindH 203, Staff
- Sec 2, (688008) 0905-0955 MTWThF, LindH 203, Ross
- Sec 3, (488009) 1010-1100 MTWThF, LindH 203, Staff

¹Any student absent the first day (Tuesday, June 15, for first term, and Monday, July 19, for second term) will lose his or her place in class.

Course Descriptions

¶ 1111. INTRODUCTION TO POETRY WRITING. (790414) (4 cr; limited to 25 students; prereq completion of English composition requirement; 1010-1100 MTWThF; LindH 215) Staff
Workshop for beginning students. Discussion of student poems, numerous assignments, formal experiments. No manuscript prerequisite.

English Language and Literature (Engl)

FIRST TERM

¶ 1009. INTRODUCTION TO LITERATURE. (590415) (4 cr; limited to 36 students; 1115-1205 MTWThF; LindH 229) Hirsch

Major literary forms (such as comedy, tragedy, romance, lyric, and novel), terms, and methods of analysis examined through selected works from different genres and historical periods. Emphasis on close reading, discussion, and writing papers.

¶ 1016. INTRODUCTION TO AMERICAN LITERATURE. (786010) (4 cr; limited to 40 students; 1010-1100 MTWThF; LindH 215) Silberman

Selected texts; critical discussion and writing.

¶ 1018. INTRODUCTION TO MODERN LITERATURE: PROSE FICTION. (390416) (4 cr; limited to 40 students; 0800-0850 MTWThF; LindH 302) Luke

Selected texts; critical discussion and writing.

3117. THE RESTORATION AND 18TH CENTURY. (190417) (4 cr; 1010-1100 MTWThF; LindH 229) Haley

Major and representative works of the Restoration and 18th century (1660-1798). Typical authors: Dryden, Pope, Swift, Johnson, Boswell, Fielding.

¶ 3241. SHAKESPEARE. (086014) (4 cr; limited to 40 students; 0905-0955 MTWThF; LindH 203) Clayton

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. (886015) (4 cr; limited to 40 students; 1115-1205 MTWThF; LindH 215) Silberman

Plays from the middle and late periods. All sections will read *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays.

3252. THE KING JAMES BIBLE AS LITERATURE. (090418) (4 cr; 1115-1205 MTWThF; LindH 203) O'Brien

The Book of Daniel, Apocrypha, and New Testament as documents in the history of literature.

3413. AMERICAN LITERATURE. (890419) (4 cr; 0800-0850 MTWThF; LindH 203) Furia

Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course, with wide reading. Stephen Crane through the 1930s.

3455. AMERICAN SHORT STORY. (686016) (4 cr; 1010-1100 MTWThF; LindH 305) Furia

Readings from Irving to the present.

¶ 3851. THE ENGLISH LANGUAGE. (486017) (4 cr, §5851; limited to 50 students; 0909-0955 MTWThF; LindH 305) MacLeish

An introduction to the English language including English grammars, phonetics and phonology, British and American dialects, and native language acquisition.

3940. FIGURES IN ENGLISH AND AMERICAN LITERATURE: KURT VONNEGUT. (190420) (4 cr; 0905-0955 MTWThF; LindH 229) Reed

Vonnegut's nine novels, from *Player Piano* to *Jailbird*. Their social commentary and the social contexts in which they were written, relevant biography, technique, theme, and form.

5152. 19TH-CENTURY ENGLISH NOVEL. (090421) (4 cr; 1010-1100 MTWThF; LindH 203) Luke

Novels by such authors as Scott, Dickens, the Brontës, Thackeray, Eliot, and Hardy.

5153. 20TH-CENTURY ENGLISH NOVEL. (286018) (4 cr; 1115-1205 MTWThF; LindH 305) Reed

Novels by such authors as Conrad, Ford, Joyce, Woolf, Lawrence, Forster, Cary, and Waugh.

5261. MILTON. (890422) (4 cr; 0905-0955 MTWThF; LindH 215) O'Brien

Paradise Lost, *Samson Agonistes*, minor poems, *Areopagitica*, and often *Paradise Regained*.

5452. AMERICAN NOVEL. (186019) (4 cr; 0800-0850 MTWThF; LindH 305) Allen

Late 19th and 20th centuries. Typical authors: James, Dreiser, Cather, Hemingway, Fitzgerald, Faulkner.

5711. CLASSICS OF LITERARY CRITICISM. (690423) (4 cr; 1010-1100 MTWThF; LindH 217) Clayton

Major works in the classic critical tradition. Aristotle and Coleridge and such authors as Plato, Horace, Longinus, Sidney, Dryden, Johnson, Hume, and Eliot

5851. STRUCTURE OF MODERN ENGLISH. (286021) (4 cr, §3851; 1115-1205 MTWThF; LindH 217) MacLeish

Modern English grammar: phonology, syntax, and semantics; variations and change.

SECOND TERM

R 1009. INTRODUCTION TO LITERATURE. (490424) (4 cr; limited to 36 students; 0905-0955 MTWThF; LindH 302) Geffen
See First Term.

R 1016. INTRODUCTION TO AMERICAN LITERATURE. (290425) (4 cr; limited to 40 students; 0800-0850 MTWThF; LindH 229) Solotaroff
See First Term.

R 1018. INTRODUCTION TO MODERN LITERATURE: PROSE FICTION. (487989) (4 cr; limited to 40 students; 0800-0850 MTWThF; LindH 215) Ross
See First Term.

3111. SURVEY OF ENGLISH LITERATURE. (190426) (4 cr; 1115-1205 MTWThF; LindH 302) Rosendahl
Historical survey of major figures, movements, and trends in English literature. Chaucer to Marvell, including Spenser, Shakespeare, and Donne.

3118. THE ROMANTIC AGE. (687991)(4 cr; 1010-1100 MTWThF; LindH 229) Rosendahl
Major and representative works of the romantic period (1798-1832). Typical authors: Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.

R 3241. SHAKESPEARE. (487992) (4 cr; limited to 40 students; 1115-1205 MTWThF; LindH 217) Geffen
See First Term.

R 3242. SHAKESPEARE. (287993) (4 cr; limited to 40 students; 0905-0955 MTWThF; LindH 215) McNaron
See First Term.

3455. AMERICAN SHORT STORY. (987995) (4 cr; 1010-1100 MTWThF; LindH 217) Solotaroff
See First Term.

R 3851. THE ENGLISH LANGUAGE. (787996) (4 cr, §5851; limited to 50 students; 1010-1100 MTWThF; LindH 305) Bridwell
See First Term.

5351. 20TH-CENTURY BRITISH POETRY. (990427) (4 cr; 1115-1205 MTWThF; LindH 229) Anderson
Major figures, historical and intellectual background, poetic theory. Includes such figures as Hardy, Housman, Hopkins, Yeats, Eliot, Auden, Thomas, Larkin, and Hughes.

5363. JAMES JOYCE. (790428) (4 cr; 0905-0955 MTWThF; LindH 229) Anderson
Life and early works, particularly *Dubliners*, *A Portrait of the Artist as a Young Man*, and the first four episodes of *Ulysses*.

5530. EARLY 19TH-CENTURY AMERICAN WRITERS: HAWTHORNE AND MELVILLE. (187999) (4 cr; 0800-0850 MTWThF; LindH 302) Roth

5620. BRITISH AND AMERICAN WOMEN WRITERS: CONTEMPORARY FICTION WRITERS. (988001) (4 cr; 1115-1205 MTWThF; LindH 215) McNaron
Reading and discussion of selected works of fiction by such writers as Eudora Welty, Toni Morrison, Alice Walker, Grace Paley, and Maxine Hung Kingston.

5910. TOPICS IN ENGLISH AND AMERICAN LITERATURE: POPULAR FICTION. (588003) (4 cr; 1010-1100 MTWThF; LindH 302) Roth
The nature and appeal of popular fiction studied through conventions of particular adventure forms: i.e., the western, science fiction, detective fiction, and the thriller.

Foreign Study (FoSt)

FIRST TERM

5960. SPAN SEMINAR FOR FOREIGN STUDY. (486034) (6 cr; prereq approval before Oct 1981 by a faculty selection committee) Wright, Tesdell, Scott
Preparation for independent study in Austria, Egypt, Singapore, West Germany, investigating history, social and political ambience, and culture.

SECOND TERM

5960. SPAN INDEPENDENT PROJECT. (188014) (6 cr; prereq satisfactory completion of first term) Wright, Tesdell, Scott
Following an 8-week stay in Austria, Egypt, Singapore, West Germany, participants prepare and submit a project growing from their study at home and abroad.

Course Descriptions

French and Italian

French (Fren)

FIRST TERM

R 1101. BEGINNING FRENCH. (5 cr; each section limited to 30 students)

Sec 1. (986037) 0905-1100 MTWThF. ChDev 216

Sec 2. (786038) 0905-1100 MTWThF. LindH 325

R 1102. BEGINNING FRENCH. (586039) (5 cr; limited to 30 students; prereq 1101 or 1 yr high school French; 0800-0955 MTWThF; FolH 205)

R 1103. BEGINNING FRENCH. (986040) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; 0800-0955 MTWThF; FolH 307)

R 1104. INTERMEDIATE FRENCH. (586042) (5 cr; limited to 30 students; prereq 1103 or 3 yrs high school French; 1010-1205 MTWThF; FolH 105)

R 3015. FRENCH CONVERSATION AND COMPOSITION. (186044) (5 cr; limited to 15 students; prereq 1105; 1010-1205 MWF; FolH 108)

Combines traditional conversational and composition courses. Orthoepic in approach, seeking command of French both in pronunciation and grammar. Includes pastiche work, free composition, and translation from and into French.

R 3016. ADVANCED FRENCH COMPOSITION AND CONVERSATION. (086045) (5 cr; limited to 15 students; prereq 3015 or equiv; 1010-1205 MWF; FolH 201)

3289. TOPICS IN 20TH-CENTURY FRENCH LITERATURE. (090192) (5 cr; prereq 3102, 3103; 0905-1100 MWF; FolH 203) Bensmaia

3601. FRENCH LITERATURE IN ENGLISH TRANSLATION. (890193) (5 cr [cr does not count toward French major]; taught in English; 1220-1415 MWF; FolH 201)

Representative works from medieval times to present examined through movements, genres, or themes.

3970. DIRECTED READINGS. (286049) (1-5 cr; prereq undergrad. Δ)

5415. RABELAIS. (690194) (5 cr; prereq 3209 or above; 1430-1625 MWF; FolH 103) Conley
Gargantua and Pantagruel in original text.

5900. TOPICS IN FRENCH LITERATURE. (686050) (3-5 cr; prereq #: 1220-1415 MWF; FolH 302)

8970. DIRECTED READINGS. (486051) (1-5 cr; prereq # and consent of dept chair; 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 may not enroll in other summer courses.

R 1101-1102-1103†. BEGINNING FRENCH. (15 cr for both terms; limited to 30 students)

Sec 5. (286052) (186053) (986054) 0905-1205 MTWThF. KollH S139

SECOND TERM

R 1102. BEGINNING FRENCH. (788016) (5 cr; limited to 30 students; 0905-1100 MTWThF; FolH 207)

R 1103. BEGINNING FRENCH. (388018) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; 0800-0955 MTWThF; FolH 304)

R 1104. INTERMEDIATE FRENCH. (188019) (5 cr; limited to 30 students; prereq 1103 or 3 yrs high school French; 0905-1100 MTWThF; FolH 103)

R 1105. INTERMEDIATE FRENCH. (588020) (5 cr; limited to 30 students; prereq 1104; 1010-1205 MTWThF; FolH 107)

R 3015. FRENCH COMPOSITION AND CONVERSATION. (188022) (5 cr; limited to 15 students; prereq 1105; 1010-1205 MWF; FolH 303)

See First Term.

R 3016. ADVANCED FRENCH COMPOSITION AND CONVERSATION. (088023) (5 cr; limited to 15 students; prereq 3015 or #: 1010-1205 MWF; FolH 302) Preckshot

3602. FRENCH LITERATURE IN TRANSLATION. (290201) (5 cr [cr does not count toward French major]; taught in English; 1220-1415 MWF; FolH 308) Waldauer

Representative works from medieval times to present examined through movements, genres, or themes.

3970. DIRECTED READINGS. (488026) (1-5 cr; prereq undergrad. ...) Staff

5900. TOPICS IN FRENCH LITERATURE. (190202) (5 cr; prereq #: 1430-1625 MWF; FolH 108) Akehurst

8970. DIRECTED READINGS. (188028) (1-5 cr; prereq # and consent of dept chair; hrs ar) Staff

French and Italian (Frit)

SECOND TERM

R 3608. NEW WAVE CINEMAS. (990931) (4 cr; does not count toward French major; knowledge of French and Italian helpful but not necessary; 1220-1415 MWF; FolH 209) Crawford

Film work of directors recasting classical traditions of Europe and America. Film theories of the western. B-genre: political cinema: Godard, Resnais, Rivette, Pasolini, Antonioni, Bertolucci.

Italian (Ital)

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 may not enroll in other summer courses.

R 1101-1102-1103†. BEGINNING ITALIAN. (186058) (086059) (386060) (15 cr for both terms; limited to 30 students)

A course with speaking objectives based on an audiolingual approach. Students learn to understand and express fundamental structures of the language. Includes audiovisual aids.

Sec 5, 0905-1205 MTWThF, KolH S138, Pipa, Dimaria

Geography (Geog)

FIRST TERM

R 1301. HUMAN GEOGRAPHY. (190216) (5 cr; 1010-1100 MTWThF; BlegH 404) Scott

Geography of population and principal ways of life; capacity of earth for future population.

3101. GEOGRAPHY OF UNITED STATES AND CANADA. (590818) (4 cr; 0905-0955 MTWThF; BlegH 435) Hart

Interaction of the aspirations and abilities of different groups of people with the complexities of the natural environment to produce regional differentiation of the United States and Canada.

3161. EUROPE. (990217) (4 cr; 1115-1205 MTWThF; BlegH 435) Rice

Cultural-economic realms in Europe (excluding U.S.S.R.); areal organization of each realm.

3970. DIRECTED STUDIES. (886063) (1-15 cr per qtr) Staff

5112. WESTERN UNITED STATES. (790218) (4 cr; 0800-0850 MTWThF; BlegH 430) Mather

Physical and human resources of western United States.

5113. CANADA AND ALASKA. (590219) (4 cr; 1010-1100 MTWThF; BlegH 430) Mather

Physical and human geography. International and external areal relationships.

8970. DIRECTED READINGS. (286066) (1-5 cr) Staff

SECOND TERM

3111. MINNESOTA. (890212) (4 cr; 1115-1205 MTWThF; BlegH 435) Rice

Physical resources, population, and commercial production.

3331. ECONOMIC GEOGRAPHY. (490214) (4 cr; 1010-1100 MTWThF; BlegH 435) R Adams

World patterns of economic activity; levels of development; appraisal of resources, production, circulation, and consumption; principles, models, and planning of economic behavior.

R 3511. INTRODUCTION TO CARTOGRAPHY. (5 cr; prereq 5 cr in geography or #: each rec limited to 20 students; lect 0905-0955 MTWThF; BlegH 445) Hsu

Principles of map design, compilation, specification, and drafting. Map symbols. History of cartography. Projections—analysis of construction, properties, and uses.

Rec 1. (890906) 1010-1100 MW, BlegH 455

Rec 2. (690907) 1010-1100 TTh, BlegH 455

3970. DIRECTED STUDIES. (1-15 cr per qtr) Staff

5383. TRANSPORTATION GEOGRAPHY. (290215) (4 cr; prereq 3331 or #: 0800-0850 MTWThF; BlegH 435) R Adams

Principles and theory of spatial development of transport systems; interaction of resource use and network growth; commodity and passenger flows; case studies at national, regional, and local (urban) levels.

8970. DIRECTED READINGS. (588034) (1-5 cr) Staff

Course Descriptions

German (Ger)

The Summer Session and the German department will sponsor a special program using the facilities of Ludwig-Maximilians Universität, Munich, Germany. Permission of the German department is required for registration. See Special Programs section.

FIRST TERM

1101. BEGINNING GERMAN. (186067) (5 cr, §1110; limited to 30 students; 0800-0955 MTWThF; FolH 104)
Emphasis on structure, reading, and listening comprehension.

1103. BEGINNING GERMAN. (986068) (5 cr, §1110; limited to 30 students; prereq 1102; 0905-1100 MTWThF; LindH 320)
See 1101.

1104. INTERMEDIATE GERMAN. (990220) (5 cr; limited to 30 students; prereq 1103 or 15 cr of 1110 or placement; 0905-1100 MTWThF; FolH 202) Wakefield
Expansion of basic skills; discussion, reading, and writing.

3104. READING AND ANALYSIS OF LITERARY TEXTS: PROSE. (786069) (4 cr; limited to 25 students; required of all German majors; prereq 1105 or #; 0905-0955 MTWThF; FolH 302) Duroche
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.

3601. GERMAN LITERATURE IN TRANSLATION: MEDIEVAL LITERATURE. (186070) (4 cr [cr does not count toward German major]; limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; knowledge of German not required; 0905-0955 MTWThF; FolH 204) Liberman
Representative literary works from medieval literature, related to other literatures.

3641. INTRODUCTION TO GERMAN FOLKLORE. (790221) (4 cr [cr does not count toward German major]; limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; knowledge of German not required; 1010-1100 MTWThF; FolH 204) Liberman
Traditional folklore genres; charms (magic), legends, fairy tales, ballads.

5510. TOPICS IN CONTEMPORARY GERMAN CULTURE: CONTEMPORARY GERMAN SATIRE. (590222) (4 cr [max 8 cr]; prereq 3513 or equiv; 1010-1125 MWF; FolH 205) Duroche
Aspects of German culture explored in depth through contemporary German satire. Taught in German.

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 may not enroll in other summer courses.

1101-1102-1103†. BEGINNING GERMAN. (586073) (386074) (186075) (15 cr for both terms; limited to 30 students)
Plummer
Emphasis on structure, reading, and listening comprehension.

Sec 5, 0905-1205 MTWThF, KoltH S134

SECOND TERM

1102. BEGINNING GERMAN. (388035) (5 cr, §1110; limited to 30 students; prereq 1101; 0800-0955 MTWThF; FolH 302)
See 1101 First Term.

1105. INTERMEDIATE GERMAN. (390223) (4 cr; limited to 30 students; prereq 1104 or placement; 0905-1100 MTWThF; FolH 306)
See 1104 First Term.

3105. READING AND ANALYSIS OF LITERARY TEXTS: DRAMA AND POETRY. (188036) (4 cr; limited to 25 students; required of all German majors; prereq 1105 or #; 1115-1205 MTWThF; FolH 204) Taraba
See 3104 First Term.

3603. GERMAN LITERATURE IN TRANSLATION: MODERN LITERATURE. (088037) (4 cr [cr does not count toward German major]; limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; knowledge of German not required; 1115-1205 MTWThF; FolH 204) Weiss
Representative literary works from the modern period, related to other literatures.

3610. GERMAN AUTHORS OR TOPICS IN TRANSLATION: FRIEDRICH NIETZSCHE. (888038) (4 cr [cr does not count toward German major]; limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; knowledge of German not required; 0905-0955 MTWThF; FolH 204) Taraba
In-depth study of the later works of Friedrich Nietzsche including *Thus Spoke Zarathustra*, *Beyond Good and Evil*, *Eccle Homo*, and *On the Genealogy of Morals*.

5603. DRAMA IN TRANSLATION. (190224) (4 cr; prereq 8 cr in theatre arts or in literature above 3001; knowledge of German not required; 0905-0955 MWF; FolH 205) Weiss
Discussion and reading of German drama and dramatic trends from 1920 to the present.

Greek—See Classics

Hebrew—See Near and Middle Eastern Studies

History (Hist)

FIRST TERM

1002. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (490228) (4 cr per qtr, §1002H, §3002; not open to jrs, srs; 0800-0850 MTWThF; BlegH 105) Thayer
Revolution, liberalism, and nationalism to 1870.

1052. ANCIENT CIVILIZATION. (890825) (4 cr, §3052; 0905-0955 MTWThF; BlegH 335) J Evans
Greek civilization to 323 B.C.

1302. AMERICAN HISTORY. (486079) (4 cr, §1302H; 0905-0955 MTWThF; AndH 330) Green
Modern America from 1880 to present.

1302H. HONORS COURSE: AMERICAN HISTORY. (886080) (4 cr, §1302; prereq #: 0905-0955 MTWThF; AndH 330)
Green
See 1302.

1422. THE WORLD AND THE WEST. (690230) (4 cr per qtr, §3422; 0800-0850 MTWThF; BlegH 115) Kopf
Modern world of renaissance, nationalism, modernization, and countermodernization, 1850 to present.

3002. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (290229) (4 cr per qtr, §1002, §1002H; 0800-0850 MTWThF; BlegH 105) Thayer
See 1002.

3052. ANCIENT CIVILIZATION. (690826) (4 cr, §1052; 0905-0955 MTWThF; BlegH 335) J Evans
See 1052

3422. THE WORLD AND THE WEST. (490231) (4 cr per qtr, §1422; 0800-0850 MTWThF; BlegH 115) Kopf
See 1422.

3424. HISTORY OF MEXICO: PRE-COLUMBIAN PERIOD THROUGH INDEPENDENCE. (290232) (4 cr; 1115-1205 MTWThF; BlegH 430) Schwartz

Indian cultures of Mexico prior to the conquest and subsequent contact between Europeans and Indians during the formation of Mexican society.

3467. THE NATIONALIST REVOLUTION IN CHINA, 1900 TO PRESENT. (190233) (4 cr, §5467; 0905-0955 MTWThF; BlegH 115) Farmer

Failure of the early republic, warlordism, the new culture movement, and the development of Chinese nationalism. The rise of the Nationalist Party and intervention of the Soviet Union, Japan, and the United States. Taiwan and the Republic of China.

3722. EUROPE IN THE ERA OF WORLD WAR II. (790235) (4 cr, §3224; 0905-0955 MTWThF; BlegH 205) Munholland
The rise of Fascism and totalitarian movements in Europe; political and military origins of World War II; the course of the war and its impact upon European society.

3823. UNITED STATES IN THE 20TH CENTURY: 1945 TO PRESENT. (590236) (4 cr; 1115-1205 MTWThF; BlegH 120) Berman

American society since World War II: origins of the cold war; the great red scare; politics and culture of the Eisenhower era; conflict and confrontation in the 1960s; Watergate and the uncertainties of the 1970s.

3883. HISTORY OF AMERICAN FOREIGN RELATIONS. (386088) (4 cr; 1010-1100 MTWThF; BlegH 205) Brauer
American foreign relations during the cold war, 1941 to present.

3970. DIRECTED STUDIES. (186089) (1-15 cr; prereq #)
Qualified individual reading or study. Open to qualified students for 1 or more quarters.

3990. DIRECTED RESEARCH. (586090) (1-15 cr; prereq #)
Qualified students, with consent of instructor, work on a tutorial basis.

Course Descriptions

5285. DIPLOMATIC HISTORY OF EUROPE, 1871-1918. (390934) (4 cr; 1115-1205 MTWThF; BlegH 120) Kieft
Bismarck alliance system; Eastern question; overseas imperialism; World War I.

5337. CRIMINAL JUSTICE IN AMERICAN HISTORY. (090239) (4 cr; prereq jr, sr or grad student; 0930-1100 TWTh; BlegH 415) Samaha

The social, political, and intellectual context of crime, justice, and punishment. Changing patterns of crime, the criminal class, Southern justice, political justice, the politics of law and order, criminal justice "reform," Watergate and beyond.

5467. THE NATIONALIST REVOLUTION IN CHINA, 1900 TO PRESENT. (990234) (4 cr, §3467; 0905-0955 MTWThF; BlegH 115) Farmer
See 3467.

5821. AMERICAN HISTORY IN THE 20TH CENTURY. (490827) (4 cr; prereq #: 1315-1500 MTh; BlegH 360) Chambers

5970. DIRECTED STUDIES. (686095) (1-15 cr; prereq #)

Qualified senior and graduate students may register for work on tutorial basis. Guided individual reading or study.

5990. DIRECTED RESEARCH. (486096) (1-15 cr; prereq #)

Qualified senior and graduate students may register for work on tutorial basis.

SECOND TERM

1003. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (190241) (4 cr, §1001H, §3001; not open to jrs, srs; 0800-0850 MTWThF; BlegH 105) Rudolph
Western European civilization to 1715.

1053. ANCIENT CIVILIZATION. (290828) (4 cr, §3053; 1010-1100 MTWThF; BlegH 245) Kelly
Roman civilization to 305 A.D.

1101. INTRODUCTION TO MEDIEVAL HISTORY. (288044) (4 cr; 0800-0850 MTWThF; BlegH 210) Bachrach
The early Middle Ages, decline of Rome, barbarian kingdoms. Carolingian empire.

1301. AMERICAN HISTORY. (188045) (4 cr, §1301H; 0905-0955 MTWThF; AndH 270) Menard
Colonial era and early national period from the Revolution through Civil War and reconstruction.

1301H. HONORS COURSE: AMERICAN HISTORY. (988046) (4 cr, §1301; prereq #: 0905-0955 MTWThF; AndH 270) Menard
See Hist 1301.

1433. INTRODUCTION TO HISTORY OF AFRICA: 1880 TO PRESENT. (190829) (4 cr, §3433; 0905-0955 MTWThF; BlegH 105) Isaacman
Colonial rule. African nationalism and independence movements.

3003. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (890257) (4 cr, §1003, §1003H; 1010-1100 MTWThF; BlegH 105) Rudolph
See 1003.

3053. ANCIENT CIVILIZATION. (490830) (4 cr, §1053; 1010-1100 MTWThF; BlegH 245) Kelly
See 1053.

3425. HISTORY OF MEXICO: THE 19TH AND 20TH CENTURIES. (690261) (4 cr; 0800-0850 MTWThF; BlegH 120) McCaa

The struggle for land and liberty from the Hidalgo revolt to the age of oil.

3433. INTRODUCTION TO HISTORY OF AFRICA: 1880 TO PRESENT. (290831) (4 cr, §1433; 0905-0955 MTWThF; BlegH 105) Isaacman
See Hist 1433.

3471. 20TH-CENTURY JAPAN. (490262) (4 cr, §5471; 1115-1205 MTWThF; BlegH 120) Marshall
The development of an industrial society, parliamentary government, mass culture, and imperialism from the Meiji reforms of the late 19th century through World War II to the contemporary period.

3822. UNITED STATES IN THE 20TH CENTURY: 1917-1945. (990265) (4 cr; 1115-1205 MTWThF; BlegH 135) Spear
Political, social, cultural, economic, and diplomatic trends in the United States during the Jazz Age, Great Depression, New Deal, and war against fascism.

3862. EUROPEAN AMERICANS: FROM IMMIGRANTS TO ETHNICS. (390268) (4 cr; 1010-1100 MTWThF; BlegH 115) Vecoli

Trans-Atlantic migrations; formation of ethnic communities and cultures; nativism and ethnic conflict; assimilation, cultural maintenance, and social mobility; emergence of a pluralistic America. Since 1890.

3970. DIRECTED STUDIES. (188059) (1-15 cr; prereq #)
See First Term.

3990. DIRECTED RESEARCH. (488060) (1-15 cr; prereq #)
See First Term.

5381. MINNESOTA HISTORY WORKSHOP: Topics in Minnesota History—July 19-30. (288061) (5 cr; first time repeaters register for 5970, sec 2; limited to 100 students)

This all-day, two-week workshop offers elementary and secondary teachers content information, teaching resources, and an introduction to the collections of the Minnesota Historical Society. This year's workshop focuses on two topics. *The*

Frontier Myth in Minnesota explores both the historical impact of the idea of the frontier in Minnesota, and our modern day preconceptions of the past. *Urban History: The City as Artifact* examines cultural values and ideas that form and change the built environment. The workshop is held at the Minnesota Historical Society in St. Paul. See Special Programs section.

5471. 20TH-CENTURY JAPAN. (190264) (5 cr. §3471; 1115-1205 MTWThF; BlegH 120) Marshall
See 3471.

5970. DIRECTED STUDIES. (1-15 cr. prereq #)
See First Term.

Sec 1. (390271) 1-15 cr
Sec 2. (090774) 5 cr. For students who are repeating Hist 5381, Minnesota History Workshop. See Special Programs section.

5990. DIRECTED RESEARCH. (588065) (1-15 cr. prereq #)
See First Term.

Humanities (Hum)

FIRST TERM

R 1001. HUMANITIES IN THE MODERN WORLD I. (286097) (5 cr. §3001, §Rhet 1301; limited to 77 students; 1010-1205 MW; FordH 155) Roshwald
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.

R 1003. HUMANITIES IN THE MODERN WORLD III. (090273) (5 cr. §3003, §Rhet 1303; limited to 80 students; 0800-0955 MW; FordH 155) Tapp
Impact of science, especially evolution theory, on religious and humanistic thought; roots of existentialism; disorientation in modern culture; impressionism. Integrative study of works by creative figures such as Kierkegaard, Darwin, Nietzsche, Chekhov, Joyce, Mann, Manet, Monet, Renoir, Degas, Wagner, Debussy, Mahler.

R 3112. EUROPEAN HERITAGE: MIDDLE AGES. (690275) (5 cr. §1112, §Rhet 3222; limited to 77 students; 0800-0955 TTh; FordH 120) Leppert
Sixth to 14th centuries: growth of Christendom; monasticism; feudalism and courtly love; rise of towns and universities. Art and architecture: Byzantine, Romanesque, and Gothic. Music: Gregorian chant, minstrelsy, liturgical drama. Literature: epic, romance; Dante. Islam. Scholastic philosophy; Abelard, Aquinas.

R 3301. A TIME TO LAUGH: A STUDY OF THE COMIC SPIRIT. (686100) (5 cr; limited to 80 students; 1010-1205 TTh; FordH 155) Thomas
Interdisciplinary survey of comedy through time and across world cultures in literature, drama, folk ritual and tale, social convention, language, sport, film.

3970. DIRECTED STUDIES. (490276) (Cr ar; prereq #)
Guided individual reading or study.

SECOND TERM

R 1002. HUMANITIES IN THE MODERN WORLD II. (190278) (5 cr. §3002, §Rhet 1302; limited to 77 students; 0905-0955 MTWTh; FordH 120) Archer
Romanticism, liberalism, socialism; industrial revolution, materialism, cult of the individual and some counterstatements; realism, naturalism. Selected works by creative persons such as Wordsworth, Byron, Adam Smith, Bentham, Marx, Mill, Stendhal, Flaubert, Ibsen, Dostoevsky, Delacroix, Courbet, Daumier, Beethoven, Berlioz, Liszt.

R 1101. THE LIFE OF THE MIND: INTRODUCTION TO METHODS IN THE HUMANITIES. (188067) (5 cr; limited to 35 students; 0800-0850 MTWTh; FordH 285) Brown
Ways of reading and appreciating poetry, sculpture, history, philosophy, painting, rhetoric, music, and film. Works by creative persons such as Stevens, Einstein, Henry Moore, Bach, Lincoln, Plato, Genet, Euclid, Joyce, and Fellini.

R 3004. HUMANITIES IN THE MODERN WORLD. (290280) (5 cr. §1004, §Rhet 3381; limited to 70 students; 1115-1205 MTWTh; FordH 115) Furia
Europe ca. 1914-1940. Ideas and forms of society and culture: Leninist, fascist-Nazi, Freudian, neo-orthodox. Expressionism, dada, surrealism. Integrative study of works by creative figures such as Lenin, Freud, Kafka, Eliot, Duchamp, Klee, Kollwitz, Dali, Picasso, Stravinsky, Schönberg, Bartók, Wright, Gropius.

R 3011. EUROPEAN HERITAGE: GREECE. (190281) (5 cr. §1011, §Rhet 3321; limited to 77 students; 1010-1100 MTWTh; FordH 308) Hershbell
Greek civilization; literary and artistic works that have influenced modern Western culture. Epic and lyric poetry, drama, architecture, sculpture, philosophy, religion; Homer, Hesiod, Aeschylus, Sophocles, Euripides, Aristophanes, Plato, Aristotle.

3970. DIRECTED STUDIES. (990282) (Cr ar; prereq #)
See First Term.

Interdepartmental Study (ID)

Interdepartmental Independent Study is an individual learning experience arranged between the student and University faculty members to explore areas of inquiry not covered by regular courses and in which the subject crosses departmental lines. Work is carried out independently, under the direction of members of the faculty, with approval from each instructor and from the Office for Special Learning Opportunities (220 Johnston Hall). For study projects of 3 to 15 credits, students should register for ID 3970. For projects of 1-5 credits, students may register for Literature and Fine Arts (LFA) 3970, Natural Science (NSci) 3970, or Social Science (SSci) 3970. For projects that are not interdepartmental in nature, students may be able to plan a Directed Study registration through the appropriate department (Directed Study 3970).

FIRST TERM

3970. INTERDEPARTMENTAL DIRECTED STUDIES. (486101) (3-15 cr; prereq consent of the instructors and the Office for Special Learning Opportunities)
Individual projects, readings, and research in areas that cross departmental lines.

SECOND TERM

3970. INTERDEPARTMENTAL DIRECTED STUDIES. (490908) (3-15 cr; prereq consent of the instructors and the Office for Special Learning Opportunities)
Individual projects, readings, and research in areas that cross departmental lines.

Italian—See French and Italian

Jewish Studies—See Near and Middle Eastern Studies

Journalism and Mass Communication (Jour)

Departmental consent for courses marked with a delta (Δ) must be obtained in 102 Murphy Hall. When a typing prerequisite is listed, testing must be arranged through 102 Murphy Hall. Contact that office for a schedule.

FIRST TERM

1001. INTRODUCTION TO MASS COMMUNICATIONS. (286102) (2 cr; English composition or communication recommended; 0800-0850 MTWThF; FordH 55) Ettema
Nature, functions, and responsibilities of communication media and agencies from professional point of view. News, opinion, entertainment, and persuasion functions; specialized communication; aspects of advertising.

1005. VISUAL COMMUNICATION. (690924) (3 cr; prereq 3rd-qr fr; 1010-1100 MTWThF; FordH 55) Ettema
Functions of visual communication in news and advertising for print and electronic media. Evaluation and criticism of current typography, photography. Lectures (CCTV), recitations: projects, critiques.

R 1101. REPORTING. (986104) (5 cr; prereq C or better in 1001, 1005 or grad student... prejournalism status, type 25 wpm, Δ : 1010-1205 MTWThF; MurH 212) Glasser
Study and practice in fact gathering and journalistic writing. Problems in judgment and handling of news and features.

R 3155. PUBLICATIONS EDITING. (586106) (4 cr; prereq major status in journalism, 3121, Δ : 0800-09:55 MTWThF; MurH 206) Dicken-Garcia
Selection and editing of news-editorial content of newspapers, brochures, magazines. Newspaper makeup, magazine format. Press association teletype service. Laboratory.

R 5141. OPINION WRITING IN AMERICA. (386107) (4 cr; prereq sr, journalism major, Δ : 1220-1310 M, 1220-1415 WTh; MurH 105) Emery
Oral and written analysis of major political, economic, and social developments. Persuasive communication in newspapers and magazines: columnists; commentators.

¶ 5221. PUBLICATION GRAPHICS. (186108) (4 cr; prereq major status in journalism, 3121 or 3231 or 8 cr in 3xxx- or 5xxx-level courses in art and design, #; 0900-0955 MTWThF; MurH 320) Wilson
Processes in graphic communication. Technique and production of illustration. Significant graphic arts developments.

5501. COMMUNICATION AND PUBLIC OPINION I. (386110) (4 cr. §Soc 5355; prereq major status in journalism, 15 cr in social science depts; 1325-1415 MTWThF; MurH 308) Glasser
Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation. Meets concurrently with Soc 5501.

5549. PUBLIC RELATIONS. (890288) (4 cr; prereq major status in journalism, 15 cr in social science depts...# for nonmajors; 0800-0850 MTWThF; MurH 311) Lindsay
History and development of public relations practices and principles. Processes and applications in a variety of institutional settings. Critique of public relations in contemporary society.

5601. HISTORY OF JOURNALISM. (186111) (4 cr; prereq major status in journalism; 1115-1205 MTWThF; MurH 308) Dicken-Garcia
Development of American newspapers and periodicals from beginnings in Europe to present day; rise of radio and television; relation of communications developments to political, economic, and social trends.

5721. MASS MEDIA IN A DYNAMIC SOCIETY. (086112) (4 cr; prereq 1201 or 3121 for journalism majors...# for others; 0905-0955 MTWThF; MurH 311) Ward
Economic, political, and social determinants of character and content of mass communications. Patterns of operation, effect on content, and relative social utility. Theory of mass society.

¶ 5970. ADVANCED PROJECTS IN JOURNALISM. (886113) (1-4 cr [may be repeated for max 8 cr]; prereq major status in journalism, B avg, #, Δ) Staff

¶ 8970. ADVANCED PROJECTS IN MASS COMMUNICATION. (686114) (1-4 cr [may be repeated for a maximum of 8 cr]; prereq grad major or minor in mass communication, #, Δ) Staff
Individual research.

SECOND TERM

¶ 1101. REPORTING. (188070) (5 cr; prereq C or better in 1001, 1005 or grad student...prejournalism status, type 25 wpm, Δ; 1010-1205 MTWThF; MurH 212) Hage
See First Term.

1201. PRINCIPLES OF ADVERTISING. (088071) (4 cr; 1001 recommended for journalism majors; 0905-0955 MTWThF; MurH 311) Jones
Theory, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, radio, television as advertising media.

¶ 3776. MASS COMMUNICATIONS LAW. (690292) (4 cr; prereq major status in journalism, Δ for photocommunication students...1001, Δ for other journalism students...Δ for nonmajors; 0905-0955 MTWThF; MurH 105) Gillmor
Origins and background of principles of press law. The press and the First Amendment. Libel and its defenses. Confidentiality of sources. Pornography, free press and fair trial. Freedom of information or the public's right to know. Access to the media. Privacy. Advertising law, lobbying, antitrust law. Regulation of broadcasting.

¶ 5182. SUPERVISION OF SCHOOL PUBLICATIONS—August 2-12. (688073) (4 cr; prereq major status in journalism, 1011 or 3121 or #; 1300-1600 MTWTh; MurH 311) Staff
Editorial content, staff organization, editing, typography, makeup, business management. For those who plan to advise high school or college newspapers, yearbooks, magazines.

5251. PSYCHOLOGY OF ADVERTISING. (488074) (4 cr. §Psy 5751; prereq major status in journalism, Psy 1001; 1115-1205 MTWThF; MurH 308) Jones
Psychological principles, research techniques, and applications in advertising and selling. Consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.

5777. CONTEMPORARY PROBLEMS IN FREEDOM OF SPEECH AND PRESS. (490293) (4 cr; prereq major status in journalism, 15 cr in social sciences; 1115-1205 MTWThF; MurH 311) Gillmor
Anglo-American concept of freedom and responsibility, constitutional development in United States, present areas of tension. Bill of Rights and journalism today.

¶ 5970. ADVANCED PROJECTS IN JOURNALISM. (988077) (1-4 cr [may be repeated for max 8 cr]; prereq major status in journalism, B avg, #, Δ) Staff

¶ 8970. ADVANCED PROJECTS IN MASS COMMUNICATIONS. (788078) (1-4 cr [may be repeated for max 8 cr]; prereq grad major or minor in mass communication, #, Δ) Staff
See First Term.

Course Descriptions

Latin—See Classics

Library School (Lib)¹

FIRST TERM

5101. INTRODUCTION TO LIBRARY AND INFORMATION SERVICES. (486115) (4 cr; limited to 40 students; 0905-1100 MTWTh; VinH 211) Olson

Social role of libraries and other information services, with attention to professional aspects of service; administration of libraries and related information agencies.

5204. PRINT MATERIALS IN LIBRARIES. (590298) (3 cr; prereq 5101, 5221, 5401, 5601; 1220-1415 MW WaLib 339) Olson

Selection, evaluation, and use of books, periodicals, and other printed sources of information and recreation for youth in school and public libraries; reading patterns of children and adolescents, and implications for selection of printed materials to meet the requirements, purposes, and abilities of different age groups.

5401. ORGANIZATION OF INFORMATION I. (186117) (3 cr; limited to 40 students; 1220-1415 MTWTh; VinH 211) Leigh

Methods and problems involved in the description, subject organization, and retrieval of records of knowledge and information in bibliographies, library catalogs, and machine-based systems.

8402. ORGANIZATION OF INFORMATION II. (390299) (4 cr; limited to 25 students; prereq 5101, 5221, 5401 or #; 0905-1100 TThF; WaLib 339) Simonton

Advanced study of methods and problems involved in the description, subject organization, and retrieval of records of knowledge and information in bibliographies, library catalogs, and machine-based systems.

8950. SELECTED TOPICS IN LIBRARY SCIENCE: MARKETING OF LIBRARY SERVICES. (986121) (3 cr; prereq 8701 or #; limited to 20 students; 0905-1100 MW; WaLib 339) D'Elia

Discusses current segmentation models of the library's market; identification of target markets and the development of services and strategies to penetrate the target market.

8970. INDEPENDENT STUDY. (786122) (Cr ar; prereq #) Staff

8990. LIBRARY RESEARCH. (586123) (Cr ar; prereq #) Staff

Graduate students under Plan B may register for at least 4 credits in library research with the approval of the professor who will guide the research project.

SECOND TERM

5221. RECORDS OF KNOWLEDGE. (588079) (4 cr; limited to 40 students; 0905-1100 MTWTh; VinH 211) Rohde
History and development of the records of knowledge in relation to the communication problems of society; principles of selection and dissemination to meet library clientele information needs.

5601. LIBRARY APPLICATIONS OF INFORMATION SCIENCE AND TECHNOLOGY. (3 cr; limited to 24 students; lect 1220-1415 MW; VinH 211) Crickman

Introduction to computers and related information technology with reference to the relationship of bibliographic storage and retrieval to systems considerations. Development of retrieval algorithms and their performance evaluation. Information measures and models in information science.

Lab 1, (788081) 1220-1415 TTh, WaLib 450

Lab 2, (388083) 1515-1715 TTh, WaLib 450

8103. PUBLIC LIBRARIES. (388083) (4 cr; prereq 5101, 5221, 5401, 5601 or #; 1430-1625 TTh; WaLib 339) McClaskey

Development of public library services with emphasis on the growth of cooperative library systems and interrelationships with all types of libraries; social change and problem solving as related to research, literature, organization, administration, and legal factors.

8223. GENERAL BIBLIOGRAPHY. (190300) (4 cr; prereq 5221, 5401, or #; 1010-1210 MW; WaLib 339) Maack
Major national and trade bibliographies with emphasis on those of the United States, Great Britain, France, Germany, and Russia; their use in selection and acquisition of print and nonprint materials and in the preparation of bibliographies.

8233. HISTORY OF CHILDREN'S LITERATURE. (688087) (4 cr; prereq 5101, 5221 or #; 1325-1520 MW; WaLib 339) McClaskey

Introduction to the history and study of children's literature in relation to social history, with special reference to current application for library services.

¹The Library School is a professional school that offers only graduate degrees and courses. Courses numbered 8000 and above are open only to graduate students and to librarians who hold a fifth-year degree in library science. Courses numbered at the 5000 level are open to anyone who has been admitted to the Graduate School or to any undergraduate in the College of Liberal Arts or the College of Education. A student who does not fall in one of the above categories must have registration for any library science course approved by an adviser in the Library School office, 419 Walter Library.

8241. HISTORY OF BOOKS AND PRINTING. (990301) (4 cr; prereq 5221 or #; 1220-1415 TTh; WaLib 339) Maack
Bookmaking in its various forms from earliest times to the present. Development of the alphabet and the manuscript book;
invention and spread of printing; design of the modern book with emphasis on aesthetic and technical aspects.

R 8950. SELECTED TOPICS IN LIBRARY SCIENCE: SERIALS MANAGEMENT. (590303) (3 cr; prereq 5101, 5221,
5401, 5601 or #; 0905-1205 TTh; WaLib 339) Crickman

For both technical services and reference librarians. Includes the development and organization of serial collections;
management, role in reference service and online developments.

8970. INDEPENDENT STUDY. (288089) (Cr ar; prereq #) Staff

8990. LIBRARY RESEARCH. (688090) (Cr ar; prereq #) Staff
See First Term.

Linguistics (Ling)

FIRST TERM

3001. INTRODUCTION TO LINGUISTICS. (386124) (5 cr, §5001, §3005; 1010-1205 MWF, 1010-1100 TTh; FolH 104)
Miranda

Survey of phonetics, phonology, morphology, syntax, semantics, and historical-comparative linguistics; language
learning and the psychology of language; linguistic universals; language in society.

3301. PHONETICS. (086126) (5 cr, §5003, §5301; prereq 3001 or #3001 or #; 1325-1520 MTWThF; FolH 202) Sheldon
Physiology and acoustics of speech sounds; practice and drill in production and perception. Meets with 5003 and 5301.

5001. INTRODUCTION TO LINGUISTICS. (886127) (5 cr, §3001, §3005; prereq grad standing or #; 1010-1205 MWF,
1010-1100 TTh; FolH 104) Miranda
Meets with 3001.

5003. APPLIED PHONETICS. (686128) (5 cr, §3301, §5301; not open to linguistics majors; prereq 5001 or #5001 or #;
1325-1520 MTWThF; FolH 202) Sheldon
Primarily for teachers of English as a second language. Meets with 3301 and 5301.

5301. PHONETICS. (486129) (5 cr, §3301, §5003; prereq 3001 or 5001 or #5001 or #; 1325-1520 MTWThF; FolH 202)
Sheldon
See 3301. Meets with 3301 and 5003.

SECOND TERM

5721. ENGLISH AS A SECOND LANGUAGE: METHODS. (488091) (4 cr; prereq 3001 or 5001 or #; 1010-1205 MWF;
FolH 104) Tarone
Linguistics applied to teaching English as a second language.

Music (Mus)

See also Music Education under College of Education.

FIRST TERM

1001. FUNDAMENTALS OF MUSIC. (4 cr; for non-music majors)
Basic musical symbols, vocabulary, rhythm, design, scale structures, intervals, chords. Development of basic piano skills;
playing simple accompaniments.

Sec 1, (886130) 0905-0955 MTWThF, WullH 320, Anderson

Sec 2, (686131) 1010-1100 MTWThF, WullH 320, Hilley

R 1160. VOICE: CLASS LESSONS. (486132) (2 cr per qtr [max 6 cr]; 1325-1415 MTWThF; MusEd 103) Weller
Fundamentals of vocal production: posture, respiration, phonation, articulation.

1507. SURVEY OF MELODIC AND HARMONIC PROCEDURES. (286133) (3 cr; prereq #; 0800-0850 MTWThF; WullH
7) Gross
Principles of melodic and harmonic structure.

1517. EAR-TRAINING AND SIGHT-SINGING. (186134) (3 cr; prereq #; 0905-0955 MTWThF; WullH 7) Gross
Development of aural skills with concentration on sight-singing, interval recognition, melodic and harmonic dictation, and
vocal improvisation.

R 3791. INTRODUCTION TO ELECTRONIC MUSIC. (986135) (4 cr; limited to 25 students; prereq 4 cr in music or #;
1010-1205 TWTh; ScottH 103) Ullan
Musical literature to which electronic materials contribute. Listening, discussions, and readings. Exercises in use of
equipment.

Course Descriptions

3970. DIRECTED STUDIES. (786136) (1-15 cr; prereq #: Δ ; hrs ar: ScottH 104) Staff
Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students.

5375. VOCAL PEDAGOGY—June 15-July 2. (690308) (4 cr; prereq 18 cr applied voice, MuEd 3431 or # 1535-1730 MTWThF; MusEd 103) Ware
Anatomical study of the vocal mechanism. Principles and techniques of vocal production. Teaching methods and application of knowledge.

5384. CHORAL CONDUCTING. (186142) (4 cr; prereq #: 1115-1205 MTWThF; WullH 7) Lancaster
Choral conducting—hand techniques, sound control, articulation, breath control, intonation, etc.

5602. HISTORY OF OPERA. (490309) (3 cr; prereq 9 cr in history of music, art, theatre, or European history from 1600, or #: 1325-1415 MTWThF; ScottH 103) Sutton
Origins of opera: development as a musicodramatic form through analysis of *libretto* and *music of representative masterpieces* of the late Renaissance, baroque, classical, romantic, and contemporary periods.

5705. LATIN AMERICAN MUSIC. (690311) (4 cr; 0905-0955 MTWThF; ScottH 103) Riedel
Pre-Maya and pre-Inca times through colonial period to present. Music of Indians in Brazil, Inca countries. Afro-American, Ibero-Latin American music. Folk, popular, contemporary music.

5950. TOPICS IN MUSIC

Sec 1. Nineteenth Century Church Music. (290313) (4 cr; 0800-0850 MTWThF; ScottH 103) Riedel
Discussion of church music in Nineteenth Century Germany, Scandinavia, England, America, Italy, France and Spain. Specific discussion of the history of the oratorio.

Sec 2. Keyboard Skills for the Public School Teacher. (990315) (3 cr; limited to 24 students: 1115-1205 MTWThF; MusEd 200) Hilley
Designed to meet the needs of the public school teacher with keyboard skills used in general music class, band, choir, and orchestra.

8990.* SPECIAL PROBLEMS. (486146) (2-12 cr; prereq 5841; hrs ar: ScottH 104) Riedel Utan

Courses in Applied Music

Offerings in applied music are classified according to seven modes: elective (with or without credit), principal, major, secondary required, secondary elective, principal beyond requirement, major beyond requirement; and 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 he or she 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, 106 Scott 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: \$96 for 0-2 credits. Music and music education majors at the x2xx, x3xx, or x4xx level are exempt from payment of these fees as are M.F.A. and D.M.A. students taking applied music at the 83xx level. Majors at the x5xx, x6xx, or x7xx level pay \$32 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.

FIRST TERM COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	
Piano	1101	1201	1301	1401	1501	1601	1701	Weiser, McNab, Ivory, Braginsky
Harpsichord	1102	1202	1302	1402	1502	1602	1702	Burris
Organ	1103	1203	1303	1403	1503	1603	1703	Fleischer
Voice	1104	1204*	1304*	1404	1504	1604	1704	Ware, Schuessler Weller, Wilson, Laskin
Violin	1105	1205	1305	1405	1505	1605	1705	Kim, West, Thomson
Viola	1106	1206	1306	1406	1506	1606	1706	Ar
Cello	1107	1207	1307	1407	1507	1607	1707	Remenikova, Jamieson
Double Bass	1108	1208	1308	1408	1508	1608	1708	Clute
Flute	1109	1209	1309	1409	1509	1609	1709	Eagle, Zeitlin
Oboe	1111	1211	1311	1411	1511	1611	1711	Angelucci, Holub, Capps
Clarinet	1112	1212	1312	1412	1512	1612	1712	Williams, Anderson, Haugen
Saxophone	1113	1213	1313	1413	1513	1613	1713	Williams, Anderson, Haugen
Bassoon	1114	1214	1314	1414	1514	1614	1714	Miller
French Horn	1115	1215	1315	1415	1515	1615	1715	Ar
Trumpet	1116	1216	1316	1416	1516	1616	1716	Baldwin, Hasselmann
Trombone	1117	1217	1317	1417	1517	1617	1717	Ar
Baritone	1118	1218	1318	1418	1518	1618	1718	Ricketts
Tuba	1119	1219	1319	1419	1519	1619	1719	Tolbert
Percussion	1121	1221	1321	1421	1521	1621	1721	Fine, Dahlgren
Harp	1122	1222	1322	1422	1522	1622	1722	Miller
Guitar	1123	1223	1323	1423	1523	1623	1723	Van
Accordion	1124				1524			Malmberg
Sitar	1125				1525			Ar
Piano	3101	3201	3301	3401	3501	3601	3701	Weiser, McNab, Ivory, Braginsky
Harpsichord	3102	3202	3302	3402	3502	3602	3702	Burris
Organ	3103	3203	3303	3403	3503	3603	3703	Fleischer
Voice	3104	3204*	3304*	3404	3504	3604	3704	Ware, Schuessler Weller, Wilson, Laskin
Violin	3105	3205	3305	3405	3505	3605	3705	Kim, West, Thomson
Viola	3106	3206	3306	3406	3506	3606	3706	Ar
Cello	3107	3207	3307	3407	3507	3607	3707	Remenikova, Jamieson
Double Bass	3108	3208	3308	3408	3508	3608	3708	Clute
Flute	3109	3209	3309	3409	3509	3609	3709	Eagle, Zeitlin

*1430-1520 TTh, ScottH 108

FIRST TERM COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	
Oboe	3111	3211	3311	3411	3511	3611	3711	Angelucci, Holub, Capps
Clarinet	3112	3212	3312	3412	3512	3612	3712	Williams, Anderson, Haugen
Saxophone	3113	3213	3313	3413	3513	3613	3713	Williams, Anderson, Haugen
Bassoon	3114	3214	3314	3414	3514	3614	3714	Miller
French Horn	3115	3215	3315	3415	3515	3615	3715	Ar
Trumpet	3116	3216	3316	3416	3516	3616	3716	Baldwin, Hasselmann
Trombone	3117	3217	3317	3417	3517	3617	3717	Ar
Baritone	3118	3218	3318	3418	3518	3618	3718	Ricketts
Tuba	3119	3219	3319	3419	3519	3619	3719	Tolbert
Percussion	3121	3221	3321	3421	3521	3621	3721	Fine, Dahlgren
Harp	3122	3222	3322	3422	3522	3622	3722	Miller
Guitar	3123	3223	3323	3423	3523	3623	3723	Van
Accordion	3124				3524			Malmberg
Sitar	3125				3525			Ar
Piano	8101	8201	8301	8401	8501	8601	8701	Weiser, McNab, Ivory, Braginsky
Harpichord	8102	8202	8302	8402	8502	8602	8702	Burns
Organ	8103	8203	8303	8403	8503	8603	8703	Fleischer
Voice	8104	8204*	8304*	8404	8504	8604	8704	Ware, Schuessler Weller, Wilson
Violin	8105	8205	8305	8405	8505	8605	8705	Kim, West, Thomson
Viola	8106	8206	8306	8406	8506	8606	8706	Ar
Cello	8107	8207	8307	8407	8507	8607	8707	Remenikova, Jamieson
Double Bass	8108	8208	8308	8408	8508	8608	8708	Clute
Flute	8109	8209	8309	8409	8509	8609	8709	Eagle, Zeitlin
Oboe	8111	8211	8311	8411	8511	8611	8711	Angelucci, Holub, Capps
Clarinet	8112	8212	8312	8412	8512	8612	8712	Williams, Anderson, Haugen
Saxophone	8113	8213	8313	8413	8513	8613	8713	Williams, Anderson, Haugen
Bassoon	8114	8214	8314	8414	8514	8614	8714	Miller
French Horn	8115	8215	8315	8415	8515	8615	8715	Ar
Trumpet	8116	8216	8316	8416	8516	8616	8716	Baldwin, Hasselmann
Trombone	8117	8217	8317	8417	8517	8617	8717	Ar
Baritone	8118	8218	8318	8418	8518	8618	8718	Ricketts
Tuba	8119	8219	8319	8419	8519	8619	8719	Tolbert
Percussion	8121	8221	8321	8421	8521	8621	8721	Fine, Dahlgren
Harp	8122	8222	8322	8422	8522	8622	8722	Miller

*1430-1520 TTh, ScottH 108

FIRST TERM COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	
Guitar	8123	8223	8323	8423	8523	8623	8723	Van
Accordion	8124				8524			Malmberg
Sitar	8125				8525			Ar

Course Descriptions

SECOND TERM

1001. FUNDAMENTALS OF MUSIC. (288092) (4 cr; for non-music majors; 0905-0955 MTWThF; WullH 320) Baldwin
See First Term.

1508. SURVEY OF MELODIC AND HARMONIC PROCEDURES. (988094) (3 cr; prereq #: 0800-0850 MTWThF;
WullH 7) Fetter
See 1507 First Term.

1518. EAR-TRAINING AND SIGHT-SINGING. (788095) (3 cr; prereq #: 0905-0955 MTWThF; WullH 7) Fetter
See 1517 First Term.

3970. DIRECTED STUDIES. (388097) (1-15 cr; prereq #, Δ; hrs ar; ScottH 104) Staff
See First Term.

5666. STRAVINSKY. (790316) (4 cr; prereq 12 cr in music, 1506; 1010-1100 MTWThF; ScottH 103) 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).

5804. FOLK AND TRADITIONAL MUSIC: CROSS-CULTURAL SURVEY. (390318) (4 cr; 1325-1415 MTWThF; ScottH 103) 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.

8990.* SPECIAL PROBLEMS. (788100) (2-12 cr; prereq 5841; hrs ar; ScottH 104) Jackson, Fetter

Courses in Applied Music

Information about second term courses in applied music appears on the following pages.

SECOND TERM COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	
Piano	1101	1201	1301	1401	1501	1601	1701	Freed Ivory Braginsky
Harpichord	1102	1202	1302	1402	1502	1602	1702	Ar
Organ	1103	1203	1303	1403	1503	1603	1703	Fleischer
Voice	1104	1204*	1304*	1404	1504	1604	1704	Ware, Weller, Wilson
Violin	1105	1205	1305	1405	1505	1605	1705	Kim
Viola	1106	1206	1306	1406	1506	1606	1706	Ar
Cello	1107	1207	1307	1407	1507	1607	1707	Remenikova, Jamieson
Double Bass	1108	1208	1308	1408	1508	1608	1708	Clute
Flute	1109	1209	1309	1409	1509	1609	1709	Zeitlin
Oboe	1111	1211	1311	1411	1511	1611	1711	Angelucci, Holub, Capps
Clarinet	1112	1212	1312	1412	1512	1612	1712	Anderson, Williams, Haugen
Saxophone	1113	1213	1313	1413	1513	1613	1713	Anderson, Williams, Haugen
Bassoon	1114	1214	1314	1414	1514	1614	1714	Miller
French Horn	1115	1215	1315	1415	1515	1615	1715	Ar
Trumpet	1116	1216	1316	1416	1516	1616	1716	Hasselmann, Baldwin
Trombone	1117	1217	1317	1417	1517	1617	1717	Ar
Baritone	1118	1218	1318	1418	1518	1618	1718	Ricketts
Tuba	1119	1219	1319	1419	1519	1619	1719	Tolbert
Percussion	1121	1221	1321	1421	1521	1621	1721	Fine, Dahlgren
Harp	1122	1222	1322	1422	1522	1622	1722	Miller
Guitar	1123	1223	1323	1423	1523	1623	1723	Van
Accordion	1124				1524			Malmberg
Sitar	1125				1525			Ar
Piano	3101	3201	3301	3401	3501	3601	3701	Freed, Ivory, Braginsky
Harpichord	3102	3202	3302	3402	3502	3602	3702	Ar
Organ	3103	3203	3303	3403	3503	3603	3703	Fleischer
Voice	3104	3204*	3304*	3404	3504	3604	3704	Ware, Weller, Wilson
Violin	3105	3205	3305	3405	3505	3605	3705	Kim
Viola	3106	3206	3306	3406	3506	3606	3706	Ar
Cello	3107	3207	3307	3407	3507	3607	3707	Remenikova, Jamieson
Double Bass	3108	3208	3308	3408	3508	3608	3708	Clute
Flute	3109	3209	3309	3409	3509	3609	3709	Zeitlin
Oboe	3111	3211	3311	3411	3511	3611	3711	Angelucci, Holub, Capps
Clarinet	3112	3212	3312	3412	3512	3612	3712	Anderson, Williams, Haugen
Saxophone	3113	3213	3313	3413	3513	3613	3713	Anderson, Williams, Haugen

*1430-1520 TTh, ScottH 108

SECOND TERM COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	
Bassoon	3114	3214	3314	3414	3514	3614	3714	Miller
French Horn	3115	3215	3315	3415	3515	3615	3715	Ar
Trumpet	3116	3216	3316	3416	3516	3616	3716	Hasselmann, Baldwin
Trombone	3117	3217	3317	3417	3517	3617	3717	Ar
Baritone	3118	3218	3318	3418	3518	3618	3718	Ricketts
Tuba	3119	3219	3319	3419	3519	3619	3719	Tolbert
Percussion	3121	3221	3321	3421	3521	3621	3721	Fine, Dahlgren
Harp	3122	3222	3322	3422	3522	3622	3722	Miller
Guitar	3123	3223	3323	3423	3523	3623	3723	Van
Accordion	3124				3524			Malmberg
Sitar	3125				3525			Ar
Piano	8101	8201	8301	8401	8501	8601	8701	Freed, Ivory, Braginsky
Harpsichord	8102	8202	8302	8402	8502	8602	8702	Ar
Organ	8103	8203	8303	8403	8503	8603	8703	Fleischer
Voice	8104	8204*	8304*	8404	8504	8604	8704	Ware, Weller, Wilson
Violin	8105	8205	8305	8405	8505	8605	8705	Kim
Viola	8106	8206	8306	8406	8506	8606	8706	Ar
Cello	8107	8207	8307	8407	8507	8607	8707	Remenikova, Jamieson
Double Bass	8108	8208	8308	8408	8508	8608	8708	Clute
Flute	8109	8209	8309	8409	8509	8609	8709	Zeitlin
Oboe	8111	8211	8311	8411	8511	8611	8711	Angelucci, Holub
Clarinet	8112	8212	8312	8412	8512	8612	8712	Anderson, Williams, Haugen,
Saxophone	8113	8213	8313	8413	8513	8613	8713	Anderson, Williams, Haugen,
Bassoon	8114	8214	8314	8414	8514	8614	8714	Miller
French Horn	8115	8215	8315	8415	8515	8615	8715	Ar
Trumpet	8116	8216	8316	8416	8516	8616	8716	Hasselmann, Baldwin
Trombone	8117	8217	8317	8417	8517	8617	8717	Ar
Baritone	8118	8218	8318	8418	8518	8618	8718	Ricketts
Tuba	8119	8219	8319	8419	8519	8619	8719	Tolbert
Percussion	8121	8221	8321	8421	8521	8621	8721	Fine, Dahlgren
Harp	8122	8222	8322	8422	8522	8622	8722	Miller
Guitar	8123	8223	8323	8423	8523	8623	8723	Van
Accordion	8124				8524			Malmberg
Sitar	8125				8525			Ar

Near and Middle Eastern Studies

Ancient Near Eastern and Jewish Studies (ANEJ)

FIRST TERM

5970. DIRECTED STUDIES. (286231) (1-4 cr; prereq #)
Guided individual reading or study.

SECOND TERM

5970. DIRECTED STUDIES. (588101) (1-4 cr; prereq #)
See First Term.

Hebrew (Hebr)

FIRST TERM

3980. DIRECTED INSTRUCTION. (186232) (1-5 cr; prereq #)
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. (986233) (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or #)

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 may not enroll in other summer courses.

1104-1105-1106. INTRODUCTION TO BIBLICAL HEBREW. 790915 (590916) (390917) (15 cr for both terms)

Sec 5, 0800-1100 MTWThF, ExpE 193, Paradise, Reisman

A beginning course for those with no background in Hebrew. Leads to mastery of the Hebrew alphabet, basic grammar and vocabulary needed to read Biblical narratives. Emphasizes the richness of interpretation provided by access to the original text of the Hebrew Scriptures.

SECOND TERM

3980. DIRECTED INSTRUCTION. (388102) (1-5 cr; prereq #)
See First Term.

5970. DIRECTED READINGS. (188103) (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or #)

Jewish Studies (JwSt)

See also Religious Studies.

FIRST TERM

3126. MODERN JUDAISM. (186237) (4 cr; 0905-0955 MTWThF; FolH 305) Zahavy
Jewish theology, religion, and ideology in the 19th and 20th centuries. The holocaust. Contemporary theology and practice: the rabbi, synagogue, talmudic academy, average Jew. American Judaism: orthodox, conservative, reform. Zionism in Europe and America. Hasidism.

5970. DIRECTED STUDIES. (086238) (1-12 cr; prereq #)
Guided individual reading or study.

SECOND TERM

5970. DIRECTED STUDIES. (088104) (1-12 cr; prereq #)
See First Term.

Course Descriptions

Middle Eastern Studies (MidE)

SECOND TERM

3544. THE ARAB WORLD IN RECENT TIMES. (090306) (4 cr; 0905-0955 MTWThF; FoH 307) Farah
The central Arab lands (the Arabian peninsula, Iraq, Syria, Jordan, Lebanon, Egypt) and the North African region (Libya, Tunisia, Morocco, Algeria) from end of World War I to present. Foreign occupation and struggle for independence, position in regional and international politics.

Personal Orientation (PO)

See also Rhetoric 1147, Efficient Reading.

FIRST TERM

1001. HOW TO STUDY. (886242) (2 cr [does not count toward BA degree]; limited to 30 students; 0800-0850 MTWThF; JonesH 2)

Practical assistance in developing efficient study habits, organizing materials, preparing for examinations, and improving speed and comprehension of reading.

SECOND TERM

1001. HOW TO STUDY. (888105) (2 cr [does not count toward BA degree]; limited to 30 students; 0800-0850 MTWThF; JonesH 2)

See First Term.

Philosophy (Phil)

FIRST TERM

1001. LOGIC. (686243) (5 cr; 0905-0955 MTWThF; FordH 130)
Application of formal techniques for evaluating arguments.

1003. ETHICS. (090256) (5 cr; 1010-1100 MTWThF; FordH 285)

Problems that arise when human beings attempt to think systematically about conduct and value.

1004. INTRODUCTION TO POLITICAL PHILOSOPHY. (390819) (5 cr; 1115-1205 MTWThF; FordH 160)

An introduction to some of the central concepts and principal theories of political philosophy.

3003. GENERAL HISTORY OF WESTERN PHILOSOPHY. (890260) (5 cr; 0905-0955 MTWThF; FordH 160)

Modern philosophy from Descartes through Hume.

3105. INTRODUCTION TO THE THEORY OF KNOWLEDGE. (290263) (4 cr; prereq 1001 or 3201 or #; 1115-1205 MTWThF; FordH 115) Staff

Theories and problems concerning evidence, belief, and knowledge.

3201. ELEMENTS OF SYMBOLIC LOGIC I. (790820) (5 cr; §5201; 1010-1100 MTWThF; FordH 160)

Development of a formalized language. Syntax and semantics of sentential and first order predicate logic, deductive systems.

3970. DIRECTED STUDIES. (786248) (1-5 cr; prereq #) Staff

5201. ELEMENTS OF SYMBOLIC LOGIC I. (590821) (5 cr; 1010-1100 MTWThF; FordH 160)

Development of a formalized language. Syntax and semantics of sentential and first order predicate logic, deductive systems. Meets concurrently with 3201.

5970. DIRECTED STUDIES. (786251) (1-5 cr; prereq #) Staff

8970. DIRECTED STUDY AND RESEARCH. (186254) (1-4 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

SECOND TERM

1001. LOGIC. (988158) (5 cr; 0905-0955 MTWThF; MurH 308)

See First Term.

1002. INTRODUCTION TO PHILOSOPHY. (190272) (5 cr; 1115-1310 TWTh; FordH 150)

Problems, principal methods and schools of philosophy; historical and contemporary views.

3004. GENERAL HISTORY OF WESTERN PHILOSOPHY. (890274) (5 cr; 1010-1100 MTWThF; FordH 175) Staff

Later modern philosophy from Kant through 19th century.

3302. MORAL PROBLEMS OF CONTEMPORARY SOCIETY. (390822) (5 cr; 0905-0955 MTWThF; FordH 160)

Analyses of selected moral problems of current interest.

3970. DIRECTED STUDIES. (688171) (1-5 cr; prereq #) Staff

5521. PHILOSOPHY OF RELIGION. (290277) (4 cr; prereq 8 cr in philosophy; 1010-1100 MTWThF; FordH 160) Staff
Grounds and sanctions of religion, according to various philosophies.

5760. SELECTED TOPICS IN PHILOSOPHY: TOPICS IN CONTEMPORARY METAPHYSICS. (190823) (4 cr per qtr; prereq 4 3xxx-5xxx cr in philosophy or #; 1115-1205 MTWThF; FordH 175)

5970. DIRECTED STUDIES. (488172) (1-5 cr; prereq #) Staff

8970. DIRECTED STUDY AND RESEARCH. (188174) (1-4 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

Political Science (Pol)

FIRST TERM

1001. AMERICAN GOVERNMENT AND POLITICS. (886373) (5 cr; 0905-1100 TWTh; AndH 270) Shaw
Principles, organization, processes, functions of government, and the interplay of political forces in the United States. Attention throughout to current issues.

1027. URBAN POLITICS. (186277) (4 cr; 1115-1205 MTWThF; BlegH 420) Nimitz
Urban politics and issues facing American cities. Political conflicts over economic and social problems.

1051. INTRODUCTION TO POLITICAL ANALYSIS. (086286) (5 cr; 1010-1205 TWTh; BlegH 255) Fogelman
Formation of political communities, political participation, policy making, compliance, legitimacy, political development, types of political systems. Empirical and normative problems. Comparisons among major countries.

3307. THE AMERICAN BUREAUCRACY. (990279) (4 cr; prereq 1001 or #: 1010-1100 MTWThF; BlegH 440) Walcott
Structure of American bureaucracy; personnel, politics, and policy making; policy implementation.

3310. TOPICS IN AMERICAN POLITICS—THE ENERGY CONNECTION: THE AMERICAN PUBLIC AND ENERGY POLITICS. (386303) (4 cr; prereq 1001 or #: 1010-1100 MTWThF; Law 55) Holt
A comprehensive look at the interaction among energy companies, public opinion and citizen protest groups, and national, state and local government levels in the United States.

3331. MINNESOTA GOVERNMENT AND POLITICS. (886306) (4 cr; 1001 recommended; 0800-0850 MTWThF; BlegH 255) Backstrom
The Minnesota political system; demographic and cultural setting, political and governmental processes, contemporary policies.

3659. AMERICAN POLITICAL THOUGHT. (790283) (4 cr; prereq 1051 or 9 cr in social science or #: 1115-1205 MTWThF; BlegH 260) Ball
From colonial times to present: Puritanism; Revolution; Constitution; utopianism; sectionalism and pluralism; anarchist, socialist, populist, and syndicalist thought; social Darwinism; conservatism; political thought in law and literature.

3810. TOPICS IN INTERNATIONAL POLITICS: ARMS REGULATION. (590284) (4 cr; 1115-1205 MTWThF; BlegH 130) Hopmann
Analysis of negotiation for arms control and disarmament with particular attention devoted to the SALT I and SALT II negotiations and the agreements which resulted from them.

5738. POLITICAL CAMPAIGNS AND ELECTIONS. (390285) (4 cr; prereq 1001 or #: 0905-0955 MTWThF; BlegH 260) Aldrich
National, state, and local campaigns and elections; research in local political parties and campaigns.

5741. POLITICAL BEHAVIOR OF WOMEN. (190286) (4 cr; prereq 1001 or 1051 or #: 0905-0955 MTWThF; BlegH 330) Gray
Women as political actors. Mass political behavior, women's political movements, women in political parties and elective office, the status of women in different societies.

SECOND TERM

1001. AMERICAN GOVERNMENT AND POLITICS. (188179) (5 cr; 1010-1205 TWTh; BlegH 235) Sullivan
See First Term.

3306. THE AMERICAN PRESIDENCY. (090919) (4 cr; prereq 1001 or #: 0800-0850 MTWThF; BlegH 205) Eyestone
The office and individual presidents; organizational characteristics of the Executive Office and individual qualities of decision making; relationships with Congress, the bureaucracy, parties, interest groups, media, and public opinion.

3308. THE UNITED STATES CONGRESS. (690289) (4 cr; prereq 1001 or #: 0905-0955 MTWThF; BlegH 205) Simon
Internal organization, committee system, party leadership, norms, recruitment; legislative policymaking; relationship with the President and bureaucracy; interest group, political party and constituency influences on the congressional process.

3309. JUDICIAL PROCESS. (890291) (4 cr; prereq 1001 or #: 1010-1100 MTWThF; BlegH 250) S Olson
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.

Course Descriptions

5455. LATIN AMERICAN GOVERNMENT AND POLITICS. (188182) (5 cr; prereq 1051, or #; 0800-0955 TWTh; RarigC 616) Wynia

Latin American political heritage, political processes, contemporary public policy issues; problems of social, economic, and political change in selected countries.

5737. POLITICAL PARTIES. (290294) (4 cr; prereq 1001 or #; 1115-1205 MTWThF; BlegH 250) Flanigan

Role and functions of the party in national government; party composition and organization; process of nomination and policy formulation; regulation of party organization and activities.

Psychology (Psy)

FIRST TERM

1001. GENERAL PSYCHOLOGY. (386480) (5 cr; 0800-0955 MTWThF; NichH 45) Burkhardt, Fox, Jenkins, Kerndall, Weiss

Introduction to study of human behavior. Prerequisite for all advanced courses in psychology.

R 1004. INTRODUCTORY LABORATORY PSYCHOLOGY. (4 cr; each section limited to 24 students; prereq soph, 1001 or F1001)

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, (186481) 0905-1205 MF, 0905-1100 W, E1H 150

Sec 2, (086482) 1325-1625 MF, 1325-1520 W, E1H 150

Sec 3, (886483) 0905-1205 MF, 0905-1100 W, E1H 160

3011. INTRODUCTION TO PSYCHOLOGY OF LEARNING. (486485) (4 cr; prereq 1001, 1005 or Biol 1107 or #; 1115-1205 MTWThF; E1H N119) Peterson

Basic methods in study of learning. Fundamental concepts and principles governing the learning process.

3014. INTRODUCTION TO APPLIED PSYCHOLOGY. (686484) (4 cr; prereq 1001; 1010-1100 MTWThF; APh 150) Brown

History and survey of the fields of applied psychology with special emphasis on research issues and problems, and applications of laboratory research.

3101. INTRODUCTION TO PERSONALITY. (286486) (4 cr. §5101; prereq 1001; 0905-0955 MTWThF; Arch 55) Tellegen

Concepts of personality, personality theory, empirical research in the field of personality, personality assessment.

3206. APPLIED SOCIAL PSYCHOLOGY. (xxxxxx) (4 cr; prereq 1001 and 3201; 1115-1205 MTWThF; E1H 150) Heath
Review applications of social psychological theories to such areas as jury selection, media, behavioral medicine, desegregation, advertising, victimology, and juvenile delinquency and energy conservation programs.

3604. INTRODUCTION TO ABNORMAL PSYCHOLOGY. (986488) (4 cr, §5604; prereq 1001; 1115-1205 MTWThF; APh 150) Kendall

Surveys the field of abnormal psychology. Etiologies of behavioral disorders; available treatment.

3801. INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS. (786489) (4 cr; prereq 1001 or equiv; 1010-1100 MTWThF; BlegH 10)

Quantification as it pertains to research problems in psychology. Descriptive and inferential statistics, including hypothesis testing and some nonparametric statistics. Examples from various areas of psychology.

3970. DIRECTED STUDIES. (186490) (1-6 cr; prereq #; hrs ar) Lofquist

Independent study or small seminars; designed to permit students to pursue their interests through special reading or study.

3990H. HONORS COURSE: PROJECT IN PSYCHOLOGY. (986491) (1-8 cr; prereq sr, #; hrs ar) Lofquist

Individual library study or empirical investigation.

5014. PSYCHOLOGY OF HUMAN LEARNING AND MEMORY. (786492) (4 cr; prereq 1005 or 3011 or 3051 or #, except students in honors sequences, grads; 0905-0955 MTWThF; E1H N119) Fox

Processes and principles in human learning and memory. Feedback, instruction and learning, individual differences in learning, cognitive processes in learning and retention, theories of human memory.

5201. SOCIAL PSYCHOLOGY. (290327) (4 cr; prereq 1001, 3201 or honors or grad or #; 1010-1100 MTWThF; E1H N119) Berscheid

Classical and contemporary theories and research in social psychology with emphasis on social influence and group dynamics.

8519. PRACTICUM IN REHABILITATION COUNSELING. (586493) (3 cr; prereq 8503 or #; hrs ar)

Counseling experience with physically and emotionally disabled clients in approved public and private rehabilitation agencies.

8520. FIELDWORK IN APPLIED PSYCHOLOGY. (386494) (1-6 cr; prereq #; hrs ar)

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (186495) (1-6 cr; prereq #: hrs ar)

8614. PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT. (086496) (2 cr; prereq student in clinical psychology program or #: hrs ar)

Theory and practice in clinical application of assessment techniques. Observation, administration, scoring, and interpretation is the focus of the laboratory experience.

8620. PRACTICUM IN CLINICAL PSYCHOLOGY. (886497) (1-6 cr; prereq #: hrs ar)
Field experience in professional work in clinical settings.

8630. PRACTICUM IN CLINICAL CHILD PSYCHOLOGY. (686498) (3 cr; prereq #: hrs ar)

Supervised experience in psychodiagnostic work with emotionally disturbed children and their families.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (486499) (2-4 cr; prereq PhD candidate in clinical psychology program and consent of director of clinical psychology training program; hrs ar)

8980. DIRECTED TEACHING IN PSYCHOLOGY. (186500) (1-6 cr; prereq #) Lofquist

8990.* RESEARCH PROBLEMS. (086501) (1-6 cr; hrs ar) Lofquist

SECOND TERM

1001. GENERAL PSYCHOLOGY. (888184) (5 cr; 0800-0955 MTWThF; HSUnitA 2-530)

See First Term.

n 1005. INTRODUCTORY LABORATORY PSYCHOLOGY. (4 cr; each section limited to 24 students; prereq soph, 1004)

See 1004 First Term.

Sec 1, (488186) 0905-1205 MF, 0905-1100 W, EltH 50

Sec 2, (288187) 1325-1625 MF, 1325-1520 W, EltH 60

Sec 3, (188188) 0905-1205 MF, 0905-1100 W, EltH 60

3031. SENSATION AND PERCEPTION. (988189) (4 cr; prereq 1001, 1004; 1115-1205 MTWThF; EltH N119)

Psychological, biological, and physical aspects of sensory experience in humans and animals. Major emphasis on vision and hearing.

3201. INTRODUCTION TO SOCIAL PSYCHOLOGY. (290330) (4 cr; prereq 1001; 0905-0955 MTWThF; EltH N119)
Snyder

Theories and research in social psychology. Effects upon the individual's attitudes and behavior of other persons, mass communications, and group membership.

3617. INTRODUCTION TO CLINICAL PSYCHOLOGY. (188191) (4 cr; prereq 3604, 3801 or 5604; 1010-1100 MTWThF; EltH 150) Kendall

Survey of historical developments and contemporary issues. Focuses upon relevant research and clinical trends in psychological assessment methods and prevention and intervention strategies.

3970. DIRECTED STUDIES. (988192) (1-6 cr; prereq #: hrs ar) Lofquist

See First Term.

3990H. HONORS COURSE: PROJECT IN PSYCHOLOGY. (788193) (1-8 cr; prereq sr, #: hrs ar) Lofquist

See First Term.

5011. THEORIES OF LEARNING AND COGNITION. (588194) (4 cr; prereq 3011, except for students in honors sequence and grad students; 1010-1100 MTWThF; EltH N119) Peterson

Major theories of learning and contemporary theories of information processing and cognition.

5045. THE PSYCHOLOGY OF MOTIVATION. (388195) (4 cr; prereq 3011 or # for undergrad students; 0800-0850 MTWThF; EltH N119) Carlson

Survey of classic and contemporary research and theory pertaining to motivation in animal and human behavior. Emphasis on the role of motivation in systematic accounts of behavior.

5202. ATTITUDES AND SOCIAL BEHAVIOR. (188196) (4 cr; prereq 1001, 3201, or #: 1315-1415 MTWThF, EltH N119) Borgida

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, and examination of basic principles of attitude change.

5751. PSYCHOLOGY OF ADVERTISING. (888198) (4 cr, §Jour 5251; prereq 1001; 1115-1205 MTWThF; MurH 308) Jones

Psychological principles, research techniques, and applications in advertising and selling. Relevant consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.

8519. PRACTICUM IN REHABILITATION COUNSELING. (688199) (3 cr; prereq 8503 or #: hrs ar)

See First Term.

8520. FIELDWORK IN APPLIED PSYCHOLOGY. (690776) (1-6 cr; prereq #: hrs ar)

Course Descriptions

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (088202) (1-6 cr; prereq #: hrs ar)

8614. PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT. (888203) (2 cr; prereq student in clinical psychology program or #: hrs ar)
See First Term.

8620. PRACTICUM IN CLINICAL PSYCHOLOGY. (488205) (1-6 cr; prereq #: hrs ar)
See First Term.

8630. PRACTICUM IN CLINICAL CHILD PSYCHOLOGY. (288206) (3 cr; prereq #: hrs ar)
See First Term.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (188207) (2-4 cr; prereq PhD candidate in clinical psychology program and consent of director of clinical psychology training program; hrs ar)

8980. DIRECTED TEACHING IN PSYCHOLOGY. (988208) (1-6 cr; prereq #) Lofquist

8990.* RESEARCH PROBLEMS. (188210) (1-6 cr; hrs ar) Lofquist

Public Affairs (PA)

FIRST TERM

3970. DIRECTED STUDIES. (386558) (1-15 cr; prereq #) Staff

5114. WORKSHOP ON MINNESOTA GOVERNMENT. (186559) (3 cr; 1325-1520 TWTh; BlegH 335) Warp, others
Background study through lecture, panel discussion, and seminar sessions of selected public policy issues that currently confront Minnesota's governmental units.

5319. INTERGOVERNMENTAL RELATIONS IN THE UNITED STATES. (586560) (4 cr, §Pol 5319; prereq 6 cr in social science or #: 1010-1205 TWTh; BlegH 335) Jernberg
Examination and analysis of the evolution of intergovernmental relations in the United States and of special fiscal and administrative problems and issues that arise in the American Federal System.

5771. ADMINISTRATIVE INTERNSHIP. (386561) (3 cr; prereq Δ ; hrs ar) Warp
Fieldwork in an approved administrative agency under the joint supervision of an employee of the agency and a member of the faculty. Rotation through various assignments, solution of special problems, seminar discussion of experiences, and preparation of an internship report.

8981. INDIVIDUAL READINGS, RESEARCH IN PUBLIC POLICY ANALYSIS, ADMINISTRATION. (186562) (Cr ar; prereq #)

SECOND TERM

3970. DIRECTED STUDIES. (788212) (1-15 cr; prereq #)

5115. WORKSHOP ON MINNESOTA GOVERNMENT. (188215) (3 cr; 1325-1520 TWTh; BlegH 335) Warp, others
See 5114 First Term.

5781. ADMINISTRATIVE INTERNSHIP. (888217) (3 cr; prereq #: hrs ar) Warp
See 5771 First Term.

8991. INDIVIDUAL READINGS, RESEARCH IN PUBLIC POLICY ANALYSIS, ADMINISTRATION. (488219) (Cr ar; prereq #)

SPECIAL TERM: AUGUST 23-SEPTEMBER 24

Econ 3101/5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD. (4 cr for 3'01, 3 cr for 5151; prereq Econ 1001, 1002, 1 qtr calculus, grad student or #)

Microeconomics with a public policy emphasis. Primarily for incoming graduate students in public affairs, but open to all. Course is a prerequisite to the school's core sequence in policy analysis.

Sec 2, (087969) (987978) 0905-0955 MTWThF, BlegH 415, Kudrie

Religious Studies (ReIS)

See also Hebrew, Jewish Studies

FIRST TERM

1001. INTRODUCTION TO RELIGIOUS STUDIES. (190921) (4 cr, §5001; 1010-1100 MTWThF; FolH 306) Zahavy
Individual and social religious behavior; methodologies for studying it; emergence of modern religious studies. Theistic Western religions (Judaism, Christianity, Islam) and nontheistic Buddhism.

5001. APPROACHES TO THE STUDY OF RELIGION. (090922) (4 cr, §1001; 1010-1100 MTWThF; FolH 306) Zahavy
See 1001.

5970. DIRECTED STUDIES. (890923) (3-5 cr; prereq Δ) Zahavy

Russian and East European Studies

Russian (Russ)

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 may not enroll in other summer courses.

1101-1102-1103. BEGINNING INTENSIVE RUSSIAN. (686601) (486602) (286603) (15 cr for both terms)
Speaking, reading, and understanding Russian through acquisition of basic patterns of speech.
Sec 5, 0800-1100 MTWThF, KolH S136

Scandinavian (Scan)

FIRST TERM

5614. THE DRAMA OF IBSEN AND STRINDBERG. (886564) (4 cr; 0905-0955 MTWThF; FolH 108) Stockenström
The later plays viewed in the context of modern art and theatre with special emphasis on different methods of visualizing the landscape of the soul on stage.

SECOND TERM

3601. GREAT LITERARY WORKS OF SCANDINAVIA. (088233) (4 cr; 0905-0955 MTWThF; FolH 108) Simpson
Major literary works from the Viking Age to the present. Readings in English.

Social Work (SW)

FIRST TERM

R 1001. INTRODUCTION TO SOCIAL WELFARE AND COMMUNITY SERVICES. (186604) (5 cr; limited to 50 students; 0915-1100 MTWTh; BlegH 130) Au Claire
A sampling of the fields of community-based social services, representative of societal responses to needs. Characteristics of such services reviewed historically, dynamically, and comparatively.

5010. SEMINAR: SPECIAL TOPICS—CHRONIC ILLNESS/IMPACT ON FAMILIES. (290361) (cr ar; limited to 30 students; prereq 1001, 3005, jr or sr or grad student majoring in social work; 0915-1200 TTh; BlegH 105) Battle
How family members are affected by chronic illness. Psychological, social, and coping strategies used by families and patients; linkages or lifelines of support; principles of cell development as causation; stigma associated with chronic illness.

8010. FIELD INSTRUCTION I. (786606) (4 cr or cr ar by # [max 12 cr required]; prereq #; hrs ar) Johnston

8020. FIELD INSTRUCTION II. (586607) (4 cr or cr ar by # [max 12 cr required]; prereq 8010; hrs ar) Johnston

R 8202. ADVANCED THEORIES OF HUMAN GROWTH AND CHANGE. (190362) (3 cr; limited to 30 students; prereq 5201 or #; 1515-1800 MW; BlegH 105) Quam
Socio-psycho-biological factors associated with individual and group development as applied to social work practice.

R 8414. SOCIAL WORK METHODS WITH GROUPS. (090936) (3 cr, §5414; limited to 30 students; prereq 8400 or #; 0915-1200 TTh; RarigC 619) Grossman
Basic principles of social group work practice applicable to both task and treatment groups. The small group as a social process to achieve task and treatment goals. Sociophilosophic orientation, theoretical frames of reference, application of structure, task and process variables, use of member-to-member interactions, group goal setting, and professional relationships with groups, individual members, and systems external to the small group.

Course Descriptions

SECOND TERM

R 5010. SEMINAR: SPECIAL TOPICS—SOCIAL WORK IN INDUSTRY. (990363) (Cr ar; limited to 40 students; prereq 1001, 3005, jr or sr or grad student majoring in social work; 1515-1800 MW; BlegH 205) Johnston
The meaning of work in peoples' lives, delivery of services by employers and unions, specific services and populations (related to chemical dependency, retirement, discrimination, sexual harassment), and selected programs and models.

8010. FIELD INSTRUCTION I. (488236) (4 cr or cr ar by #: prereq #: hrs ar) Johnston

8020. FIELD INSTRUCTION II. (288237) (4 cr or cr ar by #: prereq 8010; hrs ar) Johnston

R 8150. SPECIAL TOPICS IN SOCIAL POLICY: METHODS FOR INTERVENTION IN LARGER SYSTEMS. (188238) (Cr ar; limited to 40 students; 0915-1200 MW; BlegH 255) W Stewart

An introduction to the range of functions and roles social workers in administration, planning, program evaluation and community development play.

Sociology (Soc)

FIRST TERM

1001. INTRODUCTION TO SOCIOLOGY. (986667) (4 cr; 0905-0955 MTWThF; AndH 210) Spitzer
Introduction to the scientific study of human social behavior. Overview of the major theories, methods, concepts and research findings. Examination of the characteristics of the basic social units (social relations, groups, organizations, institutions, society), their patterns of interrelation and processes of change.

1002. AMERICAN COMMUNITY. (390349) (4 cr; 1010-1100 MTWThF; BlegH 420) Kennedy
Sociological analysis of modern American society. Distribution of population, urban-rural differences, social factors in business systems, occupational groups, determination of social status, minority group adjustment.

3101. INTRODUCTION TO AMERICAN CRIMINAL JUSTICE. (990878) (4 cr, §CJS 3101; 1010-1100 MTWThF; BlegH 120)

Components and dynamics of criminal justice system as well as its philosophical underpinnings.

R 3201. PRINCIPLES OF SOCIAL PSYCHOLOGY. (790350) (5 cr; prereq 1001; 0905-0955 MTWThF; BlegH 255)
Ideas and findings related to social psychology; experience in developing empirically based knowledge in social science.

3501. THE FAMILY SYSTEM. (586669) (4 cr; prereq 1001 or #: 1010-1100 MTWThF; BlegH 155)
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 processes and norms of human sexuality.

3551. WORLD POPULATION PROBLEMS. (986670) (4 cr; 1220-1310 MTWThF; BlegH 225) Kennedy
Population growth and natural resources, population dynamics, fertility and mortality in less developed nations, population forecasts, population policies to reduce fertility.

3801. SOCIOLOGICAL METHODS I: DESCRIPTIVE STATISTICS. (786671) (5 cr; prereq basic algebra or Math 0009; lect 1115-1205 MTWThF; BlegH 350; lab 1220-1300 TTh) T Anderson
Descriptive statistics in analysis of sociological data, measures of central tendency, deviation, correlation and regression graphs, simple treatment of three and four variables, probability.

3970. DIRECTED STUDIES. (386673) (1-15 cr per qtr; prereq #)
Guided individual reading or study.

5111. SOCIOLOGY OF DEVIANT BEHAVIOR. (186674) (4 cr; prereq 3103 or #: 1115-1205 MTWThF; BlegH 115)
The nature of deviant behavior, the social process associated with the careers of deviants, and the relationship of deviancy to problems of social control.

5161. CRIMINAL LAW IN AMERICAN SOCIETY. (590351) (4 cr, §CJS 5101; 0800-0930 TWTh; BlegH 415) Samaha
General criminal law, its philosophical underpinnings. Purposes and principles; defenses of insanity, self-defense, and mistake of fact and law.

5162. CRIMINAL PROCEDURE IN AMERICAN SOCIETY. (390352) (4 cr, §CJS 5102; 0930-1100 TWTh; BlegH 415) Samaha
Processes by which persons are convicted. Discretion to arrest, constitutional law of arrest, search, and seizure, role of prosecutor, plea bargaining, sentencing, postconviction relief.

5355. OPINION AND COMMUNICATION: SOCIAL FACTORS. (190353) (4 cr; prereq 16 cr in sociology or #: 1325-1415 MTWThF; MurH 308) Glasser
Opinion formation and change in relation to individual characteristics and social structure; flow of public communications through society; impact of communication on audiences. Meets concurrently with Jour 5501.

5401. SOCIAL ORGANIZATIONS. (090354) (4 cr [no cr for sociology majors]; prereq 8 cr in sociology, anthropology, psychology, political science or economics; 1115-1205 MTWThF; BlegH 440) Bradley
Theories of social structure, social stratification, community structure, status groups, nature of social power, social control processes, aspects of formal organizations, and rational actor models for decentralized social processes.

5952.¹ YOUTH IN MODERN SOCIETY. (790879) (4 cr. §SPFE 5125; prereq 3201 or 3401 or 3405 or 5201 or 5401 or 5953 or #; 0905-0955 MTWThF; ChDev 218) S Clark
Youth in advanced societies; youth as a social entity; functions of youth in industrial societies; roles in family, education, politics and government, economy and work, welfare and religion; youth organizations, social movements and subcultures; empirical research and cross-cultural perspectives. Meets with SPFE 5125.

5970. DIRECTED STUDIES. (886676) (1-15 cr per qtr; prereq #)
Guided individual reading or study.

8090. SUPERVISED: APPLIED INTERNSHIP. (990752) (1-4 cr; prereq #)

SECOND TERM

1001. INTRODUCTION TO SOCIOLOGY. (288240) (4 cr; 0905-0955 MTWThF; AndH 350) Bradley
See First Term.

3102. INTRODUCTION TO CRIMINAL BEHAVIOR AND SOCIAL CONTROL. (190877) (4 cr, §3102, §3103; prereq 3101; 1010-1100 MTWThF; BlegH 135)
Basic issues in criminology and the sociology of law and social control organizations.

3405. INEQUALITY: INTRODUCTION TO STRATIFICATION. (188241) (4 cr; prereq 1001; 1220-1310 MTWThF; BlegH 205) T Anderson
Inequality—causes and consequences. Inequality in American society. Related concepts of class, class cultures, status, aggregates; the social forms of inequality, their consequences for life changes and lifestyles.

3503. SEX, ROMANCE, AND RELATIONSHIPS. (988242) (4 cr; prereq 1001; 1010-1100 MTWThF; BlegH 150)
Sociological perspectives on sexual socialization; ideas of masculinity and femininity; history and functions of love and romance; characteristics of romantic relationships, intimacy, emotionality, sexuality, exclusivity, sexual deviance in relation to sexual norms.

3601. URBAN COMMUNITY. (690356) (4 cr; prereq 1001 or 1002; 0905-0955 MTWThF; BlegH 235)
Urban community patterns. Comparison of social interaction in neighborhood, city, and metropolis. Community studies. Urban power structures. Settlement patterns, organization of social life and urban problems.

3937. SOCIAL GERONTOLOGY: ELDERS IN AMERICAN SOCIETY. (490357) (4 cr; prereq 1001 or #; 1115-1205 MTWThF; BlegH 215)
Situations and problems facing aging people in modern societies. Aspects of human aging from a sociological perspective.

3970. DIRECTED STUDIES. (588244) (1-15 cr per qtr; prereq #)
See First Term.

5161. CRIMINAL LAW IN AMERICAN SOCIETY. (290358) (4 cr, §CJS 5151; 0930-1100 TWTh; BlegH 415) Samaha
See First Term.

5162. CRIMINAL PROCEDURE IN AMERICAN SOCIETY. (190359) (4 cr, §CJS 5102; 0800-0930 TWTh; BlegH 415)
Samaha
See First Term.

5201. INTRODUCTION TO SOCIAL PSYCHOLOGY. (490360) (4 cr [no cr for sociology majors]; prereq 8 cr in sociology, anthropology, psychology, political science or economics; 1115-1205 MTWThF; BlegH 440) Spitzer
Research and theory regarding relation of individual social groups. Socialization processes; effects of social interaction and isolation; individual behavior under conditions of social organization and disorganizations; cultural influence and its limits.

5970. DIRECTED STUDIES. (688252) (1-15 cr per qtr; prereq #)
See First Term.

8090. SUPERVISED: APPLIED INTERNSHIP. (488253) (1-4 cr; prereq #)

¹This course scheduled through SPFE.

Course Descriptions

South Asian Studies

Arabic (Arab)

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 may not enroll in other summer courses.

1101-1102-1103. BEGINNING ARABIC. (886239) (186240) (086241) (15 cr for both terms)

Fundamentals of Arabic, based on audiolingual method; aural comprehension, pronunciation, practical reading knowledge, and basic grammar.

Sec 5, 0800-1100 MTWThF, KoltH S135, Busool

South Asian Studies (SoAS)

FIRST TERM

3411. INTRODUCTION TO INDIAN PHILOSOPHY. (286679) (4 cr. §5411; 1115-1205 MTWThF; FolH 302) Junghare
Major concepts—principal schools of Indian philosophy; traditional and contemporary views.

5411. INTRODUCTION TO INDIAN PHILOSOPHY. (686680) (4 cr. §3411; 1115-1205 MTWThF; FolH 302) Junghare
See 3411.

Spanish and Portuguese

Spanish (Span)

FIRST TERM

1101. BEGINNING SPANISH: ORAL APPROACH. (5 cr; each section limited to 30 students)

Emphasis on speaking and understanding Spanish; pronunciation; writing and reading skills; basic grammar; cultural aspects of language and civilizations of Spain and Spanish America.

Sec 1, (486681) 0800-0955 MTWThF, FolH 105

Sec 2, (286682) 0800-0955 MTWThF, FolH 107

1102. BEGINNING SPANISH: ORAL APPROACH. (186683) (5 cr; limited to 30 students; prereq 1101 or 1 yr high school Spanish; 0905-1100 MTWThF, FolH 208)

See 1101.

1103. BEGINNING SPANISH: ORAL APPROACH. (986684) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; 0905-1100 MTWThF, FolH 209)

See 1101.

1104. INTERMEDIATE SPANISH, ORAL APPROACH: INTERPRETATION OF MODERN PROBLEMS. (786685) (4 cr; limited to 30 students; prereq 1103 or 3 yrs high school Spanish; 0940-1105 MTWThF; LindH 315)

Continued emphasis on speaking and comprehension; development of reading and writing skills based on materials from Spain and Spanish American dealing with current issues. Grammar review; frequent compositions and oral presentation to build vocabulary.

3002. READING FOR SPEED AND COMPREHENSION. (586686) (3 cr; limited to 20 students; prereq 1105 or #; 1010-1100 MTWTh; FolH 302) Rodriguez

Concentrated, individualized approach to sharpen reading skills, expand vocabulary, improve comprehension. Sight-reading drills, speed tests, word study, reading aloud. Variety of practical and literary materials at graded levels of difficulty.

3601. SPANISH AMERICA: REVOLUTION AND THE NEW LITERARY CONSCIOUSNESS. (590429) (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]; limited to 25 students; taught in English; 1115-1205 MTWThF; FolH 208) Vidal

Avant-garde movements in the fiction of the Latin American continent; correspondence to revolutionary trends in Spanish-speaking countries. Famous novels.

R 3605. POLITICS IN SPANISH AND LATIN AMERICAN LITERATURE. (990430) (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]); limited to 25 students; taught in English; 1220-1310 MTWThF; FolH 208) Ramos-Gascon
The civil wars in Spain; national liberation movements and political upheavals in Latin America.

R 3701. STRUCTURE OF SPANISH AND PORTUGUESE. (790431) (4 cr; prereq 3002 or Port 3014; limited to 20 students; 1220-1355 MWF; FolH 207) Narvaez
The phonology, morphology, and syntax of modern Spanish and Portuguese.

5910. TOPICS IN SPANISH AND SPANISH-AMERICAN LITERATURE; SPANISH DRAMA (Cervantes Theatre and Exemplary Novel) (386690) (4 cr per qtr [12 cr max]; prereq 3104 or SpPt 3104 or Δ : 1220-1435 TTh; FolH 204) Spadaccini
Students are exposed to major issues or approaches of Spanish or Spanish American literature by treating important groups, movements, trends, issues, methods, genres. Specific approaches depend on topic and instructor.

5930. TOPICS IN HISPANIC LINGUISTICS. (186691) (4 cr; per qtr [12 cr max]; prereq 3104 or SpPt 3104 or Δ : 1115-1250 MWF; FolH 204) Mantini
Problems in Hispanic linguistics; aspects of Luso-Brazilian language. A variety of linguistic approaches and methods.

5970. DIRECTED READINGS. (086692) (1-5 cr per qtr [15 cr max]; for MA and PhD candidates; prereq # and Δ ; 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.

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (886693) (Cr and hrs ar; mainly for PhD candidates) Staff
Authors and topics not otherwise offered. Weekly meetings based on student's research and analysis. Student and instructor agree on plan of reading or particular topics, figures, issues, etc. Readings in Spanish and or Spanish-American areas.

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

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students may not enroll in other summer courses.

R 1101-1102-1103. BEGINNING SPANISH. (15 cr for both terms; limited to 30 students)
See 1101 First Term.

Sec 5, (686694) (486695) (286696) 0905-1205 MTWThF, Arch 20

Sec 6, (186697) (986698) (786699) 0905-1205 MTWThF, KoltH S137

SECOND TERM

R 1101. BEGINNING SPANISH: ORAL APPROACH. (288254) (5 cr; limited to 30 students; 0800-0955 MTWThF; FolH 104)
See First Term.

R 1102. BEGINNING SPANISH: ORAL APPROACH. (988256) (5 cr; limited to 30 students; prereq 1101 or 1 yr high school Spanish; 0905-1100 MTWThF, FolH 105)
See 1101 First Term.

R 1103. BEGINNING SPANISH: ORAL APPROACH. (588258) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; 0905-1100 MTWThF; FolH 201)
See 1101 First Term.

R 1104. INTERMEDIATE SPANISH, ORAL APPROACH: INTERPRETATION OF MODERN PROBLEMS. (088264) (4 cr; limited to 30 students; prereq 1103 or 3 yrs high school Spanish; 0940-1105 MTWThF; FolH 202)
See First Term.

R 1105. INTERMEDIATE SPANISH, ORAL APPROACH: DISCUSSIONS OF MODERN LITERATURE AND THE PRESS. (688266) (4 cr; limited to 25 students; prereq 1104 or 4 yrs high school Spanish; 0940-1105 MTWThF; FolH 203)
See 1104 First Term.

R 3003. SPANISH ADVANCED GRAMMAR WORKSHOP. (288268) (3 cr; limited to 20 students; prereq 1005 or equiv; 1010-1100 MTWTh; FolH 204) Cuneo
General class study and practice of difficult language structure, patterns and usage. Directed study and practice to correct individual problem areas. Emphasis on accuracy in oral and written expression.

R 3614. DON QUIJOTE: A STUDY OF LOST ILLUSIONS. (590432) (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]); limited to 25 students; taught in English; 1115-1205 MTWThF; FolH 207) Jones
Study of the novel in many facets: the "madness" of its characters, the relation of their actions and attitudes to the theme of reality/illusion and to the society of their times.

Course Descriptions

5910. TOPICS IN SPANISH AND SPANISH-AMERICAN LITERATURE: To be Announced. (188277) (4 cr per qtr [12 cr max]; prereq 3104 or SpPt 3104 or Δ; 1115-1345 MW; FolH 103) Jara
See First Term.

5970. DIRECTED READINGS. (888279) (1-5 cr per qtr [15 cr max]; for MA and PhD candidates; prereq # and Δ; hrs ar)
Staff
See First Term.

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (088281) (Cr and hrs ar) Staff
See First Term.

Portuguese (Port)

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 may not enroll in other summer courses.

R 1001-1002-1003. BEGINNING PORTUGUESE. (190577) (090578) (890579) (15 cr for both terms; limited to 25 students)

Emphasis on speaking and understanding Portuguese; pronunciation (Brazilian speech stressed); introduction to writing and reading skills; basic grammar, cultural aspects of language and civilizations of Portuguese-speaking world.

Sec 5, 0905-1205 MTWThF, KoltH S132

Spanish-Portuguese (SpPt)

SECOND TERM

5960. SELECTED COMPARATIVE PROBLEMS IN THE WORKS OF HISPANIC AND LUSO-BRAZILIAN AUTHORS. (890775) (4 cr; prereq reading knowledge of Spanish and Portuguese; 1115-1345 TF; FolH 208) Sousa
Common conceptions, background, and influences among major peninsular Spanish, Spanish-American, Portuguese, and Brazilian authors.

Speech-Communication (Spch)

See also *Rhet 1222*.

For special department offerings see the Small Group Communication Workshop in the Special Programs section.

FIRST TERM

R 1101. FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION. (4 cr; each section limited to 24 students)

Study and application of essential elements in oral communication. Criticism and response to oral discourse. Individual speaking.

Sec 1, (486700) 0800-0850 MTWThF, FolH 306

Sec 2, (286701) 0905-0955 MTWThF, FolH 306

1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS. (186702) (4 cr; 1010-1100 MTWThF; FolH 406) Petronio

Variables in intrapersonal, interpersonal, and group communication.

3401. THEORIES OF INTERPERSONAL COMMUNICATION. (986703) (4 cr; prereq 1102 or #, Psy 1001; 1010-1100 MTWThF; FolH 305) Sykes

Theories of interpersonal communication and their usefulness for particular purposes.

3431. THE ROLE OF PERSUASION IN THE MODERN WORLD. (786704) (4 cr; soph standing recommended; 1115-1205 MTWThF; FolH 308) Cashman

Persuasion in interpersonal, organizational, intracultural, and intercultural relationships. Contemporary persuasion, with occasional historical segments.

3615. ARGUMENTATION. (890369) (4 cr; prereq 1101 or 1101H or #; 0800-0850 MTWThF; FolH 305) Jensen
Role of reasoned discourse in social and governmental affairs. Logical methods of persuasion.

3625. ETHICAL STANDARDS IN MODERN COMMUNICATION. (790364) (4 cr; prereq 1101 or 1101H or #: 0905-0955 MTWThF; FolH 406) Jensen
Ethical issues in interpersonal communication, small group discussion, public speaking, mass communication.

R 3641. DISCUSSION AND CONFERENCE METHODS. (190370) (4 cr; limited to 30 students; prereq 1101 or 1101H or #: 1220-1310 MTWThF; FolH 406) Bormann
Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings.

3970. DIRECTED STUDIES. (186707) (Cr ar [cr does not count toward speech-communication major]); prereq at least one course in speech-communication, #, Δ)
Individual study projects in speech-communication. Consultation with an instructor who agrees to supervise the project is required.

3980. DIRECTED INSTRUCTION. (086708) (1-4 cr per qtr [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ)
Students work with an instructor in planning and teaching an undergraduate course.

5403. THEORY CONSTRUCTION AND ANALYSIS IN COMMUNICATION. (590365) (4 cr; prereq 3401 or #: 0800-0850 MTWThF; FolH 406) Sykes
Development of communication theory. Analysis of existing theory. Relationship of theory to research.

R 5414. AUTHORITY AND POWER IN TASK-ORIENTED COMMUNICATION—June 15-27. (186716) (4 cr; limited to 60 students; S-N only; prereq 3641 or #: 1615-1815 MTWThF; 0900-1730 Sa Sun; FolH 306, 307, 308) 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. See Special Programs section.

5421. QUANTITATIVE RESEARCH IN COMMUNICATION. (886712) (4 cr; prereq 3401 or 5403 or #: 1115-1205 MTWThF; FolH 306) Petronio
Experimental and descriptive research: design and procedures; individual projects.

5441. COMMUNICATION IN HUMAN ORGANIZATIONS—June 15-25. (390366) (4 cr; prereq 1102 or 3401, 3641 or 5411 or grad student; 1300-1530 MTWThF FolH 209) Bantz
Communication in organizational settings. Organizational structure and dynamics and their effect on the communication process.

5970. READINGS IN SPEECH. (686713) (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ)
Directed reading and preparation of reports on selected subjects.

8423. SEMINAR: SEXUAL COMMUNICATION. (190367) (3 cr; prereq 3401, 5402 and #: 1325-1520 MW; FolH 307) Cashman
Designed for those who will work in professional settings in which significant sexual communication is likely to occur. Human sexual communication in interpersonal, management, and various professional settings.

8606. SEMINAR: RHETORICAL ANALYSIS OF CAMPAIGNS AND MOVEMENTS. (090368) (3 cr; prereq 5431, 5617 or 5618, 10 cr in social science or #: 1325-1520 TTh; FolH 307) Bormann
Literature and methodology in historical and contemporary rhetorical campaigns and movements.

8990. RESEARCH. (286715) (Cr ar)
Open to graduate students engaged in research on special problems.

SECOND TERM

R 1101. FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION. (288285) (4 cr; limited to 24 students; 0800-0850 MTWThF; FolH 306)
See First Term.

R 3201. INTRODUCTION TO BROADCASTING PRODUCTION. (788288) (4 cr; limited to 22 students; 1115-1205 MTWThF; RarigC 616) Bart
Basic practice and theory. Projects in performance, scripting, and studio production.

R 3204. TELEVISION PRODUCTION. (988290) (4 cr; limited to 18 students; 1325-1415 MTWThF; RarigC 616) Bart
Advanced experience in producing and directing through a variety of in-studio projects.

3211. DETERMINANTS OF BROADCAST PROGRAMMING. (188294) (4 cr; 0905-0955 MTWThF; FolH 305) Browne
Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. "Problem" areas in programming.

3601. APPROACHES TO PUBLIC DISCOURSE. (490374) (4 cr; prereq 1101; 0800-0850 MTWThF; FolH 209) 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.

R 3605. PUBLIC SPEAKING. (290375) (4 cr; prereq 1101; 1115-1205 MTWThF; FolH 306) Scott
Public speeches; directed practice. Public speaking in contemporary life.

Course Descriptions

3970. DIRECTED STUDIES. (188305) (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. (788307) (1-4 cr per qtr [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ)
See First Term.

5232. INTERNATIONAL BROADCASTING. (090371) (4 cr; prereq 10 cr in political science or #; 1115-1310 MW; FolH 305) Browne
International broadcasting in the United States, Great Britain, the Soviet Union, Japan, and other countries. Theories of informing and persuading through direct broadcast and exchange of programs; regulatory agreements; spectrum control; social and legal implications of broadcasting via satellite.

5431. THE PROCESS OF PERSUASION. (890372) (4 cr; prereq 1102, Psy 1001; 1010-1100 MTWThF; FolH 406) Howell
Modern motivational communication. Social control through persuasive speech.

5970. READINGS IN SPEECH. (588311) (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses. #, Δ)
See First Term.

8110. SEMINAR: ADVANCED SPEECH PROBLEMS. (690373) (3 cr; prereq undergrad major in speech or equiv. #; 1325-1520 MW; FolH 307) Scott
Evaluation of research methods in speech and communication.

8431. SEMINAR IN PERSUASION. (190376) (3 cr; prereq 5431; 1325-1520 TTh; FolH 307) Howell
Literature of persuasion, methods in study of persuasion.

8990. RESEARCH. (688316) (Cr ar)
See First Term.

Statistics (Stat)

FIRST TERM

1051. INTRODUCTION TO IDEAS OF STATISTICS. (986717) (4 cr; prereq high school higher algebra; 0905-0955 MTTh, 0905-1100 WF; Arch 10)
Presentation and analysis of data. Probabilistic models for inference. Inference and decision procedures. Emphasis on concepts rather than computation.

3091. INTRODUCTION TO PROBABILITY AND STATISTICS. (190434) (4 cr, §5121, §5131; prereq differential and integral calculus; 1010-1100 MTTh, 1010-1205 WF; WullH 230)
Elementary probability and probability distributions, sampling and elements of statistical inference. Treatment is more mathematical than 1051.

5121. THEORY OF STATISTICS. (786718) (4 cr, §5131-5132-5133; prereq Math 1231 or 1331 or 1621; 1115-1205 MWF, 1010-1205 TTh; VinH 314)
Univariate and multivariate distributions, law of large numbers, sampling, likelihood methods, estimation and hypothesis testing.

SECOND TERM

3091. INTRODUCTION TO PROBABILITY AND STATISTICS. (488320) (4 cr, §5121 §5131; prereq differential and integral calculus; 0905-0955 MTTh, 0905-1100 WF; WullH 230)
See First Term.

5122. THEORY OF STATISTICS. (388326) (4 cr, §5131-5132-5133; prereq 5121; 1115-1205 MWF, 1010-1205 TTh; VinH 2)
Confidence intervals, testing hypotheses, regression, analysis of variance and covariance, distribution-free methods.

Studio Arts—See Arts, Studio

Theatre Arts (Th)

FIRST TERM

1101. INTRODUCTION TO THE THEATRE. (090435) (4 cr; 0905-1100 MTWTh; RarigC 19C) Ballet
History and theory of plays and playwrights.

- 1301. BEGINNING ACTING FOR NONTHEATRE MAJORS.** (890436) (4 cr; prereq 1101 or *1101; 1010-1205 MTWThF; RarigC 90) Moulton
Background and techniques of the acting process as viewed and practiced in the theatre, in society, and in the student's own relationships.
- R 1321. BEGINNING ACTING: CREATIVE APPROACH.** (586719) (4 cr; prereq 1101, 1504 or *1504 and 3rd-qr fr or above; 0800-0955 MTWThF; RarigC 90) Berry
Beginning Stanislavskian technique and improvisational exercises leading to elementary scene study.
- 1328. MIME AND MASK I.** (690437) (2 cr; prereq 1321; 1010-1205 MTWThF; RarigC 10) Berry
Corporeal actor training based on LeCoq methods; basic exercises, improvisation, and the neutral mask.
- R 1405H. HONORS COURSE: INTRODUCTION TO THE THEATRE.** (190918) (2 cr; prereq 1101, #: 1115-1205 MTWTh; RarigC 75) Ballet
Enrichment course for students who have completed 1101 with outstanding records. Laboratory.
- 1504. ELEMENTS OF TECHNICAL THEATRE.** (586722) (4 cr; prereq 1101 or *1101; 1115-1205 MTWTh, 1015-1205 F; RarigC 275; lab ar) Josal, Montgomery
The practice of the arts and crafts of the theatre: scenery construction and painting, stage operation, theatre lighting, costuming.
- 3321. ADVANCED ACTING: CHARACTERIZATION.** (386723) (4 cr; prereq 1326; 1010-1205 MTWThF; RarigC 210) McIntyre
Presentation of scenes from plays with emphasis on characterization.
- 3412H. HONORS COURSE: TUTORIAL SEMINAR IN THEATRE ARTS.** (086725) (0-3 [limited to 3 cr for cum laude and magna cum laude...up to 3 addtl cr through X regis for summa cum laude]; prereq theatre arts honors candidate and Δ)
- 3515. TECHNICAL THEATRE PRODUCTION II.** (490438) (4 cr; prereq 1504; 1220-1415 MTWThF; RarigC 275; lab ar) Crellin, Montgomery
Theory and practice of design and execution of stage costuming and stage lighting.
- R 3980. DIRECTED INSTRUCTION.** (486728) (1-3 cr per qtr [8 cr max]; prereq completion of course in which teaching will be done and Δ) Staff
- R 5100. THEATRE PRACTICUM.** (286729) (2-6 cr; prereq written permission, #, Δ, consent of theatre practicum committee) Staff
Arranged individual creative projects in production of a play, meeting approval of faculty committee in one or more of these areas: playwriting, directing, acting, and design.
- 5110. THEATRE PERFORMANCE.** (686730) (1 cr [9 cr max]; prereq written permission: S-N only) Staff
Participation in the rehearsals and performances of a major University Theatre production.
- 5133. PRODUCING THEATRE FOR CHILDREN.** (290439) (4 cr; prereq 1321 or *1321, #: 0800-1205 MTWThF; RarigC 185) Congdon
Techniques and practice of performing for audiences of children.
- 5522. HISTORY OF COSTUME FOR THE STAGE.** (490441) (4 cr; prereq 3515; 1430-1625 MTWTh; RarigC 275) Crellin
History of clothing and theatrical costume, research methods in costume history, and problems of and solutions for transforming historical research into stage costume.
- 5711. STAGE DIRECTION.** (286732) (4 cr, §3708, §3711; prereq 1321, sr or grad students; 1010-1205 MTWTh; RarigC 20) Adey
Theory of direction: concept and analysis. Exercises in blocking and production of short scenes.
- 5718. THEATRE MANAGEMENT AND PROMOTION.** (186733) (4 cr; prereq 1504, sr or grad student or #: 1220-1415 MTWTh; RarigC 75) Neely
Theory and practice in ticket office procedures, house management, publicity, and promotion; special problems in college, community, children's and professional theatre.
- 5720. PLAYS IN PRODUCTION AND PERFORMANCE.** (690440) (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.** (290442) (2-4 cr [max 6 cr for undergrads]; prereq 5716 and written permission) Staff
Practical experience in stage management for specific productions of the University Theatre with emphasis on rehearsal and performance.
- 5970. DIRECTED READINGS.** (386737) (2-6 cr; prereq 9 cr in theatre, # and Δ) Staff
Directed reading and preparation of reports on selected subjects.
- 8518. SEMINAR: VISUAL ARTS OF DRAMA.** (190443) (4 cr; prereq theatre major or #: 1430-1625 TTh; RarigC 75) Josal
Selected aesthetic theories of plastic and poetic arts; relationship to visual aspects of the dramatic production. Theory of art as a symbol.

Course Descriptions

8980. DIRECTED INSTRUCTION. (786735) (1-3 cr) Staff

Teaching experience in an area in which the student does not hold a teaching assistantship but in which he or she may be required to teach as a professional. Limited to students qualified by course work in the area to be taught.

8990. RESEARCH. (586736) (Cr ar; prereq # and Δ) Staff

Open to graduate students engaged in research on special problems.

SECOND TERM

R 5510. DRAWING AND RENDERING FOR THEATRE DESIGNERS. (990444) (2 cr; prereq 3513 or 3515 or grad student, #; 0800-0955 MTWTh; RarigC 275) Brockman

Development of drawing and rendering skills necessary for presentation of scenic and costume designs.

R 5540. SCENE PAINTING TECHNIQUES. (790445) (4 cr; prereq 3513 or #; 1010-1310 MTWThF; RarigC 130) Brockman

A practical study of materials, layout, and painting techniques used in the theatre. Concentration on painting styles and texturing techniques.

R 5950. TOPICS IN THEATRE—July 19-23. (1-5 cr per qtr [max 12 cr]; prereq # and Δ)

Selected topics.

Sec 1, Workshop: Audition Techniques, (088330) 2 cr, 0800-1205 MTWThF, RarigC 190, McIntyre

Sec 2, Workshop: Acting/Directing Styles, (088331) 2 cr, 1325-1730 MTWThF, RarigC 185, Adey

Urban Studies (Urbs)

FIRST TERM

3900. INTERNSHIP. (186738) (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ ; 1730-1930 M; Mgmt/Econ 130) Hickey
A weekly seminar integrating the internship experience with the academic program. Should be taken during or immediately after the internship.

SECOND TERM

3900. INTERNSHIP. (188344) (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ ; 1730-1930 M; Mgmt/Econ 130) Hickey
See First Term.

Women's Studies (WoSt)

FIRST TERM

R 3300. COMPARATIVE STUDY OF WOMEN. (590446) (4 cr; limited to 40 students; 0905-0955 MTWThF; FordH 175) Knudson

Theoretical, historical, and contemporary perspectives on the study of women in world cultures.

R 3501. WOMEN AND LITERATURE. (390447) (4 cr; limited to 40 students; 1010-1100 MTWThF; FordH 175) Yates
Women's creative and critical writing, focused on 19th- and 20th-century British and American authors and the impact of modern feminism on their work.

SECOND TERM

R 1006. INTRODUCTION TO WOMEN'S STUDIES. (190448) (4 cr; limited to 40 students; 0905-0955 MTWThF; FordH 175) Rogers

Women's studies as a discipline; brief history of feminism; overview of issues related to the current and rapidly changing role and status of women.

R 3910. TOPICS: CONTEMPORARY FEMINIST ISSUES. (790753) (4 cr; limited to 40 students; 1010-1100 MTWThF; FordH 150) Staff

Major issues confronting women today with reference to their historical roots, theoretical formulation, and practical implications for women and the women's movement.

School of Management

ADMISSION AND REGISTRATION

Students are admitted to School of Management degree programs only in the fall and spring quarters; they may enroll in the summer as summer-only students. Admission to a degree program requires completion of 74 quarter credits, including specific premanagement courses, proof of credits in progress to total 90 by the time of entrance to the School of Management, and a minimum overall grade point average of 2.70. Information about premanagement course requirements and graduation requirements is available in the school office, 225 Management/Economics Building.

Accounting (Acct)

SPECIAL TERM: SEVEN-WEEK COURSES

JUNE 15-JULY 29 (Except for Acct 3201 classes start on Tuesday June 15)

R 1024. PRINCIPLES OF ACCOUNTING. (3 cr; each section limited to 45 students; prereq 3rd-qr fr: A-N only)
Introduction to basic financial accounting concepts and their application to the recording and reporting of business events.

- Sec 1, (485546) 0800-0900 MTWTh, BlegH 230
- Sec 2, (285547) 0800-0900 MTWTh, BlegH 240
- Sec 3, (185548) 0800-0900 MTWTh, BlegH 220
- Sec 4, (985549) 0910-1010 MTWTh, BlegH 240
- Sec 5, (285550) 0910-1010 MTWTh, BlegH 230
- Sec 6, (185551) 1020-1120 MTWTh, BlegH 240

R 1025. PRINCIPLES OF ACCOUNTING. (3 cr; each section limited to 45 students; prereq 1024; A-N only)
Introduction to the effects of generally accepted valuations and measurements upon financial statements.

- Sec 1, (585554) 0800-0900 MTWTh, BlegH 125
- Sec 2, (385555) 0800-0900 MTWTh, BlegH 145
- Sec 3, (185556) 0910-1010 MTWThF, BlegH 220
- Sec 4, (085557) 0910-1010 MTWThF, BlegH 125

R 3101. ACCOUNTING THEORY AND PRACTICE I. (085560) (4 cr; limited to 42 students; prereq 1025; 0800-0945 MWTh; BlegH 110)

The search for principles and postulates for income determination and for valuation. Includes measurement problems and funds concepts.

R 3102. ACCOUNTING THEORY AND PRACTICE II. (985561) (4 cr; limited to 40 students; prereq 3101; 1215-1400 MWTh; BlegH 110)

Concepts and problems in accounting for specific assets and equities.

R 3201. COST ACCOUNTING—July 7-August 19. (685562) (4 cr; limited to 40 students; prereq 3001, MIS 3099, QA 3055; 0800-0945 MWTh; BlegH 440)

Process and standard costs, behavior of costs under varying conditions, cost allocations, variance analysis, capital budgeting.

R 5125. AUDITING PRINCIPLES AND PROCEDURES. (485563) (4 cr; limited to 40 students; prereq 3102 and 3201; 0800-0945 MWTh; BlegH 420)

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

R 5135. INCOME TAX ACCOUNTING. (285564) (4 cr; each section limited to 40 students; prereq 1051; 1015-1200 MWTh; BlegH 110)

Individual, partnership, and corporation taxation; emphasizes income tax planning.

R 5180. ADVANCED ACCOUNTING. (185565) (4 cr; limited to 40 students; prereq 3102; 1215-1400 MWTh; BlegH 125)
Consolidated statements, partnerships, fiduciary, international and fund accounting.

8995. RESEARCH IN ACCOUNTING. (585568) (Cr ar; prereq #)

Course Descriptions

Business Administration (BA)

FIRST TERM

R 3998. INDEPENDENT STUDY. (385569) (Cr or [may be repeated for cr]); limited to 40 students; prereq consent of faculty member willing to supervise the study) Staff
Student-initiated project and/or independent course of study.

SECOND TERM

R 3998. INDEPENDENT STUDY. (687229) (Cr or [may be repeated for cr]); limited to 40 students; prereq consent of faculty member willing to supervise the study) Staff
See First Term.

Business, Government, Society (BGS)

FIRST TERM

R 3001. MANAGERIAL ECONOMICS. (785570) (4 cr; limited to 50 students, §Econ 3105; prereq Econ 1002 or equiv; 0800-0955 MTWTh; BlegH 250) Hastings
Intermediate microeconomics from the perspective of the business enterprise and of the manager. Firm and industry demand, firm revenues and costs, supply, pricing practices, market structures, and other relevant economic concepts are applied to the individual business.

R 3002. BUSINESS AND SOCIETY. (585571) (4 cr; prereq jr or sr; 0800-0955 MTWTh; BlegH 150) Holloway
Basic economic and social goals and various attempts to meet them, with emphasis on American society. Business as an institution; its relationships to other institutions and to society. Ethical and practical conflicts in the role of the firm and the manager are examined in the context of the public policy process. Current social issues and their impact on business.

SECOND TERM

R 3001. MANAGERIAL ECONOMICS. (890033) (4 cr; limited to 50 students, §Econ 3105; prereq Econ 1002 or equiv; 0800-0955 MTWTh; BlegH 250) Hastings
See First Term.

Business Law (BLaw)

FIRST TERM

R 3058. INTRODUCTION TO LAW, AND THE LAW OF CONTRACTS AND AGENCY. (4 cr, §8158; each section limited to 50 students; prereq Econ 1002 or equiv) Wright
The origin of law, its place in and effect upon society; the history and development of law; the systems of courts and legal procedure. The law of contracts as the basic law affecting business transactions. Laws affecting the relationship between principal and agent, master and servant, and employer and employee.

Sec 1, (385572) 0800-0850 MTWThF, BlegH 120

Sec 2, (185573) 0905-0955 MTWThF, BlegH 120

R 8158. INTRODUCTION TO LAW, AND THE LAW OF CONTRACTS AND AGENCY. (4 cr, §3058; each section limited to 5 students; prereq Econ 1002 or equiv) Wright
See 3058.

Sec 1, (085574) 0800-0850 MTWThF, BlegH 120

Sec 2, (885575) 0905-0955 MTWThF, BlegH 120

Finance (BFin)

FIRST TERM

R 3000. FINANCE FUNDAMENTALS. (4 cr, §MBA 8040; limited to 50 students; prereq Acct 3001 or 1051)
A comprehensive, analytical introduction to the principal concepts in finance. The general business environment, valuation theory, financial management decisions concerning uses and sources of funds (i.e., capital budgeting), survey of the nation's financial markets.

Sec 1, (685576) 0800-0930 MTWTh, BlegH 215

Sec 2, (485577) 1010-1140 MTWTh, BlegH 135

R 3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS. (285578) (4 cr, \$8300; limited to 40 students; prereq 3000; 1115-1230 MTWTh; BlegH 205) Jessup

Introduces decision procedures for a variety of financial markets. The banking system and other financial intermediaries, risk-return relationships of various marketable securities, analytical techniques of portfolio management in the context of the nation's changing financial markets.

R 3500. REAL ESTATE INVESTMENT ANALYSIS. (185579) (4 cr; limited to 40 students; prereq 3000 and Econ 1002 or equiv; 0930-1200 TTh; BlegH 145) Rosko

Analysis and economic aspects of investments in real property including cash flows; accounting depreciation vs. market value depreciation or appreciation; financing methods and costs; sources of funds; measures of return on investment.

R 8300. INVESTMENT ANALYSIS AND MANAGEMENT. (185582) (4 cr; limited to 35 students; prereq 3000 or MBA 8040; 0945-1100 MTWTh; BlegH 215) Resnick

Introduction to investment decision making from the viewpoints of individual and institutional investors. Analytical techniques of security selection and portfolio management in the context of the nation's changing securities markets. Focus on risk-return relationships of various marketable securities and portfolio strategies.

8990. READINGS AND RESEARCH IN FINANCE. (485580) (Cr or [may be repeated for cr]; prereq consent of adviser and #) Staff

Advanced readings in finance. Experimental subject areas and materials discussed in seminar. Opportunities for individualized readings and research work developed under faculty supervision.

SECOND TERM

R 3000. FINANCE FUNDAMENTALS. (887231) (4 cr, \$MBA 8040; limited to 50 students; prereq Acct 3001 or 1051; 0800-0930 MTWTh; BlegH 135)

See First Term.

R 3100. FINANCIAL MANAGEMENT. (687232) (4 cr; limited to 37 students; prereq 3000; 0945-1100 MTWTh; BlegH 330) Reik

A broad, case-oriented course building on concepts introduced in 3000. The viewpoint of a corporation's principal financial officer is generally used. Case discussions, augmented by lectures and readings, prepare students to apply finance principles in actual business situations. Experience in problem definition, specification of alternatives, analysis, and decisions. Effective verbal and written communication stressed. *Rigorous analysis of the assignment prior to each class session is expected as preparation for active class discussion.*

R 3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS. (487233) (4 cr, \$8300; limited to 40 students; prereq 3000; 1115-1230 MTWTh; BlegH 225) Jessup

See First Term.

R 8100. ADVANCED FINANCIAL MANAGEMENT. (590933) (4 cr, \$3100; limited to 37 students; prereq 3000 or MBA 8040; 1115-1230 MTWTh; BlegH 220) Reik

Rigorous case-oriented course that simulates executive-level discussion of corporate financial policy. The student is challenged to apply basic principles of finance on his or her own initiative. Effective verbal and written communication stressed. Case discussions augmented by written assignments, lectures, readings, and occasional guest presentations by financial executives.

R 8990. READINGS AND RESEARCH IN FINANCE. (287234) (Cr or [may be repeated for cr]; prereq consent of adviser and #)

See First Term.

Industrial Relations (IR)

FIRST TERM

R 3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (785584) (4 cr, \$8002; prereq Econ 1001, 1002, Psy 1001; 0800-0955 MTWTh; BlegH 225)

Labor markets, employee management, federal-state employment policy, and the resolution of industrial conflict. Process followed in valuing, employing, developing, motivating, and maintaining human resources in an industrial society.

R 3010. HUMAN RELATIONS AND APPLIED ORGANIZATION THEORY. (585585) (4 cr; 1010-1205 MTWTh; BlegH 225)

The problems of human relations arising in modern organizations and approaches to their solution. Philosophies and theories of human relations and their translation into policy. Discussion, cases, role playing, and skill building sessions.

R 8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (185587) (4 cr, \$3002; prereq Econ 1001, 1002, Psy 1001; 1010-1205 MTWTh; BlegH 210)

See 3002.

R 8003. ORGANIZATION AND STAFFING. (190031) (4 cr; prereq 8002 or #; 0800-0955 MTWTh; BlegH 210)

Integration of organization goals and objectives with individual needs and objectives through the staffing processes of human resources planning, recruitment, selection reduction, allocation and evaluation of human resources.

Course Descriptions

R 8014. ORGANIZATION DESIGN AND ADMINISTRATION. (090032) (4 cr; prereq 8002 or #: 1220-1415 MTWTh; BlegH 210)

Principles of the design and arrangement of tasks, positions, and functions within the organization. Organization design in relation to the surrounding environment and as an influence on the achievement of organizational goals and individual objectives. Design implications for effective internal organizational operations.

SECOND TERM

R 3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (187235) (4 cr, §8002; prereq Econ 1001, 1002, Psy 1001; 0800-0955 MTWTh; BlegH 130)
See First Term.

R 3007. COLLECTIVE BARGAINING NEGOTIATIONS AND MODERN LABOR RELATIONS. (987236) (4 cr; 1010-1205 MTWTh; BlegH 205)

Collective bargaining negotiations between employers and/or employer associations and unions. Relevant policies of employers, unions, and the public; background of the labor movement; current practices in labor relations; and significant trends.

R 8007. COLLECTIVE BARGAINING NEGOTIATIONS; PROCESSES IN THE PUBLIC AND PRIVATE SECTORS. (490035) (4 cr; prereq 8002 or #: 1325-1520 MTWTh; BlegH 210)

The elements in collective bargaining negotiations and the legal framework imposed on negotiations, both public and private. Conflict and behavioral models containing institutional constraints guide the examination of strategies and tactics that characterize employee-employer bargaining relationships.

R 8035. MOTIVATION AND WORK BEHAVIOR. (290036) (4 cr; prereq 8002 or #: 0905-1100 MTWTh; BlegH 210)

Work behaviors and motivation models; development of motivational frameworks appropriate to each behavior; relationship among motivation, performance, and satisfaction. Topics include labor supply, occupational choice, job turnover, job performance and productivity, work alienation and conflict.

Management (Mgmt)

FIRST TERM

R 3001. FUNDAMENTALS OF MANAGEMENT. (085591) (4 cr, §8001; limited to 50 students; 0905-1100 TWThF; BlegH 425) Miller

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.

R 3002. PSYCHOLOGY IN MANAGEMENT. (685593) (4 cr, §8006; limited to 30 students; 0800-1000 MTWThF; BlegH 245)

Development and application of behavior principles, methods, and skills that underlie managerial competence in preventing and solving problems within and between individuals and groups and aid in effective utilization of human resources. Various laboratory procedures highlight concepts, methods, and skills and furnish practice in applying them to management problems.

R 3004. BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION. (485594) (5 cr; limited to 35 students; prereq sr and completion of business core or final core course; 1010-1205 MTWThF; BlegH 330; Erickson Identifying and analyzing problems, establishing corporate or divisional goals, and designing realistic programs of action. Usually the viewpoint of the general line manager (department, division, or executive level) is taken. Case analysis and discussion, small group work, and occasional presentations made to the class.

8990. READINGS IN MANAGEMENT THEORY AND ADMINISTRATION. (185596) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student and requisite introductory courses) Staff

Readings involve intensive research into a particular subject and normally require preparation of a major term paper.

8995. GRADUATE RESEARCH IN MANAGEMENT THEORY AND ADMINISTRATION. (985597) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student and requisite introductory courses) Staff

Special research projects on a specific problem completed in cooperation in a business firm.

SECOND TERM

R 3001. FUNDAMENTALS OF MANAGEMENT. (4 cr, §8001; each section limited to 50 students)

See First Term.

Sec 1, (587241) 0905-1100 MTWTh, Law 45, Nichols

Sec 2, (387242) 0905-1100 TWThF, Law 15, Miller

R 8990. READINGS IN MANAGEMENT THEORY AND ADMINISTRATION. (187243) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student and requisite introductory courses) Staff

See First Term.

8995. GRADUATE RESEARCH IN MANAGEMENT THEORY AND ADMINISTRATION. (087244) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student and requisite introductory courses) Staff
See First Term.

Management Information Systems (MIS)

FIRST TERM

3098. ELEMENTARY COBOL. (785598) (1 cr; S-N only; prereq 3040 or *3040 or 3100 or *3100 or 3300 or *3300; 1220-1310 MW; BlegH 420)

An introduction to programming in the COBOL language. Using a programmed text in this self-paced course, the student will complete a set of simple COBOL programs. Consultants assist and administer quizzes in a laboratory environment.

3099. ELEMENTARY FORTRAN. (585599) (1 cr; S-N only; prereq 3040 or *3040 or 3100 or *3100 or 3300 or *3300; 1220-1310 MW; BlegH 425)

An introduction to programming in the FORTRAN language. Using a programmed text in this self-paced course, the student will complete a set of simple FORTRAN programs. Consultants assist and administer quizzes in a laboratory environment.

83300. INTRODUCTION TO COMPUTERS AND MANAGEMENT INFORMATION SYSTEMS. (790039) (4 cr, \$3100, \$5100, \$5300; limited to 50 students; 0800-0955 MTWTh; Law 15)

A computer appreciation course providing technical background for understanding the use of computers in organizations. Structure and operation of computer systems. Hardware technology and software development. Structure and components of MIS. Using a computer in organizations to support operations and management—in planning and control and in decision making. Managing the development and use of computer systems. Acquiring computer resources. The computer industry and impact of computers on society.

8990. READINGS IN MANAGEMENT INFORMATION SYSTEMS. (185601) (Cr ar; prereq consent of adviser, 2nd-yr grad student, requisite introductory courses)

8995. GRADUATE RESEARCH IN MANAGEMENT INFORMATION SYSTEMS. (985602) (Cr ar; prereq consent of adviser, #, 2nd-yr grad student, requisite introductory courses)

SECOND TERM

83300. SURVEY OF COMPUTERS AND MANAGEMENT INFORMATION SYSTEMS. (190040) (4 cr, \$3100, \$5100, \$8300; cr cannot be applied to MBA programs begun after Dec 15, 1979; limited to 50 students; 1010-1205 MTWTh; BlegH 130)

A computer appreciation course providing technical background for understanding and raising issues treated in later MIS courses. Structure and operation of computer systems. Hardware technology and software development. Tools and methods for developing computer applications. Structure and components of MIS. Using a computer in organizations to support operations and management—in planning and control and in decision making. MIS development, organization, management, and evaluation. Acquiring computer resources. The computer industry and profession. Intended for non-M.B.A. graduate students desiring one course in MIS.

8990. READINGS IN MANAGEMENT INFORMATION SYSTEMS. (687246) (Cr ar; prereq consent of adviser, 2nd-yr grad student, requisite introductory courses)

8995. GRADUATE RESEARCH IN MANAGEMENT INFORMATION SYSTEMS. (487247) (Cr ar; prereq consent of adviser, #, 2nd-yr grad student, requisite introductory courses)

Marketing (Mktg)

FIRST TERM

83000. PRINCIPLES OF MARKETING. (4 cr, \$8000; each section limited to 45 students; prereq Econ 1002 or equiv) 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.

Sec 1, (785603) 0905-1100 MWF, AndH 350, Walton

Sec 2, (585604) 1115-1310 MWF, BlegH 145, Berkowitz

83010. BUYER BEHAVIOR AND MARKETING ANALYSIS. (385605) (4 cr; limited to 50 students; prereq 3000 and QA 1050 or equiv; 0905-1100 MWF; BlegH 145)

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.

Course Descriptions

R 8090. MARKETING TOPICS. (690860) (4 cr [may be repeated for cr]; limited to 30 students; prereq MBA core courses...or 8000 and ...; 1300-1600 MW; BlegH 260) Hansen
Selected topics and problems of current interest and of a varied nature considered in depth. Class discussions and course projects.

8990. READINGS IN MARKETING. (885608) (Cr ar; prereq MBA core courses...or 8000 and ...and consent of adviser. #)
Readings useful to the student's program and objectives that are not available in regular course offerings.

8995. GRADUATE RESEARCH IN MARKETING. (685609) (Cr ar; prereq MBA core courses...or 8000 and ...and consent of adviser. #)
Individual research on an approved topic that is appropriate to the student's program and objectives.

SECOND TERM

R 3000. PRINCIPLES OF MARKETING. (4 cr; limited to 45 students; prereq Econ 1002 or equiv)
See First Term.

Sec 1. (287248) 0905-1100 MWF, BlegH 225, Walton
Sec 2. (690051) 1115-1310 MWF, BlegH 155, Walker

R 3020. MARKETING OPERATIONS MANAGEMENT. (187249) (4 cr; limited to 30 students; prereq 3010, 0905-1100 MWF; BlegH 425)

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. (287251) (Cr ar; prereq MBA core courses...or 8000 and ...and consent of adviser. #)
See First Term.

8995. GRADUATE RESEARCH IN MARKETING. (187252) (Cr ar; prereq MBA core courses...or 8000 and ...and consent of adviser. #)
See First Term.

Master of Business Administration (MBA)

Note: Students enrolled in the MBA courses pay tuition rates charged in the academic year.

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

R 8005. COMPUTER ACCESS AND PROGRAMMING FOR BUSINESS ANALYSIS. (1 cr; MBA students only; limited to 40 students) Hoffman
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. (085610) 1030-1230 T, Law 45 (first term), BlegH 425 (second term)
Sec 2. (390187) 1300-1500 T, BlegH 340

R 8015. HUMAN RESOURCES MANAGEMENT. (885611) (4 cr; MBA students only; limited to 40 students; 1010-1205 TTh; BlegH 340)

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.

R 8025. DECISION SCIENCES AND INFORMATION SYSTEMS. (485613) (4 cr; MBA students only; limited to 40 students; 1300-1600 T; BlegH 330) Anderson
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 systems.

R 8035. MANAGERIAL ECONOMICS AND ACCOUNTING. (285614) (4 cr; MBA students only; limited to 40 students; 1430-1600 MWTh; BlegH 330) Dickhaut
The interplay of microeconomic theory of the firm, managerial accounting, and management of organizations. Topics include cost curves and cost estimation; demand curves, market structure, and demand estimation; short-run decision making of the firm and the related accounting information; and accounting choice problems under uncertainty.

R 8040. FINANCIAL MANAGEMENT. (4 cr; MBA students only; limited to 40 students) Gahlon

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.

Sec 1. (185615) 0915-1100 MWF, AndH 310

Sec 2. (985616) 1230-1415 MWF, BlegH 330

R 8045. MARKETING MANAGEMENT. (785617) (4 cr; MBA students only; limited to 40 students; 1220-1415 MW; BlegH 340) Walton

Managing the marketing function; marketing planning, strategy, and management concepts. Identification of marketing problems and opportunities; construction, evaluation, and management of a marketing plan.

R 8050. OPERATIONS MANAGEMENT. (4 cr; MBA students only; limited to 40 students) Ar

The operations management function in different types of organizations; the relation of operations to other business decisions. Concepts of operations planning and control; process management; and the relationship to logistics.

Sec 1. (585618) 0900-1200 W, Law 50 (first term), AndH 330 (second term)

Sec 2. (385619) 1010-1310 Th, Law 45 (first term), BlegH 425 (second term)

Operations Management (OM)

SECOND TERM

R 3000. INTRODUCTION TO OPERATIONS MANAGEMENT. (987253) (4 cr; limited to 40 students; 1010-1205 MTWTh; BlegH 420)

Concepts and principles in the management of operating functions, taught from a managerial point of view. Examples from service industries, nonprofit organizations, and manufacturing. Relationships to other business functions and the environment stressed. Topics include an overview of operations, planning operating processes, productivity measurement, standards, allocation of resources, forecasting, concepts of quality, inventory management, principles of scheduling, and operational control information systems.

8990. READINGS IN OPERATIONS MANAGEMENT. (787254) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student, requisite introductory courses)

8995. GRADUATE RESEARCH IN OPERATIONS MANAGEMENT. (587255) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student, requisite introductory courses)

Research projects on a specific problem completed in cooperation with a business firm.

Quantitative Analysis (QA)

FIRST TERM

R 1050. ELEMENTARY MANAGERIAL STATISTICS. (585621) (4 cr; limited to 50 students; prereq Math 1111 or equiv or Math 1131; lect 0900-1130 MTh, AndH 230; lab 0900-1015 TF, BlegH 110)

Introduction to quantitative decision making. Probabilistic and statistical techniques in decision making, data analysis, and management information systems; e.g., laws of probability, sampling, estimation, and regression.

R 3055. INTRODUCTION TO MANAGEMENT SCIENCES. (890582) (4 cr; limited to 50 students; prereq 1050, Math 1142 or equiv; 1010-1205 MTWTh; BlegH 150)

Analytical approaches and quantitative reasoning in management problems; problem formulation, analytical methods for solution, and use of computer models. Management science concepts, decision theory, simulation, linear programming, implementation.

8990. READINGS IN QUANTITATIVE ANALYSIS. (685626) (Cr ar; prereq #)

8995. GRADUATE RESEARCH IN QUANTITATIVE ANALYSIS. (485627) (Cr ar; prereq #)

SECOND TERM

R 1050. ELEMENTARY MANAGERIAL STATISTICS. (190580) (4 cr; limited to 50 students; prereq Math 1111 or equiv or Math 1131; 0800-0955 MTWTh; BlegH 10)

See First Term.

R 3055. INTRODUCTION TO MANAGEMENT SCIENCES. (090581) (4 cr; limited to 50 students; prereq 1050, Math 1142 or equiv; 0800-0955 MTWTh; BlegH 215)

See First Term.

8990. READINGS IN QUANTITATIVE ANALYSIS. (187260) (Cr ar; prereq #)

8995. GRADUATE RESEARCH IN QUANTITATIVE ANALYSIS. (087261) (Cr ar; prereq #)

Risk Management and Insurance (Ins)

FIRST TERM

3100. RISK MANAGEMENT AND INSURANCE. (285628) (4 cr, §8100; 0930-1045 MTWTh; BlegH 235) Whitman
How to recognize and evaluate the property, liability, and personnel risks facing a business firm, a family, or some other economic unit. The tools of risk management—retention, loss control, and insurance—and the conditions under which they should be used. How to select and deal with an insurer. Public policy issues—government regulation, social insurance, pensions, and automobile insurance problems.

3200. LIFE AND HEALTH INSURANCE. (185629) (4 cr, §8200; prereq 3100 or equiv; 1115-1230 MTWTh; BlegH 404) Whitman

Types of individual life and health insurance contracts, their uses, and their major provisions. Insurance and pension components of employee benefit plans—their characteristics and regulation. Programming and estate planning. Business uses of individual life and health insurance. Selection of a life and health insurer.

8100. RISK MANAGEMENT AND INSURANCE. (485630) (4 cr, §3100; 0930-1045 MTWTh; BlegH 235) Whitman
See 3100.

8200. LIFE AND HEALTH INSURANCE. (285631) (4 cr, §3200; prereq 8100 or equiv; 1115-1230 MTWTh; BlegH 404) Whitman
See 3200.

Transportation (Tran)

FIRST TERM

3054. FUNDAMENTALS OF TRANSPORTATION. (790042) (4 cr, §8154; prereq Econ 1002 or equiv; limited to 50 students; 0905-0955 MTWThF; Law 45)

Organizational and economic aspects of the transportation system of the United States including rail, highway, air, pipeline, and water transportation. Administration of transportation by users, providers (carriers), and government.

3064. BUSINESS LOGISTICS. (185632) (5 cr, §8264; limited to 40 students; prereq 3054; 0730-0800 MTWThF; BlegH 425)

Control of the flow of physical products by the firm. Rate negotiation, transportation alternatives, logistics information systems, inventory control, warehouse operations and location, and logistics system design.

8264. BUSINESS LOGISTICS. (985633) (5 cr, §3064; limited to 10 students; prereq 3054 or 8154; 0730-0850 MTWThF; BlegH 425)
See 3064.

8990. READINGS IN TRANSPORTATION AND BUSINESS LOGISTICS. (785634) (Cr ar; prereq consent of adviser, # in field covered)

Readings useful to the student's program and objectives that are not available in regular course offerings.

8995. GRADUATE RESEARCH IN TRANSPORTATION AND BUSINESS LOGISTICS. (585635) (Cr ar; prereq consent of adviser, # in field covered)

SECOND TERM

3054. FUNDAMENTALS OF TRANSPORTATION. (487264) (4 cr, §8154; prereq Econ 1002 or equiv; limited to 50 students; 0905-0955 MTWThF; BlegH 120)

See First Term.

8990. READINGS IN TRANSPORTATION AND BUSINESS LOGISTICS. (187266) (Cr ar; prereq consent of adviser, # in field covered)

See First Term.

8995. GRADUATE RESEARCH IN TRANSPORTATION AND BUSINESS LOGISTICS. (987267) (Cr ar; prereq consent of adviser, # in field covered)

Military Science

The Army Reserve Officer's Training Corps (ROTC) summer program offers University students three ways to qualify for ROTC through an accelerated program: entry into the basic course (compress 4 years into 3); entry into the advanced course (compress 4 years into 2); an alternative to the 2-year basic camp that permits students to remain in the Twin Cities during the summer (compress 4 years into 2). No military obligation is incurred through participation in any of the summer programs. Eligible students who enroll in the advanced course receive \$100 per month beginning the next academic year. For information, call 373-2212.

Military Science (Mil)

FIRST TERM

R 1014. WORLD MILITARY HISTORY. (186741) (5 cr. §1011, §1012, §1013, §Hist 1951, §1952, §1953, §1954; limited to 50 students; prereq Δ ; 0800-0955 MTWThF; Armory 116A)

Basic concepts of military history. Principles of war, military definitions, and relationship of geography, economics, diplomacy, and technology to military history — from antiquity to present.

SECOND TERM

R 1024. BASIC COURSE SUMMER COMPRESSION PROGRAM. (488351) (5 cr; limited to 50 students; prereq 1014; 0800-0955 MTWThF; Armory 116A)

Introduction to the U.S. Army, leadership in military units, and other topics of importance to military officers.

Institute of Technology

SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

Architecture (Arch)

FIRST TERM

R 1021. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (086742) (4 cr. \$LA 1021; 0800-0955 MWF; Arch 25) Winterowd
Introduction to the philosophy and principles of architecture and landscape architecture as an art. survey of environmental history from the ancient periods through the medieval age.

R 5056. MODERN ARCHITECTURE. (886743) (4 cr; prereq 1021; 1010-1205 MWF; Arch 25) Ohlhausen
History of development of architecture and urban design in America and Europe from the early 19th century until World War II.

R 5950. TOPICS IN ARCHITECTURE: ARCHITECTURAL PRESENTATION: MEDIA. (686744) (2 cr, prereq 3093 or #; 1325-1625 T; Arch 15) Ermanis
Advanced architectural presentation techniques, methods, and media.

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

R 3082-3083. ARCHITECTURAL DESIGN I. (486745) (286746) (6 cr each; prereq 3081; 1325-1730 MWF; Arch 210) LaVine
Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making.

R 3092-3093. ARCHITECTURAL DESIGN II. (186747) (986748) (6 cr each; prereq 3091; 1325-1730 MWF; Arch 210) LaVine
Architectural problems with emphasis on development of structure as an integral part of design; site planning.

R 5111. ARCHITECTURAL DESIGN III. (786749) (6 cr; prereq 3093, 3064-3065 or #, CE 3600-3601-3602 or #; 1325-1730 MWF; Arch 210) Rockcastle
Advanced architectural problems of complex requirements, involving thorough study and detailed solution; electrical and mechanical equipment and structure as an integral part of design, research techniques. Individual effort and group collaboration.

R 5112. ARCHITECTURAL DESIGN III. (186750) (6 cr; prereq 5111; 1325-1730 MWF; Arch 210) Rockcastle
See 5111.

R 5113. ARCHITECTURAL DESIGN III. (986751) (6 cr; prereq 5112; 1325-1730 MWF; Arch 210) Rockcastle
See 5111.

R 5121. ARCHITECTURAL DESIGN IV. (786752) (9 cr; prereq 5113, CE 3062; 1325-1730 MWF; Arch 210) LaVine, Rockcastle
Building design and development in the urban context. Individual and collaborative effort; urban problems; reporting on and preparation of large-scale proposals.

R 5122. ARCHITECTURAL DESIGN IV. (586753) (9 cr; prereq 5121; 1325-1730 MWF; Arch 210) LaVine, Rockcastle
See 5121.

SECOND TERM

R 1022. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (688364) (4 cr. \$LA 1022; 1000-1155 MWF; Arch 25) Winterowd
Continuation of Arch 1021 from the Renaissance through the modern eras; focuses on forces and individuals that shaped the form of architecture and landscape architecture in the 19th and 20th centuries in America and Europe.

R 5950. TOPICS IN ARCHITECTURE: ARCHITECTURAL PRESENTATION: MEDIA. (390772) (2 cr; prereq 3093 or #; 1325-1625 T; Arch 15) Ermanis
See First Term.

Landscape Architecture (LA)

FIRST TERM

R 1021. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (190062) (4 cr, §Arch 1021; 0800-0955 MWF; Arch 25) Winterowd
Introduction to the philosophy and principles of architecture and landscape architecture as an art; survey of environmental history from the ancient periods through the medieval age.

SECOND TERM

R 1022. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (090063) (4 cr, §Arch 1022; 1000-1155 MWF; Arch 25) Winterowd
Continuation of Arch 1021 from the Renaissance through the modern eras; focuses on forces and individuals that shaped the form of architecture and landscape architecture in the 19th and 20th centuries in America and Europe.

SCHOOL OF CHEMISTRY

Chemistry (Chem)

A \$20.00 deposit card available at the Bursar's Office, Williamson Hall, is necessary for all laboratory courses.

FIRST TERM

R 1001. CHEMICAL PRINCIPLES AND COVALENT SYSTEMS. (086756) If interested in taking BioChem, see BioChem 1301. (5 cr, 1001-1002†, §1003, §1004, §1005, §1008, §1014, §1031, §1032; primarily for forestry and nursing students; a terminal course; prereq 2 yrs high school mathematics...high school chemistry recommended; lect 0800-0910 MTWThF, SciCB 375; rec 1220-1310 MWF, KoltH S133; lab 1325-1625 MWF, SmithH 315) Staff
Principles of chemical change, structural concepts of nuclei, atoms, molecules; laws governing dynamic behavior of matter; equilibrium concepts, especially those relevant to living systems; applications of principles with emphasis on organic and biological species.

R 1004. GENERAL PRINCIPLES OF CHEMISTRY. (486759) (5 cr, 1004-1005†, §1001, §1002, §1003, §1008, §1014, §1031, §1032; primarily for non-chemistry majors; prereq high school chemistry, placement index of Y or predicted mathematics GPA 1.90 on ACT or Math 0009 or college course in algebra...4 yrs high school mathematics...high school physics recommended; lect 0800-0910 MTWThF, SciCB 325; rec 1220-1310 MWF; lab 1325-1625 MWF, SmithH ar) 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.

R 1006. PRINCIPLES OF SOLUTION CHEMISTRY. (686761) (4 cr; prereq 1005 or 1032; lect 0905-0955 MTWThF, SciCB 175; lab 1220-1625 MWF, SmithH ar)
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.

R 3100. QUANTITATIVE ANALYSIS. (486762) (3 cr, 3100-3101†; for non-chemistry majors; prereq 1005 or 1032; 1220-1415 MWF; Arch 35)
(Lecture) Modern quantitative methods of analysis.

R 3101. QUANTITATIVE ANALYSIS. (286763) (2 cr, 3100-3101†; for non-chemistry majors; prereq 3100 or †3100; 0800-1100 MTWThF; SmithH 310)
(Laboratory) Modern quantitative methods of analysis including elementary physicochemical procedures.

R 3301. ELEMENTARY ORGANIC CHEMISTRY I. (186764) (4 cr, §3331; for non-chemistry majors; prereq 1005 or 1032 or equiv; 0800-0955 MTWTh; SmithH 100)
Important classes of organic compounds, both aliphatic and aromatic, and heterocyclic compounds.

R 3305. ELEMENTARY ORGANIC CHEMISTRY LABORATORY I. (786766) (2 cr; prereq 3301 or †3301; lect 1010-1100 T, SmithH 100; lab 1010-1415 WTh, SmithH 349, KoltH 365)
See 3301.

3499. SENIOR THESIS. (586767) (Cr ar; prereq #, 4th yr)
Written final senior thesis report.

3970. DIRECTED STUDY. (386771) (Cr ar; prereq #)
On- or off-campus learning experiences, individually arranged between a student and faculty member, in areas not covered by regular courses.

Course Descriptions

5520. ELEMENTARY PHYSICAL CHEMISTRY. (586770) (3 cr; prereq 1 yr college chemistry, Phys 1291 and 1295 or *Phys 1291 and *1295 or 1106 with #, Math 3211; 0800-0955 MWF; SmithH 225)
Brief general survey. Chemical thermodynamics.

8990. RESEARCH IN CHEMISTRY. (386768) (Cr and hrs ar; prereq Δ)

8991. SPECIAL TOPICS. (186769) (Cr and hrs ar; prereq Δ)

SECOND TERM

1002. CHEMICAL PRINCIPLES AND COVALENT SYSTEMS. (188370) (5 cr. 1001-1002†. §1004, §1005, §1014, §1031, §1032; primarily for forestry and nursing students; a terminal course; prereq 1001; lect 0800-0910 MTWThF, SciCB 375; rec 1220-1310 MWF; lab 1325-1625 MWF, SmithH ar)
See 1001 First Term.

1003. PHYSICAL WORLD, CHEMISTRY. (888377) (5 cr. § any other college chemistry courses a terminal course...cannot be used as prereq for any other advanced chemistry course; a similar course but without lab is offered as 1008; prereq 1 yr high school algebra...high school chem recommended; lect 0900-1000 MTWThF, SciCB 175; rec 1325-1415 MWF; lab 1430-1625 MW, SmithH ar)

Fundamental concepts of chemical bonding, structure of matter, and forces in the physical world. Scientific methods and principles contribute to understanding of the environment and problems faced in improving it. Labs to illustrate.

1005. GENERAL PRINCIPLES OF CHEMISTRY. (988385) (5 cr. 1004-1005†, §1014, §1032; primarily for non-chemistry majors; prereq 1004, high school chemistry, placement index of Y or predicted mathematics GPA 1.90 on ACT or Math 0009 or college course in algebra...4 yrs high school mathematics...high school physics recommended; lect 0800-0910 MTWThF, SciCB 325; rec 1220-1310 MWF; lab 1325-1625 MWF)
See 1004 First Term.

1008. PHYSICAL WORLD, CHEMISTRY. (190837) (4 cr. § any other college chemistry courses; a terminal course...cannot be used as prereq for any other advanced chemistry course; prereq 1 yr high school algebra...high school chemistry recommended; lect 0900-1000 MTWThF, SciCB 175)
See 1003 Second Term. No lab.

3302. ELEMENTARY ORGANIC CHEMISTRY II. (188392) (4 cr; prereq 3301, 3305 or *3305; if 3305 taken concurrently, a passing grade required for 3305 to receive cr for 3302; 0800-0955 MTWTh; SmithH 100)
See 3301 First Term.

3306. ELEMENTARY ORGANIC CHEMISTRY LABORATORY II. (188398) (2 cr; prereq 3302 or *3302; lect 1010-1100 T, SmithH 100; lab 1010-1415 WTh, SmithH 349)
See 3301 First Term.

3499. SENIOR THESIS. (488401) (Cr ar; prereq #, 4th yr)
See First Term.

3970. DIRECTED STUDY. (188403) (Cr ar; prereq #)
See First Term.

5126. MODERN ANALYTICAL CHEMISTRY. (188408) (4 cr; primarily for chemical engineering majors; prereq 3332 and 3335; lect 1220-1415 TW, KoltH S140; lab 0800-1205 MTWThF, KoltH 297, 299)
Strategies and techniques for solving modern analytical problems. The use of modern instruments in analysis.

5133. CHEMICAL INSTRUMENTATION AND ANALYSIS LECTURE. (090838) (3 cr. §5-26; prereq 1133, 5534; 1220-1415 TW, KoltH S139)
An introduction to the methodology and practices of solving analytical problems. Application of modern instrumental techniques to analysis.

5134. CHEMICAL INSTRUMENTATION AND ANALYSIS LABORATORY. (190840) (2 cr; prereq 5133 or current registration; A-N only; 0800-1205 MTWThF; KoltH 297, 299)

5521. ELEMENTARY PHYSICAL CHEMISTRY. (688414) (3 cr; prereq 1 yr college chemistry, Phys 1291 and 1295 or *Phys 1291 and *1295 or 1106 with #, Math 3211; 0800-0955 MWF; SmithH 225)
See 5520 First Term.

8990. RESEARCH IN CHEMISTRY. (488415) (Cr and hrs ar; prereq Δ)

8992. SPECIAL TOPICS. (188417) (Cr and hrs ar; prereq Δ)

COMPUTER SCIENCE (CSci)

FIRST TERM

3101. A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING. (186772) (4 cr. §1100, §1101; intended for non-CSci majors; 1115-1310 MT, 1115-1205 W; Arch 5) Ibarra
FORTRAN computer language with extensions; applications; programming techniques. Brings students to advanced-level competence in FORTRAN programming. Integral nonscheduled laboratory.

3104. INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING. (886774) (4 cr; prereq Math 1231 or Math 1331 or Math 1621 or #; intended for CSci majors; 0905-0955 MTWThF; Arch 50) Berzins
Problem-solving techniques, stepwise refinement, modularization. Algorithms, introduction to evaluation criteria, representation of algorithms, flow charts, metalanguages. The Pascal language. Elements of programming styles, program checking. Documentation.

R 3105. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES I. (490052) (4 cr; prereq 3104 or 3101, Math 1211 or #; informal lab; 1010-1205 MT, 1115-1205 W; Arch 35) Maly
Informal and formal approaches to algorithms, their properties and specification through an algorithmic language; problem solving and software engineering aspects of solution implementations; analysis of algorithms and techniques for algorithm developments; errors—their causes and effects as studied in several numerical applications.

3400. DISCRETE STRUCTURES OF COMPUTER SCIENCE. (686775) (4 cr; prereq Math 1231 or 1331 or #; 1010-1205 MW, 1115-1205 Th; Arch 55) Sahni
Sets and multisets. Proof techniques. Propositional calculus. Combinatorics. Algorithms. Computability and unsolvability. Graphs. Trees.

5121. INTRODUCTION TO DATA STRUCTURES. (286777) (4 cr; prereq 3106 and 3400 or #; informal lab; 1010-1100 MTWThF; Arch 5) Bruell
Basic concepts of data and their representation. Sequential and linked representation. Arrays, stacks and queues. Chains, circular lists and doubly linked lists. Dynamic storage management. Garbage collection and storage compaction. Generalized lists. Strings. Binary trees and trees. Tree traversal. Graphs. Activity networks.

5301. NUMERICAL ANALYSIS. (290053) (4 cr; prereq Math 3142 or #...a knowledge of FORTRAN is assumed; informal lab; 1010-1205 MT, 1115-1205 W; Arch 10) Frankowski
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.

SECOND TERM

3106. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES II. (190054) (4 cr; prereq 3105 or #; informal lab; 1010-1205 MT, 1115-1205 W; Arch 5) Du
Non-numeric application areas of computer science; system processors and processes; basic information structures and their relation to algorithm complexities; non-numeric programming languages—SNOBOL; text processing; recursion as an algorithm development technique and its implementation in a programming language; introduction to artificial intelligence.

5104. SYSTEM SIMULATION: LANGUAGES AND TECHNIQUES. (990055) (4 cr; prereq 3107 or 5101, Stat 3091 or #; informal lab; 1010-1205 MT, 1115-1205 W; Arch 35) Franta
Methodologies relevant to simulation including queueing theory, variable generation, design of experiments, data collection, statistical analysis of output. Simulation languages, both flow and event oriented; including GPSS, SIMULA, SIMSCRIPT. Application to job shops, operations research and modeling of computer and communications systems.

SCHOOL OF EARTH SCIENCES

Geology and Geophysics (Geo)

FIRST TERM

R 1001. PHYSICAL GEOLOGY. (5 cr; limited to 52 students; lect 0905-0955 MTWThF; PillsH 110) Sloan
Introduction to scientific method and nature of the earth. Main features of the physical world and processes that have formed them. Meets with 5051.

Lab 1, (986779) 1010-1205 MWF, FordH 180

Lab 2, (286780) 1325-1520 MWF, FordH 180

3099. PROBLEMS IN GEOLOGY AND GEOPHYSICS. (186781) (1-6 cr; prereq # and Δ)
Individual research or problem selected on the basis of individual interests and background.

R 5051. PHYSICAL GEOLOGY FOR TEACHERS. (4 cr, §1001, §1111; limited to 8 students; only for students holding degrees in education; prereq 1 term college chemistry or physics; lect 0905-0955 MTWThF; seminar 1220-1310 TTh; PillsH 110) Sloan
Scientific methods and nature of the earth. Main features of the physical world and of the processes that have formed them. Meets with 1001.

Lab 1, (190756) 1010-1205 MWF, FordH 180

Lab 2, (090757) 1325-1520 MWF, FordH 180

Course Descriptions

5110. FIELD GEOLOGY—June 14-July 23. (986782) (9 cr; limited to students majoring in geology, geophysics, or geoen지니어ing; prereq 3103 and #) 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.

COLLEGE OF ENGINEERING

Aerospace Engineering and Mechanics (AEM)

FIRST TERM

1015. STATICS. (4 cr; §1011; prereq Phys 1271, Math 1231; lect 0800-0955 MWF; Arch 40)
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, (590043) 0905-0955 TTh, Arch 40

Rec 2, (390044) 0905-0955 TTh, Arch 30

3036. DYNAMICS. (4 cr; prereq 1011 or 1015, †Math 3221; lect 1010-1205 MWF; Arch 40)
Review of particle dynamics. Mechanical systems and the rigid-body model. Equilibrium. Kinematics and dynamics of plane systems. Technical applications.

Rec 1, (190045) 1010-1100 TTh, Arch 40

Rec 2, (690048) 1010-1100 TTh, Arch 55

5001. AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY TEACHERS—July 6-16. (186786) (4 cr; limited to 30 students; 1:00-5:30 MTWThF; MechE 102) 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). See Special Programs section.

8800. SELECTED TOPICS IN MECHANICS AND MATERIALS. (086787) (1-4 cr per qtr; prereq #)

Topics of current interest.

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

5840. INDUSTRIAL ASSIGNMENT. (886788) (2 cr; prereq regis in engineering intern program)
Engineering intern industrial laboratory. A formal technical report, covering the work during the industrial assignment, is required.

5841. INDUSTRIAL ASSIGNMENT. (686789) (2 cr; prereq regis in engineering intern program)

5842. INDUSTRIAL ASSIGNMENT. (086790) (2 cr; prereq regis in engineering intern program)

SECOND TERM

3016. DEFORMABLE BODY MECHANICS. (4 cr; prereq 1011 or 1015, †Math 3221; lect 1010-1205 MWF; Arch 40)
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, (890047) 1010-1100 TTh, Arch 40

Rec 2, (490049) 1010-1100 TTh, Arch 15

Rec 3, (890050) 1010-1100 TTh, Arch 30

8610. SELECTED TOPICS IN FLUID MECHANICS. (488107) (1-4 cr per qtr; prereq #)

Topics of current interest.

Chemical Engineering and Materials Science

Chemical Engineering (ChEn)

FIRST TERM

5902, 5903, 5904, 5905. SPECIAL PROBLEMS. (686792) (486793) (286794) (186795) (Cr ar)

8901-8902-8903. RESEARCH. (986796) (786797) (586798) (Cr ar)

SECOND TERM

5902, 5903, 5904, 5905. **SPECIAL PROBLEMS.** (288108) (188109) (488110) (288111) (Cr ar)

8901-8902-8903. **RESEARCH.** (188112) (988113) (788114) (Cr ar)

Metallurgy/Materials Science (MatS)

FIRST TERM

R 3400. **MECHANICAL PROPERTIES OF MATERIALS.** (386799) (4 cr; prereq 2nd-year IT student; 0800-0955 MWF; AmundH 240) Sivertsen

Structure and properties of metals, alloys, and polymers; heat treatment; alloy selection and metal processing.

R 5011. **INTRODUCTION TO SCIENCE OF MATERIALS.** (986801) (4 cr; prereq 3rd-year IT student; 0800-0955 MWF; Arch 30) Anderson

Introduction to the relationships between atomic structure and physical properties of metals, semiconductors, glasses, polymers, ceramics, and composites.

5481, 5482, 5483. **SPECIAL PROBLEMS.** (786802) (586803) (386804) (Cr ar; prereq sr)

8480, 8481, 8482. **SELECTED TOPICS: MATERIALS SCIENCE, ENGINEERING.** (186805) (086806) (868607) (Cr ar)

SECOND TERM

5481, 5482, 5483. **SPECIAL PROBLEMS.** (588115) (388116) (188117) (Cr ar; prereq sr)

8480, 8481, 8482. **SELECTED TOPICS: MATERIALS SCIENCE, ENGINEERING.** (088118) (888119) (188120) (Cr ar)

Electrical Engineering (EE)

FIRST TERM

R 1510. **ELEMENTS OF ELECTRICAL ENGINEERING.** (5 cr; each section limited to 14 students; prereq grades of at least C in Math 3211, 3221, Phys 1291 or *Phys 1291; lect 0800-0955 MTWThF; MechE 202)

Physical principles underlying the modeling of circuit elements. Two- and three-terminal resistive elements. Kirchoff's laws. Simple resistive circuits. Linearity in circuits. Storage elements. First- and second-order circuits.

Lab 1, (486809) 1010-1310 TTh, ElectE 121

Lab 2, (886810) 1220-1520 WF, ElectE 121

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

R 3000. **CIRCUITS.** (4 cr; each section limited to 14 students; not for EE majors; prereq Phys 1291, Math 3221 or *Math 3221; lect 0800-0850 MWF; Arch 55)

Linear passive circuits; natural and forced response. Steady-state AC analysis; resonance.

Lab 1, (286813) 0800-0955 T, ElectE 121

Lab 2, (186814) 0800-0955 Th, ElectE 121

Lab 3, (986815) 1220-1415 M, ElectE 118

Lab 4, (786816) 1430-1625 M, ElectE 121

R 3001. **ELECTRONICS.** (4 cr; each section limited to 14 students; not for EE majors; prereq 3010 or 3000 or *3000; lect 0905-0955 MWF; Arch 35)

Network theorems; two-ports, active device models; vacuum diodes, semiconductors, amplifiers, non-linear devices; logic circuits.

Lab 1, (186819) 0800-0955 T, ElectE 118

Lab 2, (586820) 0800-0955 Th, ElectE 118

Lab 3, (386821) 1010-1205 M, ElectE 118

R 3010. **CIRCUITS, SIGNALS, AND SYSTEMS I.** (186822) (4 cr; prereq grade of at least C in 1510; 0800-0850 MWF, 1325-1520 M; Arch 15)

Modeling of lumped-parameter networks. Sinusoidal steady-state analysis. Two-port networks.

R 3012. **CIRCUITS, SIGNALS, AND SYSTEMS III.** (086823) (4 cr; prereq 3011; 1010-1100 MTWF; Arch 50)

Continuous, discrete-time systems. Feedback: stability, applications.

R 3050. **ELECTRONICS I.** (886824) (4 cr; prereq 3010 or *3010; 1115-1205 MWF, 1325-1520 W; Arch 30)

Elementary semiconductor physics; physical description of pn junction diodes, bipolar junction transistors.

R 3052. **ELECTRONICS III.** (886825) (4 cr; prereq 3051, 3012 or *3012; 0905-0955 MTWF; MechE 212)

Elementary amplifiers at high frequencies; feedback amplifiers, oscillators; differential and operational amplifiers.

Course Descriptions

- R 3100. ELECTROMAGNETIC FIELDS I.** (486826) (4 cr; prereq grades of at least C in Phys 1291, Math 3231 or *Math 3231 with #: 1010-1100 MWF, 1010-1205 Th; MechE 302)
Electrostatic, magnetostatic, and electromagnetic field theory based on fundamental experimental laws, including properties of dielectric and magnetic materials.
- R 3400. JUNIOR ELECTRICAL ENGINEERING LABORATORY.** (3 cr; each section limited to 14 students; prereq 3010, 3050 or *3010 and 3050)
Lab 1, (686839) 0800-1205 T, ElectE 21
Lab 2, (086840) 1220-1625 Th, ElectE 21
- R 3402. JUNIOR ELECTRICAL ENGINEERING LABORATORY.** (2 cr; each section limited to 14 students; prereq 3012, 3052, or *3012 and 3052)
Lab 1, (386835) 1220-1625 T, ElectE 21
Lab 2, (186836) 0800-1205 Th, ElectE 21
Lab 3, (086837) 1220-1625 Th, ElectE 21
- R 3476. INDUSTRIAL ASSIGNMENT I.** (286827) (2 cr; prereq regis in engineering intern program)
Industrial work assignment in engineering intern program. Grade based on formal written report covering the quarter's work assignment.
- R 3477. INDUSTRIAL ASSIGNMENT II.** (186828) (2 cr; prereq 3476)
See 3476.
- R 5051. LOGIC DESIGN AND MICROPROCESSORS.** (886841) (4 cr; prereq 3051 or #: 1115-205 MW, 1115-1310 F; Arch 50)
Switching algebra, design of combinational logic networks, Karnaugh maps, Flip-flops, counters and shift registers. Microprocessor architecture, programming, and input-output devices.
- R 5052. LOGIC DESIGN AND MICROPROCESSOR LABORATORY.** (1 cr; each section limited to 12 students; prereq *5051)
Lab 1, (686842) 1220-1415 M, ElectE 210
Lab 2, (486843) 1220-1415 W, ElectE 210
- R 5100. ELECTROMAGNETIC FIELDS III.** (986829) (4 cr; prereq 3101; 0800-0850 MTWF; Arch 10)
Plane-wave propagation, transmission lines, antennas, and other topics.
- R 5101. ELECTROMAGNETIC FIELDS LABORATORY.** (1 cr; each section limited to 12 students; prereq 3401, 5100 or *5100)
Lab 1, (186845) 1220-1625 alt T, ElectE 216
Lab 2, (986846) 0800-1205 alt Th, ElectE 216
Lab 3, (786847) 1220-1625 alt Th, ElectE 216
- 5478. INDUSTRIAL ASSIGNMENT III.** (286830) (2 cr; prereq 3477, regis in intern program)
See 3476.
- 5479. INDUSTRIAL ASSIGNMENT IV.** (186831) (2 cr; prereq 5478)
See 3476.

Mechanical Engineering

Industrial Engineering/Operations Research (IEOR)

FIRST TERM

R 5030. QUALITY CONTROL AND RELIABILITY. (986832) (4 cr; limited to 30 students; prereq Math 1231, ME 3900 ... IEOR 5000 recommended; lect 1010-1205 TWThF; MechE 212) White
History of quality control, quality policies and objectives, economics of quality, design for system effectiveness, reliability and maintainability, statistical aids to reliability, quality specifications, inspection, acceptance sampling, vendor relations, process control, motivation for quality, quality assurance, and quality control engineering.

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

R 5040. INTRODUCTION TO OPERATIONS RESEARCH. (586834) (4 cr; limited to 30 students; prereq Math 1231 ... IEOR 5000 recommended; lect 0800-0955 TTh; MechE 302) White, Arora
Linear programming, algebra and geometry of linear models, simplex method, sensitivity testing, and duality; network models, network algorithms, and dynamic models.

5180. APPLIED INDUSTRIAL ENGINEERING. (786833) (3-5 cr [1-2 cr term paper option]; prereq background in all basic industrial engineering areas [5000, 5010, 5020, 5030 and 5040])
Industrial engineering surveys and programs. Case problems, studies in local plants.

SECOND TERM

R 5000. INTRODUCTION TO INDUSTRIAL ENGINEERING ANALYSIS. (888430) (4 cr; limited to 30 students; prereq Math 1231... ME 3900 recommended; 1220-1415 TWThF; Arch 40) Arora
Scientific management, mathematical models, methods engineering, work measurement, worker satisfaction and participation, wage payment plans, break-even analysis, incremental costs, the time value of money and the present value concept; cost quality and inventory control; production scheduling, plant locations, and layout; linear programming, PERT, and the systems approach to management problems.

Mechanical Engineering (ME)

FIRST TERM

R 3201. MECHANICAL ENGINEERING SYSTEMS ANALYSIS. (586848) (4 cr, §AEM 3401; limited to 45 students; prereq AEM 3036; 1220-1415 TWThF; MechE 302) Frohrib
Modeling and analytic description of mechanical systems. Properties of linear models with emphasis on automatic computation solution. Necessary background includes differential equations.

R 3205. ENGINEERING SYSTEMS DESIGN. (786850) (4 cr; limited to 45 students; prereq AEM 3016; 1220-1415 TWThF; MechE 108) Kleinhenz
Application of fundamental concepts to the design of typical mechanical components. Engineering approach to the analysis and synthesis of machines and systems. Specification of materials in engineering design. Optimum design criteria.

R 3301. THERMODYNAMICS. (586851) (4 cr; limited to 45 students; prereq Chem 1014 or Phys 1281, Math 3221 or equiv; 1010-1205 TWThF; MechE 108) Scott
Properties, equations of state, processes, and cycles for various thermodynamic systems. Development of first and second laws of thermodynamics, correlating heat, work, and mass transfer. Equilibrium irreversibility and mixtures.

R 5460. INTERNAL COMBUSTION ENGINES. (186853) (4 cr; limited to 30 students; prereq 3301 or equiv; 1010-1205 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.

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

R 3740. INDUSTRIAL ASSIGNMENT. (886855) (2 cr per qtr [may be repeated for cr]; prereq regis in engineering intern program) Springer
Engineering intern industry laboratory assignment (work quarter). Grade based on formal written report covering the industrial work assignment.

R 3741. INDUSTRIAL ASSIGNMENT. (386849) (2 cr per qtr; prereq regis in intern program for 3741)
Industrial work assignment in engineering intern program. Evaluation based on formal written report accomplished by student covering the quarter's work assignment.

5190. ADVANCED ENGINEERING PROBLEMS. (386852) (2-4 cr; open to upper division students; prereq submission of approved deptl permission form)
Special investigations in various fields of mechanical engineering and related areas including a independent study project.

R 5741. INDUSTRIAL ASSIGNMENT AND DESIGN PROJECT. (390125) (4 cr per qtr; prereq 3742 for 5741)
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.

SECOND TERM

R 3303. APPLIED THERMODYNAMICS. (988435) (4 cr, §3305; limited to 30 students; prereq 3301 or equiv; 1010-1205 TWThF; MechE 108) Murphy
Application of laws of thermodynamics to chemically reacting systems and engineering systems. Vapor cycles, gas engine cycles, propulsion systems, refrigeration, and air-water vapor mixtures.

R 5260. ENGINEERING MATERIALS AND PROCESSING. (4 cr; each section limited to 18 students; prereq Phys 1291, Chem 1004, and 1st-yr calculus; 1325-1415 MTWThF; MechE 212) Raley
Introduction to materials and processing including physical and metallurgical properties, consolidation, etc. Material processing including machining, welding, and deformation processes.

Lab 1, (188442) 1430-1625 TTh, MechE 70
Lab 2, (088443) 1430-1625 MW, MechE 70

Course Descriptions

R 5342. HEAT TRANSFER. (288447) (4 cr; limited to 30 students; prereq 3301 and CE 3400 or AEM 3200; 1220-1415 TWThF; MechE 108) 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.

SCHOOL OF MATHEMATICS

Mathematics (Math)

FIRST TERM

R 0009. INTERMEDIATE ALGEBRA. (No cr; prereq 1 yr high school algebra or grade of C or better in 0006) Covers high school higher algebra.

Sec 1, (486857) 0800-0955 MTWThF, VinH 364

Sec 2, (286858) 1010-1205 MTWThF, VinH 364

R 1005. FOUNDATIONS OF ARITHMETIC. (186859) (3 cr; for pre-elementary education students only [nc cr for other CLA students]); prereq 1 yr elementary algebra, 1 yr high school geometry or equiv or Δ ; 1010-1100 MTWThF; Arch 30) Miracle

Logical and axiomatic basis of the rules for arithmetical operations with integers, rational numbers, and real irrational numbers; real number line and inequalities as background for teaching arithmetic in elementary school. Topics from geometry and congruences; history of the subject and its role in our culture and civilization.

R 1008. TRIGONOMETRY. (486860) (4 cr; prereq plane geometry, 2 yrs high school algebra... or plane geometry, grade of C or better in 0009; 1115-1205 MTTh, 1010-1100 WF; Arch 15)

Analytic trigonometry, identities, equations, and properties of trigonometry functions; right and oblique triangles.

R 1111. COLLEGE ALGEBRA AND ANALYTICAL GEOMETRY. (5 cr, §1201; prereq plane geometry, 2 yrs high school algebra... or plane geometry, grade of C or better in 0009)

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, (286861) 0800-0955 MTWThF, VinH 20

Sec 2, (186862) 1010-1205 MTWThF, VinH 20

R 1131. FINITE MATHEMATICS. (986863) (5 cr; prereq plane geometry, grade of C or better in 0009... or plane geometry, 2 yrs high school algebra; 1010-1205 MTWThF; VinH 1) Stenberg

(For students in the social sciences, behavioral sciences, and prebusiness.) Elementary computer programming, logical analysis, probability and stochastic models, Markov chains, linear systems and programming, matrix operations, and applications.

R 1142. SHORT CALCULUS. (5 cr, §1211; prereq 3½ yrs of high school math or grade of C or better in 1111 or 1131 or 1201)

(For students requiring a minimal amount of calculus.) Derivatives, integrals, differential equations, maxima and minima, partial differentiation, applications.

Sec 1, (786864) 0800-0955 MTWThF, VinH 209

Sec 2, (586865) 1010-1205 MTWThF, VinH 209

R 1201. PRE-CALCULUS. (5 cr, §1111; prereq 4 yrs high school math including trigonometry)

(For students who need to review 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.

Sec 1, (386866) 0800-0955 MTWThF, VinH 113

Sec 2, (186867) 1010-1205 MTWThF, VinH 113

R 1211. CALCULUS I. (5 cr; prereq 4 yrs high school math including trigonometry... or grade of C or better in 1201... or grade of C or better in 1008 and 1111... or equiv)

Analytic geometry and calculus of one variable, applications. Infinite series and sequences

Sec 1, (086868) 0800-0955 MTWThF, AkerH 211

Sec 2, (886869) 1010-1205 MTWThF, AkerH 211

R 1221. CALCULUS II. (5 cr; prereq grade of C or better in 1211 or equiv)

See 1211.

Sec 1, (186870) 0800-0955 MTWThF, VinH 16

Sec 2, (086871) 1010-1205 MTWThF, VinH 16

R 1231. CALCULUS III. (5 cr; prereq grade of C or better in 1221 or equiv)

See 1211.

Sec 1, (886872) 0800-0955 MTWThF, Phys 210

Sec 2, (686873) 1010-1205 MTWThF, Phys 210

¶ 3142. INTRODUCTION TO LINEAR ALGEBRA. (486874) (4 cr, §3221, §3511; prereq 2 qtrs calculus; 0905-0955 MWF, 0905-1100 TTh; VinH 6)

Vectors, systems of linear equations, matrices, determinants, eigenvalues, applications. Techniques and some proofs of theorems.

¶ 3211. MULTIVARIABLE CALCULUS. (5 cr; prereq grade of C or better in 1231 or equiv)

Partial differentiation, chain rule, implicit functions, applications. Multiple integrals in two and three dimensions.

Sec 1, (286875) 0800-0955 MTWThF, VinH 2

Sec 2, (186876) 1010-1205 MTWThF, VinH 2

¶ 3221. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS. (986877) (5 cr, §3066, §3142, §3511; prereq grade of C or better in 1231 or equiv; 1010-1205 MTWThF; AkerH 225)

Vectors, systems of linear equations, matrices, determinants, bases, eigenvalues. Linear differential equations and systems with constant coefficients, initial value problem and general solution, variation of parameters for inhomogeneous equations.

¶ 3231. VECTOR ANALYSIS. (786878) (4 cr, §5601-5602; prereq grade of C or better in 3211 or equiv; 0905-0955 MTWThF, 1010-1100 MWF; MechE 221)

Scalar and vector products, derivatives, geometry of space curves, del operator, line and surface integrals, divergence and Stokes' theorem, transformation of coordinates, dyadics, applications.

¶ 5081. FUNDAMENTALS OF ANALYSIS. (490925) (4 cr; prereq 3211 or equiv or #: 0905-0955 MWF, 0905-1100 TTh; Arch 15)

Selected topics in analysis to develop analytic abilities, to broaden perspective of mathematics, to enhance interest in mathematics. Topics such as: (1) Real number systems; (2) Theory of sets; (3) Continuous functions; (4) Properties of limits.

¶ 5209. THEORY OF NUMBERS. (586879) (4 cr; prereq 3211 or equiv or #: 1115-1205 MTTh, 1010-1205 WF; VinH 203)

A rigorous introduction to the elementary theory of numbers up to the classical results concerning congruences to a prime modulus (e.g. Fermat's theorem). Usually covers one or more advanced topics such as Gaussian integers or quadratic reciprocity.

¶ 5242. LINEAR ALGEBRA WITH APPLICATIONS. (986880) (4 cr, §5232-5233, §5262 or §5282 if content was linear algebra, §5264, §5284; prereq 3221 or 3142 or equiv or #: 0905-0955 MWF, 0905-1100 TTh; VinH 311)

Systems of linear equations, finite dimensional linear spaces, bases, linear transformations, matrices, determinants, eigenvalues, reduction to canonical forms, quadratic and bilinear forms, applications.

¶ 5457. METHODS OF APPLIED MATHEMATICS. (786881) (4 cr; prereq 3211 and 3221 or 3211 and 3066 or equiv or #: 1115-1205 MTTh, 1010-1205 WF; VinH 311)

Analytic tools used in applications of mathematics; emphasis on technique. Real and complex variables, matrices, ordinary and partial differential equations, calculus of variations, asymptotic expansions.

¶ 5512. DIFFERENTIAL EQUATIONS WITH APPLICATIONS I. (090449) (4 cr; prereq 3211 and 3066, or 3211 and 3221 or equiv or #: 0905-0955 MWF, 0905-1100 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.

¶ 5601. ADVANCED CALCULUS. (586882) (4 cr; prereq 3211 or equiv or #: 1115-1205 MTTh, 1010-1205 WF; VinH 207)

Differentiation of functions of several variables; vector algebra; curves in three dimensions; directional derivative and gradient; inverse transformation and implicit function theorems; change of variables in multiple integrals.

¶ 5701. COMBINATORICS. (390450) (4 cr; prereq 3211 or equiv, 3rd-yr standing... soph level linear algebra is helpful; 1115-1205 MTTh, 1010-1205 WF; VinH 206)

Basic concepts in combinatorics. Enumeration including binomial counting, permutations, generating functions, inclusion-exclusion principle, recurrence relations. Application. Matching theory and designs.

SECOND TERM

¶ 0009. INTERMEDIATE ALGEBRA. (888122) (No cr; prereq 1 yr high school algebra or grade of C or better in 0006; 1010-1205 MTWThF; VinH 209)

See First Term.

¶ 1006. FOUNDATIONS OF ARITHMETIC. (688123) (3 cr; for pre-elementary education students only [no cr for other CLA students]; prereq 1005; 1010-1205 MTWThF; VinH 206)

Includes topics from the following: definitions of rational and irrational numbers, definitions of addition, subtraction, multiplication, and division of fractions; methods for operations on rational and real numbers; the real number line and inequalities; topics from geometry and congruences.

¶ 1008. TRIGONOMETRY. (4 cr; prereq plane geometry, 2 yrs high school algebra... or plane geometry, grade of C or better in 0009)

See First Term.

Sec 1, (488124) 0905-0955 MWF, 0905-1100 TTh, VinH 213

Sec 2, (288125) 1115-1205 MTTh, 1115-1310 WF, VinH 213

Course Descriptions

R 1111. COLLEGE ALGEBRA AND ANALYTICAL GEOMETRY. (5 cr, §1201; prereq plane geometry, 2 yrs high school algebra... plane geometry, grade of C or better in 0009)

See First Term.

- Sec 1, (188126) 0800-0955 MTWThF, VinH 1
- Sec 2, (988127) 1010-1205 MTWThF, VinH 1

R 1142. SHORT CALCULUS. (5 cr, §1211; prereq 3½ yrs high school math or grade of C or better in 1111 or 1131 or 1201)

See First Term.

- Sec 1, (788128) 0800-0955 MTWThF, VinH 209
- Sec 2, (588129) 1010-1205 MTWThF, AndH 350

R 1201. PRE-CALCULUS. (5 cr, §1111; prereq 4 yrs high school math including trigonometry)

See First Term.

- Sec 1, (988130) 0800-0955 MTWThF, VinH 301
- Sec 2, (788131) 1010-1205 MTWThF, VinH 301

R 1211. CALCULUS I. (5 cr; prereq 4 yrs high school math including trigonometry... or grade of C or better in 1201... or grade of C or better in 1008 and 1111... or equiv)

See First Term.

- Sec 1, (588132) 0800-0955 MTWThF, VinH 2
- Sec 2, (388133) 1010-1205 MTWThF, VinH 211

R 1221. CALCULUS II. (5 cr; prereq grade of C or better in 1211 or equiv)

See 1211 First Term.

- Sec 1, (188134) 0800-0955 MTWThF, Phys 210
- Sec 2, (088135) 1010-1205 MTWThF, Phys 210

R 1231. CALCULUS III. (5 cr; prereq grade of C or better in 1221 or equiv)

See 1211 First Term.

- Sec 1, (888136) 0800-0955 MTWThF, VinH 16
- Sec 2, (688137) 1010-1205 MTWThF, VinH 16

R 3211. MULTIVARIABLE CALCULUS. (5 cr; prereq grade of C or better in 1231 or equiv)

See First Term.

- Sec 1, (488138) 0800-0955 MTWThF, VinH 20
- Sec 2, (288139) 1010-1205 MTWThF, Arch 10

R 3221. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS. (5 cr, §3066, §3142, §3511; prereq grade of C or better in 1231 or equiv)

See First Term.

- Sec 1, (688140) 0800-0955 MTWThF, Arch 40
- Sec 2, (488141) 1010-1205 MTWThF, Arch 55

R 3231. VECTOR ANALYSIS. (288142) (4 cr, §5601-5602; prereq grade of C or better in 3211 or equiv; 1010-1205 MWF, 1010-1100 TTh; VinH 364)

See First Term.

R 5243. LINEAR ALGEBRA WITH APPLICATIONS. (188143) (4 cr, §5283-5284; prereq 5242, 0905-0955 MWF, 0905-1100 TTh; VinH 311) Eagon

See 5242 First Term.

R 5458. METHODS OF APPLIED MATHEMATICS. (988144) (4 cr; prereq 5457, or equiv; 1115-1205 MTTh, 1010-1205 WF; VinH 311) Meyers

See 5457 First Term.

R 5602. ADVANCED CALCULUS. (788145) (4 cr; prereq 5601; 1115-1205 MTTh, 1010-1205 WF; VinH 207)
Line and surface integrals; Stokes' theorem; convergence of infinite series; orthogonal functions; uniform convergence; integration and differentiation of series.

R 5679. PROBABILITY. (190451) (4 cr, §5681; prereq 3211 or equiv or #: 0905-0955 MWF, 0905-1100 TTh; VinH 207)
Elementary principles of probability, total and compound probability, expectation, repeated trials. Other possible topics: Stirling's formula, the probability integral, geometrical probability, probability of causes, Bayes' theorem, errors of observation, principle of least squares.

SCHOOL OF PHYSICS AND ASTRONOMY

Astronomy (Ast)

FIRST TERM

1011. DESCRIPTIVE ASTRONOMY. (186884) (4 cr, §1021; 0905-1100 MWF; Phys 166)
Survey of the sun, moon, planets, and stars; description of the galaxy and universe to which the sun belongs. Nonmathematical.

1015. DESCRIPTIVE ASTRONOMY LAB. (1 cr, §1025; each section limited to 25 students; 4 lab hrs per wk; minimum one night observation required)

Sec 1, (086885) 1330-1530 MW, Phys 143

Sec 2, (886886) 0905-1100 TTh, Phys 143

Sec 3, (686887) 0905-1100 MW, Phys 143

SECOND TERM

1011. DESCRIPTIVE ASTRONOMY. (588146) (4 cr, §1021; 0905-1100 MWF; Phys 166)
See First Term.

1015. DESCRIPTIVE ASTRONOMY LAB. (1 cr, §1025; each section limited to 25 students; 4 lab hrs per wk; minimum one night observation required)

Sec 1, (388147) 1330-1530 MW, Phys 143

Sec 2, (188148) 0905-1100 TTh, Phys 143

Sec 3, (090824) 0905-1100 MW, Phys 143

Physics (Phys)

FIRST TERM

1031. INTRODUCTORY PHYSICS: MEASUREMENT AND APPLICATIONS. (486888) (4 cr, §other introductory physics courses; primarily for students interested in topics useful in various technical areas; prereq high school algebra and plane geometry; 0800-0955 MWF, 0800-0850 TTh; Phys 170)
Demonstration lectures, problem sessions on topics in physics. Applications of physics. Electricity and magnetism, electrical circuits, feedback and control, waves, light, optical instruments.

1035. INTRODUCTORY PHYSICS LABORATORY. (890453) (1 cr; S-N only; limited to 96 students; prereq 1031 or §1031)

Laboratory experiments offered in conjunction with 1031. Lab section assigned first 2 days of class.

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

1271. GENERAL PHYSICS. (686890) (4 cr; prereq Math 1221 or §Math 1221 or Math 1321 or §Math 1321 or Math 1621 or §Math 1621; may be taken with or without lab 1275; 0800-0850 MTWThF; Phys 166)
Calculus-level general physics course. Mechanics.

1275. GENERAL PHYSICS LABORATORY. (490455) (1 cr; S-N only; limited to 64 students; prereq 1271 or §1271; 2 lab hrs per wk ar)

Laboratory exercises in mechanics. Lab section assigned first two days of class.

1281. GENERAL PHYSICS. (286892) (4 cr; prereq 1271, Math 1231 or §Math 1231 or Math 1331 or §Math 1331 or Math 1621 or §Math 1621; may be taken with or without lab 1285; 1010-1100 MTWThF; Phys 170)
Calculus-level general physics course. Heat and electricity.

1285. GENERAL PHYSICS LABORATORY. (290456) (1 cr; S-N only; limited to 64 students; prereq 1281 or §1281; 2 lab hrs per wk ar)

Laboratory exercises in heat and electricity. Lab section assigned first two days of class.

1291. GENERAL PHYSICS. (986894) (4 cr; prereq 1281; may be taken with or without lab 1295; 1010-1100 MTWThF; Phys 150)

Calculus-level general physics course. Magnetism and optics.

1295. GENERAL PHYSICS LABORATORY. (990458) (1 cr; S-N only; limited to 64 students; prereq 1291 or §1291; 2 lab hrs per wk ar)

Laboratory exercises in magnetism and optics. Lab section assigned first two days of class.

Course Descriptions

SECOND TERM

1032. INTRODUCTORY PHYSICS: MEASUREMENT AND APPLICATION. (488513) (4 cr; primarily for students interested in topics useful in various technical areas; prereq 1031; 0800-0955 MWF; 0800-0850 TTh; Phys 170) Demonstration lectures, problem sessions on topics in physics. Applications of physics. Mechanics, fluids and gases, heat, random processes, atoms and spectra, nuclei, radioactivity.

R 1036. INTRODUCTORY PHYSICS LABORATORY. (390464) (1 cr; S-N only; limited to 96 students; pre req 1032 or 1032)

Laboratory experiments offered in conjunction with 1032. Lab section assigned first 2 days of class.

University College

University College offers three degree programs and one nondegree program designed to promote flexible learning experiences.

Established in 1930, the Inter-College Program (213 Temporary North of Appleby) allows students to design a 180 credit intercollegiate or interdisciplinary program suited to their individual objectives. It has no fixed curriculum and the student may draw upon the entire University for courses to prepare a degree contract leading to either a B.A. or B.S. degree. An applicant for admission should be at least a third-quarter sophomore who has completed at least 1 full quarter, or its equivalent, at the University of Minnesota.

University Without Walls (201 Westbrook Hall) serves the self-directed adult learner who wishes to combine liberal education and career goals in an individualized degree program. The UWW staff assists students in designing degree programs incorporating a variety of learning experiences, and in locating University and other appropriate resources to carry out their programs.

The University Scholars Program (317 Walter Library) allows a student and faculty adviser the freedom to construct a baccalaureate degree program based on individually tailored educational goals and learning experiences. To be eligible, a student should have completed 2 years of college work and must be nominated by a faculty sponsor who agrees to serve as the student's adviser in the program, supervising and assessing the student's work.

University College makes available to students regularly enrolled in any undergraduate college of the University an opportunity for intercollegiate independent study. A student may earn from 3 to 15 degree credits registering for independent study projects through UC 3075. The student designs his or her own project and works with an appropriate faculty member who supervises and evaluates the project.

University College also sponsors two experimental programs on the Twin Cities Campus—an early childhood education program and INTERnships for Career CHANGE—and one at Duluth—a cross college writing program. Information about any of the above programs or current pilot programs may be obtained at 317 Walter Library.

University College (UC)

FIRST TERM

- R 3075. INDEPENDENT STUDY. (586896) (Cr ar; prereq Δ)
- 3200. INTRODUCTORY PERIOD. (386897) (Cr ar; S-N only; prereq UWW student, Δ)
- 3201. DIRECTED STUDIES. (186898) (Cr ar; S-N only; prereq UWW student, Δ)
- 3401. DIRECTED STUDIES. (086899) (Cr ar; prereq University Scholars student, Δ)
- 5201. DOSSIER EXAMINATION. (786900) (Cr ar; S-N only; prereq UWW student, submission of dossier)

SECOND TERM

- R 3075. INDEPENDENT STUDY. (289100) (Cr ar; prereq Δ)
- 3200. INTRODUCTORY PERIOD. (789103) (Cr ar; S-N only; prereq UWW student, Δ)
- 3201. DIRECTED STUDIES. (389105) (Cr ar; S-N only; prereq UWW student, Δ)
- 3401. DIRECTED STUDIES. (889108) (Cr ar; prereq University Scholars student, Δ)
- 5201. DOSSIER EXAMINATION. (089110) (Cr ar; S-N only; prereq UWW student, submission of dossier)

College of Veterinary Medicine

(All classes scheduled by arrangement)

College of Veterinary Medicine (CVM)

FIRST AND SECOND TERM: FOURTEEN-WEEK COURSE

5760. CLINICS. (586901) (16 cr; prereq #: 0800-1630 MTWThF; VetHos) Staff
Laboratories for the application of principles and techniques of medicine, surgery, obstetrics, radiology, pathology, clinical pathology, parasitology, pharmacology, physiology, and public health to the diagnosis, prognosis, treatment, prevention, and eradication of disease in domestic animals.

Large Animal Clinical Sciences (LACS)

FIRST TERM

5180. INTRODUCTION TO HERD HEALTH AND DAIRY HERD HEALTH MANAGEMENT. (386902) (2.5 cr; prereq regis vet med, 4th year or grad student or #: 1300-1450 M; AnScVM 135) Farnsworth, Williamson, Morris
Herd health management, general epidemiology, disease surveillance and economics of farming. Dairy cattle genetics and breeding, reproduction, applied nutrition, housing, preventive medicine programs, and management practices.

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (186903) (Cr ar; prereq 5650 or equiv or #) Anderson, Diesch, Pullen, Robinson
Individual study arranged with faculty member.

5951. DIRECTED STUDIES. (190460) (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. (990461) (Cr ar; prereq grad student or #) Markham, Muscoplat
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. (790462) (Cr ar; prereq grad student or #) Markham, Muscoplat
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. (590463) (Cr ar) Anderson, Diesch, Robinson, Sorensen
Application of the principles and practice of preventive veterinary medicine in food-animal production at the herd, state, national, or international levels.

8197. METABOLIC AND NUTRITIONALLY INDUCED DISEASES OF CATTLE. (190465) (2 cr; prereq grad student or #) Olson, Stevens, Jorgensen
Discussions on the etiology, pathogenesis, current research, treatment and prevention of metabolic diseases including vitamin and mineral diseases and energy and protein abnormalities associated with production.

8199. PROBLEMS IN ECONOMICS OF ANIMAL HEALTH. (090466) (1-3 cr; prereq #) Sorensen, staff
Impact of animal disease on animal productivity and the return to investment in animal health by producers or the society studied using disease problems of current interest as subjects. Questions involving human health problems may be studied.

8290. ADVANCED VETERINARY MEDICINE. (890467) (Cr ar; prereq 5162, 5172, #) Larson, Hardy, Osborne, Sorensen, staff
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. (690468) (Cr ar; prereq 5162, SACS 5172, #) Larson, Leman, Osborne, McKeever, Ogburn, Olson
Detailed examination, discussions, and treatment of cases of animal diseases.

8292. SEMINAR: VETERINARY MEDICINE. (290473) (Cr ar; prereq #) Larson, Osborne, Hanson, staff

8293. MEDICAL CONFERENCE. (190474) (Cr ar; prereq 5162, SACS 5172. #) Larson, Osborne, Sorensen, staff
Medical, surgical, or obstetrical cases supported by anatomic, bacteriologic, pathologic, physiologic, pharmacologic, and radiologic evaluations whenever applicable.

8299. RESEARCH IN VETERINARY MEDICINE. (990475) (Cr ar) V Larson, staff
Research problems relating to any aspect of internal medicine or to the various systems in animals.

8390. SEMINAR: VETERINARY SURGERY. (790476) (Cr ar; prereq, 5365, SACS 5360 or equiv. #) Usenik, Wallace

8392. ADVANCED LARGE ANIMAL SURGERY. (590477) (Cr ar; prereq 5365 or equiv. #) Booth, Usenik
Surgery of various systems in large animals with preoperative and postoperative evaluation and treatment.

8393. PROBLEMS IN LARGE ANIMAL SURGERY. (390478) (3 cr; prereq 5365 or equiv. #) Booth, Usenik

8395. SURGICAL DISEASES OF THE MAMMARY GLAND OF DOMESTIC ANIMALS. (190479) (3 cr; prereq 5365, #)
Usenik

8397. LARGE ANIMAL ANESTHESIA. (590480) (Cr ar; prereq SACS 5380 or equiv. #)
Special problems associated with anesthesia of large animals.

8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES. (390481) (Cr ar; prereq 5570 or #)
Staff
Discussion and laboratory practices of methods for determination of fertility status of female and male animals.

8591. ADVANCED ENDOCRINOLOGY OF REPRODUCTION. (190482) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
Physiological and pathological aspects of reproductive endocrinology.

8592. ADVANCED ENDOCRINOLOGY OF REPRODUCTION. (090483) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
Physiological and pathological aspects of reproductive endocrinology.

8593. ADVANCED ENDOCRINOLOGY OF REPRODUCTION. (890484) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
Physiological and pathological aspects of reproductive endocrinology.

8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION. (690485) (Cr ar; prereq 5570 or #) Zemjanis, staff
Detailed discussion and laboratory study of specific reproductive disorders.

8595. SEMINAR: VETERINARY OBSTETRICS. (490486) (1 cr)

8596. HEREDITY IN ANIMAL DISEASE. (290487) (3 cr; prereq #)
Application of genetic principles of animal disease problems with emphasis upon specific inheritable and familial conditions in domesticated species.

8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS. (990489) (3 cr; prereq grad student or #) Stowe, Dunlop
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. (290490) (2 cr; prereq grad student or #)
Stowe
Examination of current literature and case material.

8792. SEMINAR IN VETERINARY TOXICOLOGY. (190491) (2 cr; prereq grad student or #) Stowe
Livestock and small animal intoxication with insecticides, heavy metals, rodenticides, poisonous plants, mycotoxins, herbicides, and drugs and drug combinations.

SECOND TERM

5364. EQUINE LAMENESS. (890842) (2 cr; prereq regis vet med, 4th year, 5352 or #; 1500-1650M; AnScVM 125)
Booth
All major musculoskeletal diseases affecting the horse that contribute to lameness.

5572. REPRODUCTIVE PATTERNS AND INFERTILITY IN THE DOG AND CAT. (588485) (1 cr; prereq 5570, regis vet med, 4th year or grad student or #; 1500-1650 M; AnScVM 135) S Johnston
Lectures on normal reproduction and breeding management, approach to male and female infertility and artificial insemination in the dog and cat.

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (388486) (Cr ar; prereq 5650 or equiv or #) Anderson, Diesch, Pullen, Robinson
See First Term.

5951. DIRECTED STUDIES. (790493) (1-5 cr; prereq #. Δ)
See First Term.

8193.* ADVANCES IN CLINICAL IMMUNOBIOLOGY. (590494) (Cr ar; prereq grad student or #) Markham, Muscoplat
See First Term.

Course Descriptions

- 8194.* PROBLEMS IN DIAGNOSTIC VIROLOGY, SEROLOGY, AND IMMUNOLOGY.** (390495) (Cr ar; prereq grad student or #) Markham, Muscoplat
See First Term.
- 8195.* PREVENTIVE VETERINARY MEDICINE.** (190496) (Cr ar) Anderson, Diesch, Robinson, Sorensen
See First Term.
- 8197. METABOLIC AND NUTRITIONALLY INDUCED DISEASES OF CATTLE.** (090497) (2 cr; prereq grad student or #) Olson, Stevens, Jorgensen
See First Term.
- 8199. PROBLEMS IN ECONOMICS OF ANIMAL HEALTH.** (890498) (1-3 cr; prereq #) Sorensen, staff
See First Term.
- 8290. ADVANCED VETERINARY MEDICINE.** (690499) (Cr ar; prereq 5162, 5172. #) Larson, Hardy, Osborne, Sorensen, staff
See First Term.
- 8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES.** (390500) (Cr ar; prereq 5162, SACS 5172. #) Larson, Leman, Osborne, McKeever, Ogburn, Olson
See First Term.
- 8292. SEMINAR: VETERINARY MEDICINE.** (190501) (Cr ar; prereq #) Larson, Osborne, Hanson, staff
- 8293. MEDICAL CONFERENCE.** (090502) (Cr ar; prereq 5162, SACS 5172, #) Larson, Osborne, Sorensen, Staff
See First Term.
- 8299. RESEARCH IN VETERINARY MEDICINE.** (890503) (Cr ar) V Larson, staff
See First Term.
- 8390. SEMINAR: VETERINARY SURGERY.** (690504) (Cr ar; prereq 5365, SACS 5360 or equiv, #) Usenik, Wallace
- 8392. ADVANCED LARGE ANIMAL SURGERY.** (490505) (Cr ar; prereq 5365 or equiv, #) Booth, Usenik
See First Term.
- 8393. PROBLEMS IN LARGE ANIMAL SURGERY.** (290506) (3 cr; prereq 5365 or equiv, #) Booth, Usenik
- 8395. SURGICAL DISEASES OF THE MAMMARY GLAND OF DOMESTIC ANIMALS.** (190507) (3 cr; prereq 5365, #) Usenik
- 8397. LARGE ANIMAL ANESTHESIA.** (990508) (Cr ar; prereq SACS 5380 or equiv, #)
See First Term.
- 8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES.** (790509) (Cr ar; prereq 5570 or #) Staff
See First Term.
- 8591. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (190510) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
See First Term.
- 8592. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (990511) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
See First Term.
- 8593. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (790512) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
See First Term.
- 8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION.** (590513) (Cr ar; prereq 5570 or #) Zemjanis, staff
See First Term.
- 8595. SEMINAR: VETERINARY OBSTETRICS.** (390514) (1 cr)
- 8596. HEREDITY IN ANIMAL DISEASE.** (190515) (3 cr; prereq #)
See First Term.
- 8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS.** (890517) (3 cr; prereq grad student or #) Stowe, Dunlop
See First Term.
- 8791. SEMINAR IN CLINICAL PHARMACOLOGY AND THERAPEUTICS.** (690518) (2 cr; prereq grad student or #) Stowe
See First Term.
- 8792. SEMINAR IN VETERINARY TOXICOLOGY.** (490519) (2 cr; prereq grad student or #) Stowe
See First Term.

Small Animal Clinical Sciences (SACS)

FIRST TERM

5352. ABDOMINAL AND THORACIC SURGERY OF SMALL ANIMALS. (389993) (2 cr; prereq #: 1300-1450 M; AnScVM 125) Lipowitz, Caywood
Lectures on the pathophysiology, diagnosis, and surgical-medical management of selected diseases of abdominal and thoracic viscera.

8197.* ADVANCED DERMATOLOGIC CLINICS. (086904) (4 cr; prereq grad student or #) McKeever
In-depth clinical study of dermatologic disease states, diagnosis and therapy in animals.

8198.* PROBLEMS IN VETERINARY COMPARATIVE DERMATOLOGY. (886905) (Cr ar; prereq grad student or #) McKeever
Individual study involving a research study of a selected dermatologic problem.

8391. ADVANCED SMALL ANIMAL SURGERY. (686906) (Cr ar; prereq CVM 5350 or equiv, #) Wallace, Lipowitz, Caywood
Surgery of the various systems in small animals with preoperative and postoperative evaluation and treatment.

8490. ADVANCED VETERINARY RADIOLOGY. (486907) (Cr ar; prereq 5450, 5451, 5452 or equiv, #) Hanlon, Feeney, G Johnston
Advanced radiological procedures and modalities and their interpretation or application to veterinary medicine.

SECOND TERM

8197.* ADVANCED DERMATOLOGIC CLINICS. (088488) (4 cr; prereq grad student or #) McKeever
See First Term.

8198.* PROBLEMS IN VETERINARY COMPARATIVE DERMATOLOGY. (888489) (Cr ar; prereq grad student or #) McKeever
See First Term.

8391. ADVANCED SMALL ANIMAL SURGERY. (188490) (Cr ar; prereq CVM 5350 or equiv, #) Wallace, Lipowitz, Caywood
See First Term.

8490. ADVANCED VETERINARY RADIOLOGY. (088491) (Cr ar; prereq 5450, 5451, 5452 or equiv, #) Hanlon, Feeney, G Johnston
See First Term.

Veterinary Biology (VB)

FIRST TERM

5149.* TOPICS OF ORGANOLGY. (286908) (1-5 cr [may be repeated for cr]; prereq 5104 or equiv, #) Staff
Lecture and laboratory presentation of selected organ systems of domestic and laboratory animals.

8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY. (186909) (486910) (286911) (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. (186912) (986913) (4 cr per qtr; prereq 5100, #) Fletcher
Correlated studies of the central nervous system of domestic animals. Emphasis on relating neuroanatomy to neurophysiology.

8136. EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY. (786914) (3 cr; prereq 8135, #) Fletcher
Principles, methods, and laboratory exercises in investigating the central nervous system of domestic animals.

8150. RESEARCH PROBLEMS IN VETERINARY ANATOMY. (586915) (1-5 cr; prereq #) Czarnecki
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. (386916) (Cr ar, §AnSc 8830; prereq #) Staff
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. (186917) (Cr ar; prereq 5401 or equiv, #) Staff

Course Descriptions

SECOND TERM

- 5149. TOPICS OF ORGANOLGY.** (888492) (1-5 cr [may be repeated for cr]; prereq 5104 or equiv. #) Staff
See First Term.
- 8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY.** (688493) (488494) (288495) (2 cr per qtr; prereq #) Staff
See First Term.
- 8134-8135. COMPARATIVE VETERINARY NEUROLOGY.** (188496) (988497) (4 cr per qtr; prereq 5100, #) Fletcher
See First Term.
- 8136. EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY.** (788498) (3 cr; prereq 8135, #) Fletcher
See First Term.
- 8150. RESEARCH PROBLEMS IN VETERINARY ANATOMY.** (588499) (1-5 cr; prereq #) Czarnecki
See First Term.
- 8349. RESEARCH IN PHYSIOLOGY.** (288500) (Cr ar, §AnSc 8830; prereq #) Staff
See First Term.
- 8448. PROBLEMS IN VETERINARY PHARMACOLOGY.** (188501) (Cr ar; prereq 5401 or equiv, #) Staff

Veterinary Pathobiology (VPB)

FIRST TERM

- 5521. SURGICAL PATHOLOGY.** (086918) (3 cr; prereq #) Barnes, staff
Preparation and interpretation of surgical and necropsy specimens.
- 5522. DIAGNOSTIC PATHOLOGY.** (886919) (5 cr; prereq #) Barnes, staff
History, necropsy lesions, laboratory results, and histopathology in the diagnosis of animal diseases.
- 5523. PATHOLOGY OF SPONTANEOUS DISEASES OF LABORATORY ANIMALS.** (390836) (2 cr; prereq #) Leininger, staff
Gross and microscopic pathology of laboratory animals.
- 5524. PATHOLOGY OF SPONTANEOUS DISEASES OF POULTRY.** (186920) (3 cr; prereq #) Waiser
Gross and microscopic pathology of spontaneous diseases of chickens, turkeys, and game birds.
- 5709. PREVENTIVE AVIAN MEDICINE.** (789991) (1 cr; prereq regis vet med, 4th year or grad student or #; 1500-1650 M; VetS 141) Newman
Preventive avian disease programs and management practices. Visits to poultry and aviary establishments.
- 8531. VETERINARY NECROPSY.** (886922) (1-5 cr; prereq 5501, 5502, 5503, #) O'Leary, staff
Necropsy techniques, examination of tissue sections, and preparation of records.
- 8533. PROBLEMS: PATHOLOGY.** (686923) (Cr ar; prereq #) Johnson, staff
- 8534. PROBLEMS: CLINICAL PATHOLOGY.** (486924) (Cr ar; prereq #) Perman, Stevens
- 8648. PROBLEMS IN VETERINARY PARASITOLOGY.** (286925) (Cr ar; prereq 5602 or equiv, #) Bemrick, Schlott-hauer, Stromberg
- 8720. ADVANCED VETERINARY MICROBIOLOGY.** (186926) (Cr ar; prereq #) Staff
Special topics, techniques, collateral reading, and conferences.
- 8721. ADVANCED POULTRY DISEASES.** (986927) (Cr ar; prereq 5704, #) Halvorson, Newman
Investigation of infectious disease problems of poultry.
- 8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY.** (786928) (2 or 4 cr; prereq #) Ward
Lectures and laboratory in techniques of diagnostic mycology, bacteriology, virology, and serology.
- 8725. CELL CULTURE TECHNIQUES.** (586929) (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.

SECOND TERM

- 5521. SURGICAL PATHOLOGY.** (988502) (3 cr; prereq #) Barnes, staff
See First Term.
- 5522. DIAGNOSTIC PATHOLOGY.** (788503) (5 cr; prereq #) Barnes
See First Term.

- 5524. PATHOLOGY OF SPONTANEOUS DISEASE OF POULTRY.** (588504) (3 cr; prereq #) Walser
See First Term.
- 8531. VETERINARY NECROPSY.** (188506) (1-5 cr; prereq 5501, 5502, 5503, #) O'Leary, staff
See First Term.
- 8533. PROBLEMS: PATHOLOGY.** (088507) (Cr ar; prereq #) Johnson, staff
- 8534. PROBLEMS: CLINICAL PATHOLOGY.** (888508) (Cr ar; prereq #) Perman, Stevens
- 8648. PROBLEMS IN VETERINARY PARASITOLOGY.** (688509) (Cr ar; prereq 5602 or equiv, #) Bemrick, Schlotthauer, Stromberg
- 8720. ADVANCED VETERINARY MICROBIOLOGY.** (088510) (Cr ar; prereq #) Staff
See First Term.
- 8721. ADVANCED POULTRY DISEASES.** (888511) (Cr ar; prereq 5704, #) Newman, Halvorson
See First Term.
- 8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY.** (688512) (2 or 4 cr; prereq #) Ward
See First Term.

University of Minnesota, Duluth

The Duluth campus is an exciting location for summer study. Situated on a 247-acre site overlooking Lake Superior, the campus enjoys pleasant summer temperatures, allowing the student to study and relax in comfort.

UMD, located near the center of Duluth, is but a short drive from parks, golf courses, swimming beaches, the famous Skyline Drive, Duluth's new Arena-Auditorium, the Lake Superior Marine Museum, the St. Louis County Heritage and Arts Center, Glensheen, Duluth International Harbor, and the Spirit Mountain recreation area.

The many lakes in the deeply forested Arrowhead region and the North Shore and Circle Route drives are popular for overnight or weekend camping and fishing trips.

The UMD summer session social calendar is planned to fit the recreational needs of both the individual student and entire family. Golf lessons, family swimming, concerts, lectures, theatrical productions, group discussions, dances, harbor and historical tours, films, sailing on Lake Superior, and a wilderness canoe trip are a few of the sponsored activities.

More than 300 courses are scheduled for the summer terms at the undergraduate and graduate levels. Students may earn credits for 73 majors to apply toward the degrees of associate in arts, associate in vocational teacher education, associate of office administration, associate in science in dental hygiene, bachelor of arts, bachelor of science, bachelor of applied arts, bachelor of applied science, bachelor of accounting, bachelor of business administration, bachelor of music, bachelor of fine arts, and bachelor of social work degrees, and for 17 areas of concentration for the master of arts, master of science, master of business administration, master of industrial safety, master of social work, and master of education degrees, and the specialist certificate in educational administration.

A separate Summer Session bulletin, including all courses offered on the Duluth campus, is available. For a copy of this bulletin and for more detailed information, write: UMD Summer Session, 403 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

GRADUATE PROGRAM

The Graduate School on the Duluth campus offers a master of arts degree with majors in art, education (elementary-secondary), special education (emphasis art), education (emphasis music), educational administration, educational psychology (counseling), English, history, and communicative disorders. These studies provide advanced work for teachers or for those interested in earning a general degree in the discipline. Students may complete all course work at Duluth.

Master of science degree programs are offered in biology, chemistry (analytical, inorganic, organic, physical, or biochemistry), geology, and physics. These programs are designed for teachers and for those planning additional graduate study or careers in industry. The specialist certificate in educational administration may be obtained with emphasis in elementary, secondary, or general school administration. Also offered are a master of social work program with emphasis on social development and a master of business administration program.

The graduate programs are under the jurisdiction of the dean of the Graduate School and are similar to parallel programs on the Twin Cities campus. A complete description of graduate requirements and courses is available in the current *University of Minnesota, Duluth, General Bulletin*, which may be obtained by writing to the UMD News Service, 305 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

Students who have not already applied for admission to the Graduate School and who contemplate a program of graduate studies at Duluth may request information and

application forms from the Graduate School Office, 431 Administration Building, University of Minnesota, Duluth, Minnesota 55812. *Applicants should specify their proposed major field when requesting application forms.*

Applications for summer 1982 admission must be submitted *complete in every detail*—two official transcripts of all college work and the credentials examination fee, test results, references, and other required information—by May 3 for first term and June 1 for second term. Students who wish to become candidates for the master's degree or the specialist certificate or who wish to receive graduate credit for their course work must apply for admission to the Graduate School. A credentials examination fee of \$15 will be required. Applicants who have a bachelor's degree or a professional degree from the University of Minnesota, or who will receive one before beginning graduate studies, pay only \$5 rather than the full \$15. (The reduced fee is not applicable to those who have earned degrees through Continuing Education and Extension.) Residents of the United States must submit the fee by personal check or money order; foreign applicants must submit the fee by certified bank check. All checks should be made payable to the University of Minnesota. The fee will not be refunded.

Candidates for advanced degrees must have registered and paid fees for a minimum of 3 academic quarters or the equivalent in summer terms (normally six 5-week summer terms). The transfer of up to 40 percent of the degree course work from Continuing Education and Extension, adult special, and summer special status at the University of Minnesota, or from other recognized graduate schools, in any desired combination, is permitted. The number of credits and the courses accepted for transfer are determined by each department of the Graduate School. Students are advised to consult the graduate director in the department to which they wish to transfer such credits.

Students admitted to graduate programs on another campus of the University may take courses at UMD and transfer these courses to their programs; however, they should consult with their advisers beforehand concerning the specific courses to be transferred.

Students holding bachelor's degrees who are not interested in earning graduate credit may register with the Registrar's Office as summer-only students or may apply for admission to their undergraduate college as special students. These students, if they subsequently decide to apply for admission to the Graduate School, may petition to transfer their work as special students to their graduate records. Only courses of graduate character taught by members of the graduate faculty may be transferred.

Only courses numbered 5000 or above carry graduate credit. Graduate credit is available only to those students who are officially registered in the Graduate School.

Readmission, Change of Major, or Change of Degree Objective—Persons who have withdrawn from (not attended) the Graduate School for 2 consecutive years or more and who wish to request readmission, and those currently enrolled who intend to change their major field or degree objective from that originally approved by the Graduate School, should request a copy of the Change of Status form (GS No. 72) from the Graduate School Office, 431 Administration Building, University of Minnesota, Duluth, Minnesota 55812. Individuals who have completed graduate degree programs at the University of Minnesota must also apply for readmission if they plan to pursue further graduate work. The application deadlines identified below apply in both of these cases.

Transient Graduate Student—Students currently engaged in graduate programs at another recognized graduate school who wish to enroll for 1 or 2 terms of summer session work in the Graduate School of the University of Minnesota, and who intend thereafter to return to the graduate school in which they are carrying forward their studies for a degree, may be admitted as transient graduate students. Such students will not be required to submit a full transcript of credits but must ask the dean of their graduate school to complete two copies of UMD Form 218 and return them to the Graduate School Office, 431 Administration Building, University of Minnesota, Duluth, Minnesota 55812, prior to registration. Under no circumstances will students be permitted to register for more than 1

summer session (2 terms) under transient status. Persons originally registering as transient graduate students who wish to apply for regular admission must follow the directions outlined above.

Graduate students must not register by mail, but must pick up registration materials in 431 Administration.

Master's Degree in Art

A graduate major emphasizing studio work is offered leading to the master of arts degree in art. The program is designed to accommodate individuals interested in either teaching or practicing art. Both art history and art education are available as related fields. Inquiries concerning the specific program should be directed to: Department of Art, 317 Humanities Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Biology

The Department of Biology offers graduate work in biology under either a Plan A or Plan B program. Under Plan A, students take advanced course work in a specific area of biology and complete an independent research project culminating in a thesis. Plan B is designed for students interested in a broader range of biological subjects and therefore entails considerably more course work than that required for Plan A. Although a thesis is not required for the Plan B program, one or more projects or papers must be completed. Certain graduate courses and the opportunity to pursue graduate research are offered during the summer. Further details may be obtained from: Director of Graduate Study, Department of Biology, 225 Life Science Building, University of Minnesota, Duluth, Minnesota 55812.

Master of Business Administration Degree Program

The master of business administration (M.B.A.) degree program is offered by the Graduate School through the School of Business and Economics on the Duluth campus. It is primarily an evening program.

The program requires 45 credits of course work exclusive of prerequisite courses in underlying disciplines and tool areas necessary for graduate study in the field of management. Recent graduates of recognized business schools generally meet the prerequisites and move directly into the 45-credit program of graduate work. Individuals who do not have an undergraduate background in business administration or those who completed programs some years ago usually will be required to complete prerequisite course work in selected areas. Prerequisite course work may be taken prior to admission to the M.B.A. program or may be completed after formal admission to the program.

The 45 credits of course work include 27 credits of M.B.A. core courses, 9 credits of electives, and 9 credits of research project related courses (Research Methodology and Management Research).

To be considered for admission to the M.B.A. program, an applicant must have a bachelor's degree from a recognized college or university, must submit results of the Graduate Management Admission Test (GMAT), and must file an application with the Graduate School, 431 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

For further information about the M.B.A. program, contact: Director of M.B.A. Program, 104 School of Business and Economics, University of Minnesota, Duluth, Minnesota 55812; telephone (218) 726-7282.

Master's Degree in Chemistry

Programs in chemistry are offered under both Plan A and Plan B. For Plan A, thesis research is available in analytical, inorganic, organic, or physical chemistry and biochemistry. For Plan B, 44 credits in approved courses and Plan B projects completed in three courses are required.

The programs are suited for students who wish to go on for further study; for those who plan to teach chemistry in liberal arts colleges, junior colleges, and state colleges; and for those who desire advanced training for a career in industry. Summer work on the Duluth campus during both terms will involve the research phase of the M.S. degree.

Master's Degree in Communicative Disorders

A graduate major under Plan B is offered leading to the master of arts degree in communicative disorders. Summer session offerings are designed to integrate academic, research, and clinical endeavors. Correspondence may be addressed to the Department of Communicative Disorders, 5 Home Economics Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Education

This program, available to elementary and secondary classroom and special education teachers, offers majors in the following areas: education; education (emphasis art); education (emphasis music).

Course work in related fields may include areas such as early child care and development, educational administration, psychological foundations, psychological applications, physical education, health education, industrial education, and home economics education, as well as subjects that are normally taught in the schools.

Inquiries should be addressed to: W. C. Gemeinhardt, Director of Graduate Study in Education, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Educational Administration

Courses that may be applied to a master of arts degree in educational administration are available during both terms of the summer session. Applicants must have a strong academic background with reasonable breadth of subject matter interest. Inquiries should be addressed to: Director of Graduate Study in Educational Administration, Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

Specialist Program in Educational Administration

Advanced graduate programs leading to the specialist certificate in school administration are available for elementary and secondary school principals and superintendents. Several courses, workshops, and seminars in related fields will be offered this summer. An announcement describing these programs will be sent upon request to: Director of Graduate Study in Educational Administration, College of Education, Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Educational Psychology

A master's degree program in guidance and counseling is available on the Duluth campus. Courses in psychological foundations and psychological applications as well as other required related courses will be offered during both summer terms.

Certain courses in this program have limited enrollments or require special arrangements. Therefore, interested individuals should consult with their advisers prior to registration. In addition, course descriptions and prerequisites should be studied carefully. Inquiries should be addressed to: Director of Counselor Training, Department of Psychology, 326 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in English

Two programs lead to a master of arts degree in English. One offers a broad study of literature, and the second emphasizes preparation for teaching in the junior or senior high school or the 2-year college. The master's program is also suitable for students preparing for doctoral studies. Courses carrying graduate credit are offered in all academic quarters and in both summer terms. Inquiries concerning details of the program should be directed to: Department of English, 420 Humanities Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Geology

The M.S. degree in geology is offered under Plan A and Plan B. These programs are designed for those wishing to prepare for professional employment, for further graduate study leading to the Ph.D. degree, or for teaching geology at the junior college or college level. Although no graduate-level courses for the master's degree program, other than field camp and research, will be offered in geology during the summer session, students interested in beginning their course work in the fall are reminded that the application deadline is August 1. Details concerning prerequisites for the M.S. degree in geology may be obtained from: Director of Graduate Study, Department of Geology, 229 Mathematics-Geology Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in History

The master's degree in history is awarded upon fulfillment of either of two alternative programs—Plan A (with thesis) or Plan B (without thesis). The programs are designed for students who are preparing for doctoral study, preparing for employment with local or regional historical societies, planning to teach history in secondary schools and junior colleges, or planning to enter public service.

Requirements may be completed (by the full-time student) in 1 academic year or in equivalent summer sessions. Inquiries should be addressed to: Director of Graduate Study, Department of History, 265 A. B. Anderson Hall, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Physics

A graduate major under Plan A, requiring a research thesis, is offered in physics. Current departmental research interests include atmospheric physics, atomic and molecular physics, numerical modeling, hydrodynamics, optics, remote sensing, solid-state physics, theoretical particle physics, and resonance Raman spectroscopy. Summer work on the Duluth campus involves the research phase of the degree work.

SOCIAL DEVELOPMENT PROGRAM

The School of Social Development prepares students for careers in social development at regional and national levels, and in social work as administrators, planners, supervisors and direct service personnel. The M.S.W. degree requires 90 credits; an

advanced 60-credit program is also available. Students may be admitted in September or December. Part-time study is also available. Emphasis is upon social change and individualized programs for each student. For specific information, contact: School of Social Development, 295 Marshall W. Alworth Hall, University of Minnesota, Duluth, MN 55812.

MASTER OF EDUCATION DEGREE

This University of Minnesota, Duluth, professional graduate program for educational personnel does not require a core of courses, that is, a fixed number of courses in a specific area. Student programs are tailored to meet identified professional needs. Credits may be earned for the degree in various subjects, methods, curricula, educational technologies, and learning experiences. Credit packages may focus on classroom experimentation, instructional materials development, in-service leadership, field research projects, and intensive learning experiences. Educators may concentrate in a subject matter area if they choose.

Participants are expected to develop competency in those areas that are representative of master teaching.

Admission decisions take into account a candidate's record of scholastic achievement; ability to benefit from graduate study as indicated by a measure of aptitude such as the Miller Analogies Test; potential for professional growth as evaluated by supervisors, colleagues, and UMD faculty; and competency as a teacher and a leader as identified by supervisors and colleagues.

This program is designed to help satisfy the in-service needs of school systems and other agencies conducting educational programs as well as the continuing education needs of instructors and instructional planners.

Inquiries should be addressed to: Larry Bright, Dean, College of Education, 125 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

MASTER OF INDUSTRIAL SAFETY DEGREE PROGRAM

This degree program is designed to prepare qualified personnel for safety supervisory and management positions in business, government, and industry. Candidates must complete a program of 45 quarter credits at the graduate level and must maintain an overall graduate grade point average of 3.00 or better. The minimum residence requirement for the degree is the equivalent of 3 academic quarters. In addition, an industrial internship or field research project is required. For more information write to: Department of Industrial and Technical Studies, University of Minnesota, Duluth, Minnesota 55812.

SIXTH YEAR CERTIFICATION PROGRAM IN EDUCATIONAL ADMINISTRATION

A sixth year program in educational administration, leading to licensure of elementary school principals, secondary school principals, and superintendents, is available. This program is not a Graduate School program and does not lead to a graduate degree, but does provide training for licensure by the state of Minnesota. The program is administered through the College of Education at UMD. Inquiries should be addressed to: Director, Sixth Year Certification Program in Educational Administration, College of Education, 125 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

SPECIAL EDUCATION

Course work applicable to licensure requirements in mental retardation (TMR), learning disabilities (LD), and emotional disturbance (ED) is offered during the summer

session. For information, contact: Department of Special Education, 209 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812; (218) 726-7191 or 726-7192.

SUMMER THEATRE

The UMD Summer Repertory Theatre provides a concentrated experience in all aspects of theatre. Rehearsal, production and performance activities occupy participants six days each week beginning the first week of June through the middle of August. Four shows are prepared for the 40 performances which will rotate in repertory, and will play to over 12,000 people during the summer. This year's season includes *Godspell*, *Dames at Sea*, *Bedroom Farce*, and *Play It Again, Sam*. All performances are in the Marshall Performing Arts Center. Sixteen to 20 credit hours in theatre are offered through program participation. Entry into the program is by competitive audition in March. Scholarships are available to selected experienced actors and technicians.

CONTINUING EDUCATION AND EXTENSION PROGRAMS

A number of noncredit, short-term programs will be offered on the UMD campus through the Duluth Continuing Education and Extension Center during the summer session. For information and a brochure describing the offerings contact: Director of Continuing Education and Extension, 403 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

Accommodations should be secured by participants through the Housing Office at UMD.

University of Minnesota, Morris

The University of Minnesota, Morris, is located in west central Minnesota, near some of the state's finest resort and fishing areas. Morris, a community of 5,600, offers many recreational facilities including tennis courts, a swimming beach, a nine-hole golf course, and a lighted baseball park located in a 25-acre municipal recreation area.

The UMM campus occupies 45 acres on the eastern side of Morris. The cultural activities and recreational facilities of the community are available to students, and the University also has a variety of recreational facilities and cultural activities geared toward summer students.

During the summer session UMM offers a variety of liberal arts courses in the humanities, the social sciences, business/economics, mathematics, and science that can be taken for personal enrichment, to meet general education requirements, to meet requirements for certain majors, and to prepare for or improve skills for professional careers in business, the human services, or teaching.

UMM also features a Summer Theatre Program initiated in 1981. This program permits undergraduate students to learn acting and technical theatre in an atmosphere similar to a professional company. Two plays are scheduled to be performed throughout the special 1982 Summer Theatre term.

A separate Summer Session bulletin describing UMM summer procedures and course offerings is available from: UMM Summer Session, 226 Community Services Building, University of Minnesota, Morris, Minnesota 56267; telephone (612) 589-2211.

LIBERAL ARTS CURRICULUM

As a 4-year liberal arts college of the University of Minnesota, UMM shares in the instruction, research, and service objectives of the entire University system. Students may complete one of three degree programs at Morris:

1. A 4-year curriculum in liberal education leading to the bachelor of arts degree.
2. A 4-year curriculum that combines liberal education with teacher preparation and leads to the bachelor of arts degree and licensure as an elementary or secondary school teacher.
3. A 1-, 2-, 3-, or 4-year curriculum in liberal education that meets the preprofessional liberal arts requirements of the professional schools of the University of Minnesota or of other institutions.

MAPS AND BUILDING ABBREVIATIONS

MINNEAPOLIS

East Bank

AkerH, Akerman Hall
AmundH, Amundson Hall
Annex, Music Annex (321½ 14th Ave SE)
ApH, Appleby Hall
Arch, Architecture Building
Armory, Armory Building

BellMus, Museum of Natural History
BFAB, Bierman Field Athletic Building
Botany, Botany Building
BoG, Botany Greenhouse
BoynHS, Boynton Health Service
BuH, Burton Hall

CenH, Centennial Hall
ChDev, Child Development Building
ChRC, Children's Rehabilitation Center
CMU, Coffman Memorial Union
ComH, Comstock Hall
CookeH, Cooke Hall

DiehIH, Diehl Hall
DVCCRC, Dwan Variety Club Cardiovascular
Research Center

ECDO, Education Career Development Office
(1425 University Ave SE)
EconRes, Economics Research Building
EddyH, Eddy Hall
EdHAN, Eddy Hall Annex
ElectE, Electrical Engineering Building
EIH, Elliott Hall
ExpE, Experimental Engineering Building

FieldHse, University Field House
FolH, Folwell Hall
FordH, Ford Hall
FraserH, Fraser Hall
FronH, Frontier Hall

HL, St. Anthony Falls Hydraulic Laboratory
(Mississippi River at 3rd Ave SE)
HolB, Holman Building
HSUnitA, Health Sciences Unit A
HSUnitF, Health Sciences Unit F

JacH, Jackson Hall
JOAd, Jackson-Owre Addition
JohH, Johnston Hall
JonesH, Jones Hall

KlaCt, Klaeber Court
KolthH, Kolthoff Hall

LindH, Lind Hall
LinL, Linac Laboratory
LyonL, Lyon Laboratories

MasonH, Masonic Memorial Hospital
Mayo, Mayo Memorial Building

MDH, Minnesota Department of Health
MechE, Mechanical Engineering Building
MinMet, Mines and Metallurgy Building
MirrH, Millard Hall
MMA, Mayo Memorial Auditorium
MorH, Morrill Hall
MRRC, Mineral Resources Research Center
MUHi, Marshall-University High School
(1313 5th St. SE)
MurH, Murphy Hall
MusEd, Music Education

NCCE, Nolte Center for Continuing Education
NichH, Nicholson Hall
NMA, Northrop Memorial Auditorium
NorrisH, Norris Hall

OwreH, Owre Hall

PB, Poucher Building
PeikG, Peik Hall Gymnasium
PeikH, Peik Hall
Phys, Tate Laboratory of Physics
PiH, Pioneer Hall
PillsH, Pillsbury Hall
PolDB, Police Department Building
PH, Pattee Hall
PWB, Phillips-Wangensten Building

RampA, Parking Ramp (Washington Ave at
Union St)
RampB, Parking Ramp (South of Coffman
Union)

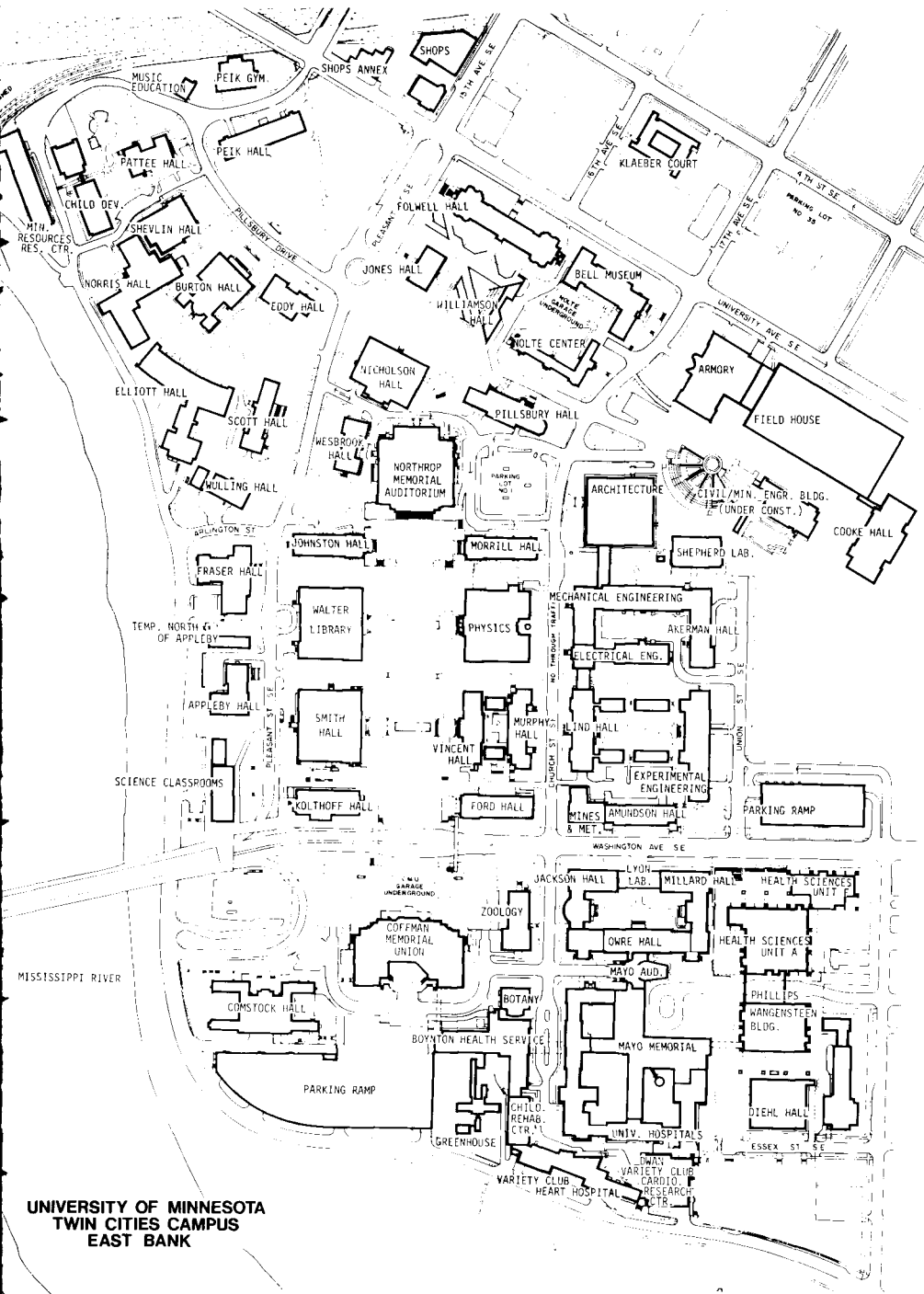
SaH, Sanford Hall
SciCB, Science Classroom Building
ScottH, Scott Hall
ShAn, Shops Annex
ShepLab, Shepherd Laboratories (formerly
Space Science Center)
ShevH, Shevlin Hall
SmithH, Smith Hall
Stad, Stadium

TerH, Territorial Hall
TNA, Temporary, North of Appleby
TNCE, Temporary, North Court of Engineering
TSCE, Temporary, South Court of Engineering

VCHH, Variety Club Heart Hospital
VFWCRC, VFW Cancer Research Center
VinH, Vincent Hall

WaLib, Walter Library
WesH, Westbrook Hall
WmsA, Williams Arena
WmsonH, Williamson Hall
WullH, Wulling Hall

Zoology, Zoology Building



UNIVERSITY OF MINNESOTA
TWIN CITIES CAMPUS
EAST BANK

West Bank

AndH, Anderson Hall
 ArtB, Art Building (2020 Washington Ave. S)

BlegH, Blegen Hall

Law, Law Building

Mgmt/Econ, Management/Economics Building (formerly
 Business Administration)

MdbH, Middlebrook Hall

OMWL, O. Meredith Wilson Library

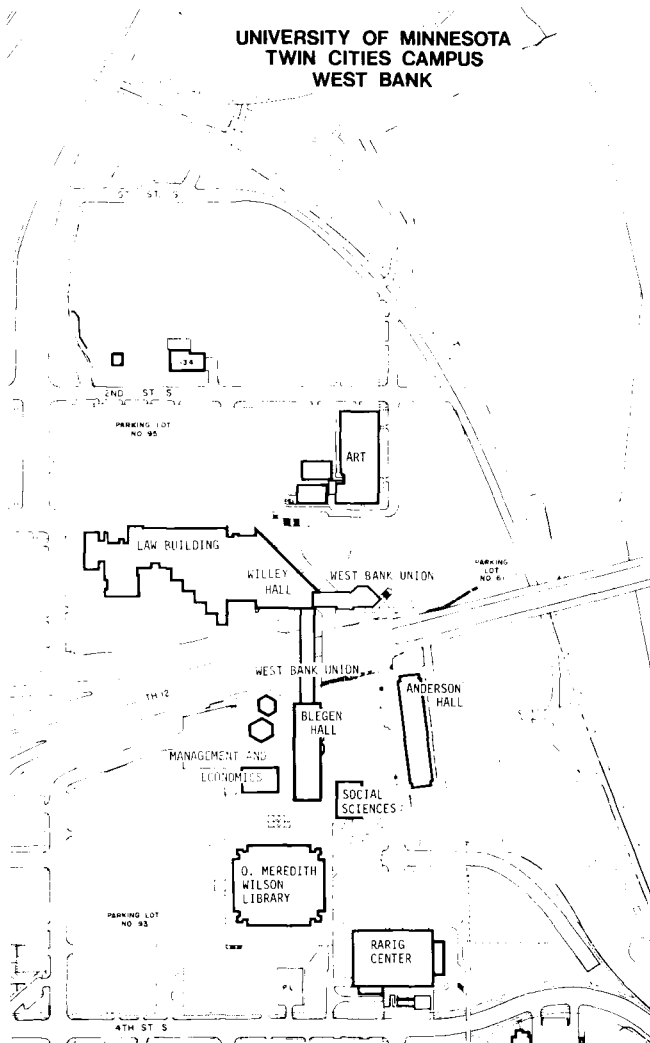
RarigC, Rarig Center

SBkSt, Smith Bookstore

SocSci, Social Sciences Building

WBU, West Bank Union

WileyH, Willey Hall



ST. PAUL

ABLMS, Andrew Boss Laboratory—Meat Science
AdmServ, Administrative Services Building
(2610 University Ave)
AgEng, Agricultural Engineering Building
AgLib, Agriculture Library
Agr, Agronomy Building
AgrPGGh, Agronomy Plant Genetics Greenhouse
AgrSH, Agronomy Seed House
AlderH, Alderman Hall
AnAren, Animal Arena
AnScVM, Animal Science, Veterinary Medicine

BaH, Bailey Hall
BB, Bull Barn
BCB, Beef Cattle Barn
Berry, Berry House (1304 Cleveland Ave N)
BFH, Botany Field House
BioSci, Biological Sciences Center

CentLib, St. Paul Campus Central Library
CI, Crop Improvement Building
CISS, Crop Improvement Seed Stocks Building
ClaOff, Classroom-Office Building
CofH, Coffey Hall
CrRes, Crops Research Building

DCB, Dairy Cattle Barn
DinC, Dining Center

EBCEC, Earle Brown Continuing Education Center
EntFW, Entomology, Fisheries, and Wildlife
Building

FCFH, Farm Crops Field House
FP, Forest Products Building
FScN, Food Science and Nutrition

GorL, Gortner Laboratory of Biochemistry
GrnH, Green Hall
Gym, Gymnasium

HB, Horse Barn
HckrH, Haecker Hall
HodsonH, Hodson Hall
HortS, Horticultural Sciences Building (new)
HS, Health Service Building

KaufL, Kaufert Laboratory

LsPav, Livestock Pavilion

McNH, McNeal Hall
MS, Machinery Shop

NCFor, North Central Forest Experiment
Station
NorH, North Hall
NWGH, Northwest Greenhouses

PalmC, Palmer Classroom Building
PavAn, Pavilion Annex
PetH, Peters Hall
PG, Poultry Group
PISci, Plant Sciences Building
PM, Post-Mortem
PPFL, Plant Pathology Field Laboratory

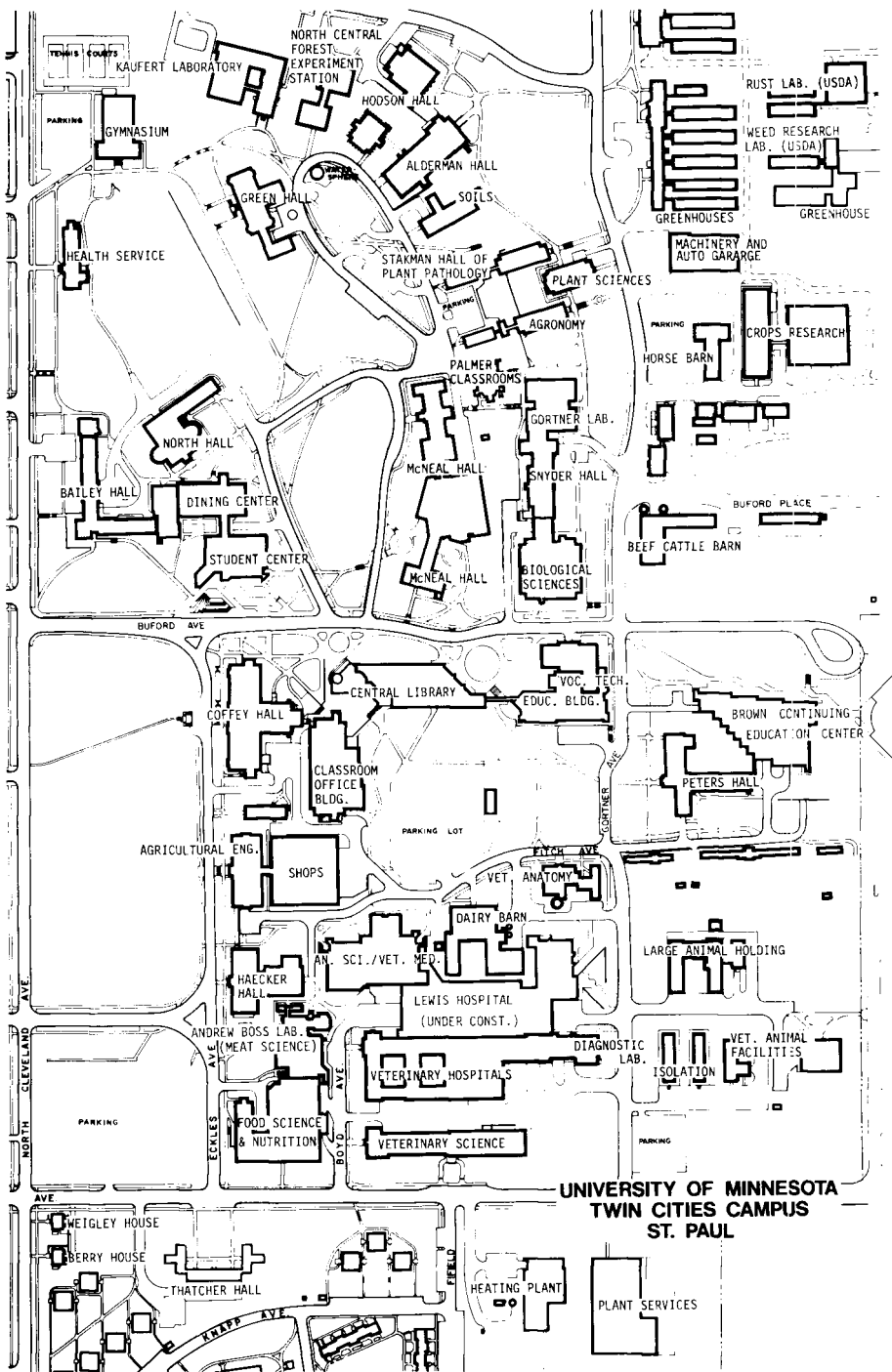
RustL, Rust Laboratory (USDA)

SB, Swine Barn
ShB, Sheep Barn
SheepR, Sheep Research
SnH, Snyder Hall
Soils, Soils Building
StakH, Stakman Hall of Plant Pathology
StCen, Student Center

TH, Thatcher Hall
TSC, Temporary, South of Coffey Hall

VB, Veterinary Barn
VetA, Veterinary Anatomy Building
VetDL, Veterinary Diagnostic Laboratories
VetHos, Veterinary Hospitals
VetIB, Veterinary Isolation Building
VetS, Veterinary Science Building
VoTech, Vocational-Technical Education

Weigley, Weigley House (1316 Cleveland Ave. N)
WRL, Weed Research Laboratory



UNIVERSITY OF MINNESOTA
TWIN CITIES CAMPUS
ST. PAUL

INDEX

- Abbreviations, Building, 238
Accounting, 201
Admission, 6
Adult and Teacher Education, 77
Adult Psychiatry, 134
Aerospace Engineering and
Mechanics, 46, 214
Afro-American Studies, 155
Agricultural and Applied
Economics, 58
Agricultural Education, 101
Agricultural Engineering, 58
Agriculture, 59
Agriculture, College of, 58
Agronomy and Plant Genetics, 59
American Indian Studies, 155
American Studies, 155
Anatomy, 121
Ancient Near Eastern
and Jewish Studies (see Near
and Middle Eastern Studies)
Anesthesiology, 122
Animal Science, 60
Anthropology, 156
Arabic (see Near and Middle Eastern
Studies)
Architecture, 210
Army ROTC, 45, 209
Art Education, 35, 75
Art History, 157
Arts, Studio, 158
Arts Study Center, 48
Astronomy, 221
Auditors, 19
- Bell Museum of Natural History, 30
Biochemistry
College of Biological Sciences, 65
Medical School, 122
Biological Sciences, College of, 65
Biology, 65
Biology Session, Lake Itasca, 69
Biometry, 144
Botany, 66
Boynton Health Service, 26
Building Abbreviations, 238
Bus Service, 24
Business Administration,
College of (see Management,
School of)
Business Administration, 202
Business and Distributive
Education, 39, 102
- Business Finance, 202
Business, Government, Society, 202
Business Law, 202
- Calculus (see Mathematics)
Calendar, 2
Campus Assistance Center, 23
Cancel-Add, 15
Changes and Corrections to bulletin, 5
Chase Lecture (Children's
Literature), 34
Chemical Engineering and Materials
Science, 214
Chemistry, 211
Child and Adolescent Psychiatry, 135
Child Care Center,
University, 22
Child Development, Institute of, 34, 73
Child Psychology, 73
Chinese Nankai Institute, 41
Classics, 42, 160
Cloquet Forestry Center, 112
Coffman Memorial Union, 28
College Offices, 13
Commencement, 20
Committee on Institutional
Cooperation, 46
Communication Disorders, 161
Composition (see English)
Computer Science, 212
Concerts and Lectures, 30
Counseling and Student Personnel
Psychology (see Psychoeducational
Studies)
Counseling Services,
College of Education, 72
College of Liberal Arts, 23
Course Codes, 51
Course Descriptions, 57
Course Enrollment Request, 248
Credits, Number of
(Amount of Work), 19
Curriculum and Instruction, 34, 75
Curriculum and Instructional Systems, 76
- Dance, 88
Dates of Summer Session, 2
Degree Candidates, 11
Degrees, Regulations
Concerning, 20
Dental Public Health, 145
Dentistry, School of, 116

- Dentistry, 116
- Departmental Offices, 54
- Deposit Cards, 18
- Dermatology, 122
- Design, 151
- Digital Information Access Line (DIAL), 23
- Dormitories, 22
- Duluth, University of Minnesota, 230

- Earth Sciences, 213
- East Asian Languages, 162
- Ecology and Behavioral
 - Biology, 67
- Economics, 163
- Education: Adult and Teacher, 77
- Education, College of, 72
- Educational Administration, 36, 85
- Electrical Engineering, 215
- Elementary Education, 77
- Employment Service, Student, 24
- Endodontics, 116
- Engineering, 214
- English, 165
- English as a Second Language, 43, 82
- Entomology, 61
- Environmental Health, 145
- Epidemiology, 45, 146
- Equal Opportunity, 3
- Examinations, 19

- Family Practice and
 - Community Health, 123
- Family Social Science, 151
- Fees,
 - Biology Session, Lake Itasca, 69
 - Refund of, 19
- Fieldwork Opportunities, 42
- Fisheries and Wildlife, 61
- Food Science and
 - Nutrition, 62, 152
- Foreign Study, 167
- Forest Products, 111
- Forest Resources, 110, 111
- Forestry, College of, 110
- Forestry Session, Lake Itasca, 110
- Forestry Workshop, Cloquet
 - Forestry Center, 112
- French, 168
- French and Italian, 169
- Freshmen, Incoming, 7

- Gallery, University, 30
- General College, 113

- Genetics and Cell Biology, 67
- Geography, 169
- Geology and Geophysics, 213
- Geology Field Study, 46
- German, 170
- Golf, 29
- Grading, 19
- Graduate Students, 9
- Greek, 161
- Guide to the Bulletin, 4

- Health Care Psychology, 146
- Health Education, 94
- Health Sciences, 116
- Health Service,
 - Fee Exemption, 16
- Hebrew, 42, 185
- Higher Education, 87
- High School Students,
 - Musicians Honors Program, 44
- History, 171
- History and Philosophy of
 - Education (see Social and Philosophical Foundations of Education)
- Holds on Registration, 14
- Home Economics, College of, 151
- Home Economics
 - Education, 40, 103
- Hospital and Health Care
 - Administration, 148
- Hospitalization Insurance,
 - Hours and Days, 5
- Housing Office, 22
- Human Relations, 98
- Humanities, 173

- Industrial Education, 40, 105
- Industrial Engineering, 216
- Industrial Relations, 203
- Insurance, Risk Management and, 208
- Intensive Language Study, 42
- Interdepartmental Study, 174
- Interdisciplinary Medicine, 123
- Italian, 169
- Itasca Forestry and Biology Station
 - Biology Session, 69
 - Forestry Session, 110

- Japanese, 163
- Jewish Studies (see Near and Middle Eastern Studies)
- Journalism and Mass
 - Communication, 43, 174

- Laboratory Medicine, 124
 Laboratory Medicine and Pathology, 124
 Landscape Architecture, 211
 Large Animal Clinical Sciences, 224
 Late Fees, 2
 Latin, 161
 Liberal Arts, College of, 155
 Library Facilities and Services, 26
 Library School, 176
 Linguistics, 43, 177
 Literature and Fine Arts (see Interdepartmental Study)

 Mail Registration, 34, 72
 Management, 204
 Management Information Systems, 205
 Management, School of, 201
 Maps and Building Abbreviations, 238
 Marketing, 205
 Master of Business Administration, 45, 206
 Maternal and Child Health, 149
 Mathematics, 218
 Mathematics Education, 38, 80
 Mechanical Engineering, 216
 Media Generalist Licensure, 34
 Medical School, 121
 Medical Technology, 125
 Medicine, 125
 Metallurgy/Materials Science, 215
 Microbiology, 127
 Middle Eastern Studies, 186
 Military Science, 209
 Minnesota History Workshop, 44
 Minnesota Public Interest Research Group (MPIRG), 16
 Minnesota Union, 27
 Missing Information, 5
 Morris, University of Minnesota, 237
 Mortuary Science, 140
 Munich Study Program, 41
 Museum of Natural History, 30
 Music, 177
 Music, Applied, 178
 Music Education, 87
 Musicians Program, High School, 44

 Nankai Institute, 41
 Near and Middle Eastern Studies, 185
 Neurology, 127
 Neurosurgery, 128

 Nursery School, 34
 Nursing, School of, 140

 Obstetrics and Gynecology, 129
 Occupational Information Library, 23
 Occupational Therapy, 133
 Offices, Departmental, 54
 Operations Management, 207
 Ophthalmology, 129
 Oral Biology, 118
 Oral Pathology, 118
 Oral Radiology, 118
 Oral Surgery, 117
 Orthodontics, 119
 Orthopaedic Surgery, 130
 Otolaryngology, 130

 Pathology, 131
 Pediatric Dentistry, 119
 Pediatrics, 131
 Peppermint Tent, 31
 Periodontology, 120
 Personal Orientation (How to Study), 186
 Pharmacology, 132
 Pharmacy, College of, 143
 Philosophy, 186
 Photography (see Arts, Studio)
 Physical Education, 37, 88
 Physical Medicine and Rehabilitation, 132
 Physical Therapy, 133
 Physics, 221
 Physiology, 133
 Plant Breeding, 60
 Plant Pathology, 62
 Political Science, 187
 Portuguese (see Spanish and Portuguese)
 Post Office, University, 23
 Prerequisites, 4
 Prosthodontics, 120
 Psychiatry, 134
 Psychoeducational Studies, 38, 95
 Psychological Foundations, 98
 Psychology, 188
 Public Affairs, 190
 Public Health, 144
 Public Health Administration, 149
 Public Health Nursing, 150
 Public Health Nutrition, 150
 Public Health, School of, 144

 Quadna, Summer Arts Study, 48
 Quantitative Analysis, 207

- Radiology, 137
- Reading and Study Skills Center, 23
- Reading, Efficient, 63
- Recreation, 29
- Recreation, Park, and Leisure Studies, 37, 93
- Refunds, 19
- Regents' Scholarships, 16
- Registration, 6
 - Changes in, 15
 - Dates, 14
 - Mail, 14
 - Offices, 13
 - Procedures, 13
- Rehabilitation Services, 23
- Religious Studies, 190
- Rhetoric, 63
- Risk Management and Insurance, 208
- Russian, 191

- Scandinavian, 191
- School Health
 - Education, 37, 94
- Secondary Education, 82
- Senior Citizens, 8
- Showboat, 30
- Small Animal Clinical Sciences, 227
- Small Group Communication
 - Workshops, 43
- Social and Philosophical Foundations of Education, 100
- Social, Psychological, and Philosophical Foundations of Education, 39, 98
- Social Work, 191
- Sociology, 192
- Soil Science, 63
- South Asian Studies, 194
- SPAN Association, 41
- Spanish and Portuguese, 194
- Special Education (see Psychoeducational Studies)
- Special Programs, Workshops, 33
- Speech-Communication, 196
- Sports Facilities, 29
- Statistics, 198
- St. Paul Student Center, 28
- Student Centers, 27
- Student Counseling Bureau, 23
- Student Educational Records,
 - Access to, 3
- Student Employment Service, 24
- Student Progress Committee, 72
- Student Services Fee, 16
- Student Teaching, 73
- Studio Arts (see Arts, Studio)
- Summer Arts Study Center, 48
- Summer-Only Students, 6
- Surgery, 138
- Swimming, 29
- Symbols, 4

- Technical Terms of the Medical and Biological Sciences (see Classics)
- Technical Writing (see Rhetoric)
- Technology, Institute of, 210
- Tennis (see Physical Education)
- Textiles and Clothing, 153
- Theatre Arts, 198
- Theatre, University, 30
- Therapeutic Radiology, 138
- Transfer Students, 7
- Transient Students, 9
- Transportation, 208
- Tuition, 16

- Union, Minnesota, 27
- University Child Care Center, 22
- University College, 223
- University Gallery, 30
- University Theatre, 30
- Urban Studies, 200
- Urologic Surgery, 139

- Veterinary Biology, 227
- Veterinary Medicine,
 - College of, 224
- Veterinary Pathobiology, 228
- Veterinary Public Health, 150
- Vocational and Technical Education, 101
- Vocational Education, 39, 108

- West Bank Union, 28
- Women's Studies, 200
- Workshops, Special Program, 33

- Youth Development and Research, Center for, 154

ID CARD IMPRINT (IF NO ID CARD, PRINT NAME, FILE NUMBER OR SSN)



COURSE ENROLLMENT REQUEST

UNIVERSITY OF MINNESOTA

A-22 (REV 4 81)

COMPLETE ONLY TO INDICATE CHANGE OR CORRECTION

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

TELEPHONE NUMBER () _____

INDICATE: (YEAR) 19 _____ (TERM) _____

CHECK APPROPRIATE BOX:

ORIGINAL REGISTRATION CANCEL ADD

IF CANCEL/ADDING INDICATE NO. OF CREDITS AFTER CHANGE _____

NOTE: Fill-in variable credits below only if credits are listed as "ar cr" in Class Schedule
Fill-in grade option below only if mandatory grading is not listed in Class Schedule

CHECK IF YOU WISH TO CANCEL ALL COURSES

COURSE REQUESTS—FIRST CHOICE

(IF CANCEL/ADDING ENTER ADDS HERE)

COURSE REQUESTS—SECOND CHOICE

(IF CANCEL/ADDING ENTER ADDS HERE)

COURSE CANCELLATIONS

CALL NO	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NO. AND SECTION	CALL NO	GRADE OPTION	VARIABLE CREDITS	DESIGNATOR, COURSE NO. AND SECTION	CALL NO	DESIGNATOR, COURSE NO. AND SECTION

HOSPITALIZATION INS (CHECK ONE)

- SINGLE COVERAGE
- FAMILY COVERAGE
- I HAVE INSURANCE COVERAGE

MPIRG (OPTIONAL)

Minnesota Public Interest Research Group is described in the General Information Bulletin. If you choose NOT to pay the MPIRG fee (85c) initial here. Payment is also refundable.

COLLEGE/DEPT ADVISER APPROVAL

COLLEGE OF EDUCATION STUDENTS ONLY

THIS SUMMER YOU MAY REGISTER BY MAIL. TO REQUEST REGISTRATION MATERIALS, PLEASE COMPLETE AND RETURN THE CARD AT THE BACK OF THIS BULLETIN. IF YOU INTEND TO REGISTER BY MAIL, PLEASE ACT PROMPTLY; ALL REGISTRATION MATERIALS MUST BE RECEIVED BY THE COLLEGE OF EDUCATION BY MAY 18 IN ORDER TO BE PROCESSED IN TIME FOR THE BEGINNING OF THE SUMMER SESSION.

HOW TO REGISTER

5 EASY STEPS...

1. Request registration materials.
2. Complete the forms you receive.
3. Mail completed forms to the College of Education. Registration forms must be received between May 3 and May 18.
4. Pay fees after you receive your fee statement in the mail. June 14 is the last day for payment without incurring a late fee.
5. Go to the first meeting of your classes without further contact with any administrative office.

If you decide not to attend a class for which you are registered, you must contact the Education Career Development Office, 1425 University Avenue S.E., Minneapolis, Minnesota 55455; telephone (612) 373-2257.

REQUEST FOR REGISTRATION MATERIALS COLLEGE OF EDUCATION

Name _____

Address _____

City _____ State _____ Zip _____

Check appropriate items:

College of Education student _____ ID# _____

Inservice Teacher _____

Not a teacher but registering for Education Courses _____

University of Minnesota Bulletin



Lake Itasca Biology Session

Summer 1982

Board of Regents

The Honorable Wenda Moore, Minneapolis, Chairman; The Honorable Lauris D. Krenik, Madison Lake, Vice Chairman; The Honorable Charles H. Casey, West Concord; The Honorable William B. Dosland, Moorhead; The Honorable Willis K. Drake, Edina; The Honorable Erwin L. Goldfine, Duluth; The Honorable David M. Lebedoff, Minneapolis; The Honorable Verne Long, Pipestone; The Honorable Charles F. McGuggan, Marshall; The Honorable David K. Roe, St. Paul; The Honorable Mary T. Schertler, St. Paul; The Honorable Michael W. Unger, St. Paul.

Administrative Officers

C. Peter Magrath, President
Frederick M. Bohlen, Vice President for Finance and Operations
Lyle A. French, Vice President for Health Sciences
Nils Hasselmo, Vice President for Administration and Planning
Stanley B. Kegler, Vice President for Institutional Relations
Kenneth H. Keller, Vice President for Academic Affairs
Frank B. Wilderson, Vice President for Student Affairs

Lake Itasca Biology Session Advisory Committee

University of Minnesota

Willard L. Thompson, Ph.D., Professor and Director of Summer Session; Chairman
Gregory Brown, Ph.D., Professor and Head, Department of Forest Resources
Richard S. Caldecott, Ph.D., Professor and Dean, College of Biological Sciences
Margaret B. Davis, Ph.D., Professor and Head, Department of Ecology and Behavioral Biology
David W. French, Ph.D., Professor and Head, Department of Plant Pathology
Blanchard O. Krogstad, Ph.D., Professor, Department of Biology (UMD)
William P. Martin, Ph.D., Professor and Head, Department of Soil Science
Gerald B. Ownbey, Ph.D., Professor, Department of Botany
David F. Parmelee, Ph.D., Professor and Chairman, Field Biology Program (ex officio)
Harold Scholten, Ph.D., Associate Professor, College of Forestry
Edward I. Sucoff, Ph.D., Professor, College of Forestry
Harrison B. Tordoff, Ph.D., Professor and Director, James Ford Bell Museum of Natural History (ex officio)
Milton W. Weller, Ph.D., Professor and Head, Department of Entomology, Fisheries, and Wildlife
H. E. Wright, Jr., Ph.D., D.Sc., Regents' Professor and Director, Limnological Research Center
David A. Hanych, Graduate Student, Department of Ecology and Behavioral Biology, representing the College of Biological Sciences

Alan S. White, M.S., Graduate Student, Department of Forest Resources, representing the College of Forestry

University of North Dakota, Grand Forks

Robert W. Seabloom, Ph.D., Professor, Department of Biology

University of Wisconsin, Madison

John W. Thomson, Ph.D., Professor, Department of Botany

Department of Natural Resources, Minnesota State Parks

Meryln L. Wesloh, Regional Administrator



Lake
Masua
Biology
Session

First Term June 13-July 17

Second Term July 18-August 21

General Information

Sponsored by the Summer Session at the Lake Itasca Forestry and Biological Station, the Biology Session is a joint enterprise of various departments of the College of Biological Sciences, the College of Agriculture, and the College of Forestry. By agreement, the University of Wisconsin and the University of North Dakota participate in making policy for and planning the Biology Session through membership on the advisory committee.

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.

RESEARCH AND ACADEMIC OPPORTUNITIES

THE ITASCA HABITATS

Itasca Park — an ecological area of national renown — embraces 50 square miles of 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, phyecology, aquatic insects, and fungi, as well as related fields. The forests of the park are unique. Here the northern coniferous and deciduous types of the central hardwood region meet. In addition, the many bog areas provide a wide variety of plant communities for study. Itasca's forests have been protected for over a half century, and many 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 types.

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.

INDEPENDENT INVESTIGATORS

Qualified investigators may pursue research in various fields of terrestrial and freshwater biology during any season. Interested persons should contact David M. Bosanko, Resident Biologist, University of Minnesota Forestry and Biological Station, Lake Itasca Post Office, Minnesota 56460.

COURSE WORK AND RESEARCH

The variety of courses available in both terms I and II allows students an opportunity to choose an entire summer of either intensive work in a particular field of interest or a sampling of several types of field experiences.

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

Students in forestry, plant pathology, soils, and fisheries and wildlife management will find course work closely related to their field as well as a broad spectrum of essential background courses in botany, ecology, entomology, and zoology.

For teachers of biology in high schools and colleges, the session offers opportunity for advanced study through course work or independent research.

Advanced students and research workers needing laboratory space and special equipment should make prior arrangements with David M. Bosanko, Resident Biologist, University of Minnesota Forestry and Biological Station, Lake Itasca Post Office, Minnesota 56460.

Temperate Zone Ecology—EBB 8800, Advanced Field Ecology, offers current and prospective graduate students a broad but rigorous introduction to ecological research in temperate regions. Students conduct group and individual research projects in the diverse habitats in the Itasca region, which include native prairie, temperate deciduous hardwood forest, northern coniferous forest, bogs, old fields, and lakes and streams. The field problems stress the testing of current ecological theories and hypotheses. These group research projects, which are led by a faculty member, explore questions from various areas of ecology, including population, community, behavioral, and evolutionary ecology, and span many taxonomic groups. Because the faculty members have experience with tropical, subtropical, and temperate ecosystems, there are opportunities for comparisons both within and between these regions. The course has attracted students from major schools throughout the United States, Canada, and Mexico.

The coordinator, Donald R. Strong, Jr., associate professor, Department of Biological Sciences, Florida State University, will be with the course the full five weeks. David Tilman, associate professor, Department of Ecology and Behavioral Biology, University of Minnesota, and two additional faculty members will be with the course for periods of one to two weeks.

This course is open only to students who are currently enrolled in or have been accepted by a graduate program. Admission is competitive. A separate application form must be obtained from the Field Biology Program, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

INSTRUCTIONAL FACILITIES

Eleven 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, bird skins, and small mammal skins are available for study. Four complete sets of aerial photos of the park area, made in 1938, 1951, 1959, and 1966, are maintained at the station along with stereoscopic equipment.

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 fieldwork and offers ample room for study. Other journals and books are available from the University Libraries.

ADMISSION AND REGISTRATION INFORMATION

ADMISSION

Courses are open to all qualified graduate and undergraduate students who have completed the usual preliminary course work in biological subjects. General rules for admission of undergraduates to the summer session apply to the Biology Session. Students are advised to review these regulations in the general *Summer Session Bulletin*.

Summer-Only Students—Students with previous college work who wish to attend the summer session only 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 credentials examination 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 (Friday, May 14, 1982, for first term; Monday, June 14, 1982, for second term).

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 credentials examination 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, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

SCHOLARSHIPS

The following awards are available for qualified students:

Alexander P. Anderson and Lydia Anderson Fellowships, at \$350 each, 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, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 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, Minnesota 55455.

Malvin and Josephine Herz Foundation Fellowship is offered to encourage an outstanding student in ornithological research. For information and applications write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Fishery and Wildlife Management Spring and Summer Scholarships are provided by the Minnehaha Chapter, Izaak Walton League, Question Club of Minneapolis, the James R. Beer Memorial Scholarship of the Minnesota Student Chapter of the Wildlife Society, and the Harriet Parmelee Memorial Scholarship. For information and applications write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

ITASCA RESEARCH STIPENDS

A number of research stipends of several hundred dollars each will be available for graduate students or qualified persons other than faculty members. Almost any scientific study relating to field biology will be 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 will be judged competitively on the basis of the scientific merit of proposals and the individual's qualifications. Applicants from within and outside the University will be 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 David F. Parmelee, Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. The deadline for application is April 1, 1982.

STUDENT LOAN INFORMATION

Students who are enrolled in a University of Minnesota degree or certificate program during the year may obtain a Guaranteed Student Loan 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 in Minneapolis or 199 Coffey Hall in St. Paul. *Visiting students who are regularly enrolled in other institutions should arrange for student loans through their home institutions.* These students should expect a delay in receipt of their loans, because a lending institution generally will release a check only after the student has completed registration and his or her enrollment is certified by the Office of Admissions and Records.

EMPLOYMENT OPPORTUNITIES

A number of jobs (library, office, shops, etc.) are available to all students on a competitive basis. Interested persons should request an application form from the chairman of the Field Biology Program. Only University of Minnesota students may apply for graduate teaching assistant positions and College Work-Study Program jobs.

RESERVATIONS

Since both the housing facilities and the enrollment size of each class are limited, early application for reservations is recommended. To apply, you should complete both the Request for Reservation form and the Summer Information Sheet found on the last pages of this bulletin and mail them to David F. Parmelee, Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. *These two forms must be accompanied by a recent transcript of your academic record, a listing of courses in which you are currently enrolled, a deposit of \$40 for one term or \$80 for two terms. A letter of evaluation from your adviser or supervisor is recommended.* The deposit will be applied toward the tuition charged at the time of registration or will be returned to you if space is not available.

Assignments to classes will be verified no later than April 9 for early applicants. They will be determined on the basis of need, date of application, completion of prerequisites for the courses desired and scholastic record. Late applications will be accepted up to the day of registration (June 13 for first term and July 18 for second term), since openings occur from time to time even in those classes that usually close early.

REGISTRATION

All courses offered at the station must be reserved. Students reserve courses by mailing in the Request for Reservation and the Summer Information Sheet at the end of this bulletin. Once these forms are received, students will be notified of acceptance and class reservation cards will be held for them until they arrive for registration.

Class reservation cards may be picked up at 130 Coffey Hall in St. Paul during regular summer session registration periods. After they have picked up their cards, Twin Cities students should complete their registration at the Registration Center on the Twin Cities campus (either 202 Fraser Hall in Minneapolis or 130 Coffey Hall in St. Paul).

Out-of-town students can complete registration at the station on June 13 for first term or on July 18 for second term. The necessary cards will be held with the reservation until these students arrive for registration.

Students may register each term for ten credits or less. A maximum load may include one ten-credit course, or two five-credit courses, or one five-credit course and a research problem (one to five credits). A one-credit seminar, Biol 5870, is required of all students taking fewer than seven credits. Students enrolling for both summer terms are advised to register for no more than three five-credit courses. Ornithology requires a great deal of time, and students should plan their schedules accordingly.

REGISTRATION AT ITASCA

Scheduled times for registration are as follows:

Term I—June 13

9:00-11:30 a.m.

1:30-4:30 p.m.

Term II—July 18

11:00-a.m.-4:30 p.m.

It is important that all students be at the station on June 13 (term I) and July 18 (term II) for a general meeting at 8:00 p.m. in the Assembly Hall (building 53).

CHANGES IN REGISTRATION

Students accepted into the program who wish to enter courses that have filled early should place their names on the official waiting list by contacting the field biology chairman. In the event of cancellations, students on the waiting list will be accommodated first.

Changes in registration must be approved by the chairman and are strongly discouraged after registration day (June 13, first term; July 18, second term).

CANCELLATION

Because late cancellations often create vacancies in classes that earlier could have been filled by persons wishing to attend the Biology Session, students who must cancel should do so as early as possible. All cancellations must be approved by the Field Biology Program chairman. Cancellation for any reason should be reported immediately to the chairman by phone (612-373-1292), followed by a statement in writing. Students should also consult with their instructors before canceling, if the term has already begun.

TUITION, FEES, AND OTHER COSTS

ACADEMIC FEES

Tuition and fees are payable each five-week term by every regular registrant. They are due on or before June 13 for first term or July 18 for second term. The following amounts were charged in the 1981 summer terms. Final determination of tuition and fees for the 1982 terms had not been made at the time this bulletin was printed.

	<i>5 credits</i>	<i>10 credits</i>
Tuition	\$103.75 ¹	\$207.50 ¹
Student Services Fee	19.50	19.50
Laboratory Fee	<u>8.50</u>	<u>8.50</u>
	\$131.75 ¹	\$235.50 ¹

A \$40 deposit for each term is required of all persons requesting reservations for course work during the Biology Session. This fee will be returned if written notice of cancellation is *postmarked* before May 1 for the first term or June 10 for the second term. When registration is completed, the \$40 or \$80 deposit will be applied to the tuition fee.

Persons registering at the University of Minnesota for the first time must pay a \$6 record service fee.

Independent investigators may use the facilities at the station and pay a research fee based on facilities, equipment, and services required; the minimum charge is \$2.50 per week.

LATE FEES

Late fees are assessed for both late registration and late payment.

Late Registration—No registration will be accepted after June 13 or July 18 without the approval of the chairman of the Field Biology Program and payment of the late registration fee, as follows:

June 14-18 or July 19-23	\$10
Thereafter	\$20

Late Payment—A fee of \$20 is charged if tuition and fees are paid after the student's due date, as indicated on the fee statement at the time of registration and on the following chart:

<i>Registration Period</i>	<i>Tuition and Fees Due Date</i>
Through June 13 or July 18	Five workdays after registration
June 14-17 or July 19-22	June 18 or July 23
Thereafter	One workday after registration

ROOM AND BOARD COSTS

There is a service charge of \$30 per term for dormitory facilities. A charge of \$225 for board is payable to the Itasca Dining Club, which is run on an actual cost basis. These fees are payable at the beginning of each term.

¹This amount plus a 10 percent tuition surcharge was charged in the 1981 summer terms.

TRANSPORTATION COSTS

University vehicles are available for class field trips. Students using them will be charged a fee to cover actual costs. Costs usually range from less than \$1 to \$30. Courses that commonly use University vehicles for long or frequent field trips are: Bot 5801, 5805, 5821; EBB 3800, 5814, 5815, 5817, 5834, 8800; FW 5456; PIPa 5102; Soil 5532.

LIVING ARRANGEMENTS

TRANSPORTATION

Students depending on public transportation to travel to the Itasca station may take a bus to either Park Rapids, 24 miles from campus, or to Bemidji, 42 miles from campus. Republic Airlines offers daily service between the Twin Cities and Bemidji. Students will be met upon arrival if they make *prior arrangements* with the chairman. Students needing to make such arrangements should contact David Parmelee, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-1292. State Highway 200 and U.S. Highway 71 provide easy access by car into the park.

CABINS

There are ten cabins for men, each accommodating eight students, and eight cabins for women, each accommodating six students. 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.

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 will be furnished upon request. The station maintains a tent and trailer camp area with a modern bathhouse and outlets for water and electricity but no outdoor cooking facility. Registered students and their spouses and children have top priority for use of the campground. The weekly charge is \$6. Interested students should apply well in advance of the session; those whose spouses or children will be accompanying them should notify the chairman.

ACCOMMODATIONS FOR VISITORS

Students must notify the office of expected guests at least 24 hours before arrival. Since there are no overnight guest facilities at the station, students must arrange housing for their guests off campus. Meals for guests can be arranged at the Itasca Dining Club if meal tickets are purchased at the office in advance. Students are responsible for the conduct of their guests and should inform them of park regulations.

MEALS

The Itasca Dining Club, a cooperative formed each year by the students and managed for them by the resident biologist, serves meals in an attractive dining hall located on the lakeshore (building 53). The well-balanced meals are carefully planned and prepared by experienced cooks.

PERSONAL NEEDS

Students must provide their own pillows, bed linen, towels, and blankets. Since the nights are often cool, it is suggested that students bring two or three wool 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, a portable typewriter and typing paper, a calculator, and the equipment necessary for individual work in the field or laboratory.

BOOKS

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.

HEALTH SERVICE

A registered nurse will be on duty at the station infirmary. Only those students who have paid the student services fee have infirmary privileges. Those not paying the student services fee should make arrangements for treatment at Park Rapids or Bemidji. Everyone living at the station is required to have hospitalization coverage, whether obtained through or outside the University. See the 1982 *Summer Session Bulletin* for information about charges for University-sponsored hospital coverage.

Students will be furnished medical care and up to 15 days of hospitalization at the nearest medical facility in case of emergency illness or accident and on approval of the chairman. These benefits do not include such items as physical examinations, treatment of chronic conditions, or payment for drugs.

MAIL

Mail for students should be addressed to: University of Minnesota Forestry and Biological Station, Lake Itasca Post Office, Minnesota 56460.

RECREATION

Recreational opportunities in the park, such as swimming, fishing, canoeing, 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 and occasional films on field biology will be scheduled. Guests on the campus should check with the chairman before using recreational equipment and engaging in recreational activities.

RULES OF CAMP

Rules of camp 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 must 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 (\$10 for Minnesota residents; \$15 for nonresidents) must be purchased for private cars at the park entrance.

Staff and Faculty

ADMINISTRATIVE STAFF

Office (218) 266-3302

David F. Parmelee, Chairman

Diane M. Berube, Administrative Secretary

Building and Grounds

Daniel Traun, Resident Manager

Research

David M. Bosanko, Resident Biologist

Library

Thomas J. English, Jr., Librarian

Dining Club

To be announced

Infirmary

To be announced.

SUMMER FACULTY

Donald Alstad, Assistant Professor, University of Minnesota, is interested in the evolutionary population ecology of insects and plant-insect interactions. (EBB 8800)

Franklin H. Barnwell, Associate Professor, University of Minnesota, carries out research on the role of biological rhythms in the adaptation of animals and plants to environmental cycles. (EBB 3800)

Norman L. Christensen, Jr., Associate Professor, Duke University, is interested in succession and nutrient cycling in terrestrial ecosystems and in the effects of fire and other factors on the composition of plant communities. His field research has been concentrated in California and in the southeastern United States. (EBB 5814)

Marty J. Dibben, Adjunct Professor, University of Wisconsin, and Head, Section for Botany, Milwaukee Public Museum, is a lichenologist interested in bryophytes and fleshy fungi. A specialist in crustose lichen chemotaxonomy, he is broadly interested in the ecology and phytogeography of tropical lichens. (Bot 5821)

Richard J. Elzinga, Professor, Kansas State University, is interested in the interrelationships between mites and insects. Recent studies have dealt with holdfast structures enabling certain uropodan mites to be phoretic on army ants. (Ent 5020)

Steven Green, Professor and Chairman, University of Miami, is interested in ethology and behavioral ecology, particularly animal communication and social organization; quantitative methods in fieldwork; effects of habitat structure, resource distribution, and physical environmental variables on social behavior of primates; and conservation biology. (EBB 5815)

Robert B. Kaul, Professor, University of Nebraska, studies the reproductive structure and biology of aquatic vascular plants and is interested in the evolutionary history of higher plants. (Bot 5805)

Robert O. Megard, Associate Professor, University of Minnesota, is primarily interested in the ecology of planktonic algae, particularly in photosynthesis and other processes that regulate the density of natural populations. (EBB 5812, term II)

Thomas Morley, Professor, University of Minnesota, is carrying out research on the taxonomy of pondweeds and woody tropical plants related to the myrtle family. (Bot 5801)

Patrice A. Morrow, Associate Professor, University of Minnesota, studies plant-insect interactions and is especially interested in the role of herbivorous insects in determining plant community structure. (EBB 8800)

Thomas G. Nimlos, Professor, University of Montana, is conducting research in the development of Montana soils. (Soil 5532)

Oscar T. Owre, Maytag Professor of Ornithology, University of Miami, is working with the ecology of birds of southern Florida and is particularly interested in the introduced species and the biology of "introduction." (EBB 5834)

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

Lois A. Pfister, Associate Professor, University of Oklahoma, is interested in the morphology and ecology of freshwater dinoflagellates, with emphases on sexual reproduction and amoeboid, phagocytic stages in dinoflagellates. (Bot 5811)

Michael R. Ross, Assistant Professor, University of Massachusetts, is interested in the reproductive behavior and mating systems of cyprinoid fishes and how they relate to the population dynamics of these taxa. (FW 5456)

Robert W. Seabloom, Professor, University of North Dakota, has research interests concerning vertebrate ecology and zoogeography in the northern Great Plains, and endocrine function in mammalian populations. (EBB 5817)

Elwin L. Stewart, Associate Professor, University of Minnesota, has specialized in the taxonomy and ecology of true and false truffles (hypogeous Ascomycotina and Basidiomycotina). His current research also includes studies on epigeous mycorrhizal fungi. (PLPa 5102)

Donald R. Strong, Jr., Associate Professor, Florida State University, is widely interested in community and population biology, and conducts fieldwork on insect-plant associations with the marsh grass *Spartina* and with tropical monocots. (EBB 8800)

G. David Tilman, Associate Professor, University of Minnesota, is doing research on resource competition in aquatic and terrestrial plant communities using experimental and theoretical approaches. (EBB 8800)

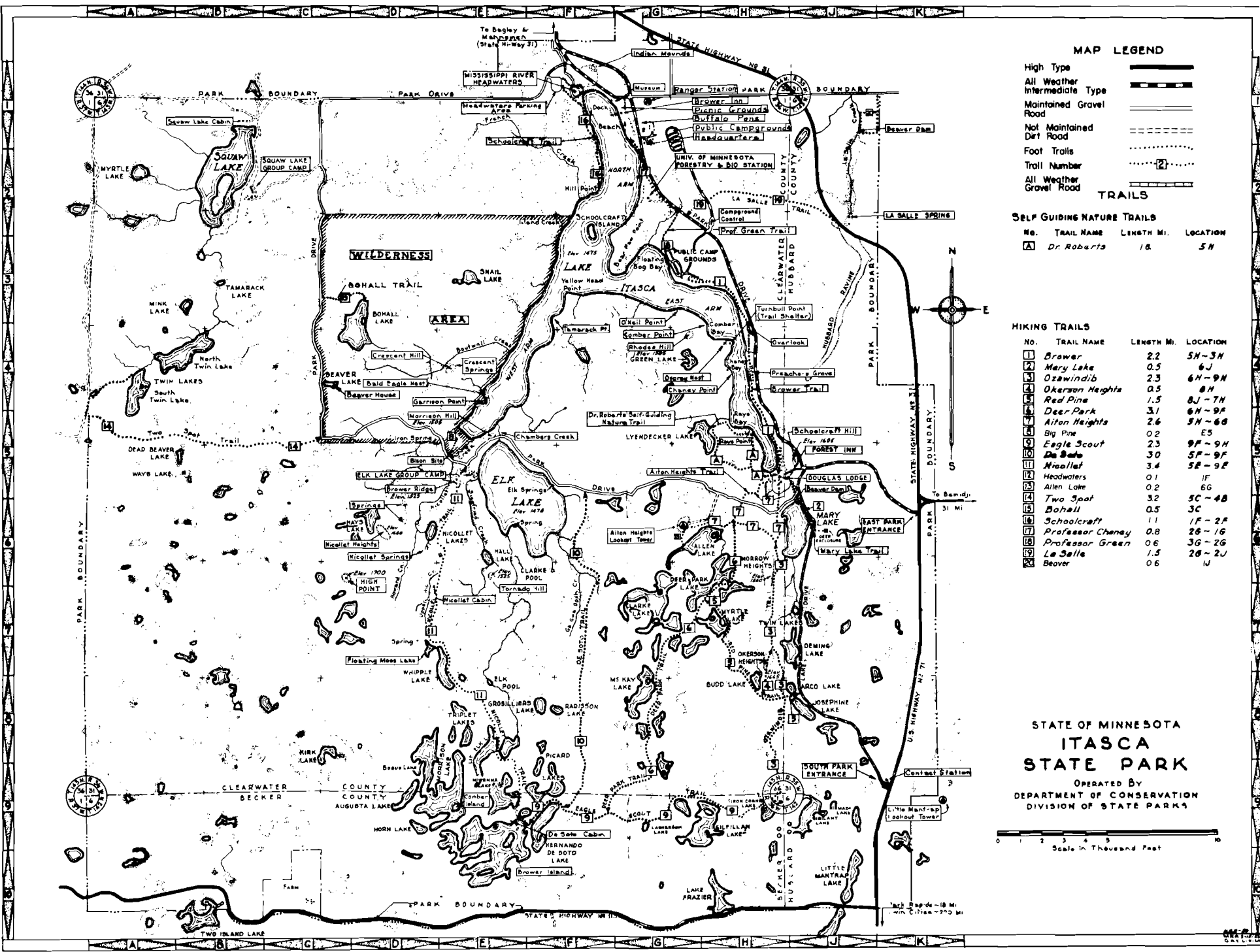
Melbourne C. Whiteside, Associate Professor, University of Tennessee, is interested in factors that determine the population and community changes of littoral and limnetic zooplankton; this currently involves the study of fish-fry predation in these communities. (EBB 5812, term II)

Mary F. Willson, Professor, University of Illinois, has research interests in a diversity of problems in evolutionary ecology. Her earlier work focused on the mating systems and foraging ecology of birds. Recently, her research effort has centered on the reproductive biology of plants, specifically the floral display and pollination biology of milkweeds and other perennials, the phenology of spring woodland ephemerals, the ecology of bird-dispersed fruits, and sexual selection. (EBB 8800)

GUEST LECTURERS

Mike Baker, Associate Professor, Colorado State University. (EBB 5815, term I)

Keith Waddington, Associate Professor, University of Miami. (EBB 5815, term I)



MAP LEGEND

- High Type
- All Weather
- Intermediate Type
- Maintained Gravel Road
- Not Maintained Dirt Road
- Foot Trails
- Trail Number 1
- All Weather Gravel Road

TRAILS

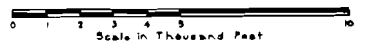
SELF GUIDING NATURE TRAILS

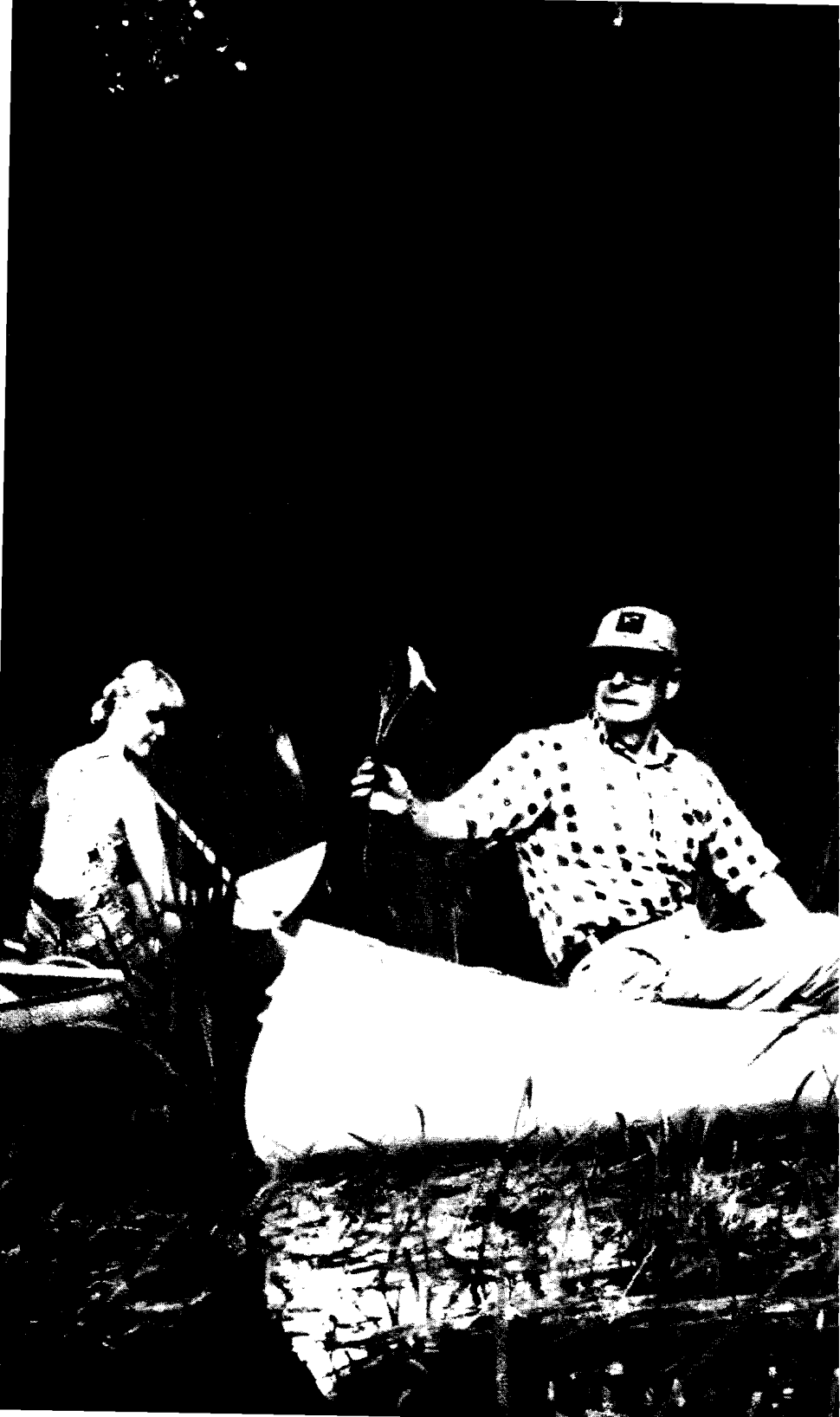
No.	TRAIL NAME	LENGTH MI.	LOCATION
1	Dr. Roberts	1.8	5N

HIKING TRAILS

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

STATE OF MINNESOTA
ITASCA STATE PARK
 OPERATED BY
 DEPARTMENT OF CONSERVATION
 DIVISION OF STATE PARKS





Courses of Instruction

R Means "controlled enrollment."
‡ Means "concurrent registration."
Means "consent of instructor is required."¹
△ Means "consent of department is required."
Classes begin at 8:00 a.m. and continue all day.

BIOLOGY (Biol)

- 5870. ITASCA SEMINAR.** (985535) (1 cr; prereq △) Parmelee
Weekly seminars by faculty members and visiting lecturers. Required of all students taking fewer than seven credits.
- 5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY; OR SOIL SCIENCE.** (785536) (Cr ar; prereq #, △) Staff
Undergraduate and graduate students may develop a short-term research project in any departmental area listed above during one or both terms.

BOTANY (Bot)

- R5801. PLAINS AND BOREAL FLORA.** (185539) (5 cr; limited to 20 students; prereq course in taxonomy, △; MTh; I term) Morley
Survey of the summer flowering plants and ferns of the state with particular reference to local flora. Identification by technical keys; important plant families; field recognition of common species; habitat preferences; collecting methods; literature; taxonomic methods.
- R5805. AQUATIC FLOWERING PLANTS.** (487183) (5 cr; limited to 20 students; prereq course in taxonomy, △; MTh; II term) Kaul
The higher plants of aquatic and marsh habitats. Identification and collection; association of species; relations to the habitat, adaptive morphology and food value to wildlife.
- R5811. FRESHWATER ALGAE.** (585540) (5 cr; limited to 20 students; prereq 10 cr botany, biology or zoology, △; TF; I term) Pfiester
The developmental morphology and taxonomy of freshwater algae as related to ecology. Identification of field collections by technical keys, collecting and analytical methods, and utilization of information for recognizing distribution patterns.
- R5821. LICHENS.** (589975) (5 cr; limited to 20 students; prereq 10 cr in botany or zoology, △; TF; II term) Dibben
The taxonomy, ecology, and floristics of lichens of northern Minnesota, identification, sampling methods, microchemistry as a taxonomic tool.
- 5890. RESEARCH PROBLEMS.** (187185) (1-5 cr per qtr; prereq △)
Individual research for undergraduates and graduates.

ECOLOGY AND BEHAVIORAL BIOLOGY (EBB)

- R3800. INTRODUCTION TO FIELD RESEARCH.** (185542) (10 cr; limited to 20 students; prereq two courses in biology, Δ ; hrs ar; I term) Barnwell
An intensive course on how to do research. A series of ecological and behavioral projects provides an introduction to the biology of forests, prairies, lakes, and marshes of the Itasca region while serving to develop individual abilities in the planning and design of experiments, acquisition and analysis of data, and preparation of scientific reports. Intended for undergraduates with little or no previous experience in field biology.
- R5812. AQUATIC ECOLOGY.** (987186) (5 cr; limited to 20 students; prereq 15 cr biology, 5 cr chemistry, Δ ; WS: I and II terms) Whiteside, Megard
General limnology of lakes with emphasis on the biology of lakes in the Itasca region as related to their physical and chemical stratification in summer. Team projects in field research. Emphasis on plankton ecology and water chemistry.
- R5814. COMMUNITY STRUCTURE AND FUNCTIONING.** (787187) (5 cr; limited to 20 students; prereq course in ecology, Δ ; TF; II term) Christensen
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.
- R5815. FIELD ETHOLOGY.** (085543) (10 cr; limited to 20 students; prereq course in behavior, . . . course in statistics recommended; Δ hrs ar; I term) Green
Field course emphasizing the methods of studying behavior of wild animals. Quantitative techniques; sound recording and sound tape analysis, capturing and marking techniques. An individual research project and term paper on the social behavior of one species is required. Individual projects require considerable outside time. Guest lecturers: Mike Baker, Associate Professor, Colorado State University; Keith Waddington, Associate Professor, University of Miami.
- R5817. VERTEBRATE ECOLOGY.** (189977) (5 cr; limited to 15 students; prereq course in ecology, Δ ; WS: II term) Seabloom
Field studies on populations and their relationships to local environments; habitat analysis and ecological research methods. Individual and team research projects, field trips, and lectures. Reports and complete data analysis required on two research projects.
- R5834. FIELD ORNITHOLOGY.** (885544) (5 cr; limited to 15 students; prereq course in biology, Δ ; TF; I term) Owe
Emphasis on the breeding season, biology, and behavioral ecology of birds in the Itasca Park region. Field trips are taken to a variety of habitats to learn bird identification and observe and practice techniques for conducting field studies. Laboratory sessions investigate family distinctions and species identification. Individual field projects.
- R8800. ADVANCED FIELD ECOLOGY.** (587188) (10 cr; limited to 20 students; prereq admission to a grad program, Δ ; hrs ar; II term) Strong (coordinator), Tilman, Alstad, Morrow, Willson
The formulation and testing of ecological theory under field conditions. Group and individual research projects, lectures, seminars, and student presentations on topics such as coevolution, life history strategies, behavioral strategies, resource allocation, and community structure. *See detailed description on page 3.*

¹For consent of EBB 8800 instructors, address inquiries to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

ENTOMOLOGY (Ent)

R5020. FIELD ENTOMOLOGY. (685545) (5 cr; limited to 15 students; prereq introductory biology; MTh; I term) Elzinga

Insect fauna in various natural habitats of the park and surrounding areas. Field trips, collection and identification of insects, and studies of general morphology, life histories, and habitats of local species.

FISHERIES (FW)

R5456. FIELD ECOLOGY OF FISHES. (387189) (5 cr; limited to 15 students; prereq course in ecology; TF; II term) Ross

Ecological studies, observation and identification of fishes in their natural habitat including life histories, reproduction, behavior, food habits, interrelationships with other fishes, and general habitat requirements. Collection methods in streams and lakes.

PLANT PATHOLOGY (PIPa)

R5102. FIELD MYCOLOGY. (789190) (5 cr; limited to 15 students; prereq 6 cr botany; MTh, II term) Stewart

Survey of the major groups of fungi including slime molds, with emphasis on field collecting, identification, life history, and the impact on human affairs. Modern taxonomic concepts evaluated in laboratory sessions.

SOIL SCIENCE (Soil)

R5532. SOILS AND THE ECOSYSTEM. (289968) (5 cr; limited to 20 students; prereq course in ecology; WS; I term) Nimlos

Functional and structural aspects of soils as a component of the ecosystem. Interrelationships of soil and vegetation of the landscape.

PROPOSED COURSE PROGRAMS

To help students make the most effective use of the academic resources of the Biology Session, the following program of annual and projected courses is presented. Changes in the projected schedule may be made to take advantage of especially competent staff members or to meet enrollment needs.

Annual Course Offerings

Bot 5801, 5805, 5811

EBB 5812, 5814, 5815, 5834

Ent 5020

PLPa 5102

Soil 5532

Proposed Courses for 1983

Biol 5950. Field Biology Photography at Itasca

Bot 5825. Biology of the Ferns

EBB 3800. Introduction to Field Research

EBB 5817. Vertebrate Ecology

EBB 5820. Wetland Ecology

EBB 8800. Advanced Field Ecology

FW 5456. Field Ecology of Fishes

SPRING TERM

Courses will not be offered at Itasca during spring quarter 1982.

Recent Research Publications

- MORLEY, T. Deciduous trees of Minnesota, a winter key. J. Minn. Acad. Sci., 38:27-36, 1972.
- PARMELEE, DAVID F. and RICHARD J. OEIHLENSCHLAGER. Connecticut warbler nest in Hubbard County, Minnesota. Loon, 44(1):5-6, 1972.
- SCHMID, WILLIAM D. Nocturnalism and variance in ambient water vapor pressure. Physiol. Zool., 45(4):302-309, 1972.
- TARAPCHAK, STEVE. Studies on xanthophyceae of the Red Lakes wetlands, Minnesota. Nova Hedwigia, 23:1-45, 1972.
- WEAVER, MARGARET G. and ROBERT L. SHAFER. Higher fungi of Minnesota. II. J. Minn. Acad. Sci., 38:46-52, 1972.
- BROWN, ERNEST B. III. Changes in patterns of seasonal growth of *Microtus pennsylvanicus*. Ecology, 54(5):1103-1110, 1973.
- ORING, LEWIS W. and M. L. KNUDSON. Monogamy and polyandry in the spotted sandpiper. Living Bird, 12:59-73, 1973.
- ROLLINS, LOUISE A. Poriferan fauna of a Minnesota pond. J. Minn. Acad. Sci., 38(2):83-85, 1973.
- WIGGINS, GLENN B. A contribution to the biology of caddis flies (Trichoptera) in temporary pools. Royal Ontario Museum, Life Sciences Contribution #88, 1973.
- BOERNKE, W. E. Natural variations in hepatic and kidney arginase activities in Minnesota anuran amphibians. Comp. Biochem. Physiol., 47B:201-207, 1974.
- MCINTYRE, JUDITH W. Territorial affinity of a common loon. Bird Banding, 1974.
- PARMELEE, DAVID F. The nest of the northern parula. Living Bird, 12:197-199, 1974.
- SCHLICHTING, H. E., JR. Ejection of microalgae into the air via bursting bubbles. J. Allergy and Clinical Immunology, 53(3):185-188, 1974.
- SCHLICHTING, H. E., JR. Periodicity and seasonality of airborne algae and protozoa. In Phenology and Seasonality Modeling, Ecological Studies, 8:407-413, 1974.
- SCHLICHTING, H. E., JR. Survival of some freshwater algae under extreme environmental conditions. Trans. Amer. Microsc. Soc., 93(4):610-613, 1974.
- SCHLICHTING, H. E., JR., G. N. PRENDEVILLE and M. D. GUIRY. New techniques for biological monitoring of water quality. Biocontrol Techniques, 1(1):1-3, 1974.
- WALSBY, A. E. and A. R. KLEMER. The role of gas vacuoles in the microstratification of a population of *Oscillatoria agardhii* var. *isothrix* in Deming Lake, Minnesota. Arch. Hydrobiol., 74(3):375-392, 1974.
- WHITESIDE, M. C. Chydorid (Cladocera) ecology: seasonal patterns and abundance of populations in Elk Lake, Minnesota. Ecology, 55(3):538-550, 1974.
- BAKKO, EUGENE B. A field water balance study of gray squirrels (*Sciurus carolinensis*) and red squirrels (*Tamiasciurus hudsonicus*). Comp. Biochem. Physiol., 51A:759-768, 1975.
- BAKKO, EUGENE B. Influence of collecting techniques on estimate of natural renal function in red squirrels. Amer. Midl. Nat., 97(2):502-504, 1975.
- BUELL, MURRAY F. and HELEN F. BUELL. Moat bogs in the Itasca Park area, Minnesota. Bull. Torrey Bot. Club, 102(1):6-9, 1975.
- GILBERTSON, D. E. and I. SCHMID. Free amino acids in the hemolymph of five species of pulmonate snails. Comp. Biochem. Physiol., 51B:201-203, 1975.
- GILBERTSON, D. E. and R. WEDLUND. Studies on schistosome dermatitis ("swimmer's itch") in Minnesota. J. Minn. Acad. Sci., 41:28-30, 1975.
- LARSON, O. R. and W. C. SCHARF. New helminth records from Minnesota mammals. Proc. Helminthological Soc. Wash., 42(2):174-175, 1975.
- SCHLICHTING, H. E., JR. Some subaerial algae from Ireland. Br. Phycol. J., 10:257-261, 1975.
- WHITESIDE, M. C. and J. B. WILLIAMS. A new sampling technique for aquatic ecologists. Verh. Internat. Verein. Limnol., 19:1534-1539, 1975.
- WIGGINS, GLENN B. Contributions to the systematics of the caddis fly family Limnephilidae (Trichoptera). II Can. Ent., 107:325-336, 1975.
- HEIDEMANN, MERLE KNUDSON and LEWIS W. ORING. Functional analysis of spotted sandpiper (*Actitis macularia*) song. Behaviour, 56 (1-3):182-193, 1976.
- KLEMER, A. R. The vertical distribution of *Oscillatoria agardhii* var. *isothrix*. Arch. Hydrobiol., 78(3):343-362, 1976.
- MCCOLL, J. G. and JOANNA BURGER. Chemical inputs by a colony of Franklin's gulls nesting in cattails. Amer. Midl. Nat., 96(2):270-280, 1976.
- MCINTYRE, JUDITH W. Toe-banding of common loon chicks. Bird-Banding, 48(3):272, 1976.
- MCINTYRE, JUDY. The common loon: part I. Loon, 48(3):126-127, 1976.
- MOEN, AARON N. Energy conservation by white-tailed deer in the winter. Ecology, 57(1):192-198, 1976.
- PIVORUN, E. B. A biotelemetry study of the thermoregulatory patterns of *Tamias striatus* and *Eutamias minimus* during hibernation. Comp. Biochem. Physiol., 53A:265-271, 1976.
- SCHLICHTING, H. E., JR. The origin and occurrence of airborne microalgae in North Carolina. In The Distribution History of the Biota of the Southern Appalachians. Algae and Fungi, IV:58-62, 1976.
- SCHMID, WILLIAM D. Temperature gradients in the nasal passage of small mammals. Comp. Biochem. Physiol., 54A:305-308, 1976.
- STARK, DONNA M. Paleolimnology of Elk Lake, Itasca State Park, northwestern Minnesota. Arch. Hydrobiol., 50:208-274, 1976.
- WUJEK, DANIEL E. Ultrastructure of flagellated chrysophytes II. *Uroglena* and *Uroglenopsis*. Cytologia, 41:665-670, 1976.
- AVERY, MICHAEL and LEWIS ORING. Song dialects in the bobolink, *Dolichonyx oryzivorus*. Condor, 79(1):113-118, 1977.

- BOERNKE, WILLIAM E. A comparison of arginase maximum velocities from several poikilotherms and homeotherms. *Comp. Biochem. Physiol.*, 36B:113-116. 1977.
- CHRISTIANSON, LEE. Winter movements of *Peromyscus* across a lake in northern Minnesota. *J. of Mammalogy*, 58(2):244. 1977.
- MCINTYRE, JUDY. The common loon: part II. *Loon*, 49(2):96-97. 1977.
- MCINTYRE, JUDY and J. MATHISEN. Artificial islands as nest sites for common loons. *J. Wildl. Manage.*, 41(2):317-319. 1977.
- PARMELEE, DAVID F. Annotated checklist of the birds of Itasca State Park and surrounding areas. *Loon*, 49(2):81-95. 1977.
- RAPPOLE, JOHN H., DWAIN W. WARNER and MARIO RAMOS O. Territoriality and population structure in a small passerine community. *Amer. Midl. Nat.*, 97(1):110-119. 1977.
- WRIGHT, H. E., JR. Quaternary vegetation history—some comparisons between Europe and America. *In Ann. Rev. Earth Planet. Sci.*, 5:123-158. 1977.
- HALL, R. J., L. BERNER and E. F. COOK. Observations on the biology of *Tricorythodes atratus* McDunnough (Ephemeroptera: tricorythidae). *Proc. Ent. Soc. Wash.* (75:34-49. 1977).
- STASIAK, RICHARD H. Morphology and variation in the Finescale Dace, *Chrosomus neogaeus*. *Copeia*, 4:771-774. 1977.
- WINTER, JIMMY D. Summer home range movements and habitat use by four largemouth bass in Mary Lake, Minnesota. *Trans. Amer. Fisheries Soc.*, 106(4):323-330. 1977.
- BOWERS, FRANK D. and JAMES PECK. The bryophyte flora of Fremont County, Iowa. *Iowa Bird Life* 48:18-20. 1978.
- BOWERS, FRANK D. and JAMES PECK. Additions to the bryoflora of Fremont County, Iowa. *The Bryologist* 81:440. 1978.
- GILBERTSON, DONALD E., OLAKUNLE O. KASSIM and JERRY L. STUMPF. Studies on the biology of *Bulinnea megasoma* (say) (*Gastropoda: pulmonata*). *J. Moll. Stud.*, 44:145-150. 1978.
- MCINTYRE, JUDITH W. The common loon: part III. *Loon*, Spring, 1978.
- STASIAK, RICHARD H. Reproduction, age, and growth of the finescale dace, *Chrosomus neogaeus*, in Minnesota. *Trans. Am. Fish. Soc.*, 107(5):720-723. 1978.
- WHITESIDE, M. C., J. B. WILLIAMS and C. P. WHITE. Seasonal abundance and pattern of Chydoridae (cladocera) in mud and vegetative habitats. *Ecology*, 59:1177-1188. 1978.
- WILLIAMS, J. B. and M. C. WHITESIDE. Population regulation of the Chydoridae in Lake Itasca, Minnesota. *Verh. Internat. Verein. Limnol.*, 20:2484-2489. 1978.
- AXELROD, MIRIAM. Observations on a boreal chickadee nest. *Loon*, 51(3):135-140. 1979.
- BOVEE, EUGENE C. Protozoa from acid-bog mosses and forest mosses of the Lake Itasca region. *University of Kansas Science Bulletin*, 51(21):615-629. 1979.
- BOWERS, FRANK D. and SALLY FRECKMANN. Atlas of Wisconsin bryophytes. A Museum of Natural History Report—Univ. of Wisconsin-Stevens Point. 16 (1&2):1-135. 1979.
- COLE, MARIETTE, FRANK D. BOWERS and SALLY FRECKMANN. Bryophytes of the Kickapoo River Valley, Southwestern Wisconsin. *The Bryologist* 82:273-276. 1979.
- HEINRICH, BERND. Resource heterogeneity and patterns of movement in foraging bumblebees. *Oecologia (Berl.)*, 40:235-245. 1979.
- HEINRICH, BERND. Foraging strategies of caterpillars: leaf damage and possible predator avoidance strategies. *Oecologia (Berl.)*, 42:325-327. 1979.
- PALM, M. E., E. L. STEWART and E. F. HASKINS. Lake Itasca State Park. Myxomycetes: an annotated checklist. *J. Minn. Acad. Sci.*, 45(1):24-26. May 1979.
- STEWART, ELWIN L. and RUSSELL K. HEBLACK. Hypogeous fungi of Minnesota: *Genea anthracina* sp. nov. *Mycotaxon*, 9:451-458. 1979.
- HALL, RONALD J., THOMAS F. WATTERS and EDWIN F. COOK. The role of drift dispersal in production ecology of a stream mayfly. *Ecology*, 61(1):37-43. 1980.
- HEINRICH, BERND and F. DANIEL VOGT. Aggregation and foraging behavior in whirligig beetles (*Gyrinidae*). *Behav. Ecol. Sociobiol.*, 7:179-186. 1980.
- PARMELEE, DAVID F. Itasca Birds. *Loon* 52(2):51-58. 1980.
- COLEMAN, R. W. and S. L. WELSH. Plants from northern Manitoba, Canada, and their substrates. Abstracts of papers, 93rd Session, Iowa Academy of Science, pp. 56. 1981.
- GLASER, PAUL H., GERALD A. WHEELER, EVILLE GORHAM and HERBERT E. WRIGHT, JR. The patterned mires of the Red Lake peatland, northern Minnesota: vegetation water chemistry and landforms. *J. of Ecology*, 69:575-599. 1981.
- HAMAS, MICHAEL J. Thermoregulatory development in the belted kingfisher. *Comp. Biochem. Physiol.*, 69A:149-152. 1981.
- PARMELEE, D. F. Bird nests at Itasca State Park. *Minnesota Volunteer*, 44(255):22-31. 1981.
- TIMM, ROBERT M. and RICHARD E. LEE, JR. Do botflies, *Cuterebra* (Diptera: Cuterebridae), emasculate their hosts? *J. Med. Entomol.*, 18(4):333-336. 1981.
- WUJEK, DANIEL E., MICHAEL M. WEIS and ROBERT A. ANDERSEN. Scaled chrysophycae from Lake Itasca region (*I. mallomonas*). *Minn. Acad. Sci.*, 47(1): 1981.

OCCASIONAL PAPERS

Field Biology Program occasional paper number one is *History of the Lake Itasca Biology Sessions* by A. C. Hodson (University of Minnesota, 1979). Dr. Hodson is a University of Minnesota emeritus professor and former head of the Department of Entomology, Fisheries, and Wildlife. Individuals or parties interested in obtaining complimentary copies should write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Graduate Student Theses

- BOERNKE, WILLIAM E. Adaptations of the amphibian ornithine-urea cycle enzyme, arginase. Ph.D. Thesis. 1972.
- BURGER, JOANNA. Breeding adaptations of Franklin's gull (*Larus pipixcan*) to a marsh habitat. Ph.D. Thesis. 1972.
- KNUDSON, MERLE L. Functional analysis of song in the spotted sandpiper, *Actitis macularia* (L.). M.S. Thesis, University of North Dakota. 1972.
- STASIAK, RICHARD H. The morphology and life history of the finescale dace, *Pfrille neogaea*, in Itasca State Park, Minnesota. Ph.D. Thesis. 1972.
- SWAIN, PATRICIA C. An analysis of morphological differences among oaks in selected Minnesota stands of the *Quercus borealis-Q. ellipsoidalis*. M.S. Thesis. 1972.
- BAKER, ALAN L. Microstratification of phytoplankton in selected Minnesota lakes. Ph.D. Thesis. 1973.
- BAKKO, EUGENE. Comparative study of water balance of four sciurid rodents. Ph.D. Thesis. 1973.
- KLEMER, ANDREW R. Factors affecting the vertical distribution of a blue-green alga. Ph.D. Thesis. 1973.
- COINER, SUSAN T. Some aspects of the behavior and physiology of the chipmunk, *Tamias striatus*. M.S. Thesis. 1974.
- PIVORUN, EDWARD B. Studies on thermoregulation and metabolism of hibernating chipmunks. Ph.D. Thesis. 1974.
- HALL, RONALD J. Life history, drift, and production rate of the steam mayfly (*Tricorythodes athratus* McDunnough) in the headwaters of the Mississippi River. Ph.D. Thesis. 1975.
- HAMAS, MICHAEL J. Ecological and physiological adaptations for breeding in the belted kingfisher (*Mega-ceryle alcyon*). Ph.D. Thesis. 1975.
- MCINTYRE, JUDITH W. The breeding biology and behavior of the common loon in relation to man-altered environments. Ph.D. Thesis. 1975.
- WHITE, C. P. The Chydorid (cladocera) communities associated with the mud habitats of Lake Itasca, Minnesota. M.S. Thesis, University of Tennessee. 1975.
- AASENG, NORMAN EDWARD. The history, nature, and extent of the major logging operations in Itasca State Park (1901-1919). M.S. Thesis. 1976.
- BAKER, KATHLEEN KROMER. Taxonomy and ecology of *Aphanizomenon* in five Minnesota lakes. Ph.D. Thesis. 1976.
- RUBBELKE, DONALD L. Distribution and relative abundance of potential prey of spotted sandpipers (*Actitis macularia* L.) on Little Pelican Island, Leech Lake, Cass County, Minnesota. M.S. Thesis, University of North Dakota. 1976.
- WARNER, GLORIA M. Seasonal, habitat, and survival studies of viable fungi carried by migratory birds. Ph.D. Thesis. 1976.
- WINTER, J. D. Movements and behavior of largemouth bass (*Micropterus salmoides*) and steelhead (*Salmo gairdneri*) determined by radio telemetry. Ph.D. Thesis. 1976.
- COINER, SUSAN T. A comparison of seasonal patterns in epithelial sodium transport among three species of ranid frogs from different habitats. Ph.D. Thesis. 1977.
- DOOLITTLE, W. L. Qualitative differences in lake biota due to fish predation. M.S. Thesis, University of Tennessee. 1977.
- PEZALLA, VIRGINIA A. MOYLE. The behavioral ecology of a dragonfly, *Libellula pulchella*. Ph.D. Thesis. 1977.
- PITTINGER, C. A. A comparative analysis of littoral and limnetic microcrustacean communities of Lake Itasca, Minnesota. M.S. Thesis, University of Tennessee. 1978.
- WILLIAMS, J. B. Seasonal abundance, pattern, and some population parameters of the Chydoridae in Lake Itasca, Minnesota. Ph.D. Thesis, University of Tennessee. 1978.

Condensed Course Schedule¹

I TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5801	Bot 5811	EBB 5812	Bot 5801	Bot 5811	EBB 5812
Ent 5020	EBB 5834	Soil 5532	Ent 5020	EBB 5834	Soil 5532

EBB 3800 and 5815 (10-credit courses) to be arranged

II TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5805	Bot 5821	EBB 5812	Bot 5805	Bot 5821	EBB 5812
PIPa 5102	EBB 5814	EBB 5817	PIPa 5102	EBB 5814	EBB 5817
	FW 5456			FW 5456	

EBB 8800 (10-credit course) to be arranged

¹Schedule only one course per day.

Request for Reservation—ITASCA BIOLOGY SESSION

Name _____ Date _____
(Please Print)

Current Address _____

City _____ State _____ Zip _____

Permanent Address _____

City _____ State _____ Zip _____

Telephone: Office _____ Home _____

Present Status: Grad, Adult Special, Freshman, Sophomore, Junior, Senior, Independent Investigator

Status by Summer 1982: _____

University or College Now Attending: _____

If U of M, College in Which Last Enrolled _____ Year _____

TERM I

TERM II

Dept. _____ No. _____ Dept. _____ No. _____

Dept. _____ No. _____ Dept. _____ No. _____

(See condensed course schedule to avoid conflicts)

I wish a reservation in a:

STUDENT CABIN _____ CAMPGROUND SITE _____ RESORT _____ (check one)

Enclosed find a \$40 or \$80 deposit (check or money order payable to the University of Minnesota) to be credited to the tuition fee upon completion of registration. A letter of evaluation from my adviser or supervisor (recommended); the Summer Information Sheet, and a recent transcript of my academic record, including a listing of all courses being taken at present (mandatory), are enclosed or will be sent directly (circle one).

IMPORTANT: Applications will not be reviewed until all items listed above are received. Please mail this form to: Chairman, Field Biology Program / 349 Bell Museum of Natural History / 10 Church Street S.E. / University of Minnesota / Minneapolis, Minnesota 55455

SUMMER INFORMATION SHEET

Office of Admissions and Records

Name (Last, first, middle, maiden) (Please Print) U of M ID Number

Permanent Home Address (Number, city, county, state)

Summer Term: I ___ II ___ Male ___ Female ___
Date of Birth (Month, day, year)

Have you ever been registered in University of Minnesota day classes, including summer? Yes ___ No ___
When ___ Last College ___

Have you applied for admission or have you been admitted to the University of Minnesota? Yes ___ No ___
If yes, what college? ___

College of University of Minnesota in which you are now registering? _____

Social Security Number _____
Current Mailing Address (Number, city, state, zip) _____

Telephone Number _____

Mail to: Chairman/Field Biology Program/349 Bell Museum/10 Church Street S.E./University of Minnesota/Minneapolis, MN 55455

Note: This Summer Information Sheet must accompany your Request for Reservation.

Equal Opportunity

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap. In adhering to this policy, the University abides by the requirements of Title IX of the Education Amendments of 1972, by Sections 503 and 504 of the Rehabilitation Act of 1973, and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Lillian H. Williams, Director, Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 100 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, (612) 373-7969, or to the Director of the Office of Civil Rights, Department of Education, Washington, D.C. 20202, or to the Director of the Office of Federal Contract Compliance Programs, Department of Labor, Washington, D.C. 20210.

Access to Student Educational Records

In accordance with regents' policy on access to student records, information about a student generally may not be released to a third party without the student's permission. The policy also permits students to review their educational records and to challenge the contents of those records.

Some student information—name, address, telephone number, dates of attendance, college and class, major, adviser, and degrees earned—is considered public or directory information. To prevent release of such information outside the University while in attendance at the University, a student must notify the records office on his or her campus.

Students are notified annually of their right to review their educational records. The regents' policy, including a directory of student records, is available for review at the information booth in Williamson Hall, Twin Cities campus/Minneapolis, and at records offices on other campuses of the University. Questions may be directed to the Office of the Coordinator of Student Support Services, 260E Williamson Hall, (612) 373-2106.

