



University
of
Minnesota
Bulletin



Summer
Session
1983



UNIVERSITY OF MINNESOTA

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UNIVERSITY OF MINNESOTA

Summer Session 1983



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 16	Graduate School application deadline for first term admission.
May 26, 27, 31- June 1, 2	Advance registration for first term, 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 3, 6-10, 13	Summer-only day school students and new students may register at this time only. See section on "Admission" for details. (Summer-only students in the College of Liberal Arts may register on June 3, 6-8, 13 <i>only</i> .) Open registration for other students as well.
June 7	Last day to pay graduation fees for first term.
June 14	FIRST TERM CLASSES BEGIN. <i>Note:</i> First Term classes begin on a Tuesday.
June 15	Graduate School application deadline for second term admission.
June 17	Thesis registration deadline for graduate students.
July 4	Holiday.
July 11-13	Advance registration for second term, 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.
July 14, 15, 18	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.
July 15	Last day of class for first term. Last day to pay graduation fee for second term. Final Oral Exam Report and all other forms due (graduate students only).
July 18	SECOND TERM CLASSES BEGIN. <i>Note:</i> Second term classes begin on a Monday.
July 29	Two bound copies of master's or doctoral thesis due.
August 19	Last day of class for second term.

LATE FEES, DUE DATES

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 18 (second term) without payment of the late registration fee, as follows:

June 15-20 or July 19-22	\$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 15	5 workdays after registration
June 14-16 or July 18-20	June 20 or July 22
Thereafter	1 workday after registration

Table of Contents

A Guide to the Summer Session Bulletin	4
Admission and Registration	
Admission	7
Registration, Tuition, Fees	12
University Services, Cultural and Recreational Opportunities	
Services	21
Cultural and Recreational Opportunities	30
Special Programs and Workshops	
College of Education	34
College of Liberal Arts	39
School of Management	42
Department of Military Science	42
School of Public Health	42
Institute of Technology	43
Committee on Institutional Cooperation	43
Summer Arts Study Center	44
Course Descriptions	53
Maps and Building Abbreviations	237, 238
Index	241
Course Enrollment Request Form	245
Summer-Only Application Form	247

Bulletin Use

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

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, MN 55455, (612 373-7969) or the Director of the Office of Civil Rights, Department of Education, Washington, DC 20202, or to the Director of the Office of Federal Contract Compliance Programs, Department of Labor, Washington, DC 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 enrollment and enrollment termination, 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, that 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, 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 required (or allowed) in the course listed after the paragraph mark.
- # Permission to Register form, completed and signed by the instructor, is required prior to registration.
- △ Permission to Register form, completed and signed by the division, department, or school offering the 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. The following breakdown may vary slightly by college: freshman, 0-45 credits; sophomore, 46-90 credits; junior, 91-135 credits; senior, 136 or more credits. Check with your college office for further information.

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. Check the Section Status Report (posted outside of 101 Fraser Hall, 18 Johnston Hall, 4 Mechanical Engineering, 170 Anderson Hall, and 130 Coffey Hall) to see if space is available in your limited enrollment courses.

Call Number—This six-digit number follows the title or section number for each course. You must use the course numbers and *these specific call numbers* when you fill out your Course Enrollment Request form.

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 14 EXCEPT where a Monday starting date is specified, and second term classes on MONDAY, JULY 18.

All students not regularly enrolled spring quarter 1983 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 to 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 1983.
- 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 an application (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 \$15 application 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 are generally not considered for admission during the summer session to degree programs of many colleges and schools of the University of Minnesota (excepting St. Paul-based colleges). If you plan to enter a degree program, you should apply for fall quarter admission and register for one or both summer terms under summer-only status. Likewise, University of Minnesota students wishing to change their college of enrollment (e.g., from CLA to Education) generally are not considered for admission to the new college (excepting St. Paul-based colleges) during the summer session. For both groups of students, 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 \$15 application 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 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 15 for first term courses and on July 19 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. Call 376-1680 for more information.

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 application (credentials examination) fee, and test results if required—by May 16, 1983 for first term admission and June 15, 1983 for second term admission.

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

Requirements for Graduate Degrees

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

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 application fee or supporting materials are required for the transient student forms. Permission to register as a transient student

Admission and Registration

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.

Graduate Student Registration New Students

- If you are registering for the first time in the Graduate School, obtain your registration materials in 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 Hall for explanation and instructions for clearing.
DOCT CAND	Come to 316 Johnston Hall for explanation and instructions for clearing.
- Read pages 12-13.
- Have your adviser sign your Course Enrollment Request form.
- 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 page 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, Ed.D., and Ph.D. students *must* register a typed draft of the thesis (or project) with the Graduate School approximately one month before the examination. June 17

Final Examination Report and all other forms and fees submitted.* July 15

Bound thesis or project (2 copies) submitted to Graduate School (Plan A Master's, Master of Engineering, Ed.D., and Ph.D.). July 29

Degree Award Date August 19

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 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 deadlines, 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 recommendation of the adviser and the Director of Graduate Studies and for referral to the Graduate School. Approval by the Graduate School confirms the student's admission to candidacy for the degree.

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 1983 may be asked to show their United States Social Security number.

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, 307 Johnston Hall 373-5542

(Students registered in the Graduate School 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: 16 Johnston Hall (373-2877)

School of Management, 225 Management/Economics (West Bank) 373-3701

Medical Technology, 15-170 Phillips-Wangensteen Building 373-9670

Medicine, 3-105 Owre Hall 373-7690

Military Science, 108 Armory Building

Mortuary Science, 400 Botany 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, 460 Veterinary Teaching Hospitals (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 7.

Currently or Previously Enrolled University of Minnesota Twin Cities Campus Students. First term registration dates are May 26, 27, 31-June 1-3, 6-10, 13. Second term registration dates are July 11-15, 18. All continuing students are encouraged to use the *Summer Session Class Schedule* for complete registration instructions and forms.

1. College of Liberal Arts students see the *Summer Session Class Schedule* for complete registration instructions.
Graduate School students see page 9 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 a Course Enrollment Request form (printed in the *Summer Session Class Schedule* and at the back 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 Course Enrollment Request form and any required Permission to Register forms 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 for St. Paul-based students. The Registration Centers are open 8:15 to 4:15, Monday through Friday.
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 the due date(s) printed on your fee statement(s).
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 3, 6-10, 13. (Summer-only students in the College of Liberal Arts may register on June 3, 6-8, 13 only.)
Second term Registration Dates Are July 14, 15, 18.**

1. Complete the Summer-Only Application form (found at the back of this bulletin) and submit it to the office of the college offering the instruction. College offices are listed on page 12. Complete your Course Enrollment Request form (also found at the back of this bulletin) using the information found in the Course Descriptions section.
2. Obtain approval of your study program and your Summer-Only application at the college office (departmental office in I.T.).
3. Obtain any approved and signed Permission to Register forms required for admittance to courses where Δ or # appears in the prerequisite statement or for limited courses that have closed.
4. Turn in your completed and approved Course Enrollment Request form and Summer-Only Application form 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, Monday through Friday.
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 the due date(s) printed on your fee statement(s).
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.

HEALTH CLEARANCE

If you are not a citizen of the United States and if you are registering for the first time at the University of Minnesota, you will be required to present proof of health clearance when you register. This health clearance is obtained at Boynton Health Service, 410 Church Street, Minneapolis, and most often requires *two* visits—the first visit for a skin test for tuberculosis and the second, 48 hours later, for evaluation of the test. If your test results are positive, you will be required to have a chest x-ray. To avoid delay, begin your health clearance at least several days before you wish to register. **Note:** if you have been tested elsewhere during the past year and can bring proof of test results to Boynton Health Service, you will not need to repeat the test.

COLLEGE OF EDUCATION STUDENTS

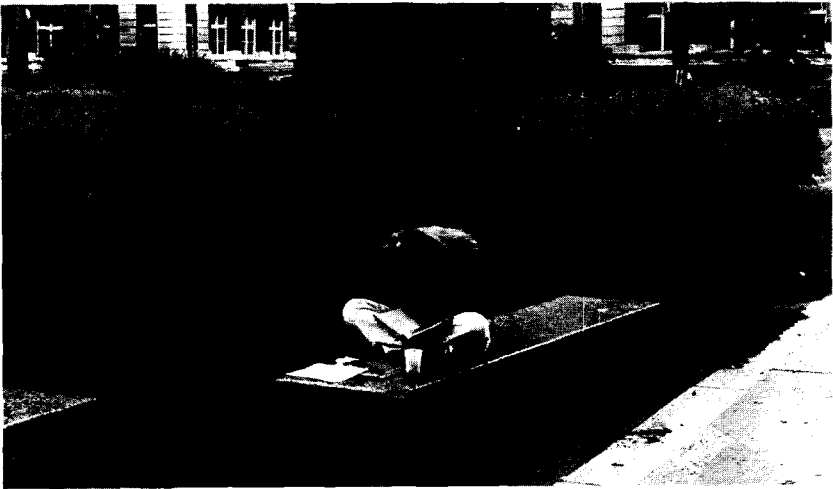
Mail Registration—Students registering in the College of Education (B.S., M.Ed., adult special, or summer-only) may register by mail. Registration materials can be obtained by completing the request form found at the back of this bulletin and sending it to the Summer Session office. (*Note:* This does 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 Course Enrollment Request form; simple failure to attend class does not, by itself, constitute cancellation. Course cancellations are generally allowed without written permission and without a transcript record during the first five days of the term. **Effective summer 1983, cancellation of a course after the fifth day of the term, for 5-week courses, will result in a W on the student's record. (10-week courses may be cancelled without transcript record through the tenth day of the term.)** Many colleges also require special approval for cancellations after the end of the first 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

TUITION

Per term; per credit

Students registering in

Lower Division—any college (90 or fewer undergraduate credits completed) [†]	\$30.75
Upper Division (91 or more undergraduate credits completed); Graduate, Professional Schools [‡]	
Agriculture, College of	34.25
Biological Sciences, College of	36.75
Dental Hygiene, Program in	31.00
Education, College of	35.50
Forestry, College of	36.25
General College	31.00
Graduate School	53.00
Home Economics, College of	34.75
Law School	79.50
Liberal Arts, College of	31.00
Management, School of	34.00
Medical Technology, Division of	40.50
Mortuary Science, Department of	44.50
Nurse Anesthetist (Medical School program).....	40.50
Public Health, School of	42.25
Technology, Institute of	35.75
University College	31.00

[†] **Exceptions**—Tuition for summer only students is chargeable at the resident upper division rate.

Tuition, both resident and non-resident, 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.

STUDENT SERVICES FEE²

Per term; not included in tuition

\$37.52

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.

Due Dates—Each fee statement has its own due date. Later fee statements do not extend the due date(s) on earlier fee statements. A \$20 late payment fee can be charged for any fee statement that is paid after the due date printed on it. **There is no installment payment plan for tuition during the summer session.**

Summer Financial Aid

Students whose financial aid file is complete, accurate, and in the Office of Student Financial Aid by April 22, 1983, and who will be attending summer session for at least 6 credits over both 1983 terms may be eligible for summer aid. Students who wish to be

¹ Tuition in the summer session reflects that of the preceding academic year. Tuition and fees are subject to change without notice.

² All students registering for three credits or more must pay this fee. Students who register for 3 or more credits in a course of 7- to 10-week length will be assessed the student services fee for **both** terms.

Admission and Registration

considered for summer aid must complete a separate summer aid application available in the Office of Student Financial Aid after April 1, 1983. This summer application must be completed and returned to the Office of Student Financial Aid by May 2, 1983.

Summer aid to students will be based on a student's calculated financial need and availability of funds. It is anticipated that a limited amount of College Work Study funds may be available. Students who will be graduating prior to June, 1984 may be eligible for a portion of their Pell Grant. Guaranteed Student Loans and non-College Work Study employment may also be available to summer session students.

For further information, write the Office of Student Financial Aid, 210 Fraser Hall, 106 Pleasant St. S.E., Minneapolis, MN 55455 or 199 Coffey Hall, 1420 Eckles Ave., St. Paul, MN 55108. Students may also call (612) 376-2424 in Minneapolis or (612) 376-2572 in St. Paul.

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)—\$20.00; Second Term including interim, (9-week coverage)—\$31.50; Total for both terms (14-week coverage)—\$51.50. 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), or have an insurance plan whose coverage duplicates the outpatient services of Boynton Health Service, may apply for a partial exemption from the Health Service portion of the student services fee in the amount of \$11.38 per 5-week term. Students who receive an exemption for this portion of the fee waive all prepaid outpatient benefits offered by the Boynton Health Service. To qualify for an exemption, proof of coverage must be presented to the cashier in Room W220 of the Health Service preferably before registration but no later than the end of the first week of the applicable term.

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.

A fee of 85¢ per term is charged to support MPIRG programs and operations. A student may decline to pay the fee prior to registration by initialing the MPIRG section of the Course Enrollment Request form or may obtain a refund at a location and date that will be announced in the University student 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:

ECOLOGY AND BEHAVIORAL BIOLOGY

EBB 5014, 5016, 5132, 5134 (Transportation Fee)—\$15

ENGLISH COMPOSITION

Comp 0011—\$85.00¹

FORESTRY

ForP 3300 (Wood Industries Tour)—\$50

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—\$20 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 week²

MATHEMATICS

Math 0005, 0006, 0007, 0009—\$85.00¹

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.

PUBLIC HEALTH

PubH 5755 (Administrative Residency)—\$200

SOIL SCIENCE

Soil 3520, 5510—\$15

Soil 5565—\$25

STUDIO ARTS³

ArtS 1101, 1102, 1104, 1105—\$10

ArtS 1701, 1702, 3110, 3120, 3160, 3710, 3720, 5710, 5740, 5790—\$15

ArtS 3430, 5110, 5120, 5160, 5190, 5430—\$20

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

ArtS 1301, 1302, 3301, 3302, 3304, 3305, 3810, 5310, 5320, 5340, 5350, 5390—\$40

ArtS 5810—\$45

ArtS 3303, 5330—\$50

ArtS 3821, 3822, 3823, 5820—\$65

ArtS 3830, 3970, 3980, 5970, 8000-level courses—Arranged

¹In lieu of tuition.

²In lieu of tuition. Researchers must also pay the \$8.50 laboratory fee.

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

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, \$.9 per one or both summer terms
Gym Clothing Rental Fee—\$10

Norris Hall, St. Paul Gymnasium

Locker and Towel Fee—\$.9

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

Application (Credentials Examination) Fee—\$.15
International Student Aid Fee—\$.2 per term (required of all non-immigrant students who have temporary visa status)
Graduation Fee (each degree)—\$.15 for small diploma; \$.22.50 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)
Credit by 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—\$.12 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. Chemistry cards are \$20; pharmacy cards are \$10; 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:

Length of Term	80 Percent Refund for Attendance	60 Percent Refund for Attendance	No Refund for Attendance of More Than
10 weeks	during 1st & 2nd weeks	during 3rd & 4th weeks	4 weeks
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

Note: For first term, the first week of classes ends on Monday, June 20.

AUDITORS

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 V (for "visitor") should be indicated on the Course Enrollment Request form in the credits column. Courses in which the student registers as an auditor count in the determination of the credit total for the student services fee. Tuition and course fees are the same as for students registered for credit.

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. In general, grading options may not be changed after the first week of classes for 5-week courses or after the second week of classes for 10-week courses. Policies may vary by college; students should check with their college office for complete information. **Note:** For first term, the first week of classes ends on Monday, June 20.

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)—\$15 for small diploma; \$22.50 for large diploma.

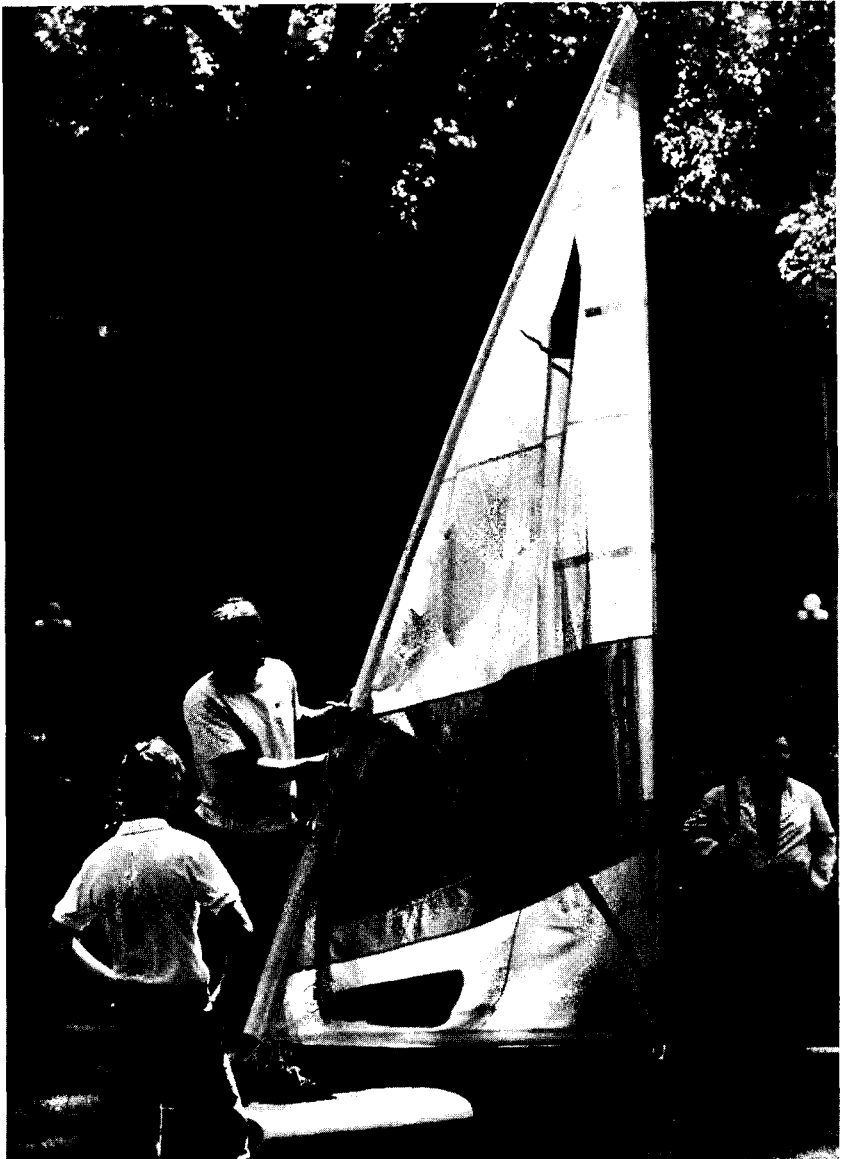
Attendance at commencement is optional. There is no commencement during the summer; students planning to graduate during the summer may attend commencement in June or December.

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 1983. 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. All 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 1983. 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. The St. Paul office is open from June 1 through September 30.

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.

STUDENT EMPLOYMENT OFFICE

The Student Employment Programs Office, of the Office of Student Financial Aid, (Room 120, Fraser 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 registered for a minimum number of credits for either spring quarter or the summer session. More information on minimum credits is available from the Student Employment Office.

The Student Employment Office is a referral service, not a placement service. Students apply in person for vacancies posted on the Student Employment 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. Student Employment does not handle graduate academic positions.

This office 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 (SES), 373-4403.

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 in the following locations: Coffman Union, West Bank Union, Williamson Hall, the St. Paul Student Center, the Housing Office in Comstock Hall, and the Transit Services Office at 2818 Como Ave S.E., Minneapolis, MN 55414 (373-0374).

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), is also available at the above locations, or from the Metropolitan Transit Commission, 827-7733.

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

Intercampus Bus: Mpls-St Paul Campus—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." (Note: There is a 10c charge to board or exit intercampus buses at Blegen Hall on the West Bank.)

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). All other buses travel via Como Avenue.

Bus schedules are subject to change; call the Transit Services Office at 373-0374 for current information. Current schedules and route maps are available at the information centers listed above and are also 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.** (There is a 10¢ fare at the West Bank stop.)
- Route 13-B: Travels from Blegen Hall on the West Bank to Jones-Eddy Hall on the East Bank (and vice versa). (There is a 10¢ fare at the West Bank stop.)
- 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. (Exception: There is a 10¢ fare to board or exit campus buses at Blegen Hall on the West Bank). 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 \$11, can be purchased at any University bursar or cashier office. A 15¢ rush-hour surcharge is required from 6:00 a.m. to 9:00 a.m. and 3:30 p.m. to 6:30 p.m., Monday through Friday but is not required when using the discount cards described above. (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

Bus service is also 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. A 10¢ cash fare is required to board or exit campus buses at the Blegen Hall stop on the West Bank.

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 30¢ fare (60¢ 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 (25¢ per ride—a 17% discount) 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. Most 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) or has an insurance plan whose coverage duplicates the outpatient services of Boynton Health Service may apply for a partial exemption from the Health Service portion of the student services fee in the amount of \$11.38 per 5-week term. Proof of HMO membership or equivalent insurance coverage must be presented to the cashier in room W220 of the Health Service preferably before registering for classes but no later than the end of the first week of the applicable summer term.

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.

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 (373-7771), is physically separate but affiliated with the Bio-Medical Library.

Institute of Technology Libraries (373-5585) includes the following six 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); 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 Arboretum 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); 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 (373-5581); Eric Sevareid Library (Journalism), 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); Reserve/Periodicals Unit, 65 Wilson (373-3840, 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.

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, exhibits, and cultural programs and a series of over 70 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, reading, and playing table games; a common room in Blegen Hall for study, conversation, and playing chess; and the service centers in the Social Sciences Building and the WBU Skyway, offering program information, locker rentals, and general assistance.

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.

The Gallery Theatre, emphasizing contemporary scripts and student participation, presents mixed-media and experimental theatre works in the Katherine E. Nash Gallery. The theatre's principal aim is to integrate the performing and visual arts.

Minnesota Forum/Public Affairs is dedicated to the enhancement of campus intellectual life; the encouragement of out-of-classroom association among faculty, students, and staff; and the provision of a variety of programs that span across humanistic and scientific disciplines and address issues, ideas, and opinions of public concerns.

West Bank Music Productions offer the University community a variety of leisure-time programming aimed at presenting fine local and regional talent, Gallery recitals, and evening concerts. Students are involved in every aspect of program planning and implementation and have the opportunity to learn some of the skills and acquire some of the knowledge necessary to arts and entertainment management.

Third Century Poetry and Prose involves the best American writers of poetry and fiction with University community and Twin Cities writers. The series aims to coordinate readings by local, regional, and national writers while providing a unique opportunity for students and previously unrecognized writers to share their art with a wide and sympathetic audience.

West Bank Bijou Films offer the University community the opportunity to view classic and historically significant films by a variety of directors in many different genres. The Bijou offers exposure to the film medium and its development through attendance at film programs and participation in all phases of film selection, booking, and promotion.

Katherine E. Nash Gallery offers members of the University community, as well as the community at large, the opportunity to exhibit, experience, and appreciate contemporary visual art and to become involved in and learn about the operations and management of an educational gallery of contemporary art.

College Bowl, the "varsity sport of the mind," offers the opportunity for University students to participate in an exciting, challenging, entertaining "sport." Intramural and varsity competition are open to University students. The program is coordinated and planned by WBU students and staff.

St. Paul Student Center

The air-conditioned St. Paul Student Center is open during the 1983 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.

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 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 features 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 are invited to use the Student Center's meeting rooms; for reservations and information call 373-1046. Bowling, billiards, and video games are available in the Games Room, which is open from 11:30 a.m. to 10:00 p.m. The Student Center contains 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.

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

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. The Golf Course telephone number is 373-1645. The telephone number for the Fourth Street Tennis Courts is 373-4212.

CONCERTS AND LECTURES

Through the Department of Concerts and Lectures, the Summer Session provides a variety of free entertainment. The summer program features lectures, blues, jazz, folk, symphonic, modern, and chamber music and 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 and related interdisciplinary events.

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, employees, and registered students. Call 373-5685 for rental information.

Gallery hours are 11 a.m. to 4 p.m. Monday, Tuesday, Wednesday, Friday; 11 a.m. to 8 p.m. 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.

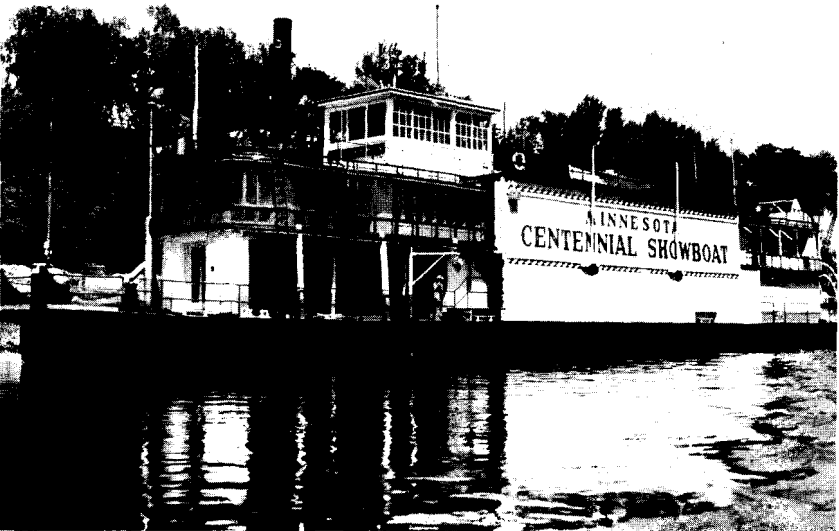
Special educational programs are scheduled throughout the year for visitors of all ages and interests.

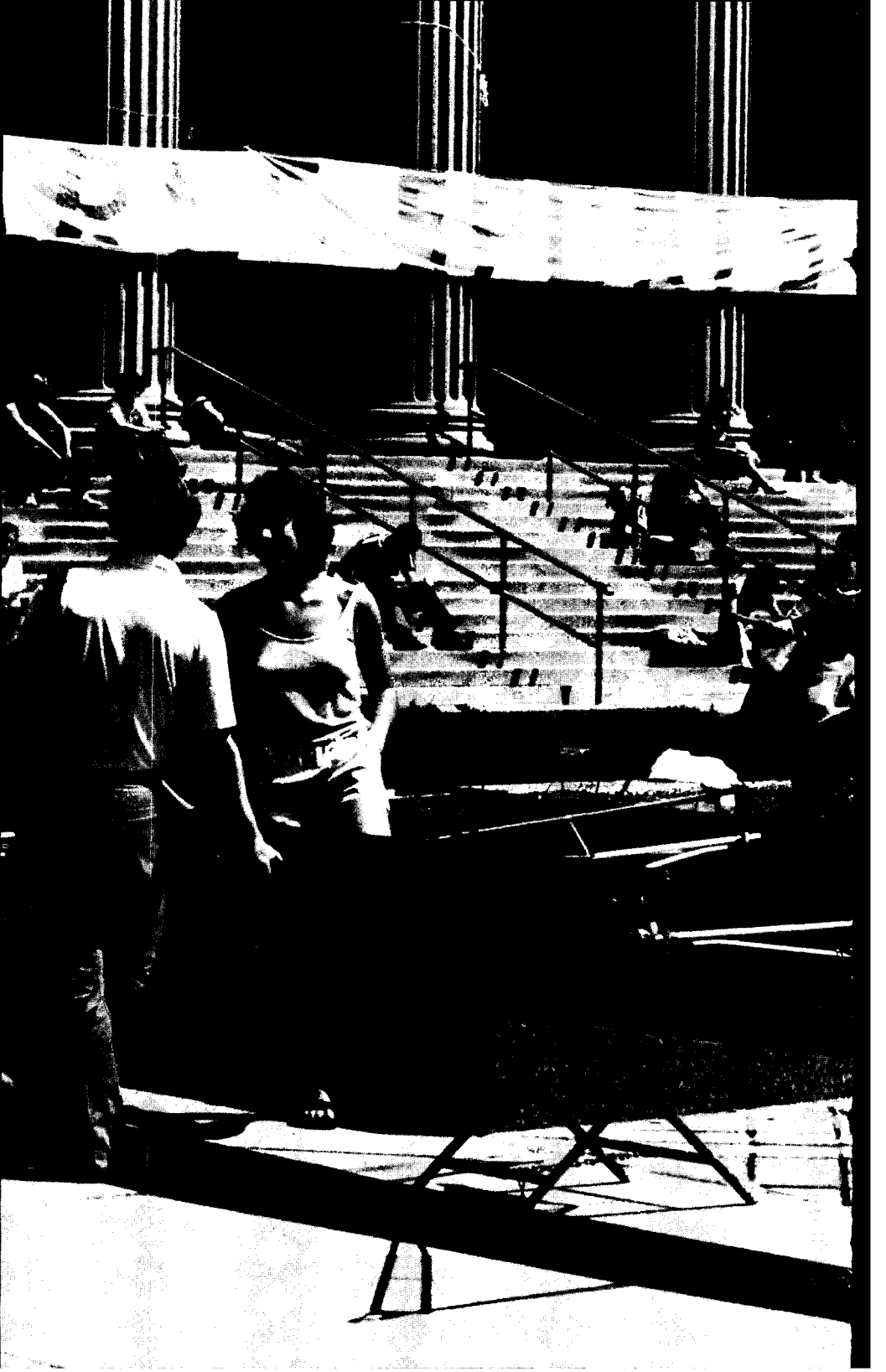
Located at 17th and University Avenues S.E. on the Minneapolis campus, the museum offers free admission and is open from 9 a.m. to 5 p.m. Tuesday through Saturday, and from 1 to 5 p.m. on Sundays. All exhibit areas of the museum are accessible to the handicapped. Call 373-2423 for tour reservations and 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 1983 play recalling the traditional Showboat style with light entertainment spiced with song and dance. 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 27* 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, 130 Peik Hall, 159 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 15, to Friday, July 15. 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 \$120 for the summer term. Parents are responsible for transporting their children to and from the school.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

The fourth annual Chase Lecture, with an emphasis on Creative Writing For and By Children, will be presented on Tuesday, June 21, at 3:30 P.M. 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 and reading." This year's guest lecturer is Tomie de Paola, distinguished artist and writer whose work has been acclaimed nationally and internationally.

Distinguished guests who will be lecturers for the creative writing course (Elem 5318) are Tomie de Paola, Julie Jensen, Emily Crofford and Karen Carlson. Questions about the course or the Chase Lecture may be directed to Department of Curriculum and Instruction, 125 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Art Education

Art Media Techniques—ArEd 5001 is scheduled in three sections 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 printmaking, teaching art appreciation, and art projects for elementary schools. They will meet in blocks of time during first and second summer terms, coordinated for maximum convenience of students.

ArEd 5302—Curriculum innovations, a course for educators interested in art curriculum development, is offered July 18-August 2.

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

Social Studies Education—Womens Studies is the topic of a three-week workshop during first term under SeEd 5153, section 1 which meets concurrently with WoSt 5970. The course attempts to infuse historical material into secondary social studies classes. Curriculum materials on women in the Middle East, China, India, USSR, Africa, and Latin America will be examined. Students will learn strategies and techniques for interdisciplinary teaching.

Teaching About the Newspaper in the Classroom focuses on a series of instructional strategies to be used in classrooms to aid students in developing necessary newspaper reading skills, in section 2 of SeEd 5153. During second term, Using the Computer in the Social Studies Classroom is offered to meet the specific content needs of social studies teachers who use, or will use, computers in their classrooms.

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 or write Robert Jackson (373-2275), 230 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Elementary School Teachers (Primary)—Three modules of 1 credit each are scheduled consecutively during second term which focus on primary astronomy (Elem 5347, section 2), processes of science (MthE 5102, section 3), and geometry (MthE 5102, section 4).

Elementary and Middle School Teachers—Two modules of the mathematics education workshop (MthE 5102) will be offered first term focusing on thematic teaching (section 4), and approaches to fractions (section 2).

Intermediate, Middle and Secondary School Teachers—Six mathematics and science education workshops (SeEd 5394, MthE 5102, and Elem 5347) contain modules emphasizing recreational mathematics, magnetism and electromagnetism, and mathematics anxiety countermeasures during second term. Topical sections offered first term include microcomputers in science, animal behavior, teaching algebra, and probability. Check course descriptions for topic titles and dates.

All levels—During second term, one module in the construction and use of laboratory lessons suitable for teachers of all levels is offered under MthE 5102 (section 3).

In addition to these workshops in this program area are listed several courses which remain popular among summer school students, and which are appropriate as part of master of arts and master of education degree programs. These include current developments in secondary mathematics, teaching mathematics to slow-learning children, microcomputers in the elementary school, and outdoor science education. Check listings for times and dates.

DEPARTMENT OF EDUCATIONAL POLICY AND ADMINISTRATION

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 Policy and Administration, 275 Peik Hall, 159 Pillsbury Drive, S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Special Programs

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 first term seminar. See the Course Descriptions section for registration requirements. Registration in both courses for a total of six credits is mandatory, and advance application is required. Inquiries should be addressed to the Department of Educational Policy and Administration, 275 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Policy Development for School Managers—EdAd 5127, which meets July 18-August 3, is a workshop designed to help management personnel use new microcomputer 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. Requires extensive use of Apple II microcomputer.

School Personnel Management—EdAd 5128, which meets June 14-24, will focus on the processes of bargaining, mediation, and arbitration, through a series of simulated activities. Also in the first term, EdAd 5227, 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.

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.

Higher Education

Course offerings have been selected to be of value to persons with particular interests and responsibilities in Higher Education. These courses may be taken either as Educational Administration (EdAd) or Higher Education (HiEd) courses. Included are Administration in Higher Education (EdAd 8253/HiEd 8255), The Law and Postsecondary Educational Institutions (EdAd/HiEd 5292), and American Higher Education (EdAd/HiEd 5250). Independent study opportunities are also available (EdAd/HiEd 8228).

Social and Philosophical Foundations of Education

This program 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 Educational Policy and Administration. Program information is available from the department office, 275 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota, 55455.

Science Fiction, Education, Society—This special offering will employ selected samples of science fiction print and nonprint sources, especially including critical works, within several analytical frameworks (social science, physical science, education cost-benefit, linguistics, general systems). The aim is to enrich student's conceptual and contextual understandings of past, contemporary, and future hypothetical educational systems, their circumstances, and measures of their productivity. (See SPFE 5099).

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION

Physical Education and Dance

Nicholas Gunn, a visiting artist formerly principal dancer in the Paul Taylor Dance Company and currently a member of the faculty at California State University in Long Beach, will teach two sections of Dnce 5701, one in intermediate and one in advanced modern dance technique. For further information see the Course Description section of this bulletin or contact Professor Nadine Jette, 101 Norris Hall, 172 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-3404.

Workshop: Dance Education—Dnce 5700 will be offered as a concentrated three-week workshop (June 14-30) 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 27 through July 8). Instructor for the course will be Jeffrey Monroe, assistant athletic trainer, University of Minnesota.

Coaching Individual, Dual, or Team Sports: Track and Field—PE 5740 is a six-day, first term (June 20-25), concentrated workshop on coaching track and field. The instructor for the workshop will be Roy Griak, head coach of the University of Minnesota men's track and field team, member of the Olympic staff from 1972-80, head Pan American track and field coach in 1975, presently a member of the Olympic Development Committee, and head manager of the 1984 Olympic Track and Field Team. Both practical and theoretical instruction in the techniques of coaching track and field will be offered. A written assignment and a final examination will be required.

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 13 through 18, will be held in a variety of settings. Some formal classes will be conducted at Cooke Hall on campus June 13, followed by a six-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 \$5 for canoe and equipment rental and transportation plus \$25 for food. The deadline for preregistration and payment of all fees is June 9.

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

Career Counseling Update for the '80s—In the first term section 1 of PsyS 5300 is designed as a three-week workshop (June 15-29) for human service workers, in a variety of settings, to provide a skill and knowledge update on the changing field of career counseling. Role-playing, filmstrips, simulations, readings, and videotapes will be used with presentations as major modes of instruction. A case management paper will be a major assignment, with a final project due within a week after the workshop to allow time for outside research. For information, contact Professor L. Sunny Hansen, 139 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455, or telephone (612) 373-0202.

Designing Career Development Programs—PsyS 5300, section 2 is a workshop designed for social service personnel working in a variety of settings, and is intended for those who have or will have career development training responsibilities and need to acquire skills. A model for designing such programs in education, business and industry, and community agencies forms the core of the instruction. For further information, contact Professor L. Sunny Hansen, 139 Burton Hall, 178 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 5601, sections 2 and 3 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 1982-83. Advance application is required. Requests should be directed to Professor Virginia Walter, 229 Burton Hall, 178 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 13 through July 22, 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, 226 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455. See Course Listing section for registration information.

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 13-24 and July 18-22).

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 13-17), VoEd 5760, Organizational Development in Industry and Business (June 20-24), and VoEd 5780, Internship: Training and Development.

Administration—Vocational administrators and those preparing for administrative roles will be especially interested in three courses listed under VoEd 5102, Special Topics in Administration: Utilizing the Job Partnership Training Act (July 11-15), Available Data Bases for Planning and Managing Vocational Education (July 18-22), and Microcomputer as a Management Tool in Vocational Education (July 25-29).

Microcomputers—VoEd 5100, Special Topics in Instruction focusing on Instructional Design Using Microcomputers will be offered for students with some experience using the Apple II microcomputer. The three-credit course (June 27-July 8) will cover the design and preparation of vocational education instructional materials using BASIC or other authoring languages.

Business and Distributive Education

Business Observation and Seminar—In BDE 5361, offered July 11-15 for three credits, business and distributive education teachers and teacher/coordinators will investigate job opportunities and requirements, job performance standards with implications for curriculum revision, and current training practices.

Program Developments—Two short-terms sections are scheduled: BDE 5360 (June 29-30) will focus on the importance of appropriate psychological concepts in teaching the typewriter/computer keyboard to elementary school students. A section of BDE 5360 in second term (August 1-5) focuses on uses of the microcomputer as a tool in teaching marketing concepts and to assist in classroom and store management activities.

Special Topics—BDE 5370 in first term (July 5-8) focuses on use of marketing research projects as a student organization activity; in second term the course (July 18-22) focuses on the use of the microcomputer in office procedures and the model office. The use of representative microcomputer simulations in the basic business subjects is the focus of BDE 5380, offered June 27-28. Also in second term a section of BDE 5390, scheduled August 1-5, focuses on the use of spread sheet analysis (Visicalc) in business and distributive education classes.

Home Economics Education

Workshop: Contemporary Problems in Home Economics Education—Listed under HEEd 5430 in the class schedule section are a variety of topics, for one, two, three, or four credits in short-term periods of time. The topics are intended to focus on issues of importance to educators in the field: approaches to group leadership; working with adolescents in child development and parenting education; use of the microcomputer as an instructional and management tool; experiential approaches to teaching; and alternative methods of delivering programs which include ways to make advantageous use of computers, television, teleconferences, and self-instructional modules. For further information, call or write the Division of Home Economics Education, 325 Vocational and Technical Building, 1954 Buford Avenue, University of Minnesota, St. Paul, MN 55108 (612) 373-1530.

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.

Workshop: Industrial Education—Ind 5306 registrants in a three-credit section on High Technology in Minnesota (July 18-29) will visit a selected group of industries using advanced technology and will hear guest speakers addressing the topic of the future of industry to identify influences on the nature of work resulting from changing technology. This is especially intended for industrial educators, counselors, and those needing to satisfy the occupational experience requirement for vocational licensure.

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 1983 student groups will study in Kenya, Mexico, and Yugoslavia.

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 ambience, 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 1984 applications may be obtained from the SPAN Office, 309 Social Sciences Building, 267 19th Avenue South, University of Minnesota, Minneapolis, Minnesota 55455; (612) 376-5219.

Nankai Institute

The fourth Minnesota-Nankai Summer Intensive Chinese Language Institute will be held at Nankai University, Tianjin, People's Republic of China, June 13 to August 19, with an associated tour from August 19 to 30. Applications for the institute were accepted until February 28, 1983. For further information, write to the China Center, 314 Social Sciences Building, 267 19th Avenue South, University of Minnesota, Minneapolis, Minnesota 55455.

FIELDWORK OPPORTUNITIES

Field Experience Learning

Students may want to arrange a project in a community agency, government office, business organization, health care facility, cultural institution, or any other appropriate off-campus location. For information about current opportunities, contact the Office for Special Learning Opportunities (OSLO), 220 Johnston Hall.

In some cases, it may be possible to earn credit for a study project carried out in conjunction with the fieldwork. This is done through a directed study (3970 or 5970) or an extra credit (X) registration. These must be approved by the instructor and the department. For more information, contact the appropriate department or the Office for Special Learning Opportunities (373-7550).

INTENSIVE LANGUAGE STUDY

Beginning Arabic, Chinese, French, German, Biblical Hebrew, Italian, Russian, and Spanish, 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.

Reading Finnish

An intensive course in reading Finnish (Fin 3001) is offered during the first term in a 10-credit course. Students will quickly master the basic vocabulary and the essentials of Finnish grammar, its inflectional as well as derivational categories. Students will begin reading Finnish texts from various fields of study.

This course is new and unique in the United States. It is designed for students with little or no prior knowledge of Finnish. The course is intended for undergraduate students, graduate students and scholars who have a desire or need to be able to read written Finnish.

For further information, see the Course Descriptions section of this bulletin or consult the Department of Scandinavian or the Center for Northwest European Language and Area Studies.

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 a full year of Biblical Hebrew taught over the two terms—June 14 to August 19. 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, Minnesota 55455; Telephone: 612/376-4866.

OTHER SPECIAL OPPORTUNITIES

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.

SJMC will offer two workshops for high school newspaper and yearbook staff members; teachers may attend. A newspaper and photo workshop will be held July 17-21,

Special Programs and Workshops

and the yearbook and photo workshop will be held July 24-28. These workshops do not offer college credit. Details may be obtained from the MHSPA, 620 Farig Center, 330 21st Avenue South, University of Minnesota, Minneapolis, Minnesota 55455.

Linguistics: English as a Second Language

An intensive English language and orientation program will be offered July 21 through September 9. 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 Intensive English Language and Orientation Program, International Student Adviser's Office, 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).

FOR HIGH SCHOOL STUDENTS

High School Musicians Honors Program

The School of Music will invite approximately 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 1, 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 Army, 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 19 through July 8. 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 5 to 15. 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), 3102, 3103, 3110, 3112, 3401, and 5501. A major paper is required. Instructor's permission required to register.

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 12, 1983 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 1983 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.

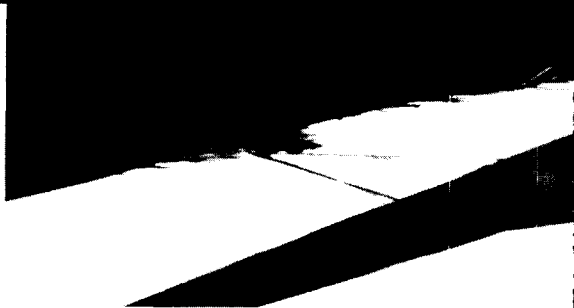
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Please send me my copy of the 1983 Summer Arts Study Center brochure.

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 DESIGNATORS (Minneapolis-St. Paul)

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

Ling	Linguistics	PMed	Physical Medicine and Rehabilitation
LMed	Laboratory Medicine	PO	Personal Orientation
Math	Mathematics	Pol	Political Science
MatS	Materials Science	Port	Portuguese
MBA	Master of Business Administration	Pros	Prosthodontics
MdBc	Biochemistry (Medical)	Psy	Psychology
ME	Mechanical Engineering	PsyF	Psychological Foundations
Med	Medicine	PsyS	Psychoeducational Studies
MedT	Medical Technology	PubH	Public Health
MetE	Metallurgical Engineering		
Mgmt	Management	QA	Quantitative Analysis
MicB	Microbiology	Rad	Radiology
MidE	Middle Eastern Studies	Rec	Recreation, Park, and Leisure Studies
Mil	Military Science	RelS	Religious Studies
MinE	Mining Engineering	Rhet	Rhetoric
MIS	Management Information Systems	Russ	Russian
Mktg	Marketing		
Mort	Mortuary Science	SACS	Small Animal Clinical Sciences
MthE	Mathematics Education	SAPh	Social and Administrative Pharmacy
MuEd	Music Education	Scan	Scandinavian
Mus	Music	SeEd	Secondary Education
MusA	Music Applied	Slav	Slavic
Neur	Neurology	SoAS	South Asian Studies
NSci	Natural Science	Soc	Sociology
NSu	Neurosurgery	Soil	Soil Science
Nurs	Nursing	Span	Spanish
Nutr	Nutrition	Spch	Speech-Communication
OBio	Oral Biology	SPFE	Social and Philosophic Foundations of Education
Obst	Obstetrics and Gynecology	SpPt	Spanish Portuguese
OM	Operations Management	SSci	Social Science
OPat	Oral Pathology	Stat	Statistics
Oph	Ophthalmology	Surg	Surgery
ORad	Oral Radiology	SW	Social Work
OrSu	Orthopedic Surgery		
Otho	Orthodontics	TexC	Textiles and Clothing
OSur	Oral Surgery	Th	Theatre Arts
Otol	Otolaryngology	TRad	Therapeutic Radiology
PA	Public Affairs	Tran	Transportation
Path	Pathology	UC	University College
PE	Physical Education	UrbS	Urban Studies
Ped	Pediatrics	Urol	Urologic Surgery
Pedo	Pediatric Dentistry		
Pero	Periodontics	VB	Veterinary Biology
Phar	Pharmacy	VoEd	Vocational Education
Phog	Pharmacognosy	VPB	Veterinary Pathobiology
Phcl	Pharmacology		
Phil	Philosophy	WoSt	Women's Studies
Phm	Pharmaceutics		
Phsl	Physiology	YoSt	Youth Development and Research
Phys	Physics		
PIPa	Plant Pathology		
PIPh	Plant Physiology		

DIRECTORY FOR DEPARTMENTAL OFFICES

Admissions and Records, Office of:		Design	McNH 240
Minneapolis Campus		East Asian Studies	FolH 113
Admissions	WmsonH 240	Ecology and Behavioral	
Records	WmsonH 150	Biology	Zoology 109
St. Paul Campus	CofH 130	Economics	Mgmt Econ 1035
Adult and Teacher Education	PeikH 175	Educational Administration	PeikH 275
Aerospace Engineering and		Electrical Engineering	ElectE 139
Mechanics	AkerH 107	Elementary Education	PeikH 125
Aerospace Studies	Armory 3	English	LindH 207
Afro-American Studies	SocSci 214	Entomology, Fisheries and	
Agricultural and		Wildlife	HodsonH 219
Applied Economics	ClaOff 231	Family Practice	
Agricultural Education	VoTech 320	Community Health	PWB 6-240
Agricultural Engineering (Agri)	AgEng 213	Family Social Science	McNH 290
Agricultural Engineering (IT)	AgEng 213	Food Sciences, Nutrition	FScN 225
Agricultural Journalism	HckrH 326	Forest Products	KaufL 203
Agronomy and Plant Genetics	Agri 303	Forest Resources	GrnH 110
American Indian Studies	SocSci 812	French and Italian	FolH 200
American Studies	LindH 225	General College	NichH 106
Anatomy	Jach 4-135	Genetics and Cell Biology	BioSci 250
Ancient Near Eastern, Jewish Studies	KlaCt 178	Geography	SocSci 414
Anesthesiology	Mayo B515	Geology and Geophysics	PillsH 106
Animal Science	PetH 120	German	FolH 219
Anthropology	FordH 215	Higher Education	BuH 105
Architecture	Arch 110	History	SocSci 614
Art Education	WullH 135	History of Science & Technology	Phys 428
Art History	Jones 107	Home Economics	McNH 32
Art, Studio	ArtB 208	Home Economics Education	VoTech 325
Astronomy	Phys 356	Horticultural Science	AlderH 305
Biochemistry (BioC)	Gor 140	Humanities	FordH 314
Biochemistry (Med)	MirdH 4-225	Industrial Education	VoTech 425
Biological Sciences	SnH 123	Interdepartmental Study (CLA)	JohH 220
Biology	SnH 223	Journalism, Mass	
Biophysical Sciences	TNCE 200	Communication	MurH 111
Botany	BioSci 220	Laboratory Medicine	Mayo D242
Business and Distributive		Large Animal Clinical Sciences	VetHos 225
Education	VoTech 420	Law School	Law 285
Chemical Engineering and		Library School	WaLib 419
Materials Science	AmundH 151	Linguistics	KlaCt 142
Chemistry	SmithH 139	Management, School of	Mgmt Econ 225
Chicano Studies	FordH 489	Mathematics	VinH 127
Child Psychology	ChDev 158	Mathematics Education	PeikH 125
Civil and Mineral Engineering	MinMet 112	Mechanical Engineering	MechE 125
Classics	FolH 310	Medical Technology	PWB 15-170
Communication Disorders	ShevH 115	Medicine	PWB 14-110
Comparative Literature	FolH 301	Microbiology	Mayo 1060
Computer Science	LindH 136	Military Science	Armory 108
Counseling, Student		Mining Engineering	MinMet 112
Personnel Psychology	BuH 139A	Mortuary Science	Botany 400
Curriculum and Instructional		Music	ScottH 106
Systems	PeikH 130		
Dance	NorrisH 159		
Dental Hygiene	HSUnitA 5-164		
Dentistry	HSUnitA 15-209		
Dermatology	PWB 4-240		

Music Education	ScottH 104	Rhetoric	HckrH 202
Natural Science, Technology	JohH 203	Russian, East European Studies	EltH 253
Naval Science	Armory 203	Scandinavian Languages	FolH 210
Neurology	PWB 12-100	School Health Education	NorrisH 101
Northwest European Language and Area Studies, Center for	FolH 210	Secondary Education	PeikH 125
Nursing	HSUnitF 5-140	Small Animal Clinical Sciences	VetHos C339
Obstetrics and Gynecology	HSUnitA 12-211	Social, Psychological and Philosophic Foundations of Educ	PeikH 275
Ophthalmology	PWB 9th floor	Social Science	JohH 203
Otolaryngology	PWB 8-240	Social Work	FordH 400
Pediatrics	PWB 13-112	Sociology	SocSci 1114
Pharmacology	MirdH 3-260	Soil Science	Soils 125
Pharmacy	HSUnitF 5-130	South and Southwest Asian Studies	KlaCt 192
Philosophy	FordH 355	Spanish and Portuguese	FolH 34
Physical Education	CookeH 224	Special Education	BuH 206
Physical Medicine and Rehabilitation	Mayo 860	Speech-Communication	FolH 317
Physics	Phys 148	Statistics	VinH 270
Physiology	MirdH 6-255	Surgery	PWB 11-100
Plant Pathology	StakH 304	Textiles and Clothing	McNH 364
Plant Physiology	BioSci 220	Theatre Arts	MdbH 208
Political Science	SocSci 1414	University College: Intercollege Program (ICP)	TNA 213
Psychiatry	Mayo A605	University Without Walls (UWW)	WesH 201
Psychoeducational Studies	BuH 204	Veterinary Biology	AnScVM 295K
Psychological Foundations	BuH 204	Veterinary Pathobiology	VetS 205g
Psychology	EltH N218	Vocational Education	VoTech 210
Public Affairs	SocSci 909	Women's Studies	FordH 492
Public Health	Mayo 1360	Youth Development and Research	McNH 48
Radiology	Mayo B238	Zoology	Zoology 108
Recreation, Park, and Leisure Studies	CookeH 203		

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

5990. SPECIAL TOPICS AND INDEPENDENT STUDY IN AGRICULTURAL AND APPLIED ECONOMICS. (690468)
(Cr ar; prereq #) Staff
Independent study, supervised reading, or research on agricultural economics problems not covered in regularly offered courses.

8200. ADVANCED TOPICS IN AGRICULTURAL AND APPLIED ECONOMICS. (486731) (1-9 cr; [may be repeated for cr]; hrs ar) Staff
Special problems for individual work by qualified students.

SECOND TERM

5990. SPECIAL TOPICS AND INDEPENDENT STUDY IN AGRICULTURAL AND APPLIED ECONOMICS. (490469)
(Cr ar; prereq #) Staff
See First Term.

8200. ADVANCED TOPICS IN AGRICULTURAL AND APPLIED ECONOMICS. (890470) (1-9 cr; [may be repeated for cr]; hrs ar) Staff
See First Term.

Agricultural Engineering

Agricultural Engineering Technology (AgET)

FIRST TERM

1020. AGRICULTURAL SHOP—METALWORK. (186733) (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) Bisek
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. (986734) (4 cr [not for grad cr]; prereq #: SN only; free elective for AgEng undergrads) Flikke
Professional experience in Ag Engineering firms or government agencies obtained through supervised practical experience; evaluative reports and consultations with faculty advisers and employers.

5033. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—FARM BUILDINGS AND ENVIRONMENT CONTROL. (690471) (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

3091. SPECIAL PROBLEMS IN AGRICULTURAL ENGINEERING. (386379) (2-5 cr; prereq #) Staff
Individual study of topics in agricultural engineering. Application of physical principles to agricultural production

5000. PROFESSIONAL EXPERIENCE PROGRAM. (088040) (4 cr [not for grad cr]; prereq #: SN only; free elective for AgEng Undergrads) Flikke
See First Term.

5020. PROGRAM PLANNING AND INSTRUCTIONAL METHODS IN AGRICULTURAL MECHANICS—August 15-19. (888042) (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.

5034. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—NATURAL RESOURCES DEVELOPMENT AND MANAGEMENT. (490472) (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.

Agricultural Journalism (AgJo)

FIRST TERM

3936. SPECIAL PROBLEMS. (691068) (Cr ar; prereq 3530 or #) Staff
Communication problems in areas such as specialized analysis of media, specialized writing, publication or periodical planning, preparation of special audio or visual production, radio and TV programming, and other mass communication areas.

5000. PROFESSIONAL EXPERIENCE PROGRAM. (491069) (4 cr [not for grad cr]; S-N; free elective for AgJo undergrads; prereq #) Staff
Professional experience in AgJo firms or government agencies obtained through supervised practical experience; evaluative reports and consultations with faculty advisers and employers.

5936. SPECIAL PROBLEMS IN AGRICULTURAL COMMUNICATIONS. (891070) (Cr ar; prereq #)
Communications problems related to specific aspects of student's major field or study.

SECOND TERM

3936. SPECIAL PROBLEMS. (691071) (Cr ar; prereq 3530 or #) Staff
See First Term.

5000. PROFESSIONAL EXPERIENCE PROGRAM. (491072) (4 cr [not for grad cr]; S-N; free elective for AgJo undergrads; prereq #) Staff
See First Term.

5936. SPECIAL PROBLEMS IN AGRICULTURAL COMMUNICATIONS. (291073) (Cr ar; prereq #)
See First Term.

Agriculture (Agri)

FIRST TERM

1000. ACADEMIC ENRICHMENT AND HONORS PROGRAM: SPECIAL PROJECTS. (786735) (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. (688042) (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. (586736) (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. (386737) (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. (186738) (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. (086739) (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. (290411) (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. (488043) (1-3 cr; prereq. #) Smith, Cardwell
See First Term.

5000. PROFESSIONAL EXPERIENCE PROGRAM. (288044) (4 cr [not for grad cr]; prereq. #) Smith, Cardwell
See First Term.

5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS. (188045) (1-5 cr; prereq. #) Smith, Cardwell
See First Term.

8010.* RESEARCH IN AGRONOMY. (988046) (Cr ar; prereq. #) Staff
See First Term.

Plant Breeding

FIRST TERM

8330.* RESEARCH IN PLANT GENETICS. (386740) (Cr ar) Staff

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

8310.* ORIENTATION TO FIELD CROP BREEDING. (186741) (1 cr; prereq 5020 or #) Stuthman
Field study of plant breeding programs and techniques.

SECOND TERM

8330.* RESEARCH IN PLANT GENETICS. (085512) (Cr ar) Staff

Animal Science (AnSc)

FIRST TERM

5221. ANIMAL BREEDING FOR VOCATIONAL AGRICULTURE TEACHERS—July 5-15. (090578) (3 cr; 0900-1145 MTWThF; PatH 108) Rempel

Application of qualitative genetic principles to animal breeding. Introduction to quantitative genetics. Concepts of livestock improvement: through breeding and selection systems.

5613. BEEF CATTLE PRODUCTION—June 13-24. (890579) (3 cr, §5603; prereq 1401...3220 and 5403 recommended; 0900-1145 MTWThF; HckrH 100) Meiske
Status and characteristics of the beef cattle industry; application of the principles of animal breeding, nutrition, physiology, and economics to management of beef cattle breeding herds. Ration formulation, management, and marketing of feedlot cattle.

5710. SPECIAL PROBLEMS. (086742) (Cr ar; open to students who have completed appropriate prereqs with #) 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. (886743) (1 cr [may be repeated once for cr]; prereq #) C Allen
Review and evaluation of pertinent scientific literature.

8810.* RESEARCH IN ANIMAL SCIENCE. (686744) (Cr and hrs ar; prereq #) Staff
Research including experimental studies in the disciplines associated with animal production and research, with emphasis on interdisciplinary studies embracing environmental and managerial considerations.

8820.* RESEARCH IN ANIMAL GENETICS. (486745) (Cr and hrs ar; prereq #) Staff
Research in quantitative genetics, cytogenetics, and other areas related to animal breeding.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (286746) (Cr and hrs ar; prereq #) Staff
Individual research under faculty direction. Topics to be determined by consultation; may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.

8840.* RESEARCH IN ANIMAL NUTRITION. (186747) (Cr and hrs ar; prereq #) Staff
Research in selected areas of animal nutrition. Topics and species studied determined by consultation with adviser.

8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY. (986748) (Cr and hrs ar; prereq #) Staff
Individual, original research, under staff direction, on selected problems involving the chemical, biochemical, and physiological aspects of muscle and meat technology. 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

5710. SPECIAL PROBLEMS. (788047) (Cr ar; open to students who have completed appropriate prereqs with #) Staff
See First Term.

8750. CONCEPTS AND DEVELOPMENTS IN MEAT SCIENCE AND TECHNOLOGY. (588048) (1 cr [may be repeated once for cr]; prereq #) C Allen
See First Term.

8810.* RESEARCH IN ANIMAL SCIENCE. (388049) (Cr and hrs ar; prereq #) Staff
See First Term.

8820.* RESEARCH IN ANIMAL GENETICS. (788050) (Cr and hrs ar; prereq #) Staff
See First Term.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (588051) (Cr and hrs ar; prereq #) Staff
See First Term.

8840.* RESEARCH IN ANIMAL NUTRITION. (388052) (Cr and hrs ar; prereq #) Staff
See First Term.

8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY. (188053) (Cr and hrs ar; prereq #) 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. (786749) (Cr ar; prereq 3175 or equiv, or #) Staff
Practical laboratory instruction in dealing with entomological materials.

Course Descriptions

5901. SPECIAL PROBLEMS IN ENTOMOLOGY. (186750) (Cr ar; prereq #) Staff
Individual field, laboratory, or library studies in various areas of entomology.

8500.* RESEARCH IN ENTOMOLOGY. (986751) (Cr ar; prereq #) Staff

SECOND TERM

3100. ENTOMOLOGICAL TECHNIQUES. (088054) (Cr ar; prereq 3175 or equiv. #) Staff
See First Term.

5901. SPECIAL PROBLEMS IN ENTOMOLOGY. (888055) (Cr ar; prereq #) Staff
See First Term.

8500.* RESEARCH IN ENTOMOLOGY. (688056) (Cr ar; prereq #) Staff

Fisheries and Wildlife (FW)

FIRST TERM

5393. SPECIAL PROBLEMS IN FISHERY BIOLOGY. (786752) (Cr ar; prereq #) Staff
Individual field, library, and laboratory research in various areas of fishery biology.

5398. SPECIAL PROBLEMS IN WILDLIFE BIOLOGY. (586753) (Cr ar; prereq #) Staff
Individual field, library, and laboratory research in various areas of wildlife biology.

8364.* RESEARCH IN FISHERY BIOLOGY. (386754) (Cr ar; prereq #) Staff

8377.* RESEARCH IN WILDLIFE BIOLOGY. (186755) (Cr ar; prereq #) Staff

SECOND TERM

5393. SPECIAL PROBLEMS IN FISHERY BIOLOGY. (488057) (Cr ar; prereq #) Staff
See First Term.

5398. SPECIAL PROBLEMS IN WILDLIFE BIOLOGY. (288058) (Cr ar; prereq #) Staff
See First Term.

8364.* RESEARCH IN FISHERY BIOLOGY. (188059) (Cr ar; prereq #) Staff

8377.* RESEARCH IN WILDLIFE BIOLOGY. (488060) (Cr ar; prereq #) Staff

Food Science and Nutrition (FScN)

FIRST TERM

R 3600. PRINCIPLES OF NUTRITION. (086756) (4 cr; limited to 25 students; prereq Biol 1009 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.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (686758) (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. (486759) (1-5 cr; prereq sr, Δ ; hrs ar) Staff
Laboratory or library research on problems related to the microbiology of dairy and food products.

R 5404. CURRENT ISSUES IN FOOD AND NUTRITION—June 27-July 8. (886760) (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 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, and organically grown foods.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (686761) (1-5 cr; prereq #: hrs ar) Staff
Independent study and written reports.

8621. INDEPENDENT STUDY: NUTRITION. (486762) (1-9 cr; prereq Δ ; hrs ar) Staff
Independent study and written reports.

SECOND TERM

1102. TECHNOLOGY OF FOOD PROCESSING. (288061) (4 cr: prereq high school chemistry and biology: 0800-0955 MWF, 0905-0955 TTh: ABLMS 125)

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.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (988063) (1-5 cr [may be repeated for cr]: prereq Δ : hrs ar) Staff
See First Term.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (788064) (1-5 cr: prereq sr, Δ : hrs ar) Staff
See First Term.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (588065) (1-5 cr: prereq Δ : hrs ar) Staff
See First Term.

8621. INDEPENDENT STUDY: NUTRITION. (388066) (1-9 cr: prereq #: hrs ar) Staff
See First Term.

Plant Pathology (PIPa)

(See also Lake Itasca Biology Session)

FIRST TERM

3090. RESEARCH IN PLANT PATHOLOGY. (986345) (cr ar: prereq 1001 or equiv or #)

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

5650. CLINICAL PLANT PATHOLOGY. (286763) (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. (186764) (Cr ar) Staff
Special assignment in laboratory and field problems in pathological research.

SECOND TERM

3090. RESEARCH IN PLANT PATHOLOGY. (786346) (cr ar: prereq 1001 or equiv or #)

5101. ECOLOGY AND IDENTIFICATION OF FLESHY FUNGI. (691703) (3 cr: prereq 6 cr botany or biology or #: \$PIPa 5102, 5104, or 5105; 0905-1055 TTh, StakH 101, 1305-1455 Th, StakH 103) Schmidt
Lectures and laboratory exercises on topics of recent interest in fungal ecology, mytoxicology, biotechnology, ethnobotany, etc., coupled with development of skills for identification of fleshy fungi.

Rhetoric (Rhet)

FIRST TERM

R 1147. EFFICIENT READING. (986765) (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. (786766) (4 cr: limited to 18 students; prereq soph, completion of fr communication requirements; 1115-1205 MTWThF: HckrH 222) Hardesty
A practical course in the fundamentals of speechmaking. Emphasis upon organizing and delivering the speech.

R 1500. INTRODUCTION TO WORD PROCESSING. (691698) (2 cr: limited to 15 students; prereq #: S-N only; 1400-1600 M; HckrH 329) Winkler
Individualized programmed instruction in the use of the Xerox 820 Word Processing System. Independent work through five two-hour lessons. Logging onto the system; creating and editing files; typing and editing a text, using seven menus to perform basic text editing processes; and printing a text. Ten hours of instruction supplemented by three hours of lab time each week to allow skills practice and conferences with the instructor or lab assistant.

Course Descriptions

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, (586767) 0905-0955 MTWThF, HckrH 111, Walzer

Sec 2, (386768) 1010-1100 MTWThF, HckrH 111, Somers

R 3562. SCIENTIFIC AND TECHNICAL WRITING. (186769) (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.

5100. TECHNICAL COMMUNICATION: SPECIAL PROBLEMS. (286181) (Cr ar; prereq #) Connolly, McDowell, others
Designed for supervised reading, research, and work on advanced technical communication projects not covered in regularly scheduled courses.

R 5147. EFFICIENT READING. (586770) (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.

5180. INTERNSHIP IN TECHNICAL COMMUNICATION. (186182) (4-6 cr; prereq #) Connolly, McDowell, others
Designed to give technical communication majors on-the-job experience at the University or in industry or government.

SECOND TERM

R 1147. EFFICIENT READING. (188067) (4 cr; limited to 30 students; 0905-1100 TWTh; FordH 115) Bennett

See First Term.

R 1222. PUBLIC SPEAKING. (088068) (4 cr; limited to 18 students; prereq soph. completion of fr communication requirements; 1115-1205 MTWThF; HckrH 222) Eyo

See First Term.

R 1500. INTRODUCTION TO WORD PROCESSING. (491699) (2 cr; limited to 15 students; prereq #: S-N only; 1400-1600 M; HckrH 329) Winkler

See First Term.

3374. HUMANITIES: SPECIAL PROBLEMS. (486390) (1-5 cr; prereq #)

Primarily for supervised reading and research of topics not covered in regularly scheduled humanities offerings.

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

See First Term.

Sec 1, (888069) 0905-0955 MTWThF, HckrH 111, Savage

Sec 2, (188070) 1010-1100 MTWThF, HckrH 111, Horberg

5100. TECHNICAL COMMUNICATION: SPECIAL PROBLEMS. (386186) (Cr ar; prereq #) Connolly, McDowell, others
See First Term.

R 5147. EFFICIENT READING. (790414) (4 cr; limited to 10 students; 0905-1100 TWTh; FordH 115) Bennett

See First Term.

5180. INTERNSHIP IN TECHNICAL COMMUNICATION. (186187) (4-6 cr; prereq #) Connolly, McDowell, others

See First Term.

Soil Science (Soil)

FIRST TERM

5114.* SPECIAL PROBLEMS IN SOILS. (386771) (1-5 cr per qtr [max 10 cr]; prereq 1122 or #) Adams, Baker, Blake, Farnham, Rust, Schmidt, Grava, Grigal, Swan, Cooper

Research, readings, instruction.

8124.* RESEARCH PROBLEMS IN SOILS. (186772) (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. (088071) (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. (888072) (2-5 cr; hrs ar) 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

5950. SPECIAL TOPICS. (091701) (1-5 cr; prereq #, Δ)

5970. DIRECTED STUDIES. (591631) (cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (391632) (cr ar; prereq #, Δ) Staff
Laboratory or field investigation of selected areas of research.

8290. CURRENT RESEARCH TECHNIQUES. (086773) (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. (886774) (2-5 cr; prereq #) Graduate faculty
Research problems in various fields in biochemistry represented by staff interest.

SECOND TERM

5950. SPECIAL TOPICS. (891702) (1-5 cr; prereq #, Δ)

5970. DIRECTED STUDIES. (191633) (cr ar; prereq #, Δ) Staff

5990. DIRECTED RESEARCH. (091634) (cr ar; prereq #, Δ) Staff
See First Term.

8290. CURRENT RESEARCH TECHNIQUES. (688073) (1-3 cr; prereq grad major in biochemistry, #) Graduate faculty
See First Term.

8990. GRADUATE RESEARCH. (488074) (2-5 cr; prereq #) Graduate faculty
See First Term.

Biology (Biol)

(See also *Lake Itasca Biology Session*)

FIRST TERM

n 1009. GENERAL BIOLOGY. (5 cr; lect 0905-1005 MTWThF; AndH 310) Swart

An introduction to the principles of biology. The cell, metabolism, heredity, reproduction, ecology, and evolution.

Lab 1, (390609) 1020-1205 MTWTh, KoltH S160

Lab 2, (790610) 1020-1205 MTWTh, KoltH S167

Lab 3, (590611) 1020-1205 MTWTh, KoltH S170

Lab 4, (390612) 1020-1205 MTWTh, KoltH S177

Course Descriptions

R 3011. ANIMAL BIOLOGY. (5 cr. §1106; limited to 48 students; prereq 1009 [formerly 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, (486776) 1000-1200 TTh, BioSci 245

Lab 2, (286777) 1400-1600 TTh, BioSci 245

R 3041. ECOLOGY. (4 cr; limited to 60 students; prereq Math 1231 or #; lect 0815-0955 TWTh; Zoology 102)
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, (190417) 1000-1100 TTh, Zoology 102

Rec 2, (090418) 1100-1200 TTh, Zoology 102

3111. ANIMAL BIOLOGY. (990606) (4 cr; §3011; prereq 1009 (formerly 1011), 1106, Chem 1005; 1215-1330 MTWTh; McNH 33)

Lectures covering the comparative physiology of various animal groups; coordination, movement, support, excretion, reproduction.

3112. BIOLOGICAL RHYTHMS—June 14–July 8. (186778) (4 cr. §5112; prereq 1009 or #: 1105-1230 MTWThF; BioSci 70) Koukkari

Timing mechanisms and rhythms of organisms in physiological processes; ecological adaptation, and health; current hypothesis concerning their cellular and molecular nature.

5001. BIOCHEMISTRY. (986779) (4 cr. §3021, §BioC 5001; prereq 1009, 12 cr organic chemistry or #: 0825-0945 MTWThF; ClaOff B35) Liener

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 8. (286780) (5 cr. §3112; prereq 15 cr biology, 10 cr chemistry or #: 1105-1230 MTWThF; BioSci 70) Koukkari

See 3112. Laboratory experience arranged.

SECOND TERM

R 1103. GENERAL BOTANY. (188076) (5 cr. §3012; limited to 40 students; prereq 1009; students who plan to major in biology in CLA or any bioscience major in CBS should take 3012; lect 1215-1315 MTWThF; BioSci 12; lab 0905-1205 TTh, BioSci 176, 182) Biesboer

Levels of organization of plants, plant functions, plant growth and development, plant reproduction.

R 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, (588079) 1325-1625 MW, KolH P168

Lab 2, (988080) 1325-1625 TTh, KolH P168

R 3012. PLANT BIOLOGY. (690616) (5 cr; §1103; limited to 40 students; prereq 1009, Chem 1005; lect 0805-0915 MTWTh, BioSci 64; lab 0920-1220 TW; BioSci 151, 163) Koukkari

Plant diversity and evolution; structure and function of the plant cell and of the whole organism; growth and development of plants.

R 3051. BIOLOGY AND THE FUTURE OF MAN. (788081) (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. (588082) (4 cr. §GCB 3022, §GCB 5022; prereq 5001; 0955-1055 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. (388083) (3 cr; prereq 5001; 1105-1205 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. (186781) (4 cr. §5131, §PIPH 3131, §PIPH 5131; prereq Biol 1103 cr 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.

5131. SURVEY OF PLANT PHYSIOLOGY. (986782) (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.

5970. DIRECTED STUDIES. (691636) (cr ar; prereq #, △) Staff

5990. DIRECTED RESEARCH. (190675) (cr ar; prereq #, △) Staff
Laboratory or field investigation of selected areas of research.

8990. RESEARCH PROBLEMS. (786783) (Cr ar; prereq #) Staff

SECOND TERM

5970. DIRECTED STUDIES. (891635) (cr ar; prereq #, △) Staff

5990. DIRECTED RESEARCH. (090676) (cr ar; prereq #, △) Staff
See First Term.

8990. RESEARCH PROBLEMS. (188084) (Cr ar; prereq #) Staff

Ecology and Behavioral Biology (EBB)

(See also *Lake Itasca Biology Session*)

FIRST TERM

5970. DIRECTED STUDIES. (586784) (Cr ar; prereq #) Staff

5990. DIRECTED RESEARCH. (491637) (cr ar; prereq #, △) Staff
Laboratory or field investigation of selected areas of research.

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (386785) (Cr ar; prereq #) Staff

SECOND TERM

5970. DIRECTED STUDIES. (088085) (Cr ar; prereq #) Staff

5990. DIRECTED RESEARCH. (291638) (cr ar; prereq #, △) Staff
See First Term.

8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY. (888086) (Cr ar; prereq #) Staff

Genetics and Cell Biology (GCB)

FIRST TERM

3022. GENETICS. (186786) (4 cr. §Biol 5003; not intended for biology majors; prereq Biol 1009 [formerly 1011]; 1000-1100 MTWThF plus 1 hr ar; ClaOff B35)
Mechanisms of heredity; their implications for biological populations, and applications to practical problems.

5022. GENETICS. (086787) (3 cr. §3022, §Biol 5003; not open to grad students in genetics; 1000-1100 MTWThF plus 1 hr ar; ClaOff B35)
See 3022.

5970. DIRECTED STUDIES. (590687) (Cr ar; prereq #, △) Staff
Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature.

5990. DIRECTED RESEARCH. (390688) (Cr ar; prereq #, △) Staff
Laboratory or field investigation of selected areas of research.

8970. DIRECTED STUDIES. (686789) (Cr ar; prereq #) Staff

8990. RESEARCH. (086790) (Cr ar; prereq #) Staff

SECOND TERM

5970. DIRECTED STUDIES. (190689) (Cr ar; prereq #, △) Staff
See First Term.

5990. DIRECTED RESEARCH. (590690) (Cr ar; prereq #, △) Staff
See First Term.

8970. DIRECTED STUDIES. (488088) (Cr ar; prereq #) Staff

8990. RESEARCH. (288089) (Cr ar; prereq #) Staff

Biology Session

Held at the Lake Itasca Forestry and Biological Station

(See also Forest Resources, page 103)

During two five-week terms of the summer session (June 12 through July 16 and July 17 through August 20), 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: Program Director, 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 12 or July 17.

TUITION AND FEES¹

Tuition and fees are payable each five-week term by every regular registrant. They are due on or before June 12 for first term or July 17 for second term.

Tuition	Varies; see page 15
Student Services Fee	\$21.75
Laboratory Fee	8.50

Graduate students who are conducting research for a dissertation may enroll in a thesis only program.

¹Subject to change.

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 \$235 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 Program Director during the first week of each term.

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

Tuition and fees for each five-week term do 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 12 and July 17. Late fees are assessed for both late registration and late payment.

Late Registration—No registration will be accepted after June 12 or July 17 without the approval of the Program Director of the Field Biology Program and payment of the late registration fee, as follows:

June 13-17 or July 18-22	\$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 12 or July 17	Five workdays after registration
June 13-17 or July 18-22	June 17 or July 22
Thereafter	One workday after registration

Biology (Biol)

FIRST TERM

R 5816. FIELD BIOLOGY PHOTOGRAPHY. (890677) (5 cr; limited to 20 students; prereq course in beginning biology, Δ; 0800-1700 TF) Rubbelke

R 5850. SPECIAL TOPICS IN BIOLOGY: FIELD BIOLOGY FOR SECONDARY TEACHERS. (790607) (10 cr; limited to 20 students; may be taken for 2½ weeks for 5 cr. #; prereq major in science education or teaching experience in the biological sciences; hrs ar) Gilbertson

5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY. (686792) (Cr ar; prereq #, Δ) Staff

SECOND TERM

5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY. (488091) (Cr ar; prereq #, Δ) Staff

Botany (Bot)

FIRST TERM

R 5801. PLAINS AND BOREAL FLORA. (486793) (5 cr; limited to 20 students; prereq course in taxonomy, Δ; 0800-1700 MTh) Thomson

R 5811. FRESHWATER ALGAE. (286794) (5 cr; limited to 20 students; prereq 10 cr in botany, biology or zoology, Δ; 0800-1700 TF) Czarnecki

5890. RESEARCH PROBLEMS. (186795) (1-5 cr; prereq #, Δ) Staff

Ecology and Behavioral Biology (EBB)

FIRST TERM

R 3800. **INTRODUCTION TO FIELD RESEARCH.** (986796) (10 cr; limited to 20 students; prereq 2 courses in biology, 1 cr; hrs ar) Barnwell

R 5812. **AQUATIC ECOLOGY.** (190420) (5 cr; limited to 20 students; prereq 15 cr biology, 5 cr chemistry, 1 cr; 0800-1700 WS) Megard

R 5834. **FIELD ORNITHOLOGY.** (586798) (5 cr; limited to 15 students; prereq Biol 1106, 1 cr; 0800-1700 MTh) Warner

SECOND TERM

R 5814. **COMMUNITY STRUCTURE AND FUNCTIONING.** (788095) (5 cr; limited to 20 students; prereq course in ecology, 1 cr; 0800-1700 TF) Peet

R 5817. **VERTEBRATE ECOLOGY.** (890422) (5 cr; limited to 15 students; prereq course in ecology, #, 1 cr; 0800-1700 WS) Tester

R 5820. **WETLAND ECOLOGY.** (590561) (10 cr; limited to 15 students; prereq 15 cr biology; introductory chemistry, course in plant identification and Biol 3041 recommended; hrs ar) Gorham

R 8800. **ADVANCED FIELD ECOLOGY.** (588096) (10 cr; limited to 20 students; prereq admission to a grad program and 1 cr; hrs ar) Taylor (Coordinator), Aistad, Davidson, Williamson

Entomology (Ent)

FIRST TERM

R 5020. **FIELD ENTOMOLOGY.** (386799) (5 cr; limited to 15 students; prereq introductory biology; 0800-1700 MTh) Elzinga

Landscape Architecture (LA)

FIRST TERM

R 5227. **IMPACT ASSESSMENT AND ENVIRONMENTAL MEDIATION.** (xxxxxx) (5 cr; limited to 20 students; prereq seniors, graduate students or #: 0800-1700 WS; 1 term) Burley

Plant Pathology (PIPa)

SECOND TERM

R 5102. **FIELD MYCOLOGY.** (188098) (5 cr; limited to 15 students; prereq 6 cr in botany; 0800-1700 MTh) Stewart

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 13), 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 27* 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 SUBCOUNCIL

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 Subcouncil 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.

Course Descriptions

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. (186870) (4 cr, §5301; prereq 5 cr introductory psychology; 1220-1310 MTWThF; WulH 230) DeHart
Introduction to science of child behavior; review of theories and research.

3302. INFANCY. (086871) (4 cr; prereq 1301 or #: 1010-1100 MTWThF; ChDev 216) Sroule
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. (886872) (4 cr, §5303; prereq 5 cr introductory psychology; 0905-0955 MTWThF; ChDev 216) List
Physical, cognitive, and social development during adolescence. Meets with 5303.

3311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (686873) (4 cr, §5311; prereq 1301 or equiv; 1010-1100 MTWThF; BuH 120) 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. (486874) (4 cr, §5331; prereq 1301 or equiv; 1220-1310 MTWThF; ChDev 218) Motti
Processes of social learning; identification, social influence, imitation, reward and punishment, internalization, object choice. Meets with 5331.

3332. CROSS-CULTURAL CHILD DEVELOPMENT. (990461) (4 cr; prereq 4 cr child psychology; S-N optional; 1115-1205 MTWThF; ChDev 105) Tapp
Interdisciplinary, cross-cultural survey of theories and research on similarities and differences in cognitive, perceptual, socioemotional, and personality development; *Child-caretaker relations in Asian and Hispanic cultures.*

3980. DIRECTED INSTRUCTION. (286875) (1-4 cr [max 4 cr]; S-N only; prereq #) Gunnar
Undergraduates serve as teaching assistants in courses they have successfully completed for credit.

5303. ADOLESCENT PSYCHOLOGY. (186876) (4 cr, §3303; prereq 5 cr introductory psychology; 0905-0955 MTWThF; ChDev 216) List
Physical, cognitive, and social development during adolescence. Meets with 3303.

5311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (986877) (4 cr, §3311; prereq 1301 or equiv; 1010-1100 MTWThF; BuH 120) 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.

5319. CLINICAL PROCEDURES WITH CHILDREN AND YOUTH. (790462) (4 cr; prereq 12 cr in psychology, educational psychology, sociology or child psychology; 0800-0850 MTWThF; ChDev 105) Gross
Assessment and intervention procedures of clinical child psychology in clinical and community settings. Primarily for students not majoring in clinical psychology.

5331. PROCESSES OF SOCIALIZATION OF CHILDREN. (586879) (4 cr, §3331; prereq 1301 or equiv; 1220-1310 MTWThF; ChDev 218) Motti
Processes of social learning; identification, social influence, imitation, reward and punishment, internalization, object choice. Meets with 3331.

5333. PERSONALITY DEVELOPMENT. (390464) (4 cr; prereq 3331 or 5331; 0905-0955 MTWThF; ChDev 105) Pancake

Psychoanalytic and behavioral theory formulations, related research literature in content areas (e.g., attachment, dependency, aggression, competence, and sex typing).

5343. COGNITIVE DEVELOPMENT. (190465) (4 cr; prereq 1301 or #; 1115-1205 MTWThF; ChDev 216) von Hofsten
Development of cognitive processes; discussion of relevant theory, research literature, and methodology.

5970. DIRECTED STUDY IN CHILD PSYCHOLOGY. (986880) (Cr ar; prereq #) Gunnar
Independent reading.

5990. DIRECTED RESEARCH IN CHILD PSYCHOLOGY. (786881) (Cr ar; prereq #) Gunnar
Individual empirical investigation.

8970. INDEPENDENT STUDY. (586882) (Cr ar; prereq #) Gunnar
Independent reading.

8990. RESEARCH PROBLEMS. (386883) (Cr ar; prereq #) Gunnar
Individual empirical investigation.

SECOND TERM

1301. INTRODUCTORY CHILD PSYCHOLOGY. (688154) (4 cr, §5301; prereq 5 cr introductory psychology; 1010-1100 MTWThF; ChDev 216) Adolf
See First Term.

3303. ADOLESCENT PSYCHOLOGY. (488155) (4 cr, §5303; prereq 5 cr introductory psychology; 1115-1205 MTWThF; ChDev 216) Bobbitt
See First Term. Meets with 5303.

3311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (288156) (4 cr, §5311; prereq 1301 or equiv; 0905-0955 MTWThF; ChDev 216) Breslow
See First Term. Meets with 5311.

3347. CHILDREN'S LEARNING AND INTELLECTUAL SKILLS. (290473) (4 cr; prereq 1301 or #; 1220-1310 MTWThF; ChDev 105) Merriman
Current research on learning, problem solving, and intellectual performance in children; application to practical contexts.

3980. DIRECTED INSTRUCTION. (188157) (1-4 cr [max 4 cr]; S-N only; prereq #) Gunnar
See First Term.

5303. ADOLESCENT PSYCHOLOGY. (988158) (4 cr, §3303; prereq 5 cr introductory psychology; 1115-1205 MTWThF; ChDev 216) Bobbitt
See First Term. Meets with 3303.

5311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (788159) (4 cr, §3311; prereq 1301 or equiv; 0905-0955 MTWThF; ChDev 216) Breslow
See First Term. Meets with 3311.

5315. INTRODUCTION TO MENTAL RETARDATION. (590480) (4 cr, §SpEd 5120, §PsyS 5120; prereq 1301 or equiv; 1010-1100 MTWThF; ChDev 218) Turnure
Psychological and educational problems related to the mentally retarded. Meets with PsyS 5120.

5339. PARENT-CHILD RELATIONS. (990475) (4 cr; prereq 3331 or 5331; 0905-0955 MTWThF; ChDev 105) Duncan
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, and rights of parents and children).

5345. LANGUAGE DEVELOPMENT. (390481) (4 cr; prereq 1301 or #; 1115-1205 MTWThF; ChDev 105) Morgan
Development of structure and function of language, factors influencing development, methodological problems, language scales, theories.

5970. DIRECTED STUDY IN CHILD PSYCHOLOGY. (988161) (Cr ar; prereq #) Gunnar
See First Term.

5990. DIRECTED RESEARCH IN CHILD PSYCHOLOGY. (788162) (Cr ar; prereq #) Gunnar
See First Term.

8970. INDEPENDENT STUDY. (588163) (Cr ar; prereq #) Gunnar
See First Term.

8990. RESEARCH PROBLEMS. (388164) (Cr ar; prereq #) Gunnar
See First Term.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Art Education (ArEd)

FIRST TERM

3001. SURVEY OF ART ACTIVITIES. (4 cr; not open to art education majors; each section limited to 35 students; A-N only)

Introduction to pictorial expression, design, and the function of art in the school environment.

Sec 1, June 14-29, (186884) 1230-1530 MTWThF, WullH 220, Day

Sec 2, June 30-July 15, (190448) 1230-1530 MTWThF, WullH 120, Slettehaugh

5001. ART MEDIA TECHNIQUES. (1-12 cr [max 12 cr]; each section limited to 35 students; A-N only)

Lectures, demonstrations, discussions, critique sessions exploring techniques and processes in creativity; handling specific media; each offering focuses on a single topic.

Sec 1, Printmaking, June 14-29, (086885) 3 cr, 0830-1130 MTWThF, WullH 120, Slettehaugh

Basic materials and techniques of printmaking appropriate for elementary and secondary schools.

Sec 2, Teaching Art Appreciation, June 30-July 15, (886886) 3 cr, 0830-1130 MTWThF, WullH 220, Day

Survey of art concepts and styles with approaches for teaching in the schools.

5605. PRACTICUM. (3-9 cr; prereq #: A-N only)

Independent project under direction: gathering data, developing proposals, experimenting with evaluating innovative practices.

Sec 21, (686887) Day

Sec 22, (486888) Slettehaugh

5900. PROFESSIONAL PROBLEMS. (3 cr; prereq MEd student; hrs ar; A-N only)

Independent study for M.Ed. candidates integrating learning from art education, art, and education.

Sec 21, (286889) Day

Sec 22, (686890) Slettehaugh

8900.* PROBLEMS: ART EDUCATION. (Cr ar; prereq #: hrs ar)

Independent projects under staff guidance; may include advanced studio practice or technical problems requiring experimental or library research.

Sec 21, (486891) Day

Sec 22, (286892) Slettehaugh

SECOND TERM

5001. ART MEDIA TECHNIQUES: Art Projects for Elementary Schools—August 3-19. (188165) (3 cr; limited to 35 students; 0830-1130 MTWThF; WullH 220; A-N only) DiBlasio

See First Term. 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.

5302. CURRICULUM INNOVATIONS IN ART EDUCATION—July 18-August 2. (090452) (4 cr; limited to 35 students; A-N only; 0830-1130 MTWThF; WullH 240) DiBlasio

Selection, evaluation, and organization of material for teaching units and projects. Conceptualizing and writing art curriculum.

5605. PRACTICUM. (090449) (3-9 cr; prereq #: hrs ar; A-N only) DiBlasio

See First Term.

5900. PROFESSIONAL PROBLEMS. (390450) (3 cr; prereq MEd student; hrs ar; A-N only) DiBlasio

See First Term.

8900.* PROBLEMS: ART EDUCATION. (090451) (Cr ar; prereq #: hrs ar) DiBlasio

See First Term.

Curriculum and Instructional Systems (CISy)

FIRST TERM

5000. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL SYSTEMS. (186893) (1 cr, §SeEd 5000, §SeEd 5102; 0910-1010 FTh; EdHAn 64; A-N only) Carrier

Introduction to use of technology in instruction: self-instructional, computer-managed module.

5002. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL EQUIPMENT RESOURCES. (985342) (1 cr, §SeEd 5002, §SeEd 5102; 0810-0900 TTh; EdHAn 62; A-N only) Carrier
Introduction to use of technology in instruction; self-instructional, computer-managed module.

R 5003. EDUCATIONAL TECHNOLOGY: COMPUTERS IN THE CLASSROOM. (986894) (1 cr, §SeEd 5003, §SeEd 5102; limited to 25 students; 1010-1100 MW; PeikH 355; A-N only) Philipson
Introduction to the use of computer technology in instruction; self-instructional, computer-managed module.

R 5006. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL COMPUTER PROGRAMMING. (1 cr; each section limited to 25 students; A-N only) 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.

Sec 1, (786895) 1010-1100 TTh, PeikH 355
Sec 2, (890484) 1110-1200 TTh, PeikH 355

R 5206. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS. (690499) (3 cr; limited to 10 students; §Elem 5140; 1325-1625 TTh, PeikH 355; A-N only) Stochl
Uses of microcomputers to enhance instruction; applications in language arts, mathematics, science, social studies; evaluation of available programs. Meets concurrently with Elem 5140.

5209. PRINCIPLES AND PROCEDURES IN DESIGNING INSTRUCTION. (586896) (4 cr; prereq 5000; 0910-1200 MWF; EdHAn 64; A-N only) Carrier
Major models of instructional development; generic components; design models; review of instructional design and learning environments.

R 5216. INSTRUCTIONAL SIMULATIONS AND LEARNING GAMES: DEVELOPMENT AND CLASSROOM USE. (785343) (3 cr, §SeEd 5131; limited to 25 students; 1310-1500 MWF; PeikH 355; A-N only)
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]; prereq Δ; A-N only)
Review of literature in research and theory of instructional systems.

Sec 21, (386897) Carrier
Sec 22, (186898) Philipson
Sec 23, (290490) Kimpston

5600. INTRODUCTION TO CURRICULUM SYSTEMS. (190488) (3 cr; 1010-1100 MTWThF; PTh 102; A-N only) 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.

5605. PRINCIPLES AND PROCEDURES IN DESIGNING CURRICULUM—June 20-July 8. (990489) (3 cr, §SeEd 5114; 1310-1500 MTWThF; EdHAn 64; A-N only) Kimpston
Systematic curriculum planning; students develop models for planning, formulate plans, outline a curriculum design for an educational setting.

8501.* PROBLEMS: INSTRUCTIONAL SYSTEMS. (Cr ar; prereq Δ)
Individual empirical investigation.

Sec 21, (086899) Carrier
Sec 22, (786900) Philipson
Sec 23, (090497) Kimpston

8700. CURRICULUM AND INSTRUCTIONAL SYSTEMS FIELD EXPERIENCE. (890498) (3-6 cr [max 6 cr]; prereq #: hrs ar) Kimpston
Internship experience in an educational setting; planning, implementing, and supervising curriculum or instructional change.

SECOND TERM

5003. EDUCATIONAL TECHNOLOGY: COMPUTERS IN THE CLASSROOM. (188174) (1 cr, §SeEd 5003, §SeEd 5102; 1010-1100 TTh; PeikH 355; A-N only)
See First Term.

R 5006. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL COMPUTER PROGRAMMING. (090502) (1 cr; limited to 25 students; 1110-1200 TTh; PeikH 355; A-N only)
See First Term.

R 5205. APPLICATIONS OF COMPUTERS IN EDUCATION. (988175) (3 cr, §SeEd 5205; limited to 25 students; prereq 5003 or SeEd 5003; 1015-1215 MWF; PeikH 355; A-N only) 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. (390500) (1-6 cr [max 6 cr]; prereq Δ; A-N only) R Tennyson
See First Term.

8501.* PROBLEMS: INSTRUCTIONAL SYSTEMS. (190501) (Cr ar; prereq Δ) R Tennyson
See First Term.

5140. MICROCOMPUTER USES IN ELEMENTARY CLASSROOMS. (190529) (3 cr; limited to 20 students; §CISy 5206; 1325-1625 TTh, PeikH 355; A-N only) Stochl
Uses of microcomputers to enhance instruction; applications in language arts, mathematics, science, social studies; evaluation of available programs. Meets with CISy 5206.

5145. CLASSROOM MANAGEMENT. (391680) (3 cr, §SeEd 5145; limited to 40 students; prereq tchg or admin exper or #; 0800-0850 MTWThF; Pth 214; A-N only) H Hansen
For teachers, administrators, and support staff working in elementary school programs; focus on management of student behavior, of instruction as it relates to student behavior, and of teacher organizational tasks within the classroom.

5300. LITERATURE FOR THE ELEMENTARY SCHOOL. (886905) (3 cr; 0905-0955 MTWThF; BuH 123; A-N only) Odland

5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOLS—June 29-July 15. (290523) (3 cr; limited to 40 students; prereq 3316 or elem tchg exper; 1010-1205 MTWThF; BuH 123; A-N only) Monson
Improvement of instruction; study of trends in English Education.

5318. CREATIVE WRITING FOR AND BY CHILDREN—June 14-28. (486907) (3-6 cr [max 6 cr]; limited to 50 students; prereq 3300 or 3336 or elem tchg exper and #; 1010-1205 MTWThF; BuH 123; A-N only) Odland, Monson
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.

5336. CLINICAL PRACTICE IN REMEDIAL TEACHING. (785651) (3 cr; prereq 5334 or 5107 and #; 0800-0955 MTWTh; off campus; A-N only) Taylor
Remedial tutoring of individual children who have difficulty in school learning. Students will be informed of where class will meet upon registration.

5339.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL READING. (1-9 cr [max 9 cr]; prereq elem tchg exper or #; A-N only)
Analysis of new instructional material, techniques, recent trends, and innovations in elementary reading instruction.

Sec 1, June 13-16, (190524) 1 cr, 1300-1600 MTWTh, off campus, Taylor
Relationships between reading instruction and composition and other language arts instruction. Involves other reading and language arts faculty—Beach, Graves, Manning, Monson, Schreiner.

Sec 2, June 20-July 7, (990525) 3 cr, 1325-1520 MTWTh, BuH 120, Manning
Program services in reading: specific attention to vocabulary and reading skill development, comprehension, and content area reading and developing of increased "time on task" reading methods.

5361. TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL—June 14-July 1. (486910) (3 cr; prereq 3101 or equiv; 1115-1310 MTWThF; PeikH 165; A-N only) 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: The Use of Museums in Elementary Social Studies—June 14-July 1. (186912) (Cr ar [max 9 cr]; limited to 35 students; prereq elem tchg exper and #; 1330-1600 MTWThF; Minnesota Science Museum, 10th and Wabasha, St. Paul, MN; A-N only) Ellis

Analysis of new instructional materials and recent curriculum developments in the field; training in innovative instructional procedures. 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. This offering for 3 credits.

5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION. (186920) (3 cr; prereq tchg exper in kindergarten or primary school or #; 0905-0955 MTWThF; Pth 214; A-N only) H Hansen
Continuing needs of children in our changing culture; current practices and recent research.

5602. PRACTICUM: IMPROVEMENT OF TEACHING. (3 cr; prereq MEd student in elem education, #; S-N only; hrs ar)

Sec 21, (486924) Lambert	Sec 26, (986930) Taylor
Sec 22, (186926) Stochl	Sec 27, (786931) Manning
Sec 23, (986927) Post	Sec 28, (586932) Ellis
Sec 24, (786928) Odland	Sec 29, (386933) H Hansen
Sec 25, (586929) Monson	Sec 30, (790526) Dykstra

8300. RESEARCH IN SPECIAL COLLECTIONS OF CHILDREN'S LITERATURE. (086935) (1-3 cr [max 6 cr]; 1325-1520 TTh; BuH 125) 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.

8316. RESEARCH IN ENGLISH COMPOSITION IN ELEMENTARY SCHOOLS. (590527) (3 cr; prereq 5316 or equiv; 1325-1520 MW; BuH 125) Monson
Review of research in oral and written language of children; needed research indicated by current classroom procedures.

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

- 8916.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar: prereq #)
Sec 21 (490519) Monson
Sec 22. (890520) Dykstra
- 8931.* PROBLEMS: TEACHING READING.** (Cr and hrs ar: prereq 5331 or SeEd 5344 and #)
Sec 21 (886936) Odland
Sec 22. (686937) Taylor
Sec 23. (690521) Manning
- 8961.* PROBLEMS: TEACHING SOCIAL STUDIES.** (490522) (Cr and hrs ar: prereq 5361 or SeEd 5155 or 8104 and #)
Ellis
- 8976. PROBLEMS: TEACHING KINDERGARTEN.** (186943) (3 cr: prereq #; hrs ar) H Hansen
- 8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION.** (Cr and hrs ar: prereq #)
Sec 21. (986944) Lambert
Sec 22. (086949) Stochl
Sec 23. (386950) Post
Sec 24. (186951) Odland
Sec 25. (086952) Monson
Sec 26. (886953) Taylor
Sec 27. (686954) Manning
Sec 28. (486955) Ellis
Sec 29. (186957) H Hansen
Sec 30. (390528) Dykstra

SECOND TERM

- 5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 18-August 5.** (688185) (3 cr; 0800-0955 MTWThF; ChDev 218; A-N only) Park
- 5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL—July 18-August 5.** (685352) (3 cr; prereq 9 cr in education; 0800-0955 MTWThF; PeikH 315; A-N only) Manning
For graduate students and summer students who hold a bachelor's degree.
- 5334. READING DIFFICULTIES—July 18-August 5.** (488186) (3 cr; prereq 5331 or SeEd 5344; 1015-1205 MTWThF; BuH 120; A-N only) Schreiner
- # 5337. BEGINNING READING INSTRUCTION—July 18-August 5.** (590530) (3 cr; limited to 40 students; prereq 3331 and #: 1010-1205 MTWThF; BuH 123; A-N only) Manning
For teachers and specialists interested in initial teaching procedures; compares alternative methods of beginning instruction; emphasis on readiness programs, test-grouping patterns, language factors, and intensive instruction procedures to prevent reading failure.
- 5339.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL READING: Use of Computers in Teaching Elementary Reading—July 18-August 5.** (288187) (1-9 cr (max 9 cr); prereq elem tchg experience or #: 0800-0955 MTWThF; PtH 102) Schreiner
See First Term. This offering for 3 credits focuses on computerized learning devices.
- # 5347.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SCIENCE.** (1-6 cr; section 1 limited to 20 students, sections 2 and 3 limited to 35 students; prereq elem tchg exper; A-N only) Heller
Offered in summers with focus on a single program for each offering; treating concept foundations, goals, and teaching and evaluation procedures.
- Sec 1, Magnetism and Electromagnetism in the Intermediate Grades and Junior High School, July 18-29.** (390531) 2 cr, 1325-1520 MTWThF. PeikH 365
Classic experiments that lead to an understanding of magnetism, electromagnetic fields, induced current, and electromagnetic radiations. Meets concurrently with SeEd 5394.
- Sec 2, Primary Science: Constellations, Myths, and Other Astronomy Activities, July 18-22.** (590532) 1 cr, 1010-1205 MTWThF, PeikH 385
Introduction to simple astronomy activities for primary grade children. Shadows, motion, constellations, stories, and parent-child projects.
- Sec 3, Processes in Science for the Primary Grades, July 25-29.** (090533) 1 cr, 1010-1205 MTWThF, PeikH 385
Exploration of activities designed to teach process skills. Observing, describing, classifying and measuring, including selected science instructional materials and involvement in classroom science demonstrations and activities.
- 5348. WORKSHOP: OUTDOOR SCIENCE EDUCATION, July 18-August 5.** (890534) (3 cr; prereq elem tchg exper; 1430-1625 MTWThF; PeikH 385; A-N only) R Johnson
Classroom and fieldwork activities dealing with models, materials, and methods in the outdoor setting; consideration of broad topics such as ecological relationships, cyclic processes and change as well as more specific topics such as rocks and minerals, plants and animals, and stargazing.
- 5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES, July 18-August 5.** (690535) (3 cr; prereq 5349; 0800-0955 MTWThF, PeikH 385; A-N only) R Johnson
Experiences in the use of educational materials and media common to the teaching of modern elementary school science.

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.

- 5602. PRACTICUM: IMPROVEMENT OF TEACHING.** (3 cr; prereq MEd student in elem education. #; S-N only; hrs ar)
 Sec 21, (188188) Jackson
 Sec 22, (988189) Manning
 Sec 23, (288190) Schreiner
 Sec 24, (188191) R Johnson
 Sec 25, (988192) Dykstra
- 8916.* PROBLEMS: TEACHING ENGLISH.** (785360) (Cr and hrs ar; prereq #) Dykstra
- 8931.* PROBLEMS: TEACHING READING.** (Cr and hrs ar; prereq 5331 or SeEd 5344 and #)
 Sec 21, (788193) Manning
 Sec 22, (588194) Schreiner
- 8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION.** (Cr and hrs ar; prereq #)
 Sec 21, (388195) Jackson
 Sec 22, (188196) Manning
 Sec 23, (088197) Schreiner
 Sec 24, (888198) R Johnson
 Sec 25, (688199) Dykstra

Mathematics Education (MthE)

FIRST TERM

R 5101.¹ WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS. (986958) (1-12 cr [max 12 cr]; limited to 35 students; not open to majors in mathematics education; prereq #: 0800-0955 MWF; PeikH 375; A-N only) Stochl
 Modern trends, methods, and materials used to convey mathematical ideas. This offering for 3 credits.

R 5102.¹ WORKSHOP: MATHEMATICS EDUCATION. (786959) (1-12 cr [max 12 cr]; sections 1 and 3 limited to 35 students, sections 2 and 4 limited to 30 students; A-N only)
 Issues, materials, and instructional techniques, focusing on a single current topic of particular relevance to secondary school and college mathematics teachers.

Sec 1, Teaching Secondary School Algebra. (786959) 2 cr. 1010-1100 MWF. PeikH 315, House
 Survey of the major concepts, principles and procedures of algebra and their relationships to other mathematics content; identification of instructional objectives and alternative teaching strategies and materials.

Sec 2, Novel Approaches to Fractions, June 14-24. (590804) 2 cr. 1220-1415 MTWThF, PeikH 375, Post
 Exploration of lessons, instructional methodologies, and materials designed to fit a variety of interpretations of fractions; approaches include techniques for initial concept learning to algorithmic developments for computation.

Sec 3, Probability. (190806) 1 cr. 1010-1100 TTh PeikH 375, House
 Elementary concepts of counting, probability, chance and decision making; problems that involve predictions and decisions based on data; examination of situations where immediate past experience does or does not affect the likelihood of future events; focus on the role of these topics in the school mathematics curriculum for middle school and secondary levels.

Sec 4, Mathematics for Thematic Teaching in the Elementary School, June 27-July 1. (390805) 1 cr. 1220-1415 MTWThF, PeikH 375, Post
 The role of mathematics in thematic teaching; exploration of mathematical skills needed to solve thematic problems; examination of materials, projects and activities that use mathematics in a setting which cuts across subject matter boundaries.

5332. CURRENT TRENDS AND ISSUES IN SECONDARY SCHOOL MATHEMATICS INSTRUCTION. (090807) (3 cr; prereq 5312 or #: 0800-0850 MTWThF; PeikH 315; A-N only) House
 Recent developments in mathematics curriculum and instructional alternatives; issues in teaching and learning; providing for special student needs; program planning and evaluation.

R 5355. MATHEMATICS FOR SLOW LEARNING CHILDREN. (186965) (3 cr; limited to 35 students; prereq 5311 or Elem 3391 or #: 1010-1205 MWF; PeikH 375; A-N only) 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]; prereq #: A-N only)
 Supervised experience in teaching or related work in school.
 Sec 21, (886970) Stochl
 Sec 22, (686971) Post
 Sec 23, (486972) House

5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; prereq #: A-N only)
 Survey of recent literature; design and preparation of reports on special problems.
 Sec 21, (585344) Stochl
 Sec 22, (385345) Post
 Sec 23, (185346) House

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

8680. INTERNSHIP: MATHEMATICS EDUCATION. (Cr ar)

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. (985339) Stochl
Sec 22. (285340) Post

Sec 23. (185341) House

8980.* PROBLEMS: MATHEMATICS EDUCATION. (Cr ar; prereq 8500 or 8570)

Sec 21. (286973) Stochl
Sec 22. (186974) Post

Sec 23. (986975) House

SECOND TERM

85102.¹ WORKSHOP: MATHEMATICS EDUCATION. (1-12 cr [max 12 cr]; each section limited to 30 students; not open to majors in mathematics education; prereq #: A-N only) Jackson
See First Term and Special Programs section.

Sec 1, Math Anxiety Countermeasures, July 18-29, (388200) 2 cr, 1010-1205 MTWThF, PeikH 375

Designing instructional environments, restructuring standard content in less anxious settings; identification of unusual content designed to relieve debilitating anxiety, evaluation of personal instructional techniques; analysis of current materials.

Sec 2, Topics in Recreational Mathematics, July 18-29, (188201) 2 cr, 0800-0955 MTWThF, PeikH 375

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, Construction and Use of Mathematics Laboratory Lessons, August 1-5, (088202) 1 cr, 0800-0955 MTWThF, PeikH 375

Designing laboratory lessons in mathematics at the elementary and at the secondary level; procedures for effective instruction; evaluation criteria.

Sec 4, Geometry Activities for Primary Children, August 1-5, (888203) 1 cr, 1010-1205 MTWThF, PeikH 375

Identification of projects, field trips, and activities which provide illustrations of the more abstract notions of geometry in the early grades.

5680. PRACTICUM IN MATHEMATICS EDUCATION. (890808) (3-9 cr [max 9 cr]; prereq #: A-N only) Jackson
See First Term.

5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION. (690809) (3-9 cr [max 9 cr]; prereq #: A-N only) Jackson
See First Term.

8680.* INTERNSHIP: MATHEMATICS EDUCATION. (090810) (Cr ar) Jackson
See First Term.

8980.* PROBLEMS: MATHEMATICS EDUCATION. (890811) (Cr ar; prereq 8500 or 8570) Jackson

Secondary Education (SeEd)

FIRST TERM

3600.² STUDENT TEACHING. (786976) (Cr ar; prereq A; S-N only) E Anderson
Supervised teaching for students wishing to elect credits in student teaching in addition to regular requirements.

5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (586977) (1-12 cr [max 12 cr]; A-N only) Mackey
Opportunity to work individually or in teams on curricular, instructional, or evaluation problems within the school.

¹ 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.

² Student teaching is open only to students in regular degree programs of the College of Education. Application must be made by May 13. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

R 5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES. (1-3 cr [max 12 cr]; section 1 limited to 20 students, section 2 limited to 40 students) Mackey

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

Sec 1, Women's Studies, June 13-July 1. (386978) 3 cr, 1300-1600 MTWThF, BioSci 12

Intensive workshop session for teachers, presented through two modules, emphasizing women in an international, cross-cultural context. The first module: women in various world areas; the second module: teaching strategies and curriculum development in women's history and culture. Meets concurrently with WoSt 5970.

Sec 2, Teaching About the Newspaper in the Classroom, July 5-15. (186979) 3 cr, 1300-1600 MTWThF, BioSci 12

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

R 5167. ECONOMIC EDUCATION PROGRAMS—June 14-July 1. (291607) (1-3 cr; prereq Econ 1002 or equiv or #: limited to 30 students; 0900-1200 MTWThF; BlegH 105, A-N only) Dalgaard

Conceptual framework of economic education through analyzing research, objectives, philosophy, scope, and curricular sequence. Focuses on economics education programs, materials, and teaching methods in the secondary school with special attention to the "Give and Take" program recently developed for junior and senior high school students. A limited number of scholarships will be available to in-service teachers who meet specified criteria. This offering for 3 credits. For information contact Bruce Dalgaard, Center for Economic Education, 1169 Management and Economics Building, 271 19th Avenue South, Minneapolis, MN 55455 or call (612) 373-4469. Advance application is required; deadline date is May 1, 1983.

5175. SECONDARY REMEDIAL READING INSTRUCTION. (586980) (3 cr; prereq 5344 or Elem 5331 or #: 1115-1205 MTWThF; PeikH 225; A-N only) Graves

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

5185. SCHOOL AND PROFESSIONAL BASED EXPERIENCES IN SECOND LANGUAGES AND CULTURES. (490956) (1-12 cr [max 12 cr]; prereq MEd students only; A-N only) Lange

Opportunity for teachers to work together on curricular, instructional, or evaluation problems; internship experiences; participation in professional activities.

R 5191.¹ WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES (Definitions of Language Proficiency, Course Development, and Proficiency Evaluation)—June 27-July 15. (285144) (1-10 cr [max 10 cr]; limited to 35 students; 1300-1500 MTWThF, PeikH 215; A-N only) Lange

Related specifically to the needs of the in-service teacher. This offering for 3 credits. Examination of the ACTFL Proficiency Guidelines, generic and language specific; French, German, and Spanish; association of proficiency guidelines with knowledge of language, language use, culture, language learning; implications for proficiency evaluation; oral interview and evaluation of listening, reading, and writing; open to secondary as well as college teachers.

5344. TEACHING READING IN CONTENT AREAS. (690955) (3 cr; 0905-0955 MTWThF; PeikH 225; A-N only) Graves

Methods of accommodating to student abilities and facilitation reading in regular content classes.

R 5394.¹ WORKSHOP: SCIENCE EDUCATION. (1-12 cr [max 12 cr]; section 1 limited to 25 students, section 2 limited to 30 students; A-N only) Gennaro

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

Sec 1, Microcomputer Applications in Science Education, June 14-July 1. (186982) 3 cr, 0800-0955 MTWThF, PeikH 355

Effective use of the microcomputer as an instructional tool in science education; hands-on experiences with the microcomputer to develop a sense of the effectiveness of science instruction through the computer.

Sec 2, Teaching Animal Behavior in the Classroom, July 5-15. (086983) 3 cr, 0905-1205 MTWThF, The Minnesota Zoological Gardens, 12101 Johnny Cake Ridge Road, Apple Valley, MN

Curricular materials and instructional techniques for middle school, junior and senior high school teachers. Exposure to animals commonly used in classrooms and the animals in a zoo setting.

5395. SCHOOL BASED PROJECTS IN SCIENCE EDUCATION. (886984) (1-12 cr [max 12 cr]; A-N only; prereq MEd student in science education) Gennaro

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

R 5404. LANGUAGE, CULTURE, AND EDUCATION. (490939) (4 cr; §Spch 5404; limited to 25 students; 1010-1100 MTWThF; PeikH 225; A-N only) Piche

Psychological and social-psychological perspectives for the study of language-communication; dimensions of language variation (dialects, codes, registers); implications for program development and instructional practices. Meets with Spch 5404.

5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS. (686985) (1-12 cr [max 12 cr]; A-N only; 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. (290957) (3-9 cr; prereq 5150, 5152, 5156, 8104 or #: hrs ar) Mackey

Individual research.

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

8871.* PROBLEMS: CURRICULUM CONSTRUCTION. (186988) (Cr and hrs ar; prereq #) Gennaro

R 8893. SEMINAR: ADVANCED TOPICS IN ENGLISH-LANGUAGE ARTS EDUCATION. (390951) (1-9 cr [max 9 cr]; prereq #: limited to 15 students; 1230-1500 TTh; PeikH 225) Piché
Selected special topics with implications for curriculum development and change. This offering for 3 credits focuses on special cognition and communication.

8894.* PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION. (190958) (Cr ar [max 8 cr]) Lange
Individual research.

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

Readings in secondary school English curriculum and instruction.

Sec 21 (090953) Graves

Sec 22 (090954) Piche

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

Sec 21, (986989) Graves

Sec 22, (286990) Piché

8898. READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION. (990959) (1-3 cr) Lange

Readings in development, research, curriculum, instruction, evaluation, culture, teacher education, as needed by the student.

SECOND TERM

R 5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (388214) (1-12 cr [max 12 cr]; A-N only) Glenn

See First Term.

R 5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES: Using the Computer in the Social Studies Classroom—July 18-August 2. (3 cr [max 12 cr]; limited to 40 students; 1300-1600 MTWThF; PeikH 355; A-N only) Glenn

See First Term.

R 5155. MATERIALS LABORATORY FOR SOCIAL STUDIES TEACHERS—August 3-19. (990962) (3 cr; prereq 5150, 5152; limited to 40 students; 1300-1600 MTWThF; PeikH 165; A-N only) Glenn

Locating, developing, and using audiovisual materials, learning programs, and simulations for use in social studies classes.

R 5167. ECONOMIC EDUCATION PROGRAMS—July 18-August 5. (290960) (1-3 cr; prereq Econ 1002 or equiv cr #: limited to 30 students; 0900-1200 MTWTh; BlegH 235; A-N only) Dalgaard

See First Term. A limited number of tuition scholarships for this 3 credit offering will be available to in-service teachers who meet specified criteria. For information contact Dr. Bruce Dalgaard, Center for Economic Education, 1169 Management and Economics Building, 271 19th Avenue South, Minneapolis, MN 55455 or call (612) 373-4469. Advance application is required; deadline date is May 1, 1983.

R 5216. FOUNDATIONS OF BILINGUAL EDUCATION. (190961) (4 cr; limited to 30 students; 1200-1400 MTWThF; PeikH 215; A-N only) Walker

Development; of bilingual schooling in the U.S.; history, social, and political impact, implications of congressional and judicial decisions related to language minority populations, current policy as it affects programs serving limited English proficient populations.

R 5350. CURRENT DEVELOPMENTS IN ENGLISH AND SPEECH EDUCATION: TEACHING WRITING—July 18-August 12. (688218) (1-6 cr [max 12]; limited to 40 students; 0915-1200 MTWThF; PeikH 225; A-N only) 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.

5351. DIRECTED STUDY. (791059) (Cr ar [max 6 cr]; S-N optional; prereq education or graduate student) Beach

R 5394¹. WORKSHOP: SCIENCE EDUCATION: Magnetism and Electromagnetism in the Intermediate Grades and Junior High School—July 18-29. (888220) (1-12 cr [max 12 cr]; limited to 15 students; 1325-1520 MTWThF; PeikH 365; A-N only) Heller

See First Term. Classic experiments that lead to an understanding of magnetism, electromagnetic fields, induced current and electromagnetic radiations. This 2-credit offering meets concurrently with Elem 5347, section 1.

5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS. (488222) (1-12 cr [max 12 cr]; prereq MEd student in English education; A-N only) Beach

See First Term.

8801*. PROBLEMS: TEACHING SOCIAL STUDIES. (790963) (3-9 cr; prereq 5150, 5152, 5156, 8104 or #) Glenn

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.

8894.* PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION. (185159) (Cr ar [max 8 cr]; prereq #)

Walker

See First Term.

8895. READINGS IN ENGLISH EDUCATION. (288223) (1-3 cr) Beach

8896.* PROBLEMS: TEACHING ENGLISH. (188224) (Cr and hrs ar) Beach

R 8898. READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION. (590964) (1-3 cr) Walker

See First Term.

DEPARTMENT OF EDUCATIONAL POLICY AND ADMINISTRATION

Educational Administration (EdAd)

FIRST TERM

5128.¹ WORKSHOP: EDUCATIONAL ADMINISTRATION: Collective Bargaining Workshop—June 14-24.

(090581) (1-6 cr; S-N optional: 1300-1700 MTWThF; P1H 111) Alkire

This offering for 3 credits. See Special Programs section.

R 5130. ADMINISTRATOR DEVELOPMENT SEMINAR. (890582) (3-9 cr [max 9 cr]; limited to 25 students; 1010-1520

MTWThF, WulIH 130; A-N only) Mueller

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 register concurrently for 3 credits in EdAd 5130 and 3 credits in EdAd 5139. Advance application is required. See Special Programs section.

R 5139. LABORATORY IN DECISION MAKING. (690583) (1-4 cr per qtr, limited to 25 students; 1010-1520 MTWThF;

WulIH 130; A-N only) Mueller

Contributions of recent research and theory to effective administration; analysis of administrative behavior in realistic settings and relations of administration to human behavior. Participants register concurrently for 3 credits in EdAd 5130 and 3 credits in EdAd 5139. Advance application is required. See Special Programs section.

5167. THE AMERICAN MIDDLE SCHOOL. (986992) (3 cr; 1010-1205 MWF; FOIH 52; A-N only) Popper

Sources of the movement; purposes, functions and limitations, fundamental problems, types, and curricular implications of reorganization.

5200. DESIGN AND MANAGEMENT OF EDUCATION SERVICES. (685061) (3 cr; 1220-1310 MTWThF; BuH 123; A-N

only) Ammentorp

Educational services offered by schools, hospitals, industries, government agencies; contemporary technology, roles, authority systems, communication networks; resource-policy relationships, evaluation and management of activities of clients and staff members.

5201. FORMAL ORGANIZATIONS IN EDUCATION. (091620) (3 cr, §8201; 1010-1235 TTh; P1H 111; A-N only) Popper

Formal school organization as a complex social system focusing on the executive role and its extensions, administrative process, and historical development of the professional field.

5202. POLITICS OF EDUCATION. (891621) (3 cr, §8202 or SPFE 8208 or 5202; 0905-0955 MTWThF; FOIH 107; A-N

only) 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 5202.

5224. LEGAL IMPLICATIONS OF ACTS BY SCHOOL BOARDS, ADMINISTRATORS, AND TEACHERS. (691622) (3

cr, §8224; 0800-0850 MTWThF; Law 20; A-N only) Hooker

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

5227. PUBLIC SCHOOL PERSONNEL PROGRAMS—June 30-July 15. (491623) (3 cr, §8227; 1325-1520 MTWThF;

ChDev 105; A-N only) Alkire

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

5250. AMERICAN HIGHER EDUCATION. (490584) (4 cr; §Educ 5250, §HiEd 5250; S-N optional; 1010-1215 MW; BuH

238; meets with HiEd 5250) Hearn

Higher and postsecondary educational systems and institutions; purposes and functions; governance and organization, instructional programs, outcomes.

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

5292. THE LAW AND POSTSECONDARY EDUCATIONAL INSTITUTIONS. (290585) (3 cr; §HiEd 5292; 0905-0955 MTWThF, FoIH 52; A-N only) Hooker
Analysis of court opinions and Federal regulations affecting post-secondary educational institutions. Meets with HiEd 5292.

8215. THE ELEMENTARY SCHOOL PRINCIPALSHIP—June 14-29. (386995) (3 cr; 1325-1520 MTWThF; ChDev 105) Lambert

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

8220. QUANTITATIVE FOUNDATIONS FOR MANAGEMENT METHODS. (186996) (3 cr; 0800-0850 MTWThF; EIH N119) Hendrix

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

8228.* PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar; §HiEd 8228; prereq #)

Selected topics on college programs, instruction, organization, and administration.

Sec 21, (990587) Clark

Sec 23, (590589) Kellogg

Sec 22, (790588) Hearn

Sec 24, (290599) Lewis.

8238. SEMINAR: THEORY AND RESEARCH. (785066) (3 cr; prereq 8218 and 8235, educational administration major or #: 1010-1205 MWF; Pth 215) Mazzoni

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

8253. ADMINISTRATION IN HIGHER EDUCATION. (790591) (3 cr; §HiEd 8255; prereq 5250 or HiEd 5250; 1010-1215 TTh; BuH 238) Hearn

Control, faculty and employee personnel administration, budget making and administration, financial accounting and reporting, protection of college funds, public relations. Meets with HiEd 8255.

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

Sec 21, (190580) Alkire

Sec 22, (590592) Lambert

8271.* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION. (886998) (Cr and hrs ar; prereq #) Poppe

8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term; hrs ar)

For superintendents and principals qualified to make intensive studies of a school system.

Sec 21, (686999) Alkire

Sec 25, (087003) Lambert

Sec 22, (587000) Ammentorp

Sec 26, (887004) Mazzoni

Sec 23, (387001) Hendrix

Sec 27, (687005) Mueller

Sec 24, (187002) Hooker

Sec 28, (487006) Popper

8273. FIELD STUDY. (0-10 cr; 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, (385068) Alkire

Sec 25, (485076) Lambert

Sec 22, (185069) Ammentorp

Sec 26, (985079) Mazzoni

Sec 23, (385071) Hendrix

Sec 27, (785083) Mueller

Sec 24, (385071) Hooker

Sec 28, (585084) Popper

SECOND TERM

5103. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION—July 19-August 11. (788226) (3 cr, §SpEd 5160, §PsyS 5160; 0800-1100 TTh; Pth 215; A-N only) Weatherman
Procedures for establishing and improving educational programs for exceptional children. Meets with PsyS 5160.

R 5127. WORKSHOP: POLICY DEVELOPMENT FOR SCHOOL MANAGERS—July 18-August 3. (190538) (3 cr; limited to 25 students; 0800-1000 MWF, PeikH 355; 0800-1000 TTh, PIH 111; A-N only) 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. Requires extensive use of Apple II microcomputer. See Special Programs section.

5210. FINANCING ELEMENTARY AND SECONDARY SCHOOLS. (291624) (3 cr, §8210; 0800-0955 MWF, PIH 111; A-N only)

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.

8212. SCHOOL BUDGETING. (590544) (3 cr; prereq 5210; 1010-1100 MTWThF, PIH 214) Sederberg
Concepts and skills involved in preparing financial budgets for public schools; competency in translating educational programs into budgetary systems, anticipating revenue receipts, planning expenditures, and techniques for preparing a balanced budget.

8221. QUANTITATIVE MODELS FOR PROGRAM ANALYSIS AND RESEARCH—July 18-August 3. (090547) (3 cr; prereq 8220; 1010-1205 MTWThF, WullH 130)

Quantitative techniques for program analysis, research, and decision making in the administration of educational organizations; emphasis on general linear models and computer usage.

8228.* PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar: §HiEd 8228: prereq #)

See First Term.

Sec 21, (690549) Kellogg

Sec 22, (090550) Lewis

8264. THE SECONDARY SCHOOL PRINCIPALSHIP. (890551) (3 cr: 0800-0850 MTWThF, WullH 130) Nickerson
Role of the principal: qualifications, duties, and problems, including current issues and factors of staff and student relationships.

8265. ADMINISTERING THE HIGH SCHOOL PROGRAM. (690552) (3 cr: 0905-0955 MTWThF, WullH 130) Nickerson
Practices and procedures used in building a master schedule; analysis and evaluation of the school program and services.

8271.* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION. (388231) (Cr and hrs ar: prereq #) Nickerson

8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term: hrs ar)

See First Term.

Sec 21, (088233) Ammentorp

Sec 23, (688235) Nickerson

Sec 22, (888234) Hendrix

Sec 24, (488236) Sederberg

8273. FIELD STUDY. (0-10 cr; prereq #: hrs ar)

See First Term.

Sec 21, (288237) Ammentorp

Sec 23, (988239) Nickerson

Sec 22, (188238) Hendrix

Sec 24, (288240) Sederberg

Higher Education (HiEd)

FIRST TERM

5250. AMERICAN HIGHER EDUCATION. (885057) (4 cr, §Educ 5250 or EdAd 5250 or EdAd 8220; S-N optional; 1010-1215 MW; BuH 238) Hearn

Higher and postsecondary educational systems and institutions, purposes and functions, governance and organization, instructional programs and outcomes. Meets with EdAd 5250.

5292. THE LAW AND POSTSECONDARY EDUCATIONAL INSTITUTIONS. (890596) (3 cr, §EdAd 5292; 0905-0955 MTWThF; FoH 52: A-N only) Hooker

Analysis of court opinions and Federal regulations affecting postsecondary educational institutions. Meets with EdAd 5292.

8228.* PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar: §EdAd 8228: prereq #)

Selected topics on college programs, instruction, organization, and administration.

Sec 21, (586901) Clark

Sec 23, (085056) Kellogg

Sec 22, (386902) Hearn

Sec 24, (690597) Lewis

8255. ADMINISTRATION IN HIGHER EDUCATION. (490598) (3 cr, §EdAd 8253: prereq 5250 or Ed Ad 5250; 1010-1215 TTh; BuH 238) Hearn

Control, faculty and employee personnel administration, budget making and administration, financial accounting and reporting, protection of college funds, public relations. Meets with EdAd 8253.

SECOND TERM

8228.* PROBLEMS: HIGHER EDUCATION. (Cr and hrs ar: §EdAd 8228: prereq #)

See First Term.

Sec 21, (685058) Kellogg

Sec 22, (485059) Lewis

Social and Philosophical Foundations of Education (SPFE)

FIRST TERM

3090. THE SCHOOL AND SOCIETY. (387970) (3 cr; limited to 45 students; prereq education sr; 0800-0850 MTWThF; BuH 123: A-N only) Clark

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.

5125. YOUTH IN MODERN SOCIETY. (785164) (4 cr, §Soc 5952; 0905-0955 MTWThF; PIH 102: A-N only) 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.

Course Descriptions

5202. POLITICS OF EDUCATION. (591600) (3 cr. §SPFE 8202 or EdAd 8202 or EdAd 5202; A-N only; 0905-0955 MTWThF; FoIH 107) 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 EdAd 5202.

8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (085168) (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. (088409) (3 cr; limited to 45 students; prereq sr: 0800-0850 MTWThF; EIH N119; A-N only) Harkins

See First Term.

5099. DIRECTED STUDY: Science Fiction, Education, Society. (188411) (Cr ar [max 9 cr]; prereq #: 0905-0955 MTWThF, BuH 125; S-N optional) Harkins

Individual or group work on topics or problems in social or philosophical foundations of education. This offering 3 credits. See Special Programs Section.

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY Psychoeducational Studies (PsyS)

FIRST TERM

3106. EXCEPTIONAL STUDENTS IN REGULAR CLASSES. (891098) (2 cr, §5106; 1115-1205 MTWTh; BuH 120; A-N only) Balow

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.

5101. EDUCATION OF EXCEPTIONAL CHILDREN. (890940) (4 cr, §SpEd 5101; 0905-0955 MTWThF WUIH 130; A-N only) Reynolds

Introduction to field of special education for classroom teachers and other school personnel.

R 5104. SOCIAL AND VOCATIONAL DEVELOPMENT OF HANDICAPPED STUDENTS. (187896) (4 cr, §SpEd 5104; limited to 35 students; prereq #: 1115-1310 TTh; BuH 125; A-N only) 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. (691099) (2 cr, §3106; 1115-1205 MTWTh; BuH 120; A-N only) Balow

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. (587899) (3 cr, §CSPP 5110; limited to 35 students; 1010-1205 TTh, 1 hr ar; PeikH 315; A-N only) 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. (987902) (3 cr; prereq 5110; limited to 35 students; 1325-1520 TTh, 1 hr ar; PeikH 325; A-N only) Shaffer

Analysis of type of client and stage of counseling; isolation of chain of interactions between client and counselor described and practices; appropriate techniques.

5112. EDUCATION OF LEARNING-DISABLED CHILDREN. (690941) (3 cr, §SpEd 5112; 1010-1100 MTWThF; ChDev 218; A-N only) Balow

Analysis of considerations in design and conduct of services of learning-disabled children; approaches to the education of such children.

5140. PSYCHOSOCIAL AND EDUCATIONAL ASPECTS OF DEAFNESS. (187906) (3 cr, §SpEd 5140; 0800-0850 MTWThF; BuH 125; A-N only) McAnally

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. (887911) (3 cr, §SpEd 5143; prereq 5140 or SpEd 5140; 0905-0955 MTWThF; Pth 215; A-N only) McAnally

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.

5181. METHODS AND MATERIALS FOR HANDICAPPED INFANTS AND PRESCHOOL CHILDREN—June 13-24. (490942) (3 cr, §SpEd 5181; prereq 12 cr in education or #: hrs ar; St. Benedicts College; A-N only) Rynders

Methods, materials, conceptual models for maximizing educational development of young children with all types of handicapping conditions.

Course Descriptions

SECOND TERM

- 3106. EXCEPTIONAL STUDENTS IN REGULAR CLASSES.** (391100) (2 cr, §5106: 0905-0955 MTWTh; BuH 120; A-N only) Walter
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.** (590950) (3 cr, §SpEd 5100; 1010-1100 MTWThF; BuH 125; A-N only) Walter
Recent trends and findings in the study of language acquisition; classroom implications for the education of exceptional children.
- 5106. EXCEPTIONAL STUDENTS IN REGULAR CLASSES.** (191101) (2 cr, §3106: 0905-0955 MTWTh; BuH 120; A-N only) Walter
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.** (088281) (3 cr, §CSPP 5110; limited to 35 students; 1010-1205 TTh, 1 hr ar; PtH 102; A-N only) Shaffer
See First Term.
- 5120. INTRODUCTION TO MENTAL RETARDATION.** (790946) (4 cr, §SpEd 5120, CPsy 5315; prereq 5101 or SpEd 5101 or #: 1010-1100 MTWThF; ChDev 218; A-N only) Turnure
Issues that relate to educational practices; community planning, educational philosophy, administration and organization, and programming. Meets with CPsy 5315.
- 5141. METHODS OF TEACHING SCHOOL SUBJECTS TO THE HEARING IMPAIRED—July 18-August 12.** (688283) (3 cr, §SpEd 5141; prereq #: 1300-1430 MTWThF; BuH 123; A-N only) McAnally
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—July 18-August 12.** (885110) (3 cr, §SpEd 5144; prereq #: 1430-1600 MTWThF; BuH 120; A-N only) McAnally
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—July 18-August 11.** (488284) (3 cr, §SpEd 5151; limited to 40 students; 1300-1530 MTWTh; PtH 102; A-N only) Wood
- 5160. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION—July 19-August 11.** (188286) (3 cr, §EdAd 5103, §SpEd 5160; 0800-1100 TTh; PtH 215; A-N only) Weatherman
Procedures for establishing and improving educational programs for exceptional children. Meets with EdAd 51C3.
- 5305. BEHAVIOR ANALYSIS PROCEDURES WITH MILDLY AND MODERATELY HANDICAPPED PEOPLE.** (390948) (4 cr; §SpEd 5301 §SpEd 5303; PsyF 5149 or Psy 5017 recommended; 0905-0955 MTWThF; BuH 123; A-N only)
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—July 18-August 5.** (091102) (2 cr, §SpEd 5501; limited to 30 students; 1300-1500 MTWThF; ChDev 105; S-N only) Force
Issues in special education; critique of research with exceptional children.
- R 5601. PRACTICUM: SPECIAL EDUCATION.** (Cr and hrs ar; section 1 limited to 25 Institute participants; S-N optional; prereq #)
See First Term.
- Sec 1, Teaching Children With Emotional Disturbances—July 18-July 22,** (391694) 2 cr; 0800-1520 MTWThF, students must also register for 5601, section 1, Term I, for 6 cr. Inclusive dates for both are June 13-July 22. Off campus. Wood.
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| Sec 21, (588289) Force | Sec 23, (788291) Walter |
| Sec 22, (887455) Turnure | Sec 24, (190949) Wood |
- 5900. INDEPENDENT STUDY.** (Cr and hrs ar [max 12 cr]; prereq #: A-N only)
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|---|
| Sec 21, (488298) special education majors only, Force |
| Sec 22, (288299) special education majors only, Turnure |
| Sec 23, (088300) special education majors only, Walter |
| Sec 24, (888301) special education majors only, Wood |
| Sec 25, (688302) counseling majors only, Shaffer |
| Sec 26, (488303) counseling majors only, Snoko |
- 8601. ADVANCED PRACTICUM.** (Cr and hrs ar; prereq #)
See First Term.
- | | |
|--------------------------|-----------------------|
| Sec 21, (388293) Force | Sec 23, (088295) Wood |
| Sec 22, (188294) Turnure | |

8701. INTERNSHIP: COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY. (688297) (0-6 cr per qtr [max 9 cr for MA and specialist students, max 18 cr for PhD students]) Snoke
See First Term.

8900. RESEARCH PROBLEMS. (Cr and hrs ar; prereq #)
Sec 21, (988306) special education majors only, Force
Sec 22, (788307) special education majors only, Turnure
Sec 23, (588308) special education majors only, Walter
Sec 24, (388309) special education majors only, Wood
Sec 25, (788310) counseling majors only, Shaffer
Sec 26, (588311) counseling majors only, Snoke

Psychological Foundations of Education (PsyF)

FIRST TERM

8 3380. INTRODUCTION TO HUMAN RELATIONS—June 20-July 14. (787898) (3 cr; limited to 30 students; prereq education sr; 0900-1100 MTWTh; Arch 15; S-N only) 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.

8 5110. INTRODUCTORY STATISTICAL METHODS. (4 cr; each section limited to 40 students; S-N optional) Stecklein
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, (387905) 0800-0850 MTWThF, EltH N647
Sec 2, (887908) 0905-0955 MTWThF, EltH N647

5112. STATISTICAL METHODS COMPUTER LABORATORY. (190918) (2 cr; prereq 5110 or equiv; 0800-0850 MTWTh; PeikH 355; S-N only)
Practical experience using the time-sharing computer language MINITAB; applications of introductory statistical methods and concepts to data files.

5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM. (087910) (4 cr; S-N optional; 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. (487913) (3 cr; prereq 5110 or 8110 or Psy 3801 or equiv; S-N optional; 1010-1100 MTWThF; BuH 125) Terwilliger
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.

5147. INTELLIGENCE. (090919) (3 cr; §5150; 1115-1205 MTWThF; PtH 214; A-N only) Bart
Examination of theories of intelligence and its development; implications for educational practices and psychological research.

5162. PERSONALITY AND SOCIAL DEVELOPMENT. (187915) (3 cr; prereq 5 cr introductory psychology; 1010-1100 MTWTh; ChDev 105; A-N only) Thoma
Major concepts and research findings in adjustment and development with emphasis on educational implications.

5182. PSYCHOLOGY OF STUDENT LEARNING. (787917) (3 cr; 0905-0955 MTWThF; PeikH 315; A-N only) Samuels
Survey of psychological methods and principles; models of the learner: topics in development, creativity, intelligence, and motivation; implications for teaching and curriculum design in preschool, elementary, and secondary education; professional training with children and adolescents as clients.

8 5305.¹ WORKSHOP IN HUMAN RELATIONS—June 20-July 14. (387919) (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; limited to 25 students; 0900-1300 MTWTh; Arch 30; S-N only) 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. (487958) (3 cr; prereq sr; S-N optional; 1010-1100 MTWThF; EltH 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 14-24. (585120) (1 cr; 1220-1310 MTWThF; EltH N647; S-N only)
Procedures for operation of batch and interactive computers; emphasis on SPSS (statistical packages for the social sciences) statistical programs; laboratory experience.

5900. DIRECTED STUDY. (287959) (Cr and hrs ar; prereq #; S-N optional) MacEachern

Course Descriptions

8110. STATISTICAL METHODS. (687960) (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.

8112. STATISTICAL METHODS. (087969) (3 cr; prereq 8111; 0905-0955 MTWThF; BuH 120) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

8120. METHODS IN EDUCATIONAL RESEARCH. (585117) (3 cr; 1115-1205 MTWThF; E1H N647) D Anderson
Methods and techniques employed in investigation and report of educational problems. Suggested for all candidates for degrees.

8900.* RESEARCH PROBLEMS. (Cr and hrs ar; prereq #)

Sec 21, (487961) D Anderson

Sec 24, (987964) Stecklein

Sec 22, (691104) Samuels

Sec 25, (185119) Terwilliger

Sec 23, (187963) MacEachern

8910.* PROBLEMS; STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY. (Cr and hrs ar)
Recent developments in statistical science; applications to educational and psychological problems.

Sec 21, (385118) D Anderson

Sec 23, (587966) Terwilliger

Sec 22, (787965) MacEachern

8920.* PROBLEMS; MEASUREMENT. (1-3 cr [max 9 cr]; hrs ar)

Recent study and individual research.

Sec 21, (387967) Stecklein

Sec 22, (187968) Terwilliger

SECOND TERM

R 3380. INTRODUCTION TO HUMAN RELATIONS—July 18-August 11. (088314) (3 cr; limited to 30 students; prereq education sr; 0900-1100 MTWTh; Arch 15; S-N only) McArthur
See First Term.

R 5110. INTRODUCTORY STATISTICAL METHODS. (4 cr; each section limited to 40 students; S-N optional)
See First Term.

Sec 1, (888315) 0800-0850 MTWThF, E1H N647, D Anderson

Sec 2, (688316) 0905-0955 MTWThF, E1H N647, MacEachern

5112. STATISTICAL METHODS COMPUTER LABORATORY. (390920) (2 cr; prereq 5110 or equiv; 0905-0955 MTWTh; PeiH 355; S-N only)

See First Term.

5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM—July 18-August 12. (190921) (4 cr; S-N optional; 1010-1130 MTWThF; PiH 111)

See First Term.

5125. PRINCIPLES AND METHODS OF EVALUATION. (488317) (3 cr; 0800-0850 MTWThF; BuH 123; S-N optional)
Merwin

Introductory course in program evaluation; theory; practical examples; purpose, roles, program descriptions, and evaluation strategies.

R 5172. STRUCTURING LEARNING: SOCIAL PSYCHOLOGICAL APPROACHES. (090922) (3 cr; limited to 60 students; 1300-1600 MTWThF July 18-August 5, and 1300-1500 August 19; PiH 214; and hrs are off campus; A-N only) D Johnson

How to use cooperation, competition, and individualization to affect learning climate and cognitive and affective outcomes of instruction.

R 5305.¹ WORKSHOP IN HUMAN RELATIONS—July 18-August 11. (188319) (1-6 cr [max 6 cr]; §CSPP 5305, §Educ 5305; limited to 25 students; 0900-1300 MTWTh; Arch 30; S-N only) Oden

See First Term. This offering for 6 credits.

5333. INTRODUCTION TO COMPUTER OPERATIONS: U OF M SYSTEMS, SPSS—July 18-29. (890923) (1 cr; 1115-1205 MTWThF; E1H N647; S-N only)

See First Term.

5900. DIRECTED STUDY. (488320) (Cr and hrs ar; prereq #; S-N optional) MacEachern

8111. STATISTICAL METHODS. (288321) (3 cr; prereq 8110; 0800-0850 MTWThF; BuH 120) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

8130. COMPUTER APPLICATION TO STATISTICAL ANALYSES. (188322) (3 cr; prereq 8112 or equiv; 1010-1100 MTWThF; E1H N647) D Anderson

Use of computer to analyze data from the behavioral sciences; interpretation of results; attention to large scale problems.

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.

8900.* RESEARCH PROBLEMS. (Cr and hrs ar; prereq #)

Sec 21. (988323) D Anderson

Sec 22. (788324) MacEachern

8910.* PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY. (Cr and hrs ar)

See First Term.

Sec 21. (388326) D Anderson

Sec 22. (188327) MacEachern

8920.* PROBLEMS: MEASUREMENT. (185122) (1-3 cr [max 9 cr]; hrs ar) Merwin

See First Term.

8921.* PROBLEMS: EVALUATION. (088328) (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.

MUSIC EDUCATION (MuEd)

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

FIRST TERM

8 3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL. (287007) (4 cr; prereq Mus 1001 and music educ major; limited to 30 students; 1010-1100 MTWThF; ScottH 4; A-N only) Borg

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. (187008) (987009) (6 cr each; S-N only; prereq #: hrs ar; ShAn 225c) Jellison

Six-month resident internship in music therapy at an affiliated, approved hospital or clinic.

5613. TEACHING MUSIC LITERATURE—June 14-July 1. (390836) (3 cr; prereq #: 1325-1520 MTWThF; ScottH 4; A-N only) Borg

Principles, methods, and materials for teaching music history (appreciation) in grades K-12.

5663. INFLUENCE OF MUSIC ON BEHAVIOR—June 27-July 15. (190837) (3 cr; 0800-0955 MTWThF; ShAn 220; A-N only) Jellison

Methods and principles of the behavioral and biological sciences as they relate to the art of music.

5665. MUSIC FOR EXCEPTIONAL CHILDREN—June 14-24. (287010) (3 cr; prereq #: 0905-1205 MTWThF; ShAn 220; A-N only) 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.

5970. INDEPENDENT STUDY. (1-4 cr; prereq education or graduate student; hrs ar; ScottH 104; A-N only)

An independent study project organized by the student with the appropriate instructor.

Sec 21. (187011) Borg

Sec 22. (987012) Jellison

8990.* RESEARCH PROBLEMS. (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScottH 104)

Sec 21. (787013) Borg

Sec 22. (587014) Jellison

SECOND TERM

8 3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL. (188241) (4 cr; limited to 30 students; prereq Mus 1001 and music educ major; 1325-1415 MTWThF; ScottH 4; A-N only) Turrentine

See First Term.

5611. TECHNIQUES AND MATERIALS: MUSIC AND RELATED ARTS—July 18-August 5. (890839) (3 cr; prereq #: 1010-1205 MTWThF; ScottH 4; A-N only) Turrentine

Teaching music to reflect the major developments of Western culture.

5631. TECHNIQUES AND MATERIALS: CHORAL CONDUCTING—July 18-August 5. (190840) (3 cr; §5421; prereq #: 0800-0955 MTWThF; ScottH 4; A-N only) Caswell

Student conducting with class as performing ensemble; criteria for selecting choral and combined choral and instrumental materials; rehearsal techniques.

Course Descriptions

5750.¹ WORKSHOP: MUSIC EDUCATION: Microcomputers in the Music Classroom—July 18-29. (090841) (1-12 cr [max 12 cr]; 1220-1520 MTWThF; ScottH 103; A-N only) Schultz
Selected topics in music education. Using the microcomputer to enhance instruction in music; developing a data base for music libraries, instrument inventories, and budgets; examination of research capabilities for music analysis, composition, and bibliographic indexes. This offering for 4 credits.

5970. INDEPENDENT STUDY. (988242) (1-4 cr; prereq education or graduate student; hrs ar; ScottH 104; A-N only)
Turrentine
See First Term.

8990.* RESEARCH PROBLEMS. (788243) (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScottH 104; A-N only)
Turrentine

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 licensure requirements. Courses applicable toward requirements in the various programs that are offered this summer include the following:

1. An Advanced Degree in Physical Education — PE 5102, 5122, 5123, 5131, 5136, 5150, 5151, 5160, 5620, 5740, 5980, 5981, 5983, 8980, 8981
2. Undergraduate Major in Physical Education—PE 3110, 3115, 3143
3. State of Minnesota Coaching License—PE 3110, 3115, 3143, 3310, 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

R 1007. SWIMMING. (1 cr; each section limited to 22 students)

Course for nonswimmers includes aquatic breathing, floating, bobbing, treading, finning, human stroke, elementary backstroke, sidestroke, front crawl.

Sec 1, (387015) 0905-0955 MTWTh, NorrisH 58, MacGowan

Sec 2, (187016) 1010-1100 MTWTh, NorrisH 58, Wu

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 1014. CONDITIONING. (1 cr; each section limited to 40 students)

Improvement of physical fitness and general appearance through the use of running, circuit training, and progressive exercises of various types.

- Sec 1. (987043) 0800-0850 MTWTh, StadS 264, Northrop Field, FieldHse, MacGowan
- Sec 2. (787044) 0905-0955 MTWTh, StadS 264, Northrop Field, FieldHse, Wu

R 1015. WEIGHT TRAINING. (1 cr; each section limited to 30 students) Heinert

Emphasizes the fundamentals of weight training including skills, techniques, individualized exercise prescription, and theory.

- Sec 1. (087017) 0800-0850 MTWTh, StadN 202
- Sec 2. (887018) 0905-0955 MTWTh, StadN 202

R 1036. RACQUETBALL. (1 cr; each section limited to 24 students) Saito

Basic fundamentals of skills and shots; rules and game strategy are stressed.

- Sec 1. (687019) 0800-0850 MTWTh, StadN 208
- Sec 2. (490858) 0905-0955 MTWTh, StadN 208

R 1038. TENNIS. (1 cr; each section limited to 28 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. (587045) 0800-0850 MTWTh, BFAB 101, Tennis Courts, Ainsworth
- Sec 2. (387046) 0905-0955 MTWTh, BFAB 101, Tennis Courts, Ainsworth
- Sec 3. (187047) 1010-1100 MTWTh, BFAB 101, Tennis Courts, Lin
- Sec 4. (087048) 1115-1205 MTWTh, BFAB 101, Tennis Courts, Lin

R 1050. GOLF. (1 cr; moderate intensity; each section limited to 24 students) Schneider

Emphasizes fundamentals of grip, stance, and swing in addition to etiquette and rules.

- Sec 1. (187050) 0905-0955 MTWTh, StadS 267, Golf Course
- Sec 2. (887052) 1010-1100 MTWTh, StadS 267, Golf Course
- Sec 3. (290859) 1115-1205 MTWThF, StadS 267, Golf Course

R 1073. SOFTBALL. (687053) (1 cr; limited to 40 students; 1010-1100 MTWTh; FieldHse, BFAB Field) Lee

Fundamental skills and tactics of softball; throwing, catching, batting, running, basic conditioning, and game play.

PROFESSIONAL COURSES (PE)

FIRST TERM

R 3110. HUMAN ANATOMY. (087020) (3 cr; limited to 35 students; 1010-1100 MTWThF; CookeH 215; A-N only) Serfass

Emphasizes bones, nerves, and muscles and their significance in physical education.

R 3310. ATHLETIC TRAINING LABORATORY—June 27-July 8. (690860) (1 cr; limited to 20 students; prereq 3114; 1220-1315 MTWThF; BFAB 144; A-N only) Monroe

Practical experience in the training room under supervision.

R 3327. TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL. (490861) (3 cr; prereq elem education major; limited to 35 students; 0800-0850 MTWThF; NorrisH M153, M153A; A-N only) Lampe

Overview of the elementary school physical education program; primarily a laboratory course, with participation in representative physical education activities for children; opportunities for observation of children, microteaching, skill analysis, and group discussion.

5122. APPLIED PHYSIOLOGY. (887021) (3 cr; prereq PubH 3386 or PhsJ 3051 or equiv; 0800-0850 MTWThF; CookeH 215; A-N only) Serfass

Application of concepts in human physiology to exercise physiology, sports training, and physical activities with particular reference to respiratory and cardiovascular systems.

5151. CURRICULUM. (290862) (3 cr; prereq sr; 1010-1100 MTWThF; CookeH 214; A-N only) Young

For students without previous experience in curriculum; objectives, content, organization, evaluation, and trends.

5160. EVALUATION IN PHYSICAL EDUCATION. (190863) (3 cr; prereq 3150 or equiv; 0905-0955 MTWThF; CookeH 214; A-N only) Shick

General principles and techniques of evaluation.

R 5620. PRACTICUM: PREVENTION AND CARE OF ATHLETIC INJURIES—June 27-July 8. (687022) (3 cr; limited to 50 students; A-N only; prereq Anat 1027 or equiv; 1330-1600 MTWThF; BFAB 285, 144) 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.

Course Descriptions

W 5740. WORKSHOP: COACHING OF INDIVIDUAL, DUAL OR TEAM SPORTS: Coaching Track and Field—June 20-25. (990864) (1-12 cr [max 12]; limited to 50 students; 1200-1630 MTWThF; 0800-1230 S; BFAB 285; Track; A-N only) Griak

Instruction at the advanced level including analyses of skills, game strategies; techniques of coaching and methods of training and conditioning. This offering for 3 credits. See Special Programs Section.

5750. ATHLETICS IN CONTEMPORARY SOCIETY: Legal Issues and Liability—June 20-July 15. (391601) (3-9 cr; prereq sr or grad student; A-N only; 0745-0850 MTWThF; CookeH 206) Schultz, Jaeger
Contemporary issues; background on organizational and management problems of interscholastic and intercollegiate athletics. This 3 credit offering meets with Rec 5900; see Special Programs section.

5980. RESEARCH METHODOLOGY. (487023) (3 cr, §HIHh 5980; prereq education or graduate student; 1115-1205 MTWThF; CookeH 214; A-N only) Shick

Methods and design for research in health, physical education, and recreation. Meets with HIHh 5980.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #: A-N only)

Focus on teaching of physical education.

Sec 21, (287024) Jaeger

Sec 24, (787027) Shick

Sec 22, (187025) Jette

Sec 25, (587028) Young

Sec 23, (987026) Serfass

5983. READINGS: PHYSICAL EDUCATION. (Cr ar [max 9 cr]; prereq education or graduate student; A-N only) Independent study under tutorial guidance.

Sec 21, (587031) Jaeger

Sec 24, (087034) Shick

Sec 22, (387032) Jette

Sec 25, (887035) Young

Sec 23, (187033) Serfass

8981.* RESEARCH PROBLEMS. (Cr and hrs ar; prereq 8980 or #: S-N only)

Individual problems.

Sec 21, (287038) Jaeger

Sec 23, (487040) Shick

Sec 22, (187039) Serfass

Sec 24, (287041) Young

PHYSICAL ACTIVITY PROGRAM COURSES (PE)

(Open to all students)

SECOND TERM

W 1007. SWIMMING. (1 cr; each section limited to 22 students)

See First Term.

Sec 1, (588244). 0800-0850 MTWTh, NorrisH 58, Yeboah

Sec 2, (185282). 0905-0955 MTWTh, NorrisH 58, Jungbauer

W 1014. CONDITIONING. (1 cr; each section limited to 40 students)

See First Term.

Sec 1, (388245) 0800-0850 MTWTh, StadS 264, Northrop Field, FieldHse, Duoos-Asche

Sec 2, (188246) 0905-0955 MTWTh, StadS 264, Northrop Field, FieldHse, Yeboah

W 1015. WEIGHT TRAINING. (1 cr; each section limited to 30 students) Kablaoui

See First Term.

Sec 1, (088247) 0905-0955 MTWTh, StadN 202

Sec 2, (790865) 1010-1100 MTWTh, StadN 202

W 1036. RACQUETBALL. (1 cr; each section limited to 24 students)

See First Term.

Sec 1, (888248) 0905-0955 MTWTh, StadN 208, Winters

Sec 2, (590866) 1010-1100 MTWTh, StadN 208, Duoos-Asche

W 1038. TENNIS. (1 cr; each section limited to 28 students)

See First Term.

Sec 1, (688249) 0800-0850 MTWTh, BFAB 101, Tennis Courts, Wolfe

Sec 2, (088250) 0905-0955 MTWTh, BFAB 101, Tennis Courts, Wolfe

Sec 3, (888251) 1010-1100 MTWTh, BFAB 101, Tennis Courts, Wolfe

Sec 4, (688252) 1115-1205 MTWTh, BFAB 101, Tennis Courts, Ainsworth

Sec 5, (390867) 1220-1310 MTWTh, BFAB 101, Tennis Courts, Ainsworth

W 1050. GOLF. (1 cr; moderate intensity; each section limited to 24 students) Jonas

See First Term.

Sec 1, (488253) 0905-0955 MTWTh, StadS 267, Golf Course

Sec 2, (288254) 1010-1100 MTWTh, StadS 267, Golf Course

W 1306. ADVANCED LIFESAVING. (085154) (1 cr; prereq ability to swim 440 yds; limited to 25 students; 0800-0850 MTWTh; CookeH 10) Jungbauer

PROFESSIONAL COURSES (PE)

SECOND TERM

3115. PHYSIOLOGICAL APPLICATION TO SPORTS. (190868) (3 cr. \$PubH 3385. \$PubH 3386; limited to 40 students; 0905-0955 MTWThF; CookeH 215; A-N only) 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 Minnesota Coaching licensure.

3143. ORGANIZATION AND MANAGEMENT OF SPORT. (188255) (3 cr; limited to 40 students; prereq 2 cr coaching course; 0800-0850 MTWThF; BFAB 285; A-N only) Wells
Principles, policies, and procedures involved in the coaching of interscholastic sports.

3327. TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL. (191602) (3 cr; prereq elem education major; limited to 35 students; 0800-0850 MTWThF; NorrisH M153, 153A; A-N only) Lampe
See First Term.

3625. SUPERVISED PRACTICAL EXPERIENCE—July 18-29. (090869) (1-6 cr [max 6]; prereq Δ; 1300-1600 MTWThF; NorrisH M151, M153, M153A, 60, 51; S-N only) Breihan
On-the-job experience under a specialist in the particular area of study. This offering for 3 credits.

5102. PRACTICUM: PHYSICAL EDUCATION FOR THE HANDICAPPED IN AN ADAPTED SETTING—July 18-29. (390870) (1-3 cr [max 3]; prereq 5100, 5101 or #; 1300-1600 MTWThF; NorrisH M151, M153, M153A, 60, 51; S-N only) Breihan
Opportunity for teaching in schools or community settings, providing instruction for atypical individuals in the segregated or adapted environment, includes seminar for review of current theory and exchange of ideas and problems. This offering for 3 credits.

5123. ANALYSIS OF MOVEMENT IN GYMNASTICS—July 18-August 3. (091603) (3 cr; prereq 3111 and 3174 or 3322 or #; 1220-1415 MTWThF; CookeH 206, 302; A-N only) Roethlisberger
Scientific principles of body mechanics and training related to teaching, analysis, and development of advanced performance techniques.

5131. MOTOR DEVELOPMENT—July 18-August 3. (190871) (3 cr; prereq 3112 or #; 0800-0955 MTWThF; CookeH 214; A-N only) Plack
Development aspects of motor skill acquisition from birth to physical maturity.

5136. PSYCHOLOGY OF COACHING—July 18-August 3. (090872) (3 cr; prereq 3113 or #; 1010-1205 MTWThF; BFAB 285; A-N only) Krotee
Psychological aspects of coaching at the elementary, secondary, and college levels.

5150. TEACHING ELEMENTARY SCHOOL PHYSICAL EDUCATION—July 18-August 3. (890873) (3 cr; prereq tchg licensure or #; 1115-1310 MTWThF; CookeH 214; A-N only) Plack
Principles, techniques, and procedures in developing basic motor skills, physical fitness, and sports skills.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #: A-N only)
See First Term.

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|----------------------------|-------------------------|
| Sec 21, (988256) Alexander | Sec 24, (388259) Krotee |
| Sec 22, (788257) Breihan | Sec 25, (788260) Plack |
| Sec 23, (588258) Jaeger | Sec 26, (588261) Stull |

5983. READINGS: PHYSICAL EDUCATION. (Cr ar [max 9 cr]; prereq education or graduate student; A-N only)
See First Term.

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|----------------------------|-------------------------|
| Sec 21, (188263) Alexander | Sec 24, (688266) Krotee |
| Sec 22, (088264) Breihan | Sec 25, (488267) Plack |
| Sec 23, (888265) Jaeger | Sec 26, (288268) Stull |

8381. LABORATORY RESEARCH TECHNIQUES—July 18-August 3. (891604) (1-3 cr; prereq 5980 or #; 1325-1520 MTWThF; CookeH S-7) Alexander
Demonstration and student participation in laboratory procedures involving assessment of exercise parameters. This offering for 3 credits.

8980. RESEARCH PROBLEMS. (690874) (1 cr [max 2 cr]; prereq 5980, PsyF 5110 or #; 1220-1310 TTh; CookeH 215; S-N only) Alexander
Designing and reporting on individual problems. Required of all M.A. and Ph.D. candidates. Meets with Hlth 8980.

8981.* RESEARCH PROBLEMS. (Cr and hrs ar; prereq 8980 or #; S-N only)
See First Term.

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| Sec 21, (188269) Alexander | Sec 23, (288271) Plack |
| Sec 22, (488270) Jaeger | Sec 24, (188272) Stull |

Course Descriptions

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
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) Lampe
Elementary steps and variations of the foxtrot, waltz, tango, samba, cha-cha, rumba, and swing.

- Sec 1, (887889) 1115-1205 MTWTh, NorrisH M153, M153A (men only)
Sec 2, (187890) 1115-1205 MTWTh, NorrisH M153, M153A (women only)

¶ 1024. **MODERN DANCE.** (087891) (1 cr; limited to 25 students; 1010-1100 MTWTh; NorrisH M153, M153A) Jette
Introduction to fundamental techniques of modern dance.

¶ 3181. **DANCE THERAPY—June 14-27.** (990508) (2 cr; limited to 18 students; 1115-1310 MTWThF; NorrisH 67: A-N only) Jette

For students and teachers interested in dance therapy as a means of communication and interaction for the emotionally disburbed or handicapped person.

5700.¹ WORKSHOP: DANCE IN EDUCATION: Creative Dance for Children—June 14-30. (385328) (Cr ar [max 12 cr]; 0800-0955 MTWThF; NorrisH 67: A-N only) Jette

History, principles, instructive techniques, and materials for teaching dance in schools and recreational agencies. This offering for 3 credits. See Special Programs section.

¶ 5701¹. **WORKSHOP: DANCE PERFORMANCE.** (1-12 cr [max 12 cr]; each section limited to 25 students; S-N optional; prereq #) Gunn

Principles of technique, improvisation, choreography, music, production, notation, history, philosophy, and criticism as they relate to dance performance. See Special Programs Section.

- Sec 1, **Intermediate Modern Dance Technique** (185699) 3 cr, 1010-1140 MTWThF, NorrisH M151

- Sec 2, **Advanced Modern Dance Technique** (290506) 3 cr, 1155-1325 MTWThF, NorrisH M151

SECOND TERM

¶ 1024. **MODERN DANCE.** (1 cr; each section limited to 25 students) Bonsignore
See First Term.

- Sec 1 (085333) 0905-0955 MTWTh, NorrisH M151
Sec 2 (390514) 1010-1100 MTWTh, NorrisH M151

¶ 1124. **MODERN DANCE.** (685335) (1 cr; prereq 1024 or equiv; limited to 25 students; 1220-1310 MTWTh; NorrisH M151) Bonsignore

Basic techniques of modern dance and improvisation.

Recreation, Park, and Leisure Studies (Rec)

FIRST TERM

3700. SENIOR INTERNSHIP. (287895) (1-15 cr; prereq sr, recreation major or minor, A; S-N only; hrs ar) McAvoy, Schultz
Supervised experiences in selected agencies.

5630. PRACTICUM: THERAPEUTIC RECREATION. (287900) (3-9 cr; prereq recreation MEd or graduate student; A-N only; hrs ar) McAvoy

Supervised experiences in program operation; administrative and supervisory duties.

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.

5640. PRACTICUM: PUBLIC RECREATION AND PARKS. (187901) (3-9 cr; prereq recreation MEd or graduate student; hrs ar: A-N only) Schultz
Supervised experiences in program operation; administrative and supervisory duties.

R 5900.¹ WORKSHOP: CONTEMPORARY ISSUES IN LEISURE SERVICES. (1-12 cr [max 12 cr]; section 1 limited to 18 students, section 2 limited to 35 students; prereq Δ : A-N only)
Contemporary issues emphasizing administrative and supervisory functions for recreation and allied professionals.

Sec 1, Leisure and Educational Resources of a Wild and Scenic River, June 13-18, (587904) 3 cr, meet 0800 M June 13. CookeH 206 for organization and departure. Field trip through 1800 June 18. McAvoy
Application of outdoor education methods, group leadership techniques, and the administration and use of a wild and scenic river environment on a six-day field canoe trip on Namekagon and St. Croix Rivers. Advance application required; see Special Programs section.

Sec 2, Legal Issues and Liability in Leisure Services, June 20-July 15, (990878) 3 cr, 0745-0850 MTWThF, CookeH 206. Schultz, Jaeger
Examination of specific legal issues affecting leisure services: liabilities, land dedication, civil liberties, civil rights, employment, and environmental regulations.

5981. PROBLEMS. (790879) (Cr and hr ar; prereq MEd candidate, #: A-N only) McAvoy
Focus on conduct of recreation programs.

5983. READINGS: RECREATION. (087907) (1-3 cr; prereq MEd or grad student or Δ ; hrs ar; A-N only) Schultz
Independent study under tutorial guidance.

8981.* RESEARCH PROBLEMS. (687909) (Cr and hrs ar; prereq 8980 or #: S-N only) Schultz
Individual problems.

SECOND TERM

3700. SENIOR INTERNSHIP. (588275) (1-15 cr; prereq sr, recreation major or minor, Δ ; S-N only; hrs ar) Schleien
See First Term.

5630. PRACTICUM: THERAPEUTIC RECREATION. (388276) (3-9 cr; prereq recreation MEd or graduate student; hrs ar; A-N only) Schleien
See First Term.

5640. PRACTICUM: PUBLIC RECREATION AND PARKS. (188277) (3-9 cr; prereq recreation MEd or graduate student; hrs ar: A-N only) Schleien
See First Term.

R 5900.¹ WORKSHOP: CONTEMPORARY ISSUES IN LEISURE SERVICES: Assessment and Evaluation in Leisure Services for Special Populations. (190880) (1-12 cr [max 12 cr]; limited to 30 students; prereq Δ : 1430-1645 TTh; CookeH 206; A-N only) Schleien
See First Term. A 3-credit in-depth study and application of approaches to therapeutic recreation service emphasizing individual, group, and facility assessment techniques, data collection strategies, and program evaluation in various settings; its application to research.

5983. READINGS: RECREATION. (888279) (1-3 cr; prereq MEd or grad student or Δ ; hrs ar; A-N only) Schleien
See First Term.

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, 5120, and 5140
2. Advanced and Graduate Degrees in School Health Education—Hlth 5120, 5140, 5685, 5980, 5981, 5983, 8980, and 8981

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

FIRST TERM

1500. AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY. (687912) (2 cr; limited to 35 students; 0905-0955 MTWThF; NorrisH 201; A-N only) 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.

1502. BASIC LIFE SUPPORT. (090886) (1 cr; limited to 30 students; 1010-1100 MTWTh; NorrisH 201; S-N only) Vokaty
Theory and practice in skills in rescue breathing and external cardiac compression; American Red Cross certification awarded upon demonstration of competence based on recommendation of instructor.

5120. ROLE OF THE SCHOOL HEALTH EDUCATOR IN HEALTH APPRAISAL. (890887) (3 cr; limited to 30 students; 1010-1100 MTWThF; NorrisH 3; A-N only) Cobb
Role of school medical and dental advisers, nurses, teachers, and other school personnel in protection and maintenance phases.

5140. ADMINISTRATION OF THE SCHOOL HEALTH PROGRAM. (690888) (3 cr; limited to 30 students; 1115-1205 MTWThF; NorrisH 3; A-N only) Cobb
Coordination of total program; health supervision and guidance; relationships between public schools and governmental health organizations and agencies; evaluation; guidance in the solution of individual professional problems.

5685. SCHOOL-BASED PROJECTS IN SCHOOL HEALTH EDUCATION. (787920) (1-12 cr [max 12 cr]; prereq school health MEd student; hrs ar: A-N only) Cobb
Individual or group projects applicable to local school situations, such as curricular, instructional, or evaluative problems.

5980. INTRODUCTION TO RESEARCH. (387922) (3 cr, §PE 5980; prereq #: 1115-1205 MTWThF; CookeH 214; A-N only) Shick
Methods and design for research in health, physical education, and recreation. Meets with PE 5980.

5981. PROBLEMS. (187929) (Cr and hrs ar; prereq #: A-N only) Cobb
Focus on teaching school health education.

5983. READINGS: HEALTH EDUCATION. (487930) (1-3 cr; prereq sr honor or grad student, #: hrs ar: A-N only) Cobb
Independent study under tutorial guidance.

8981.* RESEARCH PROBLEMS. (785133) (Cr ar; prereq 8980 or #: S-N only) Cobb

SECOND TERM

5981. PROBLEMS. (490889) (Cr and hrs ar; prereq #: A-N only) Jaeger
See First Term.

5983. READINGS: HEALTH EDUCATION. (890890) (1-3 cr; prereq sr honor or grad student, #: hrs ar: A-N only) Jaeger
See First Term.

8980.* RESEARCH PROBLEMS. (490892) (1 cr, prereq 5980, PsyF 5110 or #: 1220-1310 TTh, CookeH 215; S-N only) Alexander

Designing, reporting on individual problems; required of all M.A. and Ph.D. candidates. Meets with PE 8980

8981.* RESEARCH PROBLEMS. (690891) (Cr ar; prereq 8980 or #: S-N only) Jaeger

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Agricultural Education (AgEd)

FIRST TERM

5027. PRACTICUM: PLACEMENT FOR EXTENSION EXPERIENCES. (187971) (2-9 cr [max 9 cr], §HEEd 3605, §HeEd 5027; S-N optional; 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.

5061. PROGRAM PLANNING AND EVALUATION. (090600) (3 cr, prereq sr; 1300-1400 MTWThF; VoTech R375; A-N only) Leske, Peterson

5090. INDEPENDENT STUDY. (890601) (1-3 cr; prereq sr; hrs ar; A-N only) Marvin
Topics may be chosen to permit study of areas within education or to supplement areas of inquiry not provided in the regular course structure.

5095. INDEPENDENT STUDY. (690602) (3 cr; prereq MEd student in agricultural education; hrs ar; A-N only) Marvin
Preparation of a paper dealing with studies in agricultural education applied to professional responsibilities.

8001.* RESEARCH IN AGRICULTURAL EDUCATION. (490603) (Cr ar; prereq 15 cr in education) Marvin
Selecting problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts.

8091. FIELD PROBLEMS. (491105) (3 cr; hrs ar) Marvin
Making investigations, gathering data, and formulating plans regarding agricultural education.

SECOND TERM

3029. DIRECTED EXPERIENCE IN AGRICULTURAL EDUCATION. (691054) (1-3 cr; prereq Δ ; hrs ar; A-N only)
Leske.

5027. PRACTICUM: PLACEMENT FOR EXTENSION EXPERIENCES. (286388) (2-9 cr [max 9 cr]; §Heed 3605,
§Heed 5027; prereq #: hrs ar; off campus; S-N optional) Norenberg
See First Term.

5072. PRACTICUM: AGRICULTURAL BUSINESS AND INDUSTRY. (286388) (1-3 cr [max 9 cr]; prereq 5071 or #: hrs
ar; off campus; A-N only) Leske
Observation, study, and experience in agricultural business and industry; application to educational programs in
agriculture.

5090. INDEPENDENT STUDY. (590575) (1-3 cr; prereq sr; hrs ar; A-N only)
See First Term.

Sec 1, (590575) 1-3 cr, hrs ar, Marvin

Sec 2, (791546) August 8-9, 0900-1500 MT, VoTech R285, 1-3 cr, Peterson, Leske, Persons, Marvin

5095. INDEPENDENT STUDY. (390576) (3 cr; prereq MEd student in agricultural education; hrs ar; A-N only) Marvin
See First Term.

8001.* RESEARCH IN AGRICULTURAL EDUCATION. (291106) (Cr ar; prereq 15 cr in education) Marvin
See First Term.

8091. FIELD PROBLEMS. (190577) (3 cr; hrs ar) Marvin
See First Term.

Business and Distributive Education (BDE)

FIRST TERM

R 1501.¹ BASIC KEYBOARDING/TYPERWRITING. (487992) (3 cr, §BsEd 1501; limited to 24 students; S-N optional for
nonmajors; 1115-1205 MTWThF; VoTech 240)
Emphasis on correct keyboarding techniques for the typewriter, microcomputer, and other applications; letter format;
manuscripts; proofreading

R 1502.¹ INTERMEDIATE TYPERWRITING. (287993) (3 cr, §BsEd 1502; limited to 8 students; prereq 1501 or proficiency
exam; 1115-1205 MTWThF; VoTech 240; A-N only)
Business letters; job application forms; personal data sheets; centering and tabulations; memoranda; manuscripts with
footnotes; speed and accuracy building.

R 1503.¹ ADVANCED TYPERWRITING. (187994) (3 cr, §BsEd 1503; limited to 7 students; prereq 1502 or proficiency
exam; 1115-1205 MTWThF; VoTech 240; A-N only)
Form letters; business and personal letters; business forms; tabular/columnar copy; speed and accuracy building.

**R 5310. INTRODUCTION TO MICROCOMPUTER APPLICATIONS IN BUSINESS AND DISTRIBUTIVE EDUCA-
TION—June 13-24.** (890453) (3 cr, limited to 25 students; 0800-1100 MTWThF and hrs ar; VoTech 230; A-N only)
Lambrecht
Introduction to instructional uses of microcomputers, representative business and distributive education applications, and
BASIC programming.

R 5359. OCCUPATIONAL EXPERIENCE. (787996) (1-18 cr; limited to 20 students; prereq #: S-N optional; 1800-2000 T
and hrs ar; VoTech 420C) Hopkins
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.

¹These courses meet concurrently. A total of 39 students will be accepted in the three courses.

Course Descriptions

R 5360. PROGRAM DEVELOPMENTS IN BUSINESS AND DISTRIBUTIVE EDUCATION: Teaching Keyboarding in the Elementary School—June 29-30. (690454) (1-6 cr, limited to 25 students; 1220-1730 WTh and hrs ar; VoTech 230; A-N only) McLean

Developments emerging from research and local, state, and national programs and projects. This offering for 1 credit. Using appropriate psychological concepts in teaching the typewriter computer keyboard to elementary school students, including techniques, materials, and evaluation.

R 5361. BUSINESS OBSERVATION AND SEMINAR—July 11-15. (587997) (3-9 cr, §DE 5325; limited to 30 students; prereq Δ; 0800-1205, 1325-1625 MTWThF and hrs ar; VoTech R285; A-N only) 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.

R 5370. SPECIAL TOPICS IN INSTRUCTION: Using Marketing Research Projects as a Student Organization Activity—July 5-8. (490455) (1-6 cr; limited to 25 students; 1220-1625 TWThF and hrs ar; VoTech 220; A-N only)

Topics vary with each offering; content planning, providing, evaluating instruction. This offering for 2 credits. Instruction of designing, conducting, and evaluating individual and group marketing research projects to supplement classroom work, and student organization objectives.

R 5380. SPECIAL TOPICS IN CURRICULUM: Using the Microcomputer in the Basic Business Subjects—June 27-28. (290456) (1-6 cr; limited to 25 students; 1220-1730 MT and hrs ar; VoTech 230; A-N only) Hopkins

Topics vary with each offering; content development, evaluation of curriculum, curriculum materials. This offering for 1 credit. Use of representative microcomputer simulations in the marketing, banking, and business management areas. Procedures for evaluating and using microcomputer-based simulation in basic business classes.

R 5390. SPECIAL TOPICS IN TECHNICAL UPDATING: Microcomputer Basics for the Vocational Educator—June 20-24. (190457) (1-6 cr; limited to 25 students; 1220-1625 MTWThF and hrs ar; VoTech 230; A-N only) Hopkins

Topics vary with each offering; content, technological and procedural changes in business. This offering for 2 credits. Introduction to instructional use of microcomputers in vocational education, using and evaluating a variety of computer programs for the Apple II. No previous use of microcomputers required.

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

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

Sec 21, (387998) Hopkins

Sec 22, (187999) Lambrecht

5900. DIRECTED STUDY IN BUSINESS AND DISTRIBUTIVE EDUCATION. (1-6 cr [max 6 cr]; S-N optional; prereq Δ; hrs ar)

Opportunity for individual learning experiences not covered by regular courses.

Sec 21, (188000) Hopkins

Sec 22, (988001) Lambrecht

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

Sec 21, (788002) Hopkins

Sec 22, (588003) Lambrecht

SECOND TERM

5352. COORDINATION TECHNIQUES IN BUSINESS AND DISTRIBUTIVE EDUCATION—July 18-29. (288450) (4 cr, §BsEd 5104, §DE 5105, §DE 5106; 0800-1100 MTWThF and hrs ar; VoTech 220; A-N only) 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 Marketing and Distributive Education—August 1-5. (188451) (1-6 cr; limited to 25 students; 0800-1205 MTWThF and hrs ar; VoTech 230; A-N only) Ashmun

Developments emerging from research and local, state, and national programs and projects. This offering for 2 credits. Use of Apple II microcomputers as a tool in teaching marketing concepts and to assist in classroom and store management activities.

R 5370. SPECIAL TOPICS IN INSTRUCTION: Using the Microcomputer in Office Procedures and in the Model Office—July 18-22. (185324) (1-6 cr; limited to 25 students; 1220-1625 MTWThF and hrs ar; VoTech 230; A-N only) McLean

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: Using Spread Sheet Analysis (Visicalc) in BDE—August 1-5. (990458) (1-6 cr; limited to 25 students; 1220-1625 MTWThF and hrs ar; VoTech 230; A-N only) Lambrecht

Topics vary with each offering; content, technological and procedural changes in business. This offering for 2 credits. Procedures for using this program on the Apple II microcomputer in business and distributive education classes.

5600. SCHOOL-BASED PROJECTS IN BUSINESS AND DISTRIBUTIVE EDUCATION. (785326) (1-12 cr [max 12 cr]; prereq #: hrs ar; A-N only) Ashmun
See First Term.

5900. DIRECTED STUDY IN BUSINESS AND DISTRIBUTIVE EDUCATION. (585327) (1-6 cr [max 6 cr]; S-N optional; prereq Δ; hrs ar) Ashmun
See First Term.

8900.* PROBLEMS: BUSINESS AND DISTRIBUTIVE EDUCATION. (185329) (1-9 cr [max 9 cr]; prereq #: hrs ar) Ashmun
See First Term.

Home Economics Education (HEEd)

FIRST TERM

¶ 3325. PRACTICUM IN CHILD DEVELOPMENT—July 11-15. (290747) (1 cr; limited to 10 students; prereq 3320 or *3320 and Δ; 0900-1600 MTWThF; McNH 375; A-N only) Jessen
Observation of and experience with children as a method of teaching child development in the home economics program. For high school juniors and seniors. Advance application required. For information contact Ruth Thomas, 325 Vocational and Technical Education Building, 1954 Buford Avenue, University of Minnesota, St. Paul, MN 55108, (612) 373-1764.

5003. COOPERATIVE EDUCATION PROGRAM: INTERNSHIP. (585067) (3 cr [max 9 cr]; prereq HE 1003, 1500; hrs ar; S-N only) 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.

5405. CHILD DEVELOPMENT AND PARENT EDUCATION—June 13-24.(388004) (1-4 cr [max 12 cr]; 0900-1200 MTWThF; VoTech R380; A-N only) Thomas
Objectives, content, curriculum organization, teaching methods, materials, and evaluation approaches for teaching youth and adults about social, cultural, psychological, economic, and technical aspects of child development, parenting, and parent-child interaction. This offering for 3 credits. Concurrent registration in HEEd 5430, section 1 is required.

5407. FAMILY LIFE EDUCATION—June 27-July 8. (188005) (1-3 cr [max 12 cr]; 1300-1600 MTWThF and hrs ar; VoTech R380; A-N only) Rossmann
Objectives, content, curriculum development, methods, materials, and evaluation approaches for teaching diverse groups of youth and adults family life concepts including current research in communication, relationships, sexuality, self-esteem and decision-making. This offering for 3 credits.

5420. WORKSHOP: ADULT EDUCATION—June 27-July 1. (190748) (1-4 cr [max 12 cr]; 0800-1200 MTWThF; VoTech R370; A-N only) Bowman
Procedures in teaching adults; planning the program; use of new materials and techniques; group and individual problems. This offering for 2 credits. Group methods of instruction.

¶ 5430.¹ WORKSHOP: CONTEMPORARY PROBLEMS IN HOME ECONOMICS EDUCATION. (1-6 cr [max 12 cr]; section 1 limited to 50 students, section 4 limited to 20 students, section 5 limited to 24 students; A-N only)
Consideration of topic of current concern in home economics education.

Sec 1, Parenting Education, June 13-24, (888007) 3 cr, 1300-1600 MTWThF, VoTech R380, Thomas
Participants will apply concepts and methods learned in HEEd 5405 to individual situations. Small group minisessions will address specific problems. Concurrent registration in HEEd 5405 is required.

Sec 2, Group Leadership Strategies for Building Self-Esteem in Group Members, June 27-July 1. (688008) 1 cr, 1300-1500 MTWThF, VoTech R370, Bowman
Relationships of self-esteem to classroom or group behavior, ways to enhance self-esteem, distinction between temporarily feeling "low" and poor self-image, leader or teacher esteem, and methods useful in various settings.

Sec 3, Handling Conflict in Groups, June 27-July 1, (585070) 1 cr, 1500-1700 MTWThF, VoTech R370, Bowman
Ways to respond to anger or conflict in a group or classroom, the roots of anger and conflict, strategies for dealing with personal anger, conflict management techniques, the importance of permitting anger and conflict.

Sec 4, Working with Adolescents in Child Development and Parenting Education July 5-15, (990749) 4 cr, July 5-8, 0800-1200, July 11-15, 0900-1600, McNH 375, Cooke
Strategies for helping adolescents understand themselves, human development processes, and care-giving roles through working with children; experiences in planning, observing, and supervising adolescents' work with children and providing feedback. Advance application required. For information contact Ruth Thomas, 325 Vocational and Technical Education Building, 1954 Buford Avenue, University of Minnesota, St. Paul, MN 55108, (612) 373-1764.

Sec 5, Microcomputer Applications in Home Economics, July 11-15, (290750) 3 cr, 0800-1200 MTWThF, VoTech 230, and 1300-1600 rm ar, McClelland
Hands-on experience with home economics computer programs; use of microcomputers for instruction and management of home economics 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

5900. READINGS IN HOME ECONOMICS EDUCATION. (1-3 cr [max 12 cr]; prereq #: hrs ar; A-N only)
Independent study under tutorial guidance.

Sec 21, (488009) Rossmann
Sec 22, (888010) Thomas

Sec 23, (285080) McClelland
Sec 24, (190751), Plihal

8300. RESEARCH METHODS—June 13-July 1. (285077) (3 cr; prereq 5315, #: 1600-1800 MTWThF; VoTech R325)
Plihal

Methods of inquiry, descriptive and causal-comparative methods, with attention to experimentation.

8900.* PROBLEMS: HOME ECONOMICS EDUCATION. (1-9 cr; prereq 8300, #: hrs ar)
Independent study of current educational problems.

Sec 21, (688011) Rossmann
Sec 22, (488012) Thomas

Sec 23, (985082) McClelland
Sec 24, (490746) Plihal

SECOND TERM

5430.¹ WORKSHOP: CONTEMPORARY PROBLEMS IN HOME ECONOMICS EDUCATION. (1-6 cr [max 12 cr]; A-N only)

See First Term.

Sec 1, Alternative Educational Delivery Methods: Computers and Teleconferences, July 18-22. (988452) 1 cr, 0900-1100 MTWThF, VoTech R370, McClelland
Demonstration of computers and teleconferences as methods of instruction; consideration of serving diverse learner populations.

Sec 2, Alternative Educational Delivery Methods: Television and Videotapes, July 25-29. (788453) 1 cr, 0900-1100 MTWThF, VoTech R370, McClelland
Television and videotape production; consideration of serving diverse learner populations.

Sec 3, Alternative Educational Delivery Methods: Print Media and Self Instructional Modules, August 1-5. (590754) 1 cr, 0900-1100, MTWThF, VoTech R370, McClelland
Development of materials; consideration of serving diverse learner populations.

Sec 4, Experiential Teaching and Learning, July 18-22. (390755) 2 cr, 1200-1600 MTWThF VoTech R370, Cooke
Educational environments, teaching processes, and educator roles which facilitate experiential learning; application of relevant theory to instructional design.

5900. READINGS IN HOME ECONOMICS EDUCATION. (588454) (1-3 cr [max 12 cr]; prereq #: hrs ar; A-N only)
McClelland

See First Term.

8900.* PROBLEMS: HOME ECONOMICS EDUCATION. (685089) (1-9 cr; prereq 8300, #: hrs ar) McClelland
See First Term.

Industrial Education (Ind)

FIRST TERM

3110. CONSTRUCTION: INTERMEDIATE. (288013) (3 or 6 or 9 cr; prereq 1612, #: hrs ar; A-N only) Kavanaugh
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. (188014) (3 or 6 or 9 cr; prereq 3110, #: hrs ar; A-N only) Kavanaugh
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. (988015) (3 or 6 or 9 cr; prereq 1622, #: hrs ar; A-N only) Kavanaugh
Individualized technical skill development in areas of offset printing, technical illustrating, machine and architectural drafting, photography.

3121. GRAPHIC COMMUNICATIONS: ADVANCED. (788016) (3 or 6 or 9 cr; prereq 3120, #: hrs ar; A-N only) Kavanaugh
Individualized advanced skill development in areas of color separation, web press operation, drafting design, color renditions air brush.

3130. MANUFACTURING: INTERMEDIATE. (588017) (3 or 6 or 9 cr; prereq 1632, #: hrs ar; A-N only) Kavanaugh
Individualized technical skill development in areas of welding, lathe operation, milling machine operation, sheet metal construction.

3131. MANUFACTURING: ADVANCED. (388018) (3 or 6 or 9 cr; prereq 3130, #: hrs ar; A-N only) Kavanaugh
Individualized advanced skill development in areas of numerical control and machine setup inspection, electric discharge machining, TIG welding.

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.

3140. POWER AND ENERGY: INTERMEDIATE. (188019) (3 or 6 or 9 cr; prereq 1642, #; hrs ar; A-N only) Kavanaugh Individualized technical skill development in areas of digital, hydraulic and pneumatic control systems, and radio and TV repair.

3141. POWER AND ENERGY: ADVANCED. (588020) (3 or 6 or 9 cr; prereq 3140, #; hrs ar; A-N only) Kavanaugh Individualized advanced skill development in areas of digital, hydraulic, and pneumatic system design, electronic maintenance and repair, and alternative energy sources.

3150. TRANSPORTATION: INTERMEDIATE. (388021) (3 or 6 or 9 cr; prereq 1652, #; hrs ar; A-N only) Kavanaugh Individualized technical skill development in areas of small gas and marine engine repair, automotive tuneup, cooling systems, brakes, and autobody repair.

3151. TRANSPORTATION: ADVANCED. (188022) (3 or 6 or 9 cr; prereq 3150, #; hrs ar; A-N only) Kavanaugh Individualized advanced skill development in areas of diesel engine repair, auto engine overhaul, front end repair, automatic transmission, aircraft engine maintenance, chassis straightening.

3900. INDEPENDENT STUDY. (3 cr per qtr; prereq #; hrs ar; A-N only)
Self-directed study, preceded by classroom instruction in basic research procedures.

Sec 21, (088023) Bjorkquist	Sec 24, (488026) Pucel
Sec 22, (888024) Kavanaugh	Sec 25, (288027) Brown
Sec 23, (688025) Moss	

3901. INDEPENDENT STUDY. (3 cr per qtr; prereq #; hrs ar; A-N only)
Self-directed study, preceded by classroom instruction in basic research procedures.

Sec 21, (985647) Bjorkquist	Sec 24, (288030) Pucel
Sec 22, (188028) Kavanaugh	Sec 25, (188031) Brown
Sec 23, (988029) Moss	

3902. INDEPENDENT STUDY. (3 cr per qtr; prereq #; hrs ar; A-N only)
Self-directed study, preceded by classroom instruction in basic research procedures.

Sec 21, (988032) Bjorkquist	Sec 24, (388035) Pucel
Sec 22, (788033) Kavanaugh	Sec 25, (188036) Brown
Sec 23, (588034) Moss	

5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE. (088037) (1-5 cr [max 15 cr]; prereq #; hrs ar; A-N only) Kavanaugh
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.

5101. PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE. (888038) (1-5 cr [max 15 cr]; prereq #; hrs ar; A-N only) Kavanaugh
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.

5102. POWER/ENERGY OCCUPATIONAL EXPERIENCE. (688039) (1-5 cr [max 15 cr]; prereq #; hrs ar; A-N only) Kavanaugh
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.

5103. CONSTRUCTION OCCUPATIONAL EXPERIENCE. (088099) (1-5 cr [max 15 cr]; prereq #; hrs ar; A-N only) Kavanaugh
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.

5112. CONSTRUCTION SPECIALIZATION. (788100) (1-9 cr; prereq Δ; hrs ar; A-N only) Kavanaugh
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5122. GRAPHIC COMMUNICATIONS: SPECIALIZATION. (190765) (1-9 cr; prereq Δ; A-N only) Kavanaugh
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5132. MANUFACTURING: SPECIALIZATION. (588101) (1-9 cr; prereq Δ; hrs ar; A-N only) Kavanaugh
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5142. POWER AND ENERGY: SPECIALIZATION. (388102) (1-9 cr; prereq Δ; hrs ar; A-N only) Kavanaugh
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5152. TRANSPORTATION: SPECIALIZATION. (188103) (1-9 cr; prereq Δ; hrs ar; A-N only) Kavanaugh
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5310. COORDINATION—June 14-24. (088104) (3 cr; 0905-1205 MTWThF; VoTech R280; A-N only) Brown
Duties and responsibilities of coordinators in trade schools, part-time programs and comprehensive high schools.

Course Descriptions

5900. SCHOOL-BASED PROJECT IN INDUSTRIAL EDUCATION. (1-6 cr [max 12 cr]; 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, (888105) Bjorkquist	Sec 24, (288108) Pucel
Sec 22, (688106) Kavanaugh	Sec 25, (188109) Brown
Sec 23, (488107) Moss	

8900.* RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)

Individual conferences.

Sec 21, (488110) Bjorkquist	Sec 24, (988113) Pucel
Sec 22, (288111) Kavanaugh	Sec 25, (788114) Brown
Sec 23, (188112) Moss	

8901.* RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)

Individual conferences.

Sec 21, (588115) Bjorkquist	Sec 24, (088121) Pucel
Sec 22, (188117) Kavanaugh	Sec 25, (888122) Brown
Sec 23, (888119) Moss	

SECOND TERM

3110. CONSTRUCTION: INTERMEDIATE. (388455) (3 or 6 or 9 cr; prereq 1612, #: hrs ar; A-N only) Miletich
See First Term.

3111. CONSTRUCTION: ADVANCED. (188456) (3 or 6 or 9 cr; prereq 3110, #: hrs ar; A-N only) Miletich
See First Term.

3120. GRAPHIC COMMUNICATIONS: INTERMEDIATE. (088457) (3 or 6 or 9 cr; prereq 1622, #: hrs ar; A-N only) Miletich
See First Term.

3121. GRAPHIC COMMUNICATIONS: ADVANCED. (888458) (3 or 6 or 9 cr; prereq 3120, #: hrs ar; A-N only) Miletich
See First Term.

3130. MANUFACTURING: INTERMEDIATE. (688459) (3 or 6 or 9 cr; prereq 1632, #: hrs ar; A-N only) Miletich
See First Term.

3131. MANUFACTURING: ADVANCED. (885334) (3 or 6 or 9 cr; prereq 3130, #: hrs ar; A-N only) Miletich
See First Term.

3140. POWER AND ENERGY: INTERMEDIATE. (088460) (3 or 6 or 9 cr; prereq 1642, #: hrs ar; A-N only) Miletich
See First Term.

3141. POWER AND ENERGY: ADVANCED. (888461) (3 or 6 or 9 cr; prereq 3140, #: hrs ar; A-N only) Miletich
See First Term.

3150. TRANSPORTATION: INTERMEDIATE. (688462) (3 or 6 or 9 cr; prereq 1652, #: hrs ar; A-N only) Miletich
See First Term.

3151. TRANSPORTATION: ADVANCED. (488463) (3 or 6 or 9 cr; prereq 3150, #: hrs ar; A-N only) Miletich
See First Term.

3900. INDEPENDENT STUDY. (3 cr per qtr; prereq #: hrs ar; A-N only)
See First Term.

Sec 21, (288464) Bjorkquist	Sec 24, (788467) Moss
Sec 22, (188465) Smith	Sec 25, (790767) Pucel
Sec 23, (988466) Miletich	

3901. INDEPENDENT STUDY. (3 cr per qtr; prereq #: hrs ar; A-N only)
See First Term.

Sec 21, (588468) Bjorkquist	Sec 24, (588471) Moss
Sec 22, (388469) Smith	Sec 25, (390769) Pucel
Sec 23, (788470) Miletich	

3902. INDEPENDENT STUDY. (3 cr per qtr; prereq #: hrs ar; A-N only)
See First Term.

Sec 21, (388472) Bjorkquist	Sec 24, (888475) Moss
Sec 22, (188473) Smith	Sec 25, (590771) Pucel
Sec 23, (088474) Miletich	

5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE. (688476) (1-5 cr [max 15 cr]; prereq #: hrs ar; A-N only) Miletich
See First Term.

5101. PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE. (488477) (1-5 cr [max 15 cr]; prereq #: hrs ar: A-N only) Miletich
See First Term.

5102. POWER/ENERGY OCCUPATIONAL EXPERIENCE. (288478) (1-5 cr [max 15 cr]; prereq #: hrs ar: A-N only) Miletich
See First Term.

5103. CONSTRUCTION OCCUPATIONAL EXPERIENCE. (188479) (1-5 cr [max 15 cr]; prereq #: hrs ar: A-N only) Miletich
See First Term.

5112. CONSTRUCTION: SPECIALIZATION. (485336) (1-9 cr; prereq #: hrs ar: A-N only) Miletich
See First Term.

5122. GRAPHIC COMMUNICATIONS: SPECIALIZATION. (488480) (1-9 cr; prereq #: hrs ar: A-N only) Miletich
See First Term.

5132. MANUFACTURING: SPECIALIZATION. (288481) (1-9 cr; prereq #: hrs ar: A-N only) Miletich
See First Term.

5142. POWER AND ENERGY: SPECIALIZATION. (188482) (1-9 cr; prereq #: hrs ar: A-N only) Miletich
See First Term.

5152. TRANSPORTATION: SPECIALIZATION. (988483) (1-9 cr; prereq #: hrs ar: A-N only) Miletich
See First Term.

5301. TESTS IN INDUSTRIAL SUBJECTS—July 18-29. (190779) (3 cr; 1600-1900 MTWThF; VoTech R280; A-N only) Smith

5306. INDUSTRIAL EDUCATION WORKSHOP: High Technology in Minnesota—July 18-29. (290781) (1-6 cr; limited to 20 students; prereq tchg exper and #: 0905-1205 MTWThF; VoTech R280; A-N only) Miletich
Areas of concentration vary with each offering. This offering for 3 credits. Impact of high technology industry on work in Minnesota; considered through industrial plant tours, guest speakers, class research, and discussion.

5900. SCHOOL-BASED PROJECT IN INDUSTRIAL EDUCATION. (1-6 cr [max 12 cr]; S-N optional; prereq 5305, 5325. MEd students only; hrs ar)
See First Term.

Sec 21. (788484) Bjorkquist	Sec 24. (188487) Moss
Sec 22. (588485) Smith	Sec 25. (190773) Pucel
Sec 23. (388486) Miletich	

8900. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
See First Term.

Sec 21. (088488) Bjorkquist	Sec 24. (088491) Moss
Sec 22. (888489) Smith	Sec 25. (890775) Pucel
Sec 23. (188490) Miletich	

8901. RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar)
See First Term.

Sec 21. (888492) Bjorkquist	Sec 24. (288495) Moss
Sec 22. (688493) Smith	Sec 25. (490777) Pucel
Sec 23. (488494) Miletich	

Vocational Education (VoEd)

FIRST TERM

5100. SPECIAL TOPICS IN INSTRUCTION: Instructional Design Using Microcomputers—June 27-July 8. (288125) (1-6 cr [max 9 cr]; limited to 24 students; prereq #: 0800-1100 MTWThF and hrs ar: VoTech 230; A-N only) Lambrecht

Topics will vary with each offering but course covers planning, providing, and or evaluating instruction. This offering for 3 credits. Design and preparation of vocational education instructional materials on the microcomputer using BASIC or other authoring languages. Some experience in using Apple II microcomputer necessary.

5102. SPECIAL TOPICS IN ADMINISTRATION: Utilizing the Job Training Partnership Act—July 11-15. (391002) (1-6 cr [max 9 cr]; limited to 50 students; prereq #: 0905-1205, 1325-1625 MTWThF and hrs ar: VoTech R385; A-N only) Topics will vary with each offering but course covers leadership and management of vocational education programs. This 3-credit offering includes study of the Act and ways in which vocational education can participate in it.

Course Descriptions

R 5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—June 13-24. (988127) (3 cr; limited to 50 students; 1325-1625 MTWThF; VoTech R285; A-N only) 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.

R 5750. TRAINING IN INDUSTRY AND BUSINESS—June 13-17. (985194) (3 or 4 cr; limited to 40 students; C905-1205, 1325-1625 MTWThF and hrs ar; VoTech R385; A-N only) R Swanson, Bjorkquist
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.

R 5760. ORGANIZATIONAL DEVELOPMENT IN INDUSTRY AND BUSINESS—June 20-24. (685206) (3 or 4 cr; limited to 30 students; 0905-1205, 1325-1625 MTWThF and hrs ar; VoTech R385; A-N only) McLean
Introduction to major concepts, skills, and techniques. This offering for 3 credits.

5780. INTERNSHIP: TRAINING AND DEVELOPMENT. (485207) (Cr ar [max 15 cr]; S-N optional; prereq 5750: hrs ar) 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

5101. SPECIAL TOPICS IN CURRICULUM: Small Business Management Education—August 12-19. (091004) (1-6 cr [max 9 cr]; prereq #: Aug 12, 1200-1625, Aug 13, 15-19, 0905-1625; VoTech R385; A-N only) Persons
Topics vary with each offering covering development and evaluation of curricula or curriculum materials. This offering for 3 credits. Study of the organization, implementation, and operation of such a program for adults.

R 5102. SPECIAL TOPICS IN ADMINISTRATION. (1-6 cr [max 9 cr]; section 1 limited to 50 students, section 2 limited to 24 students; prereq #: A-N only) Knaak

Topics will vary with each offering but will deal with leadership and management of vocational education programs.

Sec 1, Available Data Bases for Planning and Managing Vocational Education, July 18-22, (288500) 3 cr. 0905-1205, 1325-1625 MTWThF and hrs ar, VoTech R285

Proactive long and short range planning for vocational education utilizing the most current applicable data bases.

Sec 2, Microcomputer as a Management Tool in Vocational Education, July 25-29, (191003) 3 cr. 0905-1205, 1325-1625 MTWThF and hrs ar, VoTech 230

Management information and hands-on experience.

5204. READING IN WORK SETTINGS—July 19-August 11. (491606) (3 cr, §Educ 5204; 1500-1730 TTh; PeikH 225; A-N only) 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 the training programs. Meets with Educ 5204.

R 5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—July 18-22. (188501) (3 cr; limited to 50 students; 0905-1205, 1325-1625 MTWThF and hrs ar; VoTech R380; A-N only) Bjorkquist
See First Term.

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. 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 students with an introduction to forestry and forests in an excellent field setting. The session 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—AUGUST 30-SEPTEMBER 22

All forest resources and forest science majors must complete this field session between the freshman and sophomore or sophomore and junior years. Nonforestry students who have an interest in forestry, outdoor education, or plant ecology also may attend the session. 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 40 credits are required before the student can attend the Itasca Forestry 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 the forest.

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. (488527) (Cr ar) Staff
- 8301.* RESEARCH PROBLEMS. (288528) (Cr ar) Staff
- 8302.* RESEARCH PROBLEMS. (188529) (Cr ar) Staff

SECOND TERM

- 8300.* RESEARCH PROBLEMS. (988500) (Cr ar) Staff
- 8301.* RESEARCH PROBLEMS. (788503) (Cr ar) Staff
- 8302.* RESEARCH PROBLEMS. (588504) (Cr ar) Staff

Forest Resources (FR)

FIRST TERM

- 8100.* RESEARCH PROBLEMS IN SILVICULTURE. (488530) (Cr ar) B Brown, Scholten, Alm
- 8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY. (288531) (Cr ar) Sucoff, G Brown
- 8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS. (188532) (Cr ar) Mohn
- 8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY. (988533) (Cr ar) Brooks
- 8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT. (788534) (Cr ar) B Brown, Ek, Irving, Hallgren
- 8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS. (588535) (Cr ar) Skok, Ellefson, Gregersen
- 8202.* RESEARCH PROBLEMS IN FOREST BIOMETRY. (388536) (Cr ar) Ek, Meyer
- 8203.* RESEARCH PROBLEMS IN FOREST RECREATION. (188537) (Cr ar) Merriam, Knopp
- 8204.* RESEARCH PROBLEMS IN FOREST POLICY. (088538) (Cr ar) Irving, Merriam, Skok, Ellefson, Gregersen, Hallgren
- 8205.* RESEARCH PROBLEMS IN REMOTE SENSING. (888539) (Cr ar) Meyer

SECOND TERM

- 8100.* RESEARCH PROBLEMS IN SILVICULTURE. (388505) (Cr ar) B Brown, Scholten, Alm
- 8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY. (188506) (Cr ar) Sucoff, G Brown
- 8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS. (088507) (Cr ar) Mohn
- 8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY. (888508) (Cr ar) Brooks
- 8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT. (688509) (Cr ar) B Brown, Ek, Irving, Hallgren
- 8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS. (088510) (Cr ar) Skok, Ellefson, Gregersen
- 8202.* RESEARCH PROBLEMS IN FOREST BIOMETRY. (888511) (Cr ar) Ek, Meyer
- 8203.* RESEARCH PROBLEMS IN FOREST RECREATION. (688512) (Cr ar) Merriam, Knopp
- 8204.* RESEARCH PROBLEMS IN FOREST POLICY. (488513) (Cr ar) Irving, Merriam, Skok, Ellefson, Gregersen, Hallgren
- 8205.* RESEARCH PROBLEMS IN REMOTE SENSING. (288514) (Cr ar) Meyer

OFFERED AT CLOQUET FORESTRY CENTER

Forest Resources (FR)

FIRST TERM

8105. ADVANCED FIELD SILVICULTURE. (188540) (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 1132. BIOLOGICAL SCIENCE: THE HUMAN BODY. (990704) (5 cr; limited to 75 students; 0800-0955 MTWThF; SciCB 175) 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 1166. PHYSICAL SCIENCE: PRINCIPLES OF CHEMISTRY. (885284) (5 cr; limited to 50 students; 1010-1205 MTWThF; SciCB 175) Schwabacher

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 1282. PSYCHOLOGY APPLIED TO HUMAN AFFAIRS. (990699) (5 cr; limited to 50 students; 1010-1205 MTWThF; NichH 207) Borow

How psychological principles and practices affect our daily lives. Examines methods and findings of behavioral science in the study of everyday human affairs. Contributions of psychology to fields of human experience: law and crime, behavior in unusual environments, personnel selection and training in industry, worker efficiency and job satisfaction, consumer behavior and advertising teaching and learning, mental health, and accidents and driving safety.

R 1311. ART: GENERAL ARTS. (485286) (4 cr, §3311; limited to 30 students; 1010-1205 TWThF; NichH 111) Byrne
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. (185288) (3 cr, §1405 completed prior to September 1981; limited to 30 students; 0905-0955 MTWThF; NichH 209A) Flake

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, (986913) 0800-0955 TWThF, NichH 216, Stockdale

Sec 2, (786914) 1010-1205 TWThF, NichH 216, Rathburn

R 1433. FUNDAMENTAL COLLEGE MATHEMATICS. (586915) (1-10 cr; initial registration should be for 3 cr; limited to 35 students; prereq: GCPP math level A or B or C or 1431 or 1434 or Δ; 0905-0955 MTWThF; FolH 124) Policoff
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: 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 1465. ORAL COMMUNICATION: INTERPERSONAL COMMUNICATION. (191611) (3 cr; limited to 25 students; 0905-0955 MTWThF; NichH 122) Amram

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 1534. PRACTICAL LAW. (086918) (4 cr; limited to 50 students; 0800-0955 TWThF; 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 1847. CONTEMPORARY MINNESOTA. (690700) (4 cr; limited to 30 students; 1010-1205 TWThF; NichH 213) Hathaway

Current affairs and recurring issues: taxation, apportionment, urban and rural representation in legislature, centralized coordination of higher education, condition of Iron Range country, reform of correctional institutions, conservation, preservation of environment, city planning. Focus on topic of general concern currently. Meets with 3847.

R 3285. ANTHROPOLOGY OF THE CITY. (490701) (5 cr; limited to 50 students; 0800-0955 MTWThF; NichH 213) F Johnson

Anthropologist's way of looking at urbanization as a process and the city as a community made up of a variety of cultures. Ecological perspective as it relates to the whole of the interaction between the various cultures. Field study on one of the many cultures which make up the city in the 1980s.

R 3311. ART: GENERAL ARTS. (985289) (4 cr, §1311; limited to 15 students; 1010-1205 TWThF; NichH 111) Byrne
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 3531. WRITING FOR BUSINESS AND THE PROFESSIONS. (185291) (4 cr; prereq 1412 or 1421...1425 or 1531 recommended; limited to 25 students; 0800-0955 TWThF; NichH 254) 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 3847. CONTEMPORARY MINNESOTA. (190703) (4 cr; limited to 30 students; 1010-1205 TWThF; NichH 213) Hathaway

Current affairs and recurring issues: taxation, apportionment, urban and rural representation in legislature, centralized coordination of higher education, condition of Iron Range country, reform of correctional institutions, conservation, preservation of environment, city planning. Focus on topic of general concern currently. Research paper required. Meets with 1847.

SECOND TERM

R 1237. UNITED STATES: JUVENILE DELINQUENCY. (585747) (4 cr, limited to 50 students; 1010-1205 MTWTh; NichH 207) 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 1252. INTERNATIONAL RELATIONS. (390707) (4 cr; limited to 50 students; 0800-0955 MTWTh; NichH 213) Jones
Some basic problems of world community: war, conflict of ideologies, developing nations, international trade, and international law and organizations. Several important analytical systems, applications to problems, and development of an individual approach.

R 1403. READING, COMPREHENSION, AND STUDY SKILLS. (385748) (3 cr; limited to 25 students; 0905-0955 MTWThF; NichH 201) Gidmark

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: COMMUNICATING IN SOCIETY. (688543) (4 cr, §1423; prereq 1421; limited to 25 students; 1010-1205 MTWTh; NichH 216) Koch

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. (488544) (5 cr; limited to 45 students; §1443, 1444; prereq GCPP math level D or 1435; 1010-1205 MTWThF; FolH 124) Barnes

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.

Course Descriptions

R 1511. INTRODUCTION TO MODERN BUSINESS. (190708) (5 cr; limited to 50 students; 0800-0955 MTWThF; NichH 109) Nelson

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 1551. MARKETING: INTRODUCTION. (091195) (5 cr; limited to 50 students; 1010-1205 MTWThF; NichH 109) Peterson

Principles of marketing; marketing strategy, target markets, marketing mix, and segmentation in retail, industrial, and wholesale businesses. Current marketing events in relation to text readings.

R 3464. COMMUNICATION IN ORGANIZATIONS. (291610) (4 cr; prereq 1461 or 1465, 5 cr in psychology; limited to 30 students; 1010-1205 TWThF; NichH 122) Hansen

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. (891196) (4 cr; prereq 1412 or 1421 . . . 1422 or 1425 or 1531 recommended; limited to 25 students; 0800-0955 MTWTh; NichH 216) Miller

See *First Term*.

R 3560. PERSONNEL ADMINISTRATION. (390710) (4 cr; limited to 50 students; 0800-0955 TWThF; NichH 207) Kroll

For both generalists and business students in certificate and baccalaureate programs--paralegal administrators, small business entrepreneurs, and other future business employers. How to pursue job and career openings and how to function more effectively as employers.

R 3721. THE FAMILY AND SOCIETY. (090709) (4 cr; limited to 50 students; 1010-1205 MTWTh; NichH 213) Latts

Social and cultural analysis of the family; family research and theory. Family as social institution made up of individuals and in continual interaction with other social institutions.

Health Sciences

SCHOOL OF DENTISTRY

Dentistry (Dent)

FIRST TERM

5054. DENTAL AUXILIARY UTILIZATION CLINIC (DAU I, II). (888329) (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). (188330) (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. (088331) (1 cr) Martens

5075. RURAL DENTAL PRECEPTORSHIP PROGRAM. (888332) (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. (688333) (Cr ar) Jensen

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

5970. GENERAL PRACTICE SEMINAR I. (586171) (Cr ar) Simmons
A sequence of lectures, discussions, and seminars on topics, related to current dental practice. Correlated with clinical experiences.

5974. GENERAL PRACTICE CLINICAL ADMINISTRATION I. (886337) (Cr ar) Simmons
Residents gain field experience in Hospital Dental Clinic Administration.

5980. GENERAL PRACTICE CLINIC I. (386172) (Cr ar) Simmons
A series of planned experiences in the clinical disciplines of dentistry. Emphasis on patient care.

5984. GENERAL PRACTICE CLINIC V. (686338) (Cr ar) Simmons
A series of planned experiences in the clinical disciplines of dentistry. Emphasis on patient care.

SECOND TERM

5054. DENTAL AUXILIARY UTILIZATION CLINIC (DAU I, II). (089219) (2 cr total) DiAngelis
See First Term.

5060. GENERAL DENTISTRY CLINIC (TEAM II). (389220) (2 cr: elective) DiAngelis
See First Term.

5070. HEALTH ECOLOGY ELECTIVE. (189221) (1 cr) Martens

5075. RURAL DENTAL PRECEPTORSHIP PROGRAM. (089222) (2 cr: two 5-week assignments: elective)
See First Term.

5080. DENTAL AUXILIARY UTILIZATION CLINIC. (889223) (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. (488334) (1 cr) Jensen
Diagnosis and treatment of clinical cases. Students assigned complex cases and explore new and unique techniques.

5313. ENDODONTIC EMERGENCY PROBLEMS. (288335) (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. (188336) (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. (988337) (1 cr) Jensen
Students present cases from the previous quarter for review by endodontic faculty and graduate students.

8004. RESEARCH IN ENDODONTICS. (788338) (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. (588339) (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. (988340) (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. (489225) (1 cr) Jensen
See First Term.

5313. ENDODONTIC EMERGENCY PROBLEMS. (289226) (1 cr) Jensen
See First Term.

5323. TREATMENT PLANNING. (189227) (1 cr) Jensen
See First Term.

5333. REVIEW OF CASES. (789229) (1 cr) Jensen
See First Term.

8004. RESEARCH IN ENDODONTICS. (189230) (1 cr) Jensen
See First Term.

8323. ADVANCED ENDODONTIC LECTURES. (989231) (1 cr) Jensen
See First Term.

Oral and Maxillofacial Surgery (OSur)

FIRST TERM

5257. AMBULATORY GENERAL ANESTHESIA. (688350) (1 cr) Gatto and staff
A clinical rotation involving experience in outpatient management utilizing intravenous sedation and general anesthesia.

5270. ORAL AND MAXILLOFACIAL RADIOLOGY REVIEW. (191625) (1 cr) Kwon
Weekly review and discussion of radiographs taken at the University Hospital relating to oral surgery procedures.

5275. ORAL PATHOLOGY REVIEW. (991626) (1 cr) Jaspers
Evaluation and microscopic interpretation of diagnostic tissue from oral and peri-oral areas. Other diagnostic information such as clinical appearance, history, and radiologic films is utilized. Course is based on individual participation in a seminar format.

8250. ADVANCED ORAL SURGERY. (288352) (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. (188353) (1 cr) Lehnert
Oral surgical subjects on a seminar basis.

8252. RESEARCH IN ORAL SURGERY. (988354) (Cr ar) Lehnert, Leonard
Research in fields related to oral surgery.

8253. PROBLEMS IN ORAL SURGERY. (788355) (1 cr) Waite
Current literature review.

8255. GENERAL SURGERY. (388357) (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. (188358) (1 cr) Gatto and staff
Outpatient general anesthesia topics and related subjects.

SECOND TERM

5257. AMBULATORY GENERAL ANESTHESIA. (289243) (1 cr) Gatto and staff
See First Term.

5270. ORAL AND MAXILLOFACIAL RADIOLOGY REVIEW. (791627) (1 cr) Kwon
Weekly review and discussion or radiographs taken at the University Hospital relating to oral surgery procedures.

5275. ORAL PATHOLOGY REVIEW. (591628) (1 cr) Jaspers
Evaluation and microscopic interpretation of diagnostic tissue from oral and peri-oral areas. Other diagnostic information such as clinical appearance, history, and radiologic films is utilized. Course is based on individual participation in a seminar format.

8250. ADVANCED ORAL SURGERY. (189244) (1 cr) Waite
See First Term.

8251. SEMINAR: ORAL SURGERY. (989245) (1 cr) Lehnert
See First Term.

8252. RESEARCH IN ORAL SURGERY. (789246) (Cr ar) Lehnert, Leonard
See First Term.

8253. PROBLEMS IN ORAL SURGERY. (589247) (1 cr) Waite
See First Term.

8254. TOPICS. (389248) (1 cr) Bevis, Lehnert
See First Term.

8255. GENERAL SURGERY. (189249) (1 cr) Winter and staff
See First Term.

8258. ANESTHESIA II SEMINAR. (589250) (1 cr) Gatto and staff
See First Term.

Oral Biology (OBio)

FIRST TERM

8001. RESEARCH IN ORAL BIOLOGY. (788341) (Cr ar) Shapiro

8002. TUTORIAL IN ORAL BIOLOGY. (588342) (Cr ar [may be repeated for cr]: 2 hrs per wk = 1 cr) Shapiro

8024. TOPICS IN ORAL BIOLOGY. (388343) (1-3 cr [may be repeated for cr]: prereq #)

SECOND TERM

8001. RESEARCH IN ORAL BIOLOGY. (789232) (Cr ar) Shapiro

8002. TUTORIAL IN ORAL BIOLOGY. (389234) (Cr ar [may be repeated for cr]: 2 hrs per wk = 1 cr) Shapiro

8024. TOPICS IN ORAL BIOLOGY. (189235) (1-3 cr [may be repeated for cr]: prereq #)

Oral Pathology (OPat)

FIRST TERM

8004. HISTOPATHOLOGY. (188344) (1 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.

Course Descriptions

8006. CURRENT LITERATURE REVIEW. (088345) (1 cr) Vickers

8014. EXFOLIATIVE CYTOLOGY OF THE ORAL MUCOSA. (888346) (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. (089236) (1 cr) Vickers

See First Term.

8006. CURRENT LITERATURE REVIEW. (889237) (1 cr) Vickers

8014. EXFOLIATIVE CYTOLOGY OF THE ORAL MUCOSA. (689238) (2 cr) Witkop

See First Term.

Oral Radiology (ORad)

FIRST TERM

8100. ORAL RADIOLOGY SEMINAR. (688347) (1 cr; prereq #) Kuba

8200. ADVANCED ORAL ROENTGENOGRAPHIC TECHNIQUE. (488348) (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, cinerentgenography, and cephalometric roentgenography; topics selected according to needs and interests of students.

8800. TEACHING ORAL RADIOLOGY. (190426) (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. (288349) (Cr ar; prereq #) Kuba

SECOND TERM

8100. ORAL RADIOLOGY SEMINAR. (889240) (1 cr; prereq #) Kuba

8900. ORAL RADIOLOGY RESEARCH. (689241) (Cr ar; prereq #) Kuba

Orthodontics (Otho)

FIRST TERM

Required Courses for Graduate Students

5004. CLINICAL ORTHODONTICS. (088359) (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. (388360) (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. (188361) (Cr ar; prereq #) Staff
Etiology, treatment, and prognosis of clinical orthodontic patients.

8211. ORTHODONTIC SEMINAR. (088362) (Cr ar; prereq #) Staff
Review of current literature and discussion of current research and its implications.

8215. RESEARCH IN ORTHODONTICS. (888363) (Cr ar; prereq #) Staff

8219. TOPICS IN ORTHODONTICS. (688364) (Cr ar; prereq #) Staff
Studies in special topics for advanced students.

SECOND TERM

- 5004. CLINICAL ORTHODONTICS.** (189252) (Cr ar; prereq #) Staff
See First Term.
- 8203. GROWTH AND DEVELOPMENT.** (089253) (Cr ar; prereq #) Staff
See First Term.
- 8207. DIAGNOSIS AND TREATMENT PLANNING.** (889254) (Cr ar; prereq #) Staff
See First Term.
- 8211. ORTHODONTIC SEMINAR.** (489256) (Cr ar; prereq #) Staff
See First Term.
- 8215. RESEARCH IN ORTHODONTICS.** (289257) (Cr ar; prereq #) Staff
See First Term.
- 8219. TOPICS IN ORTHODONTICS.** (189258) (Cr ar; prereq #) Staff
See First Term.

Pediatric Dentistry (Pedo)

FIRST TERM

- 5414. ADVANCED CLINICAL PEDODONTICS.** (488365) (Cr ar; prereq #) Till, others
Assignment of patients for treatment of difficult or unusual pedodontic problems under direct faculty supervision.
- 8001. RESEARCH IN PEDIATRIC DENTISTRY.** (288366) (Cr ar; prereq #) Messer, others
- 8290. HOSPITAL PEDODONTICS I.** (188367) (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.** (988368) (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.** (788369) (Cr ar; prereq #) Till, others
Systematic approach to diagnosis and treatment planning for various pedodontic problems.

SECOND TERM

- 5414. ADVANCED CLINICAL PEDODONTICS.** (289260) (Cr ar; prereq #) Till, others
See First Term.
- 8001. RESEARCH IN PEDIATRIC DENTISTRY.** (189261) (Cr ar; prereq #) Messer, others
- 8290. HOSPITAL PEDODONTICS I.** (789263) (Cr ar; prereq #) Walker, others
See First Term.
- 8291. HOSPITAL PEDODONTICS II.** (589264) (Cr ar; prereq #) Till, others
See First Term.
- 8293. ADVANCED PEDODONTIC TECHNIQUES.** (389265) (Cr ar; prereq #) Till, others
Description and exercises in advanced pedodontic skills and techniques.
- 8295. INDEPENDENT PEDODONTIC STUDY.** (089267) (Cr ar; prereq #) Till, others
Review of pertinent literature and preparation of a position paper on an assigned topic.

Periodontics (Pero)

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

- 8000. ADVANCED CLINICAL PERIODONTOLOGY.** (188370) (Cr ar) Pihstrom
Practical work in clinic in examination, diagnosis, treatment planning, and various phases of treatment of patients with periodontal disease.
- 8100. RESEARCH IN PERIODONTOLOGY.** (988371) (Cr ar) Bandt, Herzberg
Opportunity to take part in many phases of laboratory work under way in periodontal research.

Course Descriptions

8200. LECTURES IN PERIODONTOLOGY. (788372) (Cr ar) Pihlstrom

Tissues involved in periodontal disease. Etiology and treatment of periodontal disease.

8300. SEMINAR: PERIODONTOLOGY. (588373) (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. (388374) (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. (188375) (Cr ar [may be repeated for cr]; prereq #) Goodkind

Experience in prosthodontic treatment of patients having systemic complications.

8034. ADVANCED CLINICAL MAXILLOFACIAL PROTHESIS. (088376) (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. (885396) (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*, *Baccalaureate Programs in the Health Sciences Bulletin*, or *College of Liberal Arts Bulletin*. For further information on specific courses, write or call the appropriate health science department 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. (888377) (2 cr; prereq #) Staff

Guided individual reading or study.

8156. ADVANCED ANATOMY. (688378) (1-6 cr; prereq #) Staff

Individual problems in gross anatomy, embryology, histology, or neuroanatomy.

8204. RESEARCH IN ANATOMY. (488379) (1-10 cr; prereq #) Staff

Gross anatomy, cytochemistry, histology, endocrinology, embryology, hematology, or neuroanatomy. Special facilities offered to graduate students in clinical departments for work on problems in applied anatomy.

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

5304. HEAD AND NECK ANATOMY FOR MEDICAL/DENTAL RESIDENTS. (888380) (5 cr; prereq participation in a residency in the Medical School or School of Dentistry) Robertson and staff

5500. GENERAL GROSS ANATOMY. (688381) (3-4½ cr; prereq Phase D) Robertson

- 5501. THE EXTREMITIES.** (488382) (3-4½ cr; prereq Phase D) Robertson
5502. HEAD AND NECK. (288383) (3-4½ cr; prereq Phase D) Robertson
5508. THE THORAX. (188384) (3-4½ cr; prereq Phase D) Robertson
5509. THE ABDOMEN. (988385) (3-4½ cr; prereq Phase D) Robertson
5510. PERINEUM, GENITAL-URINARY SYSTEM AND PELVIS. (788386) (3-4½ cr; prereq Phase D) Robertson

SECOND TERM

- 3970. SPECIAL PROBLEMS.** (889271) (2 cr; prereq #) Staff
 See First Term.
8156. ADVANCED ANATOMY. (689272) (1-6 cr; prereq #) Staff
 See First Term.
8204. RESEARCH IN ANATOMY. (489273) (1-10 cr; prereq #) Staff
 See First Term.

Anesthesiology (Anes)

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

Elective Courses

- 5181. EXTERNSHIP IN CLINICAL PRACTICE OF ANESTHESIOLOGY.** (588387) (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.
5286. DIRECTED STUDY, ANESTHESIA TOPICS/PROJECT: CLINICAL. (186173) (Cr ar; prereq CRNA, regis B.S. in nurs anes, #)

Required Courses for Graduate Students

- 8265. GENERAL ANESTHESIA.** (388388) (12 cr; MTWThF; Mayo B515) Buckley, staff
 Instruction and experience in general anesthesia.
8266. REGIONAL ANESTHESIA. (188389) (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. (588390) (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. (388391) (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. (188392) (Cr and hrs ar) Buckley, staff
 Anesthesia problems in experimental laboratory or in hospital.

Biochemistry (MdBc)

Elective Courses

FIRST TERM

- 5053. PROBLEMS IN BIOCHEMISTRY.** (088393) (1-10 cr; may be taken one or both terms; prereq 5101 or 5751; hrs ar) Staff
 Special work arranged with qualified students.
8290. CURRENT RESEARCH TECHNIQUES. (888394) (1-3 cr; prereq major in biochemistry, #)
8300. RESEARCH IN BIOCHEMISTRY. (688395) (Cr and hrs ar) Staff

SECOND TERM

- 5053. PROBLEMS IN BIOCHEMISTRY.** (189275) (1-10 cr; may be taken one or both terms; prereq 5101 or 5751; hrs ar) Staff
 See First Term.

Course Descriptions

8290. **CURRENT RESEARCH TECHNIQUES.** (989276) (1-3 cr; prereq major in biochemistry. #)

8300. **RESEARCH IN BIOCHEMISTRY.** (789277) (Cr and hrs ar) Staff

Dermatology (Derm)

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

5181. **CLINICAL PROBLEMS.** (488396) (4.5 cr; 0900-1500 MTWThF. PWB 4272; 1500-1630 W. HSUnitA2520) Dahl, Gentry, Goltz, Manick, others

5182. **DERMATOLOGY EXTERNSHIP.** (288397) (Cr ar; prereq regis med) Dahl, Gentry, Goltz, Manick, others

5183. **ADVANCED DERMATOLOGY.** (188398) (Cr ar; prereq 5182) Dahl, Gentry, Goltz, Manick, others

5184. **SPECIAL COURSE.** (988399) (Cr ar) Manick

5185. **RESEARCH IN DERMATOLOGY.** (688400) (9 cr) Dahl

8225. **CLINICAL DERMATOLOGY.** (488401) (Cr ar; 0800-1625 MTWThF) Dahl, Gentry, Goltz, others

8226. **CLINICAL SEMINAR.** (288402) (Cr ar; 1300-1630 WF; PWB 4-272) Goltz, Gentry, others
Conference twice weekly on diagnosis and treatment of skin conditions.

8227. **HISTOLOGY OF THE SKIN.** (188403) (Cr ar; 1400-1530 M. 1500-1630 W; PWB 4-272) Goltz, Orkin, others
Includes histopathology, histochemistry, and fluorescence microscopy.

8228. **RESEARCH IN DERMATOLOGY.** (988404) (Cr ar) Goltz, Dahl, others

8229. **ELECTRON MICROSCOPY IN DERMATOLOGY.** (788405) (Cr ar) Zelikson, others

8230. **FUNCTIONAL BIOLOGY OF THE SKIN.** (588406) (Cr ar) Goltz, Dahl, others

8231. **CLINICS: DERMATOLOGY: NONDERMATOLOGISTS.** (388407) (Cr ar) Goltz, others

8232. **SEMINAR: DERMATOLOGIC HISTOPATHOLOGY, MYCOLOGY.** (188408) (Cr ar) Goltz, others

Family Practice and Community Health (FPCH)

SPECIAL TERM: JULY 1-SEPTEMBER 30

Required Courses

8201. **CLINICAL FAMILY MEDICINE.** (488432) (9 cr; hrs ar) Ciriacy, staff

8208. **FAMILY MEDICINE CONFERENCE.** (988435) (1 cr; hrs ar) Ciriacy, staff

8210. **FAMILY MEDICINE GRAND ROUNDS.** (788436) (0-1 cr; hrs ar) McConnell

8212. **PSYCHOLOGICAL AND PSYCHIATRIC TRAUMA WORKSHOP.** (588437) (1 cr; hrs ar) Kelly, staff

Elective Courses

5504. **MEDICAL ETHICS.** (388438) (2 cr; 1400-1530 W; PWB 6-240) Nelson

Seminar or 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.** (188439) (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.** (588440) (Cr ar; prereq med students only; #: hrs ar) Satterfield, staff

5590. **EMERGENCY MEDICINE FOR FAMILY PHYSICIANS.** (685738) (9 cr) Lija

5952. **PRACTICUM IN SEXUAL COUNSELING.** (890565) (3-6 cr) Satterfield

5953. **PRACTICUM IN SEXUAL COUNSELING.** (690566) (3-6 cr) Satterfield

5954. **PRACTICUM IN SEXUAL COUNSELING.** (490567) (3-6 cr) Satterfield.

5960. **BASIC RESEARCH METHODS SEMINAR AND PRACTICUM.** (290568) (4 cr; hrs ar) Holloway

8207. SEMINAR: COMMON DISEASES SEEN IN FAMILY PRACTICE. (088443) (1 cr; hrs ar) Ciriacy, staff
 8209. FAMILY MEDICINE X-RAY CONFERENCE. (888444) (1 cr; hrs ar) Ciriacy, staff
 8253. RESEARCH PROBLEMS. (688445) (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. (488446) (2 cr; prereq regis med: HSUnitA 2-650) Manick, staff
 5228. EAR, NOSE, THROAT. (288447) (2 cr; prereq regis med: HSUnitA 2-650) Adams, staff
 5229. EYE. (188448) (2 cr; prereq regis med: HSUnitA 2-650) Cantrill, staff
 5232. BONES, JOINTS, AND CONNECTIVE TISSUE. (988449) (4 cr; prereq regis med: HSUnitA 2-650) House, staff

Laboratory Medicine (LMed)

FIRST TERM

5139. ADVANCED MICROBIOLOGY. (988550) (Cr ar; prereq #) Balfour
 5169. RESEARCH: HUMAN GENETICS. (588552) (Cr ar; prereq #) Eaton
 5170. ADVANCED PROBLEMS: MEDICAL GENETICS. (388553) (Cr ar; prereq #) Eaton
 5179. CHEMISTRY SEMINAR. (188554) (1 cr; prereq #) Steffes
 5180. ADVANCED CHEMISTRY. (088555) (Cr ar; prereq #) Benson, staff
 5273. ADVANCED IMMUNOLOGY. (888556) (Cr ar; prereq #) Azar
 5768. ADVANCED HEMATOLOGY. (688557) (Cr ar; prereq #) Brunning
 8235. ADVANCED CLINICAL LABORATORY MEDICINE. (488558) (Cr ar; prereq #) Benson
 8236. RESEARCH ON CLINICAL LABORATORY PROBLEMS. (288559) (Cr ar; prereq #) Benson

SECOND TERM

5139. ADVANCED MICROBIOLOGY. (589278) (Cr ar; prereq #) Balfour
 5169. RESEARCH: HUMAN GENETICS. (789280) (Cr ar; prereq #) Eaton
 5170. ADVANCED PROBLEMS: MEDICAL GENETICS. (589281) (Cr ar; prereq #) Eaton
 5179. CHEMISTRY SEMINAR. (389282) (1 cr; prereq #) Steffes
 5180. ADVANCED CHEMISTRY. (189283) (Cr ar; prereq #) Benson, staff
 5273. ADVANCED IMMUNOLOGY. (089284) (Cr ar; prereq #) Azar
 5768. ADVANCED HEMATOLOGY. (889285) (Cr ar; prereq #) Brunning
 8235. ADVANCED CLINICAL LABORATORY MEDICINE. (689286) (Cr ar; prereq #) Benson
 8236. RESEARCH ON CLINICAL LABORATORY PROBLEMS. (489287) (Cr ar; prereq #) Benson

Laboratory Medicine and Pathology (LaMP)

Courses for Medical and Undergraduate Students

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

5113. SURGICAL PATHOLOGY. (688560) (Cr ar; prereq Phase B) Rosai
 5114. SURGICAL PATHOLOGY (Hennepin County Medical Center). (488561) (Cr ar; prereq Phase B) Anderson
 5115. SURGICAL PATHOLOGY (Veterans Hospital). (288562) (Cr ar; prereq Phase B) Limas
 5118. ENDOCRINE PATHOLOGY (St. Paul-Ramsey Medical Center). (188563) (Cr ar; prereq Phase B) Haus, Lakatua

Course Descriptions

5125. **CHRONOBIOLOGY.** (988564) (Cr ar; prereq Phase B, #) Halberg
5141. **PROBLEMS: EXPERIMENTAL PATHOLOGY.** (788565) (Cr ar; prereq Phase B, #) Staff
5150. **ANATOMIC PATHOLOGY (University Hospitals).** (588566) (Cr ar) Burke, Snover
5151. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (Hennepin County Medical Center).** (388567) (Cr ar) Anderson
5152. **ANATOMIC PATHOLOGY (Veterans Hospital).** (188568) (Cr ar; prereq Phase B) Posalaky
5153. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (St. Paul-Ramsey Medical Center).** (088569) (Cr ar; prereq Phase B) Posalaky
5158. **CARDIAC PATHOLOGY (Miller Hospital).** (388570) (Cr ar; prereq Phase B, #) Edwards
5181. **LABORATORY AND CLINICAL HEMATOLOGY.** (188571) (Cr ar; prereq #) Brunning
5182. **LABORATORY STUDIES OF GENETIC DISORDERS.** (088572) (Cr ar; prereq #) Eaton
5184. **IMMUNOHEMATOLOGY IN BLOOD BANKING.** (888573) (Cr ar; prereq #) McCullough
5185. **LABORATORY PROBLEMS IN BLOOD COAGULATION.** (186111) (Cr ar; prereq #) Edson
5190. **LABORATORY MEDICINE IN A COMMUNITY HOSPITAL (Duluth).** (688574) (Cr ar; prereq Phase D) Larson
5192. **LABORATORY MEDICINE FOR PRIMARY CARE (Virginia).** (488575) (Cr ar; prereq Phase D) Knabe
5193. **CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital).** (288576) (Cr ar; prereq #) Nollet, Blomberg
5194. **COMPUTER APPLICATIONS IN MEDICINE.** (790428) (Cr ar; prereq #) Ellis
5195. **COMPUTER APPLICATIONS IN MEDICAL RESEARCH.** (590429) (Cr ar; prereq #) Ellis
5203. **CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank).** (188577) (Cr ar; prereq Phase D) Polesky

Medical Technology (MedT)

FIRST TERM

5082. **APPLIED CLINICAL CHEMISTRY.** (988578) (4 cr; prereq 5063, 5111, #)
Application of basic methods and techniques in chemistry in the clinical laboratory.
5085. **APPLIED CLINICAL HEMATOLOGY.** (788579) (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.** (188580) (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.** (988581) (4 cr; prereq 5102, #)
Identification of bacteria by microscopic techniques. Correlation with clinical cases. Identification of parasites and fungi.
5090. **SPECIAL LABORATORY METHODS.** (588583) (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.** (289288) (4 cr; prereq 5063, 5111, #)
See First Term.
5085. **APPLIED CLINICAL HEMATOLOGY.** (189289) (4 cr; prereq 5067, 5076, #)
See First Term.
5086. **APPLIED CLINICAL IMMUNOHEMATOLOGY.** (489290) (4 cr; prereq 5066, #)
See First Term.
5088. **APPLIED DIAGNOSTIC MICROBIOLOGY.** (289291) (4 cr; prereq 5102, #)
See First Term.
5090. **SPECIAL LABORATORY METHODS.** (989293) (2 cr; prereq #)
See First Term.

Medicine (Med)

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5500. **ADVANCED INTERNAL MEDICINE.** (188585) (9 cr and hrs ar) Ferris
5501. **MEDICAL ONCOLOGY INTERNSHIP IN MEDICINE.** (888587) (9 cr and hrs ar) Kennedy
5502. **MEDICINE EXTERNSHIP I.** (488589) (9 cr and hrs ar) Ferris
5504. **MEDICINE EXTERNSHIP.** (888590) (9 cr and hrs ar) Wang
5505. **INFECTIOUS DISEASE RESEARCH.** (688591) (9 cr and hrs ar) Sabath
5507. **MEDICINE SUBINTERNSHIP IN HEMATOLOGY.** (886113) (9 cr) Ferris
Student serves as acting intern on the Hematology Service for six weeks. Responsibility for the care of approximately 2-4 patients, working as part of a team which includes an attending physician, a senior resident, and another subintern. Night-call responsibilities for the Hematology Service approximately every 4th night.
5509. **RESEARCH IN RHEUMATOLOGY.** (488592) (9 cr and hrs ar) Messner
5511. **RESEARCH IN GASTROENTEROLOGY.** (188594) (9 cr and hrs ar) Levitt
5512. **RESEARCH IN HEMATOLOGY.** (988595) (9 cr and hrs ar) Jacob
5518. **RESEARCH IN ENDOCRINOLOGY.** (788596) (9 cr and hrs ar) Oppenheimer
5521. **INFECTIOUS DISEASES, CLINICAL ASPECTS.** (588597) (9 cr and hrs ar) Sabath
5522. **GASTROENTEROLOGY.** (388598) (9 cr and hrs ar) Olson
5523. **MEDICAL ENDOCRINOLOGY AND METABOLISM.** (188599) (9 cr and hrs ar) Barbosa
5525. **CARDIOVASCULAR MEDICINE.** (988600) (9 cr and hrs ar) Bache
5527. **CONTEMPORARY PROBLEMS IN INVESTIGATIVE CARDIOLOGY.** (788601) (9 cr and hrs ar) Bache
5528. **CLINICAL HEMATOLOGY.** (588602) (9 cr and hrs ar) Howe
5531. **CLINICAL RHEUMATOLOGY.** (388603) (Cr and hrs ar) Hathaway
5532. **PULMONARY DISEASE.** (188604) (9 cr and hrs ar) Kronenberg
5533. **CLINICAL ALLERGY.** (888606) (Cr and hrs ar) Blumenthal
5542. **RESEARCH IN PULMONARY DISEASE.** (688607) (9 cr and hrs ar) Kronenberg
5548. **CLINICAL GENETICS.** (488608) (9 cr and hrs ar) King
5554. **FLUID, ELECTROLYTE, ACID-BASE METABOLISM.** (288609) (9 cr and hrs ar) Ma
5556. **MEDICAL NEPHROLOGY.** (488611) (9 cr and hrs ar) Ferris
5557. **RESEARCH IN NEPHROLOGY.** (288612) (18 cr and hrs ar) Ferris
5562. **NEPHROLOGY.** (988614) (9 cr and hrs ar) Rao
5570. **CLINICAL MEDICINE IN THE GENERAL CLINICAL RESEARCH CENTER.** (788615) (9 cr and hrs ar) Bantle
5572. **AMBULATORY INTERNAL MEDICINE.** (588616) (9 cr and hrs ar) Spilane
5573. **EXTERNSHIP IN GERIATRIC MEDICINE AT ST. PAUL-RAMSEY MEDICAL CENTER.** (388617) (9 cr and hrs ar) Irvine
5574. **CRITICAL CARE IN INTERNAL MEDICINE AT HENNEPIN COUNTY MEDICAL CENTER.** (790431) (9 cr per period; hrs ar) Schultz
5575. **AMBULATORY CARE MEDICINE AT HENNEPIN COUNTY MEDICAL CENTER.** (390433) (9 cr per period; hrs ar) Bloss
5576. **EXTERNSHIP IN GERIATRICS AT V.A. MEDICAL CENTER.** (590821) (9 cr) Miles
Students function as interns on a geriatric and intermediate care ward and assume responsibility for two new patients each week. Students are directly responsible to attending staff physicians; attend general medical conferences and patient care conferences, and assigned readings relevant to care of patients.
5583. **DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER.** (088619) (9 cr and hrs ar) Ramsay
5589. **MEDICINE EXTERNSHIP II AT ST. LUKE'S HOSPITAL.** (388620) (9 cr and hrs ar) Goldish
5590. **PRECEPTORSHIPS IN INTERNAL MEDICINE.** (088622) (9 cr and hrs ar) Murray

Course Descriptions

5591. INTERNAL MEDICINE FOR THE AMBULATORY OUTPATIENT. (390822) (9 cr) Howe

Provides the advanced medical student with a broad exposure to adult medicine as practiced in the outpatient setting of a busy, multispecialty clinic. Development of the student's diagnostic and therapeutic skills. Participation in general internal medicine clinics for approximately five half-days, and various medical subspecialty clinics selected by the student the other five half-days.

5592. RURAL PHYSICIANS ASSOCIATE PROGRAM IN MEDICINE. (888623) (9 cr and hrs ar) Howe

5594. PSYCHIATRY IN MEDICINE: CONSULTATION-LIAISON. (688624) (9 cr and hrs ar) Popkin

5597. RESEARCH IN OCCUPATIONAL HEALTH. (488625) (9 cr and hrs ar) Johnson

Elective Courses for Graduate Students

8201. CLINICAL MEDICINE. (888637) (Cr and hrs ar) Ferris, staff

8202. CLINICAL CONFERENCE. (688638) (1 cr and hrs ar) Ferris, staff

8203. CLINICAL RADIOLOGY CONFERENCE. (488639) (1 cr and hrs ar) Ferris, staff

8204. PATHOLOGICAL CONFERENCE. (888640) (1 cr and hrs ar) Ferris, staff

8205. ELECTROCARDIOGRAPHIC CONFERENCE. (688641) (1 cr and hrs ar) Tuna

8206. NEPHROLOGY SEMINAR. (488642) (3 cr and hrs ar) Ferris, staff

8209. TUMOR CLINICAL CONFERENCE. (288643) (1 cr and hrs ar) Kennedy, staff

8210. INFECTIOUS DISEASE SEMINAR. (188644) (Cr and hrs ar) Sabbath, staff

8211. DISEASES OF THE CARDIOVASCULAR SYSTEM. (988645) (Cr and hrs ar) Cohn, staff

8212. DISEASES OF THE CHEST. (788646) (Cr and hrs ar) Kronenberg, staff

8213. DISEASES OF THE KIDNEY. (388648) (Cr and hrs ar) Ferris, staff

8214. DISEASES OF DIABETES, ENDOCRINOLOGY, AND METABOLISM. (188649) (Cr and hrs ar) Oppenheimer, staff

8215. DISEASES OF HEMATOLOGY. (388651) (Cr and hrs ar) Jacob, staff

8216. DISEASES OF GASTROENTEROLOGY. (188652) (Cr and hrs ar) Wilson, staff

8217. DISEASES OF ONCOLOGY. (088653) (Cr and hrs ar) Kennedy, staff

8220. RESEARCH IN MEDICINE. (888654) (Cr and hrs ar) Ferris, staff

8221. TOPICS IN MEDICINE. (688655) (Cr and hrs ar) Ferris, staff

8223. TOPICS IN RELATED BASIC SCIENCE. (488656) (Cr and hrs ar) Ferris, staff

Microbiology (MicB)

FIRST TERM

5970. DIRECTED STUDIES. (190823) (Cr ar; prereq #) Rogers, staff

5990. UNDERGRADUATE RESEARCH. (090824) (Cr ar; prereq #) Rogers, staff

8990. RESEARCH IN MICROBIOLOGY. (988659) (Cr and hrs ar) Cleary, staff

Graduate students with the requisite preliminary training may elect research project outside their thesis work.

SECOND TERM

5970. DIRECTED STUDIES. (890825) (Cr ar; prereq #) Rogers, staff

5990. UNDERGRADUATE RESEARCH. (690826) (Cr ar; prereq #) Rogers, staff

8990. RESEARCH IN MICROBIOLOGY. (589295) (Cr and hrs ar) Cleary, staff

See First Term.

Neurology (Neur)

SPECIAL TERMS: SIX- AND TWELVE-WEEK COURSES

5120. **SELECTED PROBLEMS IN NEUROLOGY.** (688672) (Cr ar; prereq regis med) Staff
5510. **EXTERNSHIPS IN CLINICAL NEUROLOGY.** (488673) (Cr ar; prereq regis med) Klassen, staff
5541. **PEDIATRIC NEUROLOGY—NEUROCHEMISTRY.** (288674) (Cr ar; prereq regis med) Swaiman
5542. **PEDIATRIC NEUROLOGY.** (686114) (Cr ar; prereq regis med) Greenberg
5544. **CLINICAL ELECTROENCEPHALOGRAPHY.** (188675) (Cr ar; prereq regis med) Torres
5545. **ELECTROMYOGRAPHY.** (988676) (Cr ar; prereq regis med) Kennedy
5570. **IMMUNOLOGY.** (788677) (Cr ar; prereq regis med) Ansari

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

8200. **CLINICAL NEUROLOGY.** (588678) (Cr ar) Klassen, staff
8201. **CLINICAL PEDIATRIC NEUROLOGY.** (388679) (Cr ar) Swaiman, staff
8202. **RESEARCH.** (788680) (Cr ar) Klassen, staff
8203. **APPLIED ELECTROENCEPHALOGRAPHY.** (588681) (Cr ar) Torres
8204. **APPLIED ELECTROMYOGRAPHY.** (388682) (Cr ar) Kennedy
8205. **APPLIED NEUROPATHOLOGY.** (188683) (Cr ar) Sung, Mastro
8236. **RESEARCH: NEUROPATHOLOGY.** (088684) (Cr ar) Sung, Mastro
8705. **NEUROLOGICAL-NEUROSURGICAL CONFERENCE.** (888685) (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).** (688686) (4.5 or 9 cr; prereq regis med; MTWThF) Chou, French, Seljeskog, Erickson, Maxwell, Haines, Turner
5510. **NEUROSURGERY EXTERNSHIP (Veterans Administration Hospital).** (188689) (4.5 or 9 cr; prereq regis med; MTWThF) Maxwell
5511. **NEUROSURGERY EXTERNSHIP (Hennepin County Medical Center).** (188692) (4.5 or 9 cr; prereq regis med; MTWThF) Rockswold
5512. **NEUROSURGERY EXTERNSHIP (St. Paul-Ramsey Medical Center).** (988693) (4.5 or 9 cr; prereq regis med; MTWThF) Thienprasit
5520. **NEUROSURGERY INVESTIGATION.** (388696) (9 cr; prereq regis med; MTWThF; Diehl F109-110 and G134-144) Bloedel
5530. **NEUROPSYCHOLOGY.** (888699) (9 cr; prereq regis med; ar; Mayo C667) Meier
5550. **NEUROPHYSIOLOGICAL LITERATURE SEMINAR.** (388701) (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.** (188702) (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.** (488706) (4 cr; MTWThF; Mayo B401) Chou, French, Seljeskog, Erickson, Maxwell, Haines, Turner
Neurosurgical fellow acts as house surgeon at University and affiliated hospitals.

Course Descriptions

- 8311. OPERATIVE NEUROSURGERY.** (288710) (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.** (988712) (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.** (788713) (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.** (188716) (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.** (788730) (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.** (388729) (1 cr; prereq 8322; T; offered F and S) Staff
Advanced review and discussion of topics.
- 8324. READINGS: NEUROBIOLOGY.** (388732) (1 cr; 1600-1800 Th; DVCCRC 114) Bloedel
- 8330. NEUROSURGERY LITERATURE SEMINAR.** (488723) (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.** (988757) (9 cr; 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.** (788758) (4.5 cr; 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.** (788761) (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.
- 5560. RESEARCH IN REPRODUCTION.** (588762) (Cr ar; prereq Phase D) Foreman, staff
Topics selected for each student.
- 5575. GYNECOLOGICAL PATHOLOGY AND DIAGNOSTIC CYTOLOGY.** (388763) (9 cr; 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.** (188764) (9 cr; 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.** (888914) (Cr ar) Prem, staff
- 8205. ADVANCED OBSTETRICS AND GYNECOLOGY.** (688915) (Cr ar) Prem, staff
- 8209. ADVANCED OBSTETRICS AND GYNECOLOGY.** (488916) (Cr ar) Prem, staff
- 8210. ADVANCED OBSTETRICS AND GYNECOLOGY.** (288917) (Cr ar) Prem, staff
- 8213. ADVANCED OBSTETRICS AND GYNECOLOGY.** (388925) (Cr ar) Prem, staff

8217. SEMINAR IN OBSTETRICS AND GYNECOLOGY. (088927) (Cr ar) Prem, staff
8221. SEMINAR IN OBSTETRICS AND GYNECOLOGY. (688929) (Cr ar) Prem, staff
8222. GYNECOLOGICAL ONCOLOGY. (888931) (Cr ar) Prem, staff
8223. GYNECOLOGICAL ONCOLOGY. (488933) (Cr ar) Prem, staff
8224. GYNECOLOGICAL ENDOCRINOLOGY—PART I. (988936) (Cr ar) Prem, staff
8225. GYNECOLOGICAL ENDOCRINOLOGY—PART II. (388939) (Cr ar) Prem, staff
8226. OBSTETRICAL PHYSIOLOGY AND ANESTHESIOLOGY. (488947) (Cr ar) Prem, staff
8230. RESEARCH IN REPRODUCTION. (488950) (Cr ar) Prem, staff

Ophthalmology (Oph)

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

5100. INTRODUCTION TO OPHTHALMOLOGIC PATHOLOGY. (988953) (1 cr) Cameron
8101. CLINICAL OPHTHALMOLOGY. (388956) (8 cr) Staff
8131. PRACTICAL OCULAR SURGERY. (188957) (3 cr) Staff
8142. PATHOLOGY LABORATORY. (188960) (2 cr) Cameron
8152. OPHTHALMOLOGY LABORATORY. (088961) (15 cr) Staff
8155. SPECIAL TOPICS. (688963) (Cr ar) Staff

Orthopaedic Surgery (OrSu)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5180. ORTHOPAEDICS I. (588972) (Cr ar; prereq regis med)
5185. ORTHOPAEDICS II. (388973) (Cr ar; prereq regis med)
5186. RESEARCH PROBLEMS IN ORTHOPAEDIC SURGERY. (888976) (Cr ar; prereq regis med)
5187. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES. (688977) (Cr ar; prereq regis med)
St. Paul-Ramsey Medical Center.
5188. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES. (688980) (Cr ar; prereq regis med)
Gillette Children's Hospital, St. Paul.
5189. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES. (488981) (Cr ar; prereq regis med)
St. Luke's Hospital, Duluth.
5190. EXTERNSHIP IN ORTHOPAEDIC SURGERY AND FRACTURES. (188983) (Cr ar; prereq regis med)
Veterans Hospital.
5191. ORTHOPAEDIC EXTERNSHIP AT HENNEPIN COUNTY MEDICAL CENTER. (788985) (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. (588986) (3 cr) Thompson, Bradford, House, Premer, Robinson, Hunter, Craig, Ogilvie
Review of X-ray films and case histories of patients on the orthopaedic inpatient or outpatient service.
8403. FRACTURES. (088992) (5 cr) Gustilo, staff
Orthopaedic fellow acts as house surgeon on the fracture service at Hennepin County Medical Center.
8404. FRACTURES. (888993) (5 cr) Comfort, staff
Orthopaedic fellow acts as house surgeon on the fracture service at St. Paul-Ramsey Medical Center.
8405. ORTHOPAEDIC DIAGNOSIS. (488995) (3 cr) Thompson, Bradford, House, Robinson, Hunter, Craig, Ogilvie
Orthopaedic fellow assists in instruction of medical students and interns and studies problems in diagnosis in the Outpatient Department and in the University Hospitals.

Course Descriptions

- 8407. PEDIATRIC ORTHOPAEDICS.** (188997) (5 cr) Vanden Brink, staff
Orthopaedic fellow acts as house surgeon at Gillette Children's Hospital.
- 8408. ORTHOPAEDIC PROBLEMS AND MANAGEMENT.** (988998) (5 cr) Thompson, Bradford, House, Premer, Robinson, Hunter, Craig, Ogilvie
Orthopaedic fellow acts as house surgeon at University and Veterans Hospitals.
- 8409. ORTHOPAEDIC PROBLEMS AND MANAGEMENT.** (289002) (5 cr) Winter, Lonstein
Orthopaedic fellow acts as house surgeon on the orthopaedic service at Fairview Hospital.
- 8410. ORTHOPAEDIC PATHOLOGY.** (789005) (2 cr) Thompson, Bradford, House, Premer, Robinson, Hunter, Craig, Ogilvie
Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities.
- 8411. ORTHOPAEDIC OPERATIVE SURGERY.** (089009) (5 cr) Thompson, Bradford, House, Premer, Robinson, Hunter, Craig, Ogilvie
Orthopaedic fellow acts as first assistant at operations at University and affiliated hospitals and later may be permitted to operate.
- 8412. ORTHOPAEDIC ANATOMY.** (889013) (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.** (489015) (5 cr) Thompson, Bradford, House, Robinson, Hunter, Craig, Ogilvie
Problems in experimental or clinical surgery, University Hospitals.

Otolaryngology (Otol)

SPECIAL TERMS: THREE-, SIX-, AND TWELVE-WEEK COURSES

- 5500. GENERAL—ENT ELECTIVE.** (789022) (4.5 cr)
- 5501. ACTING INTERNSHIP—ENT ELECTIVE.** (589023) (9 cr)
- 5503. RESEARCH: BASIC SCIENCE—ENT ELECTIVE.** (389024) (9 or 18 cr)

SPECIAL TERM: EIGHT-WEEK COURSES

- 8220. RESEARCH.** (189025) (18 cr)
- 8230. CLINICAL OTORHINOLARYNGOLOGY.** (889027) (6 cr)
- 8231. SURGERY OF EAR, NOSE, THROAT.** (489029) (4 cr)
- 8232. MAXILLOFACIAL SURGERY.** (889030) (1 cr)
- 8233. PLASTIC, RECONSTRUCTIVE SURGERY: HEAD, NECK.** (689031) (1 cr)
- 8234. ANATOMY: HEAD, NECK, TEMPORAL BONE DISSECTION.** (489032) (2 cr)
- 8235. ROENTGENOLOGY OF HEAD, NECK.** (189034) (2 cr)
- 8236. PHARMACOLOGY.** (989035) (2 cr)
- 8237. ENDOSCOPY.** (789036) (2 cr)
- 8238. PATHOLOGY OF EAR, NOSE, THROAT.** (589037) (2 cr)
- 8239. OTONEUROLOGY.** (189039) (2 cr)
- 8240. ALLERGY.** (589040) (2 cr)
- 8241. TUMOR CLINIC.** (189042) (1 cr)
- 8242. AUDIOLOGY AND SPEECH PATHOLOGY.** (089043) (2 cr)
- 8243. INTRODUCTION: RESEARCH METHODOLOGY.** (689045) (2 cr)
- 8244. SEMINAR: CURRENT LITERATURE.** (489046) (1 cr)
- 8245. MASTER'S THESIS RESEARCH.** (189048) (Cr ar)
- 8246. PH.D. THESIS RESEARCH.** (289050) (Cr ar)
- 8248. RESEARCH.** (189051) (Cr ar)

Pathobiology (Path)

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

Courses for Graduate Program

- 5104. AUTOPSIES.** (789053) (Cr ar; prereq Phase B or equiv) Staff
- 5111. AUTOPSY SLIDE CONFERENCE.** (189056) (Cr ar; prereq regis grad med or #) Staff
- 5113. SURGICAL PATHOLOGY.** (089057) (Cr ar; prereq Phase B or equiv) Dehner
- 5140. SEMINAR: EXPERIMENTAL CHRONOBIOLOGY.** (089060) (1 cr; prereq #) Halberg
- 5141. PROBLEMS IN EXPERIMENTAL AND CLINICAL CHRONOBIOLOGY.** (689062) (Cr ar; prereq #) Halberg
- 5169. RESEARCH: HUMAN GENETICS.** (489063) (Cr ar; prereq #) Eaton
- 5170. ADVANCED PROBLEMS IN MEDICAL GENETICS.** (289064) (Cr ar; prereq #) Eaton, staff
- 8200. ADVANCED PROBLEMS IN PATHOLOGY.** (189065) (Cr ar; prereq #) Benson, staff
- 8201. RESEARCH.** (989066) (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.** (789067) (Cr ar; prereq #) Halberg
- 8273. ADVANCED IMMUNOBIOLOGY.** (589068) (6 cr; 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; may also be taken with a private practitioner but must be arranged with the course director). (389069) (Cr ar) Satran
- 5503. PEDIATRIC CLERKSHIP WITH OUTSTATE CLINICIANS.** (491590) (Cr ar) Satran
- 5504. PEDIATRIC CLINICAL ASPECTS OF PEDIATRIC PSYCHOLOGY** (University Hospitals). (190846) (Cr ar) Chang
- 5512. PEDIATRIC ACTING INTERNSHIP.** (389072) (Cr ar) Satran
- 5515. CHILD DEVELOPMENT AT ST PAUL-RAMSEY MEDICAL CENTER.** (189073) (Cr ar) Davis
- 5520. PEDIATRIC OUTPATIENT.** (089074) (Cr ar; prereq #) Satran
- 5522. AMBULATORY PEDIATRICS AT HENNEPIN COUNTY MEDICAL CENTER.** (689076) (Cr ar) Tobin
- 5523. OUTPATIENT EXTERNSHIP AT COMMUNITY UNIVERSITY HEALTH CARE CENTER.** (489077) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Smelker
- 5532. CLINICAL ALLERGY AND IMMUNOLOGY AT UNIVERSITY HOSPITALS.** (289078) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Page
- 5534. PEDIATRIC CARDIOLOGY AT UNIVERSITY HOSPITALS.** (489080) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Moller
- 5535. INFECTIOUS DISEASE.** (989083) (Cr ar; prereq 5501, 5503, 5512, Med 5502) Ferrier
- 5536. PEDIATRIC HEMATOLOGY-ONCOLOGY AT UNIVERSITY HOSPITALS.** (789084) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Nesbit
- 5537. PEDIATRIC ENDOCRINOLOGY AND METABOLISM** (University Hospitals). (290845) (Cr ar) Ulstrom
- 5538. PEDIATRIC GASTROENTEROLOGY.** (389086) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Sharp
- 5539. NEONATAL MEDICINE EXTERNSHIP.** (189087) (Cr ar; prereq 5501, 5502 or Med 5502) Boros or Thompson
- 5540. PEDIATRIC NEUROLOGY.** (089088) (Cr ar) Swaiman
- 5543. PEDIATRIC NEPHROLOGY.** (889089) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Michael
- 5544. PULMONARY DISEASE IN PEDIATRICS.** (189090) (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Warwick
- 5545. DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER.** (089091) (Cr ar) Ramsay
- 5548. PEDIATRIC GENETICS.** (889092) (9 cr; prereq 5501, 5503, 5512 or Med 5502) Pierpont
- 5553. ADOLESCENT MEDICINE** (University Hospitals). (186117) (9 cr) Blum

Course Descriptions

5555. NEONATAL CHECKUP (St. Joseph's Hospital, Marshfield, WI). (986118) (Cr ar) Opitz
5556. CLINICAL PEDIATRICS CLERKSHIP (Marshfield Clinic, WI). (786119) (Cr ar) Blau
8200. GRADUATE SEMINAR: PEDIATRICS. (689093) (1.5 cr) Staff
8202. PEDIATRICS CLINICS. (489094) (Cr ar; prereq #) Staff
8204. RESIDENCY IN PEDIATRICS. (289095) (Cr ar; prereq #) Staff
8206. PEDIATRIC SPECIAL INTEREST. (289096) (Cr ar; for grad students who have completed at least 1½ yrs of general grad pediatric training; prereq #) Staff
8208. PEDIATRIC RESEARCH. (989097) (Cr ar; prereq #) Krivit, staff

Pharmacology (Phcl)

FIRST TERM

5109. PROBLEMS IN PHARMACOLOGY. (789098) (Cr and hrs ar; prereq #) Shideman, staff
8203. RESEARCH IN PHARMACOLOGY. (990847) (Cr and hrs ar; prereq #) Shideman, staff

SECOND TERM

5109. PROBLEMS IN PHARMACOLOGY. (689305) (Cr and hrs ar; prereq #) Shideman, staff
8203. RESEARCH IN PHARMACOLOGY. (790848) (Cr and hrs ar; prereq #) Shideman, staff

Physical Medicine and Rehabilitation (PMed)

SPECIAL TERM: JULY 1-SEPTEMBER 30

8200. PHYSICAL MEDICINE SERVICE. (589099) (Cr and hrs ar) Staff
8205. READINGS. (289100) (1 cr; 0800-0955 M; Mayo 825) Kottke
8206. CONFERENCE ON PHYSICAL MEDICINE AND REHABILITATION. (085803) (2 cr and hrs ar) Staff
8220. SEMINAR IN PHYSICAL MEDICINE AND REHABILITATION. (885804) (Cr and hrs ar) Staff

Occupational Therapy

- 5396, 5397. FIELDWORK EDUCATION. (189101) (989102) (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. (789103) (Cr ar; prereq physical therapy) Staff
8130. CURRENT LITERATURE SEMINAR IN PHYSICAL THERAPY. (290439) (1 cr; prereq #) Staff
8170. SPECIAL TOPICS. (589104) (1 cr; prereq #) Staff
8185. PROBLEMS IN PHYSICAL THERAPY. (389105) (Cr ar; prereq physical therapy) Staff
8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (189106) (Cr ar; prereq physical therapy) Staff
8195. RESEARCH IN PHYSICAL THERAPY. (089107) (Cr ar; prereq #) Kottke, Amundsen, staff

SECOND TERM

5255. CLINICAL TRAINING. (690437) (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. (489306) (Cr ar; prereq physical therapy) Staff
8130. CURRENT LITERATURE SEMINAR IN PHYSICAL THERAPY. (090435) (1 cr; prereq #) Staff
8170. SPECIAL TOPICS. (289307) (1 cr; prereq #) Staff

- 8185. PROBLEMS IN PHYSICAL THERAPY.** (189308) (Cr ar; prereq physical therapy) Staff
- 8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY.** (989309) (Cr ar; prereq physical therapy) Staff
- 8195. RESEARCH IN PHYSICAL THERAPY.** (289310) (Cr ar; prereq #) Kottke, Amundsen, staff

Physiology (Phsl)

FIRST TERM

- 3051. HUMAN PHYSIOLOGY.** (189115) (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.** (889108) (Cr and hrs ar) Staff
Topics assigned for laboratory study; conferences and readings.
- 5552. READINGS IN PHYSIOLOGY.** (689109) (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
- 5553. RESEARCH IN PHYSIOLOGY.** (089110) (Cr and hrs ar) Staff
- 8113. PROBLEMS IN PHYSIOLOGY.** (889111) (Cr and hrs ar) Staff
Topics assigned for laboratory study; conferences and readings.
- 8202. READINGS IN PHYSIOLOGY.** (489113) (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
- 8203. RESEARCH IN PHYSIOLOGY.** (689112) (Cr and hrs ar) Staff

SECOND TERM

- 5552. READINGS IN PHYSIOLOGY.** (789960) (Cr and hrs ar) Staff
See First Term.
- 5553. RESEARCH IN PHYSIOLOGY.** (589961) (Cr and hrs ar) Staff
- 8202. READINGS IN PHYSIOLOGY.** (389962) (Cr and hrs ar) Staff
See First Term.
- 8203. RESEARCH IN PHYSIOLOGY.** (189963) (Cr and hrs ar) Staff

Psychiatry

Adult Psychiatry (AdPy)

SPECIAL TERM: JUNE 21-SEPTEMBER 10

- 5105. ADULT INPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS.** (686260) (Cr ar; prereq #) Sines
- 5107. HUMAN BEHAVIOR—June 14-July 21.** (886029) (5 cr; 0915-1000 TTh; PWB 2470) Erickson
- 5109. ADULT PSYCHIATRY.** (689207) (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 Aufderheide, M.D., St. Luke's Hospital, 915 East First Street, Duluth; telephone (218) 727-6636, ext. 660.
- 5110. CONTEMPORARY HOSPITAL PSYCHIATRY.** (489208) (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 Aufderheide, 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).** (289209) (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.

Course Descriptions

- 5222. PRECEPTORSHIPS IN PSYCHIATRY.** (489211) (9 cr per period; prereq med student) Erickson, Tucson
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).** (689224) (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).** (989228) (9 cr per period; prereq med student) Tucson
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).** (589233) (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).** (489239) (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).** (489242) (9 cr per period; prereq med student) Kroll
General adult psychiatry with emphasis on acutely ill patients and outpatient follow-up.
- 5511. PSYCHIATRY IN MEDICINE: CONSULTATION-LIAISON (University Hospitals).** (389251) (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.
- 5514. SUBSTANCE ABUSE AND RELATED PSYCHIATRIC DISORDERS (University Hospitals).** (886273) (9 cr per period; prereq med student) Westermeyer, Van Valkenberg
Students will be involved with cases over a spectrum of services from inpatient, to an intensive outpatient program or partial hospitalization, to outpatient follow-up. Cases will involve both alcohol and drug abuse, and combinations of these two with their associated medical and psychiatric conditions.
- 5515. NEUROPSYCHOLOGY (University Hospitals).** (989259) (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).** (989262) (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).** (189266) (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).** (889268) (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).** (689269) (9 cr per period; prereq med student) Nagobads
Experience in outpatient community psychiatry. Useful for students considering family practice.
- 5530. INDEPENDENT STUDY.** (089270) (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.** (289274) (1 cr; prereq #: hrs ar) Abuzzahab
Structured discussion of current problems in clinical psychopharmacology.
- SPECIAL TERM: JUNE 27-SEPTEMBER 9**
- 5800. CASE CONFERENCE; PSYCHIATRY IN MEDICINE.** (189292) (1 cr; prereq MD or #) Popkin, MacKenzie, and Brantner
- 5801. CONSULTATION-LIAISON PSYCHIATRY.** (789294) (Cr ar; prereq MD) Popkin, MacKenzie, and staff

- 5810. ALCOHOL, DRUG ABUSE.** (389296) (3 cr; prereq #) Westermeyer
- 8201. CLINICAL PSYCHIATRY.** (189297) (Up to 12 cr per qtr; hrs ar) Staff
- 8203. ADVANCED CLINICAL PSYCHIATRY.** (089298) (Up to 12 cr per qtr; hrs ar) Staff
- 8205. SPECIAL ASSIGNMENTS.** (189302) (Up to 12 cr per qtr; hrs ar) Staff
- 8206. RESEARCH.** (089303) (Up to 12 cr per qtr; hrs ar) Staff
- 8208. SURVEY OF PHYSIOLOGICAL TREATMENTS.** (389301) (2 cr; hrs ar) Eckert
- 8221. SEMINAR: CURRENT LITERATURE (Hennepin County Medical Center).** (889304) (1 cr; hrs ar) Simon
- 8265. READINGS, PSYCHOSOMATIC MEDICINE, CONSULTATION-LIAISON PSYCHIATRY.** (589300) (Cr ar [max 3]; prereq MD, #) Popkin, MacKenzie
- 8970. DIRECTED STUDY.** (889299) (Up to 9 cr per qtr; hrs ar) Staff

SECOND TERM

- 5105. ADULT INPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS.** (286262) (Cr ar; prereq #) Sines

Child and Adolescent Psychiatry (CAPy)

FIRST TERM

- 5203. CHILD AND ADOLESCENT OUTPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS.** (189311) (1-5 cr; 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.** (989312) (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.
- 5500. PEDIATRIC PSYCHIATRY LIAISON.** (789313) (9 cr; prereq med student, #) Pearson
Supervised consultation, diagnostic, and short-term therapy experience in pediatrics and pediatric neurology.
- 5501. PEDIATRIC, PEDIATRIC NEUROLOGY: PSYCHIATRIC LIAISON.** (186108) (9-18 cr; prereq med student, #)
- 5520. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY FOR PRIMARY CARE TRAINEES.** (086109) (Cr ar; prereq med student, #)
- 5522. CLINICAL INPATIENT ADOLESCENT PSYCHIATRY.** (589314) (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.** (389315) (3 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.** (189316) (9 cr per term; prereq med student; hrs ar) Realmuto
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.** (089317) (3 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.** (889318) (3 cr; 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.** (689319) (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.

Course Descriptions

8110. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (089320) (1 cr; hrs ar) Greenberg, staff
See 5204.

8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (889321) (1 cr; hrs ar) Stocking
See 5206.

8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY. (689322) (3 cr; 15-30 hrs per wk) Greenberg, Erbaugh
Supervised diagnostic and therapeutic experiences in an outpatient setting.

8212. CLINICAL INPATIENT CHILD PSYCHIATRY. (489323) (3 cr; 15-30 hrs per wk) Realmuto, 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. (289324) (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. (189325) (3 cr; prereq med student. #: hrs ar) Pearson, Jensen
See 5500.

8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY. (989326) (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. (089964) (1-5 cr; prereq #) Erbaugh
See First Term.

5204. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (889965) (1 cr; prereq med student, #: hrs ar) Erickson
See First Term.

5500. PEDIATRIC—PSYCHIATRY LIAISON. (689966) (9 cr; prereq med student. #) Pearson
See First Term.

5522. CLINICAL INPATIENT ADOLESCENT PSYCHIATRY (University Hospitals, Station 62). (489967) (9 cr per period; prereq med student; hrs ar) Erickson
See First Term.

5602. INTRODUCTORY READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (289968) (3 cr; hrs ar) Miner, staff
See First Term.

5603. INPATIENT CLINICAL CHILD PSYCHIATRY. (189969) (9 cr per term; prereq med student; hrs ar) Realmuto
See First Term.

5608. INTRODUCTION TO FAMILY THERAPY: THEORY AND PRACTICE. (489970) (3 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. (289971) (3 cr; 2½ hrs ar; prereq MD and/or #) Josephson
See First Term.

8100. READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (189972) (1 cr; hrs ar) Greenberg, staff
See First Term.

8110. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (989973) (1 cr; hrs ar) Greenberg, staff
See 5204 First Term.

8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (789974) (1 cr; hrs ar) Stocking
See 5206 First Term.

8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY. (589975) (3 cr; 15-30 hrs per wk) Jensen
See First Term.

8212. CLINICAL INPATIENT CHILD PSYCHIATRY. (389976) (3 cr; 15-30 hrs per wk) Realmuto, staff
See First Term.

8214. INPATIENT CLINICAL ADOLESCENT PSYCHIATRY. (189977) (3 cr and hrs ar) Erickson, staff
See First Term.

8216. PEDIATRIC—PSYCHIATRY LIAISON. (089978) (3 cr; prereq med student, #; hrs ar) Pearson
See First Term.

8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY. (889979) (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).** (089334) (Cr and hrs ar; prereq regis med) Gedgaudas, staff
- 5102. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Veterans Administration Hospital).** (789327) (Cr and hrs ar; prereq regis med) Reinke
- 5103. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Hennepin County Medical Center).** (589328) (Cr and hrs ar; prereq regis med) Tsai
- 5104. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Paul-Ramsey Medical Center).** (389329) (Cr and hrs ar; prereq regis med) L'Heureux
- 5105. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Luke's Hospital, Duluth).** (789330) (Cr and hrs ar; prereq regis med) Ahrens, staff
- 5140. SPECIAL PROBLEMS: ROENTGENOLOGY.** (589331) (Cr and hrs ar; prereq regis med) Gedgaudas, staff
- 5240. SPECIAL PROBLEMS: NUCLEAR MEDICINE.** (389332) (Cr and hrs ar; prereq regis med) Loken, staff
- 5530. EXTERNSHIP: NUCLEAR MEDICINE.** (189333) (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.** (589345) (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.
- 0122. PEDIATRIC ROENTGENOLOGIC CONFERENCE.** (089348) (No cr; 0930-1000 MTWThF; Mayo B167-Rigler Library) Day
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.** (889349) (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.** (089351) (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.** (889352) (No cr; 1200-1300 Th; Mayo B167-Rigler Library) Amplatz
- 8100. GASTROINTESTINAL ROENTGENOLOGY.** (689353) (Cr ar; prereq #) Feinberg
- 8101. UROLOGIC ROENTGENOLOGY.** (489354) (Cr ar; prereq #) Goldberg
- 8102. NEUROLOGICAL ROENTGENOLOGY.** (289355) (Cr ar; prereq #) Gold
- 8103. CARDIOVASCULAR ROENTGENOLOGY.** (189356) (Cr ar; prereq #) Amplatz
- 8104. PEDIATRIC ROENTGENOLOGY.** (989357) (Cr ar; prereq #) Day
- 8105. PULMONARY ROENTGENOLOGY.** (789358) (Cr ar; prereq #) Gedgaudas, staff
- 8150. RESEARCH: ROENTGENOLOGY.** (589359) (Cr ar) Gedgaudas, staff
Problems in roentgen diagnosis.
- 8200. NUCLEAR MEDICINE.** (989360) (Cr ar) Loken, staff
- 8450. RESEARCH: RADIATION BIOLOGY, NUCLEAR MEDICINE.** (289338) (Cr ar) Staff

Course Descriptions

Surgery (Surg)

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

Elective Courses for Undergraduate Students

5500. EXTERNSHIP IN GENERAL SURGERY (University and Affiliated Hospitals). (789361) (Cr ar; prereq regis med) Najarian, staff

5523. EXTERNSHIP IN COLON AND RECTAL SURGERY (Veterans Administration Hospital). (589362) (4 5 cr; offered all periods except 5; prereq regis med; 3 weeks) Goldberg

Required Courses for Graduate Students

8200. CLINICAL SURGICAL PROBLEMS AND MANAGEMENT. (389363) (5 cr; ar MTWThF) Najarian, staff

8201. SURGERY-ROENTGENOLOGY-PATHOLOGY CONFERENCE. (189364) (1 cr; 1600-1730 F; Mayo C321-Todd Amph) Najarian

8202. SURGICAL RESEARCH. (089365) (5 cr; ar MTWThF; Sur Res Lab) Staff

8203. SURGERY COMPLICATIONS AND RESEARCH CONFERENCE. (889366) (1 cr; 1640-1730 T; PWB 11-157) Najarian, staff

8207. TRANSPLANTATION AND BONE MARROW CONFERENCE. (689367) (1 cr; 1640-1730 Th; PWB 11-157) 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. (489368) (Cr ar; prereq regis med)

5505. EXTERNSHIP IN RADIATION THERAPY. (785696) (Cr ar; prereq regis med) Levitt, Kim, Lee, Potish

5506. CANCER DIAGNOSIS AND TREATMENT. (585697) (Cr ar; prereq regis med) Levitt, Kim, Lee, Potish

5507. ADVANCED EXTERNSHIP IN RADIATION THERAPY. (289369) (Cr ar; prereq regis med) Levitt, Kim, Lee, Potish

5508. SPECIAL PROBLEMS IN RADIATION BIOLOGY. (689370) (Cr ar)

5512. DOSIMETRY OF INTERNAL AND EXTERNAL RADIATION. (489371) (1 cr; 0830-0930 W; B141 Mayo) Khan, Werner, Deibel

5540. SPECIAL PROBLEMS IN RADIOLOGICAL PHYSICS. (289372) (Cr ar; prereq regis med) Khan, Loken

8300. RADIATION THERAPY. (189373) (Cr ar)

8310. FUNDAMENTALS OF RADIATION THERAPY. (989374) (1 cr; 1600-1700 M; B141 Mayo)

8315. RADIATION THERAPY PATHOLOGY. (789375) (1 cr)

8320. RADIATION THERAPY TREATMENT PLANNING PROBLEMS. (589376) (1 cr)

8325. RADIATION THERAPY PEDIATRICS ONCOLOGY. (389377) (1 cr)

8350. RESEARCH IN RADIATION THERAPY. (189378) (Cr ar)

8410. SEMINAR: RADIATION BIOLOGY. (089379) (1 cr; prereq #) Song, Buchsbaum

8450. RESEARCH IN RADIATION BIOLOGY. (389380) (Cr ar) Song, Buchsbaum

8550. RESEARCH IN RADIOLOGICAL PHYSICS. (189381) (Cr ar) Khan, Loken

Urologic Surgery (Urol)

FIRST TERM

5180. EXTERNSHIP IN UROLOGY. (089382) (Cr and hrs ar) Staff

Required Courses for Graduate Students

8250. UROLOGICAL SURGERY. (889383) (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. (689384) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others
Urological fellow performs cystoscopies and other diagnostic procedures.

8252. UROLOGICAL CONFERENCE. (489385) (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. (289386) (4 cr) Fraley, others
Problems in experimental and clinical surgery.

8254. UROLOGICAL SEMINAR. (189387) (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (989388) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (789389) (3 cr; 1640-1700 W; Mayo A503) Fraley, others

8257. SELECTED TOPICS: GENITOURINARY SYSTEM. (690678) (2 cr) Fraley, others

SECOND TERM

5180. EXTERNSHIP IN UROLOGY. (889982) (Cr and hrs ar) Staff

Required Courses for Graduate Students

8250. UROLOGICAL SURGERY. (489984) (4 cr; 0900-1200 MTThF; Main OR-H) Fraley, others
See First Term.

8251. CYSTOSCOPY AND UROLOGICAL DIAGNOSIS. (989987) (4 cr; 0800-1200 MTWThF; Cysto Suite) Fraley, others
See First Term.

8252. UROLOGICAL CONFERENCE. (789991) (4 cr; 1600-1700 F, Ward Rds, Sta 57; 0900-1100 S, Sta 57 Conf Rm) Fraley, others
See First Term.

8253. RESEARCH: UROLOGY. (189994) (4 cr) Fraley, others
See First Term.

8254. UROLOGICAL SEMINAR. (889996) (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (489998) (3 cr; 1300-1400 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (190000) (3 cr; 1630-1700 W; Mayo A503) Fraley, others

DEPARTMENT OF MORTUARY SCIENCE

Mortuary Science (Mort)

FIRST TERM

R 5040. DYING AND DEATH IN CONTEMPORARY SOCIETY—June 14-July 1. (189955) (3 cr, §PubH 5040, HSU 5040, §Hlth 5402; limited to 60 students; prereq mortuary science major, education sr, certified teacher, health science major, school or public health nurse or #: 1330-1600 MTWThF; JoAd 2-125) 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. (189390) (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

NS 5616. SYNTHESIS IN COMPLEX NURSING SITUATIONS II. (291185) (5 cr; prereq 5611, 5612, 5613, 5614; FScN 3602) Newton

Clinical course designed to enable 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.

5799. SELF-DIRECTED STUDY. (989391) (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. (089625) (Cr ar; prereq Δ) Staff
Various learning experiences planned to meet individual needs.

8009. SPECIAL TOPICS IN NURSING. (289629) (Cr ar; prereq #) Staff

NS 8010. STRUCTURE OF THE DISCIPLINE OF NURSING. (789635) (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. (189647) (Cr ar; prereq #) Staff

8509. SPECIAL TOPICS IN NURSING EDUCATION. (189650) (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION. (789652) (Cr ar; prereq #) Staff

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

NS 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 fLaMP 5171; hrs ar)

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. (185749) Urueta	3. (386074) Reese, RN only
	2. (585750) Urueta	4. (186075) Reese

NS 5614. SYNTHESIS INCORPORATING CONCEPTS OF HEALTH. (3 cr; prereq 5404, 5405 or *5405, 5407, 5408, 5409, abnormal psychology, Phcl 1009, LaMP 5171 or fLaMP 5171; hrs ar)

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. (385751) Ryden, RN only	3. (886080) Jones
	2. (185752) Ryden	4. (191180) Jones

NS 5615. SYNTHESIS IN COMPLEX NURSING SITUATIONS. (5 cr; prereq 5611, 5612, 5613, 5614, FScN 3602; hrs ar)
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. (085753) Ruhland	3. (086076) Weisensee	5. (891182) Rothweiler, RN only
	2. (091181) Ruhland	4. (786072) Weisensee	6. (686078) Rothweiler, RN only

NS 5616. SYNTHESIS IN COMPLEX NURSING SITUATIONS II. (5 cr; prereq 5611, 5612, 5613, 5614; FScN 3602) See First Term.

- (691183) Fairbanks
- (491184) Fairbanks

NS 725. LEGAL PARAMETERS OF NURSING PRACTICE. (189681) (2 cr; completion of two Level II synthesis courses or RN with abnormal psychology, 5409; hrs ar) Accola

NS 5730. NURSING AND DRUG THERAPY I. (789683) (3 cr; prereq any two of the following: 5611, 5612, 5613, 5614 or RN) Accola

Designed to give the student added ability to synthesize pharmacological knowledge into giving holistic nursing care. Major emphasis on assessing the desired effects, side effects, and interactions of common drugs affecting the cardiovascular, renal, endocrine, and autonomic nervous system; determining appropriate nursing intervention related to these drugs, and using nursing process and helping relationships in teaching clients what they need to know about their drugs. Discussion of hospitalized and discharged clients.

5799. SELF-DIRECTED STUDY. (589684) (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; hrs ar)
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. (485756) Colloton
- 2. (191186) Colloton

5999. CLINICAL STUDY. (Cr ar; prereq any two of the following: 5611, 5612, 5613, 5614)
Opportunity to utilize the research process in the design and implementation of a limited study that focuses on implications for nursing practice.

- 1. (285757) Brand
- 2. (991187) Brand

R 8011. MORAL AND ETHICAL POSITIONS IN NURSING. (489693) (3 cr; prereq Δ ; 1215-1500 W) 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.

R 8012. CONCEPTUAL FRAMEWORK FOR NURSING PRACTICE. (791188) (3 cr; prereq Nurs 8010; 0915-1200 W) Weise

Exploration and reconceptualization of assumptions, values, and beliefs underlying learner's view of nursing and nursing practice. Analysis of structure of a nursing conceptual framework and development of personal framework. Concept of intervention model and systematic process that underlies development of such a model.

R 8014. RESEARCH IN NURSING. (789697) (3 cr; prereq inferential statistics, Δ ; 0915-1200 W) Feldman
Research processes and methodologies appropriate to nursing. Analysis of research reports.

R 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, (989701) 1015-1200 TTh. Gordon
- Sec 2, (089706) 1015-1200 TTh. Taylor

Sec 3, (889710) 1015-1200; 1315-1500 T, Sodergren

8050. PROBLEMS IN NURSING. (089642) (1-9 cr; prereq #) Staff

Individual study of a problem.

8315. NURSE MIDWIFERY MANAGEMENT. (089723) (8-10 cr; prereq 8314; 0915-1300 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.

R 8415. NURSE CLINICAL ROLE DEVELOPMENT. (689742) (6-9 cr; prereq any Nursing Focus I course, a course dealing with the health care delivery system; 0915-1200 T) Snyder

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.

R 8422. PSYCHIATRIC MENTAL HEALTH NURSING: FAMILY DYNAMICS AND THERAPY. (591189) (3 cr; prereq 8421; 1015-1200 T) Kjerвик

Study of family dynamics and communication patterns. Relationship of selected family to community using concepts from systems theory. Clinical practice in family therapy.

R 8431. CHILDBEARING-CHILDBREARING FAMILY NURSING I. (185758) (4-6 cr; prereq 8030; 0915-1200 T) 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.

R 8441. PERINATAL NURSING OF THE MOTHER AND FETUS. (991190) (6 cr; prereq Nurs 8030 and Δ ; 1215-1400 TTh) Sonstegard

Exploration of theories and issues inherent in perinatal nursing. Emphasis on assessment of risk, family development, planning, intervention modalities, and evaluation. Critical analysis of research. Development of research questions.

R 8451. TEACHING NURSING. (591192) (4 cr; prereq any section of 8030, *course in learning theory and #: 1215-1500 TTh) Corcoran

Use of theories of learning to develop an intervention model for teaching nursing. Testing the intervention model in simulated situations.

SECOND TERM

R 5616. SYNTHESIS IN COMPLEX NURSING SITUATIONS II. (791191) (5 cr; prereq 5611, 5612, 5613, 5614; FScN 3602) Brand

5799. SELF-DIRECTED STUDY. (989794) (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.

Course Descriptions

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (389797) (Cr ar; prereq Δ) Staff
See First Term.

8009. SPECIAL TOPICS IN NURSING. (089799) (Cr ar; prereq #) Staff

8012. CONCEPTUAL FRAMEWORK FOR NURSING PRACTICE. (389802) (3 cr; prereq 8010 or 18010; 1215-1500 TTh) Egan

8060. ADVANCED CLINICAL NURSING. (789957) (3-9 cr; prereq Δ, #)

8509. SPECIAL TOPICS IN NURSING EDUCATION. (589958) (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION. (389959) (Cr ar; prereq #) Staff

COLLEGE OF PHARMACY

Pharmacy (Phar)

FIRST TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (689417) (2 cr. §HSU 5210) Bast
Programmed learning format to familiarize students with the language of the health sciences.

SPECIAL TERM: JUNE 15-AUGUST 21

5390. COMMUNITY PRACTICE CLERKSHIP. (585411) (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 (185413) (12 cr; prereq 3rd-yr pharmacy student; 40 hrs per wk for 12 wks) Mann

Supervised and evaluated practical experience under college-coordinated field preceptors.

5396. PHARM.D. CLERKSHIP. (385412) (12 cr; prereq 5312 or #) Cloyd

Monitoring of patient drug therapy in University Hospitals and other affiliated institutions.

SECOND TERM

5210. TERMINOLOGY OF THE HEALTH SCIENCES. (489547) (2 cr. §HSU 5210) Bast
Programmed learning format to familiarize students with the language of the health sciences.

SCHOOL OF PUBLIC HEALTH

Health Education (PubH)

FIRST TERM

8 3001. PERSONAL AND COMMUNITY HEALTH. (589149) (3 cr. §3004, §GC 3114; meets with 3004, 3033; 1010-1205 MWF; HSUnitA 2-690) Rothenberger

Fundamental principles of health conservation and disease prevention.

8 3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH. (989150) (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.

8 3033. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE. (789151) (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 6-8 (385779) (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, problems 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 interventive 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. (589152) (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. (389153) (5 cr. §5016; prereq pharmacy student, nursing student, other health professional or #: 0800-0955 MTWThF; HSUnitA 2-690) Greene

Lectures, discussions, seminars. Individualized readings on critical and current issues in community health, emphasizing public health programs and controversies.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (189154) (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 14-July 1. (089155) (3 cr. §Hlth 5402, §Mort 5040, §HSU 5040; prereq health science major, education senior, certified teachers, mortuary science major, public health grad student or #: 1330-1600 MTWThF, JOAd 2125) 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.

5081. INTERNSHIP IN FAMILY AND COMMUNITY STUDIES. (186299) (cr ar; prereq health education major)

One quarter of full-time supervised health education internship in community and family settings.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (Cr ar; prereq #) Staff

Section 1 (889156)—Environmental health students only. Section 2 (689157)—Other students majoring in public health.

SECOND TERM

5003. INTERDISCIPLINARY TEAM BUILDING IN COMMUNITY HEALTH PRACTICE—July 27-29. (785780) (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 settings 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. (089186) (Cr ar; prereq advance proposal and #) Staff

See First Term.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (889187) (Cr ar; prereq #) Staff

See First Term.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (489189) (Cr ar; prereq #) Staff

See First Term.

Biometry (PubH)

FIRST TERM

5400. INTRODUCTION TO QUANTITATIVE METHODS IN THE BIOLOGIC AND HEALTH SCIENCES. (489158) (4 cr; for students majoring in the biological and health sciences; prereq Biol 1009, Chem 1004, Math 1111 or 1201 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. (289159) (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. (689160) (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. (489161) (Cr ar; prereq #) Staff

Selected readings with discussion based on these readings.

8400. SEMINAR IN BIOMETRY. (289162) (Cr ar) Staff

8449. TOPICS IN BIOMETRY. (189163) (Cr ar; prereq 5450 and #) Staff

Studies in special topics for advanced students.

8450. RESEARCH IN BIOMETRY. (989164) (Cr ar) Staff

Opportunities for qualified students to pursue research work.

Course Descriptions

SECOND TERM

5446. BIOCOMPUTING CONSULTING SEMINAR. (889190) (3 cr; prereq biometry major, 5432, 5452 or #) Gatewood
See First Term.

5456. BIOMETRY CONSULTING SEMINAR. (689191) (Cr ar; prereq biometry major) Boen
See First Term.

5470. TOPICS IN BIOMETRY. (489192) (Cr ar; prereq #) Staff
See First Term.

8400. SEMINAR IN BIOMETRY. (289193) (Cr ar) Staff

8449. TOPICS IN BIOMETRY. (189194) (Cr ar; prereq 5450 and #) Staff
See First Term.

8450. RESEARCH IN BIOMETRY. (989195) (Cr ar) Staff
See First Term.

Dental Public Health (PubH)

FIRST TERM

5654. TOPICS: DENTAL PUBLIC HEALTH. (789165) (Cr ar; prereq student in dental public health or #) Staff
Selected readings with discussion based on these readings.

5657. INDEPENDENT STUDY: DENTAL PUBLIC HEALTH. (589166) (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. (389167) (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. (189168) (Cr ar; prereq student in dental public health or #) 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. (789196) (Cr ar; prereq student in dental public health or #) Staff
See First Term.

5657. INDEPENDENT STUDY IN DENTAL PUBLIC HEALTH. (589197) (Cr ar; prereq student in dental public health or #) Block, staff
See First Term.

5660. FIELD EXPERIENCE: DENTAL PUBLIC HEALTH. (389198) (Cr ar; prereq student in dental public health or #)
Block, staff
See First Term.

5663. ADMINISTRATIVE RESIDENCY IN DENTAL PUBLIC HEALTH. (189199) (Cr ar; prereq student in dental public health or #) Block, staff, clinical preceptors
See First Term.

Environmental Health (PubH)

FIRST TERM

5150. TOPICS IN ENVIRONMENTAL HEALTH. (089169) (Cr ar; prereq #) Staff
Selected readings with discussions of problems.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (Cr ar; prereq #) Staff
Sec 1 (889156) Environmental Health Students only.

8150. RESEARCH: ENVIRONMENTAL HEALTH. (389170) (Cr ar) Staff

SECOND TERM

5150. TOPICS IN ENVIRONMENTAL HEALTH. (989200) (Cr ar; prereq #) Staff
See First Term.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (489189) (Cr ar; prereq #) Staff
See First Term.

8150. RESEARCH: ENVIRONMENTAL HEALTH. (789201) (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. (189171) (Cr ar; prereq epidemiology student or #) Staff
Selected readings with discussion based on these readings.

8330. RESEARCH: EPIDEMIOLOGY. (089172) (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. (589202) (Cr ar; prereq epidemiology student or #) Staff
See First Term.

8330. RESEARCH: EPIDEMIOLOGY. (389203) (Cr ar) Staff
See First Term.

Health Psychology (PubH)

FIRST TERM

5800. RESEARCH PROJECT IN HEALTH PSYCHOLOGY. (889173) (1-6 cr) Staff

5801. DIRECTED STUDY IN HEALTH PSYCHOLOGY. (689174) (1-4 cr) Staff

5802. SPECIAL TOPICS IN HEALTH PSYCHOLOGY. (489175) (Cr ar; prereq health psychology major or #) Staff

5869. CLERKSHIP IN PSYCHOLOGICAL ASSESSMENT. (291008) (1-4 cr; prereq grad student in health psychology, school psychology or #) Staff

5870. CLERKSHIP IN NEUROPSYCHOLOGICAL ASSESSMENT. (191009) (1-4 cr; prereq health psychology major or #) Staff

5871. FIELDWORK EXPERIENCE IN HEALTH PSYCHOLOGY. (491010) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5872. CASE CONFERENCE IN HEALTH PSYCHOLOGY. (291011) (1 cr; prereq health psychology major or #; S-N only) Staff

5873. CASE CONFERENCE IN NEUROPSYCHOLOGY. (191012) (1 cr; prereq health psychology major or #; S-N only) Staff

5877. INTERNSHIP IN CLINICAL PSYCHOLOGY. (991013) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience; S-N only) Staff

5878. HEALTH PSYCHOLOGY CLINIC INTERNSHIP. (791014) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5879. MEDICAL CONSULTATION FOR HEALTH PSYCHOLOGY INTERNS. (591015) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5880. HEALTH PSYCHOLOGY INTERNSHIP AT THE BOYNTON HEALTH SERVICE. (391016) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5881. HEALTH PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD. (391193) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5882. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (191017) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5883. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT. (091018) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5884. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS. (891019) (1-4 cr; prereq health psychology major or #; S-N only) Staff

Course Descriptions

5885. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP. (191020) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5886. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP. (091021) (1-4 cr; prereq health psychology intern or #: S-N only) Staff

5887. HEALTH PSYCHOLOGY OF THE ELDERLY. (891022) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #: S-N only) Staff

5888. BEHAVIORAL MEDICINE. (691023) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #: S-N only) Staff

5889. CASE SEMINAR IN HEALTH PSYCHOLOGY. (491024) (2 cr; prereq health psychology major or #: S-N only) Staff

5890. SUPERVISED PSYCHOLOGICAL THERAPY. (290125) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5891. HEALTH PSYCHOLOGY LABORATORY. (191026) (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff

SECOND TERM

5800. RESEARCH PROJECT IN HEALTH PSYCHOLOGY. (189204) (1-6 cr) Staff

5801. DIRECTED STUDY IN HEALTH PSYCHOLOGY. (089205) (1-4 cr) Staff

5802. SPECIAL TOPICS IN HEALTH PSYCHOLOGY. (889206) (Cr ar; prereq health psychology major or #: Staff

5869. CLERKSHIP IN PSYCHOLOGICAL ASSESSMENT. (791031) (1-4 cr; prereq grad student in health psychology, school psychology or #: Staff

5870. CLERKSHIP IN NEUROPSYCHOLOGICAL ASSESSMENT. (591032) (1-4 cr; prereq health care psychology major or #: Staff

5871. FIELDWORK EXPERIENCE IN HEALTH PSYCHOLOGY. (391033) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5872. CASE CONFERENCE IN HEALTH PSYCHOLOGY. (191034) (1 cr; prereq health psychology major or #: S-N only) Staff

5873. CASE CONFERENCE IN NEUROPSYCHOLOGY. (091035) (1 cr; prereq health psychology major or #: S-N only) Staff

5877. INTERNSHIP IN CLINICAL PSYCHOLOGY. (891036) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience; S-N only) Staff

5878. HEALTH PSYCHOLOGY CLINIC INTERNSHIP. (691037) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5879. MEDICAL CONSULTATION FOR HEALTH PSYCHOLOGY INTERNS. (491038) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5880. HEALTH PSYCHOLOGY INTERNSHIP AT THE BOYNTON HEALTH SERVICE. (291039) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5881. HEALTH PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD. (691040) (1-4 cr; prereq clinical psychology intern or #: S-N only) Staff

5882. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (491041) (1-4 cr; prereq health psychology major; S-N only) Staff

5883. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT. (291042) (1-4 cr; prereq health psychology major; S-N only) Staff

5884. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS. (191043) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5885. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP. (991044) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5886. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP. (791045) (1-4 cr; prereq health psychology major or #: S-N only) Staff

5887. HEALTH PSYCHOLOGY OF THE ELDERLY. (590146) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #: S-N only) Staff

5888. BEHAVIORAL MEDICINE. (391047) (1-4 cr; prereq PhD candidate and 400 hrs clerkship experience or #: S-N only) Staff

5889. CASE SEMINAR IN HEALTH PSYCHOLOGY. (191048) (2 cr; prereq health psychology major or #; S-N only) Staff

5890. SUPERVISED PSYCHOLOGICAL THERAPY. (091049) (1-4 cr; prereq health psychology major or #; S-N only) Staff

5891. HEALTH PSYCHOLOGY LABORATORY. (391050) (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff

Hospital and Health Care Administration (PubH)

FIRST TERM

5758. HOSPITAL AND OTHER HEALTH CARE ORGANIZATIONS FINANCIAL STATEMENT ANALYSIS. (485465) (4 cr; prereq 5757; 1800-2100 Th; 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. (2 cr; prereq hospital administration student or #) Weckwerth, staff

Selected readings in hospital and health care with discussion based on these readings.

Sec 1, (085459) 1515-1700 TTh

Sec 2, (391548) ar

R 5771. FINANCIAL MANAGEMENT IN HEALTH SERVICES ORGANIZATIONS. (791028) (4 cr; prereq 1 prior college level 3 cr accounting course; 1715-1845 TTh; HSUnitA 2-580) Sattler

5774. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE AMBULATORY CARE FACILITY—July 10-22. (291655) (15 cr; prereq 5773) Weckwerth, staff

A 12-month program of on-campus (2 weeks) and independent study that includes periodic seminars and monthly sessions with clinical preceptors. Change theory, ethics, epidemiology, prepaid systems, legal aspects, planning.

R 5776. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE HEALTH CARE FACILITY—July 10-22 (385460) (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.

R 5779. MANAGING MULTIPLE FORCES: INTERNAL AND EXTERNAL ASPECTS OF PATIENT CARE ADMINISTRATION—July 10-22. (289176) (Cr ar; prereq present employment as administrator of patient care [director of nursing or equivalent], 5778 and #) Weckwerth, Manthey, 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.

R 5786. EXTERNAL RELATIONSHIPS AFFECTING THE ROLE AND FUNCTION OF THE MENTAL HEALTH FACILITY—July 10-22. (585652) (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. (189177) (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. (685464) (3 cr for 10 wks; prereq 5745) Bieter, Staff

Survey and solution of management problem within a local health services organization and preparation of formal report.

SECOND TERM

5770. TOPICS: HOSPITAL AND HEALTH CARE ADMINISTRATION. (586378) (cr ar; prereq hospital administration student or #)

Selected readings in hospital and health care with discussion based on these readings.

Course Descriptions

5773. MANAGEMENT AND ORGANIZATION WITHIN THE AMBULATORY CARE FACILITY—July 17-29. (991660) (15 cr; prereq current employment as ambulatory care administrator, and #)

A 12-month program of on-campus (2 weeks) and independent study that includes periodic seminars and monthly sessions with clinical preceptors. Management, organizational behavior, problem solving, executive role, personnel management, financial management, governance, clinicians, productivity, and efficiency.

5775. MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES. (689210) (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 17-29) 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. (289212) (25 cr; prereq 5774, 5776, 5786, 5788 or #) Weckwerth, staff

A 10-month program consisting of an on-campus residential session (August 10-19) 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 17-29. (385488) (25 cr; prereq present employment as administrator of patient care [director of nursing or equivalent] or #) Weckwerth, Manthey, 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 17-29. (385653) (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. (989178) (Cr ar; prereq MCH grad student: S-N only) tenBensel, Splett

Field experiences are selected by the student to meet career goals.

5649. TOPICS IN MATERNAL, CHILD HEALTH. (789179) (Cr ar; prereq #) tenBensel

Selected readings in maternal and child health with discussion based on these readings.

SECOND TERM

5614. FIELD EXPERIENCE: MATERNAL, CHILD HEALTH. (189213) (Cr ar; prereq MCH grad student: S-N only) tenBensel, Splett

See First Term.

5649. TOPICS: MATERNAL AND CHILD HEALTH.

Sec 1, (989214) cr ar, tenBensel

Sec 2, (891649) **Developing Innovative Practices in Health Education Services for Young Children With Handicaps: The Parent/Provider Partnership**, July 18-22, 3 cr, 1430-1800 MTWTh, 0800-1700 F, HSUnit A 2-620, Rubenstein, Leonard

Public Health Administration (PubH)

FIRST TERM

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (189180) (Cr ar; prereq student in public health administration or #)

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. (989181) (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. (185461) (1-12 cr; prereq public health administration student or #; S-N only)

Independent study under tutorial guidance of selected problems and current issues in public health administration.

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (885463) (Cr ar; prereq student in public health administration or #) Block
Selected readings with discussion based on these readings.

SECOND TERM

5703. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (789215) (Cr ar; prereq student in public health administration or #)
See First Term.

5704. FIELD EXPERIENCE: PUBLIC HEALTH ADMINISTRATION. (589216) (Cr ar; prereq student in public health administration or #) Block
See First Term.

5707. INDEPENDENT STUDY: PUBLIC HEALTH ADMINISTRATION. (185489) (1-12 cr; prereq public health administration student or #)
See First Term.

5739. TOPICS: PUBLIC HEALTH ADMINISTRATION. (585490) (Cr ar; prereq student in public health administration or #) Block
See First Term.

Public Health Nursing (PubH)

FIRST TERM

5530. SYNTHESIS OF ADVANCED PUBLIC HEALTH NURSING I. (285466) (2-5 cr; required of public health nursing students) 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. (789182) (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. (589183) (3 cr; prereq #) Spradley
Presentation, discussion and utilization of research processes and methodologies to serve as the basis for the Plan B research project.

R 5572. ADULT HEALTH ASSESSMENT—June 14-July 28. (389184) (4 cr; prereq #: 1200-1600 TTh; Jach 2-135) Ostwald, Shepard
Course 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. (785763) (Cr ar) Staff

5575. TOPICS IN PUBLIC HEALTH NURSING. (Cr ar; prereq #) Staff
Topics of interest.

- Sec 1, (189185)
- Sec 2, (486213)

SECOND TERM

5531. SYNTHESIS OF ADVANCED PUBLIC HEALTH NURSING II. (689188) (2-5 cr; prereq 5530, 2nd-yr public health nursing students) Aroskar, Lentsch
For description, see 5530 First Term.

5575. TOPICS: PUBLIC HEALTH NURSING. (389217) (Cr ar; prereq #) Staff
See First Term.

Public Health Nutrition (PubH)

FIRST TERM

5900. FIELD COURSE I: PUBLIC HEALTH NUTRITION. (891005) (1-4 cr; prereq public health nutrition student) Splett, Staff
Placement in approved agency with opportunity for experience in nutritional aspects of public health programs.

Course Descriptions

5901. SEMINAR: PUBLIC HEALTH NUTRITION. (691006) (1-6 cr; prereq public health nutrition student) Brown, Staff

5909. TOPICS IN PUBLIC HEALTH NUTRITION. (491007) (1-12 cr; prereq public health nutrition student or #) Brown, Staff
Independent study.

SECOND TERM

5900. FIELD COURSE IN PUBLIC HEALTH NUTRITION. (191194) (1-4 cr; prereq public health nutrition student) Splett
See First Term.

5903. NUTRITIONAL ASSESSMENT—July 18-August 2. (591029) (2 cr; prereq 3xxx level nutrition course or equiv or #: 1325-1515 MTWTh; HSUnitA 2-580) Brown
Theoretical base and application of nutritional assessment methods to communities and individuals.

5909. TOPICS: PUBLIC HEALTH NUTRITION. (991030) (1-12 cr; prereq #) Brown, Staff
See First Term.

Veterinary Public Health (PubH)

FIRST TERM

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (185467) (Cr ar; prereq VPH major or #) Staff
Research in the relationship of animal health to human health.

SECOND TERM

5326. RESEARCH IN ANIMAL/HUMAN HEALTH. (189218) (Cr ar; prereq VPH major 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

R 1521. DESIGN PROCESS: COLOR. (686923) (4 cr; limited to 24 students; 1300-1500 MTWThF; McNH 262)
Color concepts and their applications to design.

R 1523. DESIGN PROCESS: VISUAL PRESENTATION. (286925) (4 cr; limited to 24 students; 1115-1310 MTWThF; McNH 258)
Development of basic drawing skills for the designer.

R 1525. DESIGN PROCESS: TWO-DIMENSIONAL DESIGN I. (790624) (4 cr; limited to 24 students; 0900-1100 MTWThF; McNH 262)
Experiments with principles of two-dimensional design.

R 1533. METALSMITHING: INTRODUCTION TO TECHNIQUES. (590625) (4 cr; prereq 1521, 1523, 1525 or #; limited to 18 students; 0900-1100 MTWThF; McNH 10)
Introduction to techniques used in contemporary metalsmithing and jewelry making.

3580. INTERNSHIP IN HOUSING. (186934) (5-15 cr [max 15]; S-N only; prereq completion of one-half professional sequence and #, Δ)
International, intercultural, or other directed work in a community, which offers a variety of housing experiences.

R 3584. FIELD EXPERIENCE IN DESIGN. (986099) (Cr ar [max 15 cr]; S-N only; prereq #, Δ, plan to be submitted and approved in advance by adviser and employer; hrs ar) Staff
Supervised work experience with a professional, design studio, retail store, community service, museum, printing or publishing firm, or other appropriate organization. Evaluative report required.

R 5574. SPECIAL TOPICS IN INTERIOR DESIGN: BEHAVIORAL ASPECTS OF DESIGN. (390626) (4 cr; limited to 24 students; prereq Δ; 0900-1100 MTWThF; McNH 233, 316) Erickson, Franklin
Relationship between behavior and the design of interior environments by creating, experiencing, and evaluating spaces.

5584. READINGS IN DESIGN. (190627) (1-3 cr; not open to srs; prereq #, Δ; hrs ar) Staff
Independent study and review of books and periodicals. Written reports.

5585. PROBLEMS IN DESIGN: GENERAL. (090628) (2-4 cr per term [max 12 cr]; prereq # and Δ; hrs ar) Staff
Independent study in design under tutorial guidance.

8584. READINGS IN DESIGN. (186268) (1-3 cr; prereq #, Δ; hrs ar) Staff
Independent study and review of books and periodicals.

R 8585. PROBLEMS: DESIGN. (486938) (1-5 cr; prereq #, Δ) Staff

8586-8587. PROBLEMS: DESIGN. (286939) (486941) (1-5 cr; prereq #, Δ; hrs ar) Staff

SECOND TERM

1501. INTRODUCTION TO DESIGN. (190630) (3 cr; 0800-0850 MTWThF; McNH 33) Miller
Awareness of design in the near environment.

3521. DESIGN PROCESS: COLOR II. (491685) (4 cr; prereq 1521, 1523 or #, Δ; limited to 24 students; 1000-1200 MTWThF; McNH 262)
Continued study of color concepts and their application to design.

R 3580. INTERNSHIP IN HOUSING. (686100) (Cr ar [max 15]; S-N only; prereq completion of one-half professional sequence and #; Δ) Staff
See First Term.

Course Descriptions

3584. FIELD EXPERIENCE IN DESIGN. (286391) (Cr ar [max 15 cr]; S-N only; prereq #: Δ ; plan to be submitted and approved in advance by adviser and employer; hrs ar) Staff
See First Term.

5574. SPECIAL TOPICS IN INTERIOR DESIGN: KITCHEN PLANNING—August 1-12. (090631) (4 cr; 0905-1100 MTWThF; McNH 33) Ginthner, Yust
Kitchen designing from the conceptual stage through the solution. Human factors, criteria for work areas, and application of the design principles. Meets with FSoS 5240, section 1.

5585. PROBLEMS IN DESIGN: GENERAL. (086272) (2-4 cr per qtr [max 12 cr]; prereq # and Δ ; hrs ar) Staff
See First Term.

Family Social Science (FSoS)

FIRST TERM

1001. DYNAMICS OF FAMILY RELATIONSHIPS. (190653) (3 cr, §1002; 0900-1130 TTh; McNH 197) Thibault
Application of behavioral sciences to mate selection, interaction in marriage and other committed relationships, sex roles, and maintaining and ending relationships.

5001. HUMAN SEXUAL BEHAVIOR. (786945) (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.

5200. FAMILY RELATIONSHIPS. (586946) (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.

5218. THE PRINCIPLES OF FAMILY FINANCIAL MANAGEMENT—June 20-July 1. (086093) (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.

5219. PROBLEMS IN FAMILY FINANCIAL MANAGEMENT. (790655) (3-4 cr; prereq 3260 or 3001, 5260 or #: 1300-1400 TTh; McNH 69) Gage
Financial management processes; modification of management behavior by application of behavioral techniques.

5230. INDEPENDENT STUDY. (186948) (Cr ar [max 4 cr]) Staff

5240. SPECIAL TOPICS IN FAMILY SOCIAL SCIENCE. (2-6 cr per qtr [max 16 cr]; prereq set by instructor)

Sec 1, Introduction to Family Therapy, (286956) 1300-1600 Th, McNH 197, Maddock
Therapy and techniques for counseling families from a systems perspective; emphasis on basic theories and techniques for evaluating family interaction and dysfunction. For those interested in improving skills in family therapy, and for home economics educators as an introduction to field. This offering for 3 credits.

Sec 2, Step-Parenting, (990654) 1000-1200 MWF, McNH 69, Nelson
A review and discussion of step-family problems and characteristics from a family theory and psychological perspective. This offering for 3 credits.

Sec 3, Family Systems: Overview and Applications, (590656) 1400-1700 TTh, McNH 198, Olson
Overview of family system theory and how it can be applied in counseling, research, and teaching. Emphasis on the Circumplex Model and its application to the family and other social systems. This offering for 3 credits.

8251. PROBLEMS: FAMILY SOCIAL SCIENCE. (186960) (1-5 cr; prereq #: hrs ar) Staff

8252. PROBLEMS: FAMILY SOCIAL SCIENCE. (986961) (4 cr; prereq #: hrs ar) Staff

8270. PRACTICUM: FAMILY RESEARCH. (586249) (1-5 cr; prereq #: hrs ar) Staff

SECOND TERM

3260. HOME MANAGEMENT PRINCIPLES. (090659) (3 cr; prereq AgEc 1030; 1400-1515 MW; McNH 197) Hogan
Development of a theoretical systems framework to analyze behavior in families with emphasis on managerial aspects of behavior; goal setting, planning, and implementing in use of resources.

5025. PARENTING. (390657) (4 cr; prereq 5200 or 5202, CPsy 1301; 0900-1130 MW; McNH 197) 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.

5201. FAMILY IN AMERICAN SOCIAL STRUCTURE. (188546) (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.

5230. INDEPENDENT STUDY. (988547) (Cr ar [max 4 cr]) Staff

5240. SPECIAL TOPICS IN FAMILY SOCIAL SCIENCE: KITCHEN PLANNING—Aug 1-12. (890632) (2-6 cr per qtr [max 16 cr]; prereq set by instructor; 0905-1100 MTWThF; McNH 33) Yust, Ginthner
Designing a kitchen from an initial conceptual stage to presentation drawings to meet the needs of a particular family. Principles of human factor design as illustrated in kitchen planning including criteria for work areas, spatial relationships of work areas, storage requirements, appliance evaluation, utility requirements, and material choices. Aesthetic design principles will also be integrated into the kitchen plan. This offering for 4 credits.

8251. PROBLEMS: FAMILY SOCIAL SCIENCE. (788548) (1-5 cr; prereq #: hrs ar) Staff

8252. PROBLEMS: FAMILY SOCIAL SCIENCE. (588549) (4 cr; prereq #: hrs ar) Staff

8270. PRACTICUM: FAMILY RESEARCH. (786251) (1-5 cr; prereq #: hrs ar) Staff

Food Science and Nutrition (FScN)

FIRST TERM

R 3600. PRINCIPLES OF NUTRITION. (086756) (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.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (686758) (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. (486759) (1-5 cr; prereq sr, Δ; hrs ar) Staff

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

R 5404. CURRENT ISSUES IN FOOD AND NUTRITION—June 27-July 8. (886760) (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. (686761) (1-5 cr; prereq #: hrs ar) Staff

Independent study and written reports.

8621. INDEPENDENT STUDY: NUTRITION. (486762) (1-9 cr; prereq Δ; hrs ar) Staff

Independent study and written reports.

SECOND TERM

1102. TECHNOLOGY OF FOOD PROCESSING. (288061) (4 cr; prereq high school chemistry and biology; 0800-0955 MWF; 0905-0955 TTh; ABLMS 125)

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.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (988063) (1-5 cr [may be repeated for cr]; prereq Δ; hrs ar) Staff

See First Term.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (788064) (1-5 cr; prereq sr, Δ; hrs ar) Staff

See First Term.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (588065) (1-5 cr; prereq Δ; hrs ar) Staff

See First Term.

8621. INDEPENDENT STUDY: NUTRITION. (388066) (1-9 cr; prereq #: hrs ar) Staff

See First Term.

Textiles and Clothing (TexC)

FIRST TERM

R 3622. TEXTILES FOR INTERIORS. (690907) (3 cr; limited to 22 students; prereq 3621. #: 0900-1100 MTWThF; McNH 340) Franzen
Developments and trends with reference to fiber, yarn, construction, and finish of textiles for upholstery, floor, wall, and window coverings.

5003. COOPERATIVE EDUCATION PROGRAM. (786962) (4-8 cr, 5003-5004†; not for grad cr; S-N only; prereq sr, †5004, #: minimum GPA 2.50; hrs ar) Grindereing
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. (586963) (4 cr, 5003-5004†; not for grad cr; A-N only; prereq sr, †5003, #: hrs ar) Grindereing
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: TEXTILES AS COMMUNICATION: A SOCIO-CULTURAL APPROACH TO DESIGN. (185721) (4 cr; prereq Δ; 1500-1700 MTWTh; McNH 470) Thieme
Design as a form of cultural communication; the socio-historical context of designs of textile products of the 19th and 20th centuries.

8621. READINGS IN TEXTILES. (386964) (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. (086966) (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. (886967) (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. (686968) (3-9 cr [max 9 cr]; prereq #: hrs ar) Grindereing
Independent study in human behavioral aspects of clothing or textiles.

8680. SEMINAR: TOPICS IN CLOTHING AND TEXTILES—Theory and Analysis of Fashion. (490908) (3 cr; prereq #: 0930-1230 MTh; McNH 395) Grindereing
Fashion theories and factors that influence adoption and diffusion of innovations. Methodologies used in analysis of the fashion process.

SECOND TERM

8621. READINGS IN TEXTILES. (788582) (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. (388584) (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. (088586) (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. (688588) (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. (486969) (Cr ar [max 12 cr per qtr]; prereq #: hrs ar) Seltzer, staff
Independent reading and/or research under faculty supervision.

5130. SUMMER SEMINAR: CONTEMPORARY ISSUES IN YOUTHWORK—June 20-24. (591614) (4 cr; 0800-1630 MTWThF; McNH 386A) Hedin

SECOND TERM

5120. INDEPENDENT STUDY IN YOUTH STUDIES. (288593) (Cr ar [max 12 cr per qtr]; prereq #: hrs ar) Seltzer, staff
See First Term.

Law School

Calendar

May 23	Monday	First day of Summer Session classes
May 30	Monday	Memorial Day HOLIDAY
July 4	Monday	Independence Day HOLIDAY
July 14	Thursday	Last Day of Summer Session classes
July 15	Friday	Reading Period
July 18-19	Monday/ Tuesday	FINAL EXAMINATION PERIOD FOR SUMMER SESSION

ADMISSION AND REGISTRATION

Students must have completed one year at an approved law school and submit a letter of good standing from a dean of an approved law school. The tuition is \$79.50 per credit*. Students not currently enrolled in the University of Minnesota Law School must submit a nonrefundable application fee of \$15.00. Registration deadline is May 2, 1983. Information is available in the college office, 290 Law Building, 229 19th Avenue South, University of Minnesota, Minneapolis, MN 55455 or call (612) 376-3344.

SPECIAL TERM: EIGHT WEEK COURSES, May 23-July 19

5051. CORPORATIONS. (791580) (3 cr; 1020-1120 MTWThF) Koeppen

Introduction to general law of corporations. Formation of corporations; stockholder rights and obligations; powers and obligations of management; voting arrangements.

5100. TAX I. (591578) (3 cr; 0910-1010 MTWThF) Raskind

An introduction to the federal income tax as it applies to individual and business income; gross income, exclusions, deductions, basis, capital gains, and tax procedure with some reference to current topics of tax policy and public finance.

5150. TRUSTS AND ESTATES (191583) (3 cr; 1130-1230 MTWThF) Waterbury

Legal doctrines implementing gratuitous transfers of property, including topics from the law governing intestate succession, wills, administration of decedents estates, common nonprobate transfers, trusts, trust administration and future interests.

5203. LABOR LAW. (591581) (3 cr; 1020-1120 MTWThF) Cooper

Federal laws regulating labor-management relations. Continuing need for interpretation by the National Labor Relations Board and the federal courts. Opportunity to study a specific administrative agency as it interprets and applies statutory provisions. Union representation elections, collective bargaining, and collection action.

5219. EVIDENCE. (391582) (3 cr; 1130-1230 MTWThF) Cound

The rules for admission and exclusion of evidence at trial, including relevance; the hearsay rule and its exceptions; competency and examination of witnesses; writings, presumptions.

5230. ADVANCED TORTS. (391579) (3 cr; 0910-1010 MTWThF) Marshall

Study of injuries to relational interests, including defamation, privacy (a relational interest in some contexts, not in others), misuse of legal procedure, business torts, interference with family relations, and wrongful death actions. If time permits, the course will deal also with the no-fault auto compensation system in Minnesota.

5600. LEGAL PROFESSION. (791577) (2 cr; 0800-0900 MWTh) Hopeman

The nature and scope of the work of those trained in the law; their responsibilities to clients, the profession, the administration of justice, and society; the context and role of formal standards of professional ethics.

*Tuition is subject to change.

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

1025. BLACK AMERICANS: SOCIALIZATION, PERSONALITY, AND BEHAVIOR. (590463) (4 cr; 0800-0850 MTWTh; BlegH 245) Taborn

Development of the black psyche and of the black person and black culture.

3910. AFRICA THROUGH ITS CINEMA. (090466) (4 cr; 1010-1100 MTWTh; BlegH 145) Pike

An examination of contemporary Africa through the images of its filmmakers.

American Indian Studies (AmIn)

FIRST TERM

1771. INTRODUCTION TO AMERICAN INDIAN STUDIES. (190479) (4 cr; 0915-1000 MTWTh; BlegH 350) Beaulieu
Content, methods, and objectives of American Indian studies. Images of the American Indian, persistence of and change in American Indian communities, linguistics and literature, and tribal ethnohistories.

3116. AMERICAN INDIAN LITERATURE. (191695) (4 cr; 1325-1415 MTWTh; BlegH 120) Vizenor
§AmSt 3920, Sec. 1. Meets concurrently with AmSt 3920, Sec. 1.

5920. AMERICAN INDIANS IN FILMS AND PHOTOGRAPHS. (091696) (4 cr; 1010-1205 MTW; AndH 310) Vizenor
§AmSt 3920, Sec. 2. Meets concurrently with AmSt 3920, Sec. 2.

American Studies (AmSt)

FIRST TERM

1101. AMERICAN LIFE: PUBLIC AND PRIVATE. (191060) (4 cr; limited to 49 students; 0905-0955 MTWThF; AndH 270) Staff

Critical analysis of American culture.

3920. TOPICS IN AMERICAN STUDIES. (4 cr) Vizenor

Sec 1, American Indian Literature. (991061) 1325-1415 MTWTh, BlegH 120, §Amln 3116. Meets concurrently with Amln 3116.

Sec 2, American Indians in Films and Photographs. (791062)
1010-1205 MTW, AndH 310, §Amln 5920. Meets concurrently with Amln 5920.

3970. DIRECTED STUDIES. (887049) (1-15 cr; prereq #, △) Staff

5920. TOPICS IN AMERICAN STUDIES. (Max 12 cr; prereq #)

Sec 1, Cultural Regionalism from American Studies Perspective. (591063) 0800-0850 MTWThF; BlegH 130, 4 cr, Staff

8970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (087051) (Cr and hrs ar; prereq consent of program chair) Staff

SECOND TERM

R 1102. CONSCIOUSNESS AND SOCIAL ARRANGEMENTS. (191065) (4 cr; limited to 49 students; 0905-0955 MTWThF; BlegH 225) Staff
Critical analysis of American culture.

3970. DIRECTED STUDIES. (088605) (1-15 cr; prereq #, △) Staff

8970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (688610) (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

R 1101. HUMAN ORIGINS. (190482) (5 cr, §1101H; lect 1010-1100 MTWThF; MurH 311)
World prehistory as investigated by archaeologists; methods and concepts used by archaeologists in studying of prehistoric human biological and cultural development.

R 1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (090483) (5 cr, §1115, §5102; 0905-0955 MTWThF; FordH 285) Proll-Foldes
Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world.

R 3376. FIELD RESEARCH IN ARCHAEOLOGY. (191592) (Prereq #) Johnson

3970. DIRECTED STUDIES. (587059) (Cr and hrs ar; prereq #) Staff

5117. ENERGY, RESOURCE USE, AND SYSTEM CHANGE. (985180) (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.

5141. CULTURE AND PERSONALITY. (690485) (4 cr; prereq 1102 or # [waived for majors in public health, nursing, psychology, sociology, and social work]; 1010-1100 MTWThF; FordH 175) Rowe
Role of culture in formation of personality. Problems of individual adjustments to demands of culture. Psychological approach to culture.

5151. CULTURAL CHANGE AND DEVELOPMENT. (785181) (4 cr; prereq 1102 or 5102 or #; 1115-1205 MTWThF; FordH 285) Miller
Processes of cultural change; invention, diffusion, and acculturation. Effects of colonialism, urbanization, and modernization. Analysis of developing societies. Applied anthropology.

5970. DIRECTED READINGS. (490486) (2-4 cr; prereq #)
Qualified students may register for work on tutorial basis.

8211. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (290487) (3 cr; hrs ar) Staff

8950. DIRECTED STUDIES. (987060) (Cr and hrs ar; prereq grad student, #) Staff

SECOND TERM

R 1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (190491) (5 cr, §1115; 1010-1100 MTWThF; FordH 285) Ingham
See First Term.

Course Descriptions

R 3301. METHOD AND THEORY IN ARCHAEOLOGY. (790493) (5 cr; prereq 1101 or #: 0905-0955 MTWThF; FordH 285) Spector

Field methods, systems of data recording, analytical methods, and their conceptual basis. Abstract theory integrated with specific case material. Laboratory exercises in application of artifact analysis.

R 3376. FIELD RESEARCH IN ARCHAEOLOGY. (991593) (Prereq #) Johnson

3970. DIRECTED STUDIES. (288626) (Cr and hrs ar; prereq #) Staff

5331. CULTURE THEORY: AN INTRODUCTION. (590494) (4 cr; prereq jr or sr or grad student or #: 1115-1205 MTWThF; FordH 175) Penn

Selected issues in the development of culture theory: e.g., do cultural phenomena have an independent reality or are they derived from social systems?

5970. DIRECTED READINGS. (390495) (2-4 cr; prereq #)

See First Term.

8211. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (190496) (3 cr; hrs ar) Staff

8950. ADVANCED RESEARCH. (988628) (Cr and hrs ar; prereq #) Staff

Arabic—See South and Southwest Asian Studies

Art History (ArH)

FIRST TERM

1016. INTRODUCTION TO ASIAN ART. (890503) (4 cr; 1010-1100 MTWThF; JonesH 207A) Asher
Major themes of Indian and Far Eastern art.

3011. HISTORY OF RENAISSANCE AND BAROQUE ART. (885656) (4 cr; 0905-0955 MTWThF; JonesH 207A) Canedy

The major monuments in architecture, sculpture, and painting from the early 14th century through the baroque period.

3014. ART OF INDIA. (690504) (4 cr; 1210-1320 MTWThF; Jones 207A) Asher

Indian sculpture and architecture from the prehistoric Indus Valley civilization through the major historical periods. Hindu and Buddhist art from 300 B.S. to A.D. 1200.

3468. MODERN EXPRESSIONISM: VAN GOGH TO BECKMANN. (490505) (4 cr; 0905-0955 MTWThF; Jones 207B) Simon

Twelve modern expressionists: Van Gogh, Munch, Ensor, Kollwitz, Rouault, Schiele, Kokoschka, Barlach, Nolde, Kirchner, Grosz, and Beckmann.

3971. MAJOR PROJECT. (190507) (1 cr; prereq art history major, 3895, #) Staff

Completion of a research paper begun in a 5xxx-level project course.

5313. ITALIAN HIGH RENAISSANCE ARCHITECTURE, SCULPTURE, AND PAINTING. (790509) (4 cr; prereq 3011 or grad student or #: 1115-1205 MTWThF; Jones 207A) Canedy

Leonardo da Vinci, Michelangelo, Raphael, and Titian and lesser artists working in Florence, Rome, Venice, and northern Italy, Painting emphasized.

5521. 20TH-CENTURY ART IN THE UNITED STATES. (190510) (5 cr; prereq 4 cr of art history; 1010-1100 MTWThF; Jones 207B) Marling

Contemporary movements in American painting and sculpture beginning in early 20th century with "the eight" and the Armory Show, 1913.

R 5970. DIRECTED STUDIES. (685223) (1-5 cr; prereq sr, #) Staff

Guided individual reading or study.

8995-8996-8997. MUSEOLOGY II, III, IV. (587062) (387063) (187064) (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

R 3009. HISTORY OF MEDIEVAL ART. (788629) (4 cr; 0905-0955 MTWThF; JonesH 207B) Steyaert
Medieval architecture, painting, and sculpture from early Christian to Gothic period.

3142. ARTS OF EGYPT AND THE NEAR EAST. (990511) (4 cr; 1010-1100 MTWThF; Jones 207B) Smith

The arts and architecture of Egypt, Mesopotamia, and Persia from prehistoric times to the conquests of Alexander the Great.

3465. MASTER PAINTERS OF THE 19TH CENTURY. (285225) (4 cr; 1220-1310 MTWThF; JonesH 207A) Waldfoegel European artists selected for their originality, aesthetic excellence, or subsequent influence: Goya, Constable, Cezanne, and Van Gogh.

3936. ARTS OF BLACK AFRICA. (790512) (4 cr; 1220-1310 MTWThF; Jones 207B) Smith Major developments in the arts and architecture of black Africa. Artistic diversity regarding elements of style, chronology, and functional importance.

3971. MAJOR PROJECT. (590513) (1 cr; prereq art history major, 3895, #) Staff
See First Term.

5970. DIRECTED STUDIES. (188630) (1-5 cr; prereq #) Staff
See First Term.

8995-8996-8997. MUSEOLOGY II, III, IV. (588633) (788632) (988631) (5 cr; required for MA candidates in museology; prereq Δ) Staff
See First Term.

Arts, Studio (ArtS)

Materials fees are assessed at the time of registration for most Studio Arts courses. The fee covers part of the cost of expendable materials, models, breakage, and special facilities.

FIRST TERM

1101. DRAWING I. (4 cr; each section limited to 25 students)

Introduction to studio work; exploration of contemporary and traditional methods. Work from nature. various drawing mediums.

Sec 1, (087065) 0800-0955 MTWThF, ArtB 140, Cowette

Sec 2, (490536) 1010-1205 MTWThF, ArtB 150, Myers

Sec 3, (290537) 1010-1205 MTWThF, ArtB 160, Cowette

1102. DRAWING II. (887066) (4 cr; limited to 25 students; prereq 1101; 1010-1205 MTWThF; ArtB 140) Somberg Work from life and nature; introduction to color and pictorial structure.

1105. BEGINNING PAINTING. (487068) (4 cr; limited to 25 students; 0800-0955 MTWThF; ArtB 151) Hendler Contemporary and traditional surfaces in oil and acrylic media.

1301. SCULPTURE. (287069) (4 cr; limited to 22 students; 1010-1205 MTWThF; ArtB 50) Potraz Study of structure with emphasis on form and space. Direct construction in metal.

1401. INTRODUCTION TO STUDIO ARTS. (687070) (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.

1510. PRINTMAKING: INTAGLIO. (487071) (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.

1701. PHOTO MEDIUM. (391176) (4 cr; limited to 20 students; 1010-1205 MTWThF; ArtB 120) Henkel 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.

1811. CERAMICS. (785231) (4 cr; limited to 24 students; 0800-0955 MTWThF; ArtB 10) Hoard Introduction to hand-building techniques for individual creative expression.

3110. DRAWING. (187073) (4 cr per term [max 12 cr]; limited to 15 students; prereq 1102, 1401; 0800-0955 MTWThF; ArtB 141) Rowan

Drawing from model, still life, nature. Principles of anatomy. Meets with 5110.

3120. PAINTING. (987074) (4 cr per term [max 12 cr]; limited to 15 students; prereq 1105, 1401, and 4 cr of 3110 or #; 0800-0955 MTWThF; ArtB 161) Somberg Media and problems in painting; individual projects and instruction. Meets with 5120.

3160. WATERCOLOR. (990539) (4 cr per term [max 12 cr]; limited to 15 students; prereq 1101, 1104, 1401 or #; 1010-1205 MTWThF; ArtB 151) Rowan Transparent watercolor, gouache, casein, tempera. Figure, still life, landscape, abstract design. Meets with 5160.

3430. PAPERMAKING. (390545) (4 cr per term [max 12 cr]; limited to 13 students; prereq ArtS 1401, one 1xxx level Studio Arts or #; 0800-0955 MTWThF; ArtB 176) Kreppts Creative and traditional approaches to papermaking. Meets with 5430.

Course Descriptions

R 3720. PHOTOGRAPHY: NON-SILVER. (190546) (4 cr per term [max 12 cr]; limited to 20 students; prereq ArtS 1401, 1701, or 1702; 0800-0955 MTWThF; ArtB 120) Henkel
Non-silver, non-traditional, mixed media approaches to photography.

R 3810. CERAMIC DESIGN. (787075) (4 cr per term [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. (587076) (1-5 cr per term [max 8 cr]; prereq 24 cr in studio arts and #)

3980. DIRECTED INSTRUCTION. (387077) (1-5 cr per term [max 8 cr]; prereq #)
Students assist in teaching a course they have completed.

R 5110. DRAWING. (187078) (4 cr per term [max 16 cr]; limited to 10 students; prereq 12 cr of 3110 or #; 0800-0955 MTWThF; ArtB 141) Rowan
Drawing in all mediums from life. Meets with 3110.

R 5120. PAINTING. (190541) (4 cr per term [max 16 cr]; limited to 10 students; prereq 12 cr of 3120 or #; 0800-0955 MTWThF; ArtB 161) Somberg
Various media. Individual problems. Meets with 3120.

R 5160. WATERCOLOR. (790543) (4 cr per term [max 16 cr]; limited to 10 students; prereq 12 cr of 3160 or #; 1010-1205 MTWThF; ArtB 151) Rowan
Advanced watercolor techniques, aesthetic directions. Individual concepts and development of sensibilities. Meets with 3160.

5190. DRAWING AND PAINTING. (686176) (3-4 cr; max 16 cr; prereq #, non-majors)

5390. SCULPTURE. (486177) (3-4 cr; max 16 cr; prereq #, non-majors)

R 5430. PAPERMAKING. (890548) (4 cr per term [max 12 cr]; limited to 7 students; prereq ArtS 1401, one 1xxx level ArtS or #; 0800-0955 MTWThF; ArtB 176) Krepps
Creative and traditional approaches to papermaking. Meets with 3430.

5590. PRINTMAKING. (286178) (3-4 cr; max 16 cr; prereq #, non-majors)

5790. PHOTOGRAPHY. (186179) (3-4 cr; max 16 cr; prereq #, non-majors)

R 5810. CERAMICS. (087079) (4 cr per term [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.

5890. CERAMICS AND GLASS WORKING. (486180) (3-4 cr; max 16 cr; prereq #)

5970. DIRECTED STUDY. (387080) (1-5 cr per term [max 12 cr]; prereq 24 cr in studio arts and #)

8110. DRAWING. (187081) (3 cr per term [max 9 cr]; prereq #) Myers, Hendler, Somberg, Cowette, Rowan

8120. PAINTING. (087082) (3 cr per term [max 18 cr]; prereq #) Myers, Hendler, Somberg, Cowette, Rowan

8330. SCULPTURE: CAST METAL. (986278) (3 cr; max 9 cr; prereq #)

8510. PRINTMAKING. (887083) (3 cr per term [max 27 cr]; prereq #) Myers

8710. PHOTOGRAPHY. (687084) (3 cr per term [max 18 cr]; prereq #) Henkel

8810. CERAMICS. (487085) (3 cr per term [max 18 cr]; prereq #) Hoard

SECOND TERM

R 1101. DRAWING I. (191177) (4 cr; limited to 25 students; 1010-1205 MTWThF; ArtB 150) Gray
See First Term.

R 1102. DRAWING II. (188635) (4 cr; limited to 25 students; prereq 1101; 1010-1205 MTWThF; ArtB 140) Feinberg
See First Term.

R 1104. COLOR. (990556) (4 cr; limited to 25 students; prereq 1101; 1010-1205 MTWThF; ArtB 160) Bethke
Color and its visual implications.

R 1302. SCULPTURE. (088636) (4 cr; limited to 22 students; 1010-1205 MTWThF; ArtB 65, 90) Rose
Study of structure with emphasis on form and space. Clay, plaster, wood. Mold making and casting.

R 1530. PRINTMAKING: RELIEF. (085655) (4 cr per term [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 1701. PHOTO MEDIUM. (290554) (4 cr; limited to 20 students; 0800-0955 MTWThF; ArtB 120) Hallman
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.

R 1811. CERAMICS. (285273) (4 cr; limited to 24 students; 1010-1205 MTWThF; ArtB 10) Lane
See First Term.

- R 3110. DRAWING.** (588647) (4 cr per term [max 12 cr]; limited to 15 students; prereq 1102, 1401; 0800-0955 MTWThF; ArtB 140) Roode
See First Term. Meets with 5110.
- R 3120. PAINTING.** (588650) (4 cr per term [max 12 cr]; limited to 15 students; prereq 1105, 1401, and 4 cr of 3110 or #; 1010-1205 MTWThF; ArtB 151) Roode
See First Term. Meets with 5120.
- R 3710. PHOTOGRAPHY.** (585280) (4 cr per term [max 12 cr]; limited to 20 students; prereq 1401, 1701 or Jour 3301 or #; 1010-1205 MTWThF; ArtB 120) Hallman
Photographic controls and processes. Related photosensitive media. Creative processes suited to individual interests.
- 3970. DIRECTED STUDY.** (288657) (1-5 cr per term [max 8 cr]; prereq 24 cr in studio arts and #)
- 3980. DIRECTED INSTRUCTION.** (188658) (1-5 cr per term [max 8 cr]; prereq #)
See First Term.
- R 5110. DRAWING.** (288660) (4 cr per term [max 16 cr]; limited to 10 students; prereq 12 cr of 3110 or #; 0800-0955 MTWThF; ArtB 140) Roode
See First Term. Meets with 3110.
- R 5120. PAINTING.** (188661) (4 cr per term [max 16 cr]; limited to 10 students; prereq 12 cr of 3120 or #; 1010-1205 MTWThF; ArtB 151) Roode
Various media. Individual problems. Meets with 3120.
- 5190. DRAWING AND PAINTING.** (086188) (3-4 cr, max 16 cr; prereq #, non-major)
- 5390. SCULPTURE.** (886189) (3-4 cr, max 16 cr; prereq #, non-major)
- 5590. PRINTMAKING.** (186190) (3-4 cr, max 16 cr; prereq #, non-major)
- 5790. PHOTOGRAPHY.** (086191) (3-4 cr, max 16 cr; prereq #, non-major)
- 5890. CERAMICS AND GLASS WORKING.** (886192) (3-4 cr, max 16 cr; prereq #)
- 5970. DIRECTED STUDY.** (788663) (1-5 cr per term [max 12 cr]; prereq 24 cr in studio arts and #)
- 8110. DRAWING.** (588664) (3 cr per term [max 9 cr]; prereq #) Roode, Feinberg, Gray
- 8120. PAINTING.** (388665) (3 cr per term [max 18 cr]; prereq #) Roode, Feinberg, Gray
- 8330. SCULPTURE: CAST METAL.** (786282) (3 cr; max 9 cr; prereq #)
- 8510. PRINTMAKING.** (188666) (3 cr per term [max 27 cr]; prereq #) Bethke
- 8710. PHOTOGRAPHY.** (088667) (3 cr per term [max 18 cr]; prereq #) Hallman
- 8810. CERAMICS.** (888668) (3 cr per term [max 18 cr]; prereq #) Lane

Chinese—See East Asian Studies

Classics

*Classics (Clas)*¹

FIRST TERM

- 1042. GREEK AND ROMAN MYTHOLOGY.** (685805) (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.** (289145) (2-3 cr, §3045; prereq f1048; orientation 0800-0850 T, June 14...or 1220-1310 W, June 15...or 1325-1415 Th, June 16; independent and optional assistance labs ar; FolH 308)
- 1048. TECHNICAL TERMS OF THE MEDICAL AND BIOLOGICAL SCIENCES.** (189146) (2-3 cr, §3048; prereq 1045 or f1045; orientation 0800-0850 T, June 14...or 1220-1310 W, June 15...or 1325-1415 Th, June 16; independent and optional assistance labs ar; FolH 308)
- 3082. GREEK TRAGEDY IN TRANSLATION (AESCHLYUS, SOPHOCLES, EURIPIDES).** (490617) (4 cr, §5082; prereq 8 cr in English literature or in foreign literature or Δ; 0905-0955 MTWTh; FolH 207) Hershbell
Origin of European drama as distinct literary form; characteristics of Greek tragedy; ancient theatres and theatrical conventions. Selected tragedies. Problems related to cultural patterns of the time.
- 5082. GREEK TRAGEDY IN TRANSLATION (AESCHYLUS, SOPHOCLES, EURIPIDES.)** (290618) (4 cr, §3082; 0905-0955 MTWTh; FolH 207) Hershbell
Meets with 3082. Additional work required.
- 5120. FIELD RESEARCH IN ARCHAEOLOGY.** (489144) (3-6 cr)
Field excavation, survey, and research. Techniques of excavation and exploration; interpretation of archaeological materials. Contact department by April 15 for further information.

¹Knowledge of Greek or Latin is not required.

Course Descriptions

SECOND TERM

1042. GREEK AND ROMAN MYTHOLOGY. (190619) (4 cr; 1115-1205 MTWThF; FolH 308) Solomon
See First Term.

3007. THE WORLD OF GREECE. (490620) (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.

3145. GREEK AND ROMAN MYTHOLOGY II: ANALYSIS AND TRADITION. (485806) (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.

5007. THE WORLD OF GREECE. (290621) (4 cr, §3007; 1115-1205 MTWTh; FolH 209) Sheets
Meets with 3007; requires additional work for advanced undergraduate or graduate credit.

5145. CLASSICAL MYTHOLOGY: METHODOLOGY, INTERPRETATION, AND TRADITION. (285807) (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.

Latin (Lat)

FIRST TERM

3001. BEGINNING LATIN: INTENSIVE ACCELERATED. (287086) (10 cr, §1101-1102-1103, §3051-3052; 0905-1205 MTWThF; FolH 305) Miller

Ten class hours weekly, plus individual and small group sessions. Grammar, syntax, composition, and reading. See Special Programs section.

3970. DIRECTED STUDIES. (486096) (1-5 cr; prereq #, college approval)

SECOND TERM

3104. LATIN READINGS. (488687) (5 cr; prereq 1104 or equiv or #; 0905-0955 MTWThF; FolH 302) Sheets
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. (288688) (4 cr; prereq 3052 or Δ ; restricted to students in depts *other* than Classics; 0905-0955 MTWThF; FolH 302) Sheets

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

13100. CLINICAL AND RESEARCH OBSERVATION. (187087) (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.

3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY. (987088) (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. (4 cr)

Sec 1, Principles of Counseling, (787089) 0905-1100 TTh, FolH 303, Davis

Psychological issues involved in providing services to clients, parents, and others are presented. The development of skills and techniques that enhance interpersonal communication and contribute to the overall management of clients and families will be stressed.

Sec 2, Educational Audiology—Hearing Impaired Children in Public School Settings, (187090) 1325-1520 TTh, FolH 303, Davis

The psychoeducational status of hearing impaired children is discussed with emphasis on the effects of their speech, language, educational, and social characteristics on performance in public school settings. Suggestions for determining the services needed and developing ways to provide them will be given. The emphasis is on children with mild to moderately severe hearing impairments, including those with conductive hearing losses.

5970. DIRECTED STUDIES. (787092) (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. (587093) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8521. CLINICAL EDUCATION IN SPEECH/LANGUAGE PATHOLOGY. (390559) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8720. CLINICAL EDUCATION IN AUDIOLOGY. (387094) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8721. CLINICAL EDUCATION IN AUDIOLOGY. (790560) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8990. DIRECTED RESEARCH. (187095) (Cr ar [may be repeated for cr]; prereq #) Staff
Open to graduate students engaged in research.

SECOND TERM

R 3100. CLINICAL AND RESEARCH OBSERVATION. (488690) (2 cr; S-N only; limited to 10 students; prereq dept written permission) Staff
See First Term.

3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY. (288691) (4 cr; 0905-1100 TTh; FoIH 303) Starr
See First Term.

5970. DIRECTED STUDIES. (588695) (Cr ar [may be repeated for cr]; prereq #) Staff
See First Term.

8520. CLINICAL EDUCATION IN SPEECH/LANGUAGE PATHOLOGY. (188697) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8521. CLINICAL EDUCATION IN SPEECH/LANGUAGE PATHOLOGY. (790557) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8720. CLINICAL EDUCATION IN AUDIOLOGY. (088698) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8721. CLINICAL EDUCATION IN AUDIOLOGY. (590558) (2, 4, or 6 cr [may be repeated for cr]; prereq #) Staff

8990. DIRECTED RESEARCH. (588700) (Cr ar [may be repeated for cr]; prereq #) Staff
See First Term.

Composition and Communication (Comp)

FIRST TERM

R 1011. WRITING PRACTICE I. (5 cr; each section limited to 28 students; students must register for a daily lecture section and for a MTTh workshop; lab 1205-1235 MTTh; FraserH 102)
Guided practice in solving writers' problems: defining purpose, organizing and developing content, analyzing audience, drafting the whole essay and its parts, and revising and editing to master fundamentals of expository structure and style. Workshops on basic skills, syntactic fluency, and editing.

Sec 1, (491086) 0905-0955 MTWThF, LindH 303, Staff (ESL or Δ)

Sec 2, (291087) 1010-1100 MTWThF, LindH 325, Staff

Sec 3, (191088) 1115-1205 MTWThF, LindH 325, Staff

R 1027. INTERMEDIATE EXPOSITORY WRITING. (387127) (4 cr; limited to 25 students; prereq fulfillment of Writing Practice requirement; students matriculated before fall 1982 must have completed 1001, Comm 1001, or equiv; 0800-0850 MTWThF; LindH 303) Staff

Mastery of expository forms (e.g., comparison, analysis, cause-effect) and strategies of tone and diction for clear, accurate style.

R 3031. TECHNICAL WRITING FOR ENGINEERS. (991089) (4 cr; limited to 20 students; prereq the Writing Practice requirement or equiv; 1010-1100 MTWThF; LindH 340) Staff

Focus on the form and style of technical, engineering writing in reports, documentation, and correspondence. Exercises and frequent practical examples, tied as much as possible to student's major field.

R 3050. TOPICS IN ADVANCED COMPOSITION: INTRODUCTION TO LEGAL ARGUMENTATION. (291090) (4 cr; limited to 20 students; prereq the Writing Practice requirement or equiv; 1010-1100 MTWThF; LindH 215) Staff

This course aims to develop skill in constructing clear, well-reasoned arguments. Although the course uses legal materials, it requires no familiarity with the law and topics used will not be technical. Students will write several short papers analyzing hypothetical cases by using principles contained in the course text, Brand and White, *Legal Writing: The Strategy of Persuasion*. While this course could be of special benefit to students who intend to enter law school, its main goal will be to teach principles of organization, argument, and style that have general applicability.

Course Descriptions

SECOND TERM

R 1011. WRITING PRACTICE I. (5 cr; each section limited to 28 students; students must register for a daily lecture section and for a MTTh workshop; lab 1205-1235 MTTh; LindH 203)
See First Term.

Sec 1, (991092) 0905-0955 MTWThF, LindH 320, Staff
Sec 2, (791093) 1115-1205 MTWThF, LindH 303, Bridwell

R 1027. INTERMEDIATE EXPOSITORY WRITING. (591094) (4 cr; limited to 25 students; prereq fulfillment of Writing Practice requirement; students who matriculated before fall 1982 must have completed 1001, Comm 1001 or equiv; 0905-0955 MTWThF; LindH 303) Bridwell
See First Term.

R 3031. TECHNICAL WRITING FOR ENGINEERS. (391095) (4 cr; limited to 20 students; prereq the Writing Practice requirement or equiv; 0800-0850 MTWThF; LindH 303) Ross
See First Term.

R 3032. PREPROFESSIONAL WRITING FOR BUSINESS. (191096) (4 cr; limited to 20 students; prereq the Writing Practice requirement or equiv; 1115-1205 MTWThF; BlegH 360) Brown
Focus on the rhetoric, form, and style of business writing in reports, case studies, and correspondence. Exercises and frequent practical examples, tied as much as possible to the student's major field. This course fulfills senior business-writing requirement for the School of Management.

R 3085. CONFERENCE COURSE IN ADVANCED COMPOSITION. (091097) (1-4 cr; prereq fulfillment of Writing Practice requirement, jr, permission of major adviser; hr ar) Ross
Frequent writing conferences for individual students; lectures and discussion sessions in cooperation with major department; special arrangements for IT and CLA students.

East Asian Studies

Chinese (Chn)

See Special Programs section for Minnesota-Nankai Summer Intensive Chinese Language Institute.

FIRST TERM

3970. DIRECTED STUDIES. (190515) (1-4 cr; prereq #, Δ, college approval)

5970. DIRECTED STUDIES. (185677) (1-4 cr; prereq #, Δ, college approval)

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

A concentrated program of study permitting students to earn 15 hours of credit the equivalent of a full year's sequence in language. Students must enroll for all three courses and may not enroll in other courses in the Summer Session.

1011-1012-1013†. INTENSIVE BEGINNING MODERN CHINESE. (090516) (890517) (690518) (15 qtr credit for both terms, [10 semester credits] 10 hours with principal instructor, 10 hours with drillmaster)

Sec 5, 0800-1205 MTWThF, KoltH S140

Japanese (Jpn)

FIRST TERM

3970. DIRECTED STUDIES. (286097) (1-4 cr; prereq 3032, #, Δ, college approval)

5970. DIRECTED STUDIES IN JAPANESE. (186352) (1-4 cr; prereq #, Δ, CLA approval)

SECOND TERM

3970. DIRECTED STUDIES. (prereq 3032, #, Δ, college approval)

Sec 1, 586137, 1-4 cr

Sec 2, 686386, 1-4 cr

5970. DIRECTED STUDIES IN JAPANESE. (586431) (1-4 cr; prereq #, Δ, CLA approval)

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, (487099) 0800-0850 MTWThF, BlegH 215

Sec 2, (187100) 0905-0955 MTWThF, BlegH 10

Sec 3, (087101) 1010-1100 MTWThF, AndH 250

Sec 4, (887102) 1115-1205 MTWThF, BlegH 250

Sec 5, (687103) 1220-1310 MTWThF, BlegH 120

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, (487104) 0905-0955 MTWThF, AndH 256

Sec 2, (287105) 1010-1100 MTWThF, AndH 270

Sec 3, (187106) 1115-1205 MTWThF, BlegH 240

R 3101. MICROECONOMIC THEORY. (987107) (4 cr, §3105, §5151; no cr SMgt student; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #; 1010-1100 MTWThF; BlegH 150) Richter

Behavior of firms and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions.

R 3102. MACROECONOMIC THEORY. (787108) (4 cr, §5152; limited to 45 students; prereq 1001, 1002, Math 1111 or equiv or #; 1115-1205 MTWThF; BlegH 155) Simler

Determinants of national income, employment, and price level; aggregate consumption and investment.

R 3105. MANAGERIAL ECONOMICS. (085185) (4 cr, §3101, §BGS 3001; limited to 45 students; prereq 1001, 1002, 1 qtr calculus, School of Management students; 0905-0955 MTWThF; BlegH 130) Richter

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. (085784) (4cr, §5701, §5721; limited to 50 students; prereq 1001, 1002 or equiv; not open to economics majors; 0800-0855 MTWThF; BlegH 120)

Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system and monetary policy.

3970. DIRECTED STUDIES. (587109) (Cr ar; prereq 1002, #)

R 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD. (987110) (3 cr, §3101; limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #; 1010-1100 MTWThF; BlegH 150) Richter

Individual decision making by households and firms under conditions of monopoly, competition; some welfare economics.

R 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT. (787111) (3 cr, §3102; limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #; 1115-1205 MTWThF; BlegH 155) Simler

Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding.

R 5301. ECONOMIC DEVELOPMENT. (587112) (4 cr, §5331; limited to 30 students; prereq 1001, 1002 or equiv; not open to economics majors; 1115-1205 MTWThF; BlegH 230) 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.

R 5307. COMPARATIVE ECONOMIC SYSTEMS. (185184) (4 cr, §5337; limited to 25 students; prereq 1001, 1002 or equiv; not open to Econ majors; 1010-1100 MTWThF; BlegH 230) Smith

Functions of economic systems; market economy, liberal socialism, centrally planned economy, American and Soviet economies.

R 5331. ECONOMIC DEVELOPMENT. (387113) (4 cr, §5301; limited to 25 students; prereq 3101, 3102 or equiv or #; 1115-1205 MTWThF; BlegH 230) Smith

See 5301.

R 5337. COMPARATIVE ECONOMIC SYSTEMS. (685187) (4 cr, §5307; limited to 20 students; prereq 3101, 3102 or #; 1010-1100 MTWThF; BlegH 230) Smith

See 5307.

Course Descriptions

R 5401. INTERNATIONAL ECONOMICS. (187114) (4 cr, §5431; limited to 50 students; not open to economics majors; prereq 1001, 1002 or equiv; 1010-1100 MTWThF; BlegH 235) Riezman

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. (087115) (4 cr, §5401; limited to 50 students; prereq 3101, 3102 or equiv or #; 0905-0955 MTWThF; BlegH 250) Riezman
See 5401.

R 5721. MONEY AND BANKING. (887116) (4 cr, §3701, §5701; limited to 50 students; prereq 3102 or equiv; 1220-1310 MTWThF; BlegH 110)

Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system and monetary policy.

5970. DIRECTED STUDIES. (687117) (Cr ar; prereq #) Staff

Areas useful to individual programs and objectives not available in regular course offerings.

8990. INDIVIDUAL GRADUATE RESEARCH. (487118) (Cr ar) Staff

SECOND TERM

R 1001. PRINCIPLES OF MACROECONOMICS. (4 cr, §1004, §1014, §3001, §3002; each section limited to 50 students; prereq 3rd-4th fr)

See First Term.

Sec 1, (088703) 0800-0850 MTWThF, BlegH 120

Sec 2, (888704) 0905-0955 MTWThF, AndH 350

R 1002. PRINCIPLES OF MICROECONOMICS. (4 cr, §1005, §1015, §3001, §3002; each section limited to 50 students; prereq 3rd-4th fr)

See First Term.

Sec 1, (688705) 0905-0955 MTWThF, Law 15

Sec 2, (288707) 1010-1100 MTWThF, BlegH 145

Sec 3, (188708) 1115-1205 MTWThF, BlegH 145

Sec 4, (988709) 1220-1310 MTWThF, BlegH 120

R 3101. MICROECONOMIC THEORY. (188711) (4 cr, §3105, §5151; no cr S/Mgt student; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #; 0905-0955 MTWThF; BlegH 250) Richter

See First Term.

R 3102. MACROECONOMIC THEORY. (388715) (4 cr, §5152; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #; 1115-1205 MTWThF; BlegH 415)

See First Term.

R 3103. WELFARE ECONOMICS. (088717) (4 cr; limited to 50 students; prereq 3101 or 3101H or equiv; 0905-0955 MTWThF; BlegH 440) Coen

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. (685190) (4 cr, §3101, §BGS 3001; limited to 45 students; prereq 1001, 1002, 1 qtr calculus, School of Management student; 1010-1100 MTWThF; BlegH 215) Richter

See First Term.

R 3701. MONEY AND BANKING. (888718) (4 cr, §5701, §5721; limited to 50 students; prereq 1001, 1002 or equiv; not open to economics majors; 1115-1205 MTWThF; BlegH 215)

See 3701 First Term.

R 3801. ELEMENTS OF PUBLIC FINANCE. (688719) (4 cr, §5821; limited to 35 students; prereq 1001, 1002 or equiv; not open to Econ majors; 1010-1100 MTWThF; BlegH 440)

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. (088720) (Cr ar; prereq 1002, #)

R 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD. (3 cr, §3101; each section limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #)

See First Term.

Sec 1, (888721) 0905-0955 MTWThF, BlegH 250, Richter

Sec 2, (688722) 0905-0955 MTWThF, BlegH 415, Kudrie (Aug 22-Sept 23)

R 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT. (288724) (3 cr, §3102; limited to 10 students; prereq 1001, 1002, 1 qtr calculus, grad student or #; 1115-1205 MTWThF; BlegH 415)

See First Term.

R 5821. ELEMENTS OF PUBLIC FINANCE. (988726) (4 cr, §3801; limited to 20 students; prereq 3101...3103 recommended; 1010-1100 MTWThF; BlegH 440)

See 3801.

5970. DIRECTED STUDIES. (788727) (Cr ar; prereq #) Staff
See First Term.

8990. INDIVIDUAL GRADUATE RESEARCH. (588728) (Cr ar) Staff

English Language and Literature (Engl)

FIRST TERM

1009. INTRODUCTION TO THE STUDY OF LITERATURE. (585361) (4 cr; limited to 36 students; 0905-0955 MTWThF; LindH 229) Hirsch

Reading of selected literary works with emphasis on learning basic techniques and terminology of literary study; major literary forms, traditions, conventions, frames of reference, metrics, the critical reading of literary works in general, and the conventions employed in the presentation of literary criticism and scholarship.

1016. INTRODUCTION TO AMERICAN LITERATURE. (287119) (4 cr; limited to 40 students; 0800-0850 MTWThF; LindH 215) Solotaroff

Selected texts; critical discussion and writing.

1018. INTRODUCTION TO MODERN FICTION. (385362) (4 cr; limited to 40 students; 1115-1205 MTWThF; LindH 302) Reed

Selected texts; critical discussion and writing.

1019. INTRODUCTION TO MODERN DRAMA. (091584) (4 cr; limited to 40 students; 0905-0955 MTWThF; LindH 217) Hurrell

Critical discussion of and writing about selected modern plays. Typical authors: Ibsen, Shaw, Synge, Chekhov, O'Neill, Williams, Beckett.

1671. THE SHORT STORY. (390660) (4 cr; 1010-1100 MTWThF; LindH 303) Solotaroff

Lecture introduction to short stories, with some emphasis on the history and diversity of the form. Typical authors: Poe, Chekhov, Lawrence, Joyce, Kafka, Welty, Faulkner.

3101. INTERMEDIATE FICTION WRITING. (891585) (4 cr; 1010-1100 MTWThF; LindH 320) Burns

For those with some experience in writing fiction. Discussion of students' works, set texts, assignments, and experiments.

3104. INTERMEDIATE POETRY WRITING. (691586) (4 cr; 1115-1205 MTWThF; LindH 320) Browne

For those with some experience in writing poetry. Discussion of students' works, set texts, assignments, and experiments.

3115. THE MIDDLE AGES. (190661) (4 cr; 1115-1205 MTWThF; LindH 303) MacLeish

Major and representative works of the Middle Ages (650-1485). Typical readings: *Beowulf*, Chaucer, ballads, *Sir Gawain and the Green Knight*, *Everyman*.

3116. THE RENAISSANCE. (090662) (4 cr; 1010-1100 MTWThF; LindH 302) Haley

Major and representative works of the Renaissance (1485-1660). Typical authors: More, Sidney, Spenser, Shakespeare, Donne, Milton.

3241. SHAKESPEARE. (687120) (4 cr; limited to 40 students; 0800-0850 MTWThF; LindH 203) Haley

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. (487121) (4 cr; limited to 40 students; 0905-0955 MTWThF; LindH 215) Rosendahl

Plays from the middle and late periods. All sections will read *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays.

3251. THE KING JAMES BIBLE AS LITERATURE. (890663) (4 cr; 0905-0955 MTWThF; LindH 302) O'Brien

The Old Testament and literary tradition. The historical narratives, prophets, psalms, and wisdom literature.

3357. MODERN BRITISH LITERATURE. (690664) (4 cr; 0905-0955 MTWThF; LindH 305) Reed

Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes, 1939-1975. Typical authors: Caryl Phillips, Greene, Murdoch, Fowles, Beckett, Osborne, Pinter, Stoppard, Hughes, and Larkin.

3412. SURVEY OF AMERICAN LITERATURE. (490665) (4 cr; 0800-0850 MTWThF; LindH 305) Bales

Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course, with wide reading. Thoreau and Melville through James (1850-1900).

3851. THE ENGLISH LANGUAGE. (187123) (4 cr, \$5851; limited to 50 students; 1010-1100 MTWThF; LindH 305) Escure

An introduction to the English language including English grammars, phonetics and phonology, British and American dialects, and native language acquisition.

3970. DIRECTED STUDIES. (886094) (1-15 cr; prereq #, Δ, college approval)

5152. 19TH-CENTURY ENGLISH NOVEL. (485367) (4 cr; 1115-1205 MTWThF; LindH 203) Hirsh

Novels by such authors as Scott, Dickens, the Brontës, Thackeray, Eliot, and Hardy.

5174. MODERN DRAMA, 1880-1920. (491587) (4 cr; 1115-1205 MTWThF; LindH 229) Hurrell

Beginnings of modern realism, naturalism, and expressionism in English and continental drama.

Course Descriptions

5230. SPECIALIZED STUDIES IN RENAISSANCE LITERATURE AND CULTURE. (290666) (4 cr; 1010-1100 MTWThF; LindH 315) O'Brien

An inquiry into the interrelationships of metaphysical poetry and speculative prose in the later English Renaissance. Ideas of progress and advancement of learning in contradistinction to the theme of mutability and decay as reflected especially in Donne, Marvell, Cowley, Bacon, Hobbes, and Browne.

5311. ROMANTIC WRITERS: WORDSWORTH AND COLERIDGE. (190667) (4 cr; 1115-1205 MTWThF; LindH 315) Rosendahl

A careful study of selected works of each of these writers. Emphasis on their literary collaboration and their independent work as the first generation of Romantic poets in England.

5753. LITERATURE AND THE OTHER ARTS. (990668) (4 cr; 1010-1100 MTWThF; LindH 216) Bales

Informal exploration of relationships of literature to theatre, music, painting, sculpture, and architecture; how they influence one another and how their aesthetic and social roles are similar and different. Readings in English and American literature and in aesthetic theory; recordings; gallery visits.

5910. TOPICS IN ENGLISH AND AMERICAN LITERATURE: BRITISH CHILDREN'S LITERATURE. (291588) (4 cr; 0905-0955 MTWThF; LindH 203) Mitchell, L. Smith

An introduction to *British Children's Literature* and illustration, with emphasis upon works of the 20th century. Historical fiction, fantasy and fairy-tales, periodical literature, and books reflecting British life. Some attention to selected Carnegie/Greenaway and award books.

R 8810. STUDIES IN THE ENGLISH LANGUAGE: LANGUAGE AND LITERATURE. (790669) (4 cr; 0905-0955 MTWThF; LindH 216) MacLeish

The place of linguistic analysis in a theory of literary criticism; stylistic analysis in Europe and America since 1920; theories of linguistic description relevant to critical analysis; applications to texts in prose and poetry.

8970. INDEPENDENT READINGS. (986328) (1-15 cr; prereq #)

SECOND TERM

R 1009. INTRODUCTION TO THE STUDY OF LITERATURE. (485370) (4 cr; limited to 36 students; 0800-0850 MTWThF; LindH 302) Anderson

See First Term.

R 1016. INTRODUCTION TO AMERICAN LITERATURE. (285371) (4 cr; limited to 40 students; 0905-0955 MTWThF;

LindH 229) Roth

See First Term.

1241. INTRODUCTION TO SHAKESPEARE. (190670) (4 cr; 1010-1100 MTWThF; LindH 302) Clayton

Lecture survey of Shakespeare's work, treating approximately 10 plays. For students in all colleges of the University.

3118. THE ROMANTIC AGE. (188733) (4 cr; 0905-0955 MTWThF; LindH 302) Luke

Major and representative works of the romantic period (1798-1832). Typical authors: Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.

R 3241. SHAKESPEARE. (088734) (4 cr; limited to 40 students; 0800-0850 MTWThF; LindH 217) Luke

See First Term.

R 3242. SHAKESPEARE. (888735) (4 cr; limited to 40 students; 0905-0955 MTWThF; LindH 215) McNaron

See First Term.

3413. SURVEY OF AMERICAN LITERATURE. (990671) (4 cr; 1010-1100 MTWThF; LindH 229) Furia

Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course, with wide reading. Stephen Crane through World War II (1900-1945).

3455. AMERICAN SHORT STORY. (688736) (4 cr; 0800-0850 MTWThF; LindH 305) Furia

See First Term.

R 3851. THE ENGLISH LANGUAGE. (488737) (4 cr, \$5851; limited to 50 students; 1115-1205 MTWThF; LindH 305)

Brown

See First Term.

3963H. HONORS THESIS. (186416) (4 cr; prereq honors candidacy in Engl. consent of Engl honors adviser)

3970. DIRECTED STUDIES. (686095) (1-15 cr; prereq #, Δ, college approval)

5361. W.B. YEATS. (790672) (4 cr; 1010-1100 MTWThF; LindH 315) Anderson.

5451. AMERICAN NOVEL. (590673) (4 cr; 1115-1205 MTWThF; LindH 315) Roth

Through the 19th century. Typical authors: Cooper, Hawthorne, Melville, Stowe, Twain, James.

5711. CLASSICS OF LITERARY CRITICISM. (390674) (4 cr; 0905-0955 MTWThF; LindH 315) Clayton

Major works in the classic critical tradition. Aristotle, Coleridge, and such authors as Plato, Horace, Longinus, Sidney, Dryden, Johnson, Hume, and Eliot.

Finnish (Fin)—See Scandinavian

Foreign Study (FoSt)

FIRST TERM

0900. STUDY ABROAD. (187131) (prereq permission of study abroad adviser; S-N only)

0910. STUDY ABROAD. (087132) (prereq permission of study abroad adviser)

5960. SPAN SEMINAR FOR FOREIGN STUDY. (387130) (6 cr; prereq approval before Oct 1982 by a faculty selection committee) Knutson, Wren, Emmert
Preparation for independent study in Kenya, Mexico, Yugoslavia, investigating history, social and political ambience, and culture.

SECOND TERM

0900. STUDY ABROAD. (288741) (prereq permission of study abroad adviser)

0910. STUDY ABROAD. (188742) (prereq permission of study abroad adviser)

5960. SPAN INDEPENDENT PROJECT. (091178) (6 cr; prereq satisfactory completion of first term) Knutson, Wren, Emmert
Following an 8-week stay in Kenya, Mexico, Yugoslavia, participants prepare and submit a project growing from their study at home and abroad.

French and Italian

French (*Fren*)

FIRST TERM

R 1101. BEGINNING FRENCH. (5 cr; each section limited to 30 students)

Sec 1. (887133) 0905-1100 MTWThF, FolH 102

Sec 2. (687134) 0905-1100 MTWThF, JonesH 4

Sec 3. (190684), 0905-1100 MTWThF, JonesH 10

R 1102. BEGINNING FRENCH. (487135) (5 cr; limited to 30 students; prereq 1101 or 1 yr high school French; 0800-0955 MTWThF; FolH 204)

R 1103. BEGINNING FRENCH. (287136) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; 0800-0955 MTWThF; FolH 209)

R 1104. INTERMEDIATE FRENCH. (187137) (5 cr; limited to 30 students; prereq 1103 or 3 yrs high school French; 1010-1205 MTWThF; FolH 209)

R 3015. FRENCH CONVERSATION AND COMPOSITION. (987138) (5 cr; limited to 15 students; prereq 1105; 1010-1205 MWF; FolH 204)

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. (787139) (5 cr; limited to 15 students; prereq 3015 or equiv; 1010-1205 MWF; FolH 203)

3269. TOPICS IN 19TH-CENTURY FRENCH LITERATURE. (990685) (5 cr; prereq 3102, 3103; 0905-1100 MWF; FolH 304) Robinson.

3601. FRENCH LITERATURE IN ENGLISH TRANSLATION. (185176) (5 cr [cr does not count toward French major]; taught in English; 1220-1415 MWF; FolH 110) Akehurst
Representative works from medieval times to present examined through movements, genres, or themes.

3970. DIRECTED READINGS. (187140) (1-5 cr; prereq undergrad, Δ)

5339. SHORT STORIES OF THE 16TH AND 17TH CENTURIES. (791594) (5 cr; prereq 3209 or above; 1220-1415 MWF; FolH 52) Conley

Narrative techniques and variants of short stories in France in 16th and 17th centuries.

8970. DIRECTED READINGS. (787142) (1-5 cr; prereq # and consent of dept chair; hrs ar) Staff

Course Descriptions

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

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must enroll for all three courses and may not enroll in other summer courses.

R 1101-1102-1103†. **BEGINNING FRENCH.** (15 cr for both terms; limited to 30 students)
Sec 5, (587143) (387144) (187145) 0905-1205 MTWThF, KolH S139

SECOND TERM

R 1102. **BEGINNING FRENCH.** (988743) (5 cr; limited to 30 students; 0905-1100 MTWThF; FolH 207)

R 1103. **BEGINNING FRENCH.** (788744) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; 0800-0955 MTWThF; FolH 304)

R 1104. **INTERMEDIATE FRENCH.** (588745) (5 cr; limited to 30 students; prereq 1103 or 3 yrs high school French; 0905-1100 MTWThF; FolH 204)

R 1105. **INTERMEDIATE FRENCH.** (388746) (5 cr; limited to 30 students; prereq 1104; 1010-1205 MTWThF; FolH 304)

R 3015. **FRENCH COMPOSITION AND CONVERSATION.** (188747) (5 cr; limited to 15 students; prereq 1105; 1010-1205 MWF; FolH 52)
See First Term.

R 3016. **ADVANCED FRENCH COMPOSITION AND CONVERSATION.** (088748) (5 cr; limited to 15 students; prereq 3015 or #; 1010-1205 MWF; FolH 108) Preckshot

3602. **FRENCH LITERATURE IN TRANSLATION.** (585182) (5 cr [cr does not count toward French major]; taught in English; 1220-1415 MWF; FolH 110) Waldauer
Representative works from medieval times to present examined through movements, genres, or themes.

3970. **DIRECTED READINGS.** (888749) (1-5 cr; prereq undergrad, ☺) Staff

8970. **DIRECTED READINGS.** (188750) (1-5 cr; prereq # and consent of dept chair; hrs ar) Staff

French and Italian (FrIt)

SECOND TERM

R 3608. **NEW WAVE CINEMAS.** (185808) (4 cr; does not count toward French major; knowledge of French and Italian helpful but not necessary; 1220-1415 MWF; FolH 209)

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 must enroll for all three courses and may not enroll in other summer courses.

R 1101-1102-1103†. **BEGINNING ITALIAN.** (087146) (887147) (687148) (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

Geography (Geog)

FIRST TERM

R 1301. **HUMAN GEOGRAPHY.** (5 cr; each rec limited to 30 students; lect 0905-0955 MTWThF; Law 20) Miller
Rec 1, (890694) 0800-0850 TTh, BlegH 445

Rec 2, (690695) 1010-1100 TTh, BlegH 445

Geography of population and principal ways of life; capacity of earth for future population.

3121. LATIN AMERICA. (490696) (4 cr; 1010-1100 MTWThF; BlegH 425) Weil
Physical and human geography of Latin America.

3213. SOUTHWEST ASIA. (191608) (4 cr; 0905-0955 MTWThF; BlegH 360) Schwartzberg
Physical and human geography of Burma, Thailand, Indochina, Malaysia, Indonesia and the Philippines; geographic aspects of social structure, population growth, economic development, and international relations.

3331. ECONOMIC GEOGRAPHY. (290697) (4 cr; 0800-0850 MTWThF; BlegH 435) Sheppard
World patterns of economic activity; levels of development; appraisal of resources, production, circulation, and consumption; principles, models, and planning of economic behavior.

3371. INTRODUCTION TO URBAN GEOGRAPHY. (190698) (4 cr; 1115-1205 MTWThF; BlegH 425) Miller
Character, distribution, and development of cities in present-day world. Internal and external locational relationships.

3970. DIRECTED STUDIES. (487149) (1-15 cr per qtr) Staff

8970. DIRECTED READINGS. (887150) (1-5 cr) Staff

SECOND TERM

3321. POLITICAL GEOGRAPHY. (991609) (4 cr; 1115-1205 MTWThF; BlegH 425) Schwartzberg
Scope and methods; selected concepts, problems, and areas.

3351. GEOGRAPHY OF FOOD PRODUCTION. (390691) (4 cr; 0905-0955 MTWThF; BlegH 445) Weil
Environmental constraints on agriculture; world agricultural regions; geography of energy and material inputs to food production; spatial patterns of producers, consumers, and middlepersons; agribusiness and communal alternatives.

3801. DEVELOPMENT OF GEOGRAPHIC THOUGHT. (190692) (4 cr; §5801; prereq three courses in geography; 1010-1100 MTWThF; BlegH 415) Mather
Concepts and methods of geography; differing schools of thought as expressed in contemporary geographic literature.

3970. DIRECTED STUDIES. (088751) (1-15 cr per qtr) Staff

5112. WESTERN UNITED STATES. (090693) (4 cr; 0800-0850 MTWThF; BlegH 430) Mather
Physical and human resources of western United States.

8970. DIRECTED READINGS. (888752) (1-5 cr) Staff

German (Ger)

FIRST TERM

R 1101. BEGINNING AND INTERMEDIATE GERMAN: CLASSROOM INSTRUCTION. (687151) (5 cr; §1010, §1110, §1201; limited to 30 students; 0800-0955 MTWThF; NichH 107)
Structure, listening and reading comprehension, writing, speaking.

R 1104. BEGINNING AND INTERMEDIATE GERMAN: CLASSROOM INSTRUCTION. (585201) (5 cr; §1204; limited to 30 students; prereq 1103 or 15 cr of 1110 or placement; 0905-1100 MTWThF; FolH 105) Wakefield
See 1101.

R 3011. CONVERSATION AND COMPOSITION. (190711) (4 cr; limited to 10 students; prereq 1105 or placement; 0905-0955 MTWThF; FolH 103) Duroche
Spoken German; compositions; development of vocabulary; grammar review. Meets with 3012.

R 3012. CONVERSATION AND COMPOSITION. (090712) (4 cr; limited to 10 students; prereq 3011; 0905-0955 MTWThF; FolH 103) Duroche
See 3011. Meets with 3011.

R 3013. CONVERSATION AND COMPOSITION. (890713) (4 cr; limited to 10 students; prereq 3012; 0905-0955 MTWThF; FolH 208) Taraba
See 3011. Meets with 5011.

R 3104. READING AND ANALYSIS OF PROSE. (287153) (4 cr; limited to 25 students; required of all German majors; prereq 1105 or #: 1010-1100 MTWThF; FolH 103) Duroche
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.

R 3610. GERMAN AUTHORS OR TOPICS IN TRANSLATION. (4 cr [does not count toward German major or minor]; each section limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; knowledge of German not required)

Sec 1, The German Empire, (690714) 0905-0955 MTWThF, FolH 307, Weiss

A study of the social, political, and cultural changes in the German Empire (1871-1918) as reflected in the literature of the time.

Sec 2, Franz Kafka, (490715) 1115-1205 MTWThF, FolH 207, Taraba

A study in depth of selected works of Franz Kafka, including "Letter to His Father," "The Metamorphosis," "The Penal Colony," *The Trial*, *The Castle*. Kafka's works viewed both as aesthetic documents and as reflections of the German and European ethos of the 20th century

Course Descriptions

R 5011. ADVANCED COMPOSITION AND CONVERSATION. (290716) (4 cr; limited to 10 students; prereq 3013 or equiv; 0905-0955 MTWThF; FolH 208) Taraba
Meets with 3013.

5603. DRAMA IN TRANSLATION. (190717) (4 cr; prereq 8 or in theatre arts or in literature above 3001; knowledge of German not required; 1115-1205 MWF; FolH 103) Weiss
Discussion and reading of German drama and dramatic trends from 1920 to the present.

8990. READING AND RESEARCH. (686355) (3-6 cr; prereq #)

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

R 1101-1102-1103†. BEGINNING AND INTERMEDIATE GERMAN: CLASSROOM INSTRUCTION. (987155) (787156) (587157) (15 cr for both terms; §1010, §1110, §1201-1210; limited to 30 students)
Structure, listening and reading comprehension, writing, speaking. A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must enroll in all three courses and may not enroll in other summer courses.

Sec 5, 0905-1205 MTWThF, KoltH S134

R 1110. BEGINNING GERMAN: INDIVIDUALIZED READING, LISTENING, WRITING. (990721) (1-15 cr per qtr [first 3 cr must be completed as one unit; 15 cr max], §1010, §1101-1102-1103, §1201-1210; limited to 75 students; 1010-1100 T (first meeting only) [plus additional hours arranged]; PillsH 110)
Structure, writing, and comprehension. Students work at own pace with book, computer, audio and video tapes, earning credit as they progress through material. Teacher available for consultation and testing 7 hours per week.

SECOND TERM

R 1102. BEGINNING AND INTERMEDIATE GERMAN: CLASSROOM INSTRUCTION. (688753) (5 cr, §1010, §1110, §1201-1210; limited to 30 students; prereq 1101; 0800-0955 MTWThF; FolH 208)
See 1101 First Term.

R 1105. BEGINNING AND INTERMEDIATE GERMAN: CLASSROOM INSTRUCTION. (085204) (4 cr, §1205; limited to 30 students; prereq 1104 or placement; 0905-1100 TWThF; FolH 209) Hirschbach
See 1101 First Term.

R 3105. READING AND ANALYSIS OF DRAMA AND POETRY. (488754) (4 cr; limited to 25 students; required of all German majors; prereq 1105 or #; 1010-1100 MTWThF; FolH 302) Plummer
See 3104 First Term.

R 3603. GERMAN LITERATURE IN TRANSLATION: MODERN LITERATURE. (288755) (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 307) Plummer
Representative literary works from the modern period, related to other literatures.

8990. READING AND RESEARCH. (590723) (3-6 cr; prereq #)

Hebrew—See Near and Middle Eastern Studies

History (Hist)

FIRST TERM

1002. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (285208) (4 cr per qtr, §1002H, §3002; not open to jrs, srs; 1010-1100 MTWThF; BlegH 420) Thayer
Revolution, liberalism, and nationalism to 1870.

1051. ANCIENT CIVILIZATION. (390724) (4 cr, §3051; 0905-0955 MTWThF; BlegH 225) Kelly
Near East to 500 B.C.

1302. AMERICAN HISTORY. (387158) (4 cr, §1302H; 0905-0955 MTWThF; BlegH 120) Green
Modern America from 1880 to present.

1302H. HONORS COURSE: AMERICAN HISTORY. (586042) (4 cr, §1302; prereq #; 0905-0955 MTWThF; BlegH 120) Green
See 1302.

1433. INTRODUCTION TO HISTORY OF AFRICA: 1880 TO PRESENT. (291641) (4 cr, §3433; 1010-1100 MTWThF; Mgmt/Econ 128) Isaacman
Colonial rule, African nationalism and independence movements.

3002. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES. (185209) (4 cr per qtr, §1002, §1002H; 1010-1100 MTWThF; BlegH 420) Thayer
See 1002.

- 3051. ANCIENT CIVILIZATION.** (190725) (4 cr, §1051; 0905-0955 MTWThF; BlegH 225) Kelly
See 1051.
- 3433. INTRODUCTION TO HISTORY OF AFRICA: 1880 TO PRESENT.** (191642) (4 cr, §1433; 1010-1100 MTWThF; Mgmt/Econ 128) Isaacman
See Hist 1433.
- 3434. HISTORY OF ISLAM, ISLAMIC CIVILIZATION, AND POLITICS IN AFRICA.** (991643) (4 cr; 1115-1205 MTWThF; BlegH 335) Kaba
- 3491. CLASSICAL HERITAGE OF ARAB ISLAM.** (191681) (4 cr, §SoAs 3491; 1010-1100 MTWThF; Mgmt/Econ 130) Farah
Legacy of Arab contribution in institutions, letters, arts, sciences, thought, mathematics, architecture, to Islam's efflorescence; points of contact with the transmission to Europe: Crusades, Spain, Sicily. The role of Arab Islam in shaping an Islamic Civilization, 650-1350 A.D.
- 3609. MILITARY HISTORY OF MEDIEVAL WESTERN EUROPE.** (890730) (4 cr; 0800-0850 MTWThF; BlegH 225) Bachrach
Concept and conduct of war in Western Europe in the Middle Ages and the relation between military organization and society.
- 3822. UNITED STATES IN THE 20TH CENTURY: 1917-1945.** (490732) (4 cr; 1010-1100 MTWThF; BlegH 225) Berman
Political, social, cultural, economic, and diplomatic trends in the U.S. during the Jazz Age, Great Depression, New Deal, or war against fascism.
- 3955. INTRODUCTION TO WRITING HISTORY.** (791644) (4 cr; priority given to History majors; prereq Δ ; 1115-1205 MTWThF; BlegH 245) Lelyveld
Practical course in writing history. Use of documents and different kinds of historical writing. Students read and discuss material representative of contrasting historical perspectives.
- 3970. DIRECTED STUDIES.** (587160) (1-15 cr; prereq #)
Guided individual reading or study. Open to qualified students for 1 or more quarters.
- 3990. DIRECTED RESEARCH.** (387161) (1-15 cr; prereq #)
Qualified students, with consent of instructor, work on a tutorial basis.
- 5231. MODERN FRANCE FROM 1848 TO DEGAULLE.** (591645) (4 cr; 0905-0955 MTWThF; BlegH 210) Munholland
A survey of French society and political life from the Revolution of 1848 to contemporary France.
- 5264. MODERN RUSSIA: 18TH CENTURY BACKGROUND.** (290733) (4 cr; 1010-1100 MTWThF; BlegH 350) Stavrou
Foundation of the Russian empire, modernization and expansion under Peter the Great and Catherine the Great. The question of Russia's Europeanization.
- 5285. DIPLOMATIC HISTORY OF EUROPE. 1871-1918.** (185811) (4 cr; 1010-1100 MTWThF; BlegH 245) Kieft
Bismarck alliance system; Eastern question; overseas imperialism; World War I.
- 5336. CRIMINAL JUSTICE IN AMERICAN HISTORY.** (190734) (4 cr; prereq jr, sr, or grad student; 0930-1100 TWTh; Bleg H 335) Samaha
The social, political, and intellectual contest of crime, justice, and punishment. Colonial morality prosecutions, witchcraft, early forms of punishment, urban violence, rise of the penitentiary, professional police.
- 5822. PROSEMINAR: AMERICAN HISTORY IN 20TH CENTURY.** (990735) (4 cr; 5821-5822%, prereq 5821, #: 1330-1530 TF; SocSci 628) Chambers
- 5970. DIRECTED STUDIES.** (187162) (1-15 cr; prereq #)
Qualified senior and graduate students may register for work on tutorial basis. Guided individual reading or study.
- 5990. DIRECTED RESEARCH.** (087163) (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.** (885219) (4 cr, §1001H, §3001; not open to jrs, srs; 0905-0955 MTWThF; BlegH 210) Rudolph
Western European civilization to 1715.
- 1052. ANCIENT CIVILIZATION.** (790736) (4 cr, §3052; 0905-0955 MTWThF; BlegH 245) J Evans
Greek civilization to 323 B.C.
- 1301. AMERICAN HISTORY.** (191647) (4 cr; 1010-1100 MTWThF; BlegH 230) Menard
- 1301H. HONORS COURSE: AMERICAN HISTORY.** (091648) (4 cr; prereq #; 1010-1100 MTWThF; BlegH 230) Menard
- 1402. SURVEY OF LATIN AMERICAN HISTORY: 1800-1929.** (390738) (4 cr, §3402; 0905-0955 MTWThF; BlegH 415) Schwartz
Development of new nations from independence to the emergence of dependent economies.

Course Descriptions

- 1422. THE WORLD AND THE WEST.** (590740) (4 cr, §3422; 0800-0850 MTWThF; BlegH 210) Kopf
An integrated survey of the political, economic, and cultural interaction between the peoples of Europe, Africa, America, and Asia. Twentieth century world of renaissance, nationalism, modernization, and counter-modernization, 1850 to present.
- 3003. INTRODUCTION TO MODERN EUROPEAN HISTORY SINCE THE MIDDLE AGES.** (385233) (4 cr. §1003, §1003H; 0905-0955 MTWThF; BlegH 210) Rudolph
See 1003.
- 3052. ANCIENT CIVILIZATION.** (590737) (4 cr. §1052; 0905-0955 MTWThF; BlegH 245) J Evans
See 1052.
- 3402. SURVEY OF LATIN AMERICAN HISTORY: 1800-1929.** (190739) (4 cr, §1402; 0905-0955 MTWThF; BlegH 415) Schwartz
See 1402.
- 3422. THE WORLD AND THE WEST.** (390741) (4 cr. §1422; 0800-0850 MTWThF; BlegH 210) Kopf
See 1422.
- 3471. 20TH-CENTURY JAPAN.** (885236) (4 cr, §5471; 1115-1205 MTWThF; FolH 104) 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.
- 3633. HISTORY OF GERMANY: EMPIRE TO HITLER, 1848-1945.** (391646) (4 cr; 1010-1100 MTWThF; BlegH 245) Rudolph
Unification, political and economic development, the growth of socialism, World War I and revolution, the Weimar years, the Nazi seizure of power.
- 3823. UNITED STATES IN THE 20TH CENTURY: 1945 TO PRESENT.** (190742) (4 cr; 1115-1205 MTWThF; BlegH 120) Spear
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.** (090743) (4 cr; 1010-1100 MTWThF; BlegH 120) Brauer
American foreign relations during the cold war, 1941 to present.
- 3970. DIRECTED STUDIES.** (088765) (1-15 cr; prereq #)
See First Term.
- 3990. DIRECTED RESEARCH.** (888766) (1-15 cr; prereq #)
See First Term.
- 5471. 20TH-CENTURY JAPAN.** (485238) (5 cr, §3471; 1115-1205 MTWThF; FolH 104) Marshall
See 3471.
- 5970. DIRECTED STUDIES.** (485241) (1-15 cr; prereq #)
See First Term.
- 5990. DIRECTED RESEARCH.** (488768) (1-15 cr; prereq #)
See First Term.

Humanities (Hum)

FIRST TERM

- R 1001. HUMANITIES IN THE MODERN WORLD I.** (887164) (5 cr, §3001, §Rhet 1301; limited to 70 students; 0800-0955 MW; FordH 120) Powell
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, Hogarth, David, Goya, Mozart, Haydn.
- R 1002. HUMANITIES IN THE MODERN WORLD II.** (190756) (5 cr, §3002, §Rhet 1302; limited to 70 students; 1010-1205 MW; 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 3611. MEANING OF HUMANITY.** (090757) (4 cr; limited to 70 students; 0800-0955 TTh; FordH 120) Roshwald
The essence of humanity and factors determining its course; theories of Marx, Freud, Plato.
- R 3614. LIBERTY: A CONCEPTUAL AND INSTITUTIONAL ANALYSIS.** (890758) (3 cr; limited to 50 students; 1010-1100 TTh; FordH 120) Roshwald
Meaning of liberty, in theory and practice. Individual and collective liberty. Liberty and civilization. Conflict among different values of liberty.

R 3701. A TIME TO LAUGH: A STUDY OF THE COMIC SPIRIT. (690759) (5 cr; limited to 175 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. (785245) (Cr ar; prereq #)
Guided individual reading or study.

SECOND TERM

R 1003. HUMANITIES IN THE MODERN WORLD III. (090760) (5 cr, §3003, §Rhet 1303; limited to 70 students; 0800-0955 TTh, FordH 120) 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 1301. THE LIFE OF THE MIND: INTRODUCTION TO METHODS IN THE HUMANITIES. (890761) (5 cr; limited to 40 students; 0800-0955 MW; FolH 110) Hershbell
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 3111. EUROPEAN HERITAGE: GREECE. (690762) (5 cr, §1011, §Rhet 3321; limited to 50 students; 1010-1205 MW; FolH 110) 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.

R 3755. CINEMA AND IDEOLOGY. (490763) (4 cr, §CLit 3215; limited to 175 students; 1010-1205 TTh; FordH 155) Mowitz
Study of the major aspects of film as discourse with special attention to the complex relations it maintains with the ideological and political contexts in which it appears. Specific films used to study cinema as institution, film as current product, and artistic ideologies in politics.

3970. DIRECTED STUDIES. (290764) (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 1 to 15 credits, students should register for ID 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. (687165) (1-15 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. (285788) (1-15 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 18C Murphy Hall. When a typing prerequisite is listed, testing must be arranged through 18C Murphy Hall. Contact that office for a schedule. Students must abide by the course prerequisites that were in force at the time they filed an official journalism program with the School of Journalism and Mass Communication's Director of Undergraduate Studies. Journalism and Mass Communication students must have official major status before taking 3xxx and 5xxx-level journalism courses.

FIRST TERM

1001. INTRODUCTION TO MASS COMMUNICATION. (487166) (2 cr; completion of fr comp recommended; 0905-0955 MTWThF; MurH 105; A-N only) Ettema

Nature, functions, and responsibilities of communication media and agencies from professional point of view. News, opinion, entertainment, and persuasion functions; current trends. Specialized communication; aspects of advertising.

R 3101. REPORTING. (190790) (4 cr; prereq prof jour major status, type 25 wpm, Δ ; 1010-1205 MTWThF; MurH 212; A-N only) Glasser

Fact gathering and journalistic writing. Problems in judgment and handling of news and features.

R 3155. PUBLICATIONS EDITING. (287167) (4 cr; prereq 3101, Δ ; 0800-0955 MTWThF; MurH 206; A-N only) Dicken-Garcia

Selection and editing of news-editorial content of newspapers, brochures, magazines. Newspaper makeup, magazine format. Press association teletype service. Lecture and laboratory.

R 3776. MASS COMMUNICATION LAW. (891179) (4 cr; prereq Δ ; 1010-1100 MTWThF; MechE 202; A-N only) Gillmor

Brief historical background, First Amendment rights, basic law of defamation, free press and fair trial, access to news, access to the press, privacy, contempt, obscenity, the regulation of broadcasting and advertising, antitrust controls, legal and ethical rules affecting journalistic practice.

R 3970. DIRECTED STUDIES. (886046) (1-4 cr per qtr; prereq major status for prof jour, mass comm students, #, Δ ; A-N only) Staff

Guided individual reading or study.

R 5141. OPINION WRITING IN AMERICA. (187168) (4 cr; prereq 3xxx-level writing course, major or grad status for prof jour students with #, Δ ; 1220-1415 MWTh; MurH 105; A-N only) Emery

Oral and written analysis of major political, economic, and social developments. Persuasive communication in newspapers and magazines; columnists; commentators.

5221. PUBLICATION GRAPHICS. (987169) (4 cr; prereq 8 cr in 3xxx- or 5xxx-level courses in art and design, or #; 1115-1205 MTWThF; MurH 315, 320; A-N only) Wilson

Role of printing processes in graphic communication. Technique and production of illustration. Significant developments in graphic arts technology.

5501. COMMUNICATION AND PUBLIC OPINION I. (287170) (4 cr; prereq 16 cr in social science depts; 1010-1100 MTWThF; MurH 308; A-N only) Carter

Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation.

5549. PUBLIC RELATIONS. (485255) (4 cr; prereq 16 cr in social science depts; 0800-0850 MTWThF; MurH 105; A-N only) Lindsay

History and development of public relations practice and principles. Process and applications in a variety of institutional settings. Analysis and critique of public relations in contemporary society.

5601. HISTORY OF JOURNALISM. (187171) (4 cr; 1115-1205 MTWThF; MurH 105; A-N only) 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.

5611. DEVELOPMENT OF AMERICAN BROADCASTING. (090791) (4 cr; 1010-1100 MTWThF; MurH 105; A-N only) Lindsay

Historical and economic development of radio and television in the United States; government regulation, industry self-regulation, forms of social control; issues in contemporary broadcasting; the journalist as broadcaster.

5721. MASS MEDIA IN A DYNAMIC SOCIETY. (987172) (4 cr; prereq 16 cr in social science depts; 1325-1415 MTWThF; MurH 308; A-N only) Ismach

Economic, political, and social determinants of character and content of mass communication in America. Impact, structure, functioning of mass media. Problems, prospects and criticism. Professionalism, technology, and reform.

R 5970. ADVANCED PROJECTS IN JOURNALISM. (787173) (1-4 cr [may be repeated for max 8 cr]; prereq major status for prof jour, mass comm students. B avg. #, Δ; A-N only) Staff

R 8970. ADVANCED PROJECTS IN MASS COMMUNICATION. (587174) (1-4 cr [may be repeated for a max of 8 cr]; prereq grad major or minor in mass communication. #, Δ; A-N only) Staff
Individual research.

SECOND TERM

1002. VISUAL COMMUNICATION. (890792) (2 cr; 0905-0955 MTWThF; MurH 105; A-N only) Griffin

Introduction to the functions of visual communication in news and advertising in print and electronic media. Evaluation and criticism of visuals in creative typography, photography, and other visual techniques. Lectures (CCTV), projects, critiques.

R 3008. MASS COMMUNICATION PROCESSES AND STRUCTURE. (690793) (4 cr; prereq completion of preparatory journalism courses and application filed for major status for intended professional journalism majors, Δ... completion of preparatory journalism courses and filed study plan for intended mass communication majors, Δ... completion of Jour 1001 and study plan filed for intended mass communication minors, Δ... Jour 1001, Δ for others; 0800-0850 MTWThF; MurH 105; A-N only) Lee

Analysis of a variety of communication theories as they relate to mass communication processes; examination of major structural aspects of mass communication systems as they impact on mass communication processes.

3201. PRINCIPLES OF ADVERTISING. (991612) (4 cr; prereq major status for professional journalism, mass comm students... completion of Jour 1001 and study plan filed for intended mass comm minor... others: no prereqs; 1010-1100 MTWThF; MurH 308; A-N only)

Theory, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, radio, television as advertising media.

R 3970. DIRECTED STUDIES. (686047) (1-4 cr per qtr; prereq major status for prof jour, mass comm students. #, Δ; A-N only) Staff

Guided individual reading or study

5251. PSYCHOLOGY OF ADVERTISING. (791613) (4 cr, \$Psy 5751; prereq Psy 1001; 0905-0955 MTWThF; MurH 308; A-N only) 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.

5801. INTERNATIONAL COMMUNICATION. (290795) (4 cr; prereq 16 cr in social science depts; 1010-1100 MTWThF; MurH 105; A-N only) Lee

Global telecommunications, channels, and artifacts of international mass communication. Problems in the free flow of information. Roles of international organizations, journalism. Mass communication in social, political, educational, economic development; implications for conflict resolution.

R 5970. ADVANCED PROJECTS IN JOURNALISM. (488771) (1-4 cr [may be repeated for max 8 cr]; prereq major status for prof jour, mass comm students. B avg. #, Δ; A-N only) Staff

R 8970. ADVANCED PROJECTS IN MASS COMMUNICATION. (288772) (1-4 cr [may be repeated for max 8 cr]; prereq grad major or minor in mass communication. #, Δ; A-N only) Staff
Individual research.

Latin—See Classics

Library School (Lib)¹

FIRST TERM

8224. SUBJECT BIBLIOGRAPHY. (190796) (4 cr; prereq 5221, 5401, 5601 or #; 0905-1100 TTh; WaLib 339) Olson
An overview of the world of learning and the various disciplines as they have developed in the United States; the bibliographic apparatus in relation to the structure of the disciplines.

8302. 8303. REFERENCE/INFORMATION SERVICES. (990797) (790798) (5 cr; prereq 5101, 5221, 5401, 5601 or #; 0905-1100 and 1325-1520 MWF; WaLib 339) Rohde

8302: User-librarian-information interface; information services and sources to meet clientele needs; research, evaluation, and planning for future services. 8303: Field project.

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.

Course Descriptions

8970. INDEPENDENT STUDY. (887178) (3 cr; prereq #: 1325-1520 TTh; WaLib 339) Olson

8990. LIBRARY RESEARCH. (687179) (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

8223. GENERAL BIBLIOGRAPHY. (385264) (4 cr; prereq 5221, 5401 or #: 0905-1100 MW; WaLib 339)

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.

8402. ORGANIZATION OF INFORMATION II. (590799) (4 cr; prereq 5101, 5221, 5401 or #: 0905-1100 TTh; 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.

8411. LIBRARY MECHANIZATION AND SYSTEMS ANALYSIS. (290800) (4 cr; prereq 5101, 5221, 5401, 5601 or #: 1325-1520 TTh; WaLib 339) Simonton

Systems analysis as applied to library operations: data representation and coding systems, application of technological developments, such as microforms and computers, to library operations.

8950. SELECTED TOPICS IN LIBRARY SCIENCE. (085266) (4 cr; prereq #: 1325-1520 MW; WaLib 339)

8970. INDEPENDENT STUDY. (068779) (Cr ar; prereq #) Staff

8990. LIBRARY RESEARCH. (388780) (Cr ar; prereq #) Staff

See First Term.

Linguistics (Ling)

FIRST TERM

3001. INTRODUCTION TO LINGUISTICS. (087180) (5 cr, §5001, §3005; 1010-1205 MWF, 1010-1100 TTh; FolH 107) Hutchinson

Survey of phonetics, phonology, morphology, syntax, semantics, and historical-comparative linguistics; language learning and the psychology of language; linguistic universals; language in society. Meets with 5001.

3301. PHONETICS. (887181) (5 cr, §5003, §5301; prereq 3001 or *3001 or #: 1325-1520 MTWThF; FolH 50) Pinkerton
Physiology and acoustics of speech sounds; practice and drill in production and perception. Meets with 5003 and 5301.

5001. INTRODUCTION TO LINGUISTICS. (687182) (5 cr, §3001, §3005; prereq grad standing or #: 1010-1205 MWF, 1010-1100 TTh; FolH 107) Hutchinson
Meets with 3001.

5003. APPLIED PHONETICS. (487183) (5 cr, §3301, §5301; not open to linguistics majors; prereq 5001 or *5001 or #: 1325-1520 MTWThF; FolH 50) Pinkerton
Primarily for teachers of English as a second language. Meets with 3301 and 5301.

5301. PHONETICS. (287184) (5 cr, §3301, §5003; prereq 3001 or 5001 or *5001 or #: 1325-1520 MTWThF; FolH 50) Pinkerton
See 3301. Meets with 3301 and 5003.

SECOND TERM

5721. ENGLISH AS A SECOND LANGUAGE: METHODS. (188781) (4 cr; prereq 3001 or 5001 or #: 1010-1205 MWF; FolH 107) Gundel
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; prereq non-music majors) Anderson

Basic musical symbols, vocabulary, rhythm, design, scale structures, intervals, chords. Development of basic piano skills; playing simple accompaniments.

Sec 1, (187185) 0905-0955 MTWThF, WulH 320

Sec 2, (987186) 1010-1100 MTWThF, WulH 320

R 1160. VOICE: CLASS LESSONS. (787187) (2 cr per qtr [max 6 cr]; 1220-1310 MTWThF; ScottH 19) Ware
Fundamentals of vocal production; posture, respiration, phonation, articulation.

1507. SURVEY OF MELODIC AND HARMONIC PROCEDURES. (587188) (3 cr; prereq #: 0800-0850 MTWThF; WullH 30) Gross
Principles of melodic and harmonic structure.

1517. EAR-TRAINING AND SIGHT-SINGING. (387189) (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.

1804. WORLD MUSIC. (490827) (4 cr; 0905-0955 MTWThF; ScottH 19) Kagan
Music in universal perspective. Traits distinguishing styles and cultural factors that influence musical creativity. Music of different cultures compared to examine forms and traits, to develop listening abilities and an understanding of human musical expressions.

3970. DIRECTED STUDIES. (587191) (1-15 cr; prereq #: A, college approval; hrs ar; ScottH 104) Staff
Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students.

5377. THE ADOLESCENT SINGING VOICE. (290828) (3 cr; prereq 3xxx clearance in voice for vocal majors or 6 cr of applied voice for non-vocal majors; 0800-0955 TTh; ScottH 3) Jorgenson
Principles of voice in teaching adolescent singers. Directed teaching, required readings, and study of relevant repertoire.

5385. CHORAL CONDUCTING. (190829) (4 cr; prereq #: 1010-1100 MTWThF; WullH 7A) Lancaster
Choral conducting—hand techniques, sound control, articulation, breath control, intonation, etc.

5388. INSTRUMENTAL CONDUCTING. (490830) (4 cr; prereq 5387 or #: 1220-1310 MTWThF; WullH 320) Massmann
Instrumental conducting—techniques, score analysis, performing practice.

5440. ENSEMBLE. (686159) (1 cr; prereq #: 1325-1520 TTh; ScottH 108) Kim
Performance of chamber music of major and minor composers: sonatas, trios, quartets, quintets, other forms. Combination of vocal and instrumental chamber ensemble materials.

5603. HISTORY OF OPERA. (290831) (3 cr; prereq 9 cr in history of music, art, theater, or European history from 1600, or #: 1325-1415 MTWThF; ScottH 103) Sulton
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.

5950. TOPICS IN MUSIC—AMERICAN MUSIC: FOLK AND POPULAR FIDDLE TRADITIONS. (190832) (4 cr; prereq #: 1115-1205 MTWThF; ScottH 19) Kagan
The social and stylistic history, and performance practice, of American fiddle music and musicians. A study of the role of fiddling in folk and popular music since the Colonial period. Pedagogical training in fiddle performance is optional.

8990. SPECIAL PROBLEMS. (187193) (2-12 cr; prereq 5841; hrs ar; ScottH 104) Kagan

Courses in Applied Music

Offerings in applied music are classified according to eight modes: elective (with or without credit), principal, major, secondary required, secondary elective, principal beyond requirement, major beyond requirement minor 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.*

Call numbers for courses in applied music must be listed on the Course Enrollment Request form and are available in 106 Scott Hall.

FIRST TERM COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Minor	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	\$ 32	
Piano	1101	1201	1301	1401	1501	1601	1701		Ivory, Freed
Harpichord	1102	1202	1302	1402	1502	1602	1702		Braginsky
Organ	1103	1203	1303	1403	1503	1603	1703		Burris
Voice	1104	1204*	1304*	1404	1504	1604	1704		Billmeyer, Lancaster
Violin	1105	1205	1305	1405	1505	1605	1705		Ware, Robinson
Viola	1106	1206	1306	1406	1506	1606	1706		Weller, Wilson, Laskin
Cello	1107	1207	1307	1407	1507	1607	1707		Kim, Thomson, Tartaglia, Adams
Double Bass	1108	1208	1308	1408	1508	1608	1708		Ar
Flute	1109	1209	1309	1409	1509	1609	1709		Remenikova, Jamieson
Oboe	1111	1211	1311	1411	1511	1611	1711		Ar
Clarinet	1112	1212	1312	1412	1512	1612	1712		Eagle, Zeitlin
Saxophone	1113	1213	1313	1413	1513	1613	1713		Angelucci, Holub, Capps
Bassoon	1114	1214	1314	1414	1514	1614	1714		Anderson, Haugen
French Horn	1115	1215	1315	1415	1515	1615	1715		Anderson, Haugen
Trumpet	1116	1216	1316	1416	1516	1616	1716		Miller
Trombone	1117	1217	1317	1417	1517	1617	1717		Ar
Baritone	1118	1218	1318	1418	1518	1618	1718		Baldwin, Hasselmann
Tuba	1119	1219	1319	1419	1519	1619	1719		Ricketts
Percussion	1121	1221	1321	1421	1521	1621	1721		Ricketts
Harp	1122	1222	1322	1422	1522	1622	1722		Ar
Guitar	1123	1223	1323	1423	1523	1623	1723		Fine
Accordion	1124				1524				Miller
Sitar	1125				1525				Van, McGuire
Piano	3101	3201	3301	3401	3501	3601	3701	3801	Malmberg
Harpichord	3102	3202	3302	3402	3502	3602	3702	3802	Ar
Organ	3103	3203	3303	3403	3503	3603	3703	3803	Ivory, Freed
Voice	3104	3204*	3304*	3404	3504	3604	3704	3804	Braginsky
Violin	3105	3205	3305	3405	3505	3605	3705	3805	Burris
Viola	3106	3206	3306	3406	3506	3606	3706	3806	Billmeyer, Lancaster
Cello	3107	3207	3307	3407	3507	3607	3707	3807	Ware, Weller, Wilson, Laskin, Robinson
Double Bass	3108	3208	3308	3408	3508	3608	3708	3808	Kim, Thomson, Tartaglia, Adams
Flute	3109	3209	3309	3409	3509	3609	3709	3809	Ar
Oboe	3111	3211	3311	3411	3511	3611	3711	3811	Remenikova, Jamieson
Clarinet	3112	3212	3312	3412	3512	3612	3712	3812	Ar

*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	Minor	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	\$ 32	
Saxophone	3113	3213	3313	3413	3513	3613	3713	3813	Anderson, Haugen
Bassoon	3114	3214	3314	3414	3514	3614	3714	3814	Miller
French Horn	3115	3215	3315	3415	3515	3615	3715	3815	Ar
Trumpet	3116	3216	3316	3416	3516	3616	3716	3816	Baldwin, Hasselmann
Trombone	3117	3217	3317	3417	3517	3617	3717	3817	Ricketts
Baritone	3118	3218	3318	3418	3518	3618	3718	3818	Ricketts
Tuba	3119	3219	3319	3419	3519	3619	3719	3819	Ar
Percussion	3121	3221	3321	3421	3521	3621	3721	3821	Fine
Harp	3122	3222	3322	3422	3522	3622	3722	3822	Miller
Guitar	3123	3223	3323	3423	3523	3623	3723	3823	Van, McGuire
Accordion	3124				3524				Malmberg
Sitar	3125				3525				Ar
Piano	5101	8201	8301	8401	8501	8601	8701		Ivory, Freed
									Braginsky
175 Harpsichord	5102	8202	8302	8402	8502	8602	8702		Burriss
Organ	5103	8203	8303	8403	8503	8603	8703		Billmeyer
Voice	5104	8204*	8304*	8404	8504	8604	8704		Ware
									Weller, Wilson, Laskin
Violin	5105	8205	8305	8405	8505	8605	8705		Kim
Viola	5106	8206	8306	8406	8506	8606	8706		Ar
Cello	5107	8207	8307	8407	8507	8607	8707		Remenikova, Jamieson
Double Bass	5108	8208	8308	8408	8508	8608	8708		Ar
Flute	5109	8209	8309	8409	8509	8609	8709		Eagle, Zeitlin
Oboe	5111	8211	8311	8411	8511	8611	8711		Capps
Clarinet	5112	8212	8312	8412	8512	8612	8712		Anderson, Haugen
Saxophone	5113	8213	8313	8413	8513	8613	8713		Anderson, Haugen
Bassoon	5114	8214	8314	8414	8514	8614	8714		Miller
French Horn	5115	8215	8315	8415	8515	8615	8715		Ar
Trumpet	5116	8216	8316	8416	8516	8616	8716		Baldwin, Hasselmann
Trombone	5117	8217	8317	8417	8517	8617	8717		Ar
Baritone	5118	8218	8318	8418	8518	8618	8718		Ar
Tuba	5119	8219	8319	8419	8519	8619	8719		Ar
Percussion	5121	8221	8321	8421	8521	8621	8721		Ar
Harp	5122	8222	8322	8422	8522	8622	8722		Miller
Guitar	5123	8223	8323	8423	8523	8623	8723		Van, McGuire
Accordion	5124				8524				Ar
Sitar					8525				Ar

*1430-1520 TTh, ScottH 108

Course Descriptions

SECOND TERM

1001. FUNDAMENTALS OF MUSIC. (088782) (4 cr; prereq non-music majors; 0905-0955 MTWThF; WullH 320) Baldwin
See First Term.

1508. SURVEY OF MELODIC AND HARMONIC PROCEDURES. (888783) (3 cr; prereq #: 0800-0850 MTWThF; WullH 30) Fetter
See 1507 First Term.

1518. EAR-TRAINING AND SIGHT-SINGING. (688784) (3 cr; prereq #: 0905-0955 MTWThF; WullH 30) Fetter
See 1517 First Term.

3791. INTRODUCTION TO ELECTRONIC MUSIC—July 18-August 5. (990833) (4 cr; limited to 25 students; prereq 4 cr in music or #: 1010-1205 MTWThF; ScottH 103) Ultan
Musical literature to which electronic materials contribute. Listening, discussions, and readings. Exercises in use of equipment.

3970. DIRECTED STUDIES. (488785) (1-15 cr; prereq #: Δ, college approval; hrs ar; ScottH 104) Staff
See First Term.

5636. MUSIC IN BAROQUE ERA. (790834) (4 cr; prereq 1606; 1220-1310 MTWThF; WullH 7a) McClary
Vocal, instrumental, and sacred styles of baroque era.

5666. STRAVINSKY. (785276) (4 cr; prereq 12 cr in music; 1506; 1010-1100 MTW, 1010-1205 Th; 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).

5950. TOPICS IN MUSIC—METAPHOR AND MUSICAL EXPRESSION. (590835) (4 cr; 1325-1415 MTWThF; WullH 7a) McClary
Use of metaphor in the interpretation of meaning in musical gesture and process. Validity of metaphorical insight in criticism of artworks. Verbal articulation of musical perceptions and responses.

8990.* SPECIAL PROBLEMS. (288786) (2-12 cr; prereq 5841; hrs ar; ScottH 104) Jackson, Fetter, Ultan

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	Minor	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	\$ 32	
Piano	1101	1201	1301	1401	1501	1601	1701		McNab
									Braginsky
Harpsichord	1102	1202	1302	1402	1502	1602	1702		Ar
Organ	1103	1203	1303	1403	1503	1603	1703		Billmeyer
Voice	1104	1204*	1304*	1404	1504	1604	1704		Ware, Weller, Wilson, Robinson
Violin	1105	1205	1305	1405	1505	1605	1705		Kim, Tartaglia, Adams
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		Ar
Flute	1109	1209	1309	1409	1509	1609	1709		Zeitlin, Eagle
Oboe	1111	1211	1311	1411	1511	1611	1711		Angelucci, Holub, Capps
Clarinet	1112	1212	1312	1412	1512	1612	1712		Anderson, Haugen
Saxophone	1113	1213	1313	1413	1513	1613	1713		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		Hasselmann, Baldwin
Trombone	1117	1217	1317	1417	1517	1617	1717		Ricketts
Baritone	1118	1218	1318	1418	1518	1618	1718		Ricketts
Tuba	1119	1219	1319	1419	1519	1619	1719		Ar
Percussion	1121	1221	1321	1421	1521	1621	1721		Fine
Harp	1122	1222	1322	1422	1522	1622	1722		Miller
Guitar	1123	1223	1323	1423	1523	1623	1723		Van, McGuire
Accordion	1124				1524				Malmberg
Sitar	1125				1525				Ar
Piano	3101	3201	3301	3401	3501	3601	3701	3801	Braginsky, McNab
Harpsichord	3102	3202	3302	3402	3502	3602	3702	3802	Ar
Organ	3103	3203	3303	3403	3503	3603	3703	3803	Billmeyer
Voice	3104	3204*	3304*	3404	3504	3604	3704	3804	Ware, Weller, Wilson, Robinson
Violin	3105	3205	3305	3405	3505	3605	3705	3805	Kim, Tartaglia, Adams
Viola	3106	3206	3306	3406	3506	3606	3706	3806	Ar
Cello	3107	3207	3307	3407	3507	3607	3707	3807	Remenikova, Jamieson
Double Bass	3108	3208	3308	3408	3508	3608	3708	3808	Ar
Flute	3109	3209	3309	3409	3509	3609	3709	3809	Zeitlin, Eagle
Oboe	3111	3211	3311	3411	3511	3611	3711	3811	Angelucci, Holub, Capps
Clarinet	3112	3212	3312	3412	3512	3612	3712	3812	Anderson, Haugen
Saxophone	3113	3213	3313	3413	3513	3613	3713	3813	Anderson, 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	Minor	Instructor
Fee	\$ 96	—	—	—	\$ 32	\$ 32	\$ 32	\$ 32	
Bassoon	3114	3214	3314	3414	3514	3614	3714	3814	Miller
French Horn	3115	3215	3315	3415	3515	3615	3715	3815	Ar
Trumpet	3116	3216	3316	3416	3516	3616	3716	3816	Hasselmann, Baldwin
Trombone	3117	3217	3317	3417	3517	3617	3717	3817	Ricketts
Baritone	3118	3218	3318	3418	3518	3618	3718	3818	Ricketts
Tuba	3119	3219	3319	3419	3519	3619	3719	3819	Ar
Percussion	3121	3221	3321	3421	3521	3621	3721	3821	Fine
Harp	3122	3222	3322	3422	3522	3622	3722	3822	Miller
Guitar	3123	3223	3323	3423	3523	3623	3723	3823	Van, McGuire
Accordion	3124				3524				Malmberg
Sitar	3125				3525				Ar
Piano	5101	8201	8301	8401	8501	8601	8701		McNab
Harpisichord	5102	8202	8302	8402	8502	8602	8702		Braginsky
Organ	5103	8203	8303	8403	8503	8603	8703		Ar
Voice	5104	8204*	8304*	8404	8504	8604	8704		Billmeyer
Violin	5105	8205	8305	8405	8505	8605	8705		Ware, Weller, Wilson
Viola	5106	8206	8306	8406	8506	8606	8706		Kim
Cello	5107	8207	8307	8407	8507	8607	8707		Ar
Double Bass	5108	8208	8308	8408	8508	8608	8708		Remenikova, Jamieson
Flute	5109	8209	8309	8409	8509	8609	8709		Ar
Oboe	5111	8211	8311	8411	8511	8611	8711		Zeitlin, Eagle
Clarinet	5112	8212	8312	8412	8512	8612	8712		Capps
Saxophone	5113	8213	8313	8413	8513	8613	8713		Anderson, Haugen,
Bassoon	5114	8214	8314	8414	8514	8614	8714		Anderson, Haugen,
French Horn	5115	8215	8315	8415	8515	8615	8715		Miller
Trumpet	5116	8216	8316	8416	8516	8616	8716		Ar
Trombone	5117	8217	8317	8417	8517	8617	8717		Hasselmann, Baldwin
Baritone	5118	8218	8318	8418	8518	8618	8718		Ar
Tuba	5119	8219	8319	8419	8519	8619	8719		Ar
Percussion	5121	8221	8321	8421	8521	8621	8721		Ar
Harp	5122	8222	8322	8422	8522	8622	8722		Ar
Guitar	5123	8223	8323	8423	8523	8623	8723		Miller
Accordion	5124				8524				Van, McGuire
Sitar					8525				Ar

*1430-1520 TTh, ScottH 108

Near and Middle Eastern Studies

Ancient Near Eastern and Jewish Studies (ANEJ)

FIRST TERM

5970. DIRECTED STUDIES. (487278) (1-4 cr; prereq #)
Guided individual reading or study.

SECOND TERM

5970. DIRECTED STUDIES. (188787) (1-4 cr; prereq #)
See First Term.

Hebrew (Hebr)

FIRST TERM

3980. DIRECTED INSTRUCTION. (287297) (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. (687280) (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 credit hours, the equivalent of a full year's sequence in language. Students must enroll in all three courses and may not enroll in other summer courses.

1104-1105-1106. INTRODUCTION TO BIBLICAL HEBREW. (585795) (385796) (185797) (15 cr for both terms)

Sec 5. 0800-1100 MTWThF, ExpE 193, Paradise, Estelle, 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. (988788) (1-5 cr; prereq #)
See First Term.

5970. DIRECTED READINGS. (788789) (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or #)

Jewish Studies (JwSt)

See also Religious Studies.

SECOND TERM

3126. MODERN JUDAISM. (990623) (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. (188790) (1-12 cr; prereq #)
Guided individual reading or study.

Course Descriptions

Personal Orientation (PO)

See also *Rhetoric 1147, Efficient Reading.*

FIRST TERM

PO 1001. HOW TO STUDY. (091469) (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

PO 1001. HOW TO STUDY. (988791) (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. (587286) (5 cr; 0905-0955 MTWThF; MurH 308) Lewis
Application of formal techniques for evaluating arguments.

1002. INTRODUCTION TO PHILOSOPHY. (590849) (5 cr; 1010-1100 MTWThF; LindH 217) Dahl
Problems, principal methods, and schools of philosophy; historical and contemporary views.

3001. GENERAL HISTORY OF WESTERN PHILOSOPHY. (790851) (5 cr; 0850-0955 MTWTh; VinH 213) Hopkins
Greek philosophy. pre-Socratics, Socrates, Plato, Aristotle.

3304. LAW AND MORALITY. (990850) (5 cr; 1115-1310 TWTh; MinMet 104) Sartorius
Personhood, legal and moral rights, and self-respect issues studied through use of major court decisions and philosophical essays. Likely topics: privacy, legal paternalism, morals enforcement, abortion, punishment, civil disobedience.

3502. INTRODUCTION TO AESTHETICS. (590852) (4 cr; 1010-1100 MTWThF; LindH 229) Gunderson
Development of aesthetic theories from Plato to Tolstoy.

3970. DIRECTED STUDIES. (387287) (1-5 cr; prereq #) Staff

5970. DIRECTED STUDIES. (087289) (1-5 cr; prereq #) Staff

8970. DIRECTED STUDY AND RESEARCH. (087292) (1-4 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

SECOND TERM

1001. LOGIC. (588843) (5 cr; 0905-0955 MTWThF; MurH 311) Dolan
See First Term.

1002. INTRODUCTION TO PHILOSOPHY. (285242) (5 cr; 1115-1205 MTWThF; FordH 115) Anderson
Problems, principal methods and schools of philosophy; historical and contemporary views.

1003. ETHICS. (390853) (5 cr; 1115-1310 TWTh; MurH 308) Root
Problems that arise when human beings attempt to think systematically about conduct and value.

3003. GENERAL HISTORY OF WESTERN PHILOSOPHY. (190854) (5 cr; 1115-1205 MTWThF; MurH 311) Savage
Modern philosophy from Descartes through Hume.

3201. ELEMENTS OF SYMBOLIC LOGIC I. (090855) (5 cr; 0905-0955 MTWThF; LindH 217) Hanson
Development of a formalized language. Syntax and semantics of sentential and first order predicate logic, deductive systems. Meets concurrently with 5201.

3970. DIRECTED STUDIES. (288853) (1-5 cr; prereq #) Staff

5201. ELEMENTS OF SYMBOLIC LOGIC I. (890856) (5 cr; 0905-0955 MTWThF; LindH 217) Hanson
Development of a formalized language. Syntax and semantics of sentential and first order predicate logic, deductive systems. Meets concurrently with 3201.

5760. SELECTED TOPICS IN PHILOSOPHY: PHILOSOPHICAL AND MORAL IDEAS IN CHILDREN'S LITERATURE. (690857) (4 cr per qtr; prereq 4 3xxx-5xxx cr in philosophy or #; 1030-1200 TTh; LindH 215; 1010-1200 W; WaLib 109) Mason

Children's books in which philosophical perplexities and moral ideas and dilemmas are effectively and interestingly presented. Consideration of some of the critical and theoretical studies of the presentation of philosophical ideas in children's books. Students will be encouraged to make use of the resources of the Kerlan Collection of Children's Literature.

5970. DIRECTED STUDIES. (188854) (1-5 cr; prereq #) Staff

8970. DIRECTED STUDY AND RESEARCH. (788856) (1-4 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

Political Science (Pol)

FIRST TERM

1001. AMERICAN GOVERNMENT AND POLITICS. (087311) (5 cr; 1010-1205 TWTh; AndH 230) Walcott
Principles, organization, processes, functions of government, and the interplay of political forces in the United States. Attention throughout to current issues.

1025. WORLD POLITICS. (290909) (4 cr; 0905-0955 MTWThF; AndH 370) Job
Contemporary international relations; forms of state interaction; problems of conflict and cooperation.

1061. INTRODUCTION TO POLITICAL THOUGHT. (891683) (4 cr; 1115-1205 MTWThF; BlegH 130) Fogelman
Major concepts, ideas, and arguments concerning such topics as liberty, justice, obligation, consent, authority, violence.

3070. DIRECTED FIELD STUDIES. (486275) (1-4 cr; prereq #)

3308. THE UNITED STATES CONGRESS. (490911) (4 cr; prereq 1001 or #; 1010-1100 MTWThF; BlegH 155)
Eyestone

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.

3310. TOPICS IN AMERICAN POLITICS—Politics, Hollywood Style: Images of Politics in the American Film. (387340) (4 cr; 1010-1205 MWF; AndH 210) Shaw

Analysis and evaluation of the images of American politics in selected, American-made commercial films, which will be viewed in class.

3331. MINNESOTA GOVERNMENT AND POLITICS. (887343) (4 cr; 1001 recommended; 0905-0955 MTWThF; BlegH 245) Backstrom

The Minnesota political system; demographic and cultural setting, political and governmental processes, contemporary policies.

3659. AMERICAN POLITICAL THOUGHT. (185251) (4 cr; prereq 3051 or 9 cr in social science or #; 1010-1100 MTWThF; BlegH 120) 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.

3970. DIRECTED STUDIES. (186330) (1-6 cr; prereq #, college approval)

5443. GOVERNMENT AND POLITICS OF THE SOVIET UNION. (290912) (4 cr; prereq 1054 or 3051 or 12 credits in social science or #; 1010-1100 MTWThF; BlegH 130) Turner

The rise of Bolshevism; sources and nature of Bolshevik ideology, history and institutional character of the Soviet regime; sources of power; role of the party and functional groups; patterns of change.

5448. GOVERNMENT AND POLITICS OF AFRICAN COUNTRIES. (19 0913) (4 cr; prereq 1054 or 3051 or 12 credits in social science or #; 1205-1300 MTWThF; BlegH 225) Nirtz

Political institutions and behavior in sub-Saharan African countries in their social and cultural settings; class and tribal structure; parties and elections; source and nature of ideologies; economic and social policies.

SECOND TERM

1001. AMERICAN GOVERNMENT AND POLITICS. (388861) (5 cr; 1010-1205 TWTh; BlegH 155) Sullivan
See First Term.

1026. AMERICAN FOREIGN POLICY. (990914) (4 cr; 0905-0955 MTWThF; BlegH 120) Wynia

Institutions and processes that determine American foreign policy; major developments in U.S. foreign policy since World War II; contemporary issues of U.S. policy.

1054. INTRODUCTION TO COMPARATIVE POLITICS. (790915) (4 cr; 1115-1205 MTWThF; BlegH 245) Duvall
Survey of the politics of democratic, communist, and third world nations; causes and consequences of different forms of political life.

Course Descriptions

3070. DIRECTED FIELD STUDIES. (986281) (1-4 cr; prereq #)

3051. INTRODUCTION TO POLITICAL ANALYSIS. (590916) (5 cr; 0905-1100 MTWTh; BlegH 135) Shively
Formation of political communities, political participation, policymaking, compliance, legitimacy, political development, types of political systems. Empirical and normative problems. Comparisons among major countries.

3306. THE AMERICAN PRESIDENCY. (085798) (4 cr; prereq 1001 or #: 0905-0955 MTWThF; RarigC 616) Simon
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.

3309. JUDICIAL PROCESS. (185257) (4 cr; prereq 1001 or #: 1010-1100 MTWThF; BlegH 255) 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.

3561. COMPARATIVE LEGAL SYSTEMS. (390917) (4 cr; prereq jr or #: 1115-1205 MTWThF; BlegH 225) Krislov
Elementary survey, primarily for social science students, of principal legal systems of the Western world. Organization, procedures, methods of growth, relation to political and economic systems, basic juristic conceptions. Roman law and European derivatives. Anglo-American law.

3970. DIRECTED STUDIES. (886404) (1-6 cr; prereq #, college approval)

5737. POLITICAL PARTIES. (185260) (4 cr; prereq 1001 or #: 1115-1205 MTWThF; BlegH 420) Flanigan
Role and functions of the party in American government; party composition and organization; process of nomination and policy formulation; regulation of party organization and activities.

Psychology (Psy)

FIRST TERM

1001. INTRODUCTION TO PSYCHOLOGY. (687490) (5 cr; 0800-0955 MTWThF; AndH 310)
Introduction to study of human behavior. Prerequisite for all advanced courses in psychology.

1004. INTRODUCTORY LABORATORY PSYCHOLOGY. (4 cr; each section limited to 24 students; prereq soph, 1001 or *1001)

Experiments illustrating contemporary subject matter such as sensory psychology, psychophysics, perception, motivation, verbal behavior, animal and human learning, problem solving, and psychological measurement.

Sec 1, (487491) 0905-1205 MF, 0905-1100 W, EltH 150

Sec 2, (287492) 1325-1625 MF, 1325-1520 W, EltH 150

Sec 3, (187493) 0905-1205 MF, 0905-1100 W, EltH 160

3011. INTRODUCTION TO PSYCHOLOGY OF LEARNING. (787495) (4 cr; prereq 1001, 1005 or Biol 1107 or #: 1115-1205 MTWThF; EltH N119) Peterson
Basic methods in study of learning. Fundamental concepts and principles governing the learning process.

3014. INTRODUCTION TO APPLIED PSYCHOLOGY. (987494) (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.

3031. SENSATION AND PERCEPTION. (690924) (4 cr; prereq 1001, 1004; 0905-0955 MTWThF; ApH 150)
Psychological, biological, and physical aspects of sensory experience in humans and animals. Major emphasis on vision and hearing.

3061. INTRODUCTION TO PHYSIOLOGICAL PSYCHOLOGY. (490925) (4 cr, §5061; prereq 1001, 1005 or Biol 1011 or #: 1215-1305 MTWThF; EltH N119) Roberts
Survey of neural mechanisms of motivation, emotion, sleep-wakefulness cycle, learning, and communication in animals and humans.

3101. INTRODUCTION TO PERSONALITY. (587496) (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. (486101) (4 cr; prereq 1001 and 3201; 1010-1100 MTWThF; EltH N257) 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. (387497) (4 cr, §5604; prereq 1001; 1115-1205 MTWThF; ApH 150) Kendall
Surveys the field of abnormal psychology. Etiologies of behavioral disorders; available treatment.

3970. DIRECTED STUDIES. (087499) (1-8 cr; prereq #, Δ , college approval) Lofquist
Independent reading leading to written paper or oral or written examination.

- 3980. DIRECTED RESEARCH.** (591595) (1-8 cr; prereq #, Δ , college approval) Lofquist
Individual empirical research projects leading to written report.
- 5014. PSYCHOLOGY OF HUMAN LEARNING AND MEMORY.** (787500) (4 cr; prereq 1005 or 3011 or 3051 or #, except students in honors sequences, grads: 0905-0955 MTWThF; EItH 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.** (685285) (4 cr; prereq 1001, 3201 or honors or grad or #; 1010-1100 MTWThF; EItH N119) Berscheid
Classical and contemporary theories and research in social psychology with emphasis on social influence and group dynamics.
- 5901H. HONORS PROJECT.** (391596) (1-8 cr; prereq sr, #) Lofquist
Critical literature review or empirical study.
- 8519. PRACTICUM IN REHABILITATION COUNSELING.** (587501) (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.** (387502) (1-6 cr; prereq #; hrs ar)
- 8560. INTERNSHIP IN COUNSELING PSYCHOLOGY.** (187503) (1-6 cr; prereq #; hrs ar)
- 8620. PRACTICUM IN CLINICAL PSYCHOLOGY.** (887505) (1-6 cr; prereq #; hrs ar)
Field experience in professional work in clinical settings.
- 8630. PRACTICUM IN CLINICAL CHILD PSYCHOLOGY.** (687506) (3 cr; prereq #; hrs ar)
Supervised experience in psychodiagnostic work with emotionally disturbed children and their families.
- 8670. INTERNSHIP IN CLINICAL PSYCHOLOGY.** (487507) (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.** (287508) (1-6 cr; prereq #) Lofquist
- 8990.* RESEARCH PROBLEMS.** (187509) (1-6 cr; hrs ar) Lofquist

SECOND TERM

- 1001. INTRODUCTION TO PSYCHOLOGY.** (088863) (5 cr; 0800-0955 MTWThF; HSUnitA 2530) LaBerge
See First Term.
- R 1005. INTRODUCTORY LABORATORY PSYCHOLOGY.** (4 cr; each section limited to 24 students; prereq soph, 1004)
See 1004 First Term.
- Sec 1, (688865) 0905-1205 MF, 0905-1100 W, EItH 50
Sec 2, (488866) 1325-1625 MF, 1325-1520 W, EItH 60
Sec 3, (288867) 0905-1205 MF, 0905-1100 W, EItH 60
- 3201. INTRODUCTION TO SOCIAL PSYCHOLOGY.** (285287) (4 cr; prereq 1001; 0905-0955 MTWThF; EItH N119)
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.** (988869) (4 cr; prereq 3604, 3801 or 5604; 1010-1100 MTWThF; EItH N119) Kendall
Survey of historical developments and contemporary issues. Focuses upon relevant research and clinical trends in psychological assessment methods and prevention and intervention strategies.
- 3801. INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS.** (290926) (4 cr; prereq 1001 or equiv; 0800-0850 MTWThF; BlegH 10) Cudeck
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.** (288870) (1-8 cr; prereq #, Δ , college approval; hrs ar) Lofquist
See First Term.
- 3980. DIRECTED RESEARCH.** (191597) (prereq #, Δ , college approval) Lofquist
See First Term.
- 5011. THEORIES OF LEARNING AND COGNITION.** (188871) (4 cr; prereq 3011, except for students in honors sequence and grad students; 1115-1205 MTWThF; EItH N119) Peterson
Major theories of learning and contemporary theories of information processing and cognition.
- 5134. INTRODUCTION TO BEHAVIORAL GENETICS.** (190927) (4 cr; prereq 3124 or 5126; 0905-1100 TTh; EItH N257) Depue
Methodology appropriate to analyzing contribution of genetic and environmental factors to variance observed in normal and abnormal traits in man and animals. Intelligence, neuroses, and psychoses. Independent variable will be genotype of an organism.

Course Descriptions

5202. ATTITUDES AND SOCIAL BEHAVIOR. (788873) (4 cr; prereq 1001, 3201, or #: 1315-1405 MTWThF; EIH 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.

5206. RESEARCH METHODS IN SOCIAL PSYCHOLOGY. (990928) (4 cr; prereq 1001, 3201, 3801, or # or grad; 1115-1205 MTWThF; EIH N257) Heath

Overview of randomized and quasi-experimental designs suitable for research in social psychology. Validity, operational, and ethical issues in social psychological research.

5751. PSYCHOLOGY OF ADVERTISING. (091598) (4 cr, §Jour 5251; prereq 1001; 0905-0955 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.

5901H. HONORS PROJECT. (891599) (1-8 cr; prereq sr, #) Lofquist

See First Term.

8519. PRACTICUM IN REHABILITATION COUNSELING. (188876) (3 cr; prereq 8503 or #: hrs ar)

See First Term.

8520. FIELDWORK IN APPLIED PSYCHOLOGY. (385667) (1-6 cr; prereq #: hrs ar)

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (688879) (1-6 cr; prereq #: hrs ar)

8620. PRACTICUM IN CLINICAL PSYCHOLOGY. (688882) (1-6 cr; prereq #: hrs ar)

See First Term.

8630. PRACTICUM IN CLINICAL CHILD PSYCHOLOGY. (488883) (3 cr; prereq #: hrs ar)

See First Term.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (288884) (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. (188885) (1-6 cr; prereq #) Lofquist

8990.* RESEARCH PROBLEMS. (788887) (1-6 cr; hrs ar) Lofquist

Religious Studies (RelS)

See also Hebrew, Jewish Studies and South and Southwest Asian Studies.

FIRST TERM

1031. INTRODUCTION TO THE RELIGIONS OF SOUTH AND SOUTHEAST ASIA. (690681) (4 cr, §SoAS 1504; 0905-0955 MTWThF; FolH 108) Malandra

Introduction to Hinduism, Buddhism, and Jainism.

8970. DIRECTED STUDIES. (490682) (2-5 cr; prereq Δ) Malandra.

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 must enroll in all three courses and may not enroll in other summer courses.

1101-1102-1103. BEGINNING INTENSIVE RUSSIAN. (287606) (187607) (987608) (15 cr for both terms)

Speaking, reading, and understanding Russian through acquisition of basic patterns of speech.

Sec 5, 0800-1100 MTWThF, FolH 104

Scandinavian Languages

Scandinavian (Scan)

FIRST TERM

3613. CHILDREN'S LITERATURE IN SCANDINAVIA. (590883) (4 cr: 1115-1205 MTWThF; FolH 303) Mishler
Reading of representative Scandinavian children's books with emphasis on different critical methods of interpretation. Readings in English for nonmajors.

SECOND TERM

3602. THE SCANDINAVIAN FAIRY TALE AS LITERATURE. (190885) (4 cr: 1115-1205 MTWThF; FolH 303) Hove
Reading of the Scandinavian art fairy tale in the context of German Romanticism. Major emphasis on H.C. Andersen and the 20th century authors who write in his tradition. Readings in English for nonmajors.

Finnish (Fin)

3001. READING FINNISH. (791689) (10 cr: 0905-1230 MTWThF; FolH 50) Vähämäki
Course in reading Finnish for students with little or no knowledge of Finnish. The course will introduce the basic and most frequent vocabulary, the inflectional and derivational systems and the basic syntax of Finnish with emphasis of reading comprehension. See Special Programs section.

Social Work (SW)

FIRST TERM

nr 1001. INTRODUCTION TO SOCIAL WELFARE AND COMMUNITY SERVICES. (787609) (5 cr: limited to 50 students; 0915-1100 MTWTh; FordH 170) 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.

nr 3004. SOCIAL WORK ISSUES AND HUMAN DEVELOPMENT THROUGH THE LIFE CYCLE. (990900) (4 cr: limited to 45 students, §5201; prereq jr or sr, 1001, CPsy 1301; 0915-1100 TTh; BlegH 440) S Battle

Analyzes normative development from social, psychological, biological, and cultural perspectives. Special emphasis is placed on the integration of theoretical concepts with practice issues in social work.

3970. DIRECTED STUDIES. (686193) (1-15 cr; prereq #, majors only)

3990. DIRECTED RESEARCH. (790901) (Cr ar; prereq #)

nr 5010. SEMINAR: SPECIAL TOPICS—WORKING WITH THE ELDERLY: A SOCIAL WORK PERSPECTIVE—June 27-July 1. (785309) (4 cr; limited to 30 students; 0830-1630 MTWThF; RarigC 610) Austin, Quam

This workshop will focus on specific techniques of working with the elderly and their families and will be taught through the use of lecture, discussion, role plays and simulation exercises. Recent literature about casework, group work, and community organization with the elderly will be reviewed. This workshop is taught in a one-week concentrated format and it is expected that students have a general understanding of theories of aging and a multidisciplinary approach to working with elderly clients.

nr 5111. CONTEMPORARY POLICY AND PROGRAMS IN SOCIAL WELFARE. (891697) (3 cr for grads, 4 cr for undergrads; limited to 45 students; prereq grad standing or 12 cr in social sciences; 0915-1200 MW; FordH 130) Hoshino
A framework for analysis of concepts and principles in social policy for social welfare programs and services.

8010. FIELD INSTRUCTION I. (187610) (4 cr or cr ar by # [max 12 cr required]; prereq #; hrs ar) Johnston

8020. FIELD INSTRUCTION II. (987611) (4 cr or cr ar by # [max 12 cr required]; prereq 8010; hrs ar) Johnston

8970. DIRECTED STUDY. (986135) (ar cr; prereq #)
Independent study under tutorial guidance.

8990. RESEARCH PROJECTS. (xxxxxx) (Cr ar up to 6 cr)

SECOND TERM

3970. DIRECTED STUDIES. (486194) (1-15 cr; prereq #, majors only)

3990. DIRECTED RESEARCH. (190904) (Cr ar; prereq #)

8010. FIELD INSTRUCTION I. (588907) (4 cr or cr ar by #; prereq #; hrs ar) Johnston

Course Descriptions

8020. FIELD INSTRUCTION II. (388908) (4 cr or cr ar by #: prereq 8010; hrs ar) Johnston

R 8150. SPECIAL TOPICS IN SOCIAL POLICY: METHODS FOR INTERVENTION IN LARGER SYSTEMS. (188909)
(Cr ar; limited to 40 students; 0915-1200 MW; BlegH 105) Korbek
An introduction to the range of functions and roles social workers in administration, planning, program evaluation and community development play.

8970. DIRECTED STUDY. (186358) (ar cr; prereq #)
Independent study under tutorial guidance.

8990. RESEARCH PROJECTS. (890906) (Cr ar up to 6 cr).

Sociology (Soc)

FIRST TERM

1001. INTRODUCTION TO SOCIOLOGY. (487670) (4 cr; 1115-1205 MTWThF; BlegH 235) Bradley
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. (685299) (4 cr; 1010-1100 MTWThF; BlegH 250) 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.

3102. INTRODUCTION TO CRIMINAL BEHAVIOR AND SOCIAL CONTROL. (390965) (4 cr. §3103; prereq 3101; 1010-1100 MTWThF; BlegH 10) Finestone
Basic issues in criminology and the sociology of law and social control organizations.

R 3201. PRINCIPLES OF SOCIAL PSYCHOLOGY. (5 cr; prereq 1001; lect 0905-0955 MTWThF; BlegH 260) Spitzer
Ideas and findings related to social psychology: experience in developing empirically based knowledge in social science.
Lab 1, (190966) 1010-1200 T, BlegH 210
Lab 2, (090967) 1010-1200 Th, BlegH 210

3501. THE FAMILY SYSTEM. (287671) (4 cr; prereq 1001 or #: 1115-1205 MTWThF; BlegH 150)
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. (187672) (4 cr; 1220-1310 MTWThF; BlegH 135) Kennedy
Population growth and natural resources, population dynamics, fertility and mortality in less developed nations, population forecasts, population policies to reduce fertility.

3601. URBAN COMMUNITY. (890968) (4 cr; prereq 1001 or 1002; 0905-0955 MTWThF; BlegH 235) Galaskiewicz
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.

R 3801. SOCIOLOGICAL METHODS I: DESCRIPTIVE STATISTICS. (5 cr; prereq basic algebra or Math 0009; lect 1115-1205 MTWThF; BlegH 135) 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.
Lab 1, (690972) 1220-1300 MW, BlegH 410
Lab 2, (890971) 12200-1300 TTh, BlegH 410

3811. COMPUTER USAGE FOR SOCIAL STATISTICS. (586056) (1 cr; S-N only; §3801 recommended; 1010-1100 MW; SocSci 307)
Elementary computer usage in social statistics applications. Use of statistical program packages for analysis of sociological data.

3970. DIRECTED STUDIES. (787674) (1-15 cr per qtr; prereq #)
Guided individual reading or study.

5102. CRIMINOLOGY. (690969) (4 cr; prereq 3101, 3102 or #: 0905-0955 MTWThF; Law 7) J Clark
Nature and types of crime, problems in measurement of incidence and trends, and review of sociological theories of crime causation. Implications for crime prevention and control.

5161. CRIMINAL LAW IN AMERICAN SOCIETY. (185301) (4 cr. §CJS 5101; 0800-0930 TWTh; BlegH 335) Samaha
Purposes and principles of criminal law; proper limits of criminal sanction and suggested reforms in existing criminal law.

5952.¹ YOUTH IN MODERN SOCIETY. (985762) (4 cr. §SPFE 5125; prereq 1001 or equiv or #: 0905-0955 MTWThF; PTH 102) 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. (387676) (1-15 cr per qtr; prereq #)
Guided individual reading or study.

8090. TOPICS. (1-4 cr; prereq #)

Sec 1, (285645) ar

Sec 2, (Supervised Applied Internship), cr ar, (090970) 1700-1900 T. BlegH 210, Reynolds

SECOND TERM

1001. INTRODUCTION TO SOCIOLOGY. (588910) (4 cr: 0905-0955 MTWThF; AndH 230)
See First Term.

3101. INTRODUCTION TO AMERICAN CRIMINAL JUSTICE. (490973) (4 cr, §CJS 3101; 1010-1100 MTWThF; BlegH 420) Inverarity
Components and dynamics as well as philosophical underpinnings of the criminal justice system.

3401. PRINCIPLES OF SOCIAL ORGANIZATION. (190975) (5 cr; prereq 1001, 3801 or equiv; lect 0905-0955 MTWThF; BlegH 260; lab 1010-1100 MW) Bradley
How and why social organization is possible. Major concepts and theories of social structure, primary forms of social organization (groups, communities, networks, formal organizations), basic social processes (integration, differentiation, regulation, change) and how social organization evolves from individual decision making. Course content varies.

3405. INEQUALITY: INTRODUCTION TO STRATIFICATION. (388911) (4 cr; prereq 1001; 1220-1310 MTWThF; BlegH 225) Cooperman
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. (188912) (4 cr; prereq 1001; 1115-1205 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.

R 3802. SOCIOLOGICAL METHODS II: STATISTICAL INFERENCE. (790977) (5 cr; prereq 3801 or equiv or #: lect 1115-1205 MTWThF; BlegH 260; lab 1220-1300 MW) T Anderson
Statistical inferences, probability, hypothesis tests, use of statistical reasoning in analysis of sociological data.

3937. SOCIAL GERONTOLOGY: ELDERS IN AMERICAN SOCIETY. (485305) (4 cr; prereq 1001 or #: 1115-1205 MTWThF; BlegH 135)
Situations and problems facing aging people in modern societies. Aspects of human aging from a sociological perspective.

3970. DIRECTED STUDIES. (088913) (1-15 cr per qtr; prereq #)
See First Term.

5101. SOCIOLOGY OF LAW. (590978) (4 cr; prereq 3101, 3102 or #...5705 recommended; 1220-1310 MTWThF; BlegH 105) Inverarity
Sociological analysis of law and society. Social forces involved in creation of legal norms (both civil and criminal), procedures of enforcement, and impact of law on social change.

5162. CRIMINAL PROCEDURE IN AMERICAN SOCIETY. (185307) (4 cr. §CJS 5102; 0905-0955 MTWThF; BlegH 360)
Power of the state to intrude into lives of citizens and deprive them of life, liberty, and property in order to enforce criminal laws; topics such as arrest, search and seizure, pretrial practices and prisoners' rights. Suggested limits on discretionary power of police, prosecutors, judges and corrections authorities.

5970. DIRECTED STUDIES. (188918) (1-15 cr per qtr; prereq #)
See First Term.

8090. TOPICS. (1-4 cr; prereq #)

Sec 1, (988919) ar

Sec 2, (Supervised Applied Internship), cr ar, (390979) 1700-1900 T. BlegH 210, Reynolds

¹This course scheduled through SPFE.

South and Southwest 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 credit hours, the equivalent of a full year's sequence in language. Students must enroll in all three courses and may not enroll in other summer courses.

1101-1102-1103. BEGINNING ARABIC. (187283) (987284) (787285) (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; KolH S135. Busool

South Asian Studies (SoAs)

See also *History and Religious Studies*.

FIRST TERM

1504. INTRODUCTION TO THE RELIGIONS OF SOUTH AND SOUTHEAST ASIA. (890680) (4 cr, §ReIS 1031; 0905-0955 MTWThF; FolH 108) Malandra

Introduction to Hinduism, Buddhism, and Jainism.

3491. CLASSICAL HERITAGE OF ARAB ISLAM. (091682) (4 cr, §Hist 3491; 1010-1100 MTWThF; Mgmt:Econ 130) Farah

Legacy of Arab contribution in institutions, letters, arts, sciences, thought, mathematics, architecture, to Islam's efflorescence; points of contact with the transmission to Europe: Crusades, Spain, Sicily. The role of Arab Islam in shaping an Islamic Civilization, 650-1350 A.D.

Spanish and Portuguese

Spanish (Span)

FIRST TERM

R 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, (887679) 0800-0955 MTWThF, JonesH 1

Sec 2, (187680) 0800-0955 MTWThF, FolH 203

R 1102. BEGINNING SPANISH: ORAL APPROACH. (087681) (5 cr; limited to 30 students; prereq 1101 or 1 yr high school Spanish; 0905-1100 MTWThF; FolH 302)

See 1101.

R 1103. BEGINNING SPANISH: ORAL APPROACH. (887682) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; 0905-1100 MTWThF; FolH 110)

See 1101.

R 1104. INTERMEDIATE SPANISH, ORAL APPROACH: INTERPRETATION OF MODERN PROBLEMS. (687683) (4 cr; limited to 30 students; prereq 1103 or 3 yrs high school Spanish; 0940-1105 MTWThF; JonesH 2)

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.

R 3002. READING FOR SPEED AND COMPREHENSION. (487684) (3 cr; limited to 20 students; prereq 1105 or #; 1010-1100 MTWTh; FolH 108) 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.

R 3614. DON QUIJOTE: A STUDY OF LOST ILLUSIONS. (790929) (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]); limited to 50 students; taught in English; 1115-1205 MTWThF; FolH 308) Zahareas

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.

5732. SPANISH DIALECTOLOGY: REGIONAL AND SOCIAL DIALECTS OF MODERN SPANISH AMERICA. (691684) (4 cr; prereq 5729 or #: 1115-1250 MWF; FolH 302) Mantini

Major dialect areas in modern Hispanic America. Norm, speech, and language related to former political and religious divisions of Hispanic America and to new national boundaries.

5910. TOPICS IN SPANISH PENINSULAR LITERATURE: SPANISH DRAMA (Cervantes Theatre and Exemplary Novel) (287685) (4 cr per qtr [12 cr max]); prereq 3104 or SpPt 3104 or Δ : 1220-1435 TTh, FolH 103) Spadaccini
Students are exposed to major issues or approaches of Spanish literature by treating important groups, movements, trends, issues, methods, genres. Specific approaches depend on topic and instructor.

5970. DIRECTED READINGS. (987687) (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.

8100. RESEARCH IN SOCIO-HISTORICAL APPROACHES TO SPANISH LITERATURE. (190930) (4 cr; 1325-1415 MWF; FolH 108) Zahareas

Analysis of the socio-historical functions of Spanish literary texts and a critical appraisal of the major theories concerning literary production.

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (787688) (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 must enroll in all three courses and 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, (587689) (987690) (787691) 0905-1205 MTWThF, KoltH S136

Sec 6, (587692) (387693) (187694) 0905-1205 MTWThF, KoltH S137

SECOND TERM

R 1101. BEGINNING SPANISH: ORAL APPROACH. (288920) (5 cr; limited to 30 students; 0800-0955 MTWThF; FolH 107)

See First Term.

R 1102. BEGINNING SPANISH: ORAL APPROACH. (988922) (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. (588924) (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; 0905-1100 MTWThF; FolH 205)

See 1101 First Term.

R 1104. INTERMEDIATE SPANISH, ORAL APPROACH: INTERPRETATION OF MODERN PROBLEMS. (088930) (4 cr; limited to 30 students; prereq 1103 or 3 yrs high school Spanish; 0940-1105 MTWThF; FolH 102)

See First Term.

R 1105. INTERMEDIATE SPANISH, ORAL APPROACH: DISCUSSIONS OF MODERN LITERATURE AND THE PRESS. (688932) (4 cr; limited to 25 students; prereq 1104 or 4 yrs high school Spanish; 0940-1105 MTWThF; FolH 203)

See 1104 First Term.

R 3004. WRITTEN COMMUNICATION: FORMAL AND INFORMAL. (990931) (4 cr; limited to 20 students; prereq 1105 or equiv; 1010-1100 MTWThF; FolH 103) Jones

Investigative reporting, expository writing, personal journals and letters, creative composition, research papers. Individual and class exercises based on model writings from periodicals, diaries, personal and business letters, literature of Hispanic world. Emphasis on clarity of expression and structure of composition.

R 3601. SPANISH AMERICA: REVOLUTION AND THE NEW LITERARY CONSCIOUSNESS. (790932) (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]); limited to 70 students; taught in English; 1115-1205 MTWThF; FolH 50) Vidal

Avant-garde movements in the fiction of the Latin American continent; correspondence to revolutionary trends in Spanish-speaking countries. Famous novels.

Course Descriptions

5920. TOPICS IN SPANISH-AMERICAN LITERATURE. (590933) (4 cr; 1115-1345 MW; FolH 103) Jara
Topics specified in *Class Schedule*. Spanish-American literature treated in important groups, movements, trends, methods, genres. Specific approaches depend on topic and instructor.

5970. DIRECTED READINGS. (188943) (1-5 cr per qtr [15 cr max]; for MA and PhD candidates; prereq # and Δ; hrs ar) Staff
See First Term.

8960. ADVANCED RESEARCH IN SOCIAL APPROACHES TO SPANISH-AMERICAN LITERARY TEXTS. (390934) (4 cr; 1430-1520 MWF; FolH 52) Jara
Analysis of the function of Spanish-American literature in society according to various theories of social structures: Marxist, Weberian, Frankfurt School, Dependency Theory, Simmelian sociology.

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (888945) (Cr and hrs ar) Staff
See First Term.

Spanish-Portuguese (SpPt)

SECOND TERM

5960. SELECTED COMPARATIVE PROBLEMS IN THE WORKS OF HISPANIC AND LUSO-BRAZILIAN AUTHORS. (585666) (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 Organizational and Small Group Communication Workshops 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, (087695) 0800-0850 MTWThF, FolH 306

Sec 2, (887696) 0905-0955 MTWThF, FolH 306

1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS. (687697) (4 cr; 1010-1100 MTWThF; FolH 308) Petronio

Variables in intrapersonal, interpersonal, and group communication.

3401. THEORIES OF INTERPERSONAL COMMUNICATION. (487698) (4 cr; prereq 1102 or #, Psy 1001; 0800-0850 MTWThF; FolH 305) Sykes

Theories of interpersonal communication and their usefulness for particular purposes.

R 3431. THE ROLE OF PERSUASION IN THE MODERN WORLD. (287699) (4 cr; soph standing recommended; limited to 50 students, 0905-0955 MTWThF; JonesH 11) Cashman

Persuasion in interpersonal, organizational, intracultural, and intercultural relationships. Contemporary persuasion, with occasional historical segments.

3441. COMMUNICATING IN ORGANIZATIONS—June 14-30. (090936) (4 cr; prereq 1102 or 1101 or equiv; 1220-1500 MTWThF; FolH 209) Bantz

Theory and practice of communicating in organizations. How communication creates, maintains, and changes organizational culture. Role of an individual communicator in organizational culture.

3615. ARGUMENTATION. (885317) (4 cr; prereq 1101 or 1101H or #; 0800-0850 MTWThF; FolH 307) Jensen
Role of reasoned discourse in interpersonal, public and mass communications.

3625. ETHICAL STANDARDS IN MODERN COMMUNICATION. (785312) (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.

3641. DISCUSSION AND CONFERENCE METHODS. (685318) (4 cr; limited to 30 students; prereq 1101 or 1101H or #: 1220-1310 MTWThF; FolH 406)
Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings.

3970. DIRECTED STUDIES. (087700) (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. (887701) (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.

5233. BROADCASTING AND NATIONAL DEVELOPMENT. (890937) (4 cr; limited to 25 students; 1010-1205 MTW; FolH 307) Browne
Radio and television as they effect changes in social, political, economic, and cultural life of various peoples and nations. Use of broadcasting by developing nations to improve agricultural practices, promote better hygienic standards, increase literacy, and develop awareness of civic responsibility.

5404. LANGUAGE, CULTURE, AND EDUCATION. (690938) (4 cr; limited to 25 students, §SeEd 5404; prereq 1102, 3401 or #: 1010-1100 MTWThF; PeikH 225) Piche
Psychological and social-psychological perspectives for study of language-communication; dimensions of language variation (dialects, codes, registers); implications for program development and instructional practices.

5405. NONVERBAL COMMUNICATION: THEORY AND RESEARCH. (991576) (4 cr; limited to 25 students; 1010-1100 MTWThF; FolH 406) Sykes
Nonverbal (extra-linguistic) elements and dimensions of interpersonal communication. Nonverbal categories examined to include gesture, facial expression, posture, clothing, and environment.

5414. AUTHORITY AND POWER IN TASK-ORIENTED COMMUNICATION—June 14-26. (187705) (4 cr; limited to 60 students; S-N only; prereq 3641 or #: 1615-1815 MTWThF; 0900-1730 Sat Sun; FolH 306, 307, 308) Shapiro
Authority and power in task-oriented groups. 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. (687702) (4 cr; limited to 25 students; 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 14-30. (385314) (4 cr; prereq 1102 or 3401, 3641 or 5411 or grad student; 1535-1800 MTWThF; FolH 209) Bantz
Communication in organizational settings. Organizational structure and dynamics and their effect on the communication process.

5970. READINGS IN SPEECH. (487703) (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. (185315) (3 cr; limited to 15 students; 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.

8990. RESEARCH. (287704) (Cr ar)
Open to graduate students engaged in research on special problems.

SECOND TERM

1101. FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION. (188949) (4 cr; limited to 24 students; 0800-0850 MTWThF; FolH 306)
See First Term.

3201. INTRODUCTION TO BROADCASTING PRODUCTION. (188952) (4 cr; limited to 22 students; 1115-1205 MTWThF; RarigC 616) Bart
Basic practice and theory. Projects in performance, scripting, and studio production.

3204. TELEVISION PRODUCTION. (788954) (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. (088958) (4 cr; 0905-0955 MTWThF; FolH 50) Browne
Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. "Problem" areas in programming.

3601. APPROACHES TO PUBLIC DISCOURSE. (685321) (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.

Course Descriptions

3970. DIRECTED STUDIES. (188966) (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. (788968) (1-4 cr per qtr [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ)
See First Term.

R 5411. SMALL GROUP COMMUNICATION. (790980) (4 cr; limited to 40 students; A-N grading only; prereq 3641 or #; 1220-1310 MTWThF; FolH 406) Bormann
Communication and dynamics within the small, task-oriented group. Group cohesiveness, leadership, role structure, information processing, and decision-making.

5451. PROCESSES OF INTERCULTURAL COMMUNICATION. (590981) (4 cr; prereq 3401, Anth 1102 or another course in cultural anthropology or #; 1115-1205 MTWThF; FolH 406) Howell
Interpersonal communication across cultures. Adapting communication theory to intercultural context. Linguistic and nonverbal variables, analytic and holistic procedures.

R 5615. INTRODUCTION TO RHETORICAL CRITICISM. (390982) (4 cr; limited to 25 students; prereq 1101 or 1101H; 3601 recommended; 1010-1100 MTWThF; FolH 306) Scott
Traditional and contemporary rhetorical theory; its application to contemporary public address.

5970. READINGS IN SPEECH. (988970) (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ)
See First Term.

R 8411. SEMINAR: SMALL GROUP COMMUNICATION. (190983) (3 cr; limited to 15 students; prereq 1101, 5411; 1325-1520 TTh; FolH 306) Bormann
Research problems and methods in small group communication.

R 8451. SEMINAR: FACE-TO-FACE INTERCULTURAL COMMUNICATION. (090984) (3 cr; limited to 15 students; prereq, if U.S. citizen, Anth 5101 or similar course in cultural anthropology or #; 5451 recommended; 1325-1520 TTh; FolH 307) Howell
Factors influencing face-to-face communication in varied cultures, concentrating upon task-oriented communication between North American and nationals in the host country. Verbal (linguistic) and nonverbal (nonlinguistic) dimensions of communication.

8990. RESEARCH. (188974) (Cr ar)
See First Term.

Statistics (Stat)

FIRST TERM

1051. INTRODUCTION TO IDEAS OF STATISTICS. (987706) (4 cr; prereq high school higher algebra; 0905-0955 MTTh, 0905-1100 WF; VinH 301)
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. (085378) (4 cr, \S 5121, \S 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.

R 5021. STATISTICAL ANALYSIS I. (190935) (5 cr; prereq college algebra or #; 0905-1005 MTWThF, 1325-1455 TTh; ClaOff B25)
Frequency distributions, descriptive statistics, elementary probability: binomial, Poisson, and normal distributions, estimation and testing, analysis of variance, multiple comparisons, linear regression.

5121. THEORY OF STATISTICS. (787707) (4 cr, \S 5131-5132-5133; prereq Math 1231 or 1331 or 1621; 1115-1205 MWF, 1010-1205 TTh; MechE 221)
Univariate and multivariate distributions, law of large numbers, sampling, likelihood methods, estimation and hypothesis testing.

SECOND TERM

3091. INTRODUCTION TO PROBABILITY AND STATISTICS. (488978) (4 cr, \S 5121, \S 5131; prereq differential and integral calculus; 0905-0955 MTTh, 0905-1100 WF; Arch 50)
See First Term.

5122. THEORY OF STATISTICS. (988984) (4 cr, \S 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.** (885379) (4 cr; 0905-1100 MTWTh; RarigC 185) Ballet
History and theory of plays and playwrights.
- R 1326. BEGINNING ACTING: TECHNIQUE.** (890985) (4 cr; prereq 1321; 0800-0955 MTWThF; RarigC 10) Moulton
Fundamentals of body movement, rhythms, and acting techniques. Individual and group performances.
- R 1405H. HONORS COURSE: INTRODUCTION TO THE THEATRE.** (386043) (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.** (387709) (4 cr; prereq 1101 or #1101; 1115-1205 MTWTh, 1015-1205
F; RarigC 275; lab ar) Josal, Brockman
The practice of the arts and crafts of the theatre: scenery construction and painting, stage operation, theatre lighting,
costuming.
- 3321. ADVANCED ACTING: CHARACTERIZATION.** (787710) (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.** (186044) (0-3 cr [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)
- 3513. TECHNICAL THEATRE PRODUCTION I.** (690986) (4 cr; prereq 1504; 1220-1415 MTWThF; RarigC 275; lab ar)
Brockman, Josal
Theory and practice of design and execution of stage scenery and properties.
- 3801. ORAL INTERPRETATION OF FICTION.** (490987) (4 cr; prereq 1504 or 1804 or Speech 1101; 0800-0955
MTWTh; RarigC 20) Congdon
Study of selected short stories. Solo and group readings.
- 5100. THEATRE PRACTICUM.** (387712) (1-6 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: playwrighting, directing, acting, and design.
- 5110. THEATRE PERFORMANCE.** (187713) (1 cr [9 cr max]; prereq written permission; S-N only) Staff
Participation in the rehearsals and performances of a major University Theatre production.
- 5711. STAGE DIRECTION.** (087714) (4 cr, §3708, §3711; prereq 1321; sr or grad students only; 1220-1415 MTWTh;
RarigC 185) Hamilton
Theory of direction: concept and analysis. Exercises in blocking and production of short scenes.
- 5720. PLAYS IN PRODUCTION AND PERFORMANCE.** (485384) (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.** (185386) (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.
- 5950. TOPICS IN THEATRE: SPECIAL PROBLEMS IN ACTING.** (290988) prereq # and Δ; 0905-0955 MTWThF;
RarigC 210) McIntyre
- 5970. DIRECTED READINGS.** (287718) (2-6 cr; prereq 9 cr in theatre, # and Δ) Staff
Directed reading and preparation of reports on selected subjects.
- 8980. DIRECTED INSTRUCTION.** (687716) (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.** (487717) (Cr ar; prereq # and Δ) Staff
Open to graduate students engaged in research on special problems.

Course Descriptions

SECOND TERM

1321. BEGINNING ACTING: CREATIVE APPROACH. (490990) (4 cr; prereq 1101, 1504, and 3rd qtr freshman or above; 0800-0955 MTWThF; RarigC 210) Berry
Beginning Stanislavskian technique and improvisational exercises leading to elementary scene study.

3412H. HONORS COURSE: TUTORIAL SEMINAR IN THEATRE ARTS. (290991) (0-3 [limited to 3 cr 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 .)

5100. THEATRE PRACTICUM. (391470) (1-6 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. (190992) (1 cr [9 cr max]; prereq written permission, S-N only) Staff
Participation in the rehearsals and performances of a major University Theatre production.

5173. HISTORY OF THEATRE. (990993) (4 cr; prereq sr or grad; 1010-1205 MTWTh; RarigC 275) Nolte
Theatre as a mirror of society. A broad overview involving the aesthetics, philosophy, and techniques of theatre arts. The modern theatre, from Ibsen to the present.

5186. AMERICAN THEATRE. (790994) (4 cr; prereq sr or grad theatre major or #: 0800-0955 MTWTh; RarigC 275) Nolte
The theatre as an aspect of American culture from 1752 to present.

5314. STAGE COMBAT: UNARMED. (590995) (2 cr; prereq 1326 or grad; 1010-1205 MTWThF; RarigC 10) Berry
History, techniques, and aesthetics of staging physical combat.

5712. STAGE DIRECTION. (390996) (4 cr; prereq 3708 or 3711 or 5711 and 3513, 3515, 3801; 1010-1205 MTWTh; RarigC 185) Adey
Theory of rehearsal and production problems and direction of two one-act plays.

5720. PLAYS IN PRODUCTION AND PERFORMANCE. (190997) (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. (090998) (2-4 cr [max 6 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.

5802. ORAL INTERPRETATION OF POETRY. (890999) (4 cr; prereq 1504, 3801, or grad; 1220-1415 MTWTh; RarigC 20) Fredricks
Study of selected lyric poems. Solo and group readings.

5970. DIRECTED READINGS. (286195) (2-6 cr; prereq 9 cr in theatre, # and Δ) Staff
Directed reading and preparation of reports on selected subjects.

8980. DIRECTED INSTRUCTION. (791000) (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. (591001) (Cr ar; prereq # and Δ) Staff
Open to graduate students engaged in research on special problems.

Urban Studies (UrbS)

FIRST TERM

3900. INTERNSHIP. (187719) (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ ; 1730-1930 M; Mgmt/Econ 128) 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. (788999) (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ ; 1730-1930 M; Mgmt/Econ 128) Hickey
See First Term.

Women's Studies (WoSt)

FIRST TERM

W 1005. INTRODUCTION TO WOMEN'S STUDIES. (290893) (4 cr; limited to 40 students; 1010-1100 MTWThF; FordH 285) Scheman

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.

W 3200. WOMEN AND WORK. (190894) (4 cr; limited to 40 students; 0905-0955 MTWThF; FordH 175) Maynes

The work that women do studied in its social, political, familial, and economic contexts. Topics may include women and economic structures, work and family, working-class women, women in the professions, women and development in the third world.

3980. DIRECTED INSTRUCTION. (790896) (1-5 cr; prereq #, Δ, college approval)

3990. DIRECTED RESEARCH. (590897) (1-5 cr; prereq #, Δ, college approval)

W 5970. WOMEN IN WORLD AREA STUDIES—June 13-July 1. (391629) (3 cr; 1300-1600 MTWThF; Bio Sci 12)

An intensive workshop session for teachers, emphasizing women in an international, cross-cultural context through two modules. The first will emphasize content and aim at providing information about women in various world areas; the second outlines teaching strategies and curriculum development in women's history and culture appropriate for individual educator's needs. Meets concurrently with SeEd 5153.

SECOND TERM

W 3103. MODERN FEMINIST NOVEL. (791630) (4 cr; prereq English composition or equiv, limited to 40 students; 1010-1100 MTWThF; FordH 175) Yates

Analysis of fiction written by women that addresses questions of women's identity and the diversity of women's experience.

W 3910. TOPICS: CONTEMPORARY FEMINIST ISSUES. (185646) (4 cr; limited to 40 students; 1115-1205 MTWThF; FordH 285) McNaron

Feminist perspectives on racism, sexism, and homophobia.

3970. DIRECTED STUDIES. (586414) (1-15 cr; prereq #, Δ, college approval)

3980. DIRECTED INSTRUCTION. (186383) (1-5 cr; prereq #, Δ, college approval)

5970. DIRECTED STUDIES. (086241) (1-5 cr; max 12 cr; prereq #, Δ, college approval)

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 80 by the time of entrance to the School of Management, and a minimum overall grade point average of 2.70. Space permitting, students with a 2.50 overall average may be considered for admission. Information about premanagement course requirements and graduation requirements is available in the Undergraduate Studies Office, 225 Management Economics.

Accounting (Acct)

SPECIAL TERM: SEVEN-WEEK COURSES

JUNE 14-JULY 28

R 1024.¹ 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, (186800) 0800-0900 MTWTh, BlegH 125

Sec 2, (986801) 0800-0900 MTWTh, BlegH 110

Sec 3, (786802) 0910-1010 MTWTh, BlegH 110

Sec 4, (586803) 0910-1010 MTWTh, BlegH 125

Sec 5, (386804) 1020-1120 MTWTh, BlegH 125

R 1025.¹ 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, (086806) 0800-0900 MTWTh, BlegH 145

Sec 2, (886807) 0910-1010 MTWTh, BlegH 145

R 3001. MANAGERIAL ACCOUNTING. (190460) (4 cr; limited to 42 students; prereq 1025; A-N only; 1015-1200 MWTh; BlegH 220)

Accounting analysis and reports for management and investor decision making. Emphasis on planning and control reporting.

R 3101. ACCOUNTING THEORY AND PRACTICE I. (886810) (4 cr; limited to 42 students; §8101; prereq 1025; A-N only; 0800-0945 MWTh; BlegH 230)

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. (686811) (4 cr; limited to 42 students; §8101; prereq 3101; A-N only; 1215-1400 MWTh; BlegH 230)

Concepts and problems in accounting for specific assets and equities.

R 3201. COST ACCOUNTING. (486812) (4 cr; limited to 42 students; prereq 3001, MIS 3099, QA 3055; A-N only; 0800-0945 MWTh; BlegH 220)

Process and standard costs, behavior of costs under varying conditions, cost allocations, variance analysis, capital budgeting.

R 5125. AUDITING PRINCIPLES AND PROCEDURES. (286813) (4 cr; limited to 42 students; prereq 3102 and 3201; A-N only; 0800-0945 MWTh; BlegH 420)

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

R 5135. INCOME TAX ACCOUNTING. (186814) (4 cr; each section limited to 42 students; prereq 1051; A-N only; 1015-1200 MWTh; BlegH 110)

Individual, partnership, and corporation taxation; emphasizes income tax planning.

R 5180. ADVANCED ACCOUNTING. (986815) (4 cr; limited to 42 students; prereq 3102; 1215-1400 MWTh; BlegH 220)
Consolidated statements, partnerships, fiduciary, international and fund accounting.

¹Common Final Exam, Thursday, July 28, 0800-1000, WilleyH 125 175.

Business Administration (BA)

FIRST TERM

¶ 3998. **INDEPENDENT STUDY.** (586817) (Cr or sr; 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

¶ 3998. **INDEPENDENT STUDY.** (788128) (Cr or sr; 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, and Society (BGS)

FIRST TERM

¶ 3002. **BUSINESS AND SOCIETY.** (186819) (4 cr; limited to 60 students; prereq jr or sr; A-N only; 0800-0955 MTWTh; BlegH 150) J Miller

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

¶ 3001. **MANAGERIAL ECONOMICS.** (285029) (4 cr; limited to 50 students. §Econ 3101, 3105; prereq Econ 1002 or equiv; A-N only; 0800-0955 MTWTh; BlegH 150) 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 applied to the individual business.

Business Law (BLaw)

FIRST TERM

¶ 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; A-N only)

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, (586820) 0800-0850 MTWThF, BlegH 415

Sec 2, (386821) 0905-0955 MTWThF, BlegH 415

¶ 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; A-N only)

See 3058.

Sec 1, (186822) 0800-0850 MTWThF, BlegH 415

Sec 2, (086823) 0905-0955 MTWThF, BlegH 415

Finance (BFin)

FIRST TERM

¶ 3000. **FINANCE FUNDAMENTALS.** (4 cr, §MBA 8040; limited to 50 students; prereq Acct 3001 or 1051; A-N only)

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, (886824) 0800-0930 MTWTh, BlegH 240, Stregé

Sec 2, (686825) 1010-1140 MTWTh, BlegH 215, Schilit

Course Descriptions

3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS. (486826) (4 cr, §8300: limited to 40 students; prereq 3000; 1115-1230 MTWTh; BlegH 420) Reik
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.

3500. REAL ESTATE INVESTMENT ANALYSIS. (286827) (4 cr; limited to 40 students; prereq 3000 and Econ 1002 or equiv; 0930-1200 TTh; BlegH 255) 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.

8300. INVESTMENT ANALYSIS AND MANAGEMENT. (986829) (4 cr; limited to 35 students; prereq 3000 or MBA 8040; 0945-1100 MTWTh; BlegH 240) Eun
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. (186828) (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

3000. FINANCE FUNDAMENTALS. (588129) (4 cr, §MBA 8040: limited to 50 students; prereq Acct 3001 or 1051; A-N only; 0800-0930 MTWTh; BlegH 240) Schilit
See First Term.

3100. FINANCIAL MANAGEMENT. (988130) (4 cr; limited to 37 students; prereq 3000; A-N only; 0945-1100 MTWTh; BlegH 335) Janakiramanan

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.*

3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS. (788131) (4 cr, §8300: limited to 40 students; prereq 3000; 1115-1230 MTWTh; BlegH 255) Reik
See First Term.

8100. ADVANCED FINANCIAL MANAGEMENT. (285810) (4 cr; limited to 37 students; prereq 3000 or MBA 8040; 1115-1230 MTWTh; BlegH 115) Stolz

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.

8990. READINGS AND RESEARCH IN FINANCE. (588132) (cr or [may be repeated for cr]; prereq consent of adviser and #) Staff
See First Term

Industrial Relations (IR)

FIRST TERM

3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (186831) (4 cr, §8002; prereq Econ 1001, 1002, Psy 1001; 0800-0955 MTWTh; BlegH 205)
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. Meets with 8002.

3007. COLLECTIVE BARGAINING NEGOTIATIONS AND MODERN LABOR RELATIONS. (190782) (4 cr; 1010-1205 MTWTh; BlegH 260)

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.

3010. HUMAN RELATIONS AND APPLIED ORGANIZATION THEORY. (986832) (4 cr; 1010-1205 MTWTh; BlegH 205)

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.

8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (786833) (4 cr, §3002; prereq Econ 1001, 1002, Psy 1001; 0800-0955 MTWTh; BlegH 205)
Meets with 3002.

8014. ORGANIZATION DESIGN AND ADMINISTRATION. (485028) (4 cr; prereq 8002 or #; 1010-1205 MTWTh; BlegH 360)
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

8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (388133) (4 cr, §8002; prereq Econ 1001, 1002, Psy 1001; 0800-0955 MTWTh; BlegH 205)
See First Term. Meets with 8002.

8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (990783) (4 cr; §3002; prereq Econ 1001, 1002, Psy 1001; 0800-0955 MTWTh; BlegH 205)
Meets with 3002.

8003. ORGANIZATION AND STAFFING. (790784) (4 cr; prereq 8002 or #; 1430-1625 MTWTh; BlegH 205)
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.

8005. EMPLOYEE COMPENSATION AND REWARD. (590785) (4 cr; prereq 8002 or #; 1010-1205 MTWTh; BlegH 205)
Systems of employee compensation reward within economic organizations. Concepts, models, and theories relating to processes of compensation designed to influence worker behavior and performance within constraints. Wage structuring, pricing, individual appraisal and reward, employee motivation, and compensation controls.

8007. COLLECTIVE BARGAINING NEGOTIATIONS; PROCESSES IN THE PUBLIC AND PRIVATE SECTORS. (685030) (4 cr; prereq 8002 or #; 1220-1415 MTWTh; BlegH 205)
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.

Management (Mgmt)

FIRST TERM

8001. FUNDAMENTALS OF MANAGEMENT. (4 cr, §8001; each section limited to 50 students; A-N only)
Concepts, theory, research, and operational problems. The principal functional areas of management. Factors and relationships necessary to achieve organizational objectives: establishment of goals, policies, procedures; the planning process; control systems; organizational structure and behavior; leadership.

Sec 1, (386835) 0800-1000 MTWTh, BlegH 425, Enbiyaoglu
Sec 2, (891053) 1010-1205 TWThF, BlegH 415, Miller

8002. PSYCHOLOGY IN MANAGEMENT. (186836) (4 cr, §8006; limited to 25 students; A-N only; 0905-1100 MTWThF; BlegH 135) Angle
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.

8004. BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION. (086837) (5 cr; limited to 35 students; prereq sr and completion of business core or final core course; A-N only; 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. (886838) (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.

Course Descriptions

8995. GRADUATE RESEARCH IN MANAGEMENT THEORY AND ADMINISTRATION. (686839) (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

■ 3001. FUNDAMENTALS OF MANAGEMENT. (4 cr, §8001; each section limited to 50 students; A-N only)
See First Term.

- Sec 1. (888136) 0905-1100 MTWTh, Law 20, Agee
- Sec 2. (688137) 0905-1100 TWThF, BlegH 425, Miller

8990. READINGS IN MANAGEMENT THEORY AND ADMINISTRATION. (488138) (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. (288139) (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

■ 3300. INTRODUCTION TO COMPUTERS AND MANAGEMENT INFORMATION SYSTEMS. (4 cr, §3100, §5100, §5300; A-N only; limited to 50 students)

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.

- Sec 1. (185033) 0800-0955 MTWTh, AndH 230
- Sec 2. (686212) 0800-0955 MTWTh, BlegH 155

8990. READINGS IN MANAGEMENT INFORMATION SYSTEMS. (686842) (Cr ar; prereq consent of adviser, 2nd-yr grad student, requisite introductory courses; A-N only)

8995. GRADUATE RESEARCH IN MANAGEMENT INFORMATION SYSTEMS. (486843) (Cr ar; prereq consent of adviser, #, 2nd-yr grad student, requisite introductory courses; A-N only)

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

3098. ELEMENTARY COBOL. (086840) (1 cr; S-N only; prereq 3040 or *3040 or 3100 or *3100 or 3300 or *3300; 0800-0850 W; AndH 330)

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. (686841) (1 cr; S-N only; prereq 3040 or *3040 or 3100 or *3100 or 3300 or *3300; 0905-0955 W; AndH 330)

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.

5098. INTERMEDIATE COBOL. (790803) (2 cr; S-N only; prereq 3098; 1010-1100 W; AndH 330)

Self-paced course requiring the programming of a structured set of problems using intermediate and advanced features of the COBOL language. Consultants provide student assistance and administer quizzes in a laboratory environment.

SECOND TERM

■ 5300. SURVEY OF COMPUTERS AND MANAGEMENT INFORMATION SYSTEMS. (985034) (4 cr, §3100, §5100, §8300; prereq 3098 or *3098 or 3099 or *3099; cr cannot be applied to MBA programs begun after Dec 15, 1979; limited to 50 students; 1010-1205 MTWTh; BlegH 250)

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. (688140) (Cr ar; prereq consent of adviser, 2nd-yr grad student, requisite introductory courses; A-N only)

8995. GRADUATE RESEARCH IN MANAGEMENT INFORMATION SYSTEMS. (488141) (Cr ar; prereq consent of adviser, #, 2nd-yr grad student, requisite introductory courses; A-N only)

Marketing (Mktg)

FIRST TERM

R 3000. PRINCIPLES OF MARKETING. (4 cr, §8000; each section limited to 45 students; prereq Econ 1002 or equiv; A-N only)

Basic policy and strategy issues in marketing and the environmental factors that affect these issues. Legal, behavioral, ethical, competitive, economic, and technological factors as they affect product, pricing, promotion, and marketing channel decisions.

Sec 1, (286844) 0905-1100 MWF, BlegH 255

Sec 2, (186845) 1115-1310 MWF, BlegH 255

R 3010. BUYER BEHAVIOR AND MARKETING ANALYSIS. (986846) (4 cr; limited to 45 students; prereq 3000 and QA 1050 or equiv; 0905-1100 MWF; BlegH 440)

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.

R 8098. INTRODUCTION TO CONSUMER BEHAVIOR. (990802) (4 cr; limited to 30 students; prereq either MBA core courses or MBA 8045; 1220-1415 MWF; BlegH 330)

Applications of the behavioral sciences to understanding human behavior in the marketplace. Perception, learning, attitude theory and measurement, persuasion, motivation, personality, social and cultural influences, family decision making, the social influence process, consumer decision-making strategies, managerial implications of consumer research and consumerism.

8990. READINGS IN MARKETING. (786847) (Cr ar; prereq MBA core courses, or MBA 8045 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. (586848) (Cr ar; prereq MBA core courses, or MBA 8045 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, §8000; each section limited to 45 students; prereq Econ 1002 or equiv; A-N only)

See First Term.

Sec 1, (288142) 0905-1100 MWF, Law 35

Sec 2, (885043) 1115-1310 MWF, BlegH 440

R 3020. MARKETING OPERATIONS MANAGEMENT. (188143) (4 cr; limited to 30 students; prereq 3010; 0905-1100 MWF; BlegH 330)

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. (988144) (Cr ar; prereq MBA core courses, or MBA 8045 and /...and consent of adviser, #)

See First Term.

8995. GRADUATE RESEARCH IN MARKETING. (788145) (Cr ar; prereq MBA core courses, or MBA 8045 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.

SPECIAL TERM: JUNE 14-AUGUST 19

R 8005. COMPUTER ACCESS AND PROGRAMMING FOR BUSINESS ANALYSIS. (1 cr; MBA students only; S-N only; each section limited to 80 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, (386849) 0800-1000 T, BlegH 340

Sec 2, (685173) 1030-1230 T, BlegH 435

Course Descriptions

R 8015. HUMAN RESOURCES MANAGEMENT. (786850) (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. (586851) (4 cr; MBA students only; limited to 40 students; 1300-1600 T; BlegH 435)

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. (386852) (4 cr; MBA students only; limited to 40 students; 1430-1600 MWTh; BlegH 435) Daly

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; each section limited to 40 students)

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, (186853) 0915-1100 MWF, BlegH 340

Sec 2, (086854) 1230-1415 MWF, BlegH 425

R 8045. MARKETING MANAGEMENT. (886855) (4 cr; MBA students only; limited to 40 students; 1220-1415 MW; BlegH 415)

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; each section limited to 40 students)

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, (686856) 0900-1200 W, BlegH 435

Sec 2, (486857) 1010-1300 Th, BlegH 435

Operations Management (OM)

FIRST TERM

R 3000. INTRODUCTION TO OPERATIONS MANAGEMENT. (890842) (4 cr; limited to 50 students; A-N only; 1010-1205 MTWTh; AndH 350)

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. 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. (690843) (Cr ar; prereq consent of adviser and #, 2nd year grad student, requisite introductory courses; A-N only)

8995. GRADUATE RESEARCH IN OPERATIONS MANAGEMENT. (490844) (Cr ar; prereq consent of adviser and #, 2nd year grad student, requisite introductory courses; A-N only)

Research projects on a specific problem completed in cooperation with a business firm.

SECOND TERM

R 3000. INTRODUCTION TO OPERATIONS MANAGEMENT. (588146) (4 cr; limited to 50 students; A-N only; 1010-1205 MTWTh; BlegH 240)

See First Term.

8990. READINGS IN OPERATIONS MANAGEMENT. (388147) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student, requisite introductory courses; A-N only)

8995. GRADUATE RESEARCH IN OPERATIONS MANAGEMENT. (188148) (Cr ar; prereq consent of adviser and #, 2nd-yr grad student, requisite introductory courses; A-N only)

See First Term.

Quantitative Analysis (QA)

FIRST TERM

R 1050. ELEMENTARY MANAGERIAL STATISTICS. (186859) (4 cr; limited to 50 students; prereq Math 1111 or equiv or Math 1131; A-N only; lect 0900-1130 MTh, AndH 330; lab 0900-1015 TF; BlegH 220)
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. (185511) (4 cr; limited to 50 students; prereq 1050, Math 1142 or equiv; A-N only; 1010-1205 MTWTh; AndH 370)
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. (486860) (Cr ar; prereq #: A-N only)

8995. GRADUATE RESEARCH IN QUANTITATIVE ANALYSIS. (286861) (Cr ar; prereq #: A-N only)

SECOND TERM

R 1050. ELEMENTARY MANAGERIAL STATISTICS. (290683) (4 cr; limited to 50 students; prereq Math 1111 or equiv or Math 1131; A-N only; lect 0900-1130 MTh, lab 0900-1015 TF; BlegH 130)
See First Term.

R 3055. INTRODUCTION TO MANAGEMENT SCIENCES. (385510) (4 cr; limited to 50 students; prereq 1050, Math 1142 or equiv; A-N only; 0800-0955 MTWTh; BlegH 155)
See First Term.

8990. READINGS IN QUANTITATIVE ANALYSIS. (088149) (Cr ar; prereq #: A-N only)

8995. GRADUATE RESEARCH IN QUANTITATIVE ANALYSIS. (388150) (Cr ar; prereq #: A-N only)

Risk Management and Insurance (Ins)

FIRST TERM

3100. RISK MANAGEMENT AND INSURANCE. (186862) (4 cr, \$8100; A-N only; 0930-1045 MTWTh; BlegH 115) 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, employee health benefits, workers' compensation, pensions, and automobile insurance problems.

3200. LIFE AND HEALTH INSURANCE. (986863) (4 cr, \$8200; prereq 3100 or equiv; 1115-1230 MTWTh; BlegH 115) 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. (786864) (4 cr, \$3100; 0930-1045 MTWTh; BlegH 115) Whitman
Meets with 3100.

8200. LIFE AND HEALTH INSURANCE. (586865) (4 cr, \$3200; prereq 3100 or 8100 or equiv; 1115-1230 MTWTh; BlegH 115) Whitman
Meets with 3200.

SECOND TERM

8990. READINGS IN RISK MANAGEMENT AND INSURANCE. (086417) (cr ar; prereq consent of adviser and #)

Transportation (Tran)

FIRST TERM

R 3054. FUNDAMENTALS OF TRANSPORTATION. (785035) (4 cr. §8154; prereq Econ 1002 or equiv; limited to 50 students; A-N only; 0905-0955 MTWThF; BlegH 215)

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.

8990. READINGS IN TRANSPORTATION AND BUSINESS LOGISTICS. (086868) (Cr ar; prereq consent of adviser, # in field covered: A-N only)

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. (886869) (Cr ar; prereq consent of adviser, # in field covered: A-N only)

SECOND TERM

R 3054. FUNDAMENTALS OF TRANSPORTATION. (188151) (4 cr. §8154; prereq Econ 1002 or equiv; limited to 50 students; A-N only; 0905-0955 MTWThF; BlegH 215)

See First Term.

8990. READINGS IN TRANSPORTATION AND BUSINESS LOGISTICS. (088152) (Cr ar; prereq consent of adviser, # in field covered: A-N only)

See First Term.

8995. GRADUATE RESEARCH IN TRANSPORTATION AND BUSINESS LOGISTICS. (888153) (Cr ar; prereq consent of adviser, # in field covered: A-N only)

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. (487720) (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. (989004) (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.

Humphrey Institute of Public Affairs

Public Affairs (PA)

FIRST TERM

5114. WORKSHOP ON MINNESOTA GOVERNMENT. (887567) (3 cr; 1325-1520 TWTh; BlegH 335) Jernberg, others
Background study through lecture, panel discussion, and seminar sessions of selected public policy issues that currently confront Minnesota's governmental units.

5771. ADMINISTRATIVE INTERNSHIP. (687568) (3 cr; prereq #: hrs ar) Jernberg
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. (Cr ar; prereq #)

Sec 1, (487569)

Sec 2, (291591)

SECOND TERM

5115. WORKSHOP ON MINNESOTA GOVERNMENT. (388892) (3 cr; 1325-1520 TWTh; BlegH 335) Jernberg, others
See 5114 First Term.

5781. ADMINISTRATIVE INTERNSHIP. (088894) (3 cr; prereq #: hrs ar) Jernberg
See 5771 First Term.

8991. INDIVIDUAL READINGS, RESEARCH IN PUBLIC POLICY ANALYSIS, ADMINISTRATION. (Cr ar; prereq #)

Sec 1, (688896)

Sec 2, (486387)

SPECIAL TERM: AUGUST 22-SEPTEMBER 23

Econ 3101/5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD. (4 cr for 3101, 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, (588714) (688722) 0905-0955 MTWThF, BlegH 415, Kudrie

Institute of Technology

SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

Architecture (Arch)

FIRST TERM

R 1021. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (287721) (4 cr. \$LA 1021; 0800-0955 MWF; Arch 25) Winterrowd
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.

3970. DIRECTED STUDY. (986362) (Cr ar; prereq #)

R 5056. MODERN ARCHITECTURE. (187722) (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 5961. COMPUTER AIDED ARCHITECTURAL DESIGN. (491704) (4 cr; prereq Arch major, 3083, or #: 1010-1205 TTh; Arch 25) Anderson
Introduction to computing and Pascal programming. Methods in computer-aided architectural design; methods, hardware, software, problems and potential of CAAD; weekly lab projects using Terak microcomputers as a design tool.

5970. DIRECTED STUDY. (986037) (Cr ar; prereq #)

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

R 3082-3083. ARCHITECTURAL DESIGN I. (787724) (587725) (6 cr; 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. (387726) (187727) (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. (087728) (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. (887729) (6 cr; prereq 5111; 1325-1730 MWF; Arch 210) Rockcastle
See 5111.

R 5113. ARCHITECTURAL DESIGN III. (187730) (6 cr; prereq 5112; 1325-1730 MWF; Arch 210) Rockcastle
See 5111.

R 5121. ARCHITECTURAL DESIGN IV. (087731) (6 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. (887732) (6 cr; prereq 5121; 1325-1730 MWF; Arch 210) LaVine, Rockcastle
See 5121.

SECOND TERM

R 1022. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (189017) (4 cr. \$LA 1022; 1000-1155 MWF; Arch 25) Winterrowd
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.

3970. DIRECTED STUDY. (386365) (Cr ar; prereq #)

5970. DIRECTED STUDY. (786038) (Cr ar; prereq #)

Course Descriptions

Landscape Architecture (LA)

FIRST TERM

R 1021. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (385054) (4 cr. §Arch 1021; 0800-0955 MWF; Arch 25) Winterrowd
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.

5132. SELECTED PROBLEMS IN LANDSCAPE ARCHITECTURE. (786279) (cr ar; prereq #)

SECOND TERM

R 1022. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE AND LANDSCAPE ARCHITECTURE. (185055) (4 cr. §Arch 1022; 1000-1155 MWF; Arch 25) Winterrowd
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. (487734) If interested in taking BioChem, see BioChem 1301. (5 cr. 1001-1002†, §1004, §1005, §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; lab 1325-1625 MWF, SmithH 210) 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. (187736) (5 cr. 1004-1005†, §1001, §1002, §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. (787738) (4 cr; prereq 1005 or 1032; lect 0905-0955 MTWThF, SciCB 125; 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. (587739) (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. (987740) (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. (787741) (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. (387743) (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. (187744) (Cr ar; prereq #, 4th yr)
Written final senior thesis report.

3970. DIRECTED STUDY. (487748) (Cr ar; prereq #)

On- or off-campus learning experiences, individually arranged between a student and faculty member, in areas not covered by regular courses.

R 5520. ELEMENTARY PHYSICAL CHEMISTRY. (687747) (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. (087745) (Cr and hrs ar; prereq Δ)

8991. SPECIAL TOPICS. (887746) (Cr and hrs ar; prereq Δ)

SECOND TERM

R 1002. CHEMICAL PRINCIPLES AND COVALENT SYSTEMS. (189020) (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 210)

See 1001 First Term.

R 1003. PHYSICAL WORLD, CHEMISTRY. (089026) (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 MWF, 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.

R 1005. GENERAL PRINCIPLES OF CHEMISTRY. (289033) (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.

R 1008. PHYSICAL WORLD, CHEMISTRY. (885723) (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.

R 3302. ELEMENTARY ORGANIC CHEMISTRY II. (389038) (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.

R 3306. ELEMENTARY ORGANIC CHEMISTRY LABORATORY II. (889044) (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. (289047) (Cr ar; prereq #, 4th yr)

See First Term.

3970. DIRECTED STUDY. (989049) (Cr ar; prereq #)

See First Term.

R 5126. MODERN ANALYTICAL CHEMISTRY. (589054) (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.

R 5133. CHEMICAL INSTRUMENTATION AND ANALYSIS LECTURE. (685724) (3 cr, §5126; prereq 1133, 5534; 1220-1415 TW, KoltH S140)

An introduction to the methodology and practices of solving analytical problems. Application of modern instrumental techniques to analysis.

R 5134. CHEMICAL INSTRUMENTATION AND ANALYSIS LABORATORY. (485725) (2 cr; prereq 5133 or concurrent registration; A-N only; 0800-1205 MTWThF; KoltH 297, 299)

R 5521. ELEMENTARY PHYSICAL CHEMISTRY. (889058) (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. (689059) (Cr and hrs ar; prereq Δ)

8992. SPECIAL TOPICS. (889061) (Cr and hrs ar; prereq Δ)

COMPUTER SCIENCE (CSci)

FIRST TERM

¶ 3101. A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING. (4 cr; prereq Math 1111 or 1201 or equiv or #: for non-CSci majors)

FORTRAN computer language with extension: applications; programming techniques. Brings students to advanced level competence in FORTRAN programming. Integral nonscheduled laboratory.

Sec 1, (287749) 1115-1310 MT, 1115-1205 W; Arch 5, Ibarra

Sec 2, (291686) 1115-1310 MT, 1115-1205 W; Phys 131

¶ 3104. INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING. (5 cr; prereq Math 1231 or Math 1331 or Math 1621 or #: intended for CSci majors)

Required introductory course for CSci and Math CSci majors; others require department permission. Problem solving techniques, stepwise refinement, systematic loop design, evaluation criteria, programming style, documentation, design of test data. Applications in PASCAL. Scheduled lab sections.

Sec 1, (687750) 0905-0955 MTWThF; Arch 50, Du

Sec 2, (191687) 0905-0955 MTWThF; Phys 131

¶ 3105. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES I. (685044) (4 cr; prereq 3104 or 3101, Math 1211 or #: informal lab; 1010-1205 TTh, 1115-1205 W; Arch 50) 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. (487751) (4 cr; prereq Math 1231 or 1331 or #: 1010-1205 MW, 1115-1205 Th; Arch 55) Raghaven

Sets and multisets. Proof techniques. Propositional calculus. Combinatorics. Algorithms. Computability and unsolvability. Graphs. Trees.

¶ 5121. INTRODUCTION TO DATA STRUCTURES. (287752) (4 cr; prereq 3106 and 3400 or #: informal lab; 0810-1005 MW, 0910-1005 T; MechE 212) 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. (485045) (4 cr; prereq Math 3142 or #...a knowledge of Pascal or FORTRAN is assumed; informal lab; 1010-1205 MT, 1115-1205 W; MechE 302) 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

¶ 3101. A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING. (190622) (4 cr; prereq Math 1111 or 1201 or equiv or #: for non-CSci majors; 1015-1205 MT; 1115-1210 W; Arch 55)

See First Term.

¶ 3104. INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING. (991688) (5 cr; prereq Math 1231 or Math 1331 or Math 1621 or #: intended for CSci majors; 0905-0955 MTWThF; Arch 55)

See Term I.

¶ 3106. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES II. (285046) (4 cr; prereq 3105 or #: informal lab; 1010-1205 MT, 1115-1205 W; Arch 50)

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.

SCHOOL OF EARTH SCIENCES

Geology and Geophysics (Geo)

FIRST TERM

¶ 1001. PHYSICAL GEOLOGY. (5 cr; each section limited to 26 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, (987754) 1010-1205 MWF, FordH 185

Lab 2, (787755) 1325-1520 MWF, FordH 185

3099. PROBLEMS IN GEOLOGY AND GEOPHYSICS. (587756) (1-6 cr; prereq # and Δ)
Individual research or problem selected on the basis of individual interests and background.

5051. PHYSICAL GEOLOGY FOR TEACHERS. (4 cr, §1001, §1111; each section limited to 4 students; only for students holding degrees in education; prereq 1 term college chemistry or physics; lect 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. (585649) 1010-1205 MWF, FordH 185

Lab 2. (985650) 1325-1520 MWF, FordH 185

5110. FIELD GEOLOGY—June 13-July 22. (387757) (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. (585036) 0905-0955 TTh, Arch 40

Rec 2. (385037) 0905-0955 TTh, Arch 10

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. (185038) 1010-1100 TTh, Arch 40

Rec 2. (385040) 1010-1100 TTh, Arch 55

5001. AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY TEACHERS—July 5-15. (387760) (4 cr; enrollment limited to 30 students; 1300-1730 MTWThF; MechE 108) 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. (187761) (1-4 cr per qtr; prereq #)

Topics of current interest.

8888. PLAN B PROJECT. (586283) (1-4 cr per qtr; prereq grad aerospace engineering and mechanics maj, #; S-N only)

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

5800. PROBLEMS IN MECHANICS AND MATERIALS. (986040) (1-4 cr per qtr; prereq #)

Topics of current interest. Individual projects.

5810. PROBLEMS IN FLUID MECHANICS. (786041) (1-4 cr per qtr; prereq #).

5840. INDUSTRIAL ASSIGNMENT. (087762) (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. (887763) (2 cr; prereq regis in engineering intern program)

5842. INDUSTRIAL ASSIGNMENT. (687764) (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. (085039) 1010-1100 TTh, Arch 40

Rec 2. (185041) 1010-1100 TTh, Arch 20

Rec 3. (085042) 1010-1100 TTh, Arch 45

Course Descriptions

8810. SELECTED TOPICS IN FLUID MECHANICS. (588793) (1-4 cr per qtr; prereq #)
Topics of current interest.

8888. PLAN B PROJECT. (386284) (1-4 cr per qtr; prereq grad aerospace engineering and mechanics maj. #; S-N only)

Chemical Engineering and Materials Science

Chemical Engineering (ChEn)

FIRST TERM

5902, 5903, 5904, 5905. SPECIAL PROBLEMS. (487765) (287766) (187767) (987768) (Cr ar)

8901-8902-8903. RESEARCH. (787769) (187770) (987771) (Cr ar)

SECOND TERM

5902, 5903, 5904, 5905. SPECIAL PROBLEMS. (388794) (188795) (088796) (888797) (Cr ar)

8901-8902-8903. RESEARCH. (688798) (488799) (188800) (Cr ar)

Materials Science (MatS)

FIRST TERM

R 3400. MECHANICAL PROPERTIES OF MATERIALS. (787772) (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. (587773) (4 cr; prereq 3rd-year IT student; 0800-0955 MWF; Arch 20)

Introduction to the relationships between atomic structure and physical properties of metals, semiconductors, glasses, polymers, ceramics, and composites.

5481, 5482, 5483. SPECIAL PROBLEMS. (387774) (187775) (087776) (Cr ar; prereq sr)

8480, 8481, 8482. SELECTED TOPICS: MATERIALS SCIENCE, ENGINEERING. (887777) (687778) (487779) (Cr ar)

SECOND TERM

5481, 5482, 5483. SPECIAL PROBLEMS. (088801) (888802) (688803) (Cr ar; prereq sr)

8480, 8481, 8482. SELECTED TOPICS: MATERIALS SCIENCE, ENGINEERING. (488804) (288805) (188806) (Cr ar)

Electrical Engineering (EE)

FIRST TERM

R 3009. LINEAR CIRCUITS I. (590642) (4 cr; prereq IT major; at least C grades in Math 3221 or *Math 3221, Phys 1281 or *Phys 1281; 0800-0955 MTWThF; Arch 35)

Physical principles underlying the modeling of circuit elements. Two- and three-terminal resistive elements. Kirchhoff's laws. Simple resistive circuits. Linearity in circuits. Storage elements. First- and second-order circuits.

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

R 1400. CIRCUITS LABORATORY. (1 cr; each section limited to 14 students; prereq 3009 or *3009, IT major)
Laboratory to accompany EE 3009 and 3010.

Lab 1, (690633) 1010-1205 T, ElectE 121

Lab 2, (490634) 1220-1415 W, ElectE 121

Lab 3, (290635) 1220-1415 Th, ElectE 121

Lab 4, (190636) 1220-1415 F, ElectE 121

R 3003. CIRCUITS AND ELECTRONICS. (990637) (4 cr; not for EE majors; prereq IT student. Phys 1291, Math 3221, or *Math 3221; 0800-0850 MTWF; Arch 55)

Analysis of linear passive circuits; semiconductor principles, devices, and circuits. Applications to digital circuits, logic elements, microprocessors, and operational amplifiers.

R3004. CIRCUITS AND ELECTRONICS LABORATORY. (1 cr; no EE majors; prereq IT student, 3003 or *3003)

- Lab 1, (790638) 1010-1205 M, ElectE 118
- Lab 2, (590639) 1220-1415 M, ElectE 118
- Lab 3, (990640) 1430-1625 M, ElectE 118
- Lab 4, (790641) 0800-0955 Th, ElectE 118

R 3012. CIRCUITS, SIGNALS, AND SYSTEMS III. (087793) (4 cr; prereq 3011, EE or ME major; 0800-0850 MTWTh; Arch 5)

Continuous, discrete-time systems. Feedback: stability, applications.

R 3052. ELECTRONICS III. (687795) (4 cr; prereq 3051, 3012 or *3012; 0905-0955 MTWF; Arch 5)

Elementary amplifiers at high frequencies; feedback amplifiers, oscillators; differential and operational amplifiers.

R 3351. INTRODUCTION TO LOGIC DESIGN AND MICROPROCESSORS. (4 cr; §5051; each section limited to 16 students; prereq soph standing in IT; lect 1115-1205 MWThF; Arch 10)

Boolean algebra and logic gates. Combination logic and design of sequential logic systems. Basic computer organization and assembly language programming. Instruction types and addressing modes. Subroutines. Integral laboratory.

- Lab 1, (190644) 1010-1205 T, ElectE 210
- Lab 2, (090645) 1220-1415 T, ElectE 210
- Lab 3, (890646) 1430-1625 T, ElectE 210
- Lab 4, (690647) 1220-1415 Th, ElectE 210

R 3402. JUNIOR ELECTRICAL ENGINEERING LABORATORY. (2 cr; each section limited to 14 students; prereq IT student, 3012, 3052, or *3012 and 3052)

- Lab 1, (787805) 1220-1625 T, ElectE 21
- Lab 2, (587806) 0800-1205 Th, ElectE 21
- Lab 3, (387807) 1220-1625 Th, ElectE 21
- Lab 4, (086207) 1220-1625 Th, ElectE 21

R 5051. LOGIC DESIGN AND MICROPROCESSORS. (387810) (4 cr; prereq 3051 or #, IT student or grad IT major; 1115-1205 MTWThF; PWB 2-470)

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, IT student or grad IT major)

- Lab 1, (187811) 1220-1415 M, ElectE 210
- Lab 2, (087812) 1220-1415 W, ElectE 210
- Lab 3, (086160) 0800-0955 Th, ElectE 210
- Lab 4, (490648) 1325-1520 F, ElectE 210

R 5100. ELECTROMAGNETIC FIELDS III. (987799) (4 cr; prereq 3101, IT student or grad IT major; 1010-1100 MTWF; Arch 5)

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, IT student or grad IT major)

- Lab 1, (887813) 1220-1625 alt T, ElectE 35
- Lab 2, (687814) 1220-1625 alt T, ElectE 35
- Lab 3, (487815) 0800-1205 alt Th, ElectE 35
- Lab 4, (086336) 1220-1625 alt Th, ElectE 35

5478. INDUSTRIAL ASSIGNMENT III. (687800) (2 cr; prereq 3477, regis in intern program)

Industrial work assignment in engineering intern program. Grade based on formal written report covering the quarter's work assignment.

5479. INDUSTRIAL ASSIGNMENT IV. (487801) (2 cr; prereq 5478)

See 5478.

SECOND TERM

3010. LINEAR CIRCUITS II. (290652) (4 cr; prereq IT student; at least C grades in 3009, Math 3221, Phys 1291 or *Phys 1291; 0800-0955 MTWThF; Arch 10)

Modeling of lumped-parameter networks. Sinusoidal steady-state analysis. Two-port networks.

Mechanical Engineering

Industrial Engineering/Operations Research (IEOR)

FIRST TERM

R 5030. QUALITY CONTROL AND RELIABILITY. (287802) (4 cr; limited to 30 students; prereq Math 1231, ME 3900 ... IEOR 5000 recommended; 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. (987804) (4 cr; limited to 30 students; prereq Math 1231 ... IEOR 5000 recommended; 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. (187803) (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. (589071) (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. (287816) (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. (987818) (4 cr; limited to 45 students; prereq AEM 3016; 1220-1415 TWThF; AkerH 209) 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. (787819) (4 cr; limited to 50 students; prereq Chem 1014 or Phys 1281, Math 3221 or equiv; 1010-1205 TWThF; Arch 35) 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 3702. BASIC MEASUREMENTS LABORATORY II. (2 crs; each section limited to 16 students; prereq 3701; lect 0905-1000 MW; Arch 10) Marple

Treatment of experimental data, analysis and study of experimental systems via the computer. Static and dynamic characteristics of measurement systems. Fundamental principles of measurement and calibration. Measurement of temperature, pressure, vacuum, humidity, density, viscosity, heating values, speed, power, force, stress-strain, and radioactivity.

Lab 1, (490813) 1010-1205 MW, MechE 370

Lab 2, (290814) 1430-1625 TTh, MechE 370

R 5460. INTERNAL COMBUSTION ENGINES. (987821) (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 3741. INDUSTRIAL ASSIGNMENT. (187817) (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.

R 3742. INDUSTRIAL ASSIGNMENT. (190815) (2 cr; prereq 3741) Springer
See 3741.

R 3743. INDUSTRIAL ASSIGNMENT. (786170) (2 cr; prereq 3742) Springer
See 3741.

5190. ADVANCED ENGINEERING PROBLEMS. (187820) (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 an independent study project.

R 5741. INDUSTRIAL ASSIGNMENT AND DESIGN PROJECT. (485112) (4 cr; prereq 3742) Springer
Solution of system design problems that require the development of criteria, the evaluation of alternatives and generation of a preliminary design. Final report emphasizes design communication and describes the design decision process, analysis and final recommendations.

R 5742. INDUSTRIAL ASSIGNMENT AND DESIGN PROJECT. (990816) (4 cr; prereq 5741) Springer
See 5741.

SECOND TERM

R 3303. APPLIED THERMODYNAMICS. (889075) (4 cr, §3305; limited to 30 students; prereq 3301 or equiv; 1010-1205 TWTf; MechE 321) 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 16 students; prereq Phys 1291, Chem 1004, and 1st-yr calculus; lect 1325-1415 MTWThF; MechE 212) Nevrinceanu
Introduction to materials and processing including physical and metallurgical properties, consolidation, etc. Material processing including machining, welding, and deformation processes.

- Lab 1, (289081) 1430-1625 MW, MechE 70
- Lab 2, (189082) 0800-0955 TTh, MechE 70
- Lab 3, (086403) 1430-1625 TTh, MechE 70

R 5342. HEAT TRANSFER. (589085) (4 cr; limited to 30 students; prereq 3301 and CE 3400 or AEM 3200; 1220-1415 TWTf; Arch 10) 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, (587823) 0800-0955 MTWThF, VinH 364
- Sec 2, (387824) 1010-1205 MTWThF, VinH 364

R 1005. FOUNDATIONS OF ARITHMETIC. (187825) (3 cr; for pre-elementary education students only [no cr for other CLA students]; prereq 1 yr elementary algebra, 1 yr high school geometry or equiv or Δ ; 1010-1100 MTWThF; Arch 10) 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. (4 cr; prereq plane geometry, 2 yrs high school algebra . . . or plane geometry, grade of C or better in 0009)

Analytic trigonometry, identities, equations, and properties of trigonometry functions; right and oblique triangles.

- Sec 1, (087826) 0905-0955 MWF, 0905-1100 TTh, Arch 60
- Sec 2, (790817) 1115-1205 MTTh, 1010-1205 WF, Arch 60

Course Descriptions

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, (887827) 0800-0955 MTWThF, VinH 20

Sec 2, (687828) 1010-1205 MTWThF, VinH 20

R 1131. FINITE MATHEMATICS. (487829) (5 cr; prereq plane geometry, grade of C or better in 1111... or plane geometry, 2 yrs high school algebra; 1010-1205 MTWThF; VinH 1) Stenberg

(For students in the social sciences, behavioral sciences, and prebusiness.) Financial mathematics, probability, linear algebra, linear programming, Markov chains.

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, (887830) 0800-0955 MTWThF, VinH 209

Sec 2, (687831) 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, (487832) 0800-0955 MTWThF, VinH 113

Sec 2, (287833) 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, (187834) 0800-0955 MTWThF, AkerH 211

Sec 2, (987835) 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, (787836) 0800-0955 MTWThF, VinH 16

Sec 2, (587837) 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, (387838) 0800-0955 MTWThF, Phys 210

Sec 2, (187839) 1010-1205 MTWThF, Phys 210

R 3142. INTRODUCTION TO LINEAR ALGEBRA. (587840) (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.

R 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, (387841) 0800-0955 MTWThF, MurH 311

Sec 2, (187842) 1010-1205 MTWThF, MinMet 116

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)

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.

Sec 1, (087843) 0800-0955 MTWThF, AkerH 225

Sec 2, (590818) 1010-1205 MTWThF, AkerH 225

R 3231. VECTOR ANALYSIS. (887844) (4 cr, §5601-5602; prereq grade of C or better in 3211 or equiv; 0905-1100 MWF, 0905-0955 TTh; 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.

R 5082. FOUNDATIONS OF ALGEBRA. (390819) (4 acr; prereq 3211 or equiv or #: 0905-0955 MWF, 0905-1100 TTh; VinH 314)

Groups rings, fields. Applications to number theory and polynomials.

¶ 5209. THEORY OF NUMBERS. (687845) (4 cr; prereq 3211 or equiv or #: 1115-1205 MTTh, 1010-1205 WF; VinH 207)

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. (487846) (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. (287847) (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. (385393) (4 cr; prereq 3211 and 3066, or 3211 and 3221 or equiv or #: 0905-0955 MWF, 0905-1100 TTh; VinH 211)

Applications, review of special techniques, and numerical approximation for first-order equations. Euler and Runge-Kutta methods with error analysis. Applications and power series solutions for second-order equations.

¶ 5567. FOURIER SERIES AND BOUNDARY VALUE PROBLEMS. (790820) (4 cr; prereq 3211, 3066... or 3211, 3221 or equiv or #: 1115-1205 MTTh, 1010-1205 WF; VinH 203)

Partial differential equations of theoretical physics. Fourier Series, proof of convergence, orthogonal systems, Sturm-Liouville systems, solution of boundary value problems by separation of variables, applications.

¶ 5601. ADVANCED CALCULUS. (187848) (4 cr; prereq 3211 or equiv or #: 1115-1205 MTTh, 1010-1205 WF; VinH 211)

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. (185394) (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. (988807) (No cr; prereq 1 yr high school algebra or grade of C or better in 0006; 1010-1205 MTWThF; VinH 113)

See First Term.

¶ 1006. FOUNDATIONS OF ARITHMETIC. (788808) (3 cr; for pre-elementary education students only [no cr for other CLA students]; prereq 1005; 1010-1100 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, (588809) 0905-0955 MWF, 0905-1100 TTh, VinH 20

Sec 2, (988810) 1115-1205 MTTh, 1115-1310 WF, VinH 20

¶ 1111. COLLEGE ALGEBRA AND ANALYTIC 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, (788811) 0800-0955 MTWThF, VinH 1

Sec 2, (588812) 1010-1205 MTWThF, VinH 1

¶ 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, (388813) 0800-0955 MTWThF, VinH 209

Sec 2, (188814) 1010-1205 MTWThF, AndH 350

¶ 1201. PRE-CALCULUS. (5 cr, §1111; prereq 4 yrs high school math including trigonometry)

See First Term.

Sec 1, (088815) 0800-0955 MTWThF, VinH 301

Sec 2, (888816) 1010-1205 MTWThF, VinH 301

Course Descriptions

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, (688817) 0800-0955 MTWThF, VinH 211
Sec 2, (488818) 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, (288819) 0800-0955 MTWThF, Phys 210
Sec 2, (688820) 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, (488821) 0800-0955 MTWThF, VinH 16
Sec 2, (288822) 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, (188823) 0800-0955 MTWThF, Arch 40
Sec 2, (988824) 1010-1205 MTWThF, Arch 60

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, (788825) 0800-0955 MTWThF, Arch 35
Sec 2, (588826) 1010-1205 MTWThF, MechE 212

R 3231. VECTOR ANALYSIS. (388827) (4 cr. §5601-5602; prereq grade of C or better in 3211 or equiv; 1010-1205 MWF, 1010-1100 TTh; MechE 221)
See First Term.

R 5243. LINEAR ALGEBRA WITH APPLICATIONS. (188828) (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. (088829) (4 cr; prereq 5457, or equiv; 1115-1205 MTTh, 1010-1205 WF; VinH 311) Meyers
See 5457 First Term.

R 5602. ADVANCED CALCULUS. (388830) (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. (085395) (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

R 1011. DESCRIPTIVE ASTRONOMY. (987849) (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.

R 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, (287850) 1330-1530 MW, Phys 143
Sec 2, (187851) 0905-1100 TTh, Phys 143
Sec 3, (987852) 1330-1530 TTh, Phys 143

SECOND TERM

R 1011. DESCRIPTIVE ASTRONOMY. (188831) (4 cr, §1021; 0905-1100 MWF; Phys 166)
See First Term.

R 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, (088832) 1330-1530 MW, Phys 143

Sec 2, (888833) 0905-1100 TTh, Phys 143

Sec 3, (485711) 1330-1530 TTh, Phys 143

Physics (Phys)

FIRST TERM

R 1041. INTRODUCTORY PHYSICS. (491055) (4 cr [no cr for IT students except Arch, pre-Arch, environmental design]; §other introductory physics courses; prereq high school algebra and plane geometry; 8 class hrs per wk; 0800-0955 MWF, 0800-0850 TTh; Phys 170)

Lectures and problem sessions. Primarily for students interested in topics useful in technical areas. Mechanics, fluids and gases, heat, waves.

R 1045. INTRODUCTORY PHYSICS LABORATORY. (291056) (1 cr; S-N only [no cr for IT students except arch, pre-arch, environmental design]; limited to 96 students; prereq 1041 or *1041)

Laboratory experiments offered in conjunction with 1041. Lab section assigned first two days of class.

R 5970. DIRECTED STUDIES. (286214) (1-5 cr; prereq #, Δ)

Independent, directed study in physics in areas arranged by the student and a faculty member.

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

R 1271. GENERAL PHYSICS. (787853) (4 cr; prereq Math 1221 or *Math 1221 or Math 1521 or *Math 1521 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.

R 1275. GENERAL PHYSICS LABORATORY. (485398) (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.

R 1281. GENERAL PHYSICS. (587854) (4 cr; prereq 1271, Math 1231 or *Math 1231 or Math 1531 or *Math 1531 or Math 1521 or *Math 1621; may be taken with or without lab 1285; 1010-1100 MTWThF; Phys 170)

Calculus-level general physics course. Heat and electricity.

R 1285. GENERAL PHYSICS LABORATORY. (285399) (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.

R 1291. GENERAL PHYSICS. (387855) (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.

R 1295. GENERAL PHYSICS LABORATORY. (885401) (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.

SECOND TERM

R 1042. INTRODUCTORY PHYSICS. (1910 57) (4 cr [no cr for IT students except arch, pre-arch, environmental design]; §other introductory physics courses; prereq high school algebra and plane geometry; 0800-0955 MWF, 0800-0850 TTh; Phys 170)

Lectures and problem sessions. Primarily for students interested in topics useful in technical areas. Electricity and magnetism, light, optical instruments, atoms and spectra, nuclei, radioactivity.

R 1046. INTRODUCTORY PHYSICS LABORATORY. (991058) (1 cr; S-N only; [no cr for IT students except arch, pre-arch, environmental design]; limited to 96 students; prereq 1042 or *1042)

Laboratory experiments offered in conjunction with 1032. Lab section assigned first two days of class.

R 5954. PRACTICAL PHYSICS FOR PHYSICS TEACHERS. (xxxxxx) (5 cr [no cr for physics grad students or minors]; prereq college level introductory physics; 8 lect hrs and 10 lab hrs per wk; 0905-1100 MTWTh; Phys 131) Jones

Review of basic principles of physics for secondary teaching. Emphasis on laboratory work with simple inexpensive demonstration laboratory devices that adapt readily to high school physics classes.

R 5970. DIRECTED STUDIES. (186215) (1-5 cr; prereq #, Δ)

See First Term.

University College

University College sponsors programs that provide flexibility in degree planning to students whose needs are not met by other programs of the University.

The Inter-College Program (213 Temporary North of Appleby, 376-1253) is a student-designed, credit-based alternative to traditionally structured degree majors. Since 1930 it has allowed students to design an intercollegiate or interdisciplinary program suited to their individual objectives. There is no fixed curriculum, and the student may draw upon the entire University for courses to prepare a degree contract leading to a B.A. or B.S. degree. To be considered for admission, an applicant must have completed at least 80 credits of college work, 15 of them at the University of Minnesota. The application process includes preparing a carefully conceived statement of objectives and a proposed course list. Students generally spend from three weeks to several months planning their degree programs, a process which also requires meetings with ICP program advisers and with University faculty advisers.

University Without Walls, based on the Twin Cities campus (201 Westbrook Hall, 373-3919) and Morris campus (236 Community Services Building, 589-2211) serves self-directed students with clear educational goals who wish to use both University and community resources to develop and carry out an individualized degree program. Many UWW students are unable to participate in traditional programs because of job or family responsibilities, distance from campus, physical handicap, or a similar situation; many cannot pursue their chosen field of study through an existing program

Admission to UWW is based on evidence of ability to plan and carry out a self-designed degree program. A program can incorporate a variety of learning resources including University classes, independent study projects, and community-related learning activities. Experiences prior to admission which might qualify as college-level learning can be evaluated for use toward the degree. Rather than earning credits, UWW students receive written evaluations of their work on a narrative transcript. A student is granted either a B.A. or B.S. degree following approval by a graduation committee and the director of the college.

University College Independent Study (UC 3075), ranging from 3 to 15 credits, is available to students who wish to pursue projects that go beyond the scope of any single department or college of the University. Projects are interdisciplinary in nature or are done in departments that do not have an undergraduate independent study course for nonmajors. The student will be asked to find an appropriate faculty monitor and to complete the UC 3075 independent study contract prior to registering. Further information may be obtained from the Inter-College Program Office.

University College (UC)

FIRST TERM

3075. INDEPENDENT STUDY. (187856) (Cr ar; prereq Δ)

3200. INTRODUCTORY PERIOD. (087857) (Cr ar; S-N only; prereq UWW student, Δ)

3201. DIRECTED STUDIES. (887858) (8 cr; S-N only; prereq UWW student, Δ)

3211. DEGREE PLANNING. (686064) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)

3212. DEGREE PLANNING. (486065) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)

3213. DEGREE PLANNING. (286066) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)

3291. GRADUATION DOSSIER PREPARATION. (986068) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)

3292. GRADUATION DOSSIER PREPARATION. (786069) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)

- 3293. GRADUATION DOSSIER PREPARATION.** (186070) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)
- 3299. GRADUATION DOSSIER EXAMINATION.** (186067) (7 cr; S-N only; prereq UWW student, prior submission of dossier for examination, Δ)
- 3401. DIRECTED STUDIES.** (687859) (Cr ar; prereq University Scholars student, Δ)

SECOND TERM

- 3075. INDEPENDENT STUDY.** (189602) (Cr ar; prereq Δ)
- 3200. INTRODUCTORY PERIOD.** (589605) (Cr ar; S-N only; prereq UWW student, Δ)
- 3201. DIRECTED STUDIES.** (189607) (8 cr; S-N only; prereq UWW student, Δ)
- 3211. DEGREE PLANNING.** (686081) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)
- 3212. DEGREE PLANNING.** (486082) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)
- 3213. DEGREE PLANNING.** (286083) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)
- 3291. GRADUATION DOSSIER PREPARATION.** (186084) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)
- 3292. GRADUATION DOSSIER PREPARATION.** (986085) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)
- 3293. GRADUATION DOSSIER PREPARATION.** (786086) (7 cr [max 21 cr]; S-N only; prereq UWW student, Δ)
- 3299. GRADUATION DOSSIER EXAMINATION.** (586087) (7 cr; S-N only; prereq UWW student, prior submission of dossier for examination, Δ)
- 3401. DIRECTED STUDIES.** (189610) (Cr ar; prereq University Scholars student, Δ)

College of Veterinary Medicine

(All classes scheduled by arrangement)

College of Veterinary Medicine (CVM)

FIRST AND SECOND TERM: FOURTEEN-WEEK COURSE

5760. CLINICS. (887861) (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. (687862) (2.5 cr; prereq regis vet med, 3rd or 4th year or grad student or #: 1300-1450 M; AnScVM 135) Farnsworth, Williamson, others
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.

5364. EQUINE LAMENESS. (191639) (2 cr; prereq regis vet med, 3rd or 4th year, 5352 or #: 1500-1650 M; AnScVM 125) Usenik

All major musculoskeletal diseases affecting the horse that contribute to lameness.

5572. REPRODUCTIVE PATTERNS AND INFERTILITY IN THE DOG AND CAT. (491640) (1 cr; prereq 5570, regis vet med, 3rd or 4th year or grad student or #: 1300-1450 M; AnScVM 125) 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. (487863) (Cr ar; prereq 5650 or equiv or #) Anderson, Diesch, Pullen, others
Individual study arranged with faculty member.

5951. DIRECTED STUDIES. (485403) (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. (285404) (Cr ar; prereq grad student or #) Markham, Muscolpat
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. (185405) (Cr ar; prereq grad student or #) Markham, Muscolpat
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. (985406) (Cr ar) Anderson, Diesch, others
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. (785407) (2 cr; prereq grad student or #: offered 1983 and alternate years) Olson, Stevens, others
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. (585408) (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. (385409) (Cr ar; prereq 5162, 5165, 5172, #) Larson, Hardy, others
Discussions of the diseases of organs or systems in animals from the following etiologic group: prenatal, metabolic, toxic infectious, physical influences.

- 8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES.** (785410) (Cr ar; prereq 5162, SACS 5172, #) Larson, Markham, others
Detailed examination, discussions, and treatment of cases of animal diseases.
- 8292. SEMINAR: VETERINARY MEDICINE.** (885415) (Cr ar; prereq #) Larson, Osborne, others
- 8293. MEDICAL CONFERENCE.** (685416) (Cr ar; prereq 5162, SACS 5172, #) Larson, Osborne, others
Medical, surgical, or obstetrical cases supported by anatomic, bacteriologic, pathologic, physiologic, pharmacologic, and radiologic evaluations whenever applicable.
- 8294. ADVANCED COMPARATIVE IMMUNOCHEMISTRY AND IMMUNOBIOLOGY.** (091472) (3 cr; prereq MicB 5216 or equiv, grad student...others by #) Maheswaran, Muscoplat.
- 8299. RESEARCH IN VETERINARY MEDICINE.** (485417) (Cr ar) V Larson, others
Research problems relating to any aspect of internal medicine or to the various systems in animals.
- 8390. SEMINAR: VETERINARY SURGERY.** (285418) (Cr ar; prereq, 5365, SACS 5360 or equiv, #) Usenik, Wallace
- 8392. ADVANCED LARGE ANIMAL SURGERY.** (185419) (Cr ar; prereq 5365 or equiv, #) Usenik
Surgery of various systems in large animals with preoperative and postoperative evaluation and treatment.
- 8393. PROBLEMS IN LARGE ANIMAL ORTHOPEDICS.** (485420) (3 cr; prereq 5365 or equiv, #) Usenik
- 8395. SURGICAL DISEASES OF THE MAMMARY GLAND OF DOMESTIC ANIMALS.** (285421) (3 cr; prereq 5365, #) Usenik
- 8397. LARGE ANIMAL ANESTHESIA.** (185422) (Cr ar; prereq SACS 5380 or equiv, #)
Special problems associated with anesthesia of large animals.
- 8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES.** (985423) (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.** (785424) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
Physiological and pathological aspects of reproductive endocrinology.
- 8592. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (585425) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
Physiological and pathological aspects of reproductive endocrinology.
- 8593. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (385426) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
Physiological and pathological aspects of reproductive endocrinology.
- 8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION.** (185427) (Cr ar; prereq 5570 or #) Zemjanis, staff
Detailed discussion and laboratory study of specific reproductive disorders.
- 8595. SEMINAR: VETERINARY OBSTETRICS.** (085428) (1 cr)
- 8596. HEREDITY IN ANIMAL DISEASE.** (885429) (3 cr; prereq GCB 3022 or #)
Application of genetic principles of animal disease problems with emphasis upon specific inheritable and familial conditions in domesticated species.
- 8690. ZONOSSES AND COMPARATIVE MEDICINE.** (891473) (Cr ar) R Anderson, Diesch, others
- 8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS.** (185430) (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.** (085431) (2 cr; prereq grad student or #) Stowe
Examination of current literature and case material.
- 8792. SEMINAR IN VETERINARY TOXICOLOGY.** (885432) (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

- 5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH.** (789117) (Cr ar; prereq 5650 or equiv or #) Anderson, Diesch, others
See First Term.
- 5951. DIRECTED STUDIES.** (685433) (1-5 cr; prereq #, ...) See First Term.

Course Descriptions

- 8193.* ADVANCES IN CLINICAL IMMUNOBIOLOGY.** (485434) (Cr ar; prereq grad student or #) Muscoplat
See First Term.
- 8194.* PROBLEMS IN DIAGNOSTIC VIROLOGY, SEROLOGY, AND IMMUNOLOGY.** (285435) (Cr ar; prereq grad student or #) Markham, Muscoplat
See First Term.
- 8195.* PREVENTIVE VETERINARY MEDICINE.** (185436) (Cr ar) Anderson, Diesch, others
See First Term.
- 8197. METABOLIC AND NUTRITIONALLY INDUCED DISEASES OF CATTLE.** (985437) (2 cr; prereq grad student or #; offered 1983 and alternate years) Olson, Stevens, others
See First Term.
- 8199. PROBLEMS IN ECONOMICS OF ANIMAL HEALTH.** (785438) (1-3 cr; prereq #) Sorensen, staff, others
See First Term.
- 8290. ADVANCED VETERINARY MEDICINE.** (585439) (Cr ar; prereq 5162, 5172, #) Larson, Hardy, others
See First Term.
- 8291. ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES.** (985440) (Cr ar; prereq 5162, SACS 5172, #) Larson, Leman, others
See First Term.
- 8292. SEMINAR: VETERINARY MEDICINE.** (785441) (Cr ar; prereq #) Larson, Osborne, others
- 8293. MEDICAL CONFERENCE.** (585442) (Cr ar; prereq 5162, SACS 5172, #) Larson, Osborne, others
See First Term.
- 8294. ADVANCED COMPARATIVE IMMUNOCHEMISTRY AND IMMUNOBIOLOGY.** (691474) (3 cr; prereq MicB 5216 or equiv, grad student...others by #) Maheswaran, Muscoplat.
- 8299. RESEARCH IN VETERINARY MEDICINE.** (385443) (Cr ar) V Larson, others
See First Term.
- 8390. SEMINAR: VETERINARY SURGERY.** (185444) (Cr ar; prereq 5365, SACS 5360 or equiv, #) Usenik, Wallace
- 8392. ADVANCED LARGE ANIMAL SURGERY.** (085445) (Cr ar; prereq 5365 or equiv, #) Usenik
See First Term.
- 8393. PROBLEMS IN LARGE ANIMAL ORTHOPEDICS.** (885446) (3 cr; prereq 5365 or equiv, #) Usenik
- 8395. SURGICAL DISEASES OF THE MAMMARY GLAND OF DOMESTIC ANIMALS.** (685447) (3 cr; prereq 5365, #) Usenik
- 8397. LARGE ANIMAL ANESTHESIA.** (485448) (Cr ar; prereq SACS 5380 or equiv, #)
See First Term.
- 8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES.** (285449) (Cr ar; prereq 5570 or #) Staff
See First Term.
- 8591. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (685450) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
See First Term.
- 8592. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (485451) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
See First Term.
- 8593. ADVANCED ENDOCRINOLOGY OF REPRODUCTION.** (285452) (1 cr; prereq VB 5310, MdBc 5100, MdBc 5101) Zemjanis, staff
See First Term.
- 8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION.** (185453) (Cr ar; prereq 5570 or #) Zemjanis, staff
See First Term.
- 8595. SEMINAR: VETERINARY OBSTETRICS.** (985454) (1 cr)
- 8596. HEREDITY IN ANIMAL DISEASE.** (785455) (3 cr; prereq GCB 3022 or #)
See First Term.
- 8690. ZOONOSES AND COMPARATIVE MEDICINE.** (491475) (Cr ar) R Anderson, others
- 8790. PROBLEMS IN VETERINARY CLINICAL PHARMACOLOGY AND THERAPEUTICS.** (585456) (3 cr; prereq grad student or #) Stowe, Dunlop
See First Term.

8791. SEMINAR IN CLINICAL PHARMACOLOGY AND THERAPEUTICS. (385457) (2 cr; prereq grad student or #) Stowe
See First Term.

8792. SEMINAR IN VETERINARY TOXICOLOGY. (185458) (2 cr; prereq grad student or #) Stowe
See First Term.

Small Animal Clinical Sciences (SACS)

FIRST TERM

5352. SMALL ANIMAL GENERAL SURGERY. (990430) (1 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. (287864) (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. (187865) (Cr ar; prereq grad student or #) McKeever
Individual study involving a research study of a selected dermatologic problem.

8391. ADVANCED SMALL ANIMAL SURGERY. (987866) (Cr ar; prereq CVM 5350 or equiv, #) Wallace, Lipowitz, others
Surgery of the various systems in small animals with preoperative and postoperative evaluation and treatment.

8490. ADVANCED VETERINARY RADIOLOGY. (787867) (Cr ar; prereq 5450, 5451, 5452 or equiv, #) Hanlon, Feeney, others
Advanced radiological procedures and modalities and their interpretation or application to veterinary medicine.

SECOND TERM

8197.* ADVANCED DERMATOLOGIC CLINICS. (589118) (4 cr; prereq grad student or #) McKeever
See First Term.

8198.* PROBLEMS IN VETERINARY COMPARATIVE DERMATOLOGY. (389119) (Cr ar; prereq grad student or #) McKeever
See First Term.

8391. ADVANCED SMALL ANIMAL SURGERY. (789120) (Cr ar; prereq CVM 5350 or equiv, #) Wallace, Lipowitz, Caywood
See First Term.

8490. ADVANCED VETERINARY RADIOLOGY. (589121) (Cr ar; prereq 5450, 5451, 5452 or equiv, #) Hanlon, Feeney, others
See First Term.

Veterinary Biology (VB)

FIRST TERM

5149.* TOPICS OF ORGANOLGY. (587868) (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. (387869) (787870) (587871) (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. (387872) (187873) (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. (087874) (3 cr; prereq 8135, #) Fletcher
Principles, methods, and laboratory exercises in investigating the central nervous system of domestic animals.

Course Descriptions

- 8150. RESEARCH PROBLEMS IN VETERINARY ANATOMY.** (887875) (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.** (687876) (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.** (487877) (Cr ar; prereq 5401 or equiv, #) Staff

SECOND TERM

- 5149.* TOPICS OF ORGANOLGY.** (389122) (1-5 cr [may be repeated for cr]; prereq 5104 or equiv, #) Staff
See First Term.
- 8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY.** (189123) (089124) (889125) (2 cr per qtr; prereq #) Staff
See First Term.
- 8134-8135. COMPARATIVE VETERINARY NEUROLOGY.** (689126) (489127) (4 cr per qtr; prereq 5100, #) Fletcher
See First Term.
- 8136. EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY.** (289128) (3 cr; prereq 8135, #) Fletcher
See First Term.
- 8150. RESEARCH PROBLEMS IN VETERINARY ANATOMY.** (189129) (1-5 cr; prereq #) Czarnecki
See First Term.
- 8349. RESEARCH IN PHYSIOLOGY.** (489130) (Cr ar, §AnSc 8830; prereq #) Staff
See First Term.
- 8448. PROBLEMS IN VETERINARY PHARMACOLOGY.** (289131) (Cr ar; prereq 5401 or equiv, #) Staff

Veterinary Pathobiology (VPB)

FIRST TERM

- 5521. SURGICAL PATHOLOGY.** (287878) (3 cr; prereq #) Barnes, staff
Preparation and interpretation of surgical and necropsy specimens.
- 5522. DIAGNOSTIC PATHOLOGY.** (187879) (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.** (085722) (2-3 cr; prereq #) Leininger, staff
Gross and microscopic pathology of laboratory animals.
- 5524. PATHOLOGY OF SPONTANEOUS DISEASES OF POULTRY.** (487880) (3 cr; prereq #) Walser
Gross and microscopic pathology of spontaneous diseases of chickens, turkeys, and game birds.
- 5709. PREVENTIVE AVIAN MEDICINE.** (990427) (1 cr; prereq regis vet med, 4th year or grad student or #: 1500-1650 M; VetS 145) Newman, Halvorson
Preventive avian disease programs and management practices. Visits to poultry and aviary establishments.
- 8530. ONCOLOGY.** (291476) (4 cr; prereq #: offered 1983 and alternate years) Hayden, Leininger, Staff
Spontaneous and induced mammalian neoplasm with emphasis on diagnosis.
- 8531. VETERINARY NECROPSY.** (287881) (1-2 cr; prereq 5501, 5502, 5503, #) O'Leary, staff
Necropsy techniques, examination of tissue sections, and preparation of records.
- 8533. PROBLEMS: PATHOLOGY.** (187882) (Cr ar; prereq #) Johnson, staff
- 8534. PROBLEMS: CLINICAL PATHOLOGY.** (987883) (Cr ar; prereq #) Perman, Stevens
- 8648. PROBLEMS IN VETERINARY PARASITOLOGY.** (787884) (Cr ar; prereq 5602 or equiv, #) Bemrick, Schlott-hauer, Stromberg
- 8720. ADVANCED VETERINARY MICROBIOLOGY.** (587885) (Cr ar; prereq #) Staff
Special topics, techniques, collateral reading, and conferences.
- 8721. ADVANCED POULTRY DISEASES.** (387886) (Cr ar; prereq 5704, #) Halvorson, Newman
Investigation of infectious disease problems of poultry.
- 8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY.** (187887) (2 or 4 cr; prereq #) Ward
Lectures and laboratory in techniques of diagnostic mycology, bacteriology, virology, and serology.

8725. CELL CULTURE TECHNIQUES. (087888) (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. (189132) (3 cr; prereq #) Barnes, staff
See First Term.

5522. DIAGNOSTIC PATHOLOGY. (989133) (5 cr; prereq #) Barnes
See First Term.

5523. PATHOLOGY OF SPONTANEOUS DISEASES OF LABORATORY ANIMALS. (186389) (2 cr; prereq #)
Leininger, staff
See First Term.

5524. PATHOLOGY OF SPONTANEOUS DISEASES OF POULTRY. (789134) (3 cr; prereq #) Walser
See First Term.

8531. VETERINARY NECROPSY. (589135) (1-2 cr; prereq 5501, 5502, 5503, #) O'Leary, staff
See First Term.

8533. PROBLEMS: PATHOLOGY. (389136) (Cr ar; prereq #) Johnson, staff

8534. PROBLEMS: CLINICAL PATHOLOGY. (189137) (Cr ar; prereq #) Perman, Stevens

8648. PROBLEMS IN VETERINARY PARASITOLOGY. (089138) (Cr ar; prereq 5602 or equiv, #) Bemrick, Schlotthauer, Stromberg

8720. ADVANCED VETERINARY MICROBIOLOGY. (889139) (Cr ar; prereq #) Staff
See First Term.

8721. ADVANCED POULTRY DISEASES. (189140) (Cr ar; prereq 5704, #) Newman, Halvorson
See First Term.

8724. ADVANCED VETERINARY DIAGNOSTIC MICROBIOLOGY. (089141) (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 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 Darland 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), education (emphasis art), education (emphasis music), educational psychology (emphasis counseling), English, history, and communicative disorders.

Master of science degree programs are offered in biology, chemistry (analytical, inorganic, organic, physical, or biochemistry), geology, and physics. 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 Darland 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 Darland Administration Building, University of Minnesota, Duluth, Minnesota 55812. *Applicants should specify their proposed major field when requesting application forms.*

Applications for summer 1983 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 2 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 who hold 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 Darland 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 Darland 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 cannot register by mail, but must pick up registration materials in 431 Darland 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) 726-7281.

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 Montague Hall, 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 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: Director of Graduate Study, 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

Social development is the process of planned systems change to bring about a better fit between human needs and social policies and programs. On the undergraduate level the goal of the school is to prepare students for beginning social work practice. These beginning practitioners are seen as generalists, capable of performing in change agent roles with individuals, families, small groups, and larger social systems. The undergraduate program leads to a bachelor of social work degree. The master of social work degree is offered at the graduate level. The graduate curriculum provides content in policy development, planning, administration, community organization, research, program evaluation, and services to families and individuals. This program normally requires two academic years to complete, although a 12-month Advanced Standing program is available for qualified students. The graduate program includes a six-month field block project. For more information, contact: School of Social Development, 295 Marshall W. Alworth Hall, University of Minnesota, Duluth, MN 55812.

MASTER OF EDUCATION DEGREE

This professional graduate degree program is intended for educators and persons serving educative functions in such fields as business, medicine, industry, and public agencies. Programs of study are tailored to meet the professional development needs of individual students. 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, inservice leadership, field research projects, and intensive learning experiences. Participants are expected to demonstrate competency in those areas that are representative of master teaching.

Admission decisions take into account a candidate's record of scholastic achievement; measures of academic 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: Vern Simula, Director, the Master of Education Program, College of Education, 125 Bohannon Hall, University of Minnesota, Duluth, MN 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) 726-7192.

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 in June and running through the middle of August. Five 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 two musicals and three dramatic shows. 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 Darland 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 1983 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
ApH, Appleby Hall
Arch, Architecture Building
Armory, Armory Building

BellMus, Museum of Natural History
BFAB, Bierman Field Athletic Building
Botany, Botany Building
BotGn, Botany Greenhouse
BoynHS, Boynton Health Service
BuH, Burton Hall

GenH, Centennial Hall
ChDev, Child Development Building
ChRC, Children's Rehabilitation Center
CivMinE, Civil and Mineral Engineering
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
KoltH, Koltthoff Hall

LindH, Lind Hall
LinL, Linac Laboratory
LyonL, Lyon Laboratories

MasCanCtr, Masonic Cancer Center
Mayo, Mayo Memorial Building
MDH, Minnesota Department of Health

MechE, Mechanical Engineering Building
MinMet, Mines and Metallurgy Building
MlrdH, Millard Hall
NMA, 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 Gymnasium
PeikH, Peik Hall
Phys, Tate Laboratory of Physics
PIH, Pioneer Hall
PillsH, Pillsbury Hall
PolDB, Police Department Building
PtH, Pattee Hall
PWB, Phillips-Wangensteen Building

RampA, Parking Ramp (Washington Ave at
Union St)
RampB, Parking Ramp (South of Coffman
Union)

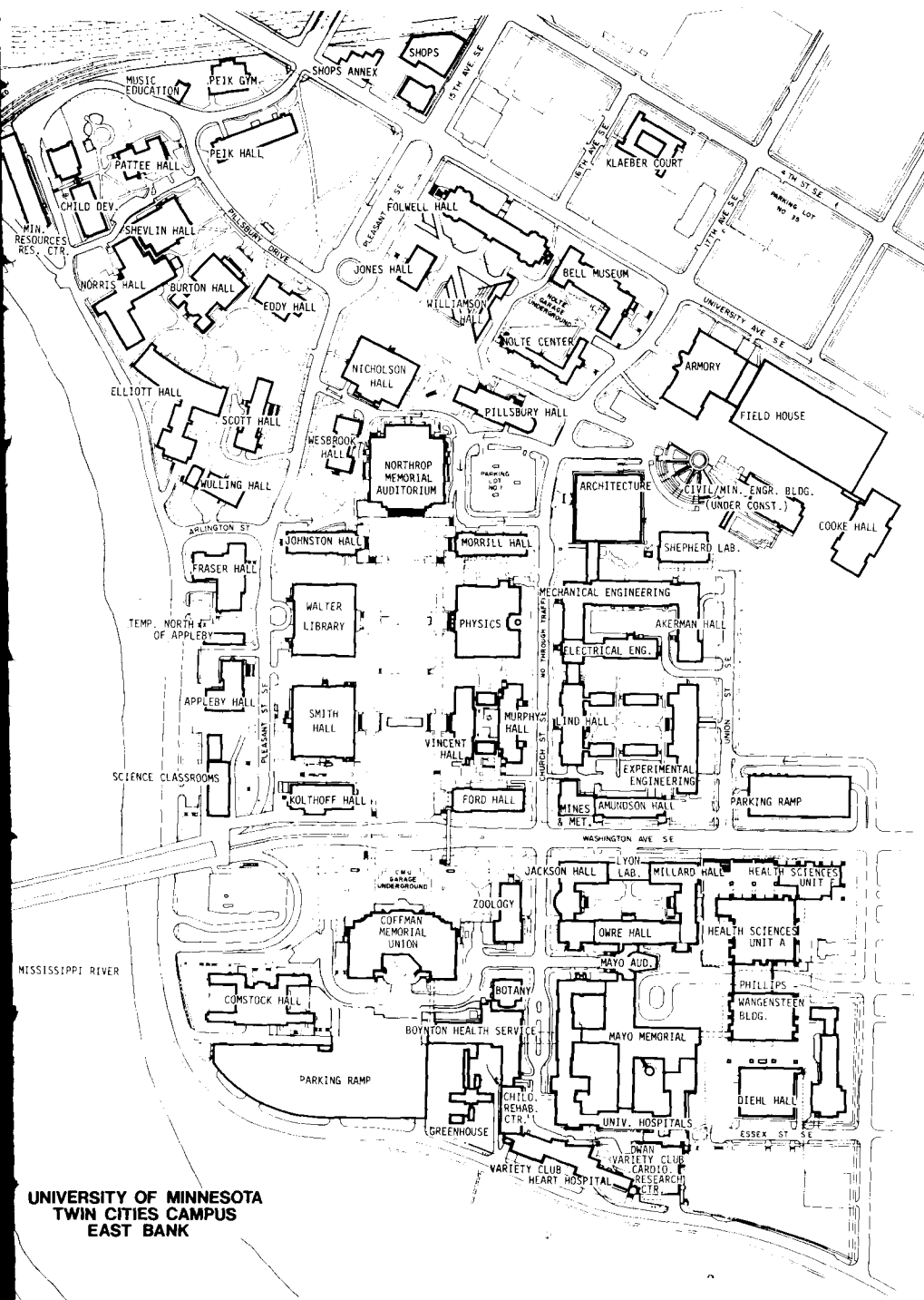
SaH, Sanford Hall
SciCB, Science Classroom Building
ScottH, Scott Hall
ShAn, Shops Annex
ShepLab, Shepherd Laboratories (formerly
Space Science Center)
ShevH, Shevlin Hall
SmithH, Smith Hall
Stad, Stadium

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)

OMWL, O. Meredith Wilson Library

BlegH, Blegen Hall

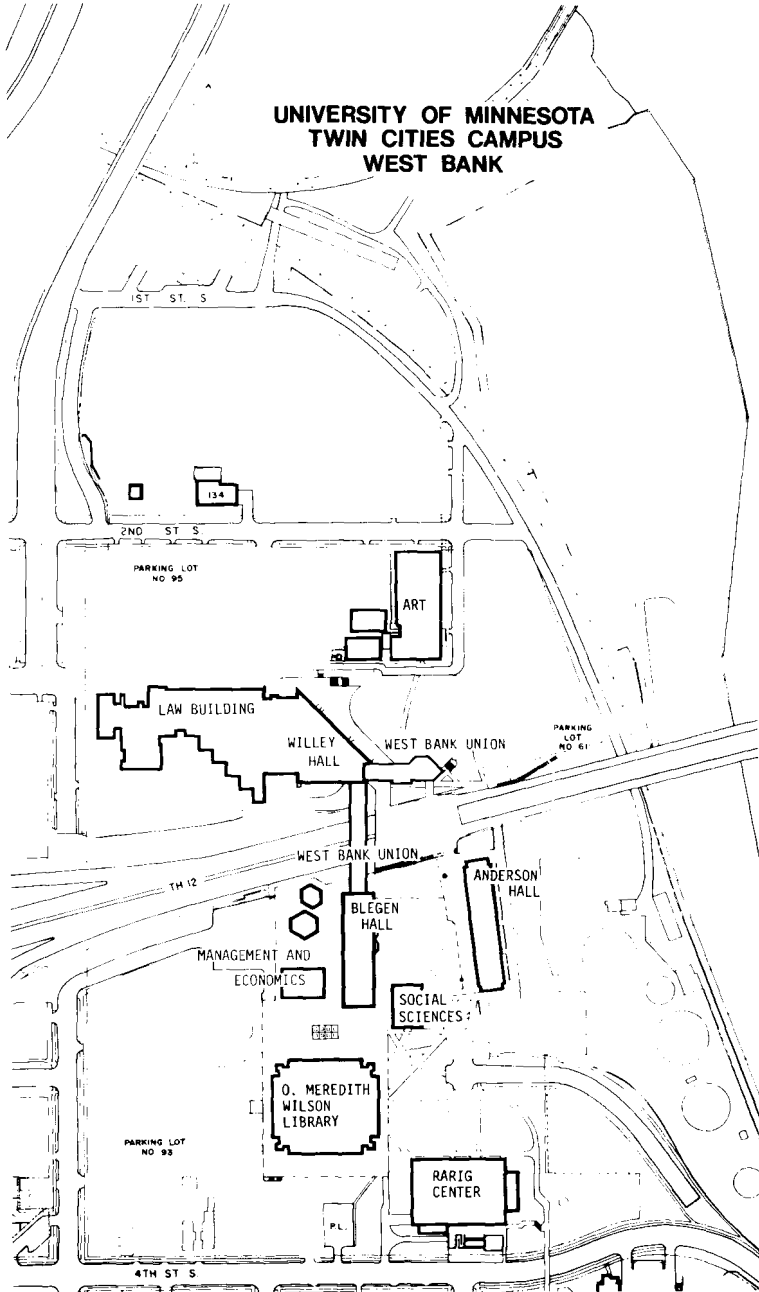
RarigC, Rarig Center

Law, Law Building

SBkSt, Smith Bookstore
SocSci, Social Sciences Building

MdbH, Middlebrook Hall
Mgmt/Econ, Management Economics Building

WBU, West Bank Union
WilleyH, Willey Hall



**UNIVERSITY OF MINNESOTA
TWIN CITIES CAMPUS
WEST BANK**

ST. PAUL

ABLMS, Andrew Boss Laboratory—Meat Science
AdmServ, Administrative Services Building
(2610 University Ave)
AgEng, Agricultural Engineering Building
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
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
CiaOff, Classroom-Office Building
CofH, Coffey Hall
CrRes, Crops Research Building

DCB, Dairy Cattle Barn
DinC, Dining Center

EBCEC, Earle Brown Continuing Education Center

FCFH, Farm Crops Field House
FScN, Food Science and Nutrition

GorL, Gortner Laboratory of Biochemistry
GrnH, Green Hall
Gym, Gymnasium

HB, Horse Barn
HckrH, Haecker Hall
HodsonH, Hodson Hall

KaufL, Kaufert Laboratory

LewisH, Lewis Hospital for Companion Animals

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
PlSci, Plant Sciences Building
PPFL, Plant Pathology Field Laboratory

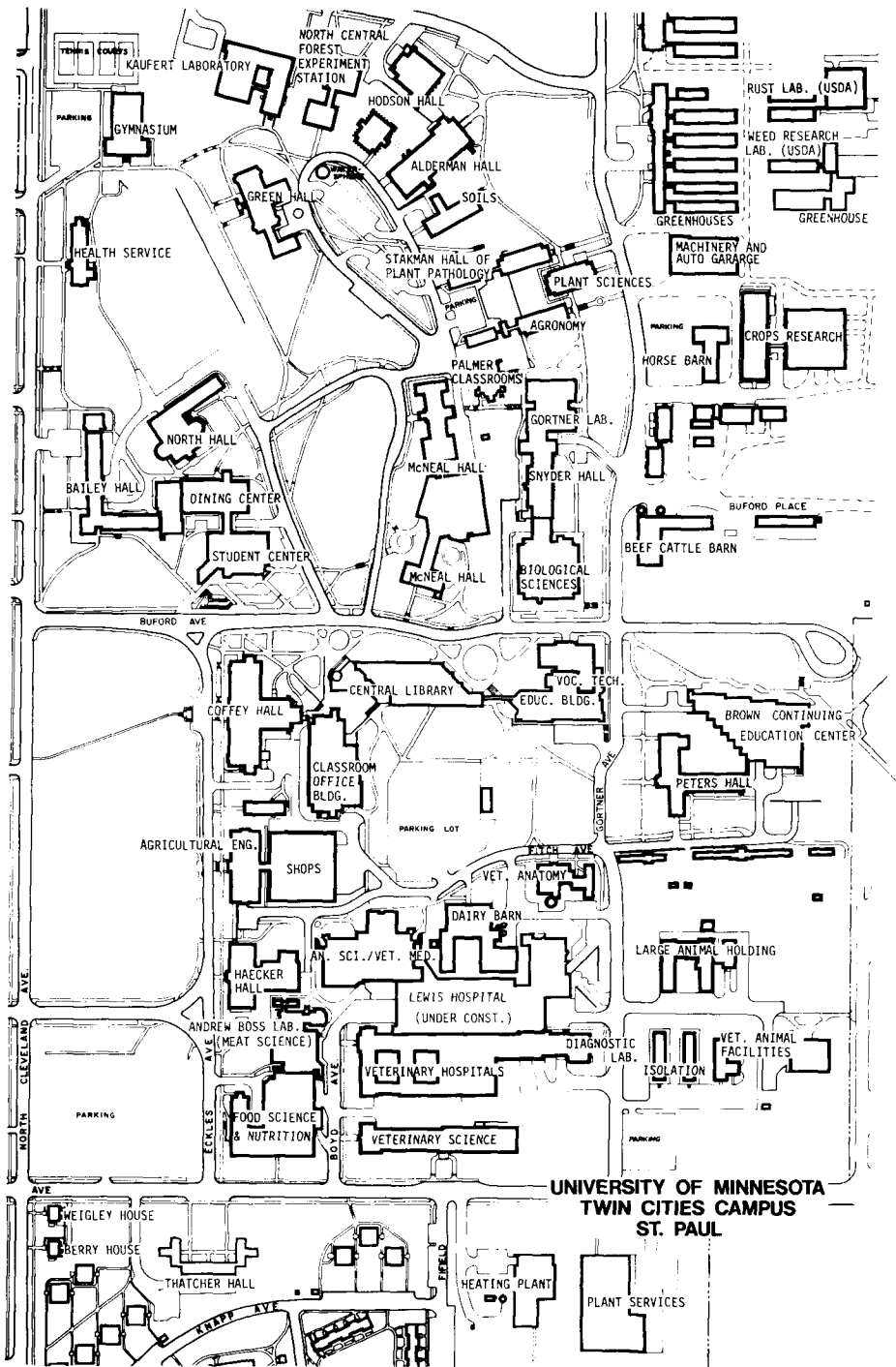
RustL, Rust Laboratory (USDA)

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, 236
Accounting, 196
Admission, 7
Adult and Teacher Education, 72
Adult Psychiatry, 127
Aerospace Engineering and
Mechanics, 43, 211
Afro-American Studies, 150
Agricultural and Applied
Economics, 54
Agricultural Education, 94
Agricultural Engineering, 54
Agricultural Journalism, 55
Agriculture, 55
Agriculture, College of, 54
Agronomy and Plant Genetics, 56
American Indian Studies, 150
American Studies, 150
Anatomy, 114
Ancient Near Eastern
and Jewish Studies, 179
Anesthesiology, 115
Animal Science, 56
Anthropology, 151
Application form, Summer-Only, 247
Arabic, 188
Architecture, 207
Army ROTC, 42, 205
Art Education, 70
Art History, 152
Arts, Studio, 153
Arts Study Center, 44
Astronomy, 218
Auditors, 19
- Bell Museum of Natural History, 31
Biblical Hebrew, 40
Biochemistry
College of Biological Sciences, 61
Medical School, 115
Biological and Medical Technical
Terms (see Classics), 155
Biological Sciences, College of, 61
Biology, 61
Biology Session, Lake Itasca, 64
Biometry, 137
Botany, 62
Boynton Health Service, 26
Building Abbreviations, 236
Bus Service, 24
Business Administration, 197
Business and Distributive
Education, 38, 95
Business Finance, 197
Business, Government, Society, 197
Business Law, 197
- Calculus (see Mathematics), 215
Calendar, 2
Campus Assistance Center, 23
Cancel-Add, 14
Chase lecture (Children's
Lit), 34
Chemical Engineering and Materials
Science, 212
Chemistry, 208
Child and Adolescent Psychiatry, 129
Child Care Center,
University, 22
Child Development, Institute of, 34, 68
Child Psychology, 68
Chinese, 158
Chinese Nankai Institute, 40
Classics, 155
Cloquet Forestry Center, 105
Coffman Memorial Union, 28
College Offices, 12
Commencement, 11
Committee on Institutional
Cooperation, 43
Communication Disorders, 156
Communication Workshops, 41
Composition and Communication, 157
Computer Science, 210
Concerts and Lectures, 30
Counseling and Student Personnel
Psychology, see PsyS, 82
Counseling Services,
College of Education, 67
College of Liberal Arts, 23
Course Designators, 49
Course Descriptions, 53
Credits, Number of
(Amount of Work), 19
Curriculum and Instruction, 34, 70
Curriculum and Instructional Systems, 70
- Dance, 88
Dates of Summer Session, 2

Degree Candidates, 11
 Degrees, Regulations
 Concerning, 20
 Dental Public Health, 138
 Dentistry, School of, 109
 Departmental Offices, 51
 Deposit Cards, 18
 Dermatology, 116
 Design, 145
 Digital Information Access Line
 (DIAL), 23
 Disabled Student Services, 23
 Dormitories, 22
 Duluth, University of Minnesota, 228

 Earth Sciences, 210
 East Asian Studies, 158
 Ecology and Behavioral
 Biology, 63
 Economics, 159
 Educational Administration, 35, 79
 Educational Psychology, 37, 82
 Education: Adult and Teacher, 72
 Education, College of, 67
 Electrical Engineering, 212
 Elementary Education, 72
 Employment Service, Student, 24
 Endodontics, 110
 Engineering, 211
 English, 161
 English as a Second Language, 41
 Entomology, 57
 Environmental Health, 138
 Epidemiology, 43, 139
 Equal Opportunity Statement, 3
 Examinations, 19

 Family Practice and
 Community Health, 116
 Family Social Science, 146
 Fees,
 Biology Session,
 Lake Itasca, 64
 Course, 17
 Refund of, 19
 Special, 18
 Fieldwork Opportunities, 40
 Financial Aid, 15
 Finnish, 185
 Fisheries and Wildlife, 58
 Food Science and
 Nutrition, 58, 147
 Foreign Study, 39, 163
 Forest Products, 104
 Forest Resources, 103, 104

 Forestry, College of, 103
 Forestry Session, Lake Itasca, 103
 Forestry Workshop, Cloquet
 Forestry Center, 105
 French, 163
 French and Italian, 163
 Freshmen, Incoming, 8

 Gallery, University, 30
 General College, 106
 Genetics and Cell Biology, 63
 Geography, 164
 Geology Field Study, 43
 Geology and Geophysics, 210
 German, 165
 Golf, 89
 Grading, 19
 Graduate Students, 9
 Guide to the Bulletin, 4

 Health Clearance, 13
 Health Education, 136
 Health Psychology, 139
 Health Sciences, 109
 Health Service,
 Fee Exemption, 16
 Hebrew, 40, 179
 High School Students, 8
 High School Students,
 Musicians Honors Program, 42
 Higher Education, 81
 History, 166
 History and Philosophy of
 Education, see SPFE, 81
 Holds on Registration, 14
 Home Economics, College of, 145
 Home Economics
 Education, 39, 97
 Hospital and Health Care
 Administration, 141
 Hospitalization Insurance, 15
 Hours and Days, 5
 Housing Office, 22
 Humanities, 168
 Human Relations, 85
 Humphrey Institute of Public Affairs, 206

 Industrial Education, 39, 98
 Industrial Engineering, 214
 Industrial Relations, 198
 Insurance, Risk Management and, 203
 Intensive Language Study, 40
 Interdepartmental Study, 169
 Interdisciplinary Medicine, 117

Italian, 164
 Itasca Forestry and Biology Station
 Biology Session, 64
 Forestry Session, 103

 Japanese, 158
 Jewish Studies, 179
 Journalism and Mass
 Communication, 41, 170

 Laboratory Medicine, 117
 Laboratory Medicine and
 Pathology, 117
 Landscape Architecture, 66, 208
 Large Animal Clinical Sciences, 222
 Late Fees, 2
 Latin, 40, 156
 Law School, 149
 Liberal Arts, College of, 150
 Library Facilities and Services, 26
 Library School, 171
 Linguistics, 172

 Mail Registration, 14, 34, 67
 Management, 199
 Management Information
 Systems, 200
 Management, School of, 196
 Maps and Building Abbreviations, 236
 Marketing, 201
 Master of Business
 Administration, 42, 201
 Maternal and Child Health, 142
 Mathematics, 215
 Mathematics Education, 75
 Mechanical Engineering, 214
 Medical & Biological Technical
 Terms (see Classics), 155
 Media Generalist Licensure, 34
 Medical School, 114
 Medical Technology, 118
 Medicine, 119
 Metallurgy/Materials Science, 212
 Microbiology, 120
 Military Science, 205
 Minnesota Public Interest
 Research Group (MPIRG), 16
 Minnesota Union, 28
 Missing Information, 5
 Morris, University of Minnesota, 235
 Mortuary Science, 133
 Museum of Natural History, 31
 Music, 172

 Music, Applied, 173
 Music Education, 87
 Musicians Program, High School, 42

 Near and Middle
 Eastern Studies, 179
 Neurology, 121
 Neurosurgery, 121
 Nursery School, 34
 Nursing, School of, 134

 Obstetrics and Gynecology, 122
 Occupational Information Library, 23
 Occupational Therapy, 126
 Offices, College, 12
 Operations Management, 202
 Operations Research, 214
 Ophthalmology, 123
 Oral and Maxillofacial Surgery, 110
 Oral Biology, 111
 Oral Pathology, 111
 Oral Radiology, 112
 Orthodontics, 112
 Orthopaedic Surgery, 123
 Otolaryngology, 124

 Pathology, 125
 Pediatric Dentistry, 113
 Pediatrics, 125
 Periodontology, 113
 Personal Orientation
 (How to Study), 180
 Pharmacology, 126
 Pharmacy, College of, 136
 Philosophy, 180
 Photography, 154
 Physical Education, 36, 88
 Physical Medicine and
 Rehabilitation, 126
 Physical Therapy, 126
 Physics, 219
 Physiology, 127
 Plant Breeding, 56
 Plant Pathology, 59
 Political Science, 181
 Post Office, University, 23
 Prerequisites, 4
 Prosthodontics, 114
 Psychiatry, 127
 Psychoeducational Studies, 82
 Psychological Foundations, 85
 Psychology, 182
 Public Affairs, Humphrey Institute of, 206

- Public Health, 136
- Public Health, School of, 136
- Public Health Administration, 142
- Public Health Nursing, 143
- Public Health Nutrition, 143

- Quadna, Summer Arts Study, 44
- Quantitative Analysis, 203

- Radiology, 131
- Reading and Study Skills Center, 23
- Recreation, 37, 92
- Recreation and Park Administration, 92
- Refunds, 19
- Regents' Scholarships, 15
- Registration, 12
 - Changes in, 14
 - Dates, 12
 - Mail, 14
 - Offices, 12
 - Procedures, 12
- Religious Studies, 184
- Rhetoric, 59
- Risk Management and Insurance, 203
- Russian, 184

- Scandinavian, 185
- School Health
 - Education, 93
- Secondary Education, 76
- Senior Citizens, 9
- Showboat, 31
- Slavic and East European Languages, 184
- Small Animal Clinical Sciences, 225
- Small Group Communication Workshops, 41
- Social, Psychological, and Philosophical Foundations, 81
- Social Work, 185
- Sociology, 186
- Soil Science, 60
- South and Southwest Asian Studies, 188
- SPAN Association, 39
- Spanish, 189
- Spanish-Portuguese, 190
- Special Education, See PsyS, 82
- Special Programs, Workshops, 34
- Speech-Communication, 190
- Sports Facilities, 30

- Statistics, 192
- Student Center, St. Paul, 29
- Student Counseling Bureau, 23
- Student Educational Records,
 - Access to, 3
- Student Employment Service, 24
- Student Services Fee, 15
- Student Teaching, 68
- Studio Arts, 153
- Summer Arts Study Center, 44
- Summer-Only Application form, 247
- Summer-Only Students, 7
- Surgery, 132
- Swimming, 88
- Symbols, 4

- Technical Terms of the Medical & Biological Sciences (see Classics), 155
- Technology, Institute of, 207
- Tennis, 89
- Textiles and Clothing, 148
- Theatre Arts, 193
- Theatre, University, 31
- Therapeutic Radiology, 132
- Transfer Students, 8
- Transient Students, 9
- Transportation, 204
- Tuition, 15

- Union, Minnesota, 28
- University Child Care Center, 22
- University College, 220
- University Gallery, 30
- University Theatre, 31
- Urban Studies, 194
- Urologic Surgery, 132

- Veterinary Biology, 225
- Veterinary Medicine,
 - College of, 222
- Veterinary Pathobiology, 226
- Veterinary Public Health, 144
- Vocational and Technical Education, 38, 94
- Vocational Education, 101

- West Bank Union, 28
- Women's Studies, 195
- Workshops, Special Program, 34

- Youth Development and Research,
 - Center for, 148



SUMMER-ONLY REGISTRATION
University of Minnesota

Summer Term _____ I _____ II _____ 19_____

Please print clearly. **See instructions on page 13.**

Social Security Number _____ - _____ - _____ ID Number _____
(previous U of M student)

Name _____
last first middle/former

Address _____
street city state zip county

Phone _____ / _____ - _____ Address/Phone Suppress (check if you do not want released)

Are you a U.S. citizen? Yes No

Male Female Birthdate _____
month day year

U of M college in which you are now registering _____

Mailing address for grades _____
(if different from above)

Have you ever been registered for class at any campus of the U of M? Yes No

If yes:

Day (including past summers) Extension

If Day:

Date of last enrollment _____ College _____

Name (if different) _____

Have you applied to or been admitted to the U of M in the past 2 years? Yes No

If yes:

College _____ Term/Yr _____

Projected degree date _____

Have you received an admission letter? Yes No

Previous School _____ Type _____
(most recent) (coll., high sch., voc. inst.)

Major field of study _____ Approximate GPA _____

Did you graduate? Yes No

If Yes: Degree earned _____ Date _____

Number of Credits Earned (indicate quarter or semester) _____

Are you in good standing at your previous college/school? Yes No

for college use only

approved for summer-only registration

college code _____

approved for special program

college approval or stamp

date

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 27 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 2 and May 27.
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 _____

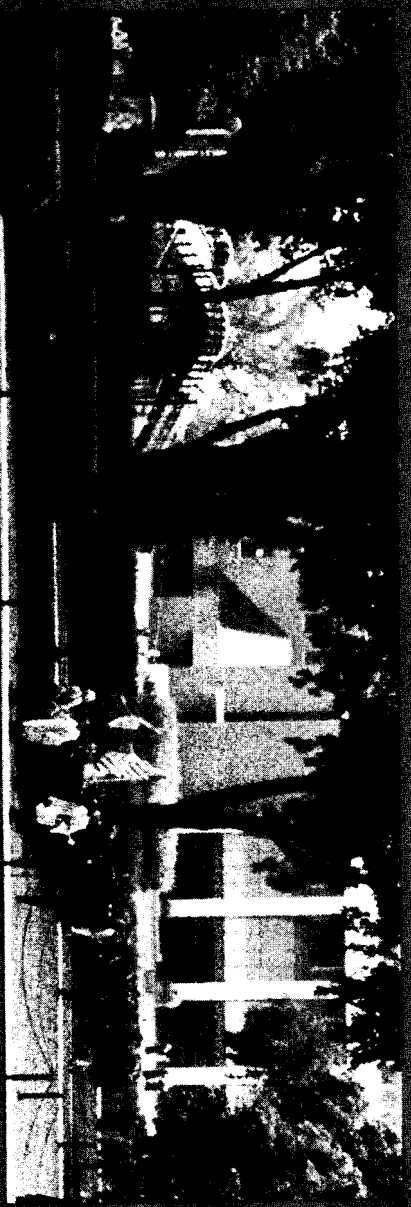
Not a teacher but registering for Education Courses _____

UNIVERSITY OF MINNESOTA
TWIN CITIES

Summer Session
135 Johnston Hall
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Minneapolis, Minnesota 55455

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University of Minnesota Bulletin

Lake Itasca Biology Session

Summer 1983



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Cover photo by Donald L. Rubbelke, Assistant Professor, St. John's University
Photos pages 14 and 24 by John Weiss, Rochester Post-Bulletin

mj

Lake Itasca Biology Session

First Term June 12-July 16

Second Term July 17-August 20

CONTENTS

General Information	2
Research and Academic Opportunities	2
Admission and Registration Information	3
Tuition, Fees, and Other Costs	7
Living Arrangements	8
Faculty and Staff	10
Courses of Instruction	15
Publications	18
Application and Information Forms	22, 23
Map of Itasca State Park	inside back cover

Bulletin Use

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

Equal Opportunity Statement

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, University of Minnesota, 100 Church Street S.E., Minneapolis, MN 55455 (612/373-7969), or to the Director of the Office of Civil Rights, Department of Education, Washington, DC 20202, or to the Director of the Office of Federal Contract Compliance Programs, Department of Labor, Washington, DC 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 enrollment and enrollment termination, 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, 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).

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, phycology, 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, Orley R. Taylor, professor, Department of Systematics and Ecology, Kansas State University, will be with the course the full five weeks, and three 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 only the summer session may do so without filing an application for admission to the University, provided they are in good standing and are not degree candidates.

Graduate Students—Any student who holds a bachelor's degree and plans to use credits earned in summer session toward a graduate degree or expects to receive graduate credit for such work should apply for admission directly to the Graduate School. The application must be submitted complete in every detail — one official transcript from each college attended, the application (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 13, 1983, for first term; Monday, June 13, 1983, 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 application (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.

Maltin and Josephine Herz Foundation Fellowship is offered to encourage an outstanding student in ornithological research. For information and applications write to the Program Director, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.*

Fisheries 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 Program Director, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.*

For information concerning *Landscape Architecture Scholarships*, write to the Landscape Architecture Program, 205 North Hall, University of Minnesota, 2005 Buford Avenue, St. Paul, Minnesota 55108.

*Applications for the Herz Fellowship and the Fisheries and Wildlife Scholarships are due on April 10.

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, Program Director, 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 10, 1983.

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 Program Director of the Field Biology Program. Only University of Minnesota students may apply for graduate teaching assistant positions and College Work-Study Program jobs. Deadline for job applications is April 10.

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, Program Director, 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 10 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 12 for first term and July 17 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.

Twin Cities students should complete their registration by picking up a fee statement prior to the beginning of the session at the Registration Center on the St. Paul campus (130 Coffey Hall).

Out-of-town students can complete registration at the station on June 12 for first term or on July 17 for second term. The necessary cards will be held with the reservation until these students arrive for registration.

Students must register each term for seven to ten credits. A maximum load may include one ten-credit course, or two five-credit courses, or one five-credit course and a research problem (two to five credits). Graduate students who are conducting research for a dissertation may enroll in a thesis only program.

REGISTRATION AT ITASCA

Scheduled times for registration are as follows:

Term I—June 12

9:00-11:30 a.m.

1:30-4:00 p.m.

Term II—July 17

9:00-11:30 a.m.

1:30-4:00 p.m.

It is important that all students be at the station on June 12 (term I) and July 17 (term II) for a general meeting at 8 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 Program Director. In the event of cancellations, students on the waiting list will be accommodated first.

Changes in registration must be approved by the Program Director and are strongly discouraged after registration day (June 12 first term; July 17 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 Director. Cancellation for any reason should be reported immediately to the director 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 12 for first term or July 17 for second term. The following amounts were charged in the 1982 summer terms. Final determination of tuition and fees for the 1983 terms had not been made at the time this bulletin was printed.

	<i>5 credits</i>	<i>10 credits</i>
Tuition	\$132.50	\$265.00
Student Services Fee	20.00	20.00
Laboratory Fee	<u>8.50</u>	<u>8.50</u>
	\$161.00	\$293.50

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 12 or July 17 without the approval of the Program Director of the Field Biology Program and payment of the late registration fee, as follows:

June 13-17 or July 18-22	\$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 12 or July 17	Five workdays after registration
June 13-17 or July 18-22	June 17 or July 22
Thereafter	One workday after registration

ROOM AND BOARD COSTS

There is a service charge of \$30 per term for dormitory facilities. A charge of \$235 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.

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 Biol 5816, 5850; Bot 5801; EBB 3800, 5814, 5817, 5820, 5834, 8800; LA 5227; PIPa 5102.

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 Program Director. 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 Program Director.

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 1983 *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 Program Director. 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 Program Director before using recreational equipment and engaging in recreational activities.

GUIDELINES

Campus regulations are kept at a minimum. Students are expected to keep their own quarters clean and orderly. Students may bring their own cars, but garages and repair services are not provided. Weekend absences and extended field trips 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, Program Director
Diane M. Berube, Executive Secretary

Building and Grounds

Daniel Traun, Resident Manager

Research

David M. Bosanko, Resident Biologist

Library

Thomas J. English, Jr., Librarian

Dining Club

Beatrice Axelrod

Infirmary

To be announced.

SUMMER FACULTY

Donald Alstad, Assistant Professor, University of Minnesota, studies the structure of suspension feeding stream communities and the population biology of insect herbivores, particularly the coevolutionary interactions of scale insects and pines. (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)

Jon B. Burley, Assistant Professor, North Dakota State University, is an occasional lecturer at the University of Minnesota. He has a special interest in designing human environments in an ecologically sensitive way. (LA 5227)

David B. Czarnecki, professor of botany, is interested in the morphology and ecology of freshwater algae, particularly diatoms; environmentally induced morphological and life-history expressions; functional and developmental aspects of frustular substructure; algal components of inland alkaline-saline systems, acid bogs, and other seemingly inhospitable environments. (Bot 5811)

Diane W. Davidson, Associate Professor, University of Utah, works on dispersal of plants in Australia and on experimental studies of granivory in desert ecosystems. (EBB 8800)

Richard J. Elzinga, Professor, Kansas State University, is interested in the interrelationships between mites and insects and also in arthropod morphology. Current research deals with the labellar modifications of cyclorrhaphous dipteran mouthparts. (Ent 5020)

Donald E. Gilbertson, Associate Professor, University of Minnesota, is interested in parasitology and in invertebrate zoology; his special interests lie in the relationships between trematodes and freshwater snails. (Biol 5850)

Eville Gorham, Professor, University of Minnesota, works in limnology, ecology, and biogeochemistry. His current research concerns the ecology of *Sphagnum* bogs, environmental factors controlling floristic boundaries in Minnesota, and the influence of morphometry on lake stratification. (EBB 5820)

Robert O. Megard, Associate Professor, University of Minnesota, studies photosynthesis with particular emphasis on mechanisms that control the photosynthetic activity of planktonic algae in lakes and oceans. (EBB 5812)

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

Robert K. Peet, Associate Professor, University of North Carolina, is interested in plant population and community ecology. His current research focuses primarily on succession and diversity in terrestrial ecosystems. (EBB 5814)

Donald L. Rubbelke, Assistant Professor, Saint John's University, is currently interested in developing and applying new methods in biological photography. (Biol 5816)

Elwin L. Stewart, Associate Professor, University of Minnesota, has specialized in the systematics of true and false truffles (hypogeous Ascomycotina and Basidiomycotina). His current research includes studies on epigeous mycorrhizal fungi and field studies on beneficial fungus-plant associations. (PIPa 5102)

Orley R. Taylor, Professor, University of Kansas, is conducting research on reproductive isolating mechanisms in butterflies, and ecology and reproductive biology of honey bees and lepidoptera, life history patterns and demographics of plants, and competition among plants for pollinators. (EBB 8800, coordinator)

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

John W. Thomson, Professor, University of Wisconsin, teaches flowering plant taxonomy and dendrology. He researches the taxonomy and ecology of the lichens of North America. He is the author of *Lichens of the North Slope of Alaska* and the forthcoming *American Arctic Lichens*. (Bot 5801)

Dwain Warner, Professor and Curator of Ornithology, University of Minnesota, is studying the effects of habitat loss on long-distance migrant birds, especially tropical forest destruction, and the effects of continuing forest fragmentation on breeding habitats of the Itasca region. (EBB 5834)

G. Bruce Willinson, Associate Professor, Louisiana State University, is interested in research programs encompassing the areas of fire ecology, plant community succession, plant mimicry, and tropical ecology. (EBB 8800)

GUEST LECTURERS

G. Bruce Willinson, Associate Professor, Louisiana State University (EBB 8800, term II)

Diane W. Davidson, Associate Professor, University of Utah (EBB 8800, term II)

Donald N. Alstad, Assistant Professor, University of Minnesota (EBB 8800, term II)



Lynn Miller, Shepherdstown, W. Va. (left),
and Katie Mroue, Austin, Minn.

1982 Itasca canoe race c





Classes in Field Ecology of Fishes





Leasa Carson, Jackson, Tenn.

Courses of Instruction

R Means "controlled enrollment."

¶ Means "concurrent registration."

Means "consent of instructor is required."

△ Means "consent of department is required."

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

BIOLOGY (Biol)

R5816. FIELD BIOLOGY PHOTOGRAPHY. (890677) (5 cr; limited to 20 students; prereq course in beginning biology, △; TF; I term) Rubbelke

Applied photographic techniques for field documentation of biological subjects and events. Emphasis on practical solutions to problems encountered in the photography of living plants and animals in natural habitats.

R5850. SPECIAL TOPICS IN BIOLOGY: FIELD BIOLOGY FOR SECONDARY TEACHERS.

(790607) (10 cr; limited to 20 students; may be taken for 2½ weeks for 5 cr, #: prereq major in science education or teaching experience in the biological sciences; hrs ar, I term) Gilbertson

Field course utilizing a broad approach to concepts and techniques in field biology. Introduction to various areas of natural history will cut across the traditional lines of organization of disciplines, with the high school curriculum as the basis for course content. Prospectus available from Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, 10 Church Street S.E., Minneapolis, MN 55455.

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) Thomson

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.

R5811. FRESHWATER ALGAE. (585540) (5 cr; limited to 20 students; prereq 10 cr botany, biology or zoology, △; TF; I term) Czarnecki

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.

5890. RESEARCH PROBLEMS. (187185) (1-5 cr per qtr; prereq △ I term)

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 term) 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) Peet
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.
- R5817. VERTEBRATE ECOLOGY.** (189977) (5 cr; limited to 15 students; prereq course in ecology, Δ ; WS; II term) Tester
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.
- R5820. WETLAND ECOLOGY.** (590561) (10 cr; limited to 15 students; prereq 15 cr biology; introductory chemistry, course in plant identification, and Biol 3041 recommended; hrs ar; II term) Gorham
Nature, origin, and development of the lake, marsh, swamp, and bog ecosystems; environmental control and productivity.
- R5834. FIELD ORNITHOLOGY.** (885544) (5 cr; limited to 15 students; prereq course in biology, Δ ; MTh; I term) Warner
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.
- R8800.¹ ADVANCED FIELD ECOLOGY.** (587188) (10 cr; limited to 20 students; prereq admission to a grad program, Δ ; hrs ar; II term) Taylor (coordinator), Alstad, Davidson, Willinson
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.

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.

¹For consent of EBB 5800 instructors, address inquiries to the Program Director, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

LANDSCAPE ARCHITECTURE (LA)

- R5227. IMPACT ASSESSMENT AND ENVIRONMENTAL MEDIATION.** (xxxxxx) (5 cr; limited to 20 students; prereq srs, grad students, or #; WS; I term) Burley
Lectures concerning history, laws, and analysis of impact assessment and environmental mediation integrated with an interdisciplinary emphasis upon fieldwork related to a selected issue, actual document preparation, presentation, and individual responsibility.

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.

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, 5811

EBB 3800, 5812, 5814, 5834, 8800

Ent 5020

PIPa 5102

Proposed Courses for 1984

EBB 5817. Vertebrate Ecology

Soil 5532. Soils and the Ecosystem

SPRING TERM

Courses will not be offered at Itasca during spring quarter 1983.

Recent Research Publications

1972

- MORLEY, T. Deciduous trees of Minnesota, a winter key. J. Minn. Acad. Sci., 38:27-36. 1972.
- PARMELEE, DAVID F. and RICHARD J. OEHLenschLAGER. Connecticut warbler nest in Hubbard County, Minnesota. Loom, 44(1):5-6. 1972
- SCHMID, WILLIAM D. Nocturnalism and variance in ambient water vapor pressure. Physiol. Zool., 45(4):302-309. 1972.
- TARAPCHAK, STEVE. Studies on xanthophyceae of the Red Lakes wetlands, Minnesota. Nova Hedwigia, 23:1-45. 1972.
- WEAVER, MARGARET G. and ROBERT L. SHAFFER. Higher fungi of Minnesota. II. J. Minn. Acad. Sci., 38:46-52. 1972

1973

- 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 #58. 1973.

1974

- 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, 11(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.

1975

- 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 L. 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.
- GORHAM, E. and J. E. SANGER. Fossil pigments in Minnesota lake sediments and their bearing upon the balance between terrestrial and aquatic inputs to sedimentary organic matter. Verhandlungen Internationale Vereinigung Limnologie, 19:2267-73. 1975
- GORHAM, E. and J. M. BERNARD. Midsummer standing crops of wetland sedge meadows along a transect from forest to prairie. J. Minn. Acad. Sci., 41:15-7. 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.

1976

- DEAN, W. E., Jr. and E. GORHAM. Major chemical and mineralogical components of profundal surface sediments of Minnesota lakes. Limnology and Oceanography, 21:261-86. 1976.
- DEAN, W. E., Jr. and E. GORHAM. Classification of Minnesota lakes by Q- and R- mode factor analysis of sediment mineralogy and geochemistry. Pp. 61-71 in Quantitative Techniques for the Analysis of Sediments, ed. D. F. Merriam. Pergamon Press, 1976.
- 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.

1977

- 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, B. 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.

1978

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Pending

- MUNGER, J. W. Chemistry of atmospheric precipitation in the north central United States: influence of sulfate, nitrate, ammonia and calcareous soil particulates. Atmospheric Environment (in press).
- PIETZ, P. J. and J. R. TESTER. Habitat selection by snowshoe hares in north central Minnesota. J. Wildl. Manage., 47: (in press, 1983).
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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 Program Director, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Graduate Student Theses

1969

HOFSTETTER, RONALD H. Floristic and ecological studies of Minnesota wetlands. Ph.D. Thesis, University of Minnesota, 1969.

1972

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, *Pfrittle 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.

1973

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.

1974

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.

1975

HALL, RONALD J. Life history, drift, and production rate of the steam mayfly (*Tricorythodes atratus* 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 (*Megasceryle 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.

1976

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.

1977

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.

1978

GAGE, MAURA A. Alkaline phosphatase activity in several Minnesota lakes. Ph.D. Thesis, University of Minnesota, 1978.

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.

1980

SANTELMAN, ELAINE P. Fossil pigments in surface lake sediments and their relationship to lake productivity and eutrophication. M.S. Thesis, University of Minnesota, 1980.

1981

MUNGER, J. WILLIAM. Environmental controls and ecological consequences of regional precipitation chemistry in Minnesota. M.S. Thesis, University of Minnesota, 1981.

Condensed Course Schedule¹

I TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5801	Biol 5816	EBB 5812	Bot 5801	Biol 5816	EBB 5812
EBB 5834	Bot 5811	LA 5227	EBB 5834	Bot 5811	LA 5227
Ent 5020			Ent 5020		

Biol 5850 and EBB 3800 (10-credit courses) to be arranged

II TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
PIPa 5102	EBB 5814	EBB 5817	PIPa 5102	EBB 5814	EBB 5817

EBB 5820 and EBB 8800 (10-credit courses) to be arranged

¹Schedule only one course per day.

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Permanent Address _____

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Status by Summer 1983: _____

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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).

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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? _____

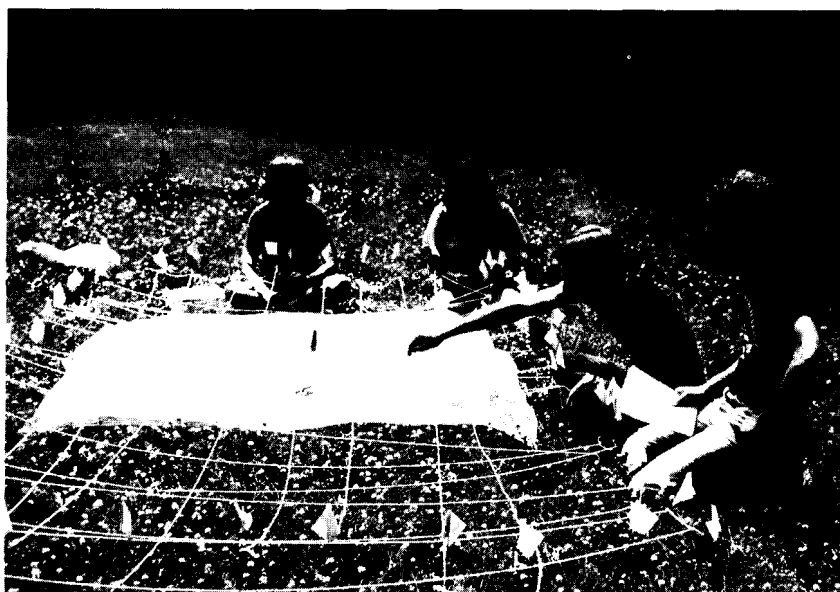
College of University of Minnesota in which you are now registering? _____

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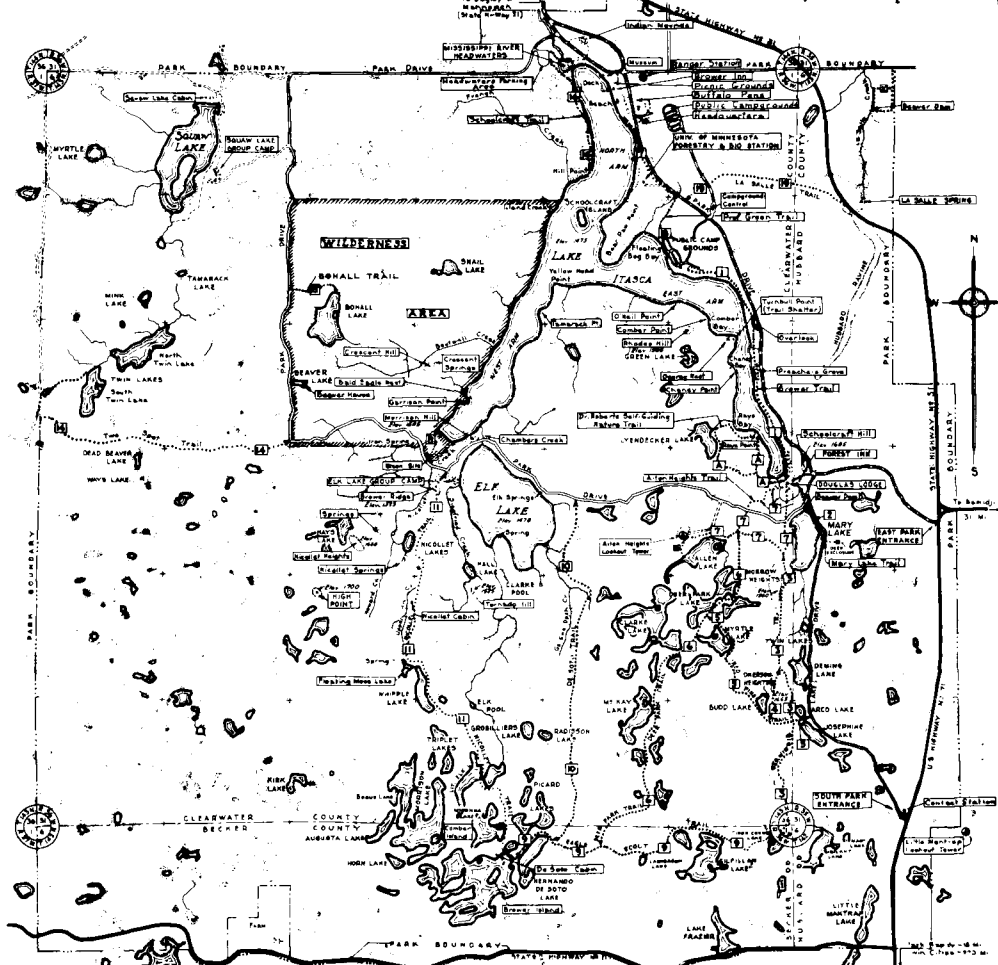




Ryan Kessler, Minneapolis (left) and Thomas Carroll of SUNY, Purchase, N.Y.

Fourth of July rides on the campus fire engine





MAP LEGEND

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

TRAILS

SELF GUIDING NATURE TRAILS

NO.	TRAIL NAME	LENGTH M.	LOCATION
1	Dr Roberts	18	5N

HIKING TRAILS

NO.	TRAIL NAME	LENGTH M.	LOCATION
1	Drawer	2.2	5N-3N
2	Mary Lake	0.5	6J
3	Oswindib	2.5	4N-9N
4	Okegown Heights	0.5	8H
5	Red Pine	1.5	4J-7N
6	Deer Park	3.1	6N-9P
7	Aiton Heights	2.6	5N-6P
8	Big Toe	0.2	E5
9	Eagle Scout	2.5	9P-9N
10	De Soto	3.0	5P-9P
11	Moosefoot	3.4	5P-9P
12	Woodwards	0.1	F
13	Allen Lane	0.2	6G
14	Two Soot	3.2	5C-4B
15	Bonelli	0.5	3C
16	Schoolcraft	1.1	1P-2P
17	Professor Cheney	0.8	1B-16
18	Professor Green	0.6	3G-2G
19	La Salle	1.5	7B-2J
20	Beorn	0.6	1J

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