

University

of Minnesota Bulletin

June 2, 1979

summer session 1979

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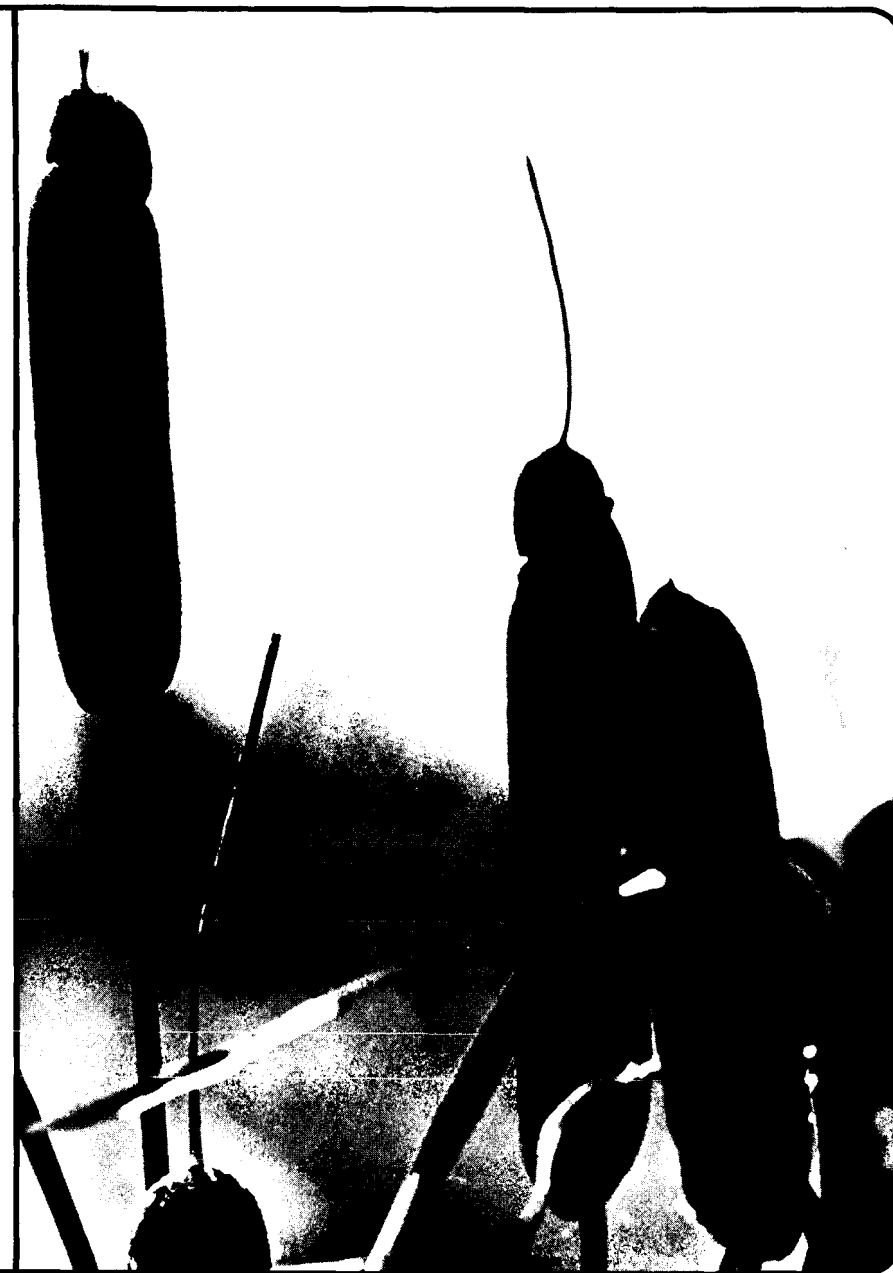
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UNIVERSITY OF MINNESOTA BULLETIN
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The contents of this bulletin and other University bulletins, publications, or announcements are subject to change without notice.





Summer Session 1979

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Calendar

May 15	Graduate School application deadline for first term admission.						
May 29-June 1	Registration period. Students may register for first term or second term or both terms at this time. See also the announcement in the Official Daily Bulletin column in the <i>Minnesota Daily</i> .						
June 4-8	Registration closed.						
June 5	Last day to pay graduation fees for first term.						
June 11	Last day to register for first term and to pay fees without incurring late fee. Late fees are assessed according to the following schedule: <table><tr><td>June 12-15</td><td>\$ 6</td></tr><tr><td>June 18-22</td><td>\$10</td></tr><tr><td>Thereafter</td><td>\$20</td></tr></table>	June 12-15	\$ 6	June 18-22	\$10	Thereafter	\$20
June 12-15	\$ 6						
June 18-22	\$10						
Thereafter	\$20						
June 12	FIRST TERM CLASSES BEGIN.						
June 15	Graduate School application deadline for second term admission. Thesis registration deadline for graduate students.						
July 4	Holiday.						
July 12, 13, 16	Registration period for second term.						
July 13	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 16	Last day to register for second term and to pay fees without incurring late fee. Late fees are assessed according to the following schedule: <table><tr><td>July 17-20</td><td>\$ 6</td></tr><tr><td>July 23-27</td><td>\$10</td></tr><tr><td>Thereafter</td><td>\$20</td></tr></table>	July 17-20	\$ 6	July 23-27	\$10	Thereafter	\$20
July 17-20	\$ 6						
July 23-27	\$10						
Thereafter	\$20						
July 17	SECOND TERM CLASSES BEGIN.						
July 27	Two bound copies of master's or doctoral thesis due.						
August 17	Last day of class for second term.						

-IMPORTANT-

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

Please note that first term classes begin on TUESDAY, JUNE 12, and second term classes on TUESDAY, JULY 17, EXCEPT where a Monday starting date is specified.

All students not regularly enrolled spring quarter 1979 must be prepared to show their United States Social Security numbers.

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 Section 504 of the Rehabilitation Act of 1973, and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Lillian H. Williams, Director, Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 100 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, (612) 373-7969, or to the Director of the Office of Civil Rights, Department of Health, Education, and Welfare, 330 Independence Avenue S.W., Washington, D.C. 20201.

Access to Student Educational Records

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

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

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

A Guide to the Summer Session Bulletin

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

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

Following each course title is a parenthetical statement specifying 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 current 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 requirements, unless otherwise noted, are indicated by the course number as follows:

- 0000 to 0998 no credit
- 1000 to 1998 for freshmen and sophomores
- 3000 to 3998 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—Class hours are identified by roman numerals. They are 50 minutes in length and begin at the times shown below:

	I	II	III	IV	V	VI	VII	VIII
Minneapolis (East and West banks) and St. Paul	8:00	9:05	10:10	11:15	12:20	1:25	2:30	3:35

A class listed I-III TTh meets the first *through* third hours Tuesdays and Thursdays; the hyphen always indicates "through." A class listed I, III meets the first *and* third hours; the comma always indicates "and." Days of the week are abbreviated M, T, W, Th, F, S.

Many courses, especially those in the College of Business Administration, 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.

Reserved Courses—Courses with limited enrollments must be reserved in the college office listed for each department. These courses are listed in the Course Descriptions section with a bullet (•) before the course number. Registration instructions for reserved courses may be found in the next section of this bulletin.

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 supplements to the *Summer Session Bulletin*.

DATES OF SUMMER SESSION

The summer session consists of two 5-week terms—June 11 through July 13 and July 16 through August 17. Students may register for courses of their choice in either or both terms.

Payment of fees for the first term without assessment of late fees must be made by 3:30 p.m. on Monday, June 11. First term classes on the Twin Cities campus begin Tuesday, June 12.

Payment of fees for the second term without assessment of late fees must be made by 3:30 p.m. on Monday, July 16. Second term classes on the Twin Cities campus begin Tuesday, July 17.

Most individual courses are completed in a single term.

and Registration

Summer Admission



ADMISSION TO DEGREE PROGRAMS FOR THE SUMMER SESSION

If you intend to receive a degree from the University of Minnesota, you must file an application, any necessary credentials, and a \$10 credentials examination fee (\$15 for the Graduate School) in order to gain regular admission to a college of the University. Summer-only registration does not qualify you for entry into a University degree program.

You should consult the *General Information Bulletin* for detailed requirements governing admission and granting of degrees. This bulletin and other college bulletins and brochures 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. 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. The colleges that admit freshmen to their programs in the summer will accept high school graduates for admission in either term.

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 units, 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 unit and registration in a regular quarter of the academic year. If admitted, you will attend the orientation-registration program with other students entering the unit fall quarter.

To be assured full consideration in time for summer admission to a degree program (for all 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. You must present a completed application form, transcripts from the last high school and all colleges attended, and a \$10 credentials examination fee. Most colleges require ACT or PSAT test scores, and some have other special admission requirements (see the *General Information Bulletin*).

Applicants With Previous College Work

Students who have previously completed college work may be admitted to degree programs of most colleges and schools of the University of Minnesota during the summer session. **EXCEPTIONS** are the General College, College of Business Administration, Institute of Technology, College of Liberal Arts, and some professional and paraprofessional programs that begin course sequences during a specified term. If you plan to enter a degree program in one of these units, you should apply for fall quarter admission and register under summer-only status. Appropriate courses completed satisfactorily during the summer will be accepted for degree credit when you have been admitted to the unit and have registered for one of the regular quarters of the school year.



Admission

Summer session courses are open to high school graduates, students with previous college work, and high school students with special abilities and interests that can be satisfied by attending college before high school graduation. Summer session students fall into two major categories: those who are beginning or continuing in University of Minnesota degree programs, and those, classified as summer-only students, who are not enrolled in University degree programs. Summer-only status does not require advance application and is open to anyone not currently pursuing a degree at the University of Minnesota, including students enrolled at other colleges and universities.

SUMMER-ONLY STUDENTS

As a summer-only student, you may register for university classes without formally applying to a university college or program. Attendance as a summer-only student is open to:

- High school graduates.
- Former University of Minnesota students (including Minnesota graduates) who are not now pursuing a degree from the University.
- Students with college work at a school other than the University of Minnesota (Twin Cities campus) who do not plan to earn a degree from the University or who have not been admitted as degree candidates for summer session 1979.
- Others who have the approval of the Office of Admissions.

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, you may have appropriate credits earned as a summer-only student transferred to your degree program.

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

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.

Admission and Registration

Students planning to use credits earned in summer session toward graduate degrees or who expect to receive graduate credit for such work, should apply for admission directly to the Graduate School. Applications must be submitted *complete in every detail*—one official transcript from each college attended, the credentials examination fee, and test results if required— by May 15, 1979 for first term admission and June 15, 1979 for second term admission. Graduate School application forms and bulletins may be obtained from the Graduate School, 307 Johnston Hall, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

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

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

Candidacy for a Degree

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

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

Requirements for Advanced Degrees

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

Deadlines for Summer Session Graduation

All graduate degree candidates must adhere to the following deadlines for graduation at the close of the summer session:

Thesis registration—June 15, 1979

Final Oral Examination Report and all other forms due—July 13, 1979

Two bound copies of the master's (Plan A) or doctoral thesis—July 27, 1979

Degree date (no ceremony)—August 17, 1979



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.



Registration, 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 1979 must be prepared to show their United States Social Security number.

Students who plan to attend the first term and the second term should register for both terms at the same time.

Registration will not be open between June 4 and June 8.

STUDENTS CURRENTLY OR PREVIOUSLY IN RESIDENCE AND DEGREE CANDIDATES

- Students in residence spring quarter should register on the dates announced in the *Minnesota Daily* and in their college office. They should register through the college in which they were last enrolled. A registration permit is required.

- Students in residence a previous quarter(s) (exclusive of summer-only or extension-only registration) also may register on the announced dates through the college in which they were last enrolled. A registration permit from that college is required, and it may be obtained in 202 Fraser Hall (150 Williamson Hall for students with mobility impairments, or 130 Coffey Hall for students registered in St. Paul-based colleges).

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

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

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.

SUMMER-ONLY STUDENTS

Persons who should register under summer-only status are listed on page 5. They will register according to the following schedule:

First Term

Dates: May 29 through June 1 and on June 11 (registration is closed June 4 through June 8).

Time: 8 a.m. to 4:15 p.m.

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

Second Term

Dates: May 29 through June 1 and on June 11; July 12, 13, and 16 (registration is closed June 4 through June 8, and June 12 through July 10).

Time: See first term.

Place: See first term.

SENIOR CITIZEN EDUCATION PROGRAM

Minnesota residents age 62 and over, who meet academic prerequisites, may attend University classes when space is available after tuition-paying students have been accommodated. Under the Senior Citizen Education Program, courses may be audited free of charge or may be taken for credit at \$2 per credit. (Auditors prepare daily assignments and participate in class discussions but do not take examinations or receive grades, and no record is kept of their work.) Senior citizens do not pay the student services fee but must pay laboratory or materials fees when required for particular courses.

Registration for the Senior Citizen Education Program will be held on June 13 for first term courses and on July 18 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 should bring identification to verify age and Minnesota residency.

COLLEGE REGISTRATION OFFICES

Agriculture, 277 Coffey Hall (St. Paul)
 Biological Sciences, 223 Snyder Hall (St. Paul)
 Business Administration, 225 Business Administration Building (West Bank)
 Dental Hygiene, Health Sciences Unit A 5-164
 Dentistry, Health Sciences Unit A 15-106
 Education, ECDO, 1425 University Avenue S.E. (Burton Hall on June 11)
 Forestry, 10 Green Hall (St. Paul)
 General College, 20 Nicholson Hall
 Graduate School, 316 Johnston Hall

(Students registered in the Graduate School in spring quarter 1979 may obtain registration materials in the office of their major department. All students planning to register in the Graduate School should see page 5 for information.)

Home Economics, 32 McNeal Hall (St. Paul)
 Institute of Technology, 5 Lind Hall
 Liberal Arts

Regular students: college offices

Summer-only students: 18 Johnston Hall

Medical Technology, 5307 Powell Hall
 Medicine, 139 Owre Hall
 Military Science, 108 Armory Building
 Mortuary Science, 114 Vincent Hall
 Nursing, 3320 Powell Hall
 Pharmacy, 100 Appleby Hall
 Physical and Occupational Therapy, 271 Children's Rehabilitation Center
 Public Health, 1360 Mayo Memorial Building
 University College, 105 Walter Library
 Veterinary Medicine, 301 Veterinary Science Building (St. Paul)

ID CARD IMPRINT		PLEASE PRINT ALL INFORMATION			
ADVISOR'S SIGNATURE		NAME LAST FIRST MIDDLE MAIDEN			
COLLEGE APPROVAL		CURRENT MAILING ADDRESS			
SCHOLARSHIP COMM APP DATE (IF REQUIRED)		STREET ADDRESS CITY STATE ZIPCODE PHONE			
RECORDER'S USE		ADDRESS TO WHICH YOUR GRADES MAY BE SENT			
R NR NHS NAS PR O TR		STREET ADDRESS CITY STATE ZIPCODE			
COLLEGE OF REGISTRATION		IF PREVIOUSLY REGISTERED AT U. OF M. INDICATE:			
FILE STATEMENT		COLLEGE QUARTER YEAR MAJOR			
DATE OF BIRTH		INDICATE:			
CIRCLE THE TERM 1S 2S		SCHOOL LAST ATTENDED TYPE (HIGH SCHOOL OR COLLEGE) MAJOR OR VOCATIONAL OBJECTIVE			
ARE YOU A RESIDENT?		W ARE YOU IN GOOD STANDING			
ARE YOU A U.S. CITIZEN?		DID YOU GRADUATE DEGREE APPROX NO OF CREDITS GRADE AVERAGE			
CIRCLE STUDENTS IN RESIDENCE		HAVE YOU FILED CREDENTIALS? DO YOU EXPECT TO RECEIVE A DEGREE FROM MINNESOTA?			
SPRING QUARTER ALL OTHERS		FR SO JR SR AD SP M ED M PUB H SUMMER			
FR SO JR SR AD SP M ED M PUB H SUMMER		00 1 82248-04 SUMMER REGISTRATION CARD			

REGISTRATION PROCEDURE

1. Obtain registration permit.
 - Students in residence spring quarter: at your regular college office.
 - Students in residence a previous quarter (exclusive of summer-only or extension-only registration): in 202 Fraser Hall (150 Williamson Hall for students with mobility impairments, or 130 Coffey Hall for students registered in St. Paul-based colleges), at the window of the college you last attended.
 - Summer-only students: registration permit not required.
2. Obtain registration material at college registration office.
3. Obtain approval of study program at college office.
4. Obtain class reservation cards for reserved courses (see list of reserved courses, below, and Course Descriptions section). *This cannot be done until you have completed the three steps listed above.*
5. Turn in registration forms and class reservation cards and obtain fee statements in 202 Fraser Hall (150 Williamson Hall for students with mobility impairments). (On June 11, College of Education graduate and undergraduate students may obtain fee statements in Burton Hall.)
 - Exceptions:* Students in the colleges of Agriculture, Forestry, Home Economics, Biological Sciences, and Veterinary Medicine as well as Graduate School students whose majors are based in St. Paul turn in their registration forms and class reservation cards and obtain their fee statements in 130 Coffey Hall.
6. Pay fees at the Bursar's Office in Williamson Hall, the West Bank Bursar's Office, the Cashier's Office in Coffey Hall, or by mail. The hours are 8:15 a.m. to 3:30 p.m. If mailed, fees must be paid or postmarked no later than Monday, June 11, for first term, or Monday, July 16, for second term.

SUMMER SESSION—FIRST TERM

CHANGES IN REGISTRATION

After a student's registration has been accepted by the University Records Office, any change must be approved by the college office through which the student is registered. Forms for changing registration may be obtained in the college office. *Only in exceptional cases will any change be made after classes have begun.* Graduate students may not change their registration after the last day of classes of either term.

I.D. CARD IMPRINT :		Fr. So. Jr. Sr. AdSp				15 25 F W S				Year 19__	USE BALL POINT PEN PRESS HARD
Advisor's Signature (If Required)		Date	NAME (Last) (First) (Middle) (Maiden)				REASONS FOR CHANGE:				
Division Office	Scholastic Comm. (If Required)	Date	Major								
UNIVERSITY OF MINNESOTA	CANCEL	Dept. Abbrev.	Course No.	Sec.	Course Description	# of credits A-N S-N	Hours	Days			
	ADD										
A304 3-77											

- Accounting 1050, 1051, 5310—225 BA
- Aerospace Engineering and Mechanics 5501—5 LindH
- American Studies 1102, 8202—12 JohH
- Art Education 3001, 3009, 5001—1425 University Avenue S.E.
- Art History 1016, 3008, 3012, 3465, 3469, 3579, 5521—12 JohH
- Biology 1011—12 JohH or 130 CofH; 3051—223 SnH or 12 JohH
- Business and Distributive Education 1501, 1502, 1503, 5359, 5361, 5600—1425 University Avenue S.E.
- Business Finance 3000, 3300, 3500, 8300—225 BA
- Business, Government and Society 3001, 8009—225 BA
- Business Law 3058, 8158—225 BA
- Chemistry 1001, 1004, 1006, 3100, 3101, 3301, 3305, 3499, 5520—5 LindH or 12JohH
- Communication Disorders 3100—12 JohH
- Composition 1001, 1002, 1027—12 JohH
- Counseling and Student Personnel Psychology 5110, 5300, 5310, 5620—1425 University Avenue S.E.
- Design 1521, 1523, 1533, 3527, 3532, 3550, 5586, 8585—130 CofH
- Ecology and Behavioral Biology 5116—223 SnH
- Economics 1001, 1002, 3101, 3102, 3501, 3701, 5021, 5401, 5431, 5531, 5621, 5721—12 JohH
- Education: Adult, Higher, and Teacher 5103—1425 University Avenue S.E.
- Electrical Engineering 1510—5 LindH
- Elementary Education 5108, 5305, 5318, 5334, 5335, 5336, 5360, 5363, 8300—1425 University Avenue S.E.
- English 1016, 1019, 3111, 3851, 5920, 8610—12 JohH
- Family Social Science 1001, 1025, 5001, 5200—130 CofH
- Food Science and Nutrition 1602, 5404, 5790—130 CofH
- Forest Resources 5406—130 CofH
- French 1101, 1102, 1103, 1104, 3015, 3104, 3602, 5311—12 JohH
- General College 1131, 1166, 1212, 1221, 1235, 1283, 1371, 1401, 1421, 1431, 1432, 1433, 1471—20 NH
- Geology and Geophysics 1001, 5051—5 LindH
- German 1301, 3501, 3602, 3641—12 JohH
- History and Philosophy of Education 3090—1425 University Avenue S.E.
- Home Economics Education 5405, 5430—1425 University Avenue S.E.
- Humanities 1001, 1101, 3014, 3101—12 JohH
- Industrial Education 5100, 5101, 5102, 5103—125 Peik H
- Industrial Engineering/Operations Research 5030—5 LindH
- Library 5101, 5221, 8224, 8304—12 JohH
- Management 3001, 3002, 3004, 8006—225 BA
- Management Information Systems 3098, 3099, 5101—225 BA
- Marketing 3000, 3010, 3050, 8000, 8047—225 BA
- Mathematics 0009, 1005, 1008, 1111, 1131, 1142, 1201, 1211, 1221, 1231, 3142, 3211, 3221, 3231, 5209, 5242, 5457, 5601—5 LindH or 12 JohH
- Mathematics Education 5101, 5102, 5355—1425 University Avenue S.E.
- Mechanical Engineering 3201, 3205, 3301, 5460—5 LindH
- Metallurgy/Materials Science 3400, 5011—5 LindH
- Military Science 1014—108 Armory
- Music 1051, 1052, 3791—12 JohH
- Nursing 5999, 8010, 8051, 8063—3320 PoH
- Personal Orientation 1001—12 JohH
- Physical Education 1007, 1014, 1015, 1038, 1050, 1074, 1138—12 JohH; 3111, 3115, 3125, 5620—1425 University Avenue S.E.
- Physics 1005, 1035—5 LindH or 12 JohH
- Psychological Foundations 3380, 5110, 5120, 5121, 5305—1425 University Avenue S.E.
- Psychology 1004—12 JohH
- Public Health 3001, 3004, 3033—1360 Mayo
- Quantitative Analysis 1050, 3055, 8000—225 BA
- Recreation and Park Administration 5240, 5900—1425 University Avenue S.E.
- Rhetoric 1147—12 JohH; 1222, 3551, 3562—130 CofH
- Secondary Education 5191, 5394, 5404—1425 University Avenue S.E.
- Social Work 1001, 5010, 8407—12 JohH
- Soil Science 5565—130 CofH

RESERVED COURSES

As part of the registration process, students must obtain class reservation cards for the courses listed below. Cards are available at the offices specified in the departmental course listings. They must be attached to the student's registration form when it is turned in for a statement of fees.

ITASCA BIOLOGY SESSION—FIRST TERM

- Biology 5950—130 CofH
- Botany 5801, 5811—130 CofH
- Ecology and Behavioral Biology 5812, 5815, 5834—130 CofH
- Entomology 5020—130 CofH
- Soil Science 5532—130 CofH

ITASCA BIOLOGY SESSION—SECOND TERM

- Botany 5805, 5815, 8970—130 CofH
- Ecology and Behavioral Biology 5814, 5820, 8800—130 CofH
- Fisheries and Wildlife 5456—130 CofH
- Plant Pathology 5102—130 CofH

Spanish 1101, 1102, 1103, 1104, 3001—12 JohH
Special Education 5601, 5610, 5611—1425 University Avenue S.E.
Speech 1101, 3203, 5404, 5411, 5414—12 JohH
Studio Arts 1101, 1102, 1104, 1105, 1302, 1401, 1701, 1801, 3110, 3120, 3160, 3301, 3303, 3305, 3701,
3710, 3740, 3810, 5110, 5160, 5310, 5330, 5350, 5810—12 JohH
Textiles and Clothing 1602, 3622, 3661, 5600, 5627, 5680—130 CoffH
Theatre Arts 1101, 1405H, 3326—12 JohH
Transportation 3064, 8264—225 BA
Urban Studies 3101—12 JohH
Vocational Education 5300—125 PeikH
Women's Studies 3103—12 JohH

SUMMER SESSION—SECOND TERM

Accounting 1050, 1051, 5300—225 BA
American Studies 1101—12 JohH
Architecture 1022, 1041—5 LindH
Art Education 5001, 5303—1425 University Avenue S.E.
Art History 3009, 3011, 3935, 5313, 5324, 5915—12 JohH
Biology 1101, 1103, 1106—12 JohH or 130 CoffH; 3011—223 SnH
Business and Distributive Education 5360, 5600—1425 University Avenue S.E.
Business Finance 3000, 3300, 8100—225 BA
Chemistry 1002, 1005, 3302, 3306, 3499, 5126, 5133, 5521—5 LindH or 12 JohH
Communication Disorders 3100—12 JohH
Composition 1001, 1002—12 JohH
Counseling and Student Personnel Psychology 5101, 5110, 5620—1425 University Avenue S.E.
Design 1521, 5588—130 CoffH
Economics 1001, 1002, 3101, 3102, 3103, 3701, 5151, 5152, 5301, 5331, 5721, 5831—12 JohH
Educational Administration 5128, 5130, 5139—1425 University Avenue S.E.
Elementary Education 5107, 5347, 5348—1425 University Avenue S.E.
English 1012, 1018, 3851, 3910, 3920, 5331, 5363—12 JohH
Family Social Science 5240—130 CoffH
French 1102, 1103, 1105, 3016, 3601, 5355—12 JohH
General College 1132, 1237, 1282, 1291, 1312, 1363, 1422, 1445, 1461, 1465, 1511, 1534—20 NH
Geology and Geophysics 5110—5 LindH
German 3105, 3603, 3610—12 JohH
History and Philosophy of Education 3090—1425 University Avenue S.E.
Humanities 1002, 1101, 3301—12 JohH
Industrial Education 5100, 5101, 5102, 5103—125 PeikH
Industrial Engineering/Operations Research 5000—5 LindH
Journalism and Mass Communication 1101, 3241—12 JohH
Library 5401, 8402, 8950—12 JohH
Management 3001—225 BA
Management Information Systems 5100—225 BA
Marketing 3000, 3010, 8078, 8098—225 BA
Mathematics 0009, 1006, 1008, 1111, 1142, 1201, 1211, 1221, 1231, 3211, 3221, 3231, 5243, 5458, 5602,
5679—5 LindH or 12 JohH
Mathematics Education 5101, 5102, 5355—1425 University Avenue S.E.
Mechanical Engineering 3303, 5260, 5342—5 LindH
Military Science 1024—108 Armory
Nursing 5718, 5999, 8012, 8063—3320 PoH
Operations Management 3000—225 BA
Personal Orientation 1001—12 JohH
Physical Education 1007, 1015, 1038, 1050, 1073, 1074, 1306, 1410—12 JohH; 3110, 3113, 3143,
3327—1425 University Avenue S.E.
Physics 1036—5 LindH
Psychological Foundations 3380—1425 University Avenue S.E.
Psychology 1005—12 JohH
Public Health 5032, 5300—1360 Mayo
Quantitative Analysis 1050, 3055—225 BA

Rhetoric 1147, 1222, 3551, 5600—130 CoffH
Secondary Education 5194, 5321, 5350, 5394—1425 University Avenue S.E.
Social Work 5010, 8406—12 JohH
Spanish 1101, 1102, 1103, 1105, 3610—12 JohH
Special Education 5302, 5601—1425 University Avenue S.E.
Speech-Communication 1101, 3201, 3204, 3641—12 JohH
Studio Arts 1101, 1102, 1302, 1510, 1701, 1801, 3110, 3120, 3160, 3302, 3510, 3710, 3810, 5120, 5160,
5320, 5510, 5810—12 JohH
Textiles and Clothing 1601, 5680—130 CoffH
Theatre Arts 1321, 1328, 5181—12 JohH
Transportation 3054—225 BA
Vocational Education 5101, 5300—125 PeikH

SUMMER SESSION—6-WEEK COURSES

Special Education 5302, 5601—1425 University Avenue S.E.

SUMMER SESSION—9-WEEK COURSES

Accounting 3101, 3102, 3201, 5125, 5135, 5310—225 BA

SUMMER SESSION—10-WEEK COURSES

Architecture 3082-3083, 3092-3093, 5111, 5112, 5113, 5121, 5122—5 LindH
Electrical Engineering 3000, 3001, 3010, 3012, 3050, 3100, 3400, 3402, 3476, 3477, 3478, 3479, 5050, 5051,
5100, 5101—5 LindH
French 1101-1102-1103—12 JohH
Industrial Engineering/Operations Research 5040—5 LindH
Italian 1101-1102-1103—12 JohH
Mechanical Engineering 3740—5 LindH
Nursing 5611, 5614, 5615, 5700, 5701, 5703, 5708, 5709, 5710, 8010, 8011, 8012, 8014, 8030, 8051, 8313,
8411, 8415, 8421, 8422, 8431, 8451, 8455, 8701, 8702—3320 PoH
Physics 1275, 1281, 1285, 1295—5 LindH or 12 JohH
Portuguese 1001-1002-1003—12 JohH
Public Health 5004, 5585—1360 Mayo
Spanish 1101-1102-1103—12 JohH

TUITION AND INCIDENTAL FEES¹

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

TUITION FEE	
Per term; per credit	\$18.25
STUDENT SERVICES FEE	
Per term; not included in tuition fee	\$31.00

Students taking 3 or more credits must pay the student services fee, which includes outpatient care at the Boynton Health Service. (Students with equivalent coverage may apply for an exemption of \$11.50—see below.) The student services fee does *not* include hospitalization benefits. Students who do not have private hospitalization must apply for this coverage at the time of registration, and an additional fee will be charged.

Note—Tuition fees for students in medicine, nursing, dentistry, veterinary medicine, physical therapy, and occupational therapy are the same as those during the regular academic year. Special tuition fees are collected for the Itasca Biology Session.

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

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

Students With Coverage for Outpatient Health Services

Students who are members of a plan that guarantees comprehensive outpatient direct personal health services on a prepaid basis, such as Group Health Plan, Inc., may apply for an exemption of \$11.50 per summer term from the student services fee. Students who qualify for and accept this exemption, or who get a refund for this portion of the fee, waive all outpatient benefits offered by the Boynton Health Service. Proof of coverage must be presented to the cashier in room W220 of the Health Service prior to registration. The Health Service cashier will complete a Partial Fee Exemption form indicating the amount of the exemption. This form, along with the student's registration form, must be presented at the college window when registering. Students who fail to apply for the exemption prior to registration may apply for a refund during the first week of classes each term.

Medical care insurance limited by deductible and coinsurance features does not qualify for this exemption.

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 50¢ per term is charged to support MPIRG programs and operations. A student may decline to pay the fee at the time of registration or may obtain a refund at a location and date that will be announced in the college newspaper (Duluth, Morris, and Twin Cities campuses).

COURSE FEES

(All fees are per term unless otherwise indicated)

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

HEALTH SERVICE (field trips and foreign study)

Required of students on University field trips such as those in anthropology, civil engineering, geology, mines and other courses—\$15 per summer term

Students 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 Table Fee—\$5 per week¹

MATHEMATICS

Math 0009—\$48.50²

MODERN LANGUAGES

German—\$325² for program in Munich, Germany

MUSIC³

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: \$85 for 0 to 2 credits. Music and music education majors at the 12xx or 13xx level in their major instrument pay \$35 per 2 credits. Music and music education majors at the 32xx or 33xx level in their major instrument (prerequisite 12 credits of 12xx or 13xx and qualifying exam) 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 \$30 per 2 credits.

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

²In lieu of tuition.

³The music fees are treated as course fees; i.e., the fees are applied *in addition to* tuition for all students in all quarters and summer terms.

¹Fees are subject to change.



PHYSICAL EDUCATION

PE 1205—\$20 per term

PUBLIC HEALTH

PubH 5755 (Administrative Residency)—\$150

SOIL SCIENCE

Soil 5565—\$25

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 (50¢ per hour for each additional hour per week)

Organ—25¢ per hour

PHYSICAL EDUCATION¹

Cooke Hall

Locker and Towel Fee—\$6

Gym Clothing Rental Fee—\$8

Norris Hall

Locker and Towel Fee—\$6

St. Paul Gymnasium

Locker and Towel Fee—\$6

SPEECH AND HEARING CLINIC

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

Outpatients:

Speech Pathology, Clinical Management—\$2 per session

Audiologic Evaluation—\$25

Audiologic Evaluation for Senior Citizens—\$15

Audiology Screening—\$2

Audiology Screening Follow-up—\$5

MISCELLANEOUS

International Student Aid Fee—\$2 per term (required of all noncitizens)

Credentials Examination Fee—\$10 (\$15 for Graduate School, School of Dentistry, Law School, Medical School, and College of Veterinary Medicine [¹\$5 if previously granted or currently completing a baccalaureate degree at the University])

Graduation Fee (each degree; includes small diploma)—\$10

Laboratory Fee—\$2 (required in certain laboratory courses)

Large Diploma—\$7.50²

Special Examination—\$20

Record Service Fee—\$6 (required of all new students)

Orientation Fee—\$5 (required of all new undergraduate and graduate students)

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

²In addition to the graduation fee.

DEPOSIT CARDS

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

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

The student must present a deposit card to be assigned a laboratory desk. Veterans (Chapter 31) will receive information from their instructor concerning deposit cards and laboratory assignments.

REFUND OF FEES

Students who cancel their summer session registration without attending class will be granted a 100 percent refund of fees. Students who cancel after having attended class will be granted a refund of fees on the following basis:

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

AUDITORS

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

AMOUNT OF WORK

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

FINAL EXAMINATIONS

Final examinations are normally held during the last scheduled class hour for each course.

GRADING

Academic achievement of Twin Cities campus students is evaluated according to two grading systems: A-B-C-D-N and S-N; the N grade indicates no credit. Students should check with their college office to find out which courses may be taken S-N and should indicate on their registration form which type of evaluation is desired for each course. 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.

REGULATIONS GOVERNING GRANTING OF DEGREES

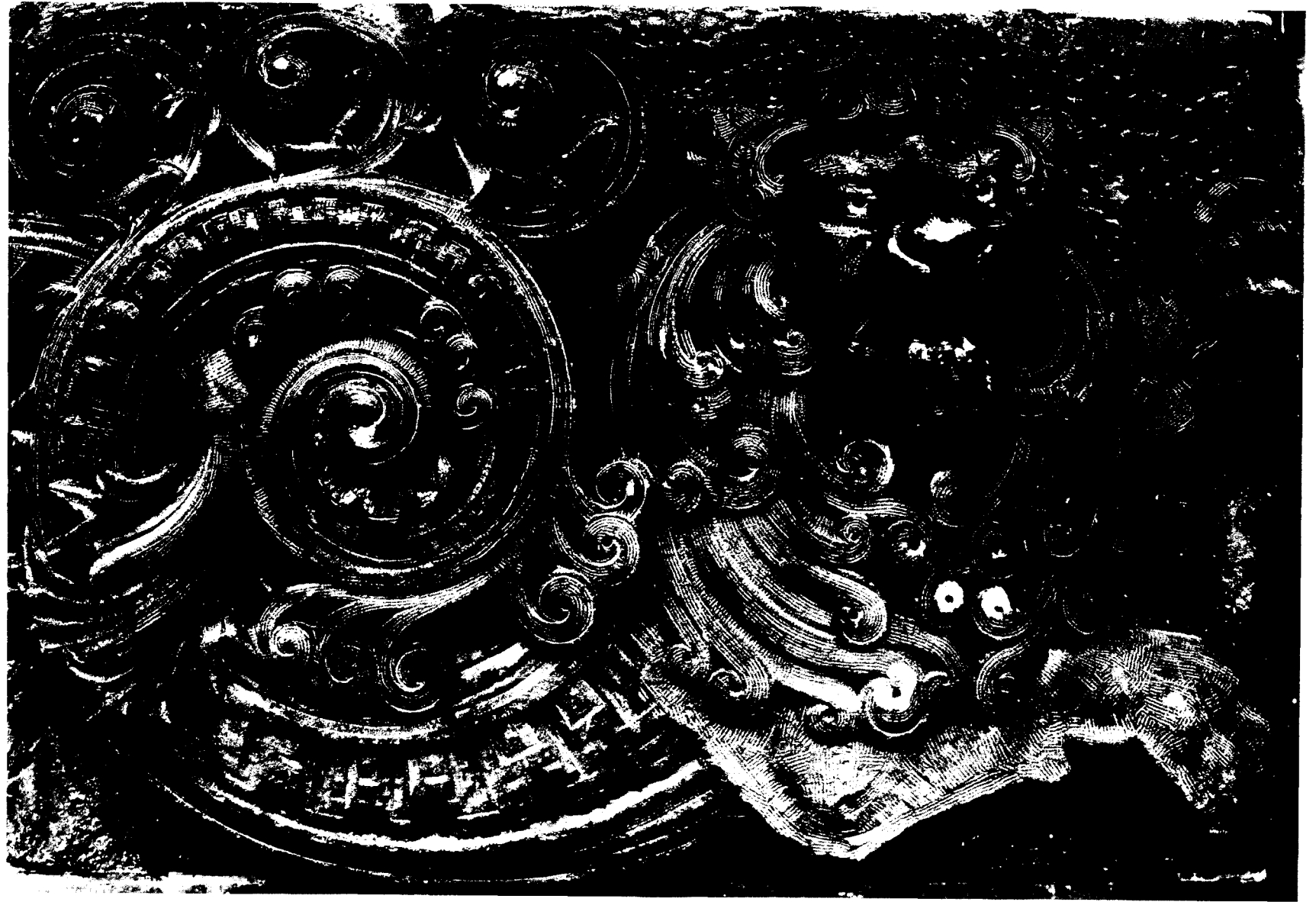
The Board of Regents will confer the degree appropriate to the course of study pursued, subject to the following conditions:

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 announcement, 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 1 year in residence at this University. If the term of residence is only 1 year, that year must be the senior year. In any case, the student must spend 2 quarters of the senior year in residence. This last requirement may be waived 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. Attendance at commencement is optional. There is no commencement during the summer, and students planning to graduate during the summer may attend commencement in June or December.
6. Payment of Graduation Fee—For each degree, \$10.
7. Payment of Placement Service Fee—Required of candidates earning degrees from:

Duluth	\$10
College of Education (except nursing education, music therapy, recreation and park administration majors)	15
Morris (optional)	15

Recreational Opportunities

The University Services Cultural and



Services

HOUSING

Minneapolis Residence Halls

Sections of Middlebrook Hall and Centennial Hall have been reserved for summer session students. Middlebrook is a coeducational air-conditioned residence on the West Bank that offers comfortable living in large double rooms with a 7-day (19-meal) food service program under the direction of a professional food manager.

Centennial is a coeducational non-air-conditioned residence on the East Bank that offers primarily single rooms, and a limited number of double rooms, with a 7-day (19-meal) food service program under the direction of a professional food manager.

In both terms and in both halls the meal service begins on the first day of regularly scheduled classes.

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 *not* be open for student or conference occupancy during the summer of 1979 due to major construction and renovation projects.

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, and that of the St. Paul office is (612) 373-0822.

UNIVERSITY CHILD CARE CENTER

The University Child Care Center, designed as a model facility with several unique features, provides care for infants and toddlers as well as preschool children. The center is open Monday through Friday throughout the year from 7:30 a.m. to 5:30 p.m. Children are divided by age and individual needs into three groups: infant (3-15 months), toddler (16-30 months), and preschool (30 to 60 months). Fees for care are 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 373-5265.

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.

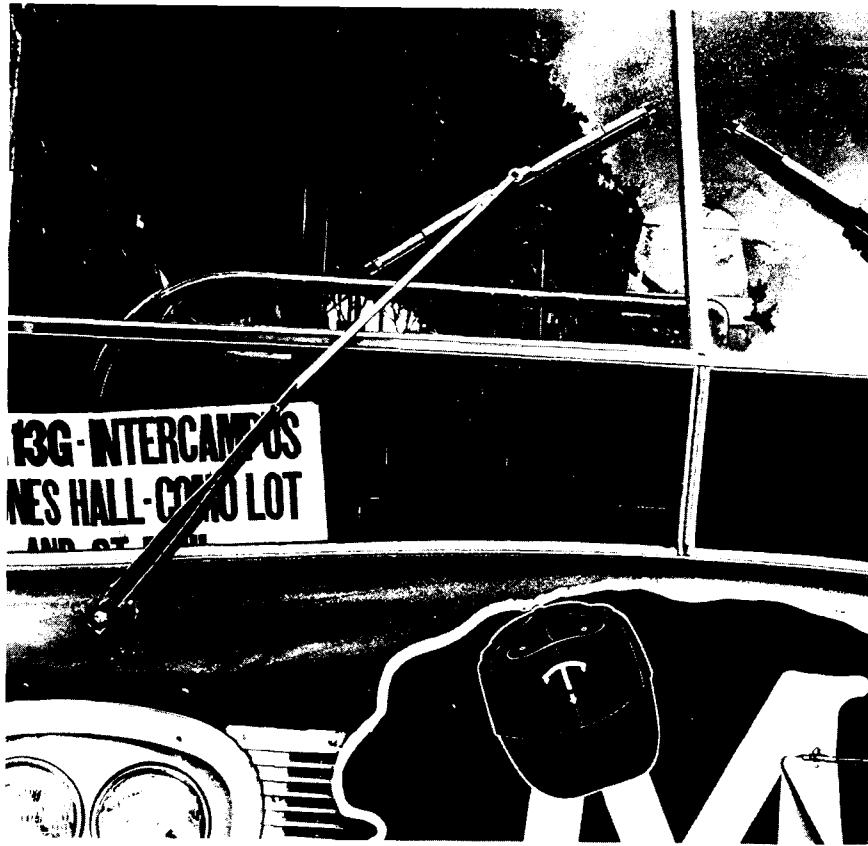
STUDENT COUNSELING BUREAU

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 vocational 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, and counseling and testing information is confidential.

Interested students should come to 101 Eddy Hall to see a counselor. Counselors are available from 8:00 a.m. to 4:30 p.m. Monday through Friday.

STUDENT EMPLOYMENT SERVICE

The Student Employment Service, 6 Morrill Hall, assists students seeking part-time work either on or off campus. Students should apply in person at the office after enrollment is completed and the class schedule is known. Chances of being placed depend on the supply of jobs and the student's qualifications and hours available. Frequently a job will provide valuable experience as well as financial assistance. Work for room and board is usually available.



CAMPUS BUS SERVICE

Detailed information about bus service to and from the Minneapolis and St. Paul campuses, East and West Banks, and Como Avenue parking complex is available at the main information center at the following locations: Coffman Union, West Bank Union, Williamson Hall, the St. Paul Student Center, Coffey Hall, the Housing Office in Comstock and Coffey halls, and the Transit Services Office at 2818 Como Avenue.

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

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

Intercampus Bus—Lines 13-G, 13-J, 13-L, and 13-U

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

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

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 (Line 13-U).

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

Route Key:

- Line 13-G: Travels from the St. Paul Student Center to Blegen Hall on the West Bank (and vice versa) via Como Avenue and "The Grove."
- Line 13-J: Travels *only* from the St. Paul Student Center to Jones Hall (and vice versa) via Larpenteur and Como avenues.
- Line 13-L: Travels from the St. Paul Student Center to Blegen Hall on the West Bank (and vice versa) via Larpenteur and Como avenues.
- Line 13-U: Travels from the St. Paul Student Center to Blegen Hall on the West Bank (and vice versa) via University and Washington avenues.

There is no charge to ride the intercampus buses, provided you board and exit at on-campus stops. If you board or exit at an off-campus stop, the fare is 30¢ or one punch of a special reduced-fare discount card. These discount cards, which allow 19 rides for \$5, can be purchased at any University bursar or cashier office.

East-West Bank Bus—Lines 13-B, 13-G, 13-L, and 13-U

Free bus service also is available Monday through Friday between the East and West banks at 10-minute intervals between 7:05 a.m. and 1:25 p.m., and at 15- and 30-minute intervals between 1:25 and 5:25 p.m. Lines 13-B, 13-G, and 13-L travel between Blegen Hall and Jones Hall. Buses labeled "Line 13-U—University of Minnesota" travel between Blegen Hall and Lyon Laboratory/Chemical Engineering.

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 20¢ fare (40¢ round trip) is charged to ride the shuttle buses to or from 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 \$4 can be purchased at any University bursar or cashier office.



BOYNTON HEALTH SERVICE

The Boynton Health Service provides outpatient services during the summer session on a basis similar to that during the academic year. The same staff of physicians, dentists, and nurses is on duty. General outpatient services are provided without charge to all students who have paid the student services fee. For certain services and products, such as dental work, prescription drugs, eye glasses, and routine physical examinations, special fees are charged.

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 who pay the student services fee have hospital insurance protection. Students may purchase University-sponsored hospital-medical-surgical insurance during registration. Those who have adequate private hospital insurance, or who are eligible for Medicaid or public assistance, may apply for exemption from the University-sponsored hospital insurance fee. Students who qualify and wish to apply for this exemption must be prepared at the time of registration to supply the name of the insurance company through which they have coverage or to give their Medicaid or public assistance number.

A student who attends both summer terms is eligible for regular outpatient benefits without extra charge until Monday of Welcome Week in the fall.

For further information, visit the Business Office, room W226 of the Boynton Health Service, or call 373-3138.

LIBRARY FACILITIES AND SERVICES

The University Libraries, with nearly 3,500,000 volumes, is one of the fifteen largest research libraries in the United States. It provides the basic resources for the teaching and research needs of the students and faculty of the University. The library handbook, *University of Minnesota Libraries, Twin Cities Campus: A Guide*, directs users to the correct location of specific materials and services.

O. Meredith Wilson Library

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

Among the specialized collections housed in Wilson Library are: the Ames Library of South Asia; the James Ford Bell Library, which contains rare volumes dealing with exploration and trade from the sixteenth through the eighteenth centuries; the East Asian Library; the Middle East Library; and the Rare Books Division.

Offering specialized services and resources are the Reference Division, the Map Division, the Government Publications Division, the Business Reference Service, and the Reserve/Listening Room, which houses a collection of spoken-word recordings.

Walter Library

Until 1968 this building served as the University's central library. It now houses the Art Library; the Chemistry Library, including resources in science and technology; the College Library, primarily for undergraduate study; the Education Library, including psychology and library science materials; the Music Library; the Children's Literature Research Collection; the University Archives; and the Learning Resources Center.

Subject Libraries

The needs of students in some of the specialized scientific and professional fields are generally met through the decentralized collections of various subject libraries. The Architecture; Bio-Medical; Engineering; Geology; Journalism; Law; Mathematics; Mines, Metallurgy, and Chemical Engineering; Natural History; Pharmacy; Physics; and Public Administration libraries are located on the Minneapolis campus.

In St. Paul, the Social Welfare History Archives, 1925 Sather Street, and the Immigration History Research Center, 826 Berry Street, offer specialized resources in these two areas of study and research. The Manuscripts Division, 826 Berry Street, contains a variety of specialized manuscript collections.

St. Paul Campus Libraries

The St. Paul campus is served by a central library that houses resources related to agriculture and home economics. Other departmental libraries serve the fields of Biochemistry, Entomology, Fisheries and Wildlife, Forestry, Horticulture, Plant Pathology, and Veterinary Medicine.

General Library Information

For information about the Twin Cities campus libraries, call 373-2424, or inquire at the Reference Desk, first floor lobby, Wilson Library.

Summer session hours are posted in each library or may be obtained by telephoning the specific library. Telephone numbers are listed in the *Student-Staff Directory*.



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 or sponsors a variety of films, concerts, dances, trips, lectures, art exhibits, and other entertainment and cultural programs, as well as a series of minicourses.

CMU houses a campus Information Center, the Student Activities Center (SAC), 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 400 campus organizations.

CMU has lounges, study carrels, dining facilities, a recreation/games complex, an art/craft studio, and a music listening center that provide 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, student stores, a post office, newsstands, the campus Lost and Found Office, the Locker Rental Service, the International Study and Travel Center, and barber and beauty shops.

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 offer learning experiences; interaction with students, faculty, and staff; and 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 welcomed—stop in at 110 Anderson Hall if interested.

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

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

WBU Bijou films are shown weekly, once in the afternoon and once in the evening. The film schedule is available in the WBU office, 110 Anderson Hall.

During 1978-79 construction of an addition to the West Bank Union will be underway. The construction should cause minimal disruption to activities and services while resulting in expanded facilities.

St. Paul Student Center

The air-conditioned St. Paul Student Center is open throughout the summer session from 7 a.m. to 10 p.m. weekdays. Details about the Student Center and campus activities may be obtained at the information desk of the center or by calling 373-1046.

Facilities include lounges, art galleries, a ballroom, conference rooms, and a games area with bowling lanes, table tennis, and billiard tables. Outings equipment is available for rental and sale. Meeting rooms are available for groups.

The Rouser Room is open for breakfast, light lunches, and snacks.

During 1979, construction of a substantial addition to the building will be under way. Every effort will be made to continue regular services despite the inevitable disruption that accompanies remodeling. The understanding and cooperation of the University community will be appreciated and eventually rewarded with expanded and improved facilities.



Cultural and Recreational Opportunities

RECREATION

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 location of the University makes accessible the resources of the many cultural and recreational facilities of a large metropolitan area. Lakes and lagoons. . . swimming beaches. . . picnic grounds in parks and along roadsides. . . evening concerts on lakeshores and in parks. . . art centers, museums, libraries. . . excellent stores for shopping and browsing. . . a wide choice of places for dining. . . as well as the many professional entertainment activities provided by a large city—all are within easy access by public or private transportation. Trips to the popular North Shore of Lake Superior or to one of the many lakeside resorts for fishing or relaxing are possible on weekends.

CAMPUS SPORTS FACILITIES

Summer session students may participate in a variety of recreational activities such as golf, swimming, table tennis, softball, tennis, paddleball, and handball. Most of the activities are free, except for locker and towel charges.

University facilities include:

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, Como Field, West Bank Field.

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

Complete information on sports programs is available from the Cooke Hall Recreational Sports, telephone 373-4200.

CONCERTS AND LECTURES

Through the Department of Concerts and Lectures, the Summer Session provides a variety of free entertainment. Blues, jazz, folk, opera, symphonic, modern, and chamber music as well as classical, modern, and folk dance are all part of the summer program. Many of these informal programs are held outdoors, and all are open to the public. Watch Northrop Auditorium bulletin boards, campus posters, and the *Minnesota Daily* for announcements about scheduled performances.



UNIVERSITY GALLERY

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

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

Framed original paintings and prints are available for rental to students and staff members and for public display on campus. Call 373-5685 for rental information.

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

BELL MUSEUM OF NATURAL HISTORY

The James Ford Bell Museum of Natural History, 17th and University avenues S.E., Minneapolis campus, features exhibitions of the wildlife of Minnesota, the Touch and See Room, the Jaques Gallery of natural history art, extensive research collections of birds, mammals, reptiles, amphibians, and fish, and the University's natural history library.

The museum's Touch and See Room is a special area that includes pelts, bones, and mounted heads of animals from all over the world. Everything is within easy reach of young children, and handling the items is encouraged. This air-conditioned part of the museum also contains a reading area, where a wide collection of children's books is maintained by the Minneapolis Public Library Children's Department for parents and babysitters with young children.

The museum offers free admission and is open from 9 a.m. to 5 p.m. Monday through Saturday and from 1 to 5 p.m. on Sunday. Guided tours are available to groups upon advance request. The museum has a wheelchair ramp and five wheelchairs and welcomes the handicapped and elderly. There is a bookstore in the lobby that also sells records of bird and animal calls, prints, and stationery. Call 373-2423 for tour appointments or further information.

UNIVERSITY THEATRE

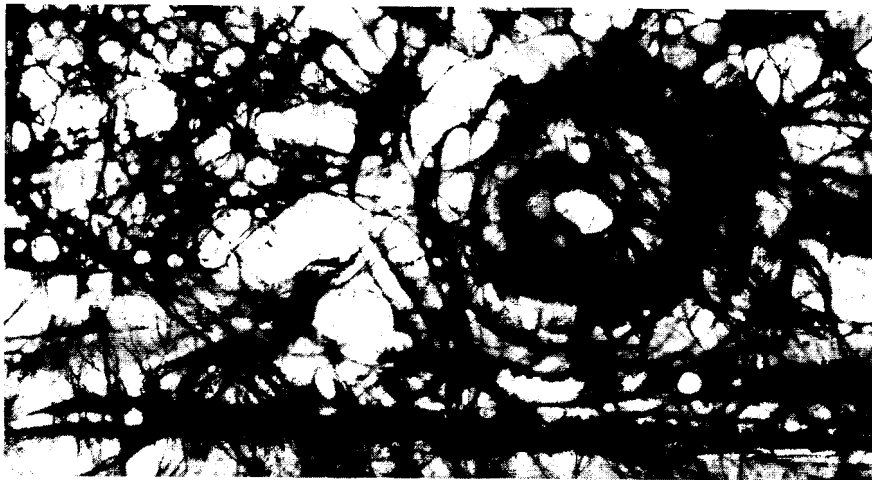
Attending University Theatre productions has become a summer entertainment tradition in Minnesota. Every year thousands of children attend Peppermint Tent productions in Rarig Center and an older audience attends Centennial Showboat productions. The University Theatre will again offer theatrical entertainment for all ages in 1979.

During June and July, Rarig Center is the home of the Peppermint Tent productions for children. Two plays will be offered this summer. Children from 4 to 10 years can enjoy the performances in the air-conditioned comfort of Rarig Center.



The Minnesota Centennial Showboat, a real old-fashioned riverboat, will feature Arthur Wing Pinero's play *Dandy Dick*, a good-natured comedy about horse racing and provincial standards that is set in turn-of-the-century England. In the tradition of the Showboat, this delightful comedy will be presented with olios. Showboat productions are scheduled June through August.

Information about tickets for and performances of all University Theatre productions is available by calling the University Theatre ticket office at 373-2337.



College of Education

MAIL REGISTRATION FOR STUDENTS IN THE COLLEGE OF EDUCATION

Beginning in summer 1979, 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 25* 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.

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 12 noon Monday through Friday, beginning Wednesday, June 13, and closing Friday, July 13. 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 \$75 for the term. Parents are responsible for transporting their children to and from the school.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Art Education

Several workshops will be offered this summer for elementary school teachers, art teachers, and others. Credits earned are applicable to M.A. and M.Ed. degree programs with the approval of the adviser.

Art Media Techniques — ArEd 5001 in the first term (June 13-26) will focus on the artistic development of children. Participants will collect and view children's art and will discuss developmental changes and meanings associated with it.

In the second term, July 18-31, section 1 will focus on integrating the visual arts and music in the schools. Elementary and junior high school teachers will examine and reconstruct a model for integrating the arts in the classroom. Section 2, August 1-14, will explore simple jewelry techniques adaptable to the elementary and secondary school classroom. The emphasis will be on creative experimentation using a variety of inexpensive materials such as cardboard, wood, foil, wire, nails, clay, leather, and papier-mâché.

Curriculum Building in Art Education: Programs for Exceptional Learners — ArEd 5303, August 6-10, will offer an intensive exploration of concepts and techniques of art therapy.

For Elementary School Educators

Workshops in elementary mathematics and science are scheduled for both terms for elementary, middle, and junior high school teachers. Credits earned are applicable to M.A. and M.Ed. degree programs with the approval of the adviser.

Workshop: Science Education — In the first term, attention of elementary teachers is drawn to section 2 of SeEd 5394. The workshop will deal with the use of toys in science classrooms to introduce, illustrate, derive, and explain basic scientific principles.

Workshop: Mathematics Education — Also in the first term, section 1 of MthE 5102 will explore the role of hand-held calculators as an integral part of the elementary school mathematics program in teaching skills, concepts, and problem solving. In the second term, this course will be offered as a practicum and will focus on the diagnosis and remediation of arithmetic learning difficulties. Previous completion of or concurrent registration in MthE 5355, Mathematics for Slow Learning Children, is strongly advised.

Use of Local Facilities for Curriculum Implementation — Two courses are scheduled for second term. Section 1 of Elem 5347 (July 23-August 10), to be conducted at the Minnesota Zoological Garden, will focus on use of the zoo as an instructional tool. Professor Humphreys will conduct learning excursions and treat concepts that the zoo displays embody. Professor Hansen will deal with zoo animal interest as a basis for readiness and oral communication. Professor Youngers will focus on beginning reading, story telling, and creative dramatics.

Section 2 of Elem 5347 (July 23-August 4) will concentrate on the geology of the Twin Cities. The course will include field trips to investigate basic characteristics of the area. Students must pay transportation costs for field trips.

For Secondary School Educators

Workshop: Mathematics Education — MthE 5102, section 2, in first term will examine mathematical principles underlying selected topics in the physical sciences that are fundamental to secondary school science. The course is appropriate for junior and senior high school teachers of science and mathematics.

New Perspectives in the Social Studies — SeEd 5153 (June 18-29) will present a series of instructional activities for teachers. It will include topics such as how to read a newspaper, teaching critical reading skills, interpreting political cartoons, and using the want ads. Noted local journalists will appear as guest speakers.

During the second term (July 17-27), SeEd 5153 will focus on mainstreaming techniques designed for teachers interested in developing specific strategies for individualizing instruction in social studies classrooms. Participants will analyze classroom situations and methods of instruction, focusing on practical alternatives useful in a regular classroom situation.

Current Developments in English and Speech Education — SeEd 5350 (July 16-August 10) will acquaint secondary teachers in all subject matter areas with current theory and methods of writing instruction. Discussions will emphasize stages of the composing process and how they vary according to purpose, audience, and type of discourse (expository, persuasive, expressive, narrative), with implications for devising writing assignments. Samples of students' writing will be used to illustrate the development of writing ability, including free-writing and talk-write activities designed to help students discover ideas and topics.

Workshop: Science Education — Teaching Animal Behavior — SeEd 5394, section 1 (June 12-July 6), is scheduled at the Minnesota Zoological Garden. Upper elementary, middle, and junior high school teachers will work with animals used in classrooms (e.g., gerbils, hamsters, finches, doves, reptiles, frogs, fish, invertebrates, protozoans) and other animals at the zoo. Students from the Twin City Institute for Talented Youth will be available for testing of curricular materials and techniques. Advance reservation is necessary; call (612) 373-0114.

Higher Education

Courses in adult and higher education are offered by several departments — Curriculum and Instruction, Educational Administration, and Social, Psychological, and Philosophical Foundations of Education.

Two complementary courses are scheduled during first term — Higher Education in the United States (Educ 8250) and Adult Learning and Educational Practice (PsyF 5183). A colloquium on political issues in Minnesota postsecondary education will be offered as part of Educ 8250.

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

Educational Administration Two-Year and Doctoral Programs

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

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

Special Workshops

Applicants for admission to degree programs in educational administration are encouraged to participate in an administrator development seminar combining registration in EdAd 5130 and 5139. Assessment and counseling, skill development, and contemporary issues in the field are topics of this special summer seminar (see Course Descriptions section for registration requirements). Registration in both courses (6 credits) is mandatory. Preapplication for this offering is required. Inquiries should be addressed to the Department of Educational Administration, 225 Health Service, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108.

In the first term, section 1 of EdAd 5128 will provide experience in the processes of bargaining, mediation, and arbitration through student participation in a series of simulated activities.

In the second term, section 1 of EdAd 5128 (July 30 through August 7) is designed for experienced administrators (superintendents, central office administrators, and building principals) who plan careers as superintendents. The dynamics of school board-superintendent relationships will be addressed. Experts in educational management and experienced school board members will participate. Preapplication is required. Address inquiries to the Department of Educational Administration, 225 Health Service, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Also in the second term, section 2 of EdAd 5128 (July 17-31) is a 3-credit workshop that will focus on teacher evaluation. Through review of research, examination of existing evaluation policies, procedures, and forms, and discussion of issues involved in teacher development, class members will design a procedure appropriate for their school settings. Films, tapes, and cases of actual school situations will provide exposure to and practice in applying evaluation techniques. The course is especially useful for secondary school administrators and those preparing for the principalship at the secondary level.

The Community School—EdAd 8203 is a course grounded in the assumption that traditional school organization has to be revitalized with a capacity to attain new educational goals appropriate to contemporary society. Social variables of this assumption will be identified and alternative models of school organization explored.

Comparative Postsecondary Study/Practicum Tours

Two opportunities are offered for intensive study of the evolution, organization, governance, and program offerings of 2-year nonbaccalaureate institutions. The first study tour (June 10-20) will include visits in England, Wales, and Scotland. Each participant will register for 3 credits of EdAd 5120, Practicum: Postsecondary Administration. The second study tour (June 24-30) will visit postsecondary nonbaccalaureate institutions in Germany. Participants in this tour will register for 3 credits of EdAd 5128, Workshop: Educational Administration. *Preapplication and deposit are required.* Persons interested in either or both of the study tours should address inquiries to the Department of Educational Administration, 225 Health Service, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108.

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION

Physical Education

Workshop: Dance in Education — Students who take PE 5700, June 25 through July 13, register for 6 credits in an intensive workshop on modern dance as a creative activity, performing art, and movement therapy. The workshop will be taught by artists Jeanette Stoner, Hannah Kahn, Nicholas Gunn, Marylee Hardenbergh, Linda Tarnay, and Nadine Jette. Please refer to the workshop brochure or Nadine Jette for information about these artists. Emphasis of the course will be on modern dance technique, dance improvisation and composition, dance repertory theatre, and dance/movement therapy. Because enrollment is limited to 100 students and preapplication is required, those interested are encouraged to make early inquiry to Professor Nadine Jette, 159 Norris Hall, 172 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Practicum: Prevention and Care of Athletic Injuries—PE 5620 will be offered first term as a concentrated 2-week practicum (June 25 through July 6). Instructors for the course will be Jeffrey Monroe, assistant athletic trainer, and James Marshall, athletic trainer, University of Minnesota.

Coaching Individual, Dual, or Team Sports: Gymnastics—PE 5740 is a 6-day (July 9-14) concentrated offering on coaching gymnastics offered during first term. Instructors for the workshop will be Fred Roethlisberger, coach of the University of Minnesota Men's three-time Big Ten Championship Gymnastics Team, Mid-East Collegiate Coach of the Year in 1972 and 1978, U.S. National Team Coach in 1977 and 1978, and Pan American Games Gold Medalist in 1967 and Olympian in 1968; and Katalin Deli, University of Minnesota Women's Gymnastics Team head coach, U.S.G.F. Region IV Age Group Developmental Director, U.S.A. Elite coach, member of Hungarian Junior National Team, and competitor in many national and international meets. Both practical and theoretical instruction in the techniques of coaching gymnastics will be offered. A written assignment and a final examination will be required.

Recreation and Park Administration

Workshop: Contemporary Issues in Leisure Services—Rec 5900, section 1, June 11-15, will feature leadership in and an interdisciplinary approach to programming outdoor education concepts, ideas, and experiences. The workshop will stress techniques that are appropriate for use in the outdoor laboratory environment. It is open to in-service teachers, recreation leaders, college juniors and seniors, and graduate students. The class will have an organizational meeting June 11; on-site meetings devoted to outdoor field experience and trips will begin June 12. Participants will live in semidormitory accommodations at Camp St. Croix, Hudson, Wisconsin, 30 miles from Minneapolis. In addition to tuition, there will be a charge of \$50.00 for room, food, and mimeographed materials. An information sheet is available from Karla Henderson, 204 Cooke Hall, 1900 University Avenue S.E., University of Minnesota, Minneapolis, Minnesota 55455.

School Health Education

Topics: Educational Aspects of Drug Use and Abuse—Basic background information on alcohol and other drugs and chemicals with emphasis on curriculum concepts, teaching methodology, materials, and referral procedures appropriate for elementary, junior high, and senior high school. Classes will meet from July 17 through July 27.

DEPARTMENT OF PSYCHOEDUCATIONAL STUDIES

Counseling and Student Personnel Psychology

Counseling Psychology I — in the first term (June 11-22), section 1 of CSPP 5300 is designed to help participants develop skill in providing classroom and counseling learning environments appropriate for different kinds of students. Student behavior will be examined for differences in quality of thinking, with a concrete to abstract framework. Strategies for designing environments to meet differences in learning needs will be examined and planned. The focus will be on creating learning environments that lead to development of intrinsic motivation, ability to adapt to change, and interpersonal effectiveness, with attention to goals, curricular intervention and materials, and assessment. This workshop is appropriate for teachers at all levels, counselors inter-

ested in the learning process, and those concerned with mainstreaming. information about the workshop and applications are available from Professor W. Wesley Tennyson, 137 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-2239.

Career Development and Changing Sex Roles — Leadership training for personnel involved in programs related to career development, career education, organizational change, and sex-role stereotyping will be the subject of a workshop for personnel working in school, vocational-technical institute, and college settings. Persons desiring to acquire leadership skills in sex-fair career development programs will be introduced to materials, concepts, and practices for use in their own institutions. Participants register for 3 credits in CSPP 5300, section 2, scheduled June 11-22. Information about the workshop and applications for participation are available from Professor L. Sunny Hansen, 139 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-0202.

Counseling Psychology II — In the second term (July 16-27), CSPP 5300, Workshop: Counseling Psychology, will focus on adaptation of developmental and career guidance strategies and materials for elementary school instructional and counseling settings. Curricular materials examined will be selected for their usefulness in promoting process as well as content objectives. Participants will practice adapting the materials to specific settings, considering ways of using materials in the ongoing class or curriculum; selection of materials for particular educational purposes; selection of materials for use with learners of varying abilities, ages, and socioeconomic and cultural backgrounds; developmental sequencing to promote continuity of learning; and creative applications to stimulate student interest. This workshop is appropriate for teachers, counselors, administrators, and others interested in elementary education or mainstreaming at this level. Information about the workshop and applications are available from Professor W. Wesley Tennyson, 137 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-2239.

Special Education

Teaching Exceptional Children (SLBP Resource or Clinical Teacher Sequence) — In the first term, the 6 credits earned in a combined offering of SpEd 5610 and 5611 may be applied to SLBP:LD teacher licensure or to a graduate degree by those students admitted to the Graduate School. Institute participants will work with learning-disabled children, concentrating on the remediation of academic problems and the quality of interaction between teacher and learner. Enrollment is limited to those who have completed SpEd 5110 and 5111 during the academic year 1978-79. Advance application is required. Requests should be directed to Professor Virginia Bruininks, 108A Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Teaching Children With Emotional Disturbances — The 6 credits earned in a workshop combining sections 1 of SpEd 5302 and 5601, scheduled during a 6-week period from June 11 through July 21, may be applied to SLBP:ED licensure or to a graduate degree with consent of the adviser. Priority will be given to those seeking licensure, but teachers, administrators, and other professionals in the field are encouraged to apply for admission. Advance application is required. Requests should be directed to Professor Frank H. Wood, 106 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Agricultural Education

FFA Advisers Workshop — AgEd 5041 will be offered in conjunction with the Minnesota FFA Association Leadership Camp, July 23-27. Emphasis of the workshop will be on procedures and processes appropriate for using new instructional materials, and on planning chapter activities, leadership and personal development activities, and state and national FFA activities. Information is available from Professor Gary Leske, 130 Classroom Office Building, 1994 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Vocational Education

Philosophy and Practice of Vocational Education — VoEd 5300 will be offered three times this summer — June 11-22, July 2-13, and July 16-27. The course is required for vocational licensure in Minnesota.

Special Topics in Instruction — VoEd 5100 (June 11-29 and July 16-August 3) provides an opportunity for teachers to become familiar with career exploration and the world of work and to reassess subject content, teaching methods, and resource materials as a result of information gained in field trip and class experiences.

Special Topics in Administration — VoEd 5102 (July 16-20) will focus on information for planning and evaluating vocational education programs. National, state, and local data sources will be identified and reviewed. A second offering (July 23-27) focuses on legal aspects of managing vocational education. It is designed to help managers of vocational education understand laws that affect their job responsibilities. The third offering (August 6-8) is designed to help lay persons and educators understand new federal vocational requirements that require all local vocational programs to utilize advisory committees.

Special Topics in Curriculum — VoEd 5101 (August 6-17) will help prepare teachers to utilize curriculum materials, accounting procedures, and business analysis concepts necessary to conduct classes in small-business management. Preapplication is required.

Teaching Entrepreneurship: Small Business Management — VoEd 5700 (July 2-13) will focus on methods, organization, curriculum modification, and implementation of educational programs that teach youth about business management.

Business and Distributive Education

Directed Occupational Experience and Seminar — During the first summer term, through BDE 5361, June 12-29, in-service teachers are offered the opportunity to complete planned internship experiences in Twin Cities business firms to update their knowledge and skills for teaching marketing, management, and distributive education. The 12 full-day internship sessions will be preceded by a 2-day orientation and followed by a 1-day seminar on campus. Preapplication is required. Applications and information are available from Professor Mary Klaurens, 275 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455 (telephone 373-9722).

Consumer Education — Teachers from all subject areas and teaching levels will have the opportunity to improve their teaching competence in BDE 5153, Consumer Education in the Schools (4 credits). The course is scheduled June 12-29.

Special Needs — BDE 5356, Business and Distributive Education for Students With Special Needs (4 credits), will be offered during first summer term, June 12-29. The course is designed to assist educators in dealing with mainstreaming. Topics such as student assessment, special teaching methodologies, and use of instructional aids will be covered.

Coordination Techniques — Persons seeking licensure as office, distributive, or work experience coordinators are encouraged to enroll in BDE 5352, Coordination Techniques in Business and Distributive Education (4 credits). The course is scheduled during second summer term, July 17 through August 3.

Teaching Shorthand — Teachers interested in improving their shorthand teaching skills should be aware that BDE 5156, Research and Methods in Teaching Shorthand and Transcription (3 credits), will be taught for the first time during second summer term, July 17 through August 3. This course is designed to help them apply research findings to classroom methodology and materials development.

Program Developments — Two sections of BDE 5360, Program Developments in Business and Distributive Education, are scheduled for second summer term. Section 1 (1 credit), July 30 through August 1, will focus on the use of computers in the classroom. Topics to be studied include examination and use of computers for such classroom applications. Program promotion is the focus of section 2 (1 credit), August 9 and 10. Students will examine and develop techniques that can be used in promoting and publicizing program offerings.

Materials and Methods in Cooperative Vocational Education — Persons seeking licensure in cooperative vocational education, or those desiring to upgrade their skills, are encouraged to enroll in BDE 5251, Materials and Methods in Cooperative Vocational Education (4 credits). The course is scheduled during second summer term, July 17 through August 3. It will deal with the planning and development of instructional materials, evaluation, and managing the learning environment to maximize the effectiveness of classroom instruction and supervised work experience.

Home Economics Education

Workshop: Child Development and Family Relations — HEEd 5405, section 1, June 11-22, is designed to help educators develop expertise in approaches to parenting education at secondary and adult levels. Students will be exposed to experiential learning techniques and to materials for teaching child development and parenting. Tuition will be paid for 50 preselected students who must meet specified criteria. Advance application is required. This course, offered for 3 credits, is designed to be taken concurrently with HEEd 5430. For information, write to Ruth G. Thomas, Department of Home Economics Education, 386 McNeal Hall, 1985 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Workshop: Contemporary Problems in Home Economics Education — HEEd 5430, offered for 3 credits June 11-22, is designed to be taken concurrently with HEEd 5405. Participants will apply concepts and methods learned in HEEd 5405 to individual situations. Small group miniworkshops will be used to address specific problems. The workshop is limited to 50 students. Advance application is required. For information, write to Ruth G. Thomas, Department of Home Economics Education, 386 McNeal Hall, 1985 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Workshop: Home Planning and Furnishing — HEEd 5400, offered June 18-22, is a 6 hour per day offering that will deal with educational strategies for and new developments in teaching housing subjects at secondary and adult levels.

Workshop: Materials for Instruction — HEEd 5415, offered for 3 credits June 25-29 will focus on materials and methods for, community resources for, and special problems in consumer education.

Methods in Teaching Home Economics: Theory and Technology — HEEd 5310, offered July 30 through August 10, will focus on frameworks for approaching instructional design in cognitive and affective areas. Emphasis will be on energy education.

Family Life Education: Curriculum, Methods, and Materials — HEEd 5407, offered July 17-27, will focus on instructional design and implementation for family life education. This course is applicable to family life endorsement requirements for vocational licensure in Minnesota.

Industrial Education

Occupational Experience — Those interested in gaining work experience for industrial arts or vocational licensure may earn the equivalent of 2 hours of work experience for each 1 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. Information about the program is available from Stephen Miletich, 125 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone 373-7791.

Instructional Materials Laboratory for Nonmajors — Ind 5400, offered June 25 through July 13 during the first term, is designed to help elementary teachers, recreation and park personnel, and occupational therapists to use projects in the areas of woods, metals, plastics, and printing in their programs. Basic instruction in planning and construction as well as use of hand and power tools is included.

Industrial Education Workshop: Coordination Methods and Materials — Ind 5306, offered August 6-10, will focus on development of materials for industrial education cooperative programs in high schools and area vocational-technical schools. This is a licensure course for teacher-coordinators and coordinators.

Instructional Materials Laboratory: Working With Special Needs Students — Ind 5600, offered June 25-July 13, will deal with the problems of teaching handicapped and disadvantaged students in industrial education. Special attention will be given to adapting the facilities, curriculum, and teaching methodology to meet the needs of these students.



College of Forestry

Forestry in the Urban Environment — The College of Forestry will offer a 3- credit, 1-week program for teachers during the first summer term, June 11-15.

The program focus will be on forestry in the urban environment. Field exercises will emphasize techniques and materials useful for teaching forestry principles in indoor and outdoor classrooms in metropolitan centers. Discussions and presentations by guest lecturers will deal with contemporary forestry issues.

Field exercises will be conducted in forest areas in and around the Twin Cities. Approximately one-half of the course time will be conducted in field settings.

The objectives of the course are threefold: to help participants increase their understanding of urban forest ecosystems and their ability to communicate this understanding to others, to impart skills/techniques and develop materials useful for teaching forestry in an urban setting, and to help participants develop an appreciation for the forest in an urban community.

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 13 other Minnesota colleges. Its 1979 student groups will study in Haiti, south India, Sweden, and Tanzania.

The SPAN program involves extensive preparation, 8 to 10 weeks abroad, and production of a research paper. Preparation, during the year preceding the summer abroad, includes study of the language, history, social and political ambiance, and culture of the area to be visited. Each "country group" of about a dozen students meets regularly with a faculty adviser. During their period of study abroad, students conduct interviews, visit appropriate institutions, use libraries and other research facilities, and often live with local families. Upon return, they complete their SPAN paper, a major academic report growing from their study at home and abroad. Upon satisfactory completion of the preparation year and of the paper the student earns 12 quarter credits in the Foreign Studies Seminar, FS 5960.

Students must apply for SPAN appointments by the fall quarter preceding the summer abroad. Information about 1980 applications may be obtained from the SPAN Office, 103 Nolte Center, 315 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Summer Term in Germany

College students or high school graduates who have completed a basic course in German are invited to take part in a summer program using the facilities of Ludwig-Maximilians-Universität in Munich, Germany, during second term. CLA credit courses to be offered (in German) include conversation and composition, contemporary Germany, and modern German literature. Permission of the German department is required. Consult the Summer Session office or Professor Gerhard Weiss, Department of German, 219 Folwell Hall, 9 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, for further information.

FIELDWORK OPPORTUNITIES

Field Experience Learning

Students who have arranged a volunteer or salaried summer project in an appropriate setting may often register under a directed studies course number to receive credit for their work. Those with Urban Corps or Governor's Internship experience, as well as those who have planned a project or would like to do so, may consult an adviser in the appropriate department or in the Office for Special Learning Opportunities (B18 Johnston Hall, 373-7550) about receiving credit for such a project.

Registration for these projects, when approved, is under departmental course numbers 3970 or 5970, or appropriate interdepartmental directed studies number 3970 (see page 111).

Geography Field Session

A field research seminar, Geog 5701 and 8400, scheduled during the first term, will explore lake and prairie landscapes of the forest-prairie margins of western Minnesota and westward into the grasslands. Two basic research subjects will be explored. The first will be patterns of lake conditions and the relationship between conditions and land use practices in the contributing drainage basin. The second will be relict remnants of prairie vegetation and whether there is evidence to support the accuracy of the descriptive vegetational geographies of grasslands from various historic sources and more contemporary descriptions in soils bulletins.

Reservations must be made by June 5. For costs, details of the program, transportation arrangements, and information on field expense subsidy, consult Professor Dwight Brown, Department of Geography, 414 Social Sciences Building, 267 19th Avenue South, University of Minnesota, Minneapolis, Minnesota 55455.

INTENSIVE LANGUAGE STUDY

Beginning French, Italian, Japanese, Portuguese, Russian, and Spanish will be taught in intensive 10-week courses, each offered for 15 credits for the equivalent of 3 quarters of study.

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

Classics: Latin

Intensive beginning Latin is offered for students with or without previous language study. Students who have studied another language, or who have high ability and motivation, may register for Lat 3001 (10 cr) in the first term and Lat 3104 (5 cr) in the second term; those who have not previously studied a foreign language who wish to acquire experience and ability in Latin may register for Lat 1101 and 1102 (5 cr each) in the first term and Lat 3104 in the second term.

Ulpan Hebrew Language Course

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

The Ulpan Hebrew language course offered this summer will extend over the two terms, June 11 through August 17. It will provide intensive study of the language as well as learning experiences in Israeli culture. The program is designed for individuals who have not previously studied Hebrew. Students will spend 15 hours per week in class during the 10 weeks. In addition to formal class sessions, special learning activities that involve natural and spontaneous use of Hebrew will include games and sports activities, Israeli folk dancing and singing, meeting with delegates of Israeli students from Rishon le'Tzion, and sessions with Israeli artists, musicians, and other professionals.

For further information, write Program in Ancient Near Eastern and Jewish Studies, 178 Klaeber Court, 320 16th Avenue S.E., University of Minnesota, Minneapolis, Minnesota 55455.

OTHER SPECIAL OPPORTUNITIES

Children's Literature Forum

The Children's Literature Forum will be held ten Thursdays, June 11 through August 17, from 2:00 to 3:30 p.m., in 109 Walter Library. Specialists in children's literature will address each forum. They will be followed by an informal exchange among members of the class, faculty, Kerlan Friends, and community. A newsletter identifying the speakers will be available in Walter Library the first week of the summer session.

Interplay '79: A Search for Understanding

Fifteen departments from throughout the University, the University Gallery, and six professional arts organizations will join this summer in presenting an experimental interdisciplinary course, ID 3111, that will explore interrelationships between the arts, humanities, social sciences, and sciences in the latter half of the 19th century. The course will be open to regularly enrolled University students and to others who wish to enroll for credit or on an audit basis.

The 4-credit, 3 week course, June 11-29, will consist of 18 1-week "minicourses" that meet for 1½ hours Mondays, Tuesdays, Thursdays, and Fridays. On Wednesdays, students will attend a "core course," which will attempt to integrate the materials covered in the minicourses. Students will be required to enroll in one of the minicourses during each of the 3 weeks, choosing one from each of three groupings each week. In addition, students must attend each of seven performances and exhibitions presented by the participating professional arts organizations and the University Gallery. Included will be performances by the Children's Theatre Company, Guthrie Theater and Minnesota Orchestra, and exhibitions at the Minneapolis Institute of Arts, Walker Art Center, and University Gallery. Tickets to these events will be included in the course packet.

The course is being made possible, in part, through a grant from the National Endowment for the Humanities and support from local foundations.

Journalism and Mass Communication

The annual 3-week Publications Workshop, June 12-29, is designed principally for high school journalism teachers and newspaper, yearbook, and magazine advisers, but is open to others. The course, Jour 5182 (4 credits), is scheduled in the afternoon. The workshop has the cooperation of the National Scholastic Press Association (for secondary schools) and the Associated Collegiate Press.

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.

Workshops for high school newspaper, yearbook, and magazine staff members are offered by the SJMC July 16 through August 10. Details may be obtained from the MHSPA, 110 Murphy Hall, 206 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. These workshops do not offer college credit.

Linguistics: English as a Second Language

An intensive English language and orientation program will be offered July 20 through September 7. 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, grammar, reading, writing, and speech pronunciation; language laboratory practice; and field trips, out-of-state visits, and an American in-home experience.

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

Media Generalist Licensure Program

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

Philosophy of Modern Literature

Philosophical ideas expressed in major works of modern literature will be examined in a course to be offered during the first term, Phil 3302. This course will examine the marriage between moral philosophy and literature. Many difficult moral problems dramatized and given life in great plays and novels will be studied. Students will read these plays and novels and see how they illuminate the moral life.

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. The workshop will meet in small groups June 12-24 (see the course listing for a schedule).

Minnesota History Workshop

Designed for elementary and secondary school teachers, the Minnesota History Workshop (July 16-27) offers study of Minnesota historical materials and methods of using local history in the classroom. The workshop is held at the Minnesota Historical Society in St. Paul, to introduce teachers to the society's collections. Those who have not enrolled in previous workshops, register for 5 credits in Hist 5381; first time "repeaters" may also take the workshop for 5 credits but should register for Hist 5970, section 2. Further information is available from the Summer Session office.



FOR HIGH SCHOOL STUDENTS

High School Musicians Honors Program

The Department of Music will invite 160 specially qualified high school musicians to spend 2 weeks on the University campus to participate in its annual music honors program. The program, June 17 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 Frank Benciscutto, 14 Northrop Memorial Auditorium, 84 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.



Department of Military Science

UNIVERSITY ARMY ROTC SUMMER PROGRAM

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

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



School of Public Health

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

EPIDEMIOLOGY

An intensive program in epidemiology will be offered by the School of Public Health and the Department of Conferences June 17 through July 7. 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.

INTERDISCIPLINARY TEAM BUILDING: INSTRUCTIONAL LABORATORY AND TEAM FIELD PROJECT

A 10-credit course, PubH 5004, will be offered for students and community workers in the health sciences (social workers, nurses, therapists, health educators, pharmacists, administrators, planners, environmentalists, physicians, and dentists) who are interested in applying the interdisciplinary team approach to community health problems. Prerequisite is satisfactory completion in spring quarter 1979 of PubH 5008, Special Workshop in Team Building, which will focus on the development of team skills such as resource sharing and utilization, verbal and nonverbal communications, giving and receiving feedback, leadership roles and styles, negotiations, decision making and problem solving, conflict utilization, power, and process intervention. Interdisciplinary student teams will form and select their own summer projects during the spring workshop.

The 10-week summer program will begin with an intensive 2-day laboratory session focusing on the application of team skills to the selected summer field projects. The summer program will include a 2-day laboratory session at the midway point of the course and will conclude with an intensive 3-day residential debriefing-reporting session involving students, faculty members, and agency personnel. For further information about the course and the prerequisite spring quarter workshop, contact Robert W. Schwanke, associate professor and director of interdisciplinary studies in the School of Public Health.



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 2 to 13. 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 Aeronautical Engineering, 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

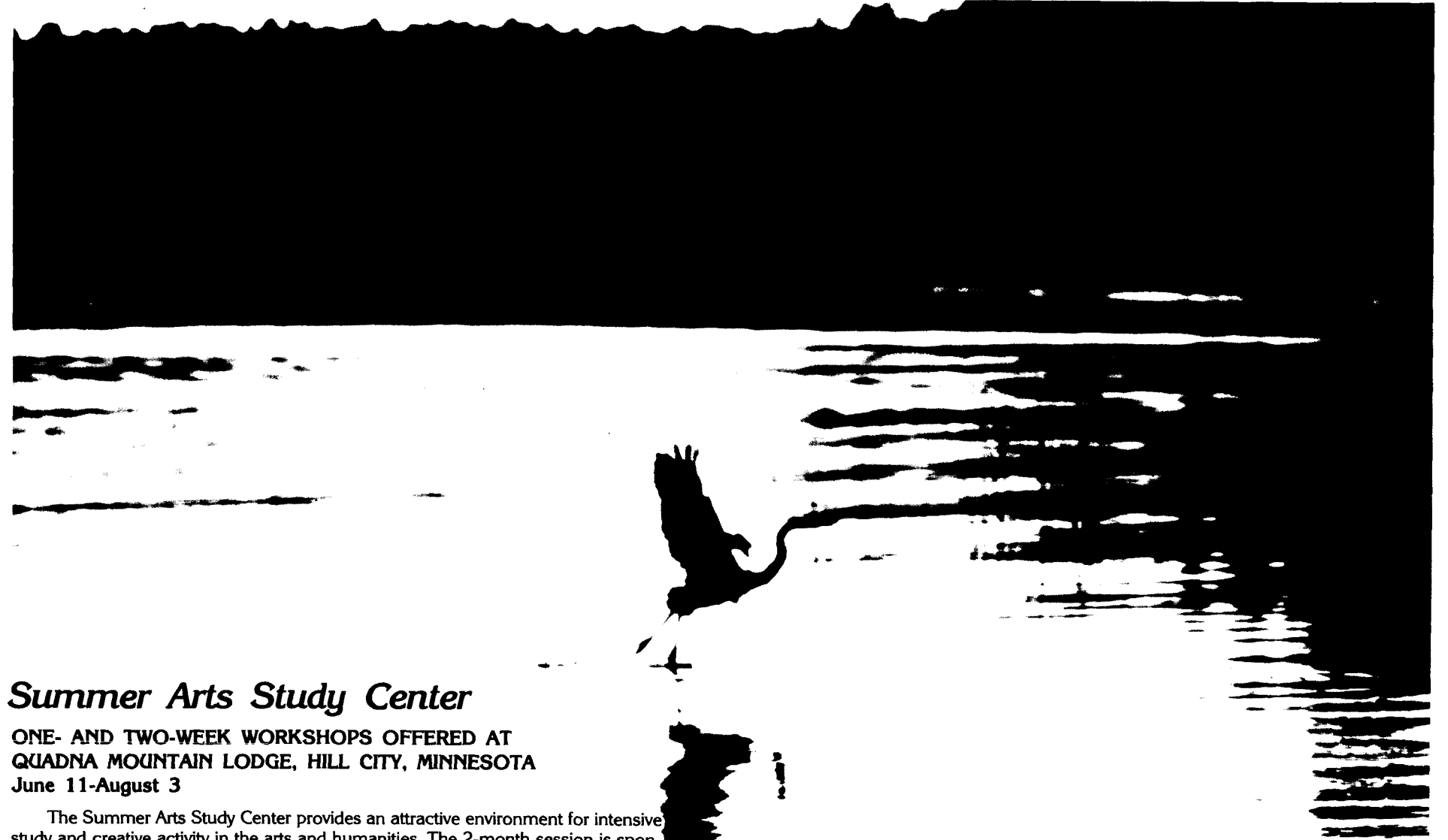
Fieldwork in geologic mapping (Geo 5110), will be conducted each term in the Sawatch Mountains near Gunnison, Colorado. The course is restricted to geology and geophysics majors who have satisfactorily completed the core sequence of Geo 1111 (or 1001), 3101, 3102, 3103, 3112, and 3401. Geo 5100, offered in the spring quarter, is strongly recommended as preparation. A major paper is required.

Geophysics majors have the option of attending the Colorado School of Mines.

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 OFFERED AT
QUADNA MOUNTAIN LODGE, HILL CITY, MINNESOTA
June 11-August 3**

The Summer Arts Study Center provides an attractive environment for intensive study and creative activity in the arts and humanities. The 2-month session is sponsored by the University of Minnesota in cooperation with the Grand Rapids Performing Arts Council. Some workshops are planned for people with a general background in the arts and some are designed for those seeking advanced work with an expert. Courses are designed to stimulate students to discover and learn about the arts creatively through participation in them. Graduate and undergraduate credit is available.

Registration for these courses is conducted through Continuing Education and Extension. Call 373-1925 for information, or register by mail (see registration form following workshop listings).

ARTS COURSES

- ABSTRACTION IN NATURE (ArtS 5420, section 82)** July 23-27
Exploration of the abstract quality in nature and the independent quality of space, light, and color. Development of heightened perception of natural forms in microcosms of landscape. Work in the medium (oil, acrylic, watercolor, collage) of the student's choice. Instructor: Kate Mitchell.
\$75 3 credits
- ART MEDIA TECHNIQUES (ArEd 5001, section 80)** July 9-13
Alternatives to the traditional arts in elementary school curricula. Related arts activities using the visual arts, music, creative dramatics and movement; will culminate in a participatory "arts experience." Instructor: Margaret Di Blasio.
\$75, plus a special course fee of \$7 3 credits
- COLOR (ArtS 5420, section 84)** July 30-August 3
The use of color in terms of making fine art. Students will combine the various structural uses of color with their own ideas. Acrylic paints will be used to mix and modify color. Informal lectures and critiques will be given daily. Instructor: David Feinberg.
\$75 3 credits
- DRAWING (ArtS 5420, section 80)** July 2-6
Designed to increase perception, explore visual elements and meaningful organization, and develop a personal mode of expression. Various media: landscape, still life, model. Individual instruction, critiques. Instructor: Judith Roode.
\$75, plus a course fee of \$5 3 credits
- PAINTING (ArtS 5420, section 87)** June 11-15
Meaningful organization of visual elements with emphasis on fundamentals of pictorial structure and development of personal expression. Students may work with oil, acrylic, or watercolor media, and with still life, landscape, abstract, or nature subjects. Individual instruction, critiques. Instructor: William Roode.
\$75 3 credits
- PAINTING IN OIL OR ACRYLICS (ArtS 5420, section 83)** July 30-August 3
Beginners will receive fundamental instruction in the techniques of use of oils or acrylics while advanced students will work toward development of a personal style. Students may work in abstract, realistic, or nature forms. Emphasis is on self-expression. Discussion, lectures, slides, and critiques. Instructor: Herman Somberg.
\$75 3 credits
- PHOTOGRAPHY (ArtS 5420, section 81)** July 23-27
For students familiar with the photographic process. Field trips, lectures, slide presentations, and discussions focusing on choices available to the photographer. Critiques, individual work, open lab. Instructor: Gary Hallman.
\$75, plus a course fee of \$14 3 credits
- PHOTOGRAPHY, BEGINNING (ArtS 1420, section 80)** July 16-20
Introduction to methods, materials, and equipment. Use of camera, demonstrations, and darkroom work. Instructor: David Husom.
\$75, plus a course fee of \$14 3 credits (undergraduate)
- POTTERY (ArtS 5420, section 88)** June 18-29
Salt-glazing and raku firing, throwing and hand building, kiln construction and firing, burners and fuels (wood, oil, propane). Intended to teach the potter to set up and maintain a studio complete with wheels, kilns, clay, and glazes. Instructor: Douglas Johnson.
\$100, plus a course fee of \$30 4 credits

WATERCOLOR (ArtS 5420, section 89)

- Development of aesthetic sensibilities through study of still life, landscape, and abstract design. Students will work in the watercolor media: transparent watercolor, gouache, casein, and tempera.
\$75 3 credits

CRAFTS/DESIGN COURSES

- ALTERNATIVE ENERGY SOURCES (Dsgn 5586, section 80)** July 16-20
Alternative, efficient energy sources for dwellings, communities, and life-styles. Theory of and practice in solar design appropriate to the Upper Midwest, energy efficient techniques for new houses, energy modifications for older dwellings, and human value assumptions. Activities will include experimentation with solar principles, building a solar collector capable of heating hot water or space in the average home, building solar greenhouse models and solar ovens, lectures, slide presentations, field trips, and group projects. Instructors: Darryl Thayer and Karen Wilson.
\$75, plus a special course fee of \$25 3 credits
- DESIGN IN NATURE (Dsgn 5585, section 80)** July 16-20
Configuration and the elements of configuration in landscape painting, point, line, plane, color, value, and texture. In addition to painting in the surrounding area, students will discuss their own work, and the work of others, and will work with the instructor individually and in groups. Instructor: Eugene Larkin.
\$75 3 credits
- FIBER DESIGN AND SCULPTURE, OFF LOOM (Dsgn 5532, section 81)** June 25-29
Sculptural forms, fiber manipulation and assemblage using crochet, wrappings, coiling, twining, plaiting, and card weaving. Independent direction at all levels of experience. Limited to 25. Instructor: Charlene Burningham.
\$75, plus a laboratory fee of \$20 3 credits
- FABRIC DESIGN, PRINTING, AND DYEING BY HAND (Dsgn 5531, section 80)** July 9-13
Students will concentrate on either relief printing or dyeing with resist techniques. Lectures, demonstrations, critiques. Instructor: Richard Abell.
\$75, plus a course fee of \$25 3 credits
- PROBLEMS: JEWELRY MAKING (Pewter Casting) (Dsgn 5587, section 80)** July 16-20
Basic techniques in the casting of pewter, model design, sprue preparation, investing, wax elimination, casting, and finishing. Students are encouraged to continue in the holloware workshop. Instructor: James Roy.
\$75, plus a course fee of \$25 3 credits
- PROBLEMS: JEWELRY MAKING (Pewter Holloware) (Dsgn 5587, section 81)** July 23-27
Basic techniques in raising, forging, and fabricating pewter holloware. Techniques of forming, soldering, fusing, and finishing. Students are encouraged to enroll in the pewter casting workshop. Instructor: James Roy.
\$75, plus a course fee of \$25 3 credits
- STAINED GLASS (Dsgn 5585, section 82)** June 11-15
Designing the stained glass window, including drawing and duplicating the cartoon, structural considerations and feasibility of the cuts. Class cutting demonstrations, two joining processes — copper foil and extruded lead, and soldering demonstrations including various solders and fluxes as well as patina. Students are also encouraged to enroll in section 83 of this class. Instructor: Gary Loch.
\$75, plus a course fee of \$25 3 credits
- STAINED GLASS (Dsgn 5585, section 83)** June 18-22
Continuation of the work of section 82 of this class. Additional joining techniques — epoxy, combined, and 3-D application. Soldering demonstrations include patina and a combination of various nonglass materials. Emphasis on 3-D investigation using hand-blown rondels and zinc channel. Instructor: Gary Loch.
\$75, plus a course fee of \$25 3 credits

LITERATURE AND RELATED COURSES

FICTION WRITER'S WORKSHOP (Comp 5101, section 80)

July 30-August 3

Students will read and criticize each other's work. Assignments and exercises will help develop individual and imaginative writing. Content: how to keep and use a writer's notebook; character: how to develop in-depth characters and how to show change; tension: how to catch and hold interest, develop the narrative line, use the fragmented narrative. Instructor: Alan Burns.

\$75

3 credits

FOLKLORE AND FOLKLIFE (AmSt 5920, section 80)

July 2-6

The cultural contexts, forms, and functions of folklore. The ways in which folklife studies can supplement and enrich school curricula and museum interpretations. Emphasis on folklore in the modern world, legends and belief, documentation of folk history, and the uses of folklore in analyzing films and literature. Discussions of readings on special case studies and analyses will be supplemented by films. Instructor: Willard Moore.

\$75

2 credits

INTENSIVE SHAKESPEARE: SHAKESPEARE AT MIDCAREER AND FULL TILT (Engl 5940, section 80)

June 25-29

Intensive study and discussion of four representative plays written between 1599 and 1604, two comedies (*Twelfth Night* and *All's Well That Ends Well*) and two tragedies (*Hamlet* and *Othello*). The plays will be studied as individual works of dramatic verbal art, as comic and tragic expressions of Shakespeare's artistic and other concerns at the turn of the 17th century, and as fictions of perennial pertinence to the human condition. Emphasis will be on Shakespeare's language—as a source of enlightenment and excitement in itself, as the reader's means of access to the action and the whole, and as something of an obstacle for the 20th-century American reader that the week's study will try to transform into a facility. Instructor: Thomas Clayton.

\$75

3 credits

MYTHS AND FAITHS (Traditional and Posttraditional) IN MODERN LITERATURE (Hum 5030, section 80)

July 16-20

The creation and critique of myth. Myths that attract followers and function as faiths will be explored through selected works of D. H. Lawrence, C. S. Lewis, Richard Bach, Ayn Rand, Kurt Vonnegut, Hermann Hesse, Ignazio Silone, and Arthur Clarke. Credits will be based on oral reports completed during the session or papers completed subsequently. Instructor: Robert B. Tapp.

\$75

3 credits

POETRY AND POETRY WRITING (Engl 5910, section 80)

July 30-August 3

Typical strategies, themes, and styles in contemporary poetry, reading and "poking" poetry, assignments and poetry games useful for teaching at all levels, visiting poet, readings. Instructor: Michael Dennis Browne.

\$75

3 credits

PRIVATE WRITING: JOURNALS AND DIARIES (Engl 5108, section 80)

June 11-15

Readings from the journals and diaries of the famous and the obscure (18th through 20th centuries), as well as suggestions for keeping a personal journal. The uses of notebooks, journals, and other informal and private writing. Historical background of the journal as a genre. Focus will be on the creative writing process and its use in daily life. Instructor: Patricia Hampl.

\$75

3 credits

THEATRE

AMERICAN FIDDLE TRADITION (Mus 5950, section 80)

July 23-27

Fiddle music — performance, techniques, oral transmission, cultural heritage, and potential use as a pedagogical tool and as a subject for regional collecting projects. The repertoire of America's country dance tunes — breakdowns, reels, hornpipes, waltzes, schottisches, ragtime, and bluegrass. Although the course is intended for violin or fiddle players, a limited number of mandolin, guitar, and banjo players will be accepted. Instructor: Alan Kagan.

\$75

3 credits

DRAMA AND RELATED ARTS IN EDUCATION (Th 5950, section 82)

June 18-22

Practical approaches to beginning and developing drama programs for grades K-12, concentrating on the senses, expression, movement, improvisation, speech, writing, painting, model making, tape recording, and slide making. Beginning group play making; students will work without audience or criticism. A positive approach to developing personal confidence and enjoyment will be emphasized. Instructor: Brian Way.

\$75, plus a special course fee of \$5

2 credits

INTRODUCTION TO PARTICIPATORY THEATRE

(Approaches to Imaginative Theatre Production) (Th 5950, section 83)

June 25-29

For persons with some experience in drama or the other arts. Will use concepts studied in the first workshop to deepen and enrich experience and expression and to develop "communication." Material will be appropriate for grades 5-12. Emphasis on the practice and development of dance-drama, improvisation, early approaches to scriptwriting, writing scripts based on original works, and imaginative approaches to producing a play. Instructor: Brian Way.

\$75, plus a special course fee of \$5

2 credits

TOPICS IN THEATRE: MIME (Th 5950, section 80)

July 9-13

For people who wish to discover the dynamics of the movement of their bodies in space. Designed for people involved with or interested in any of the arts, such as teachers, athletes, painters, architects, dancers, actors, poets, mimes, sculptors. The philosophy and teaching of the LeCoq school will be stressed; emphasis will be on centering, breathing, kinesthetic awareness, masks, mime, and improvisation. Previous mime experience not necessary. Instructor: D. M. Berry.

\$75

2 credits

A Summer Arts Study Center brochure is available at 320 Wesbrook Hall or at the MacPhail Center, 1128 LaSalle Avenue, Minneapolis, 373-1925 or 373-4947.

COURSE APPLICATION FORM

Mail to: Summer Arts Study Center, 1128 LaSalle Avenue, University of Minnesota
Minneapolis, Minnesota 55403 • Telephone: (612) 373-1925 or 373-4947

Please enroll me in the following class(es)

_____ (course title as listed) _____ (course number) _____ (dates)

_____ (course title as listed) _____ (course number) _____ (dates)

_____ (additional information as requested in course descriptions)

Name _____

Address _____

City _____ State _____ Zip _____

Position _____ Firm or Institution _____

Tuition and Fees Enclosed \$ _____
(Full tuition and fees must be included to hold a place)

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

Make reservations for room and board directly with:

Quadna Mountain Lodge, Hill City, Minnesota 55748 • Telephone (218) 697-2324

Descriptions

Course

College of Agriculture

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

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

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

Agricultural and Applied Economics (AgEc)

FIRST TERM

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

5120. AGRIBUSINESS MANAGEMENT AND MARKETING — June 11-June 22. (3 cr; not open to agricultural economics majors; prereq 1020-1030; I-II MTWThF; ClaOff 143) R Dahl and staff
Business management and marketing problems in the firms and industries serving agriculture; economic interrelationships among industries supplying agriculture and those processing and distributing farm products.

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

SECOND TERM

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

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

Agricultural Engineering

Agricultural Engineering Technology (AgEn)

FIRST TERM

1020. AGRICULTURAL SHOP—METALWORK. (4 cr; prereq Chem 1004 or #; \$2 lab fee; 2 lect and 6 lab hrs per wk; I-III MTWTh, I-IV F, AgEng 42 and 20) Riesenber
Arc and oxyacetylene welding, soldering, use and conditioning of metalworking tools, and the identification and characteristics of metals used in farm machinery.

5005. PROFESSIONAL EXPERIENCE PROGRAM. (1-6 cr [not for grad cr]; prereq 12 cr in agricultural engineering technology and #) Flikke
Up to 12 weeks of planned experience in a selected position in an industry or public agency; evaluative reports and consultations with faculty advisers and employers.

5030. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—AGRICULTURAL TRACTOR AND ENGINE POWER. (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

5005. PROFESSIONAL EXPERIENCE PROGRAM. (1-6 cr [not for grad cred]; prereq 12 cr in agricultural engineering technology and #) Flikke
See first term.

5020. PROGRAM PLANNING AND INSTRUCTIONAL METHODS IN AGRICULTURAL MECHANICS—July 23-August 3. (4 cr; prereq 10 cr in agricultural engineering technology, AgEd 3031 or AgEd 3031; \$2 lab fee; VI-IX 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.

5031. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—AGRICULTURAL MACHINERY AND MECHANIZATION. (1-3 cr; prereq 5020 or #; special problems ar; AgEng 218) Bear
Principles and practices in the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment for the instructional program.

Agriculture (Agri)

FIRST TERM

1000. ACADEMIC ENRICHMENT AND HONORS PROGRAM: SPECIAL PROJECTS. (1-15 cr; S-N only; prereq application and 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 (funds of up to \$100 are available for approved projects). For further information check with the college office.

5555. INTEGRATING PAPER FOR MASTER OF AGRICULTURE STUDENTS. (1 cr) Hanson
Preparation of a paper of the quality of a professional trade journal article integrating the student's studies with application to an agricultural problem or the student's major area of concentration. The paper will be reviewed and graded by the student's advisory committee.

SECOND TERM

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

5555. INTEGRATING PAPER FOR MASTER OF AGRICULTURE STUDENTS. (1 cr) Hanson
See First Term.

Agronomy and Plant Genetics (Agro)

Agronomy

FIRST TERM

1020. SPECIAL PROBLEMS. (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. (1-6 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. (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. (Cr ar; prereq #) Staff
Problems in physiology and production of crop plants.

SECOND TERM

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

5000. PROFESSIONAL EXPERIENCE PROGRAM. (1-6 cr [not for grad cr]; prereq #) Smith, Cardwell
See First Term.

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

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

Plant Breeding

FIRST TERM

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

SECOND TERM

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

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

Animal Science (AnSc)

FIRST TERM

5611. SWINE PRODUCTION—June 11-22. (3 cr, §5601; prereq 1401 . . . 3220 recommended; 9:00-11:45 MTWThF; PetH 110)

Status and characteristics of the swine industry; application of principles of animal breeding, nutrition, physiology, and economics to swine production; considerations in the development of a successful swine enterprise.

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

Research in an area of animal science under the supervision of a staff member. A written report on the research is required.

8810.* RESEARCH IN ANIMAL SCIENCE. (Cr and hrs ar; prereq #; PetH 108) Staff

Research including experimental studies in the disciplines associated with animal production and research, with emphasis on interdisciplinary studies embracing environmental and managerial considerations.

8820.* RESEARCH IN ANIMAL GENETICS. (Cr and hrs ar; prereq #; PetH 108) Staff

Research in quantitative genetics, cytogenetics, and other areas related to animal breeding.

8830.* RESEARCH IN ANIMAL PHYSIOLOGY. (Cr and hrs ar; prereq #; PetH 108) Staff

Individual research under faculty direction. Topics to be determined by consultation; may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.

8840.* RESEARCH IN ANIMAL NUTRITION. (Cr and hrs ar; prereq #; PetH 108) Staff

Research in selected areas of animal nutrition. Topics and species studied determined by consultation with adviser.

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

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

SECOND TERM

5315. REPRODUCTIVE PHYSIOLOGY AND LACTATION—July 16-27. (3 cr; 9:00-11:45 MTWThF; 135 AnSci/VM) Staff

Functions of the reproductive organs, fertilization, the estrous cycle and its endocrine control, reproductive efficiency, and problems and principles of artificial insemination. Anatomy, physiology, and biochemistry of the mammary gland. Mammary growth, initiation and maintenance of lactation, milk synthesis, and factors influencing the lactation curve.

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

See First Term.

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

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

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

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

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

Entomology, Fisheries, and Wildlife¹

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

5901. ADVANCED WORK IN ENTOMOLOGY. (Cr ar; prereq #) Staff
Library and laboratory research in various areas of entomology.

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

SECOND TERM

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

5901. ADVANCED WORK IN ENTOMOLOGY. (Cr ar; prereq #) Staff
See First Term.

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

Fisheries and Wildlife(FW)

FIRST TERM

5393. ADVANCED WORK IN FISHERY BIOLOGY. (Cr ar; prereq #) Staff
Library and laboratory research in various areas of fishery biology.

5398. ADVANCED WORK IN WILDLIFE BIOLOGY. (Cr ar; prereq #) Staff
Library and laboratory research in various areas of wildlife biology.

¹For additional courses, see Biology Session.

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

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

SECOND TERM

5393. ADVANCED WORK IN FISHERY BIOLOGY. (Cr ar; prereq #) Staff
See First Term.

5398. ADVANCED WORK IN WILDLIFE BIOLOGY. (Cr ar; prereq #) Staff
See First Term.

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

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

Food Science and Nutrition (FScN)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

● 1602. PRINCIPLES OF NUTRITION. (4 cr; limited to 25 students; prereq one course in biology and one course in chemistry or equiv in natural science sequence; I-II MWF, II TTh; FScN 15) Einspahr
Survey of fundamental principles of nutrition including requirements for various nutrients and results of excess or deficient intake of these nutrients.

3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE. (5 cr; prereq 3750, sr in hospitality and food service management or #; hrs ar) Staff
Planned management experience in a selected food service or hospitality business, including understanding of the operation, planning, purchasing, personnel management, financial management, supervision, and related functions.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (1-5 cr [may be repeated for cr]; prereq Δ; \$2 lab fee; 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. (1-5 cr; prereq sr, Δ; \$2 lab fee; hrs ar) Staff
Laboratory or library research on problems related to the microbiology of dairy and food products.

● 5404. CURRENT ISSUES IN FOOD AND NUTRITION—July 2-13. (3 cr; limited to 25 students; prereq 15 cr in food science and nutrition or #; II-IV MTWThF; FScN 15) Levine
Evaluation of popular and scientific literature that deals with nutrition, food additives, food safety, food fads, health foods, environmental contamination, the consumer movement, naturally occurring food toxicants, processed foods, synthetic foods, organically grown foods.

5740. DESIGN AND LAYOUT OF FOOD SERVICES—June 18-29. (4 cr; prereq 3740; VI-IX MTWThF; ClaOff B30) Olson
Problems related to the design and layout of remodeled and new food services.

● 5790x. QUANTITY FOOD PREPARATION PRACTICES—June 18-29. (3 cr; limited to 16 students; prereq 5790 or #; 8:00-12:00 MTWThF; DinC 152) Billings
Purchase, storage, preparation, service, and pricing of selected menu items. Students investigate and seek solutions to problems related to quantity food service. Opportunity to integrate lectures, laboratory experiences, and independent study with instructional programs in occupational foods. For students who have completed 5790 in a previous session.

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

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

SECOND TERM

1102. TECHNOLOGY OF FOOD PROCESSING. (4 cr; prereq high school chemistry and biology; I-II MWF, II TTh; ABLMS 125) Shapero
Introduction to the technology of processing and distributing foods with reference to the prevention of biological, physical, and chemical deterioration. Changes in food composition, microbiological safety, food laws and regulations, technologies of the major food processes such as canning, freezing, drying, and cereal and oilseed processing.

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

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (1-5 cr [may be repeated for cr]; prereq Δ; \$2 lab fee; hrs ar) Staff
See First Term.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (1-5 cr; prereq sr, Δ; \$2 lab fee; hrs ar) Staff
See First Term.

8401. INDEPENDENT STUDY: FOOD SCIENCE. (1-5 cr; prereq Δ; hrs ar) Morris, staff
See First Term.

8621. INDEPENDENT STUDY: NUTRITION. (1-9 cr; prereq Δ; hrs ar) Hegarty, staff
See First Term.

Plant Pathology (PIPa)¹

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Register for both first term and second term, one-half the total credits each term.

5013. DISEASES OF ECONOMIC PLANTS. (2 cr; prereq 1001 or equiv...5100 recommended; II T; StakH 103) Pflieger
Diseases of ornamental plants, trees, and field fruit and vegetable crops. Laboratory and fieldwork continues throughout the summer.

5650. CLINICAL PLANT PATHOLOGY. (6 cr; prereq 1001, 8 cr plant pathology; StakH 105) Groth
Laboratory and field 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. (Cr ar) Staff
Special assignment in laboratory and field problems in pathological research.

8110.* PROBLEMS IN MYCOLOGY. (Cr ar; prereq 5106, 5107) Stewart, Anderson
Individual research in taxonomy, ecology, and genetics of special groups of fungi.

8301.* RESEARCH IN PLANT VIROLOGY. (Cr ar; prereq 5400 or #) Banttari
Identification, transmission, purification, serological or histological studies involving viruses, their host plants, and vectors.

8401.* RESEARCH IN PLANT BACTERIOLOGY. (Cr ar; prereq 5400 or #) Kennedy
Special assignments on problems of current interest; investigations related to ecology and interaction among bacterial plant pathogens and their hosts.

¹For additional course, see Biology Session.

Rhetoric (Rhet)

Courses with limited enrollment must be reserved in 130 Coffey Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

● **1147. EFFICIENT READING.** (3 cr; each section limited to 32 students, reserved in JohH 12)
For students, teachers, and business or professional people of average reading ability who wish to improve speed, comprehension, and vocabulary. Techniques valuable in scholastic or professional achievement. Maximum use of recently developed visual aids. Of special value to teachers interested in laboratory-type experience in adult reading techniques. Not a remedial course.

Sec 1, 9:05-11:00 TTh, ForH 115, Bennett
Sec 2, 12:20-2:15 TTh, ForH 115, Bennett

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

● **3551. PROFESSIONAL WRITING.** (4 cr; each section limited to 23 students; prereq jr, completion of fr communication requirement)
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, II MTWThF, HckrH 111, Walzer
Sec 2, III MTWThF, HckrH 111, Veeder

● **3562. SCIENTIFIC AND TECHNICAL WRITING.** (4 cr; limited to 23 students; prereq jr, completion of fr communication requirements; IV MTWThF; HckrH 111) Wright
Methods of exposition in scientific and technical writing; types of reports; audience analysis; practice in report writing.

SECOND TERM

● **1147. EFFICIENT READING.** (3 cr; each section limited to 32 students, reserved in JohH 12)
See First Term.

Sec 1, 9:05-11:00 TTh, ForH 115, Bennett
Sec 2, 12:20-2:15 TTh, HckrH 210, Bennett

● **1222. PUBLIC SPEAKING.** (4 cr; limited to 18 students; prereq soph, completion of fr communication requirements; II MTWThF; HckrH 222) Connolly
See First Term.

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

Sec 1, II MTWThF, HckrH 111, Muller
Sec 2, III MTWThF, HckrH 111, Horberg

Soil Science (Soil)¹

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

5114.* SPECIAL PROBLEMS IN SOILS. (1-5 cr per qtr [max 10 cr]; prereq 1122 or #) Martin, Adams, Arneman, Baker, Blake, Caldwell, Famham, Rust, Schmidt, Grava, Ham, Grigal
Research, readings, instruction.

● **5565. FIELD COURSE—SOIL SURVEY.** (10 cr; limited to 20 students; prereq 5512 and #; \$25 course fee; I-X MTWThF; 215 So) Arneman, Rust
Principles of soil survey including description of soils in acceptable terms, mapping soils on airphoto base, interpretative groupings of soils, descriptive legend development, classification of soils according to soil taxonomy.

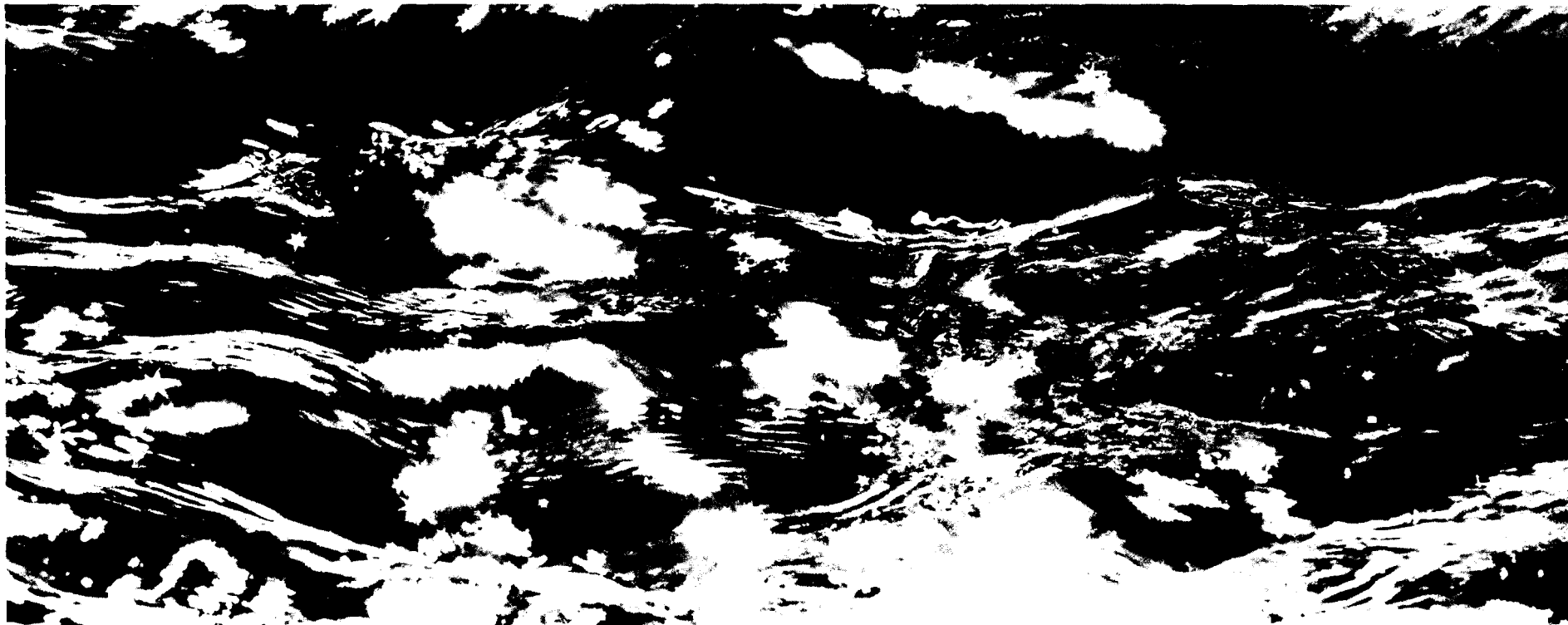
8124.* RESEARCH PROBLEMS IN SOILS. (2-5 cr; hrs ar) Martin, Adams, Arneman, Baker, Blake, Caldwell, Famham, Rust, Schmidt, Grava, Ham, Grigal
Individual laboratory or fieldwork on special problems in a phase of soils other than the student's major thesis. Arrangements must be made in advance.

SECOND TERM

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

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

¹For additional course, see Biology Session.



College of Biological Sciences

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

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

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

Biochemistry (BioC)

FIRST TERM

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

5001. BIOCHEMISTRY. (4 cr, §Biol 3021; for grad students; prereq Biol 1011, 12 cr organic chemistry or #; 8:25-9:45 MTWThF; McNH 33) Staff
Biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents and cellular regulatory mechanisms.

8290. CURRENT RESEARCH TECHNIQUES. (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. (2-5 cr; prereq #) Graduate faculty

SECOND TERM

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

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

8990. GRADUATE RESEARCH. (2-5 cr; prereq #) Graduate faculty

Biology (Biol)¹

Courses with limited enrollment must be reserved in 223 Snyder Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

● **1011. GENERAL BIOLOGY.** (5 cr; limited enrollment, reserved in JohH 12 or CofH 130; \$2 lab fee; lect 10:10-11:20 MTWThF, AndH 210; lab 11:50-1:40 MTWTh, KoltH S160 and ar) Kerr
An introduction to the principles of biology. The cell, metabolism, heredity, reproduction, ecology, and evolution. Closed-circuit TV and multimedia presentation of lectures.

3021. BIOCHEMISTRY. (4 cr, §BioC 5001; prereq 1011, 12 cr organic chemistry; 8:25-9:45 MTWThF; McNH 33)

Biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents, and cellular regulatory mechanisms.

● **3051. BIOLOGY AND THE FUTURE OF MAN.** (4 cr; S-N only; limited to 100 students, reserved in JohH 12 or SnH 223; III MTWThF; AndH 330) Lammers
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.

3112. BIOLOGICAL RHYTHMS—June 12-July 6. (4 cr; prereq 1011 or #; \$2 lab fee; 12:20-2:10 MTWThF; ClaOff B35) Koukkari

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

5112. RHYTHMS AND CIRCADIAN REGULATION—June 12-July 6. (4 cr, §3112; primarily for grad students; prereq 15 cr biology, 10 cr chemistry or #; 12:20-2:10 MTWThF; ClaOff B35) Koukkari
See 3112. Laboratory experience arranged.

SECOND TERM

● **1011. GENERAL BIOLOGY.** (5 cr; limited enrollment, reserved in JohH 12 or CofH 130; \$2 lab fee; lect 10:10-11:20 MTWThF, AndH 210; lab 11:50-1:40 MTWTh, KoltH S160 and ar) Kerr
See First Term.

● **1103. GENERAL BOTANY.** (5 cr, §3012; limited to 50 students, reserved in JohH 12 or CofH 130; prereq 1011; \$2 lab fee; lect 12:15-1:15 MTWThF; BioSci 12)
Levels of organization of plants, plant functions, plant growth and development, plant reproduction.

Lab 1, II-IV TTh, BioSci 182

Lab 2, VI-VIII TTh, BioSci 182

● **1106. GENERAL ZOOLOGY.** (5 cr; limited to 72 students, reserved in JohH 12 or CofH 130; prereq 1011; \$2 lab fee; lect 12:15-1:15 MTWThF; Bo 6) Underhill
Survey of animal phyla; structure, function, behavior, adaptation, and evolutionary relationships.

Lab 1, VI-VIII MW, KoltH P168

Lab 2, VI-VIII TTh, KoltH P168

● **3011. ANIMAL BIOLOGY.** (5 cr; limited to 48 students; prereq 1011, Chem 1005; \$2 lab fee; lect 12:15-1:30 MTWTh; BioSci 18)
Comparison of ways different phyla have solved similar physiological problems. Laboratory includes survey of major animal groups and physiological experiments.

Lab 1, I-IV TTh, BioSci 245

Lab 2, 1:40-4:30 TTh, BioSci 245

¹For additional courses, see Biology Session.

3033. GENETICS. (4 cr, §3032; prereq 3021; II MTWThF; BioSci 18)

Introduction to the nature of genetic information, its transmission from parents to offspring, its expression in cells and organisms, and its course in populations.

Botany (Bot)¹

FIRST TERM

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

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

SECOND TERM

3131. SURVEY OF PLANT PHYSIOLOGY. (4 cr, §5131, §PIPh 3131, §PIPh 5131; prereq Biol 1103 or 3012, BioC 1302 or Biol 3021 or BioC 5001; 12:20-1:25 MTWThF; BioSci 16) Soulen
Physiological principles underlying processes that occur in living plants with emphasis on higher plants. Growth and development, mineral nutrition, water relations, metabolism including respiration and photosynthesis.

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

5131. SURVEY OF PLANT PHYSIOLOGY. (4 cr, §3131, §PIPh 3131, §PIPh 5131; prereq Biol 1103 or 3012, BioC 1302 or Biol 3021 or BioC 5001; 12:20-1:25 MTWThF, 1:40-3:00 W; BioSci 16) Soulen
See 3131. Includes a weekly discussion section.

5132. PLANT PHYSIOLOGY LABORATORY. (2 cr; prereq 3131 or 5131 or §3131 or §5131; \$2 lab fee; 1:40-4:30 TTh; BioSci 198) Soulen
Laboratory course to accompany 3131 or 5131.

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

Ecology and Behavioral Biology (EBB)¹

FIRST TERM

● **5116. INTRODUCTION TO ANIMAL PARASITOLOGY.** (5 cr; limited to 32 students; prereq Biol 1106 or 3011; lect 12:15-1:15 MTWThF, Z 102; lab VI-VIII MTWTh, Z 101) Gilbertson
Parasitic protozoa, worms, and arthropods, and their relation to diseases of humans and animals.

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

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

¹For additional courses, see Biology Session.

SECOND TERM

3001. INTRODUCTION TO ECOLOGY. (4 cr; open to jrs and above but not biology majors; 8:50-9:50 MWF; Bo 6)

Basic concepts in ecology dealing with organization, development, and functioning of ecosystems; population growth and regulation. Human impact on such systems.

- Rec 1, 7:50-8:50 TTh, Z 10
- Rec 2, 7:50-8:50 TTh, Z 107
- Rec 3, 8:50-9:50 TTh, Z 10
- Rec 4, 8:50-9:50 TTh, Z 107

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

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

Genetics and Cell Biology (GCB)

FIRST TERM

3022. GENETICS. (4 cr, §Biol 3032, §Biol 3033; designed primarily for students other than CBS majors and CLA biology majors; prereq Biol 1011; III MTWThF plus 1 hr ar; ClaOff B45)

Mechanisms of heredity; their implications for biological populations, and applications to practical problems.

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

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

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

Individual projects on selected topics and problems.

5022. GENETICS. (3 cr, §3022, §Biol 3032, §3033; for grad students except those in genetics; III MTWThF plus 1 hr ar; ClaOff B45)

See 3022.

8600. LABORATORY IN ELECTRON MICROSCOPY. (3 cr; S-N only; prereq 5606 or ¶5606, #) Cunningham, Robinson

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

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

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

SECOND TERM

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

See First Term.

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

See First Term.

8600. LABORATORY IN ELECTRON MICROSCOPY. (3 cr; S-N only; prereq 5606 or ¶5606, #) Cunningham, Robinson

See First Term.

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

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

Biology Session

Held at the Lake Itasca Forestry and Biological Station

During two 5-week terms of the summer session (June 10 through July 14 and July 15 through August 18), opportunities for fieldwork in terrestrial and freshwater biology in its most fundamental aspects are available at Itasca State Park, approximately 220 miles northwest of the Twin Cities.

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

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

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

ADMISSION AND REGISTRATION

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

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

Reservations for housing and course work should be made as early as possible. A special Request for Reservation form for this purpose is included in the *Lake Itasca Biology Session Bulletin*. This form should be mailed to: Chairman of Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. Assignments to classes will be verified by April 10. 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 10 or July 15.

FEES AND EXPENSES

The following fees are payable by each registrant on or before June 10 or July 15, and must be paid before registration is complete:

Tuition Fee ¹	\$18.25 per credit
Student Services Fee ¹	17.00 per term
Laboratory Fee	8.50 per term

¹Subject to change.

Graduate students may register for thesis-only upon payment of \$69 tuition per term and required student services and laboratory fees.

Individuals holding the Ph.D. degree or its equivalent who are pursuing research as independent investigators will pay a research table fee of \$5 per week and a lab fee of \$8.50 per 5-week term.

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 \$165 for the 5-week period. A charge of \$25 per term is made for room in the cabins of the station and is to be paid to the chairman during the first week of each term.

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

The estimated cost of \$300 (5 credits) or \$385 (10 credits) for each 5-week term does not include books, class supplies, traveling expenses including class field trips, clothing, laundry, and incidental personal expenses.

Tuition and fees are payable on or before June 10 and July 15. After these dates, a late fee will be charged according to the following schedule:

June 11-15 or July 16-20	\$ 6
June 18-22 or July 23-27	10
Thereafter	20

Registrations will not be accepted after June 10 or July 15 without the approval of the chairman. Fee statements *dated* June 10 may be paid on June 15, without penalty. However, fee statements *dated* June 11 will carry the late fee.

Biology (Biol)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

5870. ITASCA SEMINAR. (Cr ar; prereq #) Staff

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

● **5950. SPECIAL TOPICS IN BIOLOGY; FIRE IN FOREST ECOSYSTEMS.** (10 cr; limited to 20 students; prereq courses in ecology, zoology or forestry or #) Heinselman

SECOND TERM

5870. ITASCA SEMINAR. (Cr ar; prereq #) Staff

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

Botany (Bot)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

3990. RESEARCH PROBLEMS. (1-5 cr; prereq #) Staff

● **5801. SUMMER FLORA OF MINNESOTA.** (5 cr; limited to 20 students; prereq course in taxonomy; MTh) Morley

● **5811. FRESHWATER ALGAE.** (5 cr; limited to 20 students; prereq 10 cr in botany, biology or zoology; TF) Meyer

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

SECOND TERM

3990. RESEARCH PROBLEMS. (1-5 cr; prereq #) Staff

● **5805. AQUATIC FLOWERING PLANTS.** (5 cr; limited to 20 students; prereq course in taxonomy; MTh) Thomson

● **5815. BRYOPHYTES.** (5 cr; limited to 20 students; prereq 10 cr biology or #; TF) Bowers

● **8970. SPECIAL TOPICS: BIOLOGY OF THE FERNS.** (5 cr; limited to 20 students; prereq #; undergraduates should enroll in Bot 3970; WS) Wagner

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

Ecology and Behavioral Biology (EBB)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

● **5812. AQUATIC ECOLOGY.** (5 cr; limited to 20 students; prereq 15 cr in biology and 5 cr in chemistry; WS) Senft

● **5815. FIELD ETHOLOGY.** (10 cr; two sections, each section limited to 15 students; prereq course in behavior or ecology; hrs ar) Baylis, Kiestner

● **5834. FIELD ORNITHOLOGY.** (5 cr; limited to 15 students; prereq Biol 1106 or equiv; TF) James

SECOND TERM

● **5814. COMMUNITY STRUCTURE AND FUNCTIONING.** (5 cr; limited to 20 students; prereq course in ecology; TF) Cushing

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

● **8800. ADVANCED FIELD ECOLOGY.** (10 cr; limited to 24 students; prereq admission to a grad program and #; hrs ar) Hubbell, Heinrich, Singer

Entomology (Ent)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

- 5020. **FIELD ENTOMOLOGY.** (5 cr; limited to 15 students; prereq introductory biology; MTh) Franklin

Fisheries and Wildlife (FW)

SECOND TERM

- 5456. **FIELD ECOLOGY OF FISHES.** (5 cr; limited to 15 students; prereq EBB 3004; WS) Ross

Plant Pathology (PiPa)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

SECOND TERM

- 5102. **INTRODUCTORY MYCOLOGY.** (5 cr; limited to 15 students; prereq 6 cr in botany; MTh) Stewart

Soil Science (Soil)

FIRST TERM

- 5532. **SOILS AND THE ECOSYSTEM.** (5 cr; limited to 20 students; prereq course in ecology; WS) Grigal



College of Business Administration

See also the College of Liberal Arts listing for ID 3111, *Interplay '79: A Search for Understanding*.

ADMISSION AND REGISTRATION

Students are admitted to College of Business Administration degree programs only in the fall, winter, and spring quarters; they may enroll in the summer as summer-only students. Admission to a degree program requires completion of 80 quarter credits, including specific prebusiness courses, and a minimum overall grade point average of 2.50 for the business—regular program or 2.70 for the business—accounting program. Information about prebusiness course requirements and graduation requirements is available in the college office, 225 Business Administration Building.

Accounting (Acct)

Courses with limited enrollment must be reserved in 225 Business Administration Building unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

● **1050. PRINCIPLES OF ACCOUNTING I.** (4 cr; each section limited to 35 students, reserved in JohH 12; 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, I-II MTWTh, BlegH 330
- Sec 2, I-II MTWTh, BlegH 335
- Sec 3, III-IV MTWTh, BlegH 330
- Sec 4, III-IV MTWTh, BlegH 335
- Sec 5, I-II MTWTh, BlegH 125

● **1051. PRINCIPLES OF ACCOUNTING II.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 1050; A-N only)
Accounting analysis and reports for management and investor decision making. Emphasis on planning and control reporting.

- Sec 1, I-II MTWTh, BlegH 115
- Sec 2, III-IV MTWTh, BlegH 115

● **5180. ADVANCED ACCOUNTING.** (4 cr; prereq 3102)
Consolidated statements, partnerships, fiduciary, international and fund accounting.

- Sec 1, I-II MTWTh, BlegH 230
- Sec 2, III-IV MTWTh, BlegH 230

● **5310. CURRENT TOPICS IN FINANCIAL ACCOUNTING.** (4 cr [may be repeated for cr]; limited to 35 students; prereq 3102 and #; III-IV MTWTh; BlegH 125)
Current topic(s) in financial accounting. Topics vary from quarter to quarter.

FIRST AND SECOND TERMS: NINE-WEEK COURSES— JUNE 11-AUGUST 10

● **3101. ACCOUNTING THEORY AND PRACTICE I.** (4 cr; limited to 35 students; prereq 1051; 9:05-10:25 MWF; BlegH 110)
The search for principles and postulates for income determination and for valuation. Includes measurement problems and funds concepts.

● **3102. ACCOUNTING THEORY AND PRACTICE II.** (4 cr; limited to 35 students; prereq 3101; 7:30-8:50 MWF; BlegH 145)
Concepts and problems in accounting for specific assets and equities.

● **3201. COST ACCOUNTING.** (4 cr; limited to 35 students; prereq 1051, MIS 3099, QA 3055; lab fee required; 10:40-12:00 MWF; BlegH 145)
Process and standard costs, behavior of costs under varying conditions, cost allocations, variance analysis, capital budgeting.

● **5125. AUDITING PRINCIPLES AND PROCEDURES.** (4 cr; limited to 40 students; prereq 3102 and 3201; 9:05-10:25 MWF; BlegH 145)
The auditor's role and function. Includes audit standards, ethics, procedures, legal responsibilities.

● **5135. INCOME TAX ACCOUNTING.** (4 cr; limited to 35 students; prereq 1051; 9:05-10:25 MWF; BlegH 240)
Individual, partnership, and corporate taxation; emphasizing income tax planning.

● **5230. CORPORATE TAXATION.** (4 cr; prereq 5135, #; 10:40-12:00 MWF; BlegH 240)
The tax consequences of the formation, operation, and liquidation of a business corporation.

SECOND TERM

● **1050. PRINCIPLES OF ACCOUNTING I.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 3rd-qr fr; A-N only)
See First Term.

- Sec 1, I-II MTWTh, BlegH 415
- Sec 2, III-IV MTWTh, BlegH 115
- Sec 3, III-IV MTWTh, BlegH 125

● **1051. PRINCIPLES OF ACCOUNTING II.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 1050; A-N only)
See First Term.

- Sec 1, I-II MTWTh, BlegH 125
- Sec 2, I-II MTWTh, BlegH 330
- Sec 3, III-IV MTWTh, BlegH 330

● **5300. CURRENT TOPICS IN MANAGERIAL ACCOUNTING.** (4 cr [may be repeated for cr]; limited to 35 students; prereq 3201 and #; III-IV MTWTh, BlegH 335)
Selected topic(s) in managerial accounting. Topics vary from quarter to quarter.

Business, Government, Society (BGS)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

FIRST TERM

● **3001. MANAGERIAL ECONOMICS.** (4 cr, §Econ 3101, 3105; limited to 50 students; prereq Econ 1002 or equiv; III-IV MTWThF; BlegH 135) 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 structure, and other relevant economic concepts are applied to the individual business.

● **3002. BUSINESS AND SOCIETY.** (4 cr; prereq jr or sr; 10:15-11:45 MTWThF; BlegH 120) Holloway
Basic economic and social goals and various attempts to meet them, with emphasis on American society. Business as an institution; its relationships to other institutions and to society. Ethical and practical conflicts in the role of the firm and the manager are examined in the context of the public policy process. Current social issues and their impact on business.

● **8009. GOVERNMENT AND BUSINESS ENTERPRISE II.** (4 cr; limited to 50 students; prereq 8008 or #; 5:30-8:15 pm MW; BlegH 415) Erickson
American industrial structure, conduct, and performance. Problems of business and labor concentration and their implications. The antitrust laws and their applications to the individual business enterprise. Alternatives to antitrust. The antitrust laws as a form of business-government interaction and the implications of this experience for other areas of interaction. Meets with 8009E.

Business Law (BLaw)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

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) Wright
The origin of law, its place in and effect upon society; the history and development of law; the systems of courts and legal procedure. The law of contracts as the basic law affecting business transactions. Laws affecting the relationship between principal and agent, master and servant, and employer and employee.

Sec 1, I MTWThF, BlegH 435
Sec 2, II MTWThF, BlegH 435

● **8158. INTRODUCTION TO LAW, AND THE LAW OF CONTRACTS AND AGENCY.** (4 cr, §3058; each section limited to 5 students; prereq Econ 1002 or equiv) Wright
See 3058.

Sec 1, I MTWThF, BlegH 435
Sec 2, II MTWThF, BlegH 435

Finance (BFin)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

FIRST TERM

● **3000. FINANCE FUNDAMENTALS.** (4 cr, §8000; limited to 50 students; prereq Acct 1051)
A comprehensive, analytical introduction to the principal concepts in finance. The general business environment, valuation theory, financial management decisions concerning uses and sources of funds (i.e., capital budgeting), survey of the nation's financial markets.

Sec 1, 8-9:15 MTWTh, Gahlon, BlegH 420
Sec 2, 12:45-2:00 MTWThF, Rosko, BlegH 420

● **3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS.** (4 cr, §8300; limited to 40 students; prereq 3000; 11:15-12:30 MTWTh; BlegH 420) Jessup
Introduces decision procedures for a variety of financial markets. The banking system and other financial intermediaries, risk-return relationships of various marketable securities, analytical techniques of portfolio management in the context of the nation's changing financial markets.

● **3500. REAL ESTATE INVESTMENT ANALYSIS.** (4 cr; limited to 40 students; prereq Econ 1002 or equiv; 8:30-11:00 TTh; BlegH 145) Rosko
Analysis and economic aspects of investments in real property including cash flows; accounting depreciation vs. market value depreciation or appreciation; financing methods and costs; sources of funds; measures of return on investment. Ellwood techniques. Computer models for investment analysis. Impact of property taxes on urban land use.

● **8300. INVESTMENT ANALYSIS AND MANAGEMENT.** (4 cr, §3300; limited to 37 students; prereq 3000 or 8000; 9:30-12:00 MWF; Law 15) Alexander
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.

SECOND TERM

● **3000. FINANCE FUNDAMENTALS.** (4 cr, §8000; limited to 50 students; prereq Acct 1051; 8:00-9:15 MTWTh; BlegH 420) Schreiner
See First Term.

● **3300. INVESTMENT MANAGEMENT AND FINANCIAL MARKETS.** (4 cr, §8300; limited to 40 students; prereq 3000; 11:15-12:30 MTWTh; BlegH 420) Jessup
See First Term.

● **8100. FINANCIAL MANAGEMENT.** (4 cr, §3100; limited to 37 students; prereq 3000 or 8000; 9:30-10:45 MTWTh; BlegH 340) Stover
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.

Industrial Relations (IR)

FIRST TERM

3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (4 cr, §8002; prereq Econ 1001, 1002, Psy 1001; II-III MTWTh; BlegH 260)
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.

3010. HUMAN RELATIONS AND APPLIED ORGANIZATION THEORY. (4 cr; VI-VII MTWTh; BlegH 260)
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. (5 cr, §3002; prereq Econ 1001, 1002, Psy 1001; I-II MTWTh; BlegH 255)
See 3002.

8006. LABOR MARKETS: PROCESSES AND DYNAMICS. (4 cr; prereq 8002 or #; V-VI MTWTh; BlegH 245)
Basic concepts, applications, and data sources to examine the usefulness of market analysis for human resources development, allocation, and utilization. Labor force dynamics and measurement, mobility, productivity, technological change, changes in the cost of living, wage structures, and public policy programs.

8023. TRAINING AND DEVELOPMENT. (4 cr; prereq 8002 or #; III-IV MTWTh; BlegH 245)
Integration of appropriate learning principles and organizational objectives into training program. Design, implementation, and evaluation of training systems to effect the development, utilization, and conservation of human resources.

SECOND TERM

3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (4 cr, §8002; prereq Econ 1001, 1002, Psy 1001; II-III MTWTh; BlegH 230)
See First Term.

3007. COLLECTIVE BARGAINING NEGOTIATIONS AND MODERN LABOR RELATIONS. (4 cr; VI-VII MTWTh; BlegH 105)

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.

8007. COLLECTIVE BARGAINING NEGOTIATIONS; PROCESSES IN THE PUBLIC AND PRIVATE SECTORS. (4 cr; prereq 8002 or #; III-IV MTWTh; BlegH 210)

The elements in collective bargaining negotiations and the legal framework imposed on negotiations, both public and private. Conflict and behavioral models containing institutional constraints guide the examination of strategies and tactics that characterize employee-employer bargaining relationships.

8014. ORGANIZATION DESIGN AND ADMINISTRATION. (4 cr; prereq 8002 or #; I-II MTWTh; BlegH 210)

Principles of the design and arrangement of tasks, positions, and functions within the organization. Organization design in relation to the surrounding environment and as an influence on the achievement of organizational goals and individual objectives. Design implications for effective internal organizational operations.

8035. MOTIVATION AND WORK BEHAVIOR. (4 cr; prereq 8002 or #; V-VI MTWTh; BlegH 245)

Work behaviors and motivation models; development of motivational frameworks appropriate to each behavior; relationships between motivation, performance, and satisfaction. Topics include labor supply, occupational choice, turnover, job performance and productivity, work alienation and conflict.

Management (Mgmt)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

FIRST TERM

● **3001. FUNDAMENTALS OF MANAGEMENT.** (4 cr, §8001; limited to 50 students) Wickesberg
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, I-II MTWThF, BlegH 425
Sec 2, III-IV MTWThF, BlegH 425

● **3002. PSYCHOLOGY IN MANAGEMENT.** (4 cr, §8006; limited to 30 students; I-II MTWThF; BlegH 404)
Solem

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.

● **3004. BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION.** (5 cr; limited to 35 students; prereq sr and completion of business core or final core course; III-IV MTWThF; Law 55) Willis
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.

● **8006. PSYCHOLOGY IN MANAGEMENT.** (4 cr, §3002; limited to 30 students; III-IV MTWThF; BlegH 404)
Solem
See 3002.

SECOND TERM

● **3001. FUNDAMENTALS OF MANAGEMENT.** (4 cr, §8001; limited to 50 students)
See First Term.

Sec 1, III-IV MTWThF; BlegH 435, Lippitt
Sec 2, 8:30-10:00 MTWTh, BlegH 435, Erickson

Management Information Systems (MIS)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

FIRST TERM

● **3098. ELEMENTARY COBOL.** (1 cr; S-N only; limited to 50 students; \$2 lab fee; V MW; BlegH 125)
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.** (1 cr; S-N only; limited to 50 students; \$2 lab fee; V MW; BlegH 230)
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.

● **5101. INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS.** (4 cr; limited to 45 students; I-II MTWTh; BlegH 225)

An overview of management information systems. Conceptual foundation including: concepts of information, humans as information processors, systems concepts and information systems, management and organizational concepts, decision-making concepts and the value of information for decision making. The structure, development, organization, management, and evaluation of a management information system. Emphasis on the user/system interface.

SECOND TERM

● **5100. INTRODUCTION TO COMPUTERS AND COMPUTER DATA PROCESSING.** (4 cr, §8208; limited to 55 students; prereq 3098 or 3099 or 13098 or 13099; I-II MTWTh; BlegH 220)
Elements of computer hardware and their functions. Computer software. Tools and methods for development of computer applications. Preparing computer programs. Acquisition, organization, and management of computer resources. The computer industry. Future developments.

Marketing (Mktg)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

FIRST TERM

● **3000. PRINCIPLES OF MARKETING.** (4 cr, §8000; section 1 limited to 50 students, section 2 limited to 35 students; prereq Econ 1002 or equiv)

Basic policy and strategy issues in marketing and the environmental factors that affect these issues. Legal, behavioral, ethical, competitive, economic, and technological factors as they affect product, pricing, promotion, and marketing channel decisions. Course will meet 3 days a week. Class meeting days will be established by the instructor and announced the first day of class.

Sec 1, 10:30-12:45 MTWThF, BlegH 220
Sec 2, 8:00-10:15 MTWThF, BlegH 220

● **3010. BUYER BEHAVIOR AND MARKETING ANALYSIS.** (4 cr; limited to 50 students; prereq 3000 and QA 1050 or equiv; 10:10-12:25 MTWThF; BlegH 415)

Identifying and applying secondary and primary data to solve marketing problems. Emphasis on consumer and organizational buyer behavior. Topics include survey and experimental research techniques, market segmentation, data analysis, behavior concepts and processes, consumer and organizational decision-making models, and managerial applications of these models. Course will meet 3 days a week. Class meeting days will be established by the instructor and announced the first day of class.

● **3065. RETAIL MANAGEMENT.** (4 cr, §8065; limited to 50 students; prereq 3010; 8:00-10:15 MTWThF; BlegH 215) Druy
Retailing principles, problems, and trends as they relate to various types of retailing institutions. Assignment of trade journal and supplementary readings for in-store study (buying and pricing) with a local retailer. Course will meet 3 days a week. Class meeting days will be established by the instructor and announced the first day of class.

● **8000. PRINCIPLES OF MARKETING.** (4 cr; limited to 15 students; prereq Econ 1002 or equiv; 8:00-10:15 MTWThF; BlegH 220)
See 3000. Course will meet 3 days a week. Class meeting days will be established by the instructor and announced the first day of class.

● **8047. MARKETING STRATEGY.** (4 cr; limited to 25 students; prereq 3000 or 8000; 10:30-12:45 MTWThF; BlegH 340)

Managing the marketing function; marketing planning, marketing strategy, marketing management concepts. Managing the marketing system; analysis of market structure. Extensive use of cases with a marketing decision orientation. Course will meet 3 days a week. Class meeting days will be established by the instructor and announced the first day of class.

SECOND TERM

● **3000. PRINCIPLES OF MARKETING.** (4 cr, §8000; limited to 50 students; prereq Econ 1002 or equiv; 10:30-11:45 MTWThF; BlegH 130)
See First Term.

● **3010. BUYER BEHAVIOR AND MARKETING ANALYSIS.** (4 cr; limited to 50 students; prereq 3000, QA 1050 or equiv; 8:00-10:15 MTWThF; BlegH 130) Walton
See First Term. Course will meet 3 days a week. Class meeting days will be established by the instructor and announced the first day of class.

● **8078. MARKETING COMMUNICATIONS.** (4 cr, §3077, §8077; limited to 25 students; prereq 3000 or 8000; 10:30-12:45 MTWThF; BlegH 404) Walton

Design and evaluation of marketing communications; communication theory, theories of persuasion and attitude change, message creation and execution, marketing communications media and guidance research data, and methods of measuring communications effectiveness. Deals primarily with communications theory and research; does not include management of marketing communications activity. Course will meet 3 days a week. Class meeting days will be established by the instructor and announced the first day of class.

● **8098. INTRODUCTION TO CONSUMER BEHAVIOR.** (4 cr, §3098; limited to 25 students; prereq 3000 or 8000; 9:00-10:15 MTWThF; BlegH 360)

Application of the behavioral sciences to understanding human behavior in the marketplace. Topics include perception, learning, attitude theory and measurement, persuasion, motivation, personality, social and cultural influences, family decision making, the social influence process, consumer decision-making strategies, managerial implications of consumer research and "consumerism."

Operations Management (OM)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

SECOND TERM

● **3000. INTRODUCTION TO OPERATIONS MANAGEMENT.** (4 cr; limited to 45 students; meets with 8000 [limited to 10 students]; III-IV MTWTh; BlegH 415)

Concepts and principles in the management of operating functions, taught from a managerial point of view. Examples from service industries, nonprofit organizations, and manufacturing. Relationships to other business functions and the environment stressed. Topics include an overview of operations, planning operating processes, productivity measurement, standards, allocation of resources, forecasting, concepts of quality, inventory management, principles of scheduling, and operational control information systems.

● **8000. INTRODUCTION TO OPERATIONS MANAGEMENT.** (4 cr; limited to 10 students; meets with 3000 [limited to 45 students]; III-IV MTWTh; BlegH 415)
See OM 3000.

Quantitative Analysis (QA)

Courses with limited enrollment must be reserved in 225 Business Administration Building unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

● **1050. ELEMENTARY MANAGERIAL STATISTICS.** (4 cr; limited to 50 students, reserved in JohH 12; prereq Math 1111 or equiv or Math 1131; \$2 lab fee; III-IV MTWTh; BlegH 155)

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.

● **3055. INTRODUCTION TO MANAGEMENT SCIENCES.** (4 cr; each section limited to 40 students; prereq 1050, Math 1142 or equiv; \$2 lab fee)

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.

Sec 1, I-II MTWTh, BlegH 205

Sec 2, III-IV MTWTh, BlegH 205

SECOND TERM

● **1050. ELEMENTARY MANAGERIAL STATISTICS.** (4 cr; limited to 50 students, reserved in JohH 12; prereq Math 1111 or equiv or Math 1131; \$2 lab fee; III-IV MTWTh; BlegH 440)

See First Term.

● **3055. INTRODUCTION TO MANAGEMENT SCIENCES.** (4 cr; limited to 40 students; prereq 1050, Math 1142 or equiv; \$2 lab fee; I-II MTWTh; BlegH 205)

See First Term.

Risk Management and Insurance (Ins)

FIRST TERM

3100. RISK MANAGEMENT AND INSURANCE. (4 cr, §8100; 9:30-10:45 MTWTh; BlegH 420) 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 prevention, and insurance—and the conditions under which they should be used. How to select and deal with an insurer. Public policy issues—government regulation, social insurance, and automobile insurance problems.

3200. LIFE AND HEALTH INSURANCE. (4 cr, §8200; prereq 3100 or equiv; 11:15-12:30 MTWTh; BlegH 250) 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. (4 cr, §3100; 9:30-10:45 MTWTh; BlegH 420) Whitman
See 3100.

8200. LIFE AND HEALTH INSURANCE. (4 cr, §3200; prereq 8100 or equiv; 11:15-12:30 MTWTh; BlegH 250) Whitman
See 3200.

SECOND TERM

3100. RISK MANAGEMENT AND INSURANCE. (4 cr, \$8100; 8:00-9:15 MTWTh; BlegH 215) Whitman
See First Term.

8100. RISK MANAGEMENT AND INSURANCE I. (4 cr, \$3100; 8:00-9:15 MTWTh; BlegH 215) Whitman
See 3100 First Term.

Transportation (Tran)

Courses with limited enrollment must be reserved in 225 Business Administration Building (see instructions under "Reserved Courses").

FIRST TERM

● **3064. BUSINESS LOGISTICS.** (5 cr, \$8264; limited to 40 students; prereq 3054; 7:30-8:50 MTWThF; BlegH 415) Ozment

Control of the flow of physical products by the firm. Rate negotiation, transportation alternatives, logistics information systems, inventory control, warehouse operations and location, and logistics system design.

● **8264. BUSINESS LOGISTICS.** (5 cr, \$3064; limited to 10 students; prereq 3054 or 8154; 7:30-8:50 MTWThF; BlegH 415) Ozment

See 3064.

SECOND TERM

● **3054. FUNDAMENTALS OF TRANSPORTATION.** (4 cr, \$8154; prereq Econ 1002 or equiv; each section limited to 50 students)

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, carriers, and government.

Sec 1, I MTWThF, BlegH 425

Sec 2, II MTWThF, BlegH 425



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 days (June 11 and July 16), some College of Education short-term workshops *will* meet on those dates.

MAIL REGISTRATION

Beginning in summer 1979, 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 25* in order to be processed in time for the start of the summer session. Any student who registers and then decides not to attend classes should notify the Education Career Development Office as early as possible so that an official cancellation can be processed.

COUNSELING SERVICES

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

STUDENT PROGRESS COMMITTEE

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

GRADUATE CREDIT FOR WORKSHOPS

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

STUDENT TEACHING

Student teaching during the summer is open *only* to those students completing programs in the College of Education who are regularly approved applicants for student teaching in the nursery school-kindergarten program; and to some students in special education. Application must be made prior to April 20 in the Education Career Development Office. 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. (4 cr; prereq 5 cr introductory psychology; III MTWThF; WuH 230) Arend

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

3302. INFANCY. (4 cr; prereq 1301 or #; IV MTWThF; NH 216) Kuskowski

Perceptual, motor, emotional, social, and cognitive development during the first 2 years of life; the developing infant in his or her social and physical environment.

3303. ADOLESCENT PSYCHOLOGY. (4 cr, §5303; prereq 5 cr introductory psychology; II MTWThF; Arch 5) Langlois

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

3304. INTRODUCTION TO MATURITY AND AGING. (4 cr; prereq 1301 or equiv; IV MTWThF; Pt 111) Keating

Empirical and theoretical issues in developmental psychology of maturity and aging; survey of perceptual-motor, cognitive, and social-psychological changes from young adulthood to old age.

3311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (4 cr, §5311; prereq 1301 or equiv; IV MTWThF; WuH 230) 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.

3313. PSYCHOLOGY OF ATYPICAL CHILDREN. (4 cr, §5313; prereq 1301 or equiv; I MTWThF; CD 216) Brown

Problems of research, assessment, and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, language, intellectual, and physical deviation. Meets with 5313.

3331. PROCESSES OF SOCIALIZATION OF CHILDREN. (4 cr, §5331; prereq 1301 or equiv; III MTWThF; FolH 304) Ford, Gnepp

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

3347. CHILDREN'S LEARNING AND INTELLECTUAL SKILLS. (4 cr; prereq 1301 or #; II MTWThF; WuH 130) Morrison

Current research on learning, problem solving, intellectual performance in children; application to practical contexts.

5303. ADOLESCENT PSYCHOLOGY. (4 cr, §3303; prereq 5 cr introductory psychology; II MTWThF; Arch 5) Langlois

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

5311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (4 cr, §3311; prereq 1301 or equiv; IV MTWThF; WuH 230) 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.

5313. PSYCHOLOGY OF ATYPICAL CHILDREN. (4 cr, §3313; prereq 1301 or equiv; I MTWThF; CD 216) Brown

Problems of research, assessment, and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, language, intellectual, and physical deviation. Meets with 3313.

5315. INTRODUCTION TO MENTAL RETARDATION. (4 cr, §SpEd 5120; prereq 1301 or equiv; II MTWThF; Pt 102) Warfield

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

5319. CLINICAL PROCEDURES WITH CHILDREN AND YOUTH. (4 cr; prereq 12 cr in child psychology, psychology, educational psychology or sociology; I MTWThF; Pt 215) Gross
Survey of assessment and intervention procedures of child clinical psychology in clinical and community settings. Primarily for students not majoring in clinical psychology.

5331. PROCESSES OF SOCIALIZATION OF CHILDREN. (4 cr, §3331; prereq 1301 or equiv; III MTWThF) Ford, Gnepp
Processes of social learning; identification, social influence, imitation, reward and punishment, internalization, object choice. Meets with 3331.

5345. LANGUAGE DEVELOPMENT. (4 cr; prereq 1301 or #; III MTWThF; CD 218) Lempers
Development of structure and function of language; factors influencing development; methodological problems, language scales, theories.

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

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

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

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

SECOND TERM

1301. INTRODUCTORY CHILD PSYCHOLOGY. (4 cr; prereq 5 cr introductory psychology; III MTWThF; WuH 230) Lederberg
See First Term.

3303. ADOLESCENT PSYCHOLOGY. (4 cr, §5303; prereq 5 cr introductory psychology; II MTWThF; WuH 230) Keating
See First Term. Meets with 5303.

3311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (4 cr, §5311; prereq 1301 or equiv; I MTWThF; WuH 230) Gouze See First Term. Meets with 5311.

5303. ADOLESCENT PSYCHOLOGY. (4 cr, §3303; prereq 5 cr introductory psychology; II MTWThF; WuH 230) Keating
See First Term. Meets with 3303.

5311. BEHAVIORAL AND EMOTIONAL PROBLEMS. (4 cr, §3311; prereq 1301 or equiv; I MTWThF; WuH 230) Gouze
See First Term. Meets with 3311.

5315. INTRODUCTION TO MENTAL RETARDATION. (4 cr, §SpEd 5120; prereq 1301 or equiv; III MTWThF; Pt 102) Ilmer
See First Term. Meets with SpEd 5120.

5333. PERSONALITY DEVELOPMENT. (4 cr; prereq 3331 or 5331; IV MTWThF; ForH 120) Chalkley
Psychoanalytic and behavioral theory formulations, related research literature in content areas (e.g. attachment, dependency, aggression, competence, and sex typing).

5339. PARENT-CHILD RELATIONS. (4 cr; prereq 3331 or 5331; II MTWThF; CD 216) Clark
Discussion of parent-child relationships and evaluation of relevant research (e.g., cross-cultural child rearing perspectives, alternative parenting roles, economics of parent-child relations, rights of parents and children).

5343. COGNITIVE DEVELOPMENT. (4 cr; prereq 1301 or #; III MTWThF; CD 216) Cavanaugh
Development of cognitive processes; discussion of relevant theory, research literature, and methodology.

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

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

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

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

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Art Education (ArEd)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

• **3001. SURVEY OF ART ACTIVITIES.** (4 cr; not open to art education majors; limited to 30 students; I-II MTWThF; WuH 220) Slettehaugh
Introduction to pictorial expression, design, and the function of art in the school environment.

• **3009. WEAVING WITHOUT A LOOM.** (4 cr; limited to 30 students; I-II MTWThF; WuH 340) Smits
Developing fundamental weaving skills employing inexpensive equipment and techniques without the use of the floor loom.

• **5001. ART MEDIA TECHNIQUES: Artistic Development of Children—June 13-26.** (1-12 cr [max 12 cr]; limited to 60 students; III-V MTWThF; WuH 240) Day
Lectures, demonstrations, discussions, critique sessions exploring techniques and processes in creativity; handling specific media; each offering focuses on a single topic. This 3-credit workshop will focus on developmental changes and meanings associated with children's art; ways to foster the creative/artistic development of children of all ages.

5318. ART EDUCATION IN EUROPE. (3 cr; IV MTWThF; WuH 110) Slettehaugh
Current practices, problems, and achievements in art education in Western Europe compared with practices in American art education.

5605. PRACTICUM. (3-9 cr; prereq #) Day, Slettehaugh
Independent project under direction; gathering data, developing proposals, experimenting with evaluating innovative practices.

5900. PROFESSIONAL PROBLEMS. (3 cr; prereq MEd student; hrs ar) Day, Slettehaugh
Independent study for M.Ed. candidates integrating learning from art education, art, and education.

8300. RESEARCH IN ART EDUCATION. (3 cr; II MTWThF; WuH 110) Day
Research techniques.

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

SECOND TERM

3030. PUPPETRY. (4 cr; I-II MTWThF; WuH 220) Olson
Construction, manipulation, and stage techniques for basic puppet types.

3200. FIELD EXPERIENCES IN ART EDUCATION. (3-9 cr; S-N only) Olson
Art education experiences in the school and community.

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

Sec 1, Integrating the Visual Arts and Music in the Schools, July 18-31, 3 cr, III-V MTWThF, WuH 240, Di Blasio
Building a related arts program, common characteristics, creative activities, developing curriculum materials.

Sec 2, Jewelry Making, August 1-14, 3 cr, III-V MTWThF, WuH 120, Olson
Previous knowledge and experience unnecessary. Simple techniques adaptable for young people of elementary school age using limited budgets and little equipment.

• **5303. CURRICULUM BUILDING IN ART EDUCATION: PROGRAMS FOR EXCEPTIONAL CHILDREN** —August 6-10. (3 cr; limited to 70 students; August 6-7, 9:00-12:00 and 12:30-4:30, AndH 310; August 8-10, times and off-campus locations to be at 1st day of class) Day
Selection, evaluation, and organization of material for teaching units and projects; intensive experience emphasizing art therapy.

5389. APPLICATION OF AESTHETIC THEORY IN EDUCATION. (3 cr; II MTWThF; WuH 110) Di Blasio
Contemporary theories of art, their psychological and philosophical foundations. Open to teachers, supervisors, and administrators concerned with art in general education at all levels.

5605. PRACTICUM. (3-9 cr; prereq #; hrs ar) Olson, Day, Di Blasio
See First Term.

5900. PROFESSIONAL PROBLEMS. (3 cr; prereq MEd student; hrs ar) Olson, Day
See First Term.

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

Curriculum and Instructional Systems (CISy)

FIRST TERM

5003. EDUCATIONAL TECHNOLOGY: COMPUTERS IN THE CLASSROOM. (1 cr, §SeEd 5003, §SeEd 5102; \$2 lab fee; IV TTh; EdH Annex 64) Davis
Introduction to the use of computer technology in instruction; self-instructional, computer-managed module.

5004. EDUCATIONAL TECHNOLOGY: CLASSROOM VIDEO. (1 cr, §SeEd 5004, §SeEd 5102; \$2 lab fee; lect IV MW; lab IV F; EdH Annex 64) Davis

5203. RESOURCE MANAGEMENT IN INSTRUCTIONAL PROGRAMS. (3 cr, §SeEd 5203; prereq 5000 or SeEd 5000 or #; \$2 lab fee; II-III MWF; EdH Annex 64) Davis
Processes an instructor or media generalist employs in integrating resources into a planned program; introduction to facilities planning, discussion of environmental health and safety.

5207. APPLICATIONS OF TELEVISION IN EDUCATION. (2 cr, §SeEd 5207; prereq 5004 or SeEd 5004; \$2 lab fee; II-III TTh; EdH Annex 64) Davis
Current uses of video systems in education.

5509. DIRECTED INDIVIDUAL STUDY. (1-6 [max 6 cr]; prereq Δ) Davis
Review of literature in research and theory of instructional systems.

5600. INTRODUCTION TO CURRICULUM DEVELOPMENT. (3 cr, §SeEd 5113; prereq SeEd 3155 or equiv; II MTWThF; NH 122) Kimpston
Environment of the secondary school related to educational philosophy, goals, objectives; systematic planning for assessing educational needs; current alternative designs for curriculum and instruction.

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

8710. FIELD STUDY IN GENERAL CURRICULUM. (6-9 cr; prereq Δ; hrs ar) Kimpston

8800.* PROBLEMS: SECONDARY SCHOOL SUPERVISION. (Cr ar; prereq Δ) Kimpston
Individual problems course on improvement of instruction.

SECOND TERM

5201. SYSTEMS APPROACH TO DESIGN OF INSTRUCTION. (3 cr, §SeEd 5201; prereq 5000 or SeEd 5000 or #; \$2 lab fee; II-III MWF; EdH Annex 64) Tennyson
Instructional materials design in accordance with systems principles including design of a specific unit of courseware.

5209. PRINCIPLES AND PROCEDURES IN DESIGNING INSTRUCTION. (4 cr; prereq 5000; IV-V MWF; EdH Annex 64) R Tennyson
Major models of instructional development; generic components; design models; review of instructional design and learning environments.

5509. DIRECTED INDIVIDUAL STUDY. (1-6 cr [max 6 cr]; prereq Δ) R Tennyson
See First Term.

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

Education: Adult, Higher, and Teacher (Educ)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

5205. FIELD EXPERIENCE IN ADULT EDUCATION. (4-8 cr [max 8 cr]; prereq #) Bruning, Park, Willie

• **5301.¹ ADULT EDUCATION WORKSHOP: Teaching Strategies for Adults.** (1-12 cr [max 12 cr]; each section limited to 35 students; prereq practicing adult educator and #)

Sec 1, Religious Education Programming: Planning and Interpretation, June 12-28, 3 cr; 1:00-3:00 MTWThF; Bu 120, Bruning
Development and implementation of religious programs, including planning, strategies for instruction and classroom management.

Sec 2, Teaching Learning Disabled Adults, 3 cr, 3:00-5:30 TTh, FolH 107, Park
For teachers and aides working with learning disabled adults (mentally retarded or multiple handicapped who are being mainstreamed back into society from institutions and those who will continue to live in limited environments; methods of teaching basic skills to learning disabled adults.

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

8250. HIGHER EDUCATION IN THE UNITED STATES. (3 cr; prereq yr of grad study in any field or 18 cr in education; III-IV TThF; Elth N647) Corcoran
Development, present status, and outlook for American colleges; purposes; current and projected programs; trends in curriculum, instruction, and administration; evaluation of outcomes.

8302.* PROBLEMS: ADULT EDUCATION. (3-9 cr; prereq #) Bruning, Park, Willie
Individual research in area of adult education.

SECOND TERM

5205. FIELD EXPERIENCES IN ADULT EDUCATION. (4-8 cr [max 8 cr]; prereq #) Woods

8302.* PROBLEMS: ADULT EDUCATION. (3-9 cr; prereq #) Woods
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.

Elementary Education (Elem)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (See instructions under "Reserved Courses").

FIRST TERM

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

5100. ELEMENTARY SCHOOL CURRICULUM. (3 cr; prereq 3101; II MTWThF; CD 218) Howey

● **5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES.** (3 cr; limited to 40 students; III MTWThF; BuH 123)

5300. LITERATURE FOR THE ELEMENTARY SCHOOL (3 cr; II MTWThF; BuH 120) Odland

● **5305. SURVEY OF SPECIAL COLLECTIONS IN CHILDREN'S LITERATURE.** (3 cr; limited to 20 students; prereq 5300 or #; I MTWThF; BuH 120) Odland
Content and accessibility of collections that relate to the creation of books; emphasis on possibilities and methods for interpreting the content of the collections to children.

5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL—June 28-July 13. (3 cr; prereq 3316 or elem tchg exper; III-IV MTWThF; BuH 120) Youngers
Improvement of instruction, study of trends in English education.

● **5318. CREATIVE WRITING FOR AND BY CHILDREN—June 12-27.** (3-6 cr [max 6 cr]; limited to 40 students; prereq 3300 or 3336 or elem tchg exper and #; III-IV MTWThF; BuH 120) Odland, Youngers
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.

5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL. (3 cr; prereq 9 cr in education; IV MTWThF; Pt 215) ar
For graduate students and summer students who hold a bachelor's degree.

● **5334. READING DIFFICULTIES.** (3 cr; limited to 50 students; prereq 5331 or SeEd 5344; I MTWThF; BuH 123) Taylor

● **5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES.** (3 cr; students are required to register concurrently in Elem 5336; limited to 35 students; prereq 5334; III-IV MTWThF; off campus) Schreiner
Relationship to psychological factors and clinical remedial correction. Students will be informed of where class will meet upon registration.

● **5336. CLINICAL PRACTICE IN REMEDIAL TEACHING.** (3 cr; students are required to register concurrently in Elem 5335; limited to 35 students; prereq 5334 or 5107 and #; III-IV MTWThF; off campus) Schreiner
Remedial tutoring of individual children who have difficulty in school learning. Students will be informed of where class will meet upon registration.

5337. BEGINNING READING INSTRUCTION. (3 cr; prereq 3331 and #; III MTWThF; PeikH 315) Taylor
For teachers and specialists interested in initial teaching procedures; compares alternative methods of beginning instruction; emphasis on readiness program, test-grouping patterns, language factors, and intensive instructional procedures to prevent reading failure.

● **5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES.** (3 cr; limited to 35 students; prereq 5349; I-II TTh; PeikH 385) Humphreys
Experiences in the use of educational materials and media common to teaching modern elementary school science.

● **5363.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES.** (Cr ar [max 9 cr]; section 1 limited to 30 students, section 2 limited to 50 students; prereq elem tchg exper and #)

Analysis of new instructional materials and recent curriculum developments in the field; training in innovative instructional procedures.

Sec 1, June 12-27, V-VII MTWThF, KoltH S140, Cogan

This 3-credit workshop will focus on economics education programs, materials, and teaching methods in the elementary school with special attention to the "Trade Offs" program recently developed for elementary school students.

Sec 2, June 28-July 13, V-VIII MTWThF, Minnesota Historical Society, 240 Summit Avenue, St. Paul, Ellis
This 3-credit workshop will acquaint elementary teachers with materials, resources, and methods for teaching Minnesota state history.

5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION. (3 cr; prereq tchg exper in kindergarten or primary school or #; II MTWThF; WuH 230) Hansen
Continuing needs of children in our changing culture; current practices and recent research; not intended for kindergarten licensure requirements.

5377. EARLY CHILDHOOD EDUCATION: MATERIALS AND RESOURCES. (3 cr; prereq 3377 or 5376 and tchg exper; IV MTWThF; BuH 125) Hansen
Experience in the selection and use of commercial and teacher-made education materials common to early childhood education programs.

5602. PRACTICUM: IMPROVEMENT OF TEACHING. (3 cr; prereq MEd student in elem education, #; S-N only; hrs ar) Dykstra, Hansen, Jackson, Odland, Stochl, Ellis, Howey, Humphreys, Youngers, Schreiner, Cogan, Taylor

● **8300. RESEARCH IN SPECIAL COLLECTIONS OF CHILDREN'S LITERATURE.** (1-3 cr [max 6 cr]; limited to 15 students; V-VI TTh; BuH 123) 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.

8916.* PROBLEMS: TEACHING ENGLISH. (Cr and hrs ar; prereq #) Dykstra, Youngers

8931.* PROBLEMS: TEACHING READING. (Cr and hrs ar; prereq 5331 or SeEd 5344 and #) Odland, Schreiner, Taylor

8961.* PROBLEMS: TEACHING SOCIAL STUDIES. (Cr and hrs ar; prereq 5361 or SeEd 5155 or 8104 and #) Ellis, Cogan

8976. PROBLEMS: TEACHING KINDERGARTEN. (3 cr; prereq #; hrs ar) Hansen

8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION. (Cr and hrs ar; prereq #) Dykstra, Hansen, Jackson, Odland, Stochl, Howey, Humphreys, Youngers, Schreiner, Cogan, Taylor, Ellis

SECOND TERM

● **5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 17-August 3.** (3 cr; limited to 40 students; III-IV MTWThF; PeikH 315)

5317. MATERIALS LABORATORY FOR TEACHING ENGLISH IN ELEMENTARY SCHOOLS—July 17-August 3. (3 cr; prereq 3316 or elem tchg exper; III-IV MTWThF; BuH 123) Youngers
Examination and evaluation of textbooks, programmed materials, and audiovisual resources for elementary school language arts instruction.

¹Student teaching is open only to students in regular degree programs of the College of Education. Application must be made prior to April 20. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

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.

5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL—July 17-August

3. (3 cr; prereq 9 cr in education; I-II MTWThF; Pt 215) Taylor

See First Term.

5334. READING DIFFICULTIES—July 17-August 3. (3 cr; prereq 5331 or SeEd 5344; I-II MTWThF; BuH 123) D Pearson

5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES—July 17-August 3. (3 cr; prereq 5334; III-IV MTWThF; Pt 214) Taylor

See First Term.

5338. TEACHING READING IN THE INTERMEDIATE GRADES—July 17-August 3. (3 cr; prereq 3331 and #; III-IV MTWThF; BuH 120) D Pearson

● **5347. WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SCIENCE.** (3-6 cr; each section limited to 30 students; prereq elem tchg exper)

Concept foundations, goals, and teaching and evaluation procedures.

Sec 1, July 23-August 10, 9:00-2:00 MTWThF, Minnesota Zoological Garden, 12101 Johnny Cake Ridge Road, Apple Valley, Hansen, Humphreys, Youngers

This 3-credit offering will focus on natural science and environmental concepts and curriculum materials for preschool, kindergarten, and primary grade children. See Special Programs section.

Sec 2, July 23-August 4, 1:00-3:00 MTWThF, PeikH 385, field trip July 28 and August 4, R Johnson

This 3-credit workshop will concentrate on meteorology and geology in the earth science curriculum, particularly the geology of the Twin Cities area.

● **5348. WORKSHOP: OUTDOOR SCIENCE EDUCATION—August 6-10.** (3 cr; limited to 30 students; prereq elem tchg exper; all day MTWThF; Itasca State Park) R Johnson

Classroom and fieldwork activities dealing with models, materials, and methods in the outdoor setting. The course will be held in Itasca State Park. Participants are required to provide sleeping bags and other necessary items. Students will be responsible for the costs of food, transportation, and campsite rental. The course will cover many aspects of outdoor sciencing including forestry activities, nature trail development, marsh studies, and stargazing. For further information, contact Roger Johnson, 370 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

5361. TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL—July 17-August 3. (3 cr; prereq 3101 or equiv; I-II MTWThF; Pt 214) Ellis

For graduate students and summer students who hold a bachelor's degree in elementary education.

5602. PRACTICUM: IMPROVEMENT OF TEACHING. (3 cr; prereq MEd student in elem education, #; S-N only; hrs ar) Dykstra, Stochl, R Johnson, D Pearson, Post, Ellis, Howey, Taylor, Youngers

8916.* PROBLEMS: TEACHING ENGLISH. (Cr and hrs ar; prereq #) Dykstra, Youngers

8931.* PROBLEMS: TEACHING READING. (Cr and hrs ar; prereq 5331 or SeEd 5344 and #) D Pearson, Taylor

8961.* PROBLEMS: TEACHING SOCIAL STUDIES. (Cr and hrs ar; prereq 5361 or SeEd 5155 or 8104 and #) Ellis

8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION. (Cr and hrs ar; prereq #) Dykstra, Stochl, R Johnson, D Pearson, Post, Ellis, Howey, Taylor, Youngers

Mathematics Education (MthE)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

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.

FIRST TERM

● **5101.¹ WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS.** (1-12 cr [max 12 cr;]; limited to 30 students; not open to majors in mathematics education; prereq #: I-II MWF; PeikH 375) Stochl
Modern trends, methods, and materials used to convey mathematical ideas. This offering for 3 credits.

● **5102.¹ WORKSHOP: MATHEMATICS EDUCATION.** (1-12 cr [max 12 cr;]; each section limited to 35 students)

Issues, materials, and instructional techniques, focusing on a single current topic of particular relevance to secondary school and college mathematics teachers.

Sec 1, Using Hand-Held Calculators to Teach Elementary School Mathematics, June 12-22, 3 cr, V-VII MTWThF, PeikH 375, Jackson

Instructional activities that involve the calculator as an integral component; designed to make teaching more effective and relevant to children.

Sec 2, Mathematical Applications With Physical Sciences, 3 cr, V-VII TTh, PeikH 315, House
Mathematical principles underlying selected topics in the physical sciences fundamental to secondary school science; laboratory experiments embodying these concepts provide insight and suggest instructional approaches appropriate for the secondary school classroom. Appropriate for junior and senior high school teachers of both science and mathematics.

5312. TEACHING AND SUPERVISION OF MATHEMATICS IN THE SECONDARY SCHOOL. (3 cr; prereq mathematics tchg exper or #; I-II MWF; PeikH 315) House

Methods, materials, and curriculum development; principles of learning; review of research; preparation and evaluation of tests, units, and materials of instruction.

● **5355. MATHEMATICS FOR SLOW LEARNING CHILDREN.** (3 cr; limited to 35 students; prereq 5311 or Elem 3391 or #; I-II MWF; PeikH 385) Jackson

Units of instruction emphasizing mathematical concepts essential for vocational competence; experimental materials and methods designed to improve performance of low achievers.

5680. PRACTICUM IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; prereq #) Jackson, Stochl, House
Supervised experience in teaching or related work in school.

5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; prereq #) Jackson, Stochl, House

Survey of recent literature; design and preparation of reports on special problems.

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

SECOND TERM

● **5101.¹ WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS—July 17-August 3** (1-12 cr [max 12 cr]; limited to 30 students; not open to majors in mathematics education; prereq #: I-II MTWThF; PeikH 375) Stochl

See First Term. This offering for 3 credits.

● **5102. WORKSHOP: MATHEMATICS EDUCATION (Practicum in Remedial Mathematics)—July 17-August 3.** (1-12 cr [max 12 cr]; limited to 25 students; not open to majors in mathematics education; prereq #: III-V July 17, PeikH 375; thereafter III-V daily at an off-campus elementary school that will be announced) Post
See First Term. This 3-credit practicum will focus on arithmetic learning difficulties; students will review diagnostic procedures and plan remediative activities prior to actual work with children.

● **5355. MATHEMATICS FOR SLOW LEARNING CHILDREN—July 17-August 3.** (3 cr; limited to 35 students; prereq 5311 or Elem 3391 or #; I-II MTWThF; PeikH 315) Post
See First Term.

5680. PRACTICUM IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; prereq #) Post, Stochl
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.

5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION. (3-9 cr [max 9 cr]; prereq #) Post, Stochl
See First Term.

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

Music Education (MuEd)

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

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

• **3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL.** (4 cr; limited to 30 students; III MTWThF, ScH 4) Borg
For non-music majors; methods and materials in teaching singing, rhythm, music reading, creativity, classroom instruments, fundamentals, appreciation in K-6.

3503. WOODWIND TECHNIQUES—June 12-29. (4 cr; prereq music education major or #; II-III MTWThF; NMA 4) Schultz
Playing experience on all woodwind instruments; basic concepts of teaching; study of methods and materials; class instruction.

5111. RESEARCH IN MUSIC EDUCATION: BIBLIOGRAPHY. (3 cr; I MTWThF; ScH 3) Turrentine
Sources, materials, and techniques.

5611. TECHNIQUES AND MATERIALS: MUSIC AND RELATED ARTS—July 2-13. (3 cr; prereq #; VI-VIII MTWThF; ScH 3) Turrentine
Teaching music to reflect the major developments of Western culture.

5613. TEACHING MUSIC LITERATURE—June 12-29. (3 cr; prereq #; VI-VII MTWThF; ScH 103) Borg
Principles, methods, and materials for teaching music history (appreciation) in grades K-12.

5643. TECHNIQUES AND MATERIALS: WOODWINDS—July 2-13. (3 cr, \$5515; prereq #; II-IV MTWThF; NMA 4) Schultz
Practical performance with lectures on and discussions of research in performance techniques.

5970. INDEPENDENT STUDY. (1-4 cr; prereq consent of adviser and of dept; hrs ar; ScH 104) Turrentine, Schultz, Borg
An independent study project organized by the student in consultation with the appropriate instructor.

8990.* RESEARCH PROBLEMS. (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScH 104) Turrentine, Schultz, Borg
Individual projects.

SECOND TERM

3001. MUSIC FOR RECREATIONAL LEADERSHIP—July 16-August 3. (4 cr; prereq Mus 1001; VI-VII MTWThF; ScH 4) Jellison
Directing and working with students in musical performing groups, rhythmic activities, singing, musical instruments, and listening.

• **3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL.** (4 cr; limited to 30 students; prereq Mus 1001 or exemption; IV MTWThF; ScH 4) Caswell
See First Term.

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

5631. TECHNIQUES AND MATERIALS: CHORAL CONDUCTING—July 16-August 3. (3 cr, \$5421; prereq #; VI-VII MTWThF; MusEd 103) Caswell
Student conducting with class as performing ensemble; criteria for selecting choral and combined choral and instrumental materials; rehearsal techniques.

5665. MUSIC FOR EXCEPTIONAL CHILDREN—July 16-27. (3 cr; prereq #; II-IV MTWThF; MusEd 103) Jellison
Trends; methods and materials for a functional program of singing, playing, rhythm, listening, and creative activities for mentally and physically handicapped and gifted pupils.

5970. INDEPENDENT STUDY. (1-4 cr; prereq consent of adviser and of dept; hrs ar; ScH 104) Caswell, Jellison
See First Term.

8990.* RESEARCH PROBLEMS. (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScH 104) Caswell, Jellison
See First Term.

Secondary Education (SeEd)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

3600.² STUDENT TEACHING. (Cr ar; prereq Δ) 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. (1-12 cr [max 12 cr]) Mackey
Opportunity to work individually or in teams on curricular, instructional, or evaluation problems within the school.

5152. TECHNIQUES OF INSTRUCTION IN SOCIAL STUDIES. (3 cr; prereq 5150; IV MTWThF; PeikH 165) Mackey

Analysis of teaching strategies and contemporary curriculum materials in the social studies; techniques of instruction useful in inquiry; strategies of analysis; classroom behavior and evaluation. Required of M.A., M.Ed., and Ph.D. candidates.

• **5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES: Teaching About the Newspaper in the Classroom—June 18-29.** (1-3 cr [max 12 cr]; limited to 50 students; I-III MTWThF; PeikH 165) Mackey
Issues, materials, and instructional techniques related to current topics of particular relevance to social studies teachers. A 3-credit offering on how to use the newspaper as an instructional tool.

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

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

• **5191.¹ WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES.** (1-10 [max 10 cr]; each section limited to 40 students) Jorstad

Related specifically to the needs of the in-service teacher.

• **Sec 1, Preparing Supplementary Materials for Use in Elementary, Middle, and Secondary Schools, June 12-22,** 3 cr, 12:15-3:30 MTWThF, PeikH 215

Development and role of games, worksheets, simulations, displays, and other motivational materials in meeting objectives of language instruction; integrating supplementary materials with basic language curricula; for teachers of French, Spanish, German, ESL, Hebrew, and bilingual/bicultural education.

• **Sec 2, Techniques for Using Supplementary Materials and Motivational Activities in Elementary, Middle, and Secondary Schools, June 25-July 13,** 3 cr, 12:45-3:00 MTWThF, PeikH 215

Techniques using games, drama, field trips, displays, and festivals for teachers of French, Spanish, German, Hebrew, ESL, and bilingual/bicultural education.

5344. TEACHING READING IN CONTENT AREAS. (3 cr; prereq 9 cr in education; IV MTWThF; PeikH 225) Graves

Procedures, objectives, and materials.

5351. DIRECTED STUDY. (Cr ar [max 6 cr]; S-N optional; prereq #) Gennaro, Graves, Jorstad, Mackey
Individual or group work on curricular, instructional, or evaluation problems.

5371.¹ CURRICULUM WORKSHOP: The Middle School—June 18-July 6. (1-3 cr; prereq 5113 or ClSy 5600 or Elem 5100 or #; III-IV MTWThF; NH 107) Kimpston

Workshops pertaining to curriculum and instruction. A 3-credit offering for present and prospective middle school teachers and administrators; implications of the philosophy and organization of middle schools, pre- and early adolescent psychology for structuring the learning environment; curriculum design, teaching and learning, student evaluation.

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

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

• **Sec 1, Teaching of Animal Behavior, June 12-July 6,** 6 cr, II-IV MTWThF, Minnesota Zoological Garden, 12101 Johnny Cake Ridge Road, Apple Valley, Gennaro

Curricular materials and instructional techniques for middle school, junior high school, and senior high school teachers. Students will use animals commonly used in classrooms and will be exposed to the animals in the zoo setting. Students from the Twin Cities Institute for Talented Youth will be available for testing curricular materials and teaching techniques. Advance reservation is necessary—telephone (612) 373-0114.

• **Sec 2, Teaching Science Through Toys, July 2-13,** 3 cr, V-VII MTWThF, PeikH 385, Humphreys
How to use toys in demonstration and laboratory exercises for intermediate grade and junior high science instructors; data gathering, derivation and illustration of basic science principles.

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

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

• **5404. LANGUAGE, CULTURE, AND EDUCATION.** (4 cr, §Spch 5404; limited to 50 students; III MTWThF; PeikH 225) Piché

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

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

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

8801.* PROBLEMS: TEACHING SOCIAL STUDIES. (3-9 cr; prereq 5150, 5152, 5156, 8104 or #; hrs ar) Gardner, Mackey

Individual research.

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

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

Individual research.

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

Readings in secondary school English curriculum and instruction.

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

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

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

SECOND TERM

5150. ADVANCED METHODS OF TEACHING THE SOCIAL STUDIES — July 30-August 10. (3 cr; I-III MTWThF; PeikH 165) Glenn

Advanced methods for social studies teachers; prerequisite to other graduate-level courses in social studies education.

5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (1-12 cr [max 12 cr]) 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.

²Student teaching is open only to students in regular degree programs of the College of Education. Application must be made prior to April 20. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

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.

5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES—July 17-27. (1-3 cr [max 12 cr]; I-III MTWThF; PeikH 165) Glenn
See First Term. This offering for 3 credits will focus on individualizing and mainstreaming in social studies classrooms.

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

5191.¹ WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES (The Cultural and Language Heritage of France, Germany, and Spain in Minnesota) — July 16-August 10. (1-10 cr [max 10 cr]; 1:00-3:30 MTWThF; PeikH 215) Lange
See First Term. This 4-credit offering will uncover the heritage by examination of documents, interviewing resource persons, visiting locales; planning and developing materials.

• **5194. ENGLISH LANGUAGE ARTS CURRICULA IN THE SECONDARY SCHOOL — July 17-August 10.** (3 cr; prereq 3326 or equiv; limited to 40 students; 11:45-12:50 MTWThF; PeikH 225) Brunetti
Growth and development of English as a major school subject; description and evaluation of current curricular direction.

• **5321. TEACHING LITERATURE IN SECONDARY SCHOOLS — July 17-August 10.** (3 cr; limited to 40 students; prereq 3155 or jr-sr high school tchg exper; 8:00-9:05 MTWThF; PeikH 225) Brunetti
Current theory and methods of instruction; research and response to literature and reading; adolescent literature; growth assessment; curriculum design and evaluation.

• **5350. CURRENT DEVELOPMENTS IN ENGLISH AND SPEECH EDUCATION: Teaching Writing — July 17-August 10.** (1-6 cr [max 12]; limited to 40 students; 9:15-11:35 MTWThF; FolH 105) Beach
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. (Cr ar [max 6 cr]; S-N optional; prereq #) Brunetti, Beach, Gennaro, Glenn
See First Term.

• **5394. WORKSHOP: SCIENCE EDUCATION (Practical Science) July 17-27.** (1-12 cr [max 12 cr]; limited to 35 students; I-III MTWThF and 6 hrs ar; PeikH 365) Gennaro
This 3-credit offering will include applications of biology, chemistry, physics, and earth science to everyday life: chemically testing and explaining household hints, the physical science of the bicycle, the biology of household and industrial substances, backyard earth science explored in a hands-on manner for possible inclusion in secondary science curricula.

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

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

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

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

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

8895. READINGS IN ENGLISH EDUCATION. (1-3 cr) Brunetti, Beach
See First Term.

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

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

DEPARTMENT OF EDUCATIONAL ADMINISTRATION Educational Administration (EdAd)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

• **5120. PRACTICUM: POSTSECONDARY ADMINISTRATION—June 10-21.** (3-6 cr [max 6]; limited to 36 students) Morgan

Intensive group and individual examination of current and pertinent administrative problems in postsecondary but nonbaccalaureate institutions in a 2-week study tour in England, Wales, and Scotland. Designed for persons employed in or with an interest in the evolution, organization, governance, and program offerings of 2-year institutions. Preapplication and deposit required. This offering for 3 credits. See Special Programs section.

• **5128.¹ WORKSHOP: EDUCATIONAL ADMINISTRATION.** (1-6 cr; S-N optional; section 1 limited to 25 students, section 2 limited to 36 students; prereq practicing educational administrator or #)
Laboratory approach provides opportunities for experienced administrators to concentrate study on common administrative and supervisory problems. Section 2 is a 2-week study tour in Germany designed for persons employed in or with an interest in the evolution, organization, governance, and program offerings of 2-year nonbaccalaureate institutions. Preapplication and deposit are required. See Special Programs Section.

Sec 1, **Collective Bargaining Workshop, June 11-22, 3 cr; 2:00-5:00 MTWThF; BioSci 115, Alkire**

Sec 2, **Study Tour to Germany, June 24-30, 3 cr; Morgan**

5200. DESIGN AND MANAGEMENT OF EDUCATION SERVICES. (3 cr; II MTWThF; BioSci 115) 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.

5231. PRACTICUM IN SCHOOL-COMMUNITY RELATIONS — June 11-22. (1-4 cr; S-N optional; 2:00-5:00 MTWThF; CofH 120) Popper

Practical experience in design and use of basic tools in a program such as conducting community analysis; preparing copy and news releases; meeting, working with material for the press, radio, and television; planning school publications; opinion polling and personal conferences. This offering for 3 credits. See Special Programs section.

8201. FORMAL ORGANIZATIONS IN EDUCATION. (3 cr; III-IV MWF; ClaOff B25) Popper
Focus on schools; organizations as social systems; individual behavior in organization roles; technical or production processes and management control systems.

8210. FINANCING ELEMENTARY AND SECONDARY SCHOOLS. (3 cr; I MTWThF; ClaOff B30)
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.

8220. QUANTITATIVE FOUNDATIONS FOR MANAGEMENT METHODS. (3 cr; III MTWThF; BioSci 115) Hendrix

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

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.

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

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

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

8238. SEMINAR: THEORY AND RESEARCH. (3 cr; prereq 8218, 8235, educational administration major or #; IV MTWThF; ClaOff B36) Hendrix

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

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

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

8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term; hrs ar) Ammentorp, Hendrix, Hooker, Popper, Alkire

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

8273.* FIELD STUDY. (0-10 cr; prereq #; hrs ar) Ammentorp, Hendrix, Hooker, Popper, Alkire
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.

SECOND TERM

5103. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION — August 6-17. (3 cr, §SpEd 5160; prereq #: 2:00-5:00 MTWThF; ClaOff B30)

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

• **5128.¹ WORKSHOP: EDUCATIONAL ADMINISTRATION.** (1-6 cr; each section limited to 20 students; S-N optional; prereq practicing educational administrator or #)

See First Term and Special Programs section.

Sec 1, Superintendent Workshop, July 30-August 7, 4 cr, II-VII MTWThF, BioSci 70, Hooker

Sec 2, Teacher Evaluation Workshop, July 17-31, 3 cr, 2:00-5:00 MTWThF, BioSci 115, Nickerson

• **5130. ADMINISTRATOR DEVELOPMENT SEMINAR.** (3-9 cr [max 9 cr]; limited to 25 students; III-VII MTWThF; BioSci 64) Alkire, Mazzoni

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

• **5139. LABORATORY IN DECISION MAKING.** (1-4 cr per qtr; limited to 25 students; III-VII MTWThF; BioSci 64) Alkire, Mazzoni

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

5274. TWO-YEAR POSTSECONDARY INSTITUTIONS — July 17-31. (3 cr, §VoEd 5274; II-IV MTWThF; ClaOff B42) Morgan

Present status, development, functions, organization, curriculum, and trends of postsecondary but non-baccalaureate institutions. Meets with VoEd 5274.

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.

8202. POLITICS OF EDUCATION. (3 cr; II MTWThF; BioSci 64) Mazzoni

Formal and informal institutional governance structures; processes of political influence at local, state, and national levels; social science concepts, techniques of analysis, and research findings applied to participants, processes, structures, issues, and outcomes involved in governing the public schools.

8203. THE COMMUNITY SCHOOL. (3 cr; III-IV MWF; ClaOff B30) Popper

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

8221. QUANTITATIVE MODELS FOR PROGRAM ANALYSIS AND RESEARCH—July 17-August 3. (3 cr; prereq 8220; III-IV MTWThF; ClaOff B36) Hendrix

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

8227. PUBLIC SCHOOL PERSONNEL PROGRAMS—August 6-17. (3 cr; 1:30-4:00 MTWThF; ClaOff B42) Alkire

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

8264. THE SECONDARY SCHOOL PRINCIPALSHIP. (3 cr; I MTWThF; ClaOff B35) Nickerson

The role of the principal: qualifications, duties, and problems including current issues and factors in staff and student relationships.

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

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

8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION. (1-3 cr per term; hrs ar) Popper, Alkire, Morgan, Mazzoni, Nickerson

8273.* FIELD STUDY. (0-10 cr; prereq #; hrs ar) Popper, Alkire, Morgan, Mazzoni, Nickerson

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION Physical Education (PE)

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, 1074, 1138, 1306.

Professional Physical Education — Courses are offered at the undergraduate and graduate levels in physical education. Many of these courses apply toward the licensure requirements for teaching physical education in the state of Minnesota. Courses are also offered that will apply toward the athletic coaching credential requirements for men and women. Courses applicable toward requirements in the various programs that are offered this summer include the following:

1. An Advanced Degree in Physical Education — PE 5100, 5122, 5130, 5136, 5140, 5160, 5620, 5700, 5740, 5980, 5981, 5983, 8980, 8981
2. Undergraduate Major in Physical Education — PE 3110, 3111, 3113, 3115, 3125, 3143
3. State of Minnesota Coaching Credential — PE 3110, 3111, 3115, 3125, 3143, 5740

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)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

● **1007. SWIMMING.** (1 cr; limited to 22 students; \$2 lab fee; III MTWTh; NorrisH 58) Wicks
Course for nonswimmers includes aquatic breathing, floating, bobbing, treading, finning, human stroke, elementary backstroke, sidestroke, front crawl.

● **1014. CONDITIONING.** (1 cr; each section limited to 40 students; \$2 lab fee) Spicer
Improvement of physical fitness and general appearance through the use of running, circuit training, and progressive exercises of various types.

Sec 1, II MTWTh, Stadium S264, Northrop Field, Fldhse

Sec 2, III MTWTh, Stadium S264, Northrop Field, Fldhse

● **1015. WEIGHT TRAINING.** (1 cr; each section limited to 30 students; \$2 lab fee)
Emphasizes the fundamentals of weight training including skills, techniques, individualized exercise prescription, and theory.

Sec 1, I MTWTh, Stadium N202, Conrad

Sec 2, II MTWTh, Stadium N202, Rasmussen

● **1036. PADDLEBALL-RACQUETBALL.** (1 cr; limited to 24 students; \$2 lab fee; I MTWTh; Stadium N208) Spicer
Basic fundamentals of skills and shots; rules and game strategy are stressed.

● **1038. TENNIS.** (1 cr; sections 1, 2, 5 and 6, limited to 28 students, sections 3 and 4 limited to 18 students; \$2 lab fee)

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, II MTWTh, BFAB 101, Tennis Courts, Ringhofer

Sec 2, III MTWTh, BFAB 101, Tennis Courts, Ringhofer

Sec 3, III MTWTh, St. Paul Gym, Tennis Courts, Kundla

Sec 4, IV MTWTh, St. Paul Gym, Tennis Courts, Kundla

Sec 5, IV MTWTh, BFAB 101, Tennis Courts, Linder

Sec 6, V MTWTh, BFAB 101, Tennis Courts, Linder

● **1050. GOLF.** (1 cr; moderate intensity; each section limited to 24 students; \$2 lab fee)
Emphasizes fundamentals of grip, stance, and swing in addition to etiquette and rules.

Sec 1, I MTWTh, Stadium S267, Golf Course, Vang

Sec 2, II MTWTh, Stadium S267, Golf Course, Vang

Sec 3, III MTWTh, Stadium S267, Golf Course, Kelley

Sec 4, IV MTWTh, Stadium S267, Golf Course, Kelley

● **1074. VOLLEYBALL.** (1 cr; each section limited to 48 students; \$2 lab fee)
Emphasizes the fundamentals of volleyball including serving, setting, spiking, and defensive and offensive theory.

Sec 1, I MTWTh, CookeH 325, Wicks

Sec 2, II MTWTh, CookeH 325, Wicks

● **1138. TENNIS.** (1 cr; limited to 28 students; prereq 1038 or equiv; \$2 lab fee; III MTWTh; BFAB 101, Tennis Courts) Kelley

PROFESSIONAL COURSES (PE)

See also ID 3111, Interstudy '79: A Search for Understanding—June 11-29, section on Dance.

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

● **3111. MECHANICS OF MOVEMENT.** (3 cr; limited to 35 students; prereq Anat 1027, Phys 1061; I MTWThF; CookeH 215) Ben-Sira
Structure of the body, principles and mechanics of bodily movements.

● **3115. PHYSIOLOGICAL APPLICATION TO SPORTS.** (3 cr, \$PubH 3385, 3386; limited to 40 students; II MTWThF; CookeH 215) Alexander
Muscular contraction for strength development programs; contributions of training programs to endurance, speed, and skill acquisition; influence of training on the cardiovascular system; fatigue and recovery; early season training, pregame meals and ergogenic aids in athletics. Required for the Minnesota Coaching Endorsement.

● **3125. PHILOSOPHY OF PHYSICAL EDUCATION AND SPORT.** (3 cr; limited to 35 students; III MTWThF; CookeH 215) Hood
Introduction to the form and content of the subject as represented by the major short essay literature; theories of reality, knowledge, and value salient to physical education and sport.

5122. APPLIED PHYSIOLOGY — June 12-29. (3 cr; prereq PubH 3386 or Phsl 3051 or equiv; I-II MTWThF; CookeH 214) Stull

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

5140. BIOMECHANICS OF SPORT SAFETY. (3 cr; prereq undergrad kinesiology; IV MTWThF; CookeH 215) Stoner
Forces and torques developed in sports activities; tolerances of the human body; techniques for preventing injury; design of protective equipment.

5160. EVALUATION IN PHYSICAL EDUCATION. (3 cr; prereq 3150 or equiv; III MTWThF; CookeH 214) Shick
General principles and techniques of evaluation.

● **5620. PRACTICUM: PREVENTION AND CARE OF ATHLETIC INJURIES — June 25-July 6.** (3 cr; limited to 50 students; prereq Anat 1027 or equiv; 1:30-4:00 MTWThF; BFAB 125, 144) Marshall, Monroe
An overview of problems (recognition, principles, and responsibilities) related to athletic injuries in secondary and college programs; demonstration and practice in training techniques and familiarity with the use of instruments for athletic rehabilitation.

● **5700.¹ WORKSHOP: DANCE IN EDUCATION—June 25-July 13.** (1-12 cr [max 12 cr] limited to 100 students; 9:00-5:00 MTWThF; NorrisH 68, 151, 153, 153a) Jette
History, principles, instructional techniques, and materials for teaching dance in schools and recreational agencies. Topic and credit will vary with each offering. This offering for 6 credits.

● **5740.¹ WORKSHOP: COACHING OF INDIVIDUAL, DUAL, OR TEAM SPORTS: Coaching Gymnastics—July 9-14.** (1-12 cr [max 12 cr] limited to 50 students; 12:00-4:30 MTWThF, 9:00-12:00 S; CookeH 302, 308) Roethlisberger, Deli
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.

5980. RESEARCH METHODOLOGY. (3 cr, \$Hlth 5980; prereq #; V MTWThF; CookeH 214) Shick
Methods and design for research in health, physical education, and recreation. Meets with Hlth 5980.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #) Alexander, Jaeger, Shick, Stoner, Stull, Young
Focus on teaching of physical education.

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.

5983. READINGS: PHYSICAL EDUCATION. (1-3 cr; prereq sr honor or grad student, #) Jaeger, Alexander, Shick, Stoner, Stull, Young
Independent study under tutorial guidance.

8150. PROFESSIONAL PREPARATION OF PHYSICAL EDUCATION TEACHERS — June 12-29. (3 cr; prereq 5151 or equiv; I-II MTWThF; CookeH 226) Young
Current needs, issues, trends, curriculum patterns and standards; for experienced teachers.

8382. BIOMECHANICS: RESEARCH TECHNIQUES. (3 cr; prereq 5120 or #; VI MTWThF; CookeH S-7) Stoner
Laboratory course: developing expertise in techniques used for biomechanical research in human motion.

8981.* RESEARCH PROBLEMS. (Cr and hrs ar; prereq 8980 or #; S-N only) Jaeger, Alexander, Shick, Stoner, Stull, Young
Individual problems.

PHYSICAL ACTIVITY PROGRAM COURSES (PE)

(Open to all students)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

SECOND TERM

• **1007. SWIMMING.** (1 cr; limited to 22 students; \$2 lab fee; I MTWTh; NorrisH 58) Rasmussen
See First Term.

• **1014. CONDITIONING.** (1 cr; each section limited to 40 students; \$2 lab fee)
See First Term.

Sec 1, I MTWTh, Stadium S264, Northrop Field, Fldhse, Foster

Sec 2, II MTWTh, Stadium S264, Northrop Field, Fldhse, Foster

• **1015. WEIGHT TRAINING.** (1 cr; limited to 30 students; \$2 lab fee; II MTWTh; Stadium N202) Vanderwall
See First Term.

• **1038. TENNIS.** (1 cr; each section limited to 28 students; \$2 lab fee)
See First Term.

Sec 1, I MTWTh, BFAB 101, Tennis Courts, Renick

Sec 2, II MTWTh, BFAB 101, Tennis Courts, Graiewski

Sec 3, III MTWTh, BFAB 101, Tennis Courts, Sailes

Sec 4, IV MTWTh, BFAB 101, Tennis Courts, Sailes

Sec 5, V MTWTh, BFAB 101, Tennis Courts, MacGowan

Sec 6, VI MTWTh, BFAB 101, Tennis Courts, MacGowan

• **1050. GOLF.** (1 cr; moderate intensity; each section limited to 24 students; \$2 lab fee) Duoos-Asche
See First Term.

Sec 1, I MTWTh, Stadium S267, Golf Course

Sec 2, II MTWTh, Stadium S267, Golf Course

Sec 3, III MTWTh, Stadium S267, Golf Course

• **1073. SOFTBALL.** (1 cr; limited to 40 students; \$2 lab fee; III MTWTh; FieldHse and Northrop Field) Vanderwall
Fundamental skills and tactics of softball; throwing, catching, batting, running, basic conditioning, and game play.

• **1074. VOLLEYBALL.** (1 cr; limited to 48 students; \$2 lab fee; II MTWTh; CookeH 325) Renick
See First Term.

• **1306. ADVANCED LIFESAVING.** (1 cr; limited to 26 students; \$2 lab fee; prereq ability to swim 440 yds; IV MTWTh; CookeH 15) Graiewski

PROFESSIONAL COURSES (PE)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

SECOND TERM

• **3110. HUMAN ANATOMY.** (3 cr; limited to 40 students; I MTWThF; CookeH 215) Serfass
Emphasizes bones, nerves, and muscles and their significance in physical education.

• **3113. MOTOR LEARNING AND MOTOR DEVELOPMENT.** (4 cr; limited to 40 students; IV MTWThF; CookeH 215) R Johnson

Motor growth and development of children, adolescents, and adults with emphasis on sociopsychological factors.

• **3143. ORGANIZATION AND MANAGEMENT OF SPORT.** (3 cr; limited to 40 students; prereq 2 cr coaching course; II MTWThF; CookeH 215) French
Principles, policies, and procedures involved in the coaching of interscholastic sports.

• **3327. TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL.** (3 cr, \$1560, \$3325, \$Hlth 3325; limited to 35 students; prereq elem education major; I MTWThF; NorrisH 153, 153a) Lampe
An overview of the elementary school physical education program; primarily a laboratory course, with participation in representative physical education activities for children; opportunities for observation of children, microteaching, skill analysis, and group discussion.

5100. TEACHING PHYSICAL EDUCATION FOR THE HANDICAPPED — July 17-August 3. (3 cr; prereq #; I-II MTWThF; CookeH 214, Stadium S264) Rini

Introduction to the role of physical education in the education of the handicapped individual, emphasizing understanding, principles of organization, administration, curriculum, supervision, and evaluation.

5130. MOTOR LEARNING AND HUMAN PERFORMANCE — July 17-August 3. (3 cr; prereq 3113 or #; VI-VII MTWThF; CookeH S7) R Johnson

Mechanisms of human motor skill learning; emphasis on theories of motor learning and control of movement, motor memory, and individual differences.

5134. PERCEPTUAL-MOTOR DEVELOPMENT IN CHILDHOOD—July 17-August 3. (3 cr; prereq 3113 or #; III-IV MTWThF; CookeH 206) Plack

The motoric dimension of perception; emphasis on developmental tenets of perception, diagnosis and remediation of perceptual-motor deficiencies and related research.

5136. PSYCHOLOGY OF COACHING — July 17-August 3. (3 cr; prereq 3113 or #; III-IV MTWThF; CookeH 214) Krotee

Psychological aspects of coaching at the elementary, secondary, and college levels.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #) Jaeger, Stull, French, R Johnson, Krotee, Rini, Serfass, Plack
See First Term.

5983. READINGS: PHYSICAL EDUCATION. (1-3 cr; prereq sr honor or grad student, #) Jaeger, R Johnson, Plack, Stull
See First Term.

8980.* RESEARCH PROBLEMS — July 17-August 3. (1 cr; prereq 5980, PsyF 5110 or #; S-N only; V MTWThF; CookeH 214) Plack
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) Jaeger, R Johnson, Plack, Stull
See First Term.

Recreation and Park Administration (Rec)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

3700. SENIOR INTERNSHIP. (1-15 cr; prereq sr, recreation major or minor, Δ; S-N only; hrs ar) McAvoy, Schultz

Supervised experiences in selected agencies.

● **5240. RECREATION FOR THE AGING — June 18-July 13.** (3 cr; limited to 40 students; prereq 3540 or 5100 or Δ; II-IV TTh; CookeH 206) McAvoy

Leisure problems of the aging citizen; modification of program activities; community resources; trends and developments in recreation planning.

5630. PRACTICUM: THERAPEUTIC RECREATION. (3-9 cr; prereq 12 cr in recreation; hrs ar) McAvoy

Supervised experiences in program operation; administrative and supervisory duties.

5640. PRACTICUM: PUBLIC RECREATION AND PARKS. (3-9 cr; prereq 12 cr in recreation; hrs ar) Schultz

Supervised experiences in program operation; administrative and supervisory duties.

● **5900.¹ WORKSHOP: CONTEMPORARY ISSUES IN LEISURE SERVICES.** (1-12 cr [max 12 cr]; section 1 limited to 30 students, section 2 limited to 40 students; prereq Δ)

Contemporary issues emphasizing administrative and supervisory functions for recreation and allied professionals; individual offerings focus on special issues and/or professional groups. See Special Programs Section.

Sec 1, June 11-15, 3 credits, 2:00-4:00 M, CookeH 214; all day TWThF, Camp St. Croix, Hudson, Wisconsin, Henderson. This 3-credit offering will focus on programming in outdoor education

Sec 2, June 18-July 13, III-IV MWF, CookeH 206, Schultz. This 3-credit offering will focus on legal issues in leisure services.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #) McAvoy

Focus on conduct of recreation programs.

5983. READINGS: RECREATION. (1-3 cr; prereq MEd or grad student or Δ; hrs ar) Schultz

Independent study under tutorial guidance.

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

Individual problems.

SECOND TERM

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

See First Term.

3900. DIRECTED STUDY. (3 cr per qtr [max 9 cr]; S-N optional; prereq recreation majors only, Δ; hrs ar) Chapman

Self-directed study preceded by classroom study and possession of basic competence.

5630. PRACTICUM: THERAPEUTIC RECREATION. (3-9 cr; prereq 12 cr in recreation; hrs ar) Chapman

See First Term.

5640. PRACTICUM: PUBLIC RECREATION AND PARKS. (3-9 cr; prereq 12 cr in recreation; hrs ar) Chapman

See First Term.

5981. PROBLEMS. (Cr and hrs ar; prereq MEd candidate, #) Chapman

See First Term.

5983. READINGS: RECREATION. (1-3 cr; prereq MEd or grad student or Δ; hrs ar) Chapman

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.

School Health Education (Hlth)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

Teaching Requirements for School Health Education — Those interested in teaching school health education in the state of Minnesota may qualify through one of the following professional programs:

1. Courses offered this summer that may be applied to the undergraduate major in school and community health education are Hlth 3100, 3320, 5120, and 5140.
2. Courses offered this summer that may be applied to advanced and graduate degrees in school health education are Hlth 5120, 5140, 5400, 5685, 5980, 5981, 5983, and 8980.

FIRST TERM

3100. CURRICULUM IN SCHOOL HEALTH EDUCATION. (3 cr; prereq PubH 3004, school health education major or minor; II MTWThF; NorrisH 3) Wolf

Study of the content included in units for the secondary school.

3320. METHODS AND MATERIALS IN SCHOOL HEALTH EDUCATION. (3 cr; prereq 3100; IV MTWThF; NorrisH 3) Lemke

Methods, materials, problems, and evaluation in preparation for health teaching; allocation and gradation of subject matter.

5120. ROLE OF THE SCHOOL HEALTH EDUCATOR IN HEALTH APPRAISAL. (3 cr; V MTWThF; NorrisH 201) Hldek

Role of school medical and dental advisers, nurses, and teachers and other school personnel in protection and maintenance phases.

5140. ADMINISTRATION OF THE SCHOOL HEALTH PROGRAM. (3 cr; III MTWThF; NorrisH 3) 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. (1-12 cr [max 12 cr]; prereq #: hrs ar) Cobb

Individual or group projects applicable to local school situations, such as curricular, instructional, or evaluative problems.

5980. RESEARCH METHODOLOGY. (3 cr, \$Hlth 5980; prereq #: V MTWThF; CookeH 214) Shick

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

5981. PROBLEMS. (Cr and hrs ar; prereq #) Cobb

Focus on teaching school health education.

5983. READINGS: HEALTH EDUCATION. (1-3 cr; prereq sr honor or grad student, #: hrs ar) Cobb

Independent study under tutorial guidance.

SECOND TERM

5150. FAMILY LIFE AND SEX EDUCATION IN THE SECONDARY SCHOOLS. (3 cr; prereq FSoS 5001 or #: II MTWThF; NorrisH 3) Needle

Concepts, appropriate materials, and methods for teaching in the junior and senior high schools.

5300. CONTEMPORARY PROBLEMS IN SCHOOL HEALTH EDUCATION. (3 cr; III MTWThF; NorrisH 3) Needle

Instructional and individual problems.

5400. TOPICS: EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE — July 17-August 27. (3 cr, §PubH 5032; prereq education sr, licensed teacher, or school nurse; 9:00-12:30 MTWThF; HSUnitA 2-530) Hochhauser

Basic background information on alcohol and other drugs and chemicals with emphasis on curriculum concepts, teaching methodology, materials, and referral procedures appropriate for elementary, junior high, and senior high schools.

5983. READINGS; HEALTH EDUCATION. (1-3 cr; prereq sr honor or grad student, #; hrs ar) Hochhauser
See First Term.

8980.* RESEARCH PROBLEMS. (1 cr; S-N only; prereq PE 5980, PsyF 5110 or #; V MTWThF; CookeH214) Plack

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

DEPARTMENT OF PSYCHOEDUCATIONAL STUDIES

Counseling and Student Personnel Psychology (CSPP)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

● **5110. COUNSELING PROCEDURES.** (3 cr; limited to 35 students; III-IV TTh, 1 hr ar; FoIH 107) 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.

5130. INTRODUCTION TO GUIDANCE. (3 cr; I-III MWF; CD105) W Tennyson
Philosophy, principles, and practices in development and operation of pupil personnel services; role of counselor, teacher, principal, and specialized personnel; guidance techniques and case studies.

● **5300.¹ WORKSHOP: COUNSELING PSYCHOLOGY.** (1-6 cr [max 12 cr]; section 1 limited to 35 students, section 2 limited to 40 students; prereq #)
For all counselors, teachers, and administrators; aspects of intervention theory in relation to psychological principles; counseling, career development, assessment, psychology education, and consultation. Preapplication required. See Special Programs section.

Sec 1, Counseling Psychology I, June 12-22, 3 cr, I-III MTWThF, BuH 125, W Tennyson
Creating learning environments leading to development of intrinsic motivation, ability to adapt to change, and interpersonal effectiveness; attention to goals, curricular intervention and materials, assessment. Preapplication required.

Sec 2, Career Development and Changing Sex Roles, June 12-22, 3 cr, 8:30-12:00 MTWThF, Law 20, 21, 23, L Hansen
This BORN FREE workshop focuses on career-related sex-role stereotyping educational institutions at all levels; concepts, processes, and materials regarding career development, sex-role socialization, and organizational change. Preapplication required.

● **5310. CAREER DEVELOPMENT AND COUNSELING OF WOMEN — June 12-29.** (3 cr; S-N optional; limited to 30 students; VI-VIII MTW and 1 hr ar; BuH 125) L Hansen
Theory and research regarding career development characteristics and patterns of women; facts and trends concerning changing career roles and status of both men and women; counseling skills and interventions facilitating female career development. Preapplication required.

5320. GROUP COUNSELING: PRINCIPLES AND PROCEDURES. (3 cr; prereq course in counseling theory or #; VI-VII MWF; BuH 123) A Anderson
Basic principles of group dynamics related to the group counseling process; emphasis on developing concepts, attitudes, and skills; includes theory and laboratory experiences.

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.

● **5620. PRACTICUM IN GROUP COUNSELING.** (1-6 cr [max 6 cr]; limited to 6 students; prereq 5320 or equiv; VIII-IX TTh, BuH 139C) Shaffer

Supervised practice in counseling several groups, preferably in the setting in which the student intends to work; emphasis on systematic evaluation of progress through direct observations and tapes and on developing skills in interpersonal perception, communication, and research. Students must register both terms for a minimum of 3 credits each term.

5900. INDEPENDENT STUDY: GUIDANCE AND COUNSELING. (Cr and hrs ar; prereq #) L Hansen, Snoko, W Tennyson, A Anderson, Shaffer
Independent study in areas of special interest to students.

8701. INTERNSHIP: COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY. (0-6 cr per qtr [max 9 cr for MA and specialist students, max 18 cr for PhD students:]; Snoko
Supervised employment at departmentally approved sites.

8900.* RESEARCH METHODS IN COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY. (1-3 cr [max 9 cr]; prereq MA student and #; hrs ar) L Hansen, Snoko, W Tennyson, A Anderson, Shaffer
Research methodology and techniques; critical examination of literature; participation in formulating and executing a research proposal.

SECOND TERM

● **5101. FOUNDATIONS OF CAREER DEVELOPMENT.** (3 cr; limited to 40 students; V-VI MW and 1 hr ar; BuH 125) W Tennyson
Vocational theory and career development research; occupational analysis and industrial structure; methods of classifying the world of work; analysis of labor force and employment trends; basic concepts and principles for effective work in educational and vocational planning and development.

● **5110. COUNSELING PROCEDURES.** (3 cr; limited to 35 students; IV-V TTh, 1 hr ar; Bu 125) Shaffer
See First Term.

● **5300.¹ WORKSHOP: COUNSELING PSYCHOLOGY II—July 16-27.** (1-6 cr [max 12 cr]; limited to 40 students; prereq #; I-III MTWThF; BuH 125) W Tennyson
This 3-credit offering focuses on adaptation of developmental and career guidance strategies and materials for elementary school instructional and counseling settings. Preapplication required. See First Term and Special Programs section.

● **5620. PRACTICUM IN GROUP COUNSELING.** (1-6 cr [max 6 cr]; limited to 6 students; prereq 5320 or equiv; VIII-IX TTh; BuH 139C) Shaffer
See First Term. Students must register both terms for a minimum of 3 credits each term.

5900. INDEPENDENT STUDY: GUIDANCE AND COUNSELING. (Cr and hrs ar; prereq #) W Tennyson, Shaffer
See First Term.

8900.* RESEARCH METHODS IN COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY. (1-3 cr per qtr [max 9 cr]; prereq MA student and #; hrs ar) W Tennyson, Shaffer
See First Term.

Special Education (SpEd)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

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.

FIRST TERM

5100. CHILDHOOD LANGUAGE DEVELOPMENT: CLASSROOM IMPLICATIONS. (3 cr; II MTWThF; Pt 111) Mercaldo
Recent trends and findings in the study of language acquisition; classroom implications for the education of exceptional children.

5101. EDUCATION OF EXCEPTIONAL CHILDREN. (4 cr; I MTWThF; CD 218) Ilmer
Introduction to field of special education for classroom teachers and other school personnel.

5112. EDUCATION OF LEARNING-DISABLED CHILDREN. (3 cr; II MTWThF; Pt 215) Balow
Analysis of considerations in design and conduct of services for learning-disabled children; approaches to the education of such children.

5120. INTRODUCTION TO MENTAL RETARDATION. (4 cr, §CPsy 5315; prereq 5101 or #; II MTWThF; Pt 102) Warfield
Issues that relate to educational practices; community planning; educational philosophy, administration and organization, and programming. Meets with CPsy 5315.

5123. METHODS AND MATERIALS FOR SEVERELY RETARDED PRESCHOOL AND SCHOOL-AGE PUPILS. (4 cr; prereq 5101 or equiv; I MTWThF; Pt 102) Rynders
Issues and problems in curriculum development; pupil assessment and evaluation techniques; materials and teaching strategies.

5143. TEACHING LANGUAGE TO THE HEARING IMPAIRED I. (3 cr; prereq 5140; IV MTWThF; Pt102) Mercaldo
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.

5151. MANAGING PROBLEM BEHAVIOR IN THE CLASSROOM. (3 cr; VI-VIII TTh; Pt 111) Wood
Typical patterns of problem behavior in classroom settings; relationships to teacher mental health; simulation of methods of prevention and management.

5173. METHODS OF TEACHING VISUALLY HANDICAPPED CHILDREN. (3 cr; prereq 5170 or #; V MTWThF; CD 105)
Principles of preparation, selection, and effective use of instructional materials; adaptation of school environment; utilization of family, school, and community resources.

● **5302.¹ WORKSHOP: SPECIAL EDUCATION.** (Cr ar; section 2 limited to 40 students; prereq #; III MTWThF) Ilmer
Laboratory approach provides opportunity for school personnel to study specific problems related to special education.

Sec 2, 3 cr, Teaching Severely Multihandicapped Children.

Strategies for developing educational treatment interventions for children manifesting combinations of severe neurological, emotional, physical and/or sensory impairments; practical considerations for implementing clinical teaching methods. See also section 1 in Six-Week Courses.

5501. INTRODUCTION TO RESEARCH IN SPECIAL EDUCATION. (2 cr; S-N only; III MW and ar; Pt 102) Rubin
Issues in special education; critique of research on exceptional children.

● **5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 2 limited to 15 students; S-N optional; prereq #)
Supervised experience in teaching or related work in schools or other agencies serving exceptional children. See also section 1 listed under Six-Week Courses.

Sec 2, cr and hrs ar, Rynders, Wood

● **5610. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY I.** (3 cr; limited to 80 students; prereq #5110 and #; S-N optional; I-VI MTWThF, off campus; June 12 and 13 4:00-8:00 pm) V Bruininks
Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5110. Prior application required; limited to Institute participants only. See Special Programs section.

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

● **5611. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY II.** (3 cr; limited to 80 students; prereq 5610, #5111, and #; S-N optional; I-VI MTWThF, off campus; June 12-13 only 4:00-8:00 pm) V Bruininks

Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5111. Prior application required; limited to Institute participants only. See Special Programs section.

5900. INDEPENDENT STUDY: SPECIAL EDUCATION. (Cr ar [max 12 cr]; prereq #; hrs ar) Rynders

8601. ADVANCED PRACTICUM. (Cr ar; prereq #; hrs ar) Rynders, Wood
Experience planned with supervising professor in college teaching, supervision of student teachers, or other forms of advanced professional practice; usually taken by advanced graduate students.

8900.* PROBLEMS. (Cr ar; prereq #; hrs ar) Rynders, Wood

FIRST AND SECOND TERMS: SIX-WEEK COURSES

● **5302.¹ WORKSHOP: SPECIAL EDUCATION.** (Cr ar; section 1 limited to 25 Institute participants only; prereq #)
Laboratory approach provides opportunities for school personnel to study specific problems related to special education. Prior application required. See Special Programs section.

Sec 1, Teaching Children With Emotional Disturbances, June 11-July 20, 3 cr, I-VII MTWThF, off campus, Wood

● **5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 1 limited to 25 Institute participants only, S-N optional; prereq #)
Supervised experience in teaching or related work in schools or other agencies serving exceptional children. Prior application required. See Special Programs section.

Sec 1, Teaching Children With Emotional Disturbances, June 11-July 20, 3 cr, I-VII MTWThF, off campus, Wood

SECOND TERM

5101. EDUCATION OF EXCEPTIONAL CHILDREN. (4 cr; II MTWThF; Pt 111) Force
See First Term.

5112. EDUCATION OF LEARNING DISABLED CHILDREN. (3 cr; III MTWThF; Pt 215) Balow
See First Term.

5120. INTRODUCTION TO MENTAL RETARDATION. (4 cr, §CPsy 5315; prereq 5101 or #; III MTWThF; Pt 102) Ilmer
See First Term. Meets with CPsy 5315.

5125. EDUCATION OF SEVERELY HANDICAPPED INFANTS AND PRESCHOOL CHILDREN. (4 cr; prereq 5101 or 5120 or #; I MTWThF; Pt 102) Rynders
Issues and implications and practical application in designing teaching strategies and curricula for maximizing educational development in such children.

5140. PSYCHOSOCIAL AND EDUCATIONAL ASPECTS OF DEAFNESS. (3 cr; II MTWThF; Pt 102) Mercaldo
Historical and current societal perceptions of the deaf; analysis of effects on 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.

5141. METHODS OF TEACHING SCHOOL SUBJECTS TO THE HEARING IMPAIRED. (3 cr; prereq #; IV MTWThF; Pt 111) Mercaldo
Adaptation of materials and teaching methods for hearing impaired children in reading, mathematics, social studies, and science.

5151. MANAGING PROBLEM BEHAVIOR IN THE CLASSROOM. (3 cr; VI-VIII TTh; Pt 111) Wood
See First Term.

5155. PSYCHOEDUCATIONAL INTERVENTIONS: PSYCHOTIC CHILDREN. (3 cr; prereq 12 cr in psychology, child psychology or special education; I MTWThF; Pt 111) Ilmer
Introduction to psychopathology of children with psychotic characteristics; emphasis on psychoeducational intervention programs and teaching strategies.

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.

5160. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION—August 6-17. (3 cr, §EdAd 5103; prereq #: 2:00-5:00 MTWThF; ClaOff B30)

Procedures for establishing and improving educational programs for exceptional children. Meets with EdAd 5103. See Special Programs section.

• **5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 2 limited to 15 students; S-N optional; prereq #) See First Term. See also section 1 listed under Six-Week Courses.

Sec 2, cr and hrs ar, Force, Rynders, Wood

5900. INDEPENDENT STUDY: SPECIAL EDUCATION. (Cr ar [max 12 cr]; prereq #: hrs ar) Force, Rynders, Wood

8601. ADVANCED PRACTICUM. (Cr ar; prereq #: hrs ar) Force, Rynders, Wood
See First Term.

8900.* PROBLEMS. (Cr ar; prereq #: hrs ar) Force, Rynders, Wood

DEPARTMENT OF SOCIAL, PSYCHOLOGICAL, AND PHILOSOPHICAL FOUNDATIONS OF EDUCATION

Psychological Foundations (PsyF)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

• **3380. INTRODUCTION TO HUMAN RELATIONS—June 18-July 13.** (3 cr; limited to 25 students; prereq education jr, sr; S-N only; 8:00-10:00 MTWTh; JonesH 4) Norem-Hebeisen
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.

• **5110. INTRODUCTORY STATISTICAL METHODS.** (3 cr; each section limited to 40 students) (Not equivalent to 8110) Basic statistical techniques; comprehension of literature using elementary concepts and methods.

Sec 1, I MTWThF, Pt 111, Merwin

Sec 2, II MTWThF, EItH N647, D Anderson

5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM. (4 cr; II MTWThF; BuH 123) 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. (3 cr; prereq 5110 or 8110 or Psy3801 or equiv; III MTWThF; Pt 111) 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.

5125. PRINCIPLES AND METHODS OF EVALUATION. (3 cr; II MTWThF; CD 216) Merwin
Nature of inquiry in education (evaluation vs. elucidation); internal and external validity of designs; analytical operations on data; overview of models.

5162. PERSONALITY AND SOCIAL DEVELOPMENT. (3 cr; prereq 5 cr introductory psychology; III MTWThF; CD 105)

Major concepts and research findings in adjustment and development with emphasis on educational implications.

5176. CHEMICAL USE: PSYCHOSOCIAL ASPECTS. (3 cr; 11:00-12:00 MTWTh; CD 216) Norem-Hebeisen

Chemical use examined from multiple perspectives of psychosociological theory and research; individual projects and current research findings used to strengthen applications in school settings.

5182. PSYCHOLOGY OF STUDENT LEARNING. (3 cr; II MTWThF; NH 107)

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.

5183. ADULT LEARNING AND EDUCATIONAL PRACTICE. (4 cr; III-IV MW; Arch 40) P Johnson
Survey of psychological methods and principles in human learning; models of the adult learner; topics in motivation, creativity, achievement, intelligence; implications for teaching and curriculum design in higher education, continuing education, and professional training.

• **5305. WORKSHOP IN HUMAN RELATIONS—June 18-July 13.** (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; limited to 25 students; S-N only; 8:00-12:00 MTWTh; Arch 60) Oden

Experientially based course including simulation activities, curriculum writing, and supervised practice in basic human relations skills emphasizing individual, cultural, and ethnic differences and their implications for educational practice. This offering for 6 credits.

5900. DIRECTED STUDY. (Cr ar; prereq #: hrs ar) MacEachern

8110. STATISTICAL METHODS. (3 cr; prereq 5110 or Psy 3801 or equiv; I MTWThF; Arch 50) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

8900.* RESEARCH PROBLEMS. (Cr ar; prereq #: hrs ar) Merwin, Terwilliger, D Anderson, MacEachern, Corcoran

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

8920.* PROBLEMS: MEASUREMENT. (1-3 cr [max 9 cr]; hrs ar) Terwilliger, Merwin
Intensive study and individual research.

8921.* PROBLEMS: EVALUATION. (Cr ar; prereq 5621 or 8525; hrs ar) Merwin, Corcoran
Designing, implementing, and analyzing strategies; students work on their own problems, on evaluation problems in schools of the area, or on problems associated with national curriculum projects.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

8112. STATISTICAL METHODS (PARTS I AND II). (3 cr total for both parts; prereq 8111; II MWF; Arch 50) MacEachern

Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

SECOND TERM

• **3380. INTRODUCTION TO HUMAN RELATIONS—July 23-August 17.** (3 cr; limited to 25 students; prereq education jr or sr; S-N only; 8:00-10:00 MTWTh; JonesH 4) Norem-Hebeisen
See First Term.

5110. INTRODUCTORY STATISTICAL METHODS. (3 cr; I MTWThF; EItH N647) D Anderson
See First Term.

5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM. (4 cr; II MTWThF, EItH N647) D Anderson
See First Term.

5148. PSYCHOLOGY AND PEDAGOGY OF READING. (3 cr; 8:00-10:00 TW; Arch 20) Samuels
Physiological, psychological, and linguistic factors influencing beginning and fluent reading, and their implications for instruction.

5153. INTRODUCTION TO THE PSYCHOLOGY OF INSTRUCTION. (3 cr; III MTWThF; PeikH 225) ar
Survey of psychological factors in design of instruction; performance criteria, strategy, and sequence in the context of research; development and implementation in instructional techniques, technologies, and delivery systems; psychological processes relevant to measures of effectiveness in the teaching-learning environment.

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.

5177. CHEMICAL USE: REVIEW AND ANALYSIS OF PREVENTION APPROACHES. (3 cr; 11:00-12:00 MTWTh; CD 216) Norem-Hebeisen, Hochhauser
Critique of models for intervention and prevention approaches; issues of the match between identified goals and interventions; programs currently available for use in educational settings.

• **5305.* WORKSHOP IN HUMAN RELATIONS—July 16-August 10.** (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; limited to 25 students; S-N only; 8:00-12:00 MTWTh; Arch 60) Oden
See First Term. This offering for 6 credits.

5621. PRACTICUM: INSTRUMENTS AND PROCEDURES FOR EVALUATION. (3 cr; prereq 5121, 5125 or equiv; III-IV TTh, III F; EtH N647) Welch
Developing curriculum evaluation instruments and procedures; introduction to methods and theories; focus on identifying evaluation problems; developing and implementing techniques for their solution.

5900. DIRECTED STUDY. (Cr ar; prereq #: hrs ar) MacEachern

8111. STATISTICAL METHODS. (3 cr; prereq 8110; I MTWThF; Arch 50) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

8900.* RESEARCH PROBLEMS. (Cr ar; prereq #: hrs ar) D Anderson, MacEachern, Samuels, Welch

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

8920.* PROBLEMS: MEASUREMENT. (1-3 cr [max 9 cr]; hrs ar) D Anderson
See First Term.

8921.* PROBLEMS: EVALUATION. (Cr ar; prereq 5621 or 8525; hrs ar) Welch
See First Term.

Social and Philosophical Foundations of Education

History and Philosophy of Education (HEd)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

• **3090. THE SCHOOL AND SOCIETY.** (3 cr; limited to 70 students; prereq sr; I MTWThF; WuH 230) Harkins
Readings in social science and philosophy give the student opportunity to integrate points of view concerning the role of the school in present-day society.

3099. DIRECTED STUDY. (1-6 cr; prereq #: hrs ar) Harkins

5209. EDUCATION IN FUTURE SOCIAL SYSTEMS. (3 cr, §5212; 9:05-11:35 TTh; Pt 214) Harkins
Interdisciplinary inquiry into problems of social specialization and generalization; projections and analysis of long-range (30 years or more) social and technological trends related to education.

8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (Cr ar; prereq #: hrs ar) Corcoran, Harkins
For graduate students interested in research and original work in these areas.

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

SECOND TERM

• **3090. THE SCHOOL AND SOCIETY.** (3 cr; limited to 70 students; prereq sr; I MTWThF; BuH 120) Harkins
See First Term.

3099. DIRECTED STUDY. (1-6 cr; prereq #: hrs ar) Harkins

5190. SOCIOLOGY OF EDUCATION. (4 cr, §Soc 5953; 9:05-11:35 TTh; CD 105) Harkins
Advanced studies in the social aspects of education including the school as a socialization process, the social structure of education, and the role of the school in social change.

8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (Cr ar; prereq #: hrs ar) Harkins
See First Term.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Agricultural Education (AgEd)

FIRST TERM

5027. PRACTICUM: PLACEMENT FOR EXTENSION EXPERIENCES. (2-6 cr [max 6 cr], §HeEd 3605 or 5027, S-N optional; prereq #: hrs and rm ar) 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.

5035. METHODS AND PRACTICES IN TEACHING POST-HIGH SCHOOL AGRICULTURE—June 11-22. (3 cr; VI-VIII MTWThF; ClaOff 143) Peterson
Problems unique to area school and junior college teaching; improving ability to organize and present subject matter.

5041. WORKSHOP: AGRICULTURAL EDUCATION TECHNOLOGY. (1-6 cr [max 6 cr]; hrs and rm ar) Persons
New understandings, techniques, and materials in animal science, plant science, horticulture, soil science, agricultural mechanics, forestry, natural resources, youth organization, visual aids, and occupational exploration.

5072. PRACTICUM: AGRICULTURAL BUSINESS AND INDUSTRY—June 11-15. (1-3 cr [max 9 cr]; prereq 5071 or #: I-IV and VI-VIII MTWThF; ClaOff 143) Leske
Observation, study, and experience in agricultural business and industry; application to educational programs in agriculture.

5090. INDEPENDENT STUDY. (1-3 cr; prereq sr; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, Peterson
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. (3 cr; prereq MEd student in agricultural education; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, Peterson
Preparation of a paper dealing with studies in agricultural education applied to professional responsibilities.

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

8091. FIELD PROBLEMS. (3 cr; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, Peterson
Making investigations, gathering data, and formulating plans regarding agricultural education.

SECOND TERM

5027. PRACTICUM: PLACEMENT FOR EXTENSION EXPERIENCES. (2-6 cr [max 6 cr], §HeEd 3605 or 5027; S-N optional; prereq #: hrs and rm ar) Norenberg
See First Term.

5041. WORKSHOP: AGRICULTURAL EDUCATION TECHNOLOGY—July 23-27. (1-6 cr [max 6 cr]; I-IV and VI-VIII MTWThF; ClaOff 130) Leske
See First Term.

5051. ENTERPRISE ANALYSIS—July 23-August 3. (3 cr; prereq #: VI-VIII MTWThF; ClaOff 143) Persons
Analyzing the farm business as a basis for identifying problems; planning learning experiences to improve farm management at the high school, young farmer, and adult levels.

5080. ORGANIZATION AND MANAGEMENT—July 30-August 3. (3 cr; prereq #: I-IV and VI-VIII MTWThF; ClaOff 130) Marvin
Administrative structure and function of subcollegiate programs.

5090. INDEPENDENT STUDY. (1-3 cr; prereq sr; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, Peterson
See First Term.

5095. INDEPENDENT STUDY. (3 cr; prereq MEd student in agricultural education; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, Peterson
See First Term.

5128. METHODS OF TEACHING—July 23-August 3. (3 cr; prereq non-agricultural education major and/or #: I-IV MTWThF; ClaOff 142E) Peterson
Methods of teaching agriculture or related subjects; developing competencies in planning, organizing, implementing, and evaluating instruction, with practice in instructional techniques.

8001.* RESEARCH IN AGRICULTURAL EDUCATION. (Cr ar; prereq 15 cr in education) Bear, Marvin, Norenberg, Persons, Swanson, Leske, Peterson
See First Term.

8091. FIELD PROBLEMS. (3 cr; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, Peterson
See First Term.

Business and Distributive Education (BDE)

Courses with limited enrollment must be reserved at 1425 University Avenue S.E. (see instructions under "Reserved Courses").

FIRST TERM

• **1501.¹ (formerly BsEd 1501) BEGINNING TYPEWRITING.** (3 cr, §BsEd 1501; limited to 25 students; S-N optional for nonmajors; \$2 lab fee; V-VI MTWThF; PeikH 265) Anderson
Emphasis on correct typewriting techniques; letter styles; manuscripts; simple tabulations; proofreading.

• **1502.¹ (formerly BsEd 1502) INTERMEDIATE TYPEWRITING.** (3 cr, §BsEd 1502; limited to 5 students; prereq 1501 or proficiency exam; \$2 lab fee; V-VI MTWThF; PeikH 265) Anderson
Speed and accuracy building; carbons, tabulations, simple manuscripts, rough drafts, additional letter styles, interoffice memoranda, office forms, outlines and enumerations.

• **1503.¹ (formerly BsEd 1503) ADVANCED TYPEWRITING.** (3 cr, §BsEd 1503; limited to 5 students; prereq 1502 or proficiency exam; \$2 lab fee; V-VI MTWThF; PeikH 265) Anderson
Proficiency in typing complex manuscripts, footnotes, bibliographies, additional letter styles, complex tabulations.

5153. (formerly BsEd 5103) CONSUMER EDUCATION IN THE SCHOOLS—June 12-29. (4 cr, §BsEd 5103; I-II MTWThF and ar; PeikH 245) Hopkins
Objectives, content, curricular organization, and teaching methods at the elementary, secondary, postsecondary, and adult levels.

¹These courses meet concurrently. A total of 35 students will be accepted in the three courses.

5356. (formerly BsEd 5109) BUSINESS AND DISTRIBUTIVE EDUCATION FOR STUDENTS WITH SPECIAL NEEDS—June 12-29. (4 cr, §BsEd 5109; III-IV MTWThF and ar; PeikH 245) McLean
Characteristics of students such as the handicapped, disadvantaged, incarcerated, and gifted; review of programs, curricula, methodologies, and instructional materials for meeting general and vocational needs, including mainstreaming and self-contained classrooms.

• **5359 (formerly BsEd 5114, DE 5114) OCCUPATIONAL EXPERIENCE.** (1-18 cr; limited to 20 students; prereq #: S-N optional; 5:30-7:30 pm T and hrs ar; PeikH 245) Gregar
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.

• **5361. (formerly DE 5325) DIRECTED OCCUPATIONAL EXPERIENCE AND SEMINAR—June 11-29.** (3-9 cr, §DE 5325; limited to 30 students; prereq Δ; I-IV, V-VII MTWThF; PeikH 255) Klaurens
Current operating practices and career opportunities in business and industry combining planned experiences in work environments and related seminars. This offering for 6 credits will provide management internships for marketing and distributive education teacher/coordinators to update technical competencies and to adapt their curriculum to current marketing activities. Preapplication required. Address inquiries to Mary Klaurens, 254 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455, before June 1.

• **5600. (formerly BsEd 5116, DE 5600) SCHOOL-BASED PROJECTS IN BUSINESS AND DISTRIBUTIVE EDUCATION.** (1-12 cr [max 12 cr]; limited to 30 students; prereq #: hr ar) Hopkins, Klaurens, McLean
Individual or group work on curricular, instructional, developmental, or evaluation problems and projects applicable to local school situations.

5900. (formerly BsEd 5390, DE 5900) DIRECTED STUDY IN BUSINESS AND DISTRIBUTIVE EDUCATION. (1-6 cr [max 6 cr]; S-N optional; prereq Δ; hrs ar) Hopkins, Klaurens, McLean
Opportunity for individual learning experiences not covered by regular courses.

8900.* (formerly BsEd 8900, DE 8900) PROBLEMS: BUSINESS AND DISTRIBUTIVE EDUCATION. (1-9 cr [max 9 cr]; S-N only; prereq #: hrs ar) Hopkins, Klaurens, McLean
Individual research.

SECOND TERM

5156. (formerly BsEd 5119) RESEARCH AND METHODS IN TEACHING SHORTHAND AND TRANSCRIPTION—July 16-August 3. (3 cr, §BsEd 5119; III-IV MTWThF; PeikH 255) Lambrecht
Application of research findings to classroom methodology and materials development in shorthand, and machine and shorthand transcription.

5251. (formerly DE 5300, 5301) MATERIALS AND METHODS IN COOPERATIVE VOCATIONAL EDUCATION—July 17-August 3. (4 cr, §DE 5300, §DE 5301; III-IV MTWThF and ar hrs; PeikH 245)
Planning, execution and evaluation of instruction; selection of instructional materials and management of learning environment.

5352. (formerly BsEd 5104, DE 5105, DE 5106) COORDINATION TECHNIQUES IN BUSINESS AND DISTRIBUTIVE EDUCATION—July 17-August 3. (4 cr, §BsEd 5104, §DE 5105, §DE 5106; \$2 lab fee; I-II MTWThF and ar; PeikH 245) 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.

• **5360. (formerly BsEd 5112, DE 5400) PROGRAM DEVELOPMENTS IN BUSINESS AND DISTRIBUTIVE EDUCATION.** (1-6 cr; each section limited to 30 students)
Developments emerging from research and local, state, and national programs and projects.

Sec 1, Using the Computer in the Classroom, July 30-August 1, 1 cr, VI-IX MTW, PeikH 255, Lambrecht
Applications, such as games and simulations, in basic business, economics, sales, management, and accounting; use of microprocessors for programming instruction; the PLATO system for computer-assisted instruction; and computerized systems for managing instructional activities.

Sec 2, Program Promotion, August 9-10, 1 cr, II-III, VI-IX ThF; PeikH 255, Lambrecht
Techniques for publicizing and promoting program offerings; media, displays, career or job fairs, follow-up and involvement of graduates, news releases, student organization campaigns, community involvement through speakers and advisory committees, scholarship offerings.

● **5600. (formerly BsEd 5116, DE 5600) SCHOOL-BASED PROJECTS IN BUSINESS AND DISTRIBUTIVE EDUCATION.** (1-12 cr [max 12 cr]; limited to 20 students; prereq #: hrs ar) Ashmun, Lambrecht See First Term.

5900. (formerly BsEd 5390, DE 5900) DIRECTED STUDY IN BUSINESS AND DISTRIBUTIVE EDUCATION. (1-6 cr [max 6 cr]; S-N optional; prereq Δ; hrs ar) Ashmun, Lambrecht See First Term.

8900.* (formerly BsEd 8900, DE 8900) PROBLEMS: BUSINESS AND DISTRIBUTIVE EDUCATION. (1-9 cr [max 9 cr]; S-N only; prereq #: hrs ar) Ashmun, Lambrecht See First Term.

Home Economics Education (HEED)

Courses with limited enrollment must be reserved at 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

5400. WORKSHOP: HOME PLANNING AND FURNISHING—June 18-22. (3 or 4 cr [max 12 cr]; prereq Δ; II-IV, VI-VIII MTWThF; McNH 146) Smith
Problems at high school and adult levels; use of new materials and techniques; group and individual projects to meet the needs and interests of experienced teachers. This offering for 3 credits.

● **5405.¹ WORKSHOP: CHILD DEVELOPMENT AND FAMILY RELATIONS.** (1 to 4 cr; each section limited to 50 students; prereq grad student or in-service teacher)
Recent emphasis on growth and guidance of individuals; materials and techniques for high school and adult levels to attain better understanding.

Sec 1, June 11-22, 3 cr, II-IV MTWThF, McNH 375, Thomas
Students are required to register and pay tuition and fees for concurrent registration in 5430. Tuition for *this* section will be waived for 50 preselected students who meet specified criteria. Preapplication is required. Deadline for application is April 15. Address inquiries to Ruth Thomas, 386 McNeal Hall, 1985 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Sec 2, June 18-22, 3 cr, II-IV, VI-VIII MTWThF, McNH 386, Reilly
Tuition will be waived for the preselected students who meet specified criteria. Preapplication is required. Deadline for application is April 15. Address inquiries to Ruth Thomas, 386 McNeal Hall, 1985 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.

5410. WORKSHOP: FOODS AND NUTRITION—July 2-13. (3 or 4 cr [max 12 cr]; prereq Δ; VI-VIII MTWThF; McNH 375) Wilkosz
Problems in teaching at high school and adult levels; use of new materials and techniques; group and individual projects for experienced teachers. This offering for 3 credits.

5415. WORKSHOP: MATERIALS FOR INSTRUCTION—June 25-29. (1-4 cr; prereq grad student or in-service teacher; II-IV, VI-VIII MTWThF; McNH 375)
Problems in selection and use of new materials for instruction in home economics. This offering for 3 credits will focus on consumer education.

● **5430. WORKSHOP: CONTEMPORARY PROBLEMS IN HOME ECONOMICS EDUCATION—June 11-22.** (3 or 4 cr [max 12 cr]; limited to 50 students; prereq #: VI-VIII MTWThF; McNH 375) Thomas
Concurrent registration is required in 5405, section 1. Consideration of topics of current concern. This offering for 3 credits will focus on parenting education. This offering is for 3 credits. Preapplication is required. Deadline for application is April 15. Address inquiries to Ruth Thomas, 386 McNeal Hall, 1985 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.

5900. READINGS IN HOME ECONOMICS EDUCATION. (1-3 cr; hrs ar) Thomas
Independent study under tutorial guidance.

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

SECOND TERM

5003. COOPERATIVE EDUCATION PROGRAM: INTERNSHIP. (3 cr [max 9 cr]; S-N only; prereq 1500, HE 1003, and #: hrs ar) Rossmann
Planned work experience focusing on education competencies in nonschool settings. Students assume defined responsibilities of the position. A maximum of 3 credits may be applied toward M.A. and M.Ed. programs.

5310. METHOD IN TEACHING HOME ECONOMICS: THEORY AND TECHNOLOGY—July 30-August 10. (3 cr; prereq 3530 and #: VI-VIII MTWThF; McNH 375) Rossmann
Derivation of theory for educational method from relevant research; application to educational objectives; analysis of technology related to teaching method. This offering will focus on energy education.

5407. FAMILY LIFE EDUCATION: CURRICULUM, METHODS, AND MATERIALS—July 17-27. (3 cr; prereq 3620 or equiv; VI-VIII MTWThF; McNH 395) Rossmann
Materials, curriculum articulation, teaching techniques, and evaluation for high school and adult levels; theoretical foundations for production and critique of curriculum.

5910. INTEGRATING PAPER. (3 cr; prereq MEd student; hrs ar) Rossmann
Independent paper integrating learnings from a course or courses in education with learnings in home economics education.

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

Industrial Education (Ind)

Courses with limited enrollment must be reserved in 125 Peik Hall (see instructions under "Reserved Courses").

FIRST TERM

3110. CONSTRUCTION: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1612, #: hrs ar) Miletich
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. (3 or 6 or 9 cr; prereq 3110, #: hrs ar) Miletich
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. (3 or 6 or 9 cr; prereq 1622, #: hrs ar) Miletich
Individualized technical skill development in areas of offset printing, technical illustrating, machine and architectural drafting, photography.

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

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

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

3140. POWER AND ENERGY: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1642, #: hrs ar) Miletich
Individualized technical skill development in areas of digital, hydraulic and pneumatic control systems, and radio and TV repair.

3141. POWER AND ENERGY: ADVANCED. (3 or 6 or 9 cr; prereq 3140, #: hrs ar) Miletich
Individualized advanced skill development in areas of digital, hydraulic, and pneumatic system design, electronic maintenance and repair, and alternative energy sources.

3150. TRANSPORTATION: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1652, #: hrs ar) Miletich
Individualized technical skill development in areas of small gas and marine engine repair, automotive tuneup, cooling systems, brakes, and autobody repair.

3151. TRANSPORTATION: ADVANCED. (3 or 6 or 9 cr; prereq 3150, #; hrs ar) Miletich
Individualized advanced skill development in areas of diesel engine repair, auto engine overhaul, front end repair, automatic transmission, aircraft engine maintenance, chassis straightening.

3900, 3901, 3902. INDEPENDENT STUDY. (3 cr per qtr; prereq jr or #; hrs ar) Irvin, Bjorkquist, Brown, Irvin, Miletich

Self-directed study, preceded by classroom instruction in basic research procedures.

● **5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE.** (1-5 cr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Miletich
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.** (1-5 cr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Miletich
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.** (1-5 cr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Miletich
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.** (1-5 [max 15 cr]; limited to 15 students; prereq #; hrs ar) Miletich
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. (1-9 cr; prereq MEd student only; hrs ar) Miletich
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5122. GRAPHIC COMMUNICATIONS: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Miletich
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5132. MANUFACTURING: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Miletich
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5142. POWER AND ENERGY: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Miletich
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5152. TRANSPORTATION: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Miletich
Integration of specialized technical instruction in advanced or emerging areas into courses in industrial education.

5310. COORDINATION—June 11-22. (3 cr; VI-VIII MTWThF; ClaOff B25) Brown
Duties and responsibilities of coordinators in trade schools, part-time programs, and comprehensive high schools.

5325. FOUNDATIONS OF INDUSTRIAL EDUCATION—June 25-July 6. (3 cr; II-IV MTWThF; PeikH 41) Bjorkquist
History, objectives, development, and current practices of the field.

5400. INSTRUCTIONAL MATERIALS LABORATORY FOR NONMAJORS—June 11-29. (3 cr; prereq tchg exper or #; II-III MTWThF; PeikH 60) Irvin
For students needing manipulative skills and craftwork activities in their teaching; individual and group projects.

5600. INSTRUCTIONAL MATERIALS LABORATORY: Working With Special Needs Students—June 25-July 13. (3-6-9 cr; prereq major, tchg exper or #; V-VI MTWThF; PeikH 41) Brown
Laboratory and shop experiences with new materials, processes, and equipment; development of complementary instructional materials. This offering for 3 credits.

8900, 8901, 8902.* RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar) Bjorkquist, Brown, Irvin, Miletich, Moss, Pucel, Smith
Individual conferences.

SECOND TERM

3110. CONSTRUCTION: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1612, #; hrs ar) Kavanaugh
See First Term.

3111. CONSTRUCTION: ADVANCED. (3 or 6 or 9 cr; prereq 3110, #; hrs ar) Kavanaugh
See First Term.

3120. GRAPHIC COMMUNICATIONS: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1622, #; hrs ar) Kavanaugh
See First Term.

3121. GRAPHIC COMMUNICATIONS: ADVANCED. (3 or 6 or 9 cr; prereq 3120, #; hrs ar) Kavanaugh
See First Term.

3130. MANUFACTURING: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1632, #; hrs ar) Kavanaugh
See First Term.

3131. MANUFACTURING: ADVANCED. (3 or 6 or 9 cr; prereq 3130, #; hrs ar) Kavanaugh
See First Term.

3140. POWER AND ENERGY: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1642, #; hrs ar) Kavanaugh
See First Term.

3141. POWER AND ENERGY: ADVANCED. (3 or 6 or 9 cr; prereq 3140, #; hrs ar) Kavanaugh
See First Term.

3150. TRANSPORTATION: INTERMEDIATE. (3 or 6 or 9 cr; prereq 1652, #; hrs ar) Kavanaugh
See First Term.

3151. TRANSPORTATION: ADVANCED. (3 or 6 or 9 cr; prereq 3150, #; hrs ar) Kavanaugh
See First Term.

3900, 3901, 3902. INDEPENDENT STUDY. (3 cr per qtr; prereq jr or #; hrs ar) Kavanaugh, Miletich
See First Term.

● **5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE.** (1-5 cr [max 15 cr]; limited to 15 students; prereq #; hrs ar)
See First Term.

● **5101. PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE.** (1-5 cr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Kavanaugh
See First Term.

● **5102. POWER/ENERGY OCCUPATIONAL EXPERIENCE.** (1-5 cr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Kavanaugh
See First Term.

● **5103. CONSTRUCTION OCCUPATIONAL EXPERIENCE.** (1-5 cr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Kavanaugh
See First Term.

5112. CONSTRUCTION: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Kavanaugh
See First Term.

5122. GRAPHIC COMMUNICATIONS: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Kavanaugh
See First Term.

5132. MANUFACTURING: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Kavanaugh
See First Term.

5142. POWER AND ENERGY: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Kavanaugh
See First Term.

5152. TRANSPORTATION: SPECIALIZATION. (1-9 cr; prereq MEd student only; hrs ar) Kavanaugh
See First Term.

5303. INSTRUCTIONAL AIDS—July 16-27. (3 cr; II-IV MTWThF; PeikH 41) Kavanaugh
Planning, construction, use.

5306. INDUSTRIAL EDUCATION WORKSHOP: Coordination Methods and Materials—August 6-10. (1-6 cr; prereq tchg exper and #; II-IV, VI-VIII MTWThF; PeikH 41) Miletich
Areas of concentration vary with each offering. This offering for 3 credits focuses on development of materials for industrial education cooperative programs in high schools and area vocational-technical schools; licensure course for T & I teacher-coordinators, coordinators.

8900, 8901, 8902.* RESEARCH PROBLEMS. (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar) Bjorkquist, Kavanaugh, Miletich, Moss, Pucel, Smith.
See First Term.

Vocational Education (VoEd)

Courses with limited enrollment must be reserved at 125 Peik Hall (see instructions under "Reserved Courses").

FIRST TERM

5100. SPECIAL TOPICS IN INSTRUCTION: Career Exploration—June 11-29. (1-6 cr [max 9]; prereq #: I-IV MTWThF; Hennepin Technical Center, North Campus, 9000 77th Avenue North, Brooklyn Park) Davis, Helling
Topics will vary with each offering but will deal with planning, providing, and/or evaluating instruction. This offering for 5 credits provides an introduction to career education and awareness of the world of work to enable teachers to reassess subject content, teaching methods, and resource materials in relation to information gained in field trip and class experiences.

● **5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION.** (3 cr; each section limited to 70 students)

Interpretation of the purposes of vocational education in varying socioeconomic contexts; analysis of vocational fields in regard to recipients, practices, legislation, and funding.

Sec 1, June 11-22. II-IV MTWThF, ClaOff B35, Swanson

Sec 2, July 2-13, VI-VIII MTWThF, ClaOff B25, Hopkins

5700. TEACHING ENTREPRENEURSHIP: SMALL BUSINESS MANAGEMENT—July 2-13. (4 cr; I-IV MTWThF; ClaOff B42) McLean
Methods, organization, curriculum modifications, and implementation of education programs.

SECOND TERM

5100. SPECIAL TOPICS IN INSTRUCTION: Career Exploration—July 16-August 3. (1-6 cr [max 6]; prereq #: I-IV MTWThF; Hennepin Technical Center, South Campus, 9200 Flying Cloud Drive, Eden Prairie) Davis, Helling
See First Term. This offering for 5 credits.

● **5101. SPECIAL TOPICS IN CURRICULUM: Small Business Management Education—August 6-17.** (1-6 cr [max 9 cr]; limited to 20 students; I-IV MTWThF; ClaOff 143) Persons
Topics will vary with each offering but will deal with development and evaluation of curricula and/or curriculum materials. This offering for 3 credits features organization, implementation, and operation of a small business management education program for adults. Preapplication is required. Address inquiries to Edgar Persons, 130 Classroom-Office Building, 1944 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.

● **5102. SPECIAL TOPICS IN ADMINISTRATION.** (1-6 cr [max 9 cr]; sections 1 and 3 each limited to 33 students; section 2 limited to 30 students; prereq #)
Topics will vary with each offering but will deal with leadership in and management of vocational education programs.

Sec 1, Information for Planning and Evaluating Vocational Education Programs, July 16-20, 3 cr, II-IV, VI-VIII MTWThF, ClaOff 143, Copa

Understanding and using data from national, state, and local sources on occupational demand and supply, people needs, follow-up, program cost, and occupational descriptions to plan and evaluate programs; for program managers and administrators.

Sec 2, Legal Aspects of Managing Vocational Education, July 23-27, 3 cr, II-IV, VI-VIII MTWThF, BioSci 58, Pucel

To aid managers of vocational education to understand laws affecting their job responsibilities.

Sec 3, Utilizing Advisory Committees, August 6-8, 2 cr, II-IV, VI-VIII MTWThF, ClaOff B36, Ashmun
To assist vocational instructors, administrators, board members, and interested persons in meeting requirements of the new vocational education legislation.

5274. TWO-YEAR POSTSECONDARY INSTITUTIONS—July 17-31. (3 cr, §EdAd 5274; II-IV MTWThF; ClaOff B42) Morgan

Present status, development, functions, organization, curriculum, and trends in postsecondary but nonbaccalaureate institutions. Meets with EdAd 5274.

● **5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—July 16-27.** (3 cr; limited to 70 students; VI-VIII MTWThF; ClaOff B25) Marvin
See First Term.

College of Forestry

Undergraduate forestry field studies are offered for beginning juniors, both resident and transfer students, at the Lake Itasca Forestry and Biological Station, Itasca State Park, during the 4 weeks immediately preceding the opening of the fall quarter. This fieldwork is required of all students majoring in forest resources and forest science. Required courses offered at Itasca are FR 3100, Important Forest Plants (2 credits); FR 3101, Forest Ecology (3 credits); and FR 3201, Field Forest Measurements (1 credit). The intensive field training provides all students entering professional forestry courses in the junior year with an introduction to forestry in an excellent field setting. It is timed to interfere as little as possible with summer employment.

About one-half of the nonforestry courses required for graduation in all College of Forestry curricula are available during the summer session on the Twin Cities campus through the various colleges. Students with deficiencies, or those desiring to graduate early, can effectively utilize the summer session to complete required courses in the biological and physical sciences, mathematics, social sciences, communications and other areas.

OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION¹

(SPECIAL TERM FOR FORESTRY STUDENTS—AUGUST 27-SEPTEMBER 20)

The field training session, required of all forest resources and forest science majors, must be completed between the sophomore and junior years. Required freshman and sophomore courses (see pages 9-10 in the *College of Forestry Bulletin*) must be completed with a maximum of 5 credits of D grades, a minimum grade point average of 2.00, and a minimum of 80 to 90 credits before the student can attend the Itasca Forestry Session. Transfer students must have been accepted for admission by the College of Forestry. Registration for Itasca is administered at the same time as fall quarter registration, in early August. The Itasca session occupies the student's full time for 5½ days per week. It consists largely of field or laboratory work. All students must register for the following courses.

Forest Resources (FR)

3100. IMPORTANT FOREST PLANTS. (2 cr; prereq Biol 1103) Brown, Scholten
Identification of forest plants as related to forest types.

3101. FIELD FOREST ECOLOGY. (3 cr; prereq college physics) Kurmis, Sucoff
Field examination of succession, soils, silvical characteristics, tree classification, stand structure, and the ecology of regeneration.

3201. FIELD FOREST MEASUREMENT. (1 cr; prereq Math 1008) Staff
Introduction to and use of instruments in forest mensuration.

OFFERED ON THE ST. PAUL CAMPUS

Forest Products (ForP)

FIRST TERM

8300.* RESEARCH PROBLEMS. (Cr ar) Staff

8301.* RESEARCH PROBLEMS. (Cr ar) Staff

8302.* RESEARCH PROBLEMS. (Cr ar) Staff

SECOND TERM

8300.* RESEARCH PROBLEMS. (Cr ar) Staff

8301.* RESEARCH PROBLEMS. (Cr ar) Staff

8302.* RESEARCH PROBLEMS. (Cr ar) Staff

¹For additional courses, see Biology Session.

Forest Resources (FR)

FIRST TERM

• **5408. FORESTRY IN THE URBAN ENVIRONMENT—June 11-15.** (3 cr; limited to 40 students; prereq student teacher, teacher or #)
Study of forest ecosystems and forest management in lecture and laboratory sessions. Special uses and problems of the urban forest. Two field exercises focus on techniques and materials useful for teaching the principles of forestry in indoor and outdoor classrooms. Forest areas in the Twin Cities are used for field exercises. Discussions and presentations by guest lecturers on contemporary forestry issues. See Special Programs section.

8100.* RESEARCH PROBLEMS IN SILVICULTURE. (Cr ar) Bakuzis, B Brown, Hansen, Scholten, White, Alm

8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY. (Cr ar) Sucoff, G Brown

8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS. (Cr ar) Mohn

8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY. (Cr ar) Brooks

8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT. (Cr ar) B Brown, Ek, Irving, Hallgren, Rose

8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS. (Cr ar) Skok, Ellefson, Gregersen

8202.* RESEARCH PROBLEMS IN FOREST MEASUREMENTS. (Cr ar) Ek, Meyer, Rose

8203.* RESEARCH PROBLEMS IN FOREST RECREATION. (Cr ar) Hansen, Merriam, Knopp

8204.* RESEARCH PROBLEMS IN FOREST POLICY. (Cr ar) Irving, Merriam, Skok, Ellefson, Gregersen, Hallgren

8205.* RESEARCH PROBLEMS IN REMOTE SENSING. (Cr ar) Meyer, Lillesand

SECOND TERM

8100.* RESEARCH PROBLEMS IN SILVICULTURE. (Cr ar) Bakuzis, B Brown, Hansen, Scholten, White, Alm

8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY. (Cr ar) Sucoff, G Brown

8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS. (Cr ar) Mohn

8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY. (Cr ar) Brooks

8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT. (Cr ar) B Brown, Ek, Irving, Hallgren, Rose

8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS. (Cr ar) Skok, Ellefson, Gregersen

8202.* RESEARCH PROBLEMS IN FOREST MEASUREMENTS. (Cr ar) Ek, Meyer, Rose

8203.* RESEARCH PROBLEMS IN FOREST RECREATION. (Cr ar) Hansen, Merriam, Knopp

8204.* RESEARCH PROBLEMS IN FOREST POLICY. (Cr ar) Irving, Merriam, Skok, Ellefson, Gregersen, Hallgren

8205.* RESEARCH PROBLEMS IN REMOTE SENSING. (Cr ar) Meyer, Lillesand

OFFERED AT CLOQUET FORESTRY CENTER

Forest Resources (FR)

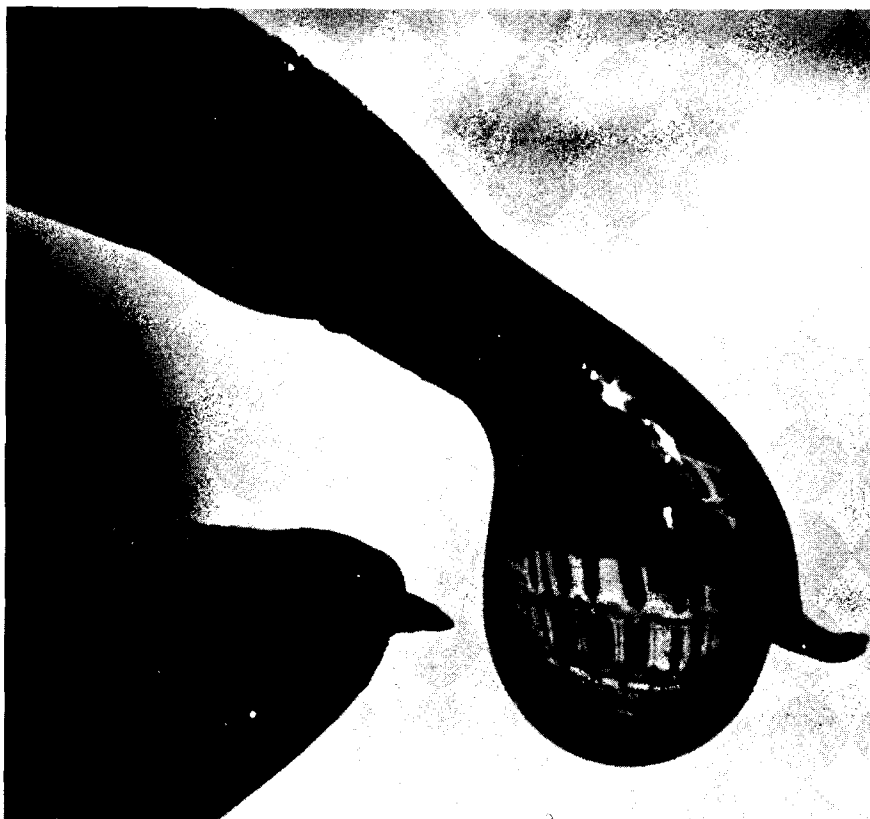
Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

8105. ADVANCED FIELD SILVICULTURE. (3 cr; prereq 5101, #) White
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.

General College

The General College is open to any resident of Minnesota who is a high school graduate and for whom its courses and student personnel services are appropriate. Non-high school graduates who perform satisfactorily on scholastic aptitude tests also may apply for admission.



A student enrolled in the General College pursues a course of study individually planned in consultation with an adviser. The student may use this program to explore educational and personal interests, to test his or her ability to succeed in college-level academic work, or (if previous grades are acceptable) to prepare for advanced study at the University of Minnesota or at another institution. The student may combine general and liberal arts courses with instruction in such career education sequences as dental assisting, marketing, legal paraprofessions, and human services generalist programs. Credits earned in these occupational options, and in some cases through work experience, can be applied toward the requirements for the associate in arts (A.A.), bachelor of general studies (B.G.S.), and bachelor of applied studies (B.A.S.) degrees offered through the General College. Information about these degrees can be found on pages 16-24 of the current *General College Bulletin*.

General or liberal studies courses in the General College resemble those offered in a traditional curriculum in that they can be classified into the social sciences, the natural sciences, and the humanities. However, the curriculum departs from tradition in some respects. Instruction focuses not only upon factual content but also on relations in and among fields of knowledge, on practical applications, and on critical and creative thinking. The courses tend to be broad in scope rather than specialized and may be used to develop an overview of a field. Students deciding upon a major should register for the basic courses offered by the department in which they plan to complete advanced study.

Students enrolling in the college for the first time as entering freshmen are required to register for General College courses only. After they have satisfactorily completed 1 quarter in the college, they may consult an adviser about the possibility of registering for a "combination program," in which some of their course work is taken in other colleges of the University. The combination program is especially valuable during the summer session, when only a limited number of General College courses are available.

General College students may transfer to other colleges of the University without undue loss of time or academic credits if their grades meet the level of academic achievement required by the college they wish to enter.

Students and prospective students are urged to bring problems and questions to the General College Counseling and Student Development office, 10 Nicholson Hall.

General College (GC)

Courses with limited enrollment must be reserved in 20 Nicholson Hall (see instructions under "Reserved Courses").

FIRST TERM

• 1131. **BIOLOGICAL SCIENCE: PRINCIPLES.** (5 cr; limited to 75 students; \$2 lab fee; 4 lab hrs per wk; I-II MTWThF; SciCB 125) Dearden

The variety and relationships of living organisms, illustrating general principles of biology as they apply to humans, animals, and plants. These principles are drawn from fields such as study of cells, relationships of organisms in nature, heredity, chemical and physical properties of living organisms in nature, evolution, and reproduction. Work in multimedia laboratory on biological information and biological problems through the aid of tapes, pictures, graphs, movies, and experiments.

- **1166. PHYSICAL SCIENCE: PRINCIPLES OF CHEMISTRY.** (5 cr; limited to 75 students; III-IV MTWThF; SciCB 125) Schwabacher
Fundamental principles and laws stressing development and application of theories and their roots in experience. Topics and demonstrations include classification of matter, reactions, elements, atomic and molecular structure, chemical bonding theory, and other subjects. Students gain general understanding of both content and process of the science of chemistry.
- **1212. URBAN PROBLEMS.** (5 cr; limited to 50 students; I-II MTWThF; NH 207) F Johnson
Using problem-solving, interdisciplinary approach, students examine some major urban problems such as social class and poverty, social change, crime, and education. Emphasizes practical activities through fieldwork or community service.
- **1221. MINNESOTA: HISTORY.** (5 cr; limited to 50 students; I-II MTWThF; NH 213) Moen
Introduction to people and institutions of the state. Topics include geography, exploration, frontier settlement, statehood, economic development, politics, and social and intellectual history.
- **1235. UNITED STATES: LAW IN SOCIETY.** (5 cr; limited to 50 students; III-IV MTWThF; NH 207) Hower
The role of law in our changing society; legal aspects of current topics. Students select topics for study from the following: courts and court systems, corrections, police-community relations, environmental problems, drug problems, welfare and domestic problems, wills and probate, insurance, and consumer rights.
- **1283. PSYCHOLOGY OF HUMAN DEVELOPMENT.** (5 cr; limited to 75 students; III-IV MTWThF; NH 213) Latts
Focuses on growth and development of individual from conception through old age. Physical, motor, social, emotional, and psychological growth, and cognitive and moral development. Integrated view of facets of development in order to understand human being as a complex organism functioning in a complex environment. The family as the main environmental factor in early development of individual.
- **1371. LITERATURE: READING SHORT STORIES.** (3 cr; limited to 40 students; III MTWThF; NH 216) Kurak
Representative short stories by American, British, and Continental writers. How individual writers have used the short story to express their ideas about human experience.
- **1401. COMMUNICATION SKILLS: VOCABULARY DEVELOPMENT.** (3 cr; limited to 40 students; II MTWThF; NH 216) Stockdale
In class discussion, small-group work, and individual projects, students develop substantial and workable vocabulary through study of the dictionary, word parts, and meanings in context in programmed textbooks, current college textbooks, and individually compiled contextual passages. Both written and oral classwork.
- **1421. WRITING LABORATORY: PERSONAL WRITING.** (4 cr; each section 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, I-II TWThF, NH 209, Wyvell
Sec 2, III-IV TWThF, NH 209, Rathburn
- **1431. FUNDAMENTAL COLLEGE MATHEMATICS I.** (2 cr; limited to 35 students; prereq ¶1432; I MTWThF; EtH N391) Denny
One of a three-part series of courses intended for students who have gaps in their mathematics background. Topics chosen, as appropriate, from number theory, algebra, and geometry. (Meets with 1432.)
- **1432. FUNDAMENTAL COLLEGE MATHEMATICS II.** (1 cr; limited to 35 students; prereq ¶1431; I MTWThF; EtH N391) Denny
See 1431.
- **1433. FUNDAMENTAL COLLEGE MATHEMATICS III:** (1-9 cr; limited to 35 students; prereq #: I MTWThF; EtH N391) Denny
See 1431.
- **1471. CREATIVITY: CREATIVE PROBLEM SOLVING—INNOVATION TECHNIQUES.** (4 cr; limited to 30 students; III-IV MTWThF; NH 122) Benson
To heighten awareness of difficulties and challenges in academic and personal life, students solve problems in an open and trusting environment and become aware of their creative potential. Working individually or in groups, students use innovative techniques to help them perceive and approach problems flexibly and imaginatively. Readings and class exercises.

SECOND TERM

- **1132. BIOLOGICAL SCIENCE: THE HUMAN BODY.** (5 cr; limited to 75 students; I-II MTWThF; SciCB 125) Jefferson
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.
- **1237. UNITED STATES: JUVENILE DELINQUENCY.** (4 cr; limited to 40 students; I-II MTWThF; NH 216) 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.
- **1282. FIELDS OF APPLIED PSYCHOLOGY.** (5 cr; limited to 40 students; III-IV MTWThF; NH 213) Borow
Use of psychological principles in study of human affairs. Contributions of psychological research in fields such as environmental psychology; mental retardation; personnel selection and training in industry; measurement and improvement of worker efficiency and morale; law, crime, and aggression; consumer research and advertising; and attitude and opinion formation and measurement.
- **1312. ART: ART TODAY I.** (3 cr; limited to 35 students; III MTWThF; NH 111) Safer
Participation in selected fields of study related to contemporary art and art activity, generally in areas such as painting, filmmaking, sculpture, architecture, and crafts.
- **1363. LITERATURE FOR CHILDREN.** (4 cr; limited to 40 students; III-IV MTWThF; NH 216) Collins
Survey of children's literature. For parents, prospective parents, or child care workers who wish to become acquainted with children's literature and to guide children in selecting and reading books, or for others who may not have had an opportunity to read books—including classics—when they were children.
- **1422. WRITING LABORATORY: COMMUNICATING IN SOCIETY.** (4 cr; limited to 25 students; I-II TWThF; NH 209) Gidmark
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.
- **1445. MATHEMATICS: INTERMEDIATE ALGEBRA.** (5 cr; limited to 35 students; prereq 1 yr high school algebra; III-IV MTWThF; EtH N391) 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.
- **1461. ORAL COMMUNICATION: BASIC PRINCIPLES.** (5 cr; prereq dental assisting student; limited to 25 students; III-IV MTWThF; NH 107) Hagen
In conversations, discussions, and prepared speeches, students share ideas, attitudes, and experiences with others; investigate pervasiveness and function of communication in modern life; and examine how language functions as means of communication. Various uses to which people put speech and basic biological, psychological, and social needs these uses are intended to satisfy. Students listen and respond to communication of others and comment on what they see, hear, and feel.
- **1465. ORAL COMMUNICATION: INTERPERSONAL COMMUNICATION.** (3 cr; limited to 25 students; II MTWThF; NH 107) Hansen
Students examine their own communication patterns—verbal, nonverbal, and vocal—and try to discover why they are effective or ineffective communicators, to uncover some origins of their communicative behavior, and to understand means we use to relate to each other and ways we alienate ourselves from each other. Course asks students to begin or deepen their search for identity and to aid others in their search. Students apprehensive about the "personal" dimension should not take this course.

• **1534. PRACTICAL LAW.** (5 cr; limited to 50 students; I-II MTWThF; NH 207) Kahn
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.

• **3841. MINNESOTA RESOURCES.** (5 cr; limited to 40 students; I-II MTWThF; NH 213) Steinhauser
Quality of life in Minnesota observed in context of the "American Dream" and the "good life." Minnesota's people, physical environment, and economic activities. Films, slides, and audiotapes provide immediate experience with present-day Minnesota.

Health Sciences

See also the College of Liberal Arts listing for ID 3111, Interstudy '79: A Search for Understanding, section on History of Medicine.



SCHOOL OF DENTISTRY

Dental Hygiene (DH)

FIRST TERM

1154. BIOMATERIALS IV. (3 cr, lect I-II TTh; HSUnitA 5-125) Pokorny
Continuation of DH 1153 with emphasis on analysis of patient education and role of the dental hygienist with regard to restorative and preventive procedures. Clinical application of procedures incorporated with the prophylaxis (or with plaque control) in laboratory.

Lab 1, VII-IX TTh, HSUnitA 5-130

Lab 2, VII-IX WF, HSUnitA 5-130

1250. OFFICE MANAGEMENT. (3 cr; III-IV WF; HSUnitA 5-125) Nelson
Dental jurisprudence, work simplification, case presentation, appointment control, records management, preventive practice development, recall systems, payment plans, fees and collections, inventory control and product selection.

3053. DENTAL PROPHYLAXIS V. (3 cr; III-IV Th; HSUnitA 5-125; clinic ar) Furry
Continuation of DH 3052.

3055. DENTAL PROPHYLAXIS VII. (3 cr; I-II W; HSUnitA 5-125; clinic ar) Haider
Continuation of DH 3054.

3276. CLINICAL ROENTGENOLOGY. (2 cr; clinic ar) Kuba
Students observe and participate in demonstrations of various roentgenographic procedures (intraoral and extraoral, including panoramic roentgenography) in order to develop the ability to produce acceptable complete periapical-bitewing roentgenographic surveys on mounted skulls and patients, process exposed films, qualitatively evaluate their results, and mount and interpret their roentgenograms; discussion of topics relevant to oral radiology.

SECOND TERM

3399. INDEPENDENT STUDY. (Cr ar; elective) Haider
Opportunity to study an area not covered by regular course offerings. May include off-campus experiences.

Dentistry (Dent)

The School of Dentistry offers instruction for undergraduate students in the clinical disciplines who elect to continue their clinical experience during the summer months.

FIRST TERM

5070. HEALTH ECOLOGY ELECTIVE. (1 cr) Foglesong

5321. ORAL SURGERY ELECTIVE. (1 cr) Jaspers

5999. DENTAL CLINIC. (Cr ar) Jensen

SECOND TERM

5070. HEALTH ECOLOGY ELECTIVE. (1 cr) Foglesong

5321. ORAL SURGERY ELECTIVE. (1 cr) Jaspers

Endodontics (Endo)

FIRST TERM

5303. ADVANCED CLINICAL ENDODONTICS. (1 cr) Jensen
Diagnosis and treatment of clinical cases. Students assigned complex cases and explore new and unique techniques.

5313. ENDODONTIC EMERGENCY PROBLEMS. (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. (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. (1 cr) Jensen
Students present cases from the previous quarter for review by endodontic faculty and graduate students.

8004. RESEARCH IN ENDODONTICS. (1 cr) Jensen
Organized literature review in areas of specific interest to student, selection of this project, and completion of research and thesis.

8313. SEMINAR: ENDODONTICS. (1 cr) Jensen
Review of current literature, research, and clinical areas. Sessions assigned to student.

8323. ADVANCED ENDODONTIC LECTURES. (1 cr) Jensen
Pulpal and periapical pathology, diagnosis, and treatment planning.

SECOND TERM

5303. ADVANCED CLINICAL ENDODONTICS. (1 cr) Jensen
See First Term.

5313. ENDODONTIC EMERGENCY PROBLEMS. (1 cr) Jensen
See First Term.

5323. TREATMENT PLANNING. (1 cr) Jensen
See First Term.

5333. REVIEW OF CASES. (1 cr) Jensen
See First Term.

8004. RESEARCH IN ENDODONTICS. (1 cr) Jensen
See First Term.

8313. SEMINAR: ENDODONTICS. (1 cr) Jensen
See First Term.

8323. ADVANCED ENDODONTIC LECTURES. (1 cr) Jensen
See First Term.

Oral Biology (OBio)

FIRST TERM

8001. RESEARCH IN ORAL BIOLOGY. (Cr ar)

8002. TUTORIAL IN ORAL BIOLOGY. (Cr ar [may be repeated for cr]; 2 hrs per wk=1 cr)

8024. TOPICS IN ORAL BIOLOGY. (1-3 cr [may be repeated for cr]; prereq #)

SECOND TERM

8001. RESEARCH IN ORAL BIOLOGY. (Cr ar) Shapiro

8002. TUTORIAL IN ORAL BIOLOGY. (Cr ar [may be repeated for cr]; 2 hrs per wk=1 cr) Shapiro

8024. TOPICS IN ORAL BIOLOGY. (1-3 cr [may be repeated for cr]; prereq #)

Oral Pathology (OPat)

FIRST TERM

8004. HISTOPATHOLOGY. (2 cr) Vickers
Weekly presentation of various pathologic cases in which methods of diagnosis are stressed. Clinical or radiographic aspects utilized. Covers the spectrum of oral and paraoral pathology.

8006. CURRENT LITERATURE REVIEW AND TOPICS. (2 cr) Gorlin
Monthly journals are analyzed and interesting papers and articles are summarized and presented. Special topics in oral pathology and related fields are also presented by staff members.

8014. EXFOLIATIVE CYTOLOGY OF THE ORAL MUCOSA. (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. (2 cr) Vickers
See First Term.

8006. CURRENT LITERATURE REVIEW AND TOPICS. (2 cr) Gorlin
See First Term.

8014. EXFOLIATIVE CYTOLOGY OF THE ORAL MUCOSA. (2 cr) Witkop
See First Term.

Oral Radiology (ORad)

FIRST TERM

8100. ORAL RADIOLOGY SEMINAR. (1 cr; prereq #) Kuba

8900. ORAL RADIOLOGY RESEARCH. (Cr ar; prereq #) Kuba

SECOND TERM

8100. ORAL RADIOLOGY SEMINAR. (1 cr; prereq #) Kuba

8900. ORAL RADIOLOGY RESEARCH. (Cr ar; prereq #) Kuba

Oral Surgery (OSur)

FIRST TERM

5257. AMBULATORY GENERAL ANESTHESIA. (1 cr) Gatto and staff
A clinical rotation involving experience in outpatient management utilizing intravenous sedation and general anesthesia.

8250. ADVANCED ORAL SURGERY. (1 cr) Waite
Assigned clinics in University, Veterans Administration, Hennepin County Medical Center, and 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. (1 cr) Lehnert
Oral surgical subjects on a seminar basis.

8252. RESEARCH IN ORAL SURGERY. (Cr ar) Leonard
Research in fields related to oral surgery.

8253. PROBLEMS IN ORAL SURGERY. (1 cr) Waite
Current literature review; experience in surgical techniques.

8254. TOPICS. (1 cr) Gatto, Bevis
Surgical orthodontic techniques on seminar basis.

8255. GENERAL SURGERY. (1 cr) Christensen, Miller, Stiegler
Clinical rotation on the general surgical service at Fairview Hospital, Minneapolis. Includes seminars, clinics, and operating room experience.

8258. ANESTHESIA II SEMINAR. (1 cr) Gatto and staff
Outpatient general anesthesia topics and related subjects.

SECOND TERM

5257. AMBULATORY GENERAL ANESTHESIA. (1 cr) Gatto and staff
See First Term.

8250. ADVANCED ORAL SURGERY. (1 cr) Waite
See First Term.

8251. SEMINAR: ORAL SURGERY. (1 cr) Lehnert
See First Term.

8252. RESEARCH IN ORAL SURGERY. (Cr ar) Leonard
See First Term.

8253. PROBLEMS IN ORAL SURGERY. (1 cr) Waite
See First Term.

8254. TOPICS. (1 cr) Gatto, Bevis
See First Term.

8255. GENERAL SURGERY. (1 cr) Christensen, Miller, Stiegler
See First Term.

8258. ANESTHESIA II SEMINAR. (1 cr) Gatto and staff
See First Term.

Orthodontics (Otho)

FIRST TERM

Required Courses for Graduate Students

5004. CLINICAL ORTHODONTICS. (Cr ar; prereq #)
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. (Cr ar; prereq #)
Head growth, development, osteology and myology. Includes both normal and abnormal morphology and function; cephalometric methods.

8207. DIAGNOSIS AND TREATMENT PLANNING. (Cr ar; prereq #)
Etiology, treatment, and prognosis of clinical orthodontic patients.

8211. ORTHODONTIC SEMINAR. (Cr ar; prereq #)
Review of current literature and discussion of current research and its implications.

8215. RESEARCH IN ORTHODONTICS. (Cr ar; prereq #)

8219. TOPICS IN ORTHODONTICS. (Cr ar; prereq #)
Studies in special topics for advanced students.

SECOND TERM

5004. CLINICAL ORTHODONTICS. (Cr ar; prereq #)
See First Term.

8203. GROWTH AND DEVELOPMENT. (Cr ar; prereq #)
See First Term.

8207. DIAGNOSIS AND TREATMENT PLANNING. (Cr ar; prereq #)
See First Term.

8211. ORTHODONTIC SEMINAR. (Cr ar; prereq #)
See First Term.

8215. RESEARCH IN ORTHODONTICS. (Cr ar; prereq #)
See First Term.

8219. TOPICS IN ORTHODONTICS. (Cr ar; prereq #)
See First Term.

Pediatric Dentistry (Pedo)

FIRST TERM

5414. ADVANCED CLINICAL PEDODONTICS. (Cr ar; prereq #) Shaw, others
Assignment of patients for treatment of difficult or unusual pedodontic problems under direct faculty supervision.

5415. DENTAL TEACHING. (Cr ar) Till, others
Practice teaching in appropriate dental clinics. Preparation of seminars and lectures. Use of various educational methods including slide-tape sequences and programmed instruction.

8001. RESEARCH IN PEDIATRIC DENTISTRY. (Cr ar; prereq #) Messer, others

8290. HOSPITAL PEDODONTICS I. (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. (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.

8292. PEDODONTIC LITERATURE. (Cr ar; prereq #) Shaw, others
In-depth literature review and seminar discussion of specific pedodontic topics.

8294. PEDODONTIC DIAGNOSIS AND TREATMENT PLANNING. (Cr ar; prereq #) Shaw, others
Systematic approach to diagnosis and treatment planning for various pedodontic problems.

SECOND TERM

5414. ADVANCED CLINICAL PEDODONTICS. (Cr ar; prereq #) Shaw, others
See First Term.

5415. DENTAL TEACHING. (Cr ar) Till, others
See First Term.

8001. RESEARCH IN PEDIATRIC DENTISTRY. (Cr ar; prereq #) Messer, others

8290. HOSPITAL PEDODONTICS I. (Cr ar; prereq #) Walker, others
See First Term.

8291. HOSPITAL PEDODONTICS II. (Cr ar; prereq #) Till, others
See First Term.

8293. ADVANCED PEDODONTIC TECHNIQUES. (Cr; prereq #) Shaw, others
Description and exercises in advanced pedodontic skills and techniques.

8295. INDEPENDENT PEDODONTIC STUDY. (Cr ar; prereq #) Till, others
Review of pertinent literature and preparation of a position paper on an assigned topic.

Periodontology (Pero)

FIRST TERM

8000. ADVANCED CLINICAL PERIODONTOLOGY. (Cr ar) Pihlstrom
Practical work in clinic in examination, diagnosis, treatment planning, and various phases of treatment of patients with periodontal disease.

8100. RESEARCH IN PERIODONTOLOGY. (Cr ar)
Opportunity to take part in many phases of laboratory work under way in periodontal research.

8200. LECTURES IN PERIODONTOLOGY. (Cr ar) Pihlstrom
Tissues involved in periodontal disease. Etiology and treatment of periodontal disease.

8300. SEMINAR: PERIODONTOLOGY. (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.

SECOND TERM

8000. ADVANCED CLINICAL PERIODONTOLOGY. (Cr ar) Pihlstrom
See First Term.

8100. RESEARCH IN PERIODONTOLOGY. (Cr ar)
See First Term.

8200. LECTURES IN PERIODONTOLOGY. (Cr ar) Pihlstrom
See First Term.

8300. SEMINAR: PERIODONTOLOGY. (Cr ar) Pihlstrom
See First Term.

Prosthodontics (Pros)

FIRST TERM

8030. INTRODUCTION TO COMPREHENSIVE MAXILLOFACIAL CARE. (Cr ar; prereq #) Moller
Milestones in development of maxillofacial prosthetics and interdisciplinary relationships in treatment of the maxillofacial patient.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

8001. RESEARCH IN PROSTHODONTICS. (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. (Cr ar [may be repeated for cr]; prereq #) Goodkind, Meyer
Experience in prosthodontic treatment of patients having systemic complications.

MEDICAL SCHOOL

Complete listings of courses offered by departments of the Medical School for undergraduate (prebaccalaureate) students, allied health students, medical students (pre-M.D.), and graduate students (postbaccalaureate in basic health science fields or post-M.D. in clinical fields) can be found in the *Medical School Bulletin*, *Graduate Programs in the Health Sciences Bulletin*, *Graduate School Bulletin*, or bulletin of allied health programs. For further information on specific courses, write or call the appropriate departmental office at the Health Sciences Center. 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. (2 cr; prereq #) Staff
Guided individual reading or study.

8156. ADVANCED ANATOMY. (2-6 cr; prereq #) Staff
Individual problems in gross anatomy, embryology, histology, or neuroanatomy.

8204. RESEARCH IN ANATOMY. (2-10 cr; prereq #) Staff
Gross anatomy, cytochemistry, histology, endocrinology, embryology, hematology, or neuroanatomy. Special facilities offered to graduate students in clinical departments for work on problems in applied anatomy.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

8141. NEUROANATOMICAL METHODS. (2 cr; prereq #; special course fee \$30) Elde
An introduction to contemporary morphological techniques applicable to investigation of the nervous system. The theoretical basis of these techniques as well as practical aspects related to their use. Laboratory experience with selected techniques.

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

5500. GENERAL GROSS ANATOMY. (3-4½ cr; prereq Phase D) Robertson

5501. THE EXTREMITIES. (3-4½ cr; prereq Phase D) Robertson

5502. HEAD AND NECK. (3-4½ cr; prereq Phase D) Robertson

5508. THE THORAX. (3-4½ cr; prereq Phase D) Robertson

5509. THE ABDOMEN. (3-4½ cr; prereq Phase D) Robertson

5510. PERINEUM, GENITAL-URINARY SYSTEM AND PELVIS. (3-4½ cr; prereq Phase D) Robertson

8102. HEAD AND NECK ANATOMY. (9 cr; prereq medical or dental resident, #) Robertson
A comprehensive survey and review of head and neck anatomy. A 6-week course.

SECOND TERM

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

8156. ADVANCED ANATOMY. (2-6 cr; prereq #) Staff
See First Term.

8204. RESEARCH IN ANATOMY. (2-10 cr; prereq #) Staff
See First Term.

Anesthesiology (Anes)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Elective Courses

5181. EXTERNSHIP IN CLINICAL PRACTICE OF ANESTHESIOLOGY. (9 cr; University Hospitals) Buckley, Bergen, staff
Primarily for family practice and surgery tracks, although open to others in limited number. Fundamentals of clinical anesthesia with emphasis on airway and ventilatory management, resuscitation, evaluation of the unconscious patient, choice of agents and techniques, practice administration of general and regional anesthesia, pre- and post-anesthetic management.

Required Courses for Graduate Students

8265. GENERAL ANESTHESIA. (12 cr) Buckley, staff
Instruction and experience in general anesthesia.

8266. REGIONAL ANESTHESIA. (4 cr) Buckley, staff
Observation, instruction, and administration in all types of local, regional, and spinal anesthesia.

8267. PRE- AND POST-ANESTHETIC EVALUATION. (2 cr; VIII MTWThF; 1108 PoH) Buckley, staff
Selection of proper anesthetic agent and technique, premedication and observation of recovery from anesthesia.

8268. SEMINAR: ANESTHESIOLOGY. (2 cr; 1108 PoH) Buckley, staff
Review of literature, reporting of case problems, and discussion of research work in progress within the department.

8269. RESEARCH IN ANESTHESIA. (Cr and hrs ar) Buckley, staff
Anesthesia problems in experimental laboratory or in hospital.

Biochemistry (MdBc)

Elective Courses

FIRST TERM

5053. PROBLEMS IN BIOCHEMISTRY. (Cr and hrs ar; may be taken one or both terms; prereq 5101 or 5742)
Staff
Special work arranged with qualified students.

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

8300. RESEARCH IN BIOCHEMISTRY. (Cr and hrs ar) Staff

SECOND TERM

5053. PROBLEMS IN BIOCHEMISTRY. (Cr and hrs ar; may be taken one or both terms; prereq 5101 or 5742)
Staff
See First Term.

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

8300. RESEARCH IN BIOCHEMISTRY. (Cr and hrs ar) Staff

Dermatology (Derm)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

5181. CLINICAL PROBLEMS. (4.5 cr) Dahl, Gentry, Goltz, Manick, others

5182. DERMATOLOGY EXTERNSHIP. (Cr ar; prereq regis med) Dahl, Gentry, Goltz, Manick, others

5183. ADVANCED DERMATOLOGY. (Cr ar; prereq 5182) Dahl, Gentry, Goltz, Manick, others

8225. CLINICAL DERMATOLOGY. (Cr ar) Dahl, Gentry, Goltz, others

8226. CLINICAL SEMINAR. (Cr ar) Goltz, Gentry, others
Conference twice weekly on diagnosis and treatment of skin conditions.

8227. HISTOLOGY OF THE SKIN. (Cr ar) Goltz, Orkin, others
Includes histopathology, histochemistry, and fluorescence microscopy.

8228. RESEARCH IN DERMATOLOGY. (Cr ar) Goltz, Pass, others

8229. ELECTRON MICROSCOPY IN DERMATOLOGY. (Cr ar) Zelickson, others

8230. FUNCTIONAL BIOLOGY OF THE SKIN. (Cr ar) Goltz, Pass, others

8231. CLINICS: DERMATOLOGY: NONDERMATOLOGISTS. (Cr ar) Goltz, others

8232. SEMINAR: DERMATOLOGIC HISTOPATHOLOGY, MYCOLOGY. (Cr ar) Goltz, others

Family Practice and Community Health (FPCH)

SPECIAL TERM: JULY 1-SEPTEMBER 30

Required Courses

8201. CLINICAL FAMILY MEDICINE. (9 cr; hrs ar) Ciriacy, staff

8208. FAMILY MEDICINE CONFERENCE. (1 cr; hrs ar) Ciriacy, staff

8210. FAMILY MEDICINE GRAND ROUNDS. (0-1 cr; hrs ar) McConnell

8212. CLINICAL PSYCHIATRY ROUNDS. (1 cr; hrs ar) Kelly, staff

Elective Courses

5955. DIRECTED STUDY. (Cr ar; prereq #; hrs ar) Maddock, staff

8207. SEMINAR: COMMON DISEASES SEEN IN FAMILY PRACTICE. (1 cr; hrs ar) Ciriacy, staff

8209. FAMILY MEDICINE X-RAY CONFERENCE. (1 cr; hrs ar) Ciriacy, staff

8253. RESEARCH PROBLEMS. (Cr ar; prereq #; hrs ar) O'Leary, staff

Interdisciplinary Medicine (InMd)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

5225. REPRODUCTION. (4 cr; prereq regis med; PWB 2-470) Foreman, staff

5227. SKIN. (2 cr; prereq regis med; PWB 2-470) Manick, staff

5232. BONES, JOINTS, CONNECTIVE TISSUES. (4 cr; prereq regis med; PWB 2-470) House, staff

Laboratory Medicine and Pathology (LaMP)

Courses for Medical and Undergraduate Students

(Phase A pathology [5101], which began in March, will continue through July 18.)

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

- 5104. **AUTOPSIES.** (Cr ar; prereq Phase B) Staff
- 5113. **SURGICAL PATHOLOGY.** (Cr ar; prereq Phase B) Rosai
- 5114. **SURGICAL PATHOLOGY (Hennepin County Medical Center).** (Cr ar; prereq Phase B) Staff
- 5115. **SURGICAL PATHOLOGY (Veterans Hospital).** (Cr ar; prereq Phase B) Anderson
- 5118. **ENDOCRINE PATHOLOGY (St. Paul-Ramsey Hospital).** (Cr ar; prereq Phase B) Haus, Lakatua
- 5123. **PULMONARY PATHOLOGY (St. Paul-Ramsey Hospital).** (Cr ar) Woolfrey
- 5125. **CHRONOBIOLOGY.** (Cr ar; prereq Phase B, #) Halberg
- 5141. **PROBLEMS: EXPERIMENTAL PATHOLOGY.** (Cr ar; prereq Phase B, #) Halberg
- 5151. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (Hennepin County Medical Center).** (Cr ar) Staff
- 5152. **ANATOMIC PATHOLOGY (Veterans Hospital).** (Cr ar; prereq Phase B) Staff
- 5153. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (St. Paul-Ramsey Hospital).** (Cr ar; prereq Phase B) Staff
- 5155. **ANATOMIC PATHOLOGY: HOSPITAL SETTING.** (Cr ar; prereq Phase B, Δ ; hospital to be arranged)
- 5158. **CARDIAC PATHOLOGY (Miller Hospital).** (Cr ar; prereq Phase B, #) Edwards
- 5181. **LABORATORY AND CLINICAL HEMATOLOGY.** (Cr ar; prereq #) Brunning
- 5182. **LABORATORY STUDIES OF GENETIC DISORDERS.** (Cr ar; prereq #) J Yunis
- 5184. **IMMUNOHEMATOLOGY IN BLOOD BANKING.** (Cr ar; prereq #) McCullough
- 5186. **CLINICAL PATHOLOGY EXTERNSHIP (Hennepin County Medical Center).** (Cr ar; prereq #) Strom
- 5191. **GENERAL CLINICAL MICROBIOLOGY.** (Cr ar; prereq #) Balfour
- 5193. **CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital).** (Cr ar; prereq #) Nollet
- 5203. **CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank).** (Cr ar; prereq Polesky)

Laboratory Medicine and Pathology (LMed)

FIRST TERM

- 5139. **ADVANCED MICROBIOLOGY.** (Cr ar; prereq #) Balfour, Blazevic, Ederer
- 5169. **RESEARCH: HUMAN GENETICS.** (Cr ar; prereq #) J Yunis
- 5170. **ADVANCED PROBLEMS: MEDICAL GENETICS.** (Cr ar; prereq #) J Yunis, others
- 5180. **ADVANCED CHEMISTRY.** (Cr ar; prereq #) Benson, staff
- 5272. **IMMUNOLOGY SEMINAR.** (1 cr; prereq #) Azar
- 5273. **ADVANCED IMMUNOLOGY.** (Cr ar; prereq #) Azar
- 5768. **ADVANCED HEMATOLOGY.** (Cr ar; prereq #) Brunning
- 8235. **ADVANCED CLINICAL LABORATORY MEDICINE.** (Cr ar; prereq #) Benson, Azar
- 8236. **RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (Cr ar; prereq #) Benson, Azar

SECOND TERM

- 5139. **ADVANCED MICROBIOLOGY.** (Cr ar; prereq #) Balfour, Blazevic, Ederer
- 5169. **RESEARCH: HUMAN GENETICS.** (Cr ar; prereq #) J Yunis
- 5170. **ADVANCED PROBLEMS: MEDICAL GENETICS.** (Cr ar; prereq #) J Yunis, others
- 5180. **ADVANCED CHEMISTRY.** (Cr ar; prereq #) Benson, staff
- 5272. **IMMUNOLOGY SEMINAR.** (1 cr; prereq #) Azar
- 5273. **ADVANCED IMMUNOLOGY.** (Cr; prereq #) Azar
- 5768. **ADVANCED HEMATOLOGY.** (Cr; prereq #) Brunning
- 8235. **ADVANCED CLINICAL LABORATORY MEDICINE.** (Cr ar; prereq #) Benson, Azar
- 8236. **RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (Cr ar; prereq #) Benson, Azar

Medical Technology (MedT)

FIRST TERM

- 5082. **APPLIED CLINICAL CHEMISTRY.** (4 cr; prereq 5063, 5108, #)
Application of basic methods and techniques in chemistry in the clinical laboratory.
- 5085. **APPLIED CLINICAL HEMATOLOGY.** (4 cr; prereq 5065, 5067, #)
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.** (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.** (4 cr; prereq 5102, #)
Identification of bacteria by microscopic techniques. Correlation with clinical cases. Identification of parasites and fungi.
- 5090. **SPECIAL LABORATORY METHODS.** (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.** (4 cr; prereq 5063, 5108, #)
See First Term.
- 5085. **APPLIED CLINICAL HEMATOLOGY.** (4 cr; prereq 5065, 5067, #)
See First Term.
- 5086. **APPLIED CLINICAL IMMUNOHEMATOLOGY.** (4 cr; prereq 5066, #)
See First Term.
- 5088. **APPLIED DIAGNOSTIC MICROBIOLOGY.** (4 cr; prereq 5102, #)
See First Term.
- 5090. **SPECIAL LABORATORY METHODS.** (2 cr; prereq #)
See First Term.

Medicine (Med)

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5501. MEDICAL ONCOLOGY INTERNSHIP IN MEDICINE. (Cr and hrs ar) Kennedy
5502. MEDICINE EXTERNSHIP I. (Cr and hrs ar) Murray
5503. MEDICINE EXTERNSHIP II. (Cr and hrs ar) Murray
5505. INFECTIOUS DISEASE RESEARCH. (Cr and hrs ar) Sabath
5509. RESEARCH IN RHEUMATOLOGY. (Cr and hrs ar) Douglas
5511. RESEARCH IN GASTROENTEROLOGY. (Cr and hrs ar) Levitt
5512. RESEARCH IN HEMATOLOGY. (Cr and hrs ar) Jacob
5520. INFECTIOUS DISEASES, ALLERGY AND CLINICAL IMMUNOLOGY. (Cr and hrs ar) Sabath, Staff
5521. INFECTIOUS DISEASES, CLINICAL ASPECTS. (Cr and hrs ar) Sabath
5522. GASTROENTEROLOGY. (Cr and hrs ar) Martin
5523. MEDICAL ENDOCRINOLOGY AND METABOLISM. (Cr and hrs ar) Barbosa
5525. CARDIOVASCULAR MEDICINE. (Cr and hrs ar) Bache
5527. CONTEMPORARY PROBLEMS IN INVESTIGATIVE CARDIOLOGY. (Cr and hrs ar) Bache
5528. CLINICAL HEMATOLOGY. (Cr and hrs ar) Howe
5531. CLINICAL RHEUMATOLOGY. (Cr and hrs ar) Hathaway
5532. PULMONARY DISEASE. (Cr and hrs ar) Drage
5533. CLINICAL ALLERGY. (Cr and hrs ar) Blumenthal
5542. RESEARCH IN PULMONARY DISEASE. (Cr and hrs ar) Kronenberg
5548. CLINICAL GENETICS. (Cr and hrs ar) King
5554. FLUID, ELECTROLYTE, ACID-BASE METABOLISM. (Cr and hrs ar) Masler, staff
5556. MEDICAL NEPHROLOGY. (Cr and hrs ar) Kjellstrand
5557. RESEARCH IN NEPHROLOGY. (Cr and hrs ar) Kjellstrand
5562. NEPHROLOGY. (Cr and hrs ar) Rao
5572. AMBULATORY INTERNAL MEDICINE. (Cr and hrs ar) Spilane
5583. DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER. (Cr and hrs ar) Ramsay
5589. MEDICINE EXTERNSHIP II AT ST. LUKE'S HOSPITAL. (Cr and hrs ar) Goldish
5590. PRECEPTORSHIPS IN INTERNAL MEDICINE. (Cr and hrs ar) Murray
5592. RURAL PHYSICIANS ASSOCIATE PROGRAM IN MEDICINE. (Cr and hrs ar) Drage
5594. PSYCHIATRY IN MEDICINE: CONSULTATION-LIAISON. (Cr and hrs ar) Popkin
5595. PSYCHOLOGICAL ASPECTS OF MEDICAL PRACTICE. (Cr and hrs ar) Wilder

Elective Courses for Graduate Students

8201. CLINICAL MEDICINE. (Cr and hrs ar) Ferris, staff
8202. CLINICAL CONFERENCE. (Cr and hrs ar) Ferris, staff
8203. CLINICAL RADIOLOGY CONFERENCE. (Cr and hrs ar) Ferris, staff

8204. PATHOLOGICAL CONFERENCE. (Cr and hrs ar) Ferris, staff
8205. ELECTROCARDIOGRAPHIC CONFERENCE. (Cr and hrs ar) Tuna
8206. NEPHROLOGY SEMINAR. (Cr and hrs ar) Kjellstrand, staff
8209. TUMOR CLINICAL CONFERENCE. (Cr and hrs ar) Kennedy, staff
8210. INFECTIOUS DISEASE SEMINAR. (Cr and hrs ar) Sabath, staff
8211. DISEASES OF THE CARDIOVASCULAR SYSTEM. (Cr and hrs ar) Cohn, staff
8212. DISEASES OF THE CHEST. (Cr and hrs ar) Drage, staff
8213. DISEASES OF THE KIDNEY. (Cr and hrs ar) Kjellstrand, staff
8214. DISEASES OF DIABETES, ENDOCRINOLOGY, AND METABOLISM. (Cr and hrs ar) Oppenheimer, staff
8215. DISEASES OF HEMATOLOGY. (Cr and hrs ar) Jacob, staff
8216. DISEASES OF GASTROENTEROLOGY. (Cr and hrs ar) Wilson, staff
8217. DISEASES OF ONCOLOGY. (Cr and hrs ar) Kennedy, staff
8220. RESEARCH IN MEDICINE. (Cr and hrs ar) Ferris, staff
8221. TOPICS IN MEDICINE. (Cr and hrs ar) Ferris, staff
8223. TOPICS IN RELATED BASIC SCIENCE. (Cr and hrs ar) Ferris, staff

Microbiology (MicB)

FIRST TERM

5970. SPECIAL PROBLEMS. (Cr ar; prereq #) Rogers, staff
8990. RESEARCH IN MICROBIOLOGY. (Cr and hrs ar) Faras, staff
Graduate students with the requisite preliminary training may elect research project outside their thesis work.

SECOND TERM

5970. SPECIAL PROBLEMS. (Cr ar; prereq #) Rogers, staff
8990. RESEARCH IN MICROBIOLOGY. (Cr and hrs ar) Faras, staff
See First Term.

SPECIAL TERM: JUNE 4-JULY 28

5206. MICROBIOLOGY FOR MEDICAL STUDENTS. (4 cr; prereq regis med fr or grad; lect II MTWThF; HSUnitA 2-650) Brand, staff
(Continuation of 5205) Immunology, parasitology, mycology, and medical bacteriology, virology with emphasis on pathogenesis. Principles and techniques enabling diagnosis, treatment (especially chemotherapy), and prevention of infectious disease.

Lab A III-IV M, VII-VIII W
Lab B VII-VIII M, III-IV W

Neurology (Neur)

SPECIAL TERMS: SIX- AND TWELVE-WEEK COURSES

5120. SELECTED PROBLEMS IN NEUROLOGY. (Cr ar; prereq regis med) Staff
5510. EXTERNSHIPS IN CLINICAL NEUROLOGY. (Cr ar; prereq regis med) Klassen, staff
5541. PEDIATRIC NEUROLOGY—NEUROCHEMISTRY. (Cr ar; prereq regis med) Swaiman
5544. CLINICAL ELECTROENCEPHALOGRAPHY. (Cr ar; prereq regis med) Torres, Zeese

5545. **ELECTROMYOGRAPHY.** (Cr ar; prereq regis med) Kennedy

5570. **IMMUNOLOGY.** (Cr ar; prereq regis med) Ansari

FIRST AND SECOND TERMS: TEN-WEEK COURSES

8200. **CLINICAL NEUROLOGY.** (Cr ar) Resch, staff

8201. **CLINICAL PEDIATRIC NEUROLOGY.** (Cr ar) Swaiman, staff

8202. **RESEARCH.** (Cr ar) Resch, staff

8203. **APPLIED ELECTROENCEPHALOGRAPHY.** (Cr ar) Torres

8204. **APPLIED ELECTROMYOGRAPHY.** (Cr ar) Kennedy

8205. **APPLIED NEUROPATHOLOGY.** (Cr ar) Sung, Mastrì

8236. **RESEARCH: NEUROPATHOLOGY.** (Cr ar) Sung, Mastrì

8705. **NEUROLOGICAL-NEUROSURGICAL CONFERENCE.** (1 cr, §Rad 5163, §Surg 8318) Staff

Neurosurgery (NSur)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5500. **NEUROSURGERY EXTERNSHIP (University Hospitals).** (Cr ar; prereq regis med; MTWThF) Staff

5510. **NEUROSURGERY EXTERNSHIP (Veterans Administration Hospital).** (Cr ar; prereq regis med; MTWThF) Staff

5511. **NEUROSURGERY EXTERNSHIP (Hennepin County Medical Center).** (Cr ar; prereq regis med; MTWThF) Staff

5512. **NEUROSURGERY EXTERNSHIP (St. Paul-Ramsey Hospital).** (Cr ar; prereq regis med; MTWThF) Staff

5520. **NEUROSURGERY INVESTIGATION.** (Cr ar; prereq regis med; MTWThF) Staff

5530. **NEURORADIOLOGICAL CONFERENCE.** (1 cr; prereq regis med; F) Meier
A review of X-ray films and case histories on neurosurgical service.

5540. **NEUROSURGICAL CONFERENCE.** (1 cr; prereq regis med; Sat) Staff
In-depth review of selected topics in basic and clinical neurosurgery.

5550. **NEUROPHYSIOLOGICAL LITERATURE SEMINAR.** (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

Required Courses for Graduate Students

8305. **NEUROSURGICAL DIAGNOSIS.** (4 cr; MTWThF) Chou, French, Seljeskog, Erickson
Neurosurgical fellow assists in instruction of clinical clerks and interns, studies problems in diagnosis at University and affiliated hospitals.

8308. **NEUROSURGICAL PROBLEMS AND MANAGEMENT.** (4 cr; MTWThF) Chou, French, Seljeskog, Erickson
Neurosurgical fellow acts as house surgeon at University and affiliated hospitals.

8311. **OPERATIVE NEUROSURGERY.** (4 cr; MTWThF) Chou, French, Seljeskog, Erickson
Neurosurgical fellow acts as first assistant for operations at University and affiliated hospitals and later may be permitted to operate.

8316. **NEUROSURGICAL RESEARCH.** (6 cr; MTWThF) Chou, French, Seljeskog, Bloedel, Erickson
Problems in experimental or clinical surgery.

8318. **NEURORADIOLOGICAL CONFERENCE.** (1 cr; F) Chou, French, Seljeskog
A review of X-ray films and case histories on neurosurgical service.

8320. **NEUROSURGICAL CONFERENCE.** (2 cr; Sat) Chou, French, Seljeskog, Bloedel
In-depth review of selected topics in basic and clinical neurosurgery.

8322. **NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART I.** (1 cr; T; offered Su and W) Staff
Review and discussion of topics.

8323. **NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART II.** (1 cr; prereq 8322; T; offered F and S) Staff
Advanced review and discussion of topics.

8324. **READINGS: NEUROBIOLOGY.** (1 cr; Th; KE 114) Bloedel

8330. **NEUROSURGERY LITERATURE SEMINAR.** (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 25-AUGUST 3 AND AUGUST 6-SEPTEMBER 14

Elective Courses for Undergraduate Students

• 5500. **EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY.** (Cr ar; limited enrollment; 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 Hospital, and University Hospitals. Emphasis on medical aspects of obstetrics and gynecology.

• 5520. **OBSTETRICS AND GYNECOLOGY EXTERNSHIP IN CLINICAL PRACTICE.** (Cr ar; limited enrollment; 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.** (Cr ar; limited enrollment; prereq 5500) Foreman, staff

Full-time clinical experience as acting intern on obstetrical and gynecological service at Hennepin County Medical Center, St. Paul-Ramsey Hospital, or University Hospitals.

• 5550. **PSYCHIATRIC ASPECTS OF OBSTETRICS AND GYNECOLOGY.** (Cr ar; limited enrollment; prereq Phase D) Foreman, Bernstein

Clinical course. Psychiatric problems relating to reproductive system.

• 5560. **RESEARCH IN REPRODUCTION.** (Cr ar; limited enrollment; prereq Phase D) Foreman, staff
Topics selected for each student.

• 5575. **GYNECOLOGICAL PATHOLOGY AND DIAGNOSTIC CYTOLOGY.** (Cr ar; limited enrollment; 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.** (Cr ar; limited enrollment; 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.** (Cr ar) Prem, staff

8205. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff

8209. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff

8210. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff

8213. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff

8217. SEMINAR IN OBSTETRICS AND GYNECOLOGY. (Cr ar) Prem, staff
 8221. SEMINAR IN OBSTETRICS AND GYNECOLOGY. (Cr ar) Prem, staff
 8222. GYNECOLOGICAL ONCOLOGY. (Cr ar) Prem, staff
 8223. GYNECOLOGICAL ONCOLOGY. (Cr ar) Prem, staff
 8224. GYNECOLOGICAL ENDOCRINOLOGY—PART I. (Cr ar) Prem, staff
 8225. GYNECOLOGICAL ENDOCRINOLOGY—PART II. (Cr ar) Prem, staff
 8226. OBSTETRICAL PHYSIOLOGY AND ANESTHESIOLOGY. (Cr ar) Prem, staff
 8230. RESEARCH IN REPRODUCTION. (Cr ar) Prem, staff

Ophthalmology (Oph)

FIRST TERM

8101. CLINICAL OPHTHALMOLOGY. (8 cr) Staff
 8106. STRABISMUS MANAGEMENT. (1 cr) Letson
 8131. PRACTICAL OCULAR SURGERY. (3 cr) Staff
 8151. BASIC AND APPLIED OPHTHALMOLOGY. (2 cr) Staff
 8152. OPHTHALMOLOGY LABORATORY. (15 cr) Staff

SECOND TERM

8101. CLINICAL OPHTHALMOLOGY. (8 cr) Harris, staff
 8106. STRABISMUS MANAGEMENT. (1 cr) Letson
 8131. PRACTICAL OCULAR SURGERY. (3 cr) Harris, staff
 8152. OPHTHALMOLOGY LABORATORY. (15 cr) Harris, staff

Orthopaedic Surgery (OrSu)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5180. ORTHOPEDICS I. (Cr ar; prereq regis med)
 5185. ORTHOPEDICS II. (Cr ar; prereq regis med)
 5186. RESEARCH PROBLEMS IN ORTHOPEDIC SURGERY. (Cr ar; prereq regis med)
 5187. EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES. (Cr ar; prereq regis med)
 St. Paul-Ramsey Hospital.
 5188. EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES. (Cr ar; prereq regis med)
 Gillette Children's Hospital, St. Paul.
 5189. EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES. (Cr ar; prereq regis med)
 Fairview-St. Mary's Hospitals.
 5190. EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES. (Cr ar; prereq regis med)
 Veterans Hospital.
 5191. ORTHOPEDIC EXTERNSHIP AT HENNEPIN COUNTY MEDICAL CENTER. (Cr ar; prereq regis med)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Required Courses for Graduate Students

8401. ORTHOPEDIC CONFERENCE. (3 cr) Thompson, Bradford, House, Mayfield, Premer, Robinson
 Review of X-ray films and case histories of patients on the orthopedic inpatient or outpatient service.
 8403. FRACTURES. (5 cr) Gustilo, staff
 Orthopedic fellow acts as house surgeon on the fracture service at Hennepin County Medical Center.
 8404. FRACTURES. (5 cr) Comfort, staff
 Orthopedic fellow acts as house surgeon on the fracture service at St. Paul-Ramsey Hospital.
 8405. ORTHOPEDIC DIAGNOSIS. (3 cr) Thompson, Bradford, House, Mayfield, Robinson
 Orthopedic fellow assists in instruction of medical students and interns and studies problems in diagnosis in the Outpatient Department and in the University Hospitals.
 8407. PEDIATRIC ORTHOPEDICS. (5 cr) Winter, staff
 Orthopedic fellow acts as house surgeon at Gillette Children's Hospital.
 8408. ORTHOPEDIC PROBLEMS AND MANAGEMENT. (5 cr) Thompson, Bradford, House, Mayfield, Premer, Robinson
 Orthopedic fellow acts as house surgeon at University and Veterans Hospitals.
 8409. ORTHOPEDIC PROBLEMS AND MANAGEMENT. (5 cr) Winter, Lonstein
 Orthopedic fellow acts as house surgeon on the orthopedic service at Fairview Hospital.
 8410. ORTHOPEDIC PATHOLOGY. (2 cr) Thompson, Bradford, House, Mayfield, Premer, Robinson
 Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities.
 8411. ORTHOPEDIC OPERATIVE SURGERY. (5 cr) Thompson, Bradford, House, Mayfield, Premer, Robinson
 Orthopedic fellow acts as first assistant at operations at University and affiliated hospitals and later may be permitted to operate.
 8412. ORTHOPEDIC ANATOMY. (2 cr) House
 Orthopedic fellow dissects upper and lower extremities and aids in instruction of medical students in anatomy of the extremities.
 8416. ORTHOPEDIC RESEARCH. (5 cr) Thompson, Bradford, House, Mayfield, Robinson
 Problems in experimental or clinical surgery, University Hospitals.

Otolaryngology (Otol)

SPECIAL TERMS: THREE-, SIX-, AND TWELVE-WEEK COURSES—JUNE 12-AUGUST 18

- 5500. GENERAL—ENT ELECTIVE. (4.5 cr; limited enrollment)
- 5501. ACTING INTERNSHIP—ENT ELECTIVE. (9 cr; limited enrollment)
- 5503. RESEARCH: BASIC SCIENCE—ENT ELECTIVE. (9 or 18 cr; limited enrollment)

SPECIAL TERM: EIGHT-WEEK COURSES

8220. RESEARCH. (18 cr)
 8230. CLINICAL OTORHINOLARYNGOLOGY. (6 cr)
 8231. SURGERY OF EAR, NOSE, THROAT. (4 cr)
 8232. MAXILLOFACIAL SURGERY. (1 cr)
 8233. PLASTIC, RECONSTRUCTIVE SURGERY: HEAD, NECK. (1 cr)
 8234. ANATOMY: HEAD, NECK, TEMPORAL BONE DISSECTION. (2 cr)
 8235. ROENTGENOLOGY OF HEAD, NECK. (2 cr)

- 8236. PHARMACOLOGY. (2 cr)
- 8237. ENDOSCOPY. (2 cr)
- 8238. PATHOLOGY OF EAR, NOSE, THROAT. (2 cr)
- 8239. OTONEUROLOGY. (2 cr)
- 8240. ALLERGY. (2 cr)
- 8241. TUMOR CLINIC. (1 cr)
- 8242. AUDIOLOGY, SPEECH PATHOLOGY. (2 cr)
- 8243. INTRODUCTION: RESEARCH METHODOLOGY. (2 cr)
- 8244. SEMINAR: CURRENT LITERATURE. (1 cr)
- 8245. MASTER'S THESIS RESEARCH. (Cr ar)
- 8246. PH.D. THESIS RESEARCH. (Cr ar)
- 8248. RESEARCH. (Cr ar)

Pathology (Path)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Courses for Graduate Program

- 5101. GENERAL PATHOLOGY. (6 cr for Phase A period March 26 through July 18; prereq regis Phase A or equiv) Ratliff, staff
- 5104. AUTOPSIES. (Cr ar; prereq Phase B or equiv) Staff
- 5106. DISEASES OF THE HEART. (1 cr; prereq Phase B or equiv) Edwards
- 5113. SURGICAL PATHOLOGY. (Cr ar; prereq Phase B or equiv) Rosai
- 5140. SEMINAR: EXPERIMENTAL CHRONOBIOLOGY. (1 cr; prereq #) Halberg
- 5141. PROBLEMS IN EXPERIMENTAL CHRONOBIOLOGY. (Cr ar; prereq #) Halberg
- 5169. RESEARCH: HUMAN GENETICS. (Cr ar; prereq #) J Yunis, staff
- 8200. ADVANCED PROBLEMS IN PATHOLOGY. (Cr ar; prereq #) Staff
- 8201. RESEARCH. (Cr ar; prereq #) Staff
Students with the necessary preliminary training may elect research either as a major or minor in pathology.
- 8207. RESEARCH IN EXPERIMENTAL CHRONOBIOLOGY. (Cr ar; prereq #) Halberg

Pediatrics (Ped)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Elective Courses

- 5501. PEDIATRIC CLERKSHIP (University Hospitals, Hennepin County Medical Center, St. Paul-Ramsey Hospital, St. Paul Children's Hospital). (Cr ar) Sinaiko
- 5502. PEDIATRIC CLERKSHIP WITH OUTSTATE CLINICIANS. (Cr ar; prereq #) Sinaiko
- 5512. PEDIATRIC ACTING INTERNSHIP (University Hospitals, St. Paul Children's Hospital, Hennepin County Medical Center). (Cr ar) Sinaiko
- 5514. CHILD CARE CLINIC PROGRAM. (Cr ar) Fisch
- 5515. CHILD DEVELOPMENT AT ST PAUL-RAMSEY HOSPITAL. (Cr ar) Davis

- 5517. PRECEPTORSHIP IN CLINICAL PEDIATRICS. (Cr ar) Ulstrom
- 5520. PEDIATRIC OUTPATIENT. (Cr ar; prereq #) Satran
- 5521. AMBULATORY PEDIATRICS AT ST. PAUL CHILDREN'S HOSPITAL. (Cr ar) Levitt
- 5522. AMBULATORY PEDIATRICS AT HENNEPIN COUNTY MEDICAL CENTER. (Cr ar) Tobin
- 5523. OUTPATIENT EXTERNSHIP AT COMMUNITY UNIVERSITY HEALTH CARE CENTER. (Cr ar; prereq 5501, 5503, 5512, Med 5502) Snelker
- 5532. CLINICAL ALLERGY AND IMMUNOLOGY AT UNIVERSITY HOSPITALS. (Cr ar; prereq 5501, 5503, 5512, Med 5502) Page
- 5534. PEDIATRIC CARDIOLOGY AT UNIVERSITY HOSPITALS. (Cr ar; prereq 5501, 5503, 5512, Med 5502) Moller
- 5535. INFECTIOUS DISEASE. (Cr ar; prereq 5501, 5503, 5512, Med 5502) Ferrieri
- 5536. PEDIATRIC HEMATOLOGY-ONCOLOGY AT UNIVERSITY HOSPITALS. (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Krivit
- 5538. PEDIATRIC GASTROENTEROLOGY. (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Sharp
- 5539. NEONATAL MEDICINE EXTERNSHIP. (Cr ar; prereq 5501, 5502 or Med 5502) Boros
- 5540. PEDIATRIC NEUROLOGY. (Cr ar) Swaiman
- 5543. PEDIATRIC NEPHROLOGY. (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Michael
- 5544. PULMONARY DISEASE IN PEDIATRICS. (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Warwick
- 5545. DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER. (Cr ar) Ramsay
- 5546. PEDIATRIC PATHOLOGY. (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Burke
- 5548. PEDIATRIC GENETICS. (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Staff
- 8200. GRADUATE SEMINAR: PEDIATRICS. (1.5 cr) Moller, staff
- 8202. PEDIATRICS CLINICS. (Cr ar; prereq #) Staff
- 8204. RESIDENCY IN PEDIATRICS. (Cr ar; prereq #) Staff
- 8206. PEDIATRIC SPECIAL INTEREST. (Cr ar; for grad students who have completed at least 1 1/2 yrs of general grad pediatric training; prereq #) Staff
- 8208. PEDIATRIC RESEARCH. (Cr ar; prereq #) Moller, staff

Pharmacology (Phcl)

FIRST TERM

- 5109. PROBLEMS IN PHARMACOLOGY. (Cr and hrs ar; prereq #) Shideman staff
- 8203. RESEARCH IN PHARMACOLOGY. (Cr and hrs ar; prereq #) Shideman, staff

SECOND TERM

- 5109. PROBLEMS IN PHARMACOLOGY. (Cr and hrs ar; prereq #) Shideman, staff
- 8203. RESEARCH IN PHARMACOLOGY. (Cr and hrs ar; prereq #) Shideman, staff

Physical Medicine and Rehabilitation (PMed)

SPECIAL TERM: JULY 1-SEPTEMBER 30

- 8200. PHYSICAL MEDICINE SERVICE.** (Cr and hrs ar) Staff
8205. READINGS. (1 cr; I-II M; 825 Mayo) Kottke
8206. CONFERENCE. (Cr and hrs ar) Staff
8210. RESEARCH IN PHYSICAL MEDICINE. (Cr and hrs ar) Staff
8212. ELECTROMYOGRAPHY. (Cr and hrs ar) Awad

Occupational Therapy

- 5396, 5397. FIELDWORK EDUCATION.** (Cr ar; for sr OT students) Eliason
Six months of supervised training in affiliated hospitals and community centers.

Physical Therapy

FIRST TERM

- 5255. CLINICAL TRAINING.** (3 cr; limited to PT students in the professional program; hrs ar at affiliated hospitals)
Five weeks of supervised practice at affiliated hospitals.
8103. PHYSICAL THERAPY CLINIC. (Cr ar; prereq physical therapy) Staff
8170. SPECIAL TOPICS. (1 cr; prereq #) Staff
8185. PROBLEMS IN PHYSICAL THERAPY. (Cr ar; prereq physical therapy) Staff
8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (Cr ar; prereq physical therapy) Staff
8195. RESEARCH IN PHYSICAL THERAPY. (Cr ar; prereq #) Kottke, Skowlund, staff

SECOND TERM

- 8103. PHYSICAL THERAPY CLINIC.** (Cr ar; prereq physical therapy) Staff
8170. SPECIAL TOPICS. (1 cr; prereq #) Staff
8185. PROBLEMS IN PHYSICAL THERAPY. (Cr ar; prereq physical therapy) Staff
8193. RESEARCH PROBLEMS IN PHYSICAL THERAPY. (Cr ar; prereq physical therapy) Staff
8195. RESEARCH IN PHYSICAL THERAPY. (Cr ar; prereq #) Kottke, Skowlund, staff

Physiology (Phsl)

FIRST TERM

- 3051. HUMAN PHYSIOLOGY.** (5 cr; primarily for baccalaureate nursing students and physical therapy students; prereq zoology and 1 yr college chemistry; \$2 lab fee; lect VI MW, IV and VII-VIII TTh, VI-VII F, rm ar; lab VII-IX MW, HSUnitA 3-110) Staff
Introduction to human physiology.
5113. PROBLEMS IN PHYSIOLOGY. (Cr and hrs ar) Staff
Topics assigned for laboratory study; conferences and readings.
5552. READINGS IN PHYSIOLOGY. (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.

- 5553. RESEARCH IN PHYSIOLOGY.** (Cr and hrs ar) Staff
8113. PROBLEMS IN PHYSIOLOGY. (Cr and hrs ar) Staff
Topics assigned for laboratory study; conferences and readings.
8202. READINGS IN PHYSIOLOGY. (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
8203. RESEARCH IN PHYSIOLOGY. (Cr and hrs ar) Staff

SECOND TERM

- 5552. READINGS IN PHYSIOLOGY.** (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
5553. RESEARCH IN PHYSIOLOGY. (Cr and hrs ar) Staff
8202. READINGS IN PHYSIOLOGY. (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
8203. RESEARCH IN PHYSIOLOGY. (Cr and hrs ar) Staff

Psychiatry

Adult Psychiatry (AdPy)

SPECIAL TERM: JUNE 25-SEPTEMBER 14

- 5109. CLINICAL PSYCHIATRY.** (9 cr per period) Olson
Contact Arthur Aufderheide, M.D., St. Luke's Hospital, 915 East First Street, Duluth; telephone (218) 727-6636, extension 660.
5110. EXTERNSHIP IN PSYCHIATRY. (9 cr per period) Cowan
At St. Luke's Hospital, Duluth. See 5109.
5120. CLINICAL EXPERIENCE IN INTERVIEWING AND DIAGNOSTIC SKILLS (Veterans Hospital). (9 cr per period) Posey
5222. PRECEPTORSHIPS IN PSYCHIATRY. (9 cr per period) Hausman, Tuason
5500. COMBINED INPATIENT AND CRISIS INTERVENTION CENTER (Hennepin County Medical Center). (9 cr per period) Dean
Experience on Adult Inpatient Unit; emphasizes diagnosis and team treatment. This is combined with the Crisis Intervention Unit in the E.R. with rapid evaluation, prompt psychosocial intervention, home visits, suicide phone, agency contacts, individual patient responsibility and seminars.
5501. CLINICAL PSYCHIATRY (St. Paul-Ramsey Hospital). (9 cr per period) Tuason
Identifying various psychiatric disorders; their natural history, course, and therapeutic procedures. Students will be involved in the operations of adult inpatient psychiatry, as a key member of a psychiatric team under direct staff supervision.
5507. CLINICAL RESEARCH (University Hospitals, Station 61). (9 cr per period) Heston
General adult psychiatry with emphasis on pharmacology treatment and research. Inpatients and outpatients.
5508. ADULT PSYCHIATRY (University Hospitals, Station 60). (9 cr per period) Kroll
General adult psychiatry with emphasis on acutely ill patients and outpatient follow-up.
5511. PSYCHIATRY IN MEDICINE: CONSULTATION—LIAISON (University Hospitals). (9 cr per period; hrs ar) Popkin, MacKenzie
Students will assist in psychiatric consultation to other services in University Hospitals under direct supervision of staff.
5512. PSYCHOLOGIC ASPECTS OF MEDICAL PRACTICE. (9 cr per period; Veterans Administration Hospital) Wilder

5513. ST. MARY'S EXTENDED CARE CENTER—CHEMICAL DEPENDENCY CENTER. (9 cr per period) Mann
Involvement in inpatient service and outpatient follow-up program.

5515. NEUROPSYCHOLOGY (University Hospitals). (9 cr per period) Meier

5516. ST. MARY'S EXTENDED CARE CENTER—CHEMICAL DEPENDENCY CENTER. (9 cr per period; St. Mary's Hospital) Mann

5518. COMMUNITY PSYCHIATRY (Five-County Human Development Program, Inc., Braham). (9 cr per period) Kollmorgen, staff
Participation as a physician member of a multidisciplinary team composed of health science students and mental health professionals.

5519. CLINICAL PSYCHIATRY (Abbott Hospital). (9 cr per period) Mayberg
Training and supervision in individual therapy, psychiatric hospital management, community psychiatry, group therapy, and an innovative program in the utilization of some of the newer techniques of psychiatric intervention such as movement therapy and Gestalt programs.

5521. COMMUNITY PSYCHIATRY (Dakota County Mental Health Center). (9 cr per period) Nagobads
Experience in outpatient community psychiatry; would be meaningful for students considering family practice.

5530. INDEPENDENT STUDY. (Up to 9 cr per period; hrs ar) Heston

5602. CLINICAL PSYCHOPHARMACOLOGY SEMINAR. (1 cr; hrs ar) Abuzzahab

SPECIAL TERM: JULY 2-SEPTEMBER 14

5800. CASE CONFERENCE; PSYCHIATRY IN MEDICINE. (1 cr; prereq MD or #) Popkin, MacKenzie, and Brantner.

5801. CONSULTATION-LIAISON PSYCHIATRY. (Cr ar; prereq MD) Popkin, MacKenzie, and staff

8201. CLINICAL PSYCHIATRY. (Up to 12 cr per qtr; hrs ar) Staff

8203. ADVANCED CLINICAL PSYCHIATRY. (Up to 12 cr per qtr; hrs ar) Staff

8205. SPECIAL ASSIGNMENTNTS. (Up to 12 cr per qtr; hrs ar) Staff

8206. RESEARCH. (Up to 12 cr per qtr; hrs ar) Staff

8208. SURVEY OF PHYSIOLOGICAL TREATMENTS. (2 cr; hrs ar) Eckert

8221. SEMINAR: CURRENT LITERATURE (Hennepin County Medical Center). (1 cr; hrs ar) Simon

8238. CASE CONFERENCE PSYCHOLOGICAL MEDICINE (Veterans Hospital). (1 cr; hrs ar) Wilder

8239. CONTINUOUS CASE SEMINAR. (1 cr) London

8265. READINGS, PSYCHOSOMATIC MEDICINE, CONSULTATION-LIAISON PSYCHIATRY. (Cr ar [max 3]; prereq MD, #) Popkin, MacKenzie

8970. DIRECTED STUDY. (Up to 9 cr per qtr; hrs ar) Staff

Child and Adolescent Psychiatry (CAPy)

FIRST TERM

5202. ADOLESCENT INPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS. (Cr ar; prereq #) Rains
Experience in the psychological assessment and therapeutic management of adolescents hospitalized for diagnosis and treatment in a milieu-oriented psychiatric unit.

5203. CHILD AND ADOLESCENT OUTPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS. (Cr ar; prereq #) Erbaugh
Experience in assessment and therapeutic interventions with children, adolescents, and families in an outpatient child and adolescent psychiatric setting.

5204. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; prereq med student, #; hrs ar) Greenberg, staff
Multidisciplinary evaluations of children, adolescents, and their families are presented for discussion, dynamic and diagnostic formulations, and disposition planning in conference setting.

5206. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; prereq med student, #; hrs ar) Lawton, staff
Therapeutic techniques utilized in child, adolescent, and family psychiatry are reviewed through presentation and discussion of ongoing cases.

5500. PEDIATRIC AND PEDIATRIC NEUROLOGY—PSYCHIATRIC LIAISON. (9 cr; prereq med student, #) Pearson
Supervised consultation, diagnostic, and short-term therapy experience in pediatrics and pediatric neurology.

5522. ADOLESCENT PSYCHIATRY (University Hospitals, Station 62). (9 cr per period; prereq med student, hrs ar) Erickson
Student will be primary therapist (supervised) for selected patients.

5602. INTRODUCTORY READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Miner, staff
Assigned readings and discussions with faculty. A survey course; includes child development, diagnostic and therapeutic techniques, and psychopathology.

8100. READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Greenberg, staff
Comprehensive review of the classical and contemporary literature in the field of child, adolescent, and family psychiatry including growth and development, diagnostic and therapeutic techniques, and psychopathology, with supplemental course work in other departments and schools.

8110. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Greenberg, staff
See 5204.

8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Lawton, staff
See 5206.

8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY. (3 cr; 15-30 hrs per wk) Greenberg
Supervised diagnostic and therapeutic experiences in an outpatient setting.

8212. CLINICAL INPATIENT CHILD PSYCHIATRY. (3 cr; 15-30 hrs per wk) Miner
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. (3 cr; hrs ar) Erickson
Supervised diagnostic and therapeutic experiences in an inpatient, multidisciplinary adolescent psychiatry unit with an emphasis on group and milieu therapies.

8216. PEDIATRIC AND PEDIATRIC NEUROLOGY—PSYCHIATRIC LIAISON. (3 cr; prereq med student, #; hrs ar) Pearson
See 5500.

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

SECOND TERM

5202. ADOLESCENT INPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS. (Cr ar; prereq #) Rains
See First Term.

5203. CHILD AND ADOLESCENT OUTPATIENT PSYCHIATRY FOR HEALTH CARE PSYCHOLOGY INTERNS. (Cr ar; prereq #) Erbaugh
See First Term.

5204. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; prereq med student, #; hrs ar) Greenberg, staff
See First Term.

5206. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; prereq med student, #; hrs ar) Lawton, staff
See First Term.

5500. PEDIATRIC AND PEDIATRIC NEUROLOGY—PSYCHIATRIC LIAISON. (9 cr; prereq med student, #) Pearson
See First Term.

5522. ADOLESCENT PSYCHIATRY (University Hospitals, Station 62). (9 cr per period; prereq med student; hrs ar) Erickson
See First Term.

5601. INTRODUCTORY READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Miner, staff
See First Term.

8100. READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Greenberg, staff
See First Term.

8110. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Greenberg, staff
See 5204 First Term.

8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY. (1 cr; hrs ar) Lawton, staff
See 5206 First Term.

8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY. (3-6 cr; 15-30 hrs per wk) Greenberg
See First Term.

8212. CLINICAL INPATIENT CHILD PSYCHIATRY. (Cr ar; 15-30 hrs per wk) Miner
See First Term.

8214. INPATIENT CLINICAL ADOLESCENT PSYCHIATRY. (Cr and hrs ar) Greenberg, Erickson
See First Term.

8216. PEDIATRIC AND PEDIATRIC NEUROLOGY—PSYCHIATRIC LIAISON. (3 cr; prereq med student, #; hrs ar) Pearson
See First Term.

8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY. (1 cr; hrs ar) Yellin
See First Term.

5108. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS. (Cr ar; prereq #) Morgan, staff

5109. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Hanvik, Reed, staff

5110. FIELDWORK EXPERIENCE IN HEALTH CARE PSYCHOLOGY. (Cr ar; prereq #) Staff

5112. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Loper, staff

5113. CASE SEMINAR IN HEALTH CARE PSYCHOLOGY. (1 cr; prereq #) Roberts, Schofield, staff

5115. SUPERVISED PSYCHOLOGICAL THERAPY. (Cr ar; prereq #) Staff

5611. TECHNIQUES OF EVALUATION. (1 cr; prereq regis med; hrs ar) Westermeyer

5701. PROJECT IN CLINICAL PSYCHOLOGY. (Cr ar; hrs ar) Staff

8202. SPECIAL RESEARCH TOPICS. (Cr ar; prereq #) Staff

8203. PSYCHOMETRIC CLERKSHIP. (Cr ar) Staff

8204. INTERNSHIP IN CLINICAL PSYCHOLOGY. (2 or 4 cr; prereq PhD candidate in clinical psychology with #) Staff

8206. MEDICAL PSYCHOLOGY LABORATORY. (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff

8226. TECHNIQUES OF EVALUATION. (1 cr; hrs ar) Westermeyer

SECOND TERM

5102. HEALTH CARE PSYCHOLOGY CLINIC INTERNSHIP. (Cr ar; prereq #) Hafner, Petzel, Quast, staff

5103. MEDICAL CONSULTATION FOR HEALTH CARE PSYCHOLOGY INTERNS. (Cr ar; prereq #) Brantner

5104. HEALTH CARE PSYCHOLOGY INTERNSHIP AT THE STUDENT HEALTH SERVICE. (Cr ar; prereq #) Heiberg

5105. HEALTH CARE PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD. (Cr ar; prereq #) Briggs, staff

5106. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas

5107. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas

5108. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS. (Cr ar; prereq #) Morgan, staff

5109. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Hanvik, Reed, staff

5110. FIELDWORK EXPERIENCE IN HEALTH CARE PSYCHOLOGY. (Cr ar; prereq #) Staff

5112. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Loper, staff

5113. CASE SEMINAR IN HEALTH CARE PSYCHOLOGY. (1 cr; prereq #) Roberts, Schofield, staff

5115. SUPERVISED PSYCHOLOGICAL THERAPY. (Cr ar; prereq #) Staff

5611. TECHNIQUES OF EVALUATION. (1 cr; prereq regis med; hrs ar) Westermeyer

5701. PROJECT IN CLINICAL PSYCHOLOGY. (Cr ar; hrs ar) Staff

8202. SPECIAL RESEARCH TOPICS. (Cr ar; prereq #) Staff

8203. PSYCHOMETRIC CLERKSHIP. (Cr ar) Staff

8204. INTERNSHIP IN CLINICAL PSYCHOLOGY. (2 or 4 cr; prereq PhD candidate in clinical psychology with #) Staff

8206. MEDICAL PSYCHOLOGY LABORATORY. (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff

8226. TECHNIQUES OF EVALUATION. (1 cr; hrs ar) Westermeyer

Health Care Psychology (HCPy)

SECOND TERM

5102. HEALTH CARE PSYCHOLOGY CLINIC INTERNSHIP. (Cr ar; prereq #) Hafner, Petzel, Quast, staff

5103. MEDICAL CONSULTATION FOR HEALTH CARE PSYCHOLOGY INTERNS. (Cr ar; prereq #) Brantner

5104. HEALTH CARE PSYCHOLOGY INTERNSHIP AT THE STUDENT HEALTH SERVICE. (Cr ar; prereq #) Heiberg

5105. HEALTH CARE PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD. (Cr ar; prereq #) Briggs, staff

5106. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas

5107. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas

Radiology (Rad)

SPECIAL TERM: THREE-WEEK COURSES

Elective Courses for Third- and Fourth-Year Students

5100. **EXTERNSHIP: NUCLEAR MEDICINE.** (Cr and hrs ar; prereq regis med) Loken, staff
Gedgaudas, staff
5101. **EXTERNSHIP: DIAGNOSTIC RADIOLOGY (University Hospitals).** (Cr and hrs ar; prereq regis med) Gedgaudas, staff
5102. **EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Veterans Administration Hospital).** (Cr and hrs ar; prereq regis med) Reinke
5103. **EXTERNSHIP: DIAGNOSTIC RADIOLOGY (Hennepin County Medical Center).** (Cr and hrs ar; prereq regis med) Tsai
5104. **EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Paul-Ramsey Hospital).** (Cr and hrs ar; prereq regis med) Bjornson
5105. **EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Luke's Hospital, Duluth).** (Cr and hrs ar; prereq regis med) Ahrens, staff
5140. **SPECIAL PROBLEMS: ROENTGENOLOGY.** (Cr and hrs ar; prereq regis med) Gedgaudas, staff
5240. **SPECIAL PROBLEMS: NUCLEAR MEDICINE.** (Cr and hrs ar; prereq regis med) Loken, staff

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Required Courses for Graduate Students

0121. **MEDICAL ROENTGENOLOGIC CONFERENCE.** (No cr; 11:30-12:00 T; Hosp 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.** (No cr; 9:30-10:00 MTWThF; Rigler Library) L'Heureux
Daily meetings with the pediatric staff at which all the important pediatric cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.
0123. **SURGICAL ROENTGENOLOGIC CONFERENCE.** (No cr; II S; Hosp 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.** (No cr; VI F; Hosp Todd Amph) Peterson
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.** (No cr; 12:00-1:00 Th; Rigler Library) Amplatz
8100. **GASTROINTESTINAL ROENTGENOLOGY.** (Cr ar; prereq #) Feinberg
8101. **UROLOGIC ROENTGENOLOGY.** (Cr ar; prereq #) Goldberg
8102. **NEUROLOGICAL ROENTGENOLOGY.** (Cr ar; prereq #) Peterson
8103. **CARDIOVASCULAR ROENTGENOLOGY.** (Cr ar; prereq #) Amplatz
8104. **PEDIATRIC ROENTGENOLOGY.** (Cr ar; prereq #) L'Heureux
8105. **PULMONARY ROENTGENOLOGY.** (Cr ar; prereq #) Gedgaudas, staff
8150. **RESEARCH: ROENTGENOLOGY.** (Cr ar) Gedgaudas, staff
Problems in roentgen diagnosis.
8200. **NUCLEAR MEDICINE.** (Cr ar) Loken, staff
8450. **RESEARCH: RADIATION BIOLOGY, NUCLEAR MEDICINE.** (Cr ar) Staff

Surgery (Surg)

SPECIAL TERMS: JUNE 25-AUGUST 3 AND AUGUST 6-SEPTEMBER 14

Elective Courses for Undergraduate Students

5500. **EXTERNSHIP IN GENERAL SURGERY (University and Affiliated Hospitals).** (Cr ar; prereq regis med) Najarian, staff
5523. **EXTERNSHIP IN COLON AND RECTAL SURGERY (Veterans Administration Hospital).** (4.5 cr; offered all periods except 5; prereq regis med; 3 weeks) Goldberg

SPECIAL TERMS: JULY 2-AUGUST 10 AND AUGUST 13-SEPTEMBER 21

Required Courses for Graduate Students

8200. **CLINICAL SURGICAL PROBLEMS AND MANAGEMENT.** (5 cr) Najarian, staff
8201. **SURGERY-ROENTGENOLOGY-PATHOLOGY CONFERENCE.** (1 cr) Najarian
8202. **SURGICAL RESEARCH.** (5 cr) Staff
8203. **SURGERY COMPLICATIONS AND RESEARCH CONFERENCE.** (1 cr) Najarian, staff
8207. **TRANSPOANTATION AND BONE MARROW CONFERENCE.** (1 cr) Surgery and Pathology staffs

Therapeutic Radiology (TRad)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

5340. **SPECIAL PROBLEMS IN RADIATION THERAPY.** (Cr ar; prereq regis med)
5505. **EXTERNSHIP IN RADIATION THERAPY.** (Cr ar; prereq regis med) Levitt, Jones, Haselow, Kim, Lee, Potish
5506. **CANCER DIAGNOSIS AND TREATMENT.** (Cr ar; prereq regis med) Levitt, Jones, Haselow, Kim, Lee
5507. **ADVANCED EXTERNSHIP IN RADIATION THERAPY.** (Cr ar; prereq regis med) Levitt, Jones, Haselow, Kim, Lee, Potish
5508. **SPECIAL PROBLEMS IN RADIATION BIOLOGY.** (Cr ar)
5510. **BASIC PRINCIPLES OF RADIOLOGICAL PHYSICS.** (1 cr; 3:00-4:00 F; Rigler Library) Khan, Sewchand, Fullerton
5512. **DOSIMETRY OF INTERNAL AND EXTERNAL RADIATION.** (1 cr; 8:30-9:30 W; B141 Mayo) Khan, Sewchand, Fullerton
5540. **SPECIAL PROBLEMS IN RADIOLOGICAL PHYSICS.** (Cr ar; prereq regis med) Khan, Loken, Sewchand, Fullerton
8300. **RADIATION THERAPY.** (Cr ar)
8310. **FUNDAMENTALS OF RADIATION THERAPY.** (1 cr; 4:00-5:00 M; B141 Mayo)
8315. **RADIATION THERAPY PATHOLOGY.** (1 cr)
8320. **RADIATION THERAPY TREATMENT PLANNING PROBLEMS.** (1 cr)
8325. **RADIATION THERAPY PEDIATRICS ONCOLOGY.** (1 cr)
8350. **RESEARCH IN RADIATION THERAPY.** (Cr ar)
8410. **SEMINAR: RADIATION BIOLOGY.** (1 cr; prereq #) Song, Buchsbaum, Clement
8450. **RESEARCH IN RADIATION BIOLOGY.** (Cr ar) Song, Buchsbaum, Clement
8550. **RESEARCH IN RADIOLOGICAL PHYSICS.** (Cr ar) Khan, Loken, Sewchand, Fullerton

Urologic Surgery (Urol)

FIRST TERM

5180. EXTERNSHIP IN UROLOGY. (Cr and hrs ar) Staff

Required Courses for Graduate Students

8250. UROLOGICAL SURGERY. (4 cr; 9:00-12:00 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. (4 cr; 8:00-12:00 MTWThF; Cysto Suite) Fraley, others
Urological fellow performs cystoscopies and other diagnostic procedures.

8252. UROLOGICAL CONFERENCE. (4 cr; 4:00-5:00 F, Ward Rds, Sta 57; 9:00-11:00 S, Sta 57 Conf Rm) Fraley, others
Problems in diagnosis and treatment.

8253. RESEARCH: UROLOGY. (4 cr) Fraley, others
Problems in experimental and clinical surgery.

8254. UROLOGICAL SEMINAR. (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (3 cr; 1:00-2:00 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (3 cr; 4:30-5:00 W; Mayo A503) Fraley, others

SECOND TERM

5180. EXTERNSHIP IN UROLOGY. (Cr and hrs ar) Staff

Required Courses for Graduate Students

8250. UROLOGICAL SURGERY. (4 cr; 9:00-12:00 MTThF; Main OR-H) Fraley, others
See First Term.

8251. CYSTOSCOPY AND UROLOGICAL DIAGNOSIS. (4 cr; 8:00-12:00 MTWThF; Cysto Suite) Fraley, others
See First Term.

8252. UROLOGICAL CONFERENCE. (4 cr; 4:00-5:00 F, Ward Rds, Sta 57; 9:00-11:00 S, Sta 57 Conf Rm) Fraley, others
See First Term.

8253. RESEARCH: UROLOGY. (4 cr) Fraley, others
See First Term.

8254. UROLOGICAL SEMINAR. (3 cr) Fraley, others

8255. UROLOGICAL-RADIOLOGICAL CONFERENCE. (3 cr; 1:00-2:00 MTWThF; Mayo A503) Fraley, others

8256. UROLOGICAL-PATHOLOGICAL CONFERENCE. (3 cr; 4:30-5:00 W; Mayo A503) Fraley, others

DEPARTMENT OF MORTUARY SCIENCE

Mortuary Science (Mort)

All courses must be reserved in 114 Vincent Hall (see instructions under "Reserved Courses").

FIRST TERM

3090. INDEPENDENT STUDY. (Cr ar; prereq sr)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

3080. PRACTICUM IN FUNERAL SERVICE. (12 cr; prereq sr)
Practical experience in an off-campus funeral home as assigned by the department.

3081. SEMINAR. (3 cr; prereq 13080)
Funeral service survey based on practicum experiences. Assigned reading of funeral service literature.

SCHOOL OF NURSING

Nursing (Nurs)

Limited enrollment and reserved courses must be reserved in 3320 Powell Hall.

FIRST TERM

5799. SELF-DIRECTED STUDY. (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
Opportunity for students to engage in learning experiences not provided for in established nursing elective courses.

● 5999. CLINICAL STUDY. (1 cr; limited to 15 students; prereq any two of the following: 5611, 5612, 5613, 5614; III-IV F) Ruhland
Use of the research process in the design and implementation of a limited study that focuses on implications for nursing practice.

8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING. (Cr ar; prereq Δ) Staff
Various learning experiences planned to meet individual needs.

8009. SPECIAL TOPICS IN NURSING. (Cr ar; prereq #) Staff

● 8010. STRUCTURE OF THE DISCIPLINE OF NURSING. (3 cr; must be reserved; prereq Δ; VI-VIII TTh) Sime
The purposes, characteristics, and kinds of structures of nursing with emphasis on theories, models, and conceptual frameworks.

8050. PROBLEMS IN NURSING. (1-9 cr; prereq #) Staff
Individual study of a problem.

8509. SPECIAL TOPICS IN NURSING EDUCATION. (Cr ar; prereq #) Staff

8609. SPECIAL TOPICS IN NURSING SUPERVISION. (Cr ar) Staff

FIRST AND SECOND TERMS: TEN-WEEK COURSES

5407. SYSTEMATIC PROCESS II. (2 cr; prereq 5207; III-IV M) Brand

Compares the problem-solving process utilized in Systematic Process I with the systematic process used in research. Opportunity to develop confidence in using problem solving and research as tools for working toward nursing care goals and conducting clinical studies.

- 5611. SYNTHESIS INCORPORATING CONCEPTS OF CHRONICITY. (4 cr; each lab limited to 8 students; prereq 5407, 5408, 5409, 5404, 5405 or ¶5405, abnormal psychology, Phcl 1009, LaMP 5171 or ¶LaMP 5171; \$2 lab fee; lect, VI F)

Clinical course that focuses on the synthesis of systematic process, adaptation, helping relationships, and tools in nursing care of recipients experiencing conditions of long-term nature.

Lab A,	8:00-12:00 T	A 1. Simon
	8:00-11:00 W	B 2. Simon
Lab B,	8:00-12:00 Th	A 3. Reese
	8:00-11:00 F	C 4. Lewis
		D 5. Simon (RN only)
Lab C,	3:30- 6:30 M	
	8:00-12:00 T	
Lab D,	12:00-4:00 M	
	1:00-4:00 T	

- 5614. SYNTHESIS INCORPORATING CONCEPTS OF HEALTH. (3 cr; each lab limited to 8 students; prereq 5404, 5405 or ¶5405, 5407, 5408, 5409, abnormal psychology, Phcl 1009, LaMP 5171 or ¶LaMP 5171; \$2 lab fee; seminar, III-IV M)

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.

Lab A,	12:30-5:30 T	A 1. Grummer
Lab B,	12:30-5:30 Th	B 2. Grummer
Lab C,	8:00-1:00 T	C 3. Jones
Lab D,	8:00-1:00 Th	D 4. Jones
		D 5. Hansen (RN only)

- 5615. SYNTHESIS IN COMPLEX NURSING SITUATIONS. (4 cr; each lab limited to 8 students; prereq 5611, 5612, 5613, 5614, FScN 3602; \$2 lab fee)

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.

Labs,	8:00-12:30 TTh	1. Brand
	12:00-4:30 TTh	2. Juarez
	12:00-4:30 WF	3. Juarez
	3:00-6:00 W	4. Úrueta
	7:00-1:00 Th	
	3:00-6:00 M	5. Úrueta
	7:00-1:00 T	

5816. LEADERSHIP MANAGEMENT. (6 cr; prereq 5611, 5612, 5613, 5614, FScN 3602; seminar, I-II M)

Clinical course introducing basic management and change theory and practice. Provides students with experience in functioning as a first-level manager within a peer group in a clinical setting.

Labs, 8:00-1:00 T	1. Anderson
	2. Weisensee
TBA	3. Canedy (Clin only)

5620. INDEPENDENT STUDY IN NURSING TOPICS. (1-9 cr; prereq #) Staff

Opportunity for students to develop and engage in learning experiences beyond those required in the program. A contract with a faculty adviser is required.

- 5700. CRITICAL CARE NURSING. (5 cr; limited to 5 students; prereq 5611, 5612, 5613, 5614; \$2 lab fee) Jackle

Group presentations and discussions, individualized instruction, and supervised clinical experience focusing on care of acutely ill recipients at the primary nurse level.

- 5701. NURSING CARE OF THE EXPANDING FAMILY. (6 cr; limited to 8 students; prereq 5611, 5612, 5613, 5614) Fairbanks

Application of previous studies and the concept of primary prevention in the nursing care of families during the reproductive process. Opportunity to work with families both within and outside of the hospital.

Lect,	II-III M
Lab,	7:30-12:00 WF

- 5703. THE FUTURE IS NOW. (2-3 cr; limited to 15 students minimum and 25 students maximum; prereq any two of the following: 5611, 5612, 5613, 5614; VII-VIII M) Weisensee

Designed to increase students' awareness of controversial views regarding the future. Interrelationships of the individual with the environment with emphasis on aspects that will influence health care needs in the next century.

- 5708. PHILOSOPHY AND VALUES AS APPLIED TO NURSING PRACTICE. (2 cr; limited to 15 students minimum and 25 students maximum; prereq any two of the following, 5611, 5612, 5613, 5614; VI-VII W) Reese

Seminar course designed to assist students in clarifying their values as a prelude to defining and articulating a personal philosophy and recognizing its impact on nursing care. Values/philosophies held by individuals and groups such as existentialists, Easterners, and various nursing leaders. Exercises in value clarification.

- 5709. NURSING CARE OF THE PERSON IN PAIN. (5 cr; each lab limited to 4 students; prereq all four level II synthesis courses; seminar, III-IV W) Carolan

Factors involved in an individual's adaptation to pain. Analysis of nursing interventions that facilitate alleviation of pain for the individual and promote health for the individual, his or her family, and the community. Clinical experience in providing nursing care to individual's experiencing pain.

Lab A,	1:00-5:00 M
Lab B,	1:00-5:00 W

- 5710. CONTINUITY OF NURSING CARE DURING HOSPITALIZATION AND AFTER—June 12-July 5, July 24-August 16. (6 cr; limited to 8 students; prereq 5611, 5612, 5613, 5614; Seminar, VII-VIII T (June 12-July 5, July 24-August 16) Accola

Utilizing the conceptual framework, students provide nursing care to individuals and their families during hospitalization and, after discharge, in their homes. Emphasis is on discharge preparation, understanding how present health problems affect the recipient's meaning in life, and facilitation of the recipient's transition back into her or his home life. Includes evaluation of the effectiveness of nursing care provided during hospitalization.

Lab A,	7:00-3:00 W
Lab B,	7:00-3:30 Th

- 5799. SELF-DIRECTED STUDY. (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 See First Term.

- 5999. CLINICAL STUDY. (1 cr; prereq any two of the following: 5611, 5612, 5613, 5614; V-VI W) Ruhland See First Term.

- 8010. STRUCTURE OF THE DISCIPLINE OF NURSING. (3 cr; must be reserved; prereq Δ)

Sec 2, 11:15-12:45 TTh, Egan
See First Term.

- 8011. MORAL AND ETHICAL POSITIONS IN NURSING. (3 cr; must be reserved; prereq Δ ; II-IV Th) Crisham

Influence of moral and ethical positions on behavior and decision making in nursing. Emphasis on bases for positions taken, such as selected moral and ethical theories, rights and responsibilities, and conflict.

Sec 1,	I-III W, Crisham
Sec 2,	4:00-7:00 pm Th, Crisham

- **8012. CONCEPTUAL FRAMEWORK FOR NURSING PRACTICE.** (3 cr; must be reserved; prereq 8010 or 18010; 4:00-5:30 TTh)
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. The concept of an intervention model and the systematic process that underlies development of such a model.

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. The concept of an intervention model and the systematic process that underlies development of such a model.

- **8014. RESEARCH IN NURSING.** (3 cr; must be reserved; prereq inferential statistics, Δ)
Research processes and methodologies appropriate to nursing. Analysis of research reports.

Sec 1, I-III F, King
Sec 2, 4:00-7:00 T, Rode

- **8030. NURSING INTERVENTION MODELS.** (8 cr; must be reserved; prereq 8011 or 18011, 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, VI-VII TTh, Gordon
Sec 2, VI-VII TTh, Taylor
Sec 3, VI-VII TTh, Maykoski
Sec 4, 4:00-6:00 TTh, Burns

- **8050. PROBLEMS IN NURSING.** (1-9 cr; prereq #) Staff
See First Term.

- **8051. SPECIAL TOPICS IN NURSING RESEARCH.** (1-9 cr; must be reserved; prereq #: I-III W) Rode
Seminar and/or individual study.

- **8063. NURSING CONSULTATION.** (3 cr; must be reserved; I-III Th) Staff
Study and practice in consultation in nursing care.

- **8313. CARE OF THE CHILDBEARING FAMILY IN RISK.** (4-6 cr; must be reserved; prereq physiology, #; III-IV W, lab ar) Dineen

Problems encountered during perinatal period with emphasis on nursing care of mothers and babies with medical complications. Toxemia, diabetes, Rh disease, respiratory distress syndrome, and other topics. Socio-economic problems, battering and neglect, unusual psychological stress. Clinical experience with complex medical cases involving mothers, newborns in intensive care, and families experiencing social or economic deprivation.

- **8411. KNOWLEDGE DEVELOPMENT UNDERLYING NURSING THERAPY.** (4-6 cr; must be reserved; prereq 8030; III-IV TTh, lab ar) Snyder
Development of nursing practice for a specified client population. Focus on one element or aspect of an intervention model to expand knowledge in that area. Relevant research literature evaluated.

- **8415. NURSE CLINICAL ROLE DEVELOPMENT.** (6-9 cr; must be reserved; prereq any Nursing Focus I course, a course dealing with the health care delivery system; 4-6 Th) Schumann
Selection and development of a role, either a nurse clinician-specialist or nurse clinician-generalist. Aspects of the role may include patient care, consultation, staff development, research, coordination, and collaboration.

- **8421. PSYCHIATRIC-MENTAL HEALTH NURSING: GROUP DYNAMICS AND LEADERSHIP SKILLS.** (3 cr; must be reserved; prereq 8030; Psychiatric Mental Health Section; III-IV T) Kjervik
Group dynamics and process with emphasis on development of leadership skills. Integration and application of mental health concepts, clinical practice in group therapy.

- **8422. PSYCHIATRIC-MENTAL HEALTH NURSING: FAMILY DYNAMICS AND THERAPY.** (3 cr; must be reserved; prereq 8421; III-IV Th, lab ar) Kjervik
Family dynamics, development, and communication patterns. Relationship of selected family to community using concepts from systems theory. Clinical practice in family therapy.

- **8425. PSYCHIATRIC-MENTAL HEALTH NURSING: ROLE DEVELOPMENT.** (6 cr; must be reserved; prereq 8422; 4-6 T) Mansfield
Theoretical and clinical components of modalities of psychiatric-mental health nursing intervention. Opportunity to clarify understanding of interdisciplinary roles and relationships in community mental health setting. Concepts from systems theory related to organizational structure of mental health facilities and community.

- **8431. CHILDBEARING-CHILDBEARING FAMILY NURSING I.** (4-6 cr; must be reserved; prereq 8030; III-IV T) Clatworthy
Maintenance, promotion, improvement, and restoration of health in the childbearing-childrearing family unit. Theoretical concepts related to women, children and families, and family development.

- **8451. TEACHING NURSING.** (4 cr; must be reserved; prereq any section of 8030, 1 course in learning theory and #; VI-VII TTh, lab VI-VIII F) Corcoran
Use of theories of learning to develop an intervention model for teaching nursing. Testing the intervention model in simulated situations.

- **8455. THE NURSE EDUCATOR IN HIGHER EDUCATION.** (6 cr; must be reserved; prereq 8451, 1 course in educational measurement, #; 4:00-6:00 TTh) Gustafson
Analysis of roles and responsibilities of nurse educator in higher education. Data for analysis obtained through review of relevant literature and testing of roles in an academic setting.

- **8600. HEALTH CARE INSTITUTIONS AND NURSING LEADERSHIP.** (3 cr; prereq #)
Some aspects inherent in American society (alienation, productivity, roles, youth emphasis) and their impact on health care institutions: nurse's effects upon individuals involved in these institutions.

- **8701. NURSING ADMINISTRATION I.** (6 cr; must be reserved; prereq 8030, 8600, #; VI-VIII T)
Intensive study of role of nursing administrator by application of major concepts in organization and management theories and nursing process to nursing administration. Emphasis on planning for and organizing nursing administration and assembling resources to carry out plans. Experiences planned to meet individual needs and to maximize previous experience and knowledge.

- **8702. NURSING ADMINISTRATION II.** (6 cr; must be reserved; prereq 8701, #; 4:00-6:00 Th)
Intensive study of role of nursing administrator by application of major concepts in organization and management theory and nursing process to nursing administration. Emphasis on instituting and evaluating nursing administration goals.

SECOND TERM

- **5620. INDEPENDENT STUDY IN NURSING TOPICS.** (1-9 cr; prereq #) Staff
See Ten-Week Courses.

- **5718. CONTEMPORARY PUBLIC HEALTH NURSING.** (6 cr; limited to 8 students; prereq 5611, 5612, 5613, 5614, and PubH 5006 or 1PubH 5006; \$2 lab fee; seminar, II-III M, VI-VII F) Gingrich-Crass
Opportunity for student to refine and broaden skills in meeting identified health needs of a specified community. Focus on health promotion concepts, family-centered nursing, community assessment skills, helping relationship skills, and peer review.

Lab, 8:00-1:00 TTh, 8:00-12:00 WF

- **5799. SELF-DIRECTED STUDY.** (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
See First Term.

- **5999. CLINICAL STUDY.** (1 cr; limited to 15 students; prereq any two of the following: 5611, 5612, 5613, 5614; III-IV F) Ruhland
See First Term.

- **8001. SPECIAL EDUCATIONAL EXPERIENCES IN NURSING.** (Cr ar; prereq Δ) Staff
See First Term.

- **8009. SPECIAL TOPICS IN NURSING.** (Cr ar; prereq #) Staff

- **8012. CONCEPTUAL FRAMEWORK FOR NURSING PRACTICE.** (3 cr; must be reserved; prereq 8010 or 18010; VI-VIII TTh) Sime
See First and Second Terms: Ten-Week Courses

- **8050. PROBLEMS IN NURSING.** (1-9 cr; prereq #) Staff
See First Term.

- **8509. SPECIAL TOPICS IN NURSING EDUCATION.** (Cr ar; prereq #) Staff

- **8609. SPECIAL TOPICS IN NURSING SUPERVISION.** (Cr ar) Staff

COLLEGE OF PHARMACY

Pharmacy (Phar)

SPECIAL TERM: JUNE 11-AUGUST 17

0295. PHARMACY EXTERNSHIP. (No cr; prereq 3rd-yr pharmacy student; 40 hrs per wk for 3 months) Supervised and evaluated practical experience under college coordinated field preceptors.

0399. PHARM.D. CLERKSHIP. (No cr; prereq 5312 or #)

Monitoring of patient drug therapy in University Hospitals and other affiliated institutions.

• **5265. PSYCHOSOCIAL FACTORS AND HEALTH CARE FOR THE AGING.** (2 cr for 10 wks; prereq #; limited enrollment; VI TTh; KoltH S132) Maiman
Psychological, sociological, physiological/pharmacological, and economic aspects of aging and drug utilization among the elderly.

5266. DRUGS AND THE ELDERLY WORKSHOP. (1-3 cr for 10 wks; prereq 5265 and #) Maiman
Seminar/discussion/workshop sessions on specific drug problems, communication skills with the elderly, and problem-solving techniques. Clinical experiences include home visits to individuals with drug problems and presentations to senior citizens groups on a variety of drug-related subjects.

5270. CLINICAL CLERKSHIP. (4 cr for 10 wks; V M; HUnitA 2-520) Clinite

Supervised delivery of pharmaceutical services at University Hospitals; affiliated institutions, or other practice settings.

5280. CONTEMPORARY PHARMACY. (2 cr; prereq 2nd- or 3rd-yr pharmacy student, #) Wertheimer
Contemporary topics in pharmacy.

5281. OVER-THE-COUNTER PREPARATIONS. (2 cr for 10 wks; prereq 3rd-yr pharmacy student; IV-V T; HSUnitA 2-520) Scott

Evaluation of nonprescription medication and preparation of student for triage role in preventive medicine.

5291. HOSPITAL PHARMACY. (2 cr for 10 wks; lect and hospital visitations; VI MW; HSUnitA 2-520) Giese
History, organization, and administration of pharmaceutical services in institutional settings.

5299. SPECIAL PROBLEMS. (Cr ar; prereq #)

5301. CLINICAL THERAPEUTICS. (3 cr for 10 wks; prereq 5350, Phcl 5102, or #; IV MWF; JacH 74) Angaran
Clinical therapeutics of common disease entities.

5650. DISPENSING PHARMACY. (3 cr for 10 wks; prereq 5640; V W, II-III F; JacH 74) Carlson
Technology, record systems, interprofessional relationships, drug use control, and other factors involved in dispensing prescription medicine.

5651. DISPENSING PHARMACY LABORATORY. (2 cr for 10 wks; prereq 5650; S-N grading; \$2 lab fee; I-III MWTTh; AH 104) Carlson

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

SCHOOL OF PUBLIC HEALTH

Public Health (PubH)

Courses with limited enrollment must be reserved in 1360 Mayo unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

• **3001. PERSONAL AND COMMUNITY HEALTH.** (3 cr, §3004; meets with 3004, 3033; limited enrollment, reserved in JohH 12; III-IV MTWThF; HSUnitA 2-690) Rothenberger
Fundamental principles of health conservation and disease prevention.

• **3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH.** (5 cr, §3001, §3033; limited enrollment, reserved in JohH 12; III-IV 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.

• **3033. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE — June 12-22.** (2 cr, §3004; meets with 3001, 3004; limited enrollment; III-IV MTWThF; 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.

5005. TOPICS IN PUBLIC HEALTH. (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. 5 cr, §Nurs 5625; prereq # or nursing students, nurses, public health students, other health professionals; I-II 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. (Cr ar; prereq #) Staff
Individualized, directed instruction. Selected readings in interdisciplinary studies with discussion based on these readings.

5061-5062. COMMUNITY HEALTH EDUCATION LABORATORY. (Total of 5 cr for 5061 and 5062...students must register for both courses this term; prereq 5054, 5055, 5056; 20 hrs per wk) Craig, Carlaw
Review of the procedures and techniques utilized in collecting health education data; visitation to major health centers in the metropolitan area and discussion of the goals and organization of each; identification and discussion of representative health education programs and opportunities in the metropolitan area.

5600. FIELD EXPERIENCE IN PUBLIC HEALTH NUTRITION. (Cr ar; prereq #) Brown, staff
Placement in an approved agency with opportunity for experience in nutritional aspects of public health programs.

5601. SEMINAR: PUBLIC HEALTH NUTRITION. (Cr ar; prereq #) Brown, Fleming

5609. TOPICS: INDEPENDENT STUDY IN PUBLIC HEALTH NUTRITION. (Cr ar; prereq #) Brown, Fleming

5614. FIELD EXPERIENCE: MATERNAL, CHILD HEALTH. (Cr ar; prereq 5610, 5611 or #)

5649. TOPICS: MATERNAL, CHILD HEALTH. (Cr ar; prereq #)

5654. TOPICS: DENTAL PUBLIC HEALTH. (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

5657. INDEPENDENT STUDY IN DENTAL PUBLIC HEALTH. (Cr ar; prereq #) 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. (Cr ar; prereq 5701)
Supervised field experience in selected community or public health agencies and institutions.

5702. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (Cr ar; prereq 5701)
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. (Cr ar; prereq #) Block
Supervised field experience at a management level in selected community or public health agencies and institutions.

5749. TOPICS: PUBLIC HEALTH ADMINISTRATION. (Cr ar; prereq #) Block
Selected readings with discussion based on these readings.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (Cr ar; prereq #) Staff
Section 1—Environmental health students only. Section 2—Other students majoring in public health.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

• **5004. FIELD INSTRUCTION IN PUBLIC HEALTH.** (10 cr for 10 wks; limited to 30 students; prereq grad student in public health, social work or other health or helping field...5008 offered spring 1979, and #; 20-30 hrs per wk)

Generalized, function-oriented or discipline-oriented community experience under academic and professional supervision. Emphasis on application of acquired knowledge and skills to relevant health issues and problems. This offering: Interdisciplinary Team Building. A team field project involving the application of team skills to improve the outcome of selected public health projects. Development of skills such as resource sharing and utilization, verbal and nonverbal communications, giving and receiving feedback, leadership roles and styles, negotiations, decision making and problem solving, conflict utilization, and process intervention. See Special Programs section.

5575. TOPICS: PUBLIC HEALTH NURSING. (Cr ar; prereq #) Staff
Topics of interest.

● **5585. PUBLIC HEALTH NURSING.** (6 cr for 10 wks; prereq current RN licensure and #; limited enrollment) Staff
Designed for nurses with a baccalaureate degree who are interested in public health nursing certification and others interested in gaining theoretical knowledge and clinical skills in community health nursing.

SECOND TERM

5005. TOPICS IN PUBLIC HEALTH. (Cr ar; prereq #) Staff
See First Term.

5015. TOPICS IN INTERDISCIPLINARY STUDIES. (Cr ar; prereq #) Staff
See First Term.

● **5032. EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE—July 17-27.** (3 cr, \$Hth 5400; limited to 50 students; prereq education sr, licensed tchr, school nurse or #; 9:00-12:30 MTWThF; HSUnitA 2-520) Rothenberger, Hockhauser
Basic background information on alcohol and other drugs and chemicals with emphasis on curriculum concepts, teaching methodology, materials, and referral procedures appropriate for elementary, junior, and senior high schools.

● **5300. COMPARATIVE MEDICINE AND PUBLIC HEALTH.** (2 cr; limited to 14 students; VI-VII TTh; HSUnitA 2-542)
Survey of comparative medicine in human relationship to the biologic environment, interrelationship between animal and human health, source of animal diseases, ecology of zoonoses; food production and hygiene; laboratory animal medicine.

5600. FIELD COURSE IN PUBLIC HEALTH NUTRITION. (Cr ar; prereq #)
See First Term.

5601. SEMINAR: PUBLIC HEALTH NUTRITION. (Cr ar; prereq #) Brown, Fleming

5609. TOPICS: PUBLIC HEALTH NUTRITION. (Cr ar; prereq #) Brown, Fleming

5614. FIELD EXPERIENCE: MATERNAL, CHILD HEALTH. (Cr ar; prereq 5610, 5611 or #)

● **5641. CHILD ABUSE AND NEGLECT IN THE JUVENILE JUSTICE SYSTEM.** (2 cr; limited to 20 students)

5649. TOPICS: MATERNAL, CHILD HEALTH. (Cr ar; prereq #)

5654. TOPICS: DENTAL PUBLIC HEALTH. (Cr ar; prereq #) Staff
See First Term.

5657. INDEPENDENT STUDY IN DENTAL PUBLIC HEALTH. (Cr ar; prereq #) Block, staff
See First Term.

5660. FIELD EXPERIENCE: DENTAL PUBLIC HEALTH. (Cr ar; prereq #) Block, staff
See First Term.

5663. ADMINISTRATIVE RESIDENCY IN DENTAL PUBLIC HEALTH. (Cr ar; prereq #) Block, staff, clinical preceptors
Eleven months of fieldwork 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.

5702. PUBLIC HEALTH ADMINISTRATION CLERKSHIP. (Cr ar; prereq 5701)
See First Term.

5704. FIELD EXPERIENCE: PUBLIC HEALTH ADMINISTRATION. (Cr ar; prereq #) Block
See First Term.

5749. TOPICS: PUBLIC HEALTH ADMINISTRATION. (Cr ar; prereq Block
See First Term.

8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES. (Cr ar; prereq #) Staff
See First Term.

Biometry (PubH)

FIRST TERM

5400. INTRODUCTION TO QUANTITATIVE METHODS IN THE HEALTH AND LIFE SCIENCES. (4 cr; for students majoring in the biological and health sciences; prereq Biol 1011, Chem 1005, Math 1231, #; I MTWThF; HSUnitA 2-680, 2-676) Le
Basic quantitative methods for the design and analysis of clinical and laboratory studies in biology and the health sciences.

5403. COMPUTER APPLICATIONS IN HEALTH SERVICES ADMINISTRATION. (4 cr; prereq non-biometry major, health science regis or #) Gatewood
Survey of current applications of digital computers for health services, clinical algorithms, and health-related information systems. Costs of, benefits of, and interrelationships between data acquisition, reduction, storage, interpretation, and dissemination for health services. Stress on administrative needs for planning, personnel, backup, and evaluation. Applications illustrated through use of the BASIC computing language and package computer programs.

5446. BIOCOMPUTING CONSULTING SEMINAR. (3 cr; prereq biometry major, 5432, 5452 or #) Gatewood
Overview of computer hardware, operating systems, languages, and packages for statistics, graphics, file maintenance, report generation, and health science applications. Case examples used to illustrate roles and responsibilities of the project manager in analyzing the requirements of the health science project, designing and specifying computer interfaces, and supervising the development, training, documentation, and evaluation of the implementation effort.

5456. BIOMETRY CONSULTING SEMINAR. (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. (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

8400. SEMINAR IN BIOMETRY. (Cr ar) Staff

8449. TOPICS IN BIOMETRY. (Cr ar; prereq 5450 and #) Staff
Studies in special topics for advanced students.

8450. RESEARCH IN BIOMETRY. (Cr ar) Staff
Opportunities for qualified students to pursue research work.

SECOND TERM

5446. BIOCOMPUTING CONSULTING SEMINAR. (3 cr; prereq biometry major, 5432, 5452 or #) Gatewood
See First Term.

5456. BIOMETRY CONSULTING SEMINAR. (Cr ar; prereq biometry major) Boen
See First Term.

5470. TOPICS IN BIOMETRY. (Cr ar; prereq #) Staff
See First Term.

8400. SEMINAR IN BIOMETRY. (Cr ar) Staff

8449. TOPICS IN BIOMETRY. (Cr ar; prereq 5450 and #) Staff
See First Term.

8450. RESEARCH IN BIOMETRY. (Cr ar) Staff
See First Term.

Environmental Health (PubH)

FIRST TERM

5150. TOPICS IN ENVIRONMENTAL HEALTH. (Cr ar; prereq #) Staff
Selected readings with discussions of problems.

5170. TOPICS IN ENVIRONMENTAL BIOLOGY. (Cr ar; prereq #) Staff
Selected readings with discussion of control techniques.

5180. TOPICS IN AIR POLLUTION. (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

5183. PROBLEMS OF AIR POLLUTION CONTROL (Cr ar; prereq 5181, #) Paulus
Special supervised studies involving laboratory and field investigation procedures; review of pertinent literature.

5200. TOPICS IN RADIOLOGICAL HEALTH. (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

5210. TOPICS IN OCCUPATIONAL HEALTH. (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

5220. TOPICS IN FOOD SANITATION. (Cr ar; prereq #) Staff
Review of literature and practice to identify association of food sanitation problems to public health.

5230. TOPICS IN INSTITUTIONAL ENVIRONMENTAL HEALTH. (Cr ar; prereq #) Staff
Review of literature and practice to identify institutional environmental health problems.

5240. TOPICS IN WATER HYGIENE. (Cr ar; prereq #) Staff
Selected readings and discussions of problems relating to the health aspects of water supply and waste water systems.

8150. RESEARCH: ENVIRONMENTAL HEALTH. (Cr ar) Staff
Opportunities for qualified students to pursue research in the importance to public health of environmental stresses on human beings.

8170. RESEARCH: ENVIRONMENTAL BIOLOGY. (Cr ar; prereq #) Ruschmeyer

8180. RESEARCH: AIR POLLUTION. (Cr ar; prereq #) Paulus

8200. RESEARCH: RADIOLOGICAL HEALTH. (Cr ar; prereq #) Barber

8208. FIELD PRACTICE IN RADIOLOGICAL HEALTH. (Cr ar; prereq #) Barber

8210. RESEARCH: OCCUPATIONAL HEALTH. (Cr ar; prereq #) McJilton

8220. RESEARCH: FOOD SANITATION. (Cr ar; prereq #) Pflug

8230. RESEARCH: INSTITUTIONAL ENVIRONMENTAL HEALTH. (Cr ar; prereq #) Vesley

8240. RESEARCH: WATER HYGIENE. (Cr ar; prereq #) Straub

SECOND TERM

5150. TOPICS IN ENVIRONMENTAL HEALTH. (Cr ar; prereq #) Staff
See First Term.

5170. TOPICS IN ENVIRONMENTAL BIOLOGY. (Cr ar; prereq #) Staff
See First Term.

5180. TOPICS IN AIR POLLUTION. (Cr ar; prereq #) Staff
See First Term.

5183. PROBLEMS OF AIR POLLUTION CONTROL (Cr ar; prereq 5181, #) Paulus
See First Term.

5200. TOPICS IN RADIOLOGICAL HEALTH. (Cr ar; prereq #) Staff
See First Term.

5210. TOPICS IN OCCUPATIONAL HEALTH. (Cr ar; prereq #) Staff
See First Term.

5220. TOPICS IN FOOD SANITATION. (Cr ar; prereq #) Staff
See First Term.

5230. TOPICS IN INSTITUTIONAL ENVIRONMENTAL HEALTH. (Cr ar; prereq #) Staff
See First Term.

5240. TOPICS IN WATER HYGIENE. (Cr ar; prereq #) Staff
See First Term.

8150. RESEARCH: ENVIRONMENTAL HEALTH. (Cr ar) Staff
See First Term.

8170. RESEARCH: ENVIRONMENTAL BIOLOGY. (Cr ar; prereq #) Ruschmeyer

8180. RESEARCH: AIR POLLUTION. (Cr ar; prereq #) Paulus

8200. RESEARCH: RADIOLOGICAL HEALTH. (Cr ar; prereq #) Barber

8208. FIELD PRACTICE IN RADIOLOGICAL HEALTH. (Cr ar; prereq #) Barber

8210. RESEARCH: OCCUPATIONAL HEALTH. (Cr ar; prereq #) McJilton

8220. RESEARCH: FOOD SANITATION. (Cr ar; prereq #) Pflug

8230. RESEARCH: INSTITUTIONAL ENVIRONMENTAL HEALTH. (Cr ar; prereq #) Vesley

8240. RESEARCH: WATER HYGIENE. (Cr ar; prereq #) Straub

Epidemiology (PubH)

See the Special Programs section for a series of courses offered through Continuing Education and Extension.

FIRST TERM

5379. TOPICS IN EPIDEMIOLOGY. (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.

8330. RESEARCH: EPIDEMIOLOGY. (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. (Cr ar; prereq #) Staff
See First Term.

8330. RESEARCH: EPIDEMIOLOGY. (Cr ar) Staff
See First Term.

Hospital and Health Care Administration (PubH)

FIRST TERM

5765. HOSPITAL DEPARTMENTAL OPERATIONS. (3 cr; prereq #: VI-VII MWF; HSUnitA 2-533) Sweetland
The operation, management, and functions of hospital departments. Presented from the point of view of what an administrator needs to know about a department in order to supervise the department head.

5792. LEGAL ASPECTS OF HOSPITAL AND HEALTH CARE ADMINISTRATION. (3 cr; prereq #: II-III TTh; HSUnitA 2-520) Holloway

Laws affecting administration of hospitals and other health care organizations; administrative law, corporate and business law, labor law, civil liability, and tax-related issues. Focuses on legal issues relevant to the administrator and the decision-making and planning processes.

5793. HOSPITAL FINANCIAL STATEMENT ANALYSIS. (3 cr; prereq 5764, 5791; I-II MF; 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.

5794. FINANCIAL MANAGEMENT SEMINARS. (3 cr; prereq 5764, 5791; III-IV MF; HSUnitA 2-520) Osqustowicz

Major financial management topics presented by outside experts in the fields of public accounting, investment banking, lease financing, insurance counseling, hospital-based physician financial negotiation, rate setting/rate review negotiation, etc., for class analysis and practical application. Representatives from government and third-party payers will discuss the impact of legislation and regulation on health care financial management.

5796. INTERNAL OPERATIONS OF A MENTAL HEALTH FACILITY—July 16-27. (15 cr; prereq 1 yr experience as mental health facility administrator and #; I-IX MTWThF; Law 50) Malban, 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.

5797. EXTERNAL RELATIONSHIPS AFFECTING THE ROLE AND FUNCTION OF THE MENTAL HEALTH FACILITY—June 20-29. (15 cr; prereq 5796; I-IX MTWThF; BA 128, 130, 160, SocSci 307) Malban, 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.

5799. MENTAL HEALTH ADMINISTRATION SEMINAR. (2 cr; restricted to and required of students enrolled in mental health administration training) Malban

Readings, group discussion, debate and presentation of current issues in the mental health field. Field trips. Follow-up to the A. K. Rice Institute experience.

8796. TOPICS IN HEALTH ECONOMICS. (3 cr; prereq one economics course and #; I-IV TTh; HSUnitA 2-580) 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.

SECOND TERM

5752. CLERKSHIP. (4 cr; prereq enrollment in 5755) Bieter, staff, clinical preceptors
Survey and solution of management problem and preparation of formal report in an administrative residency organization.

5755. ADMINISTRATIVE RESIDENCY.** (Cr ar; prereq #) Dornblaser, staff, clinical preceptors
Eleven months of fieldwork in an approved health care planning or operating organization, weighted rotation through departments, solution of management problems, and special projects. Preparation of formal report.

5775. MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES. (15 cr; prereq current employment as health care facility administrator and #) Weckwerth, staff

A 12-month program consisting of an on-campus residential session (2 weeks) 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.

5776. ADMINISTRATIVE AND PROFESSIONAL RELATIONSHIPS WITHIN THE HEALTH CARE FACILITY. (15 cr; prereq 5775 or #) 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.

5777. EXTERNAL FORCES AFFECTING HEALTH CARE DELIVERY. (25 cr; prereq 5776 or #) Weckwerth, staff

A 10-month program consisting of an on-campus residential session (2 weeks) 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. (25 cr; prereq present employment as administrator of patient care [director of nursing or equiv] and #) Danielsen, Weckwerth, staff

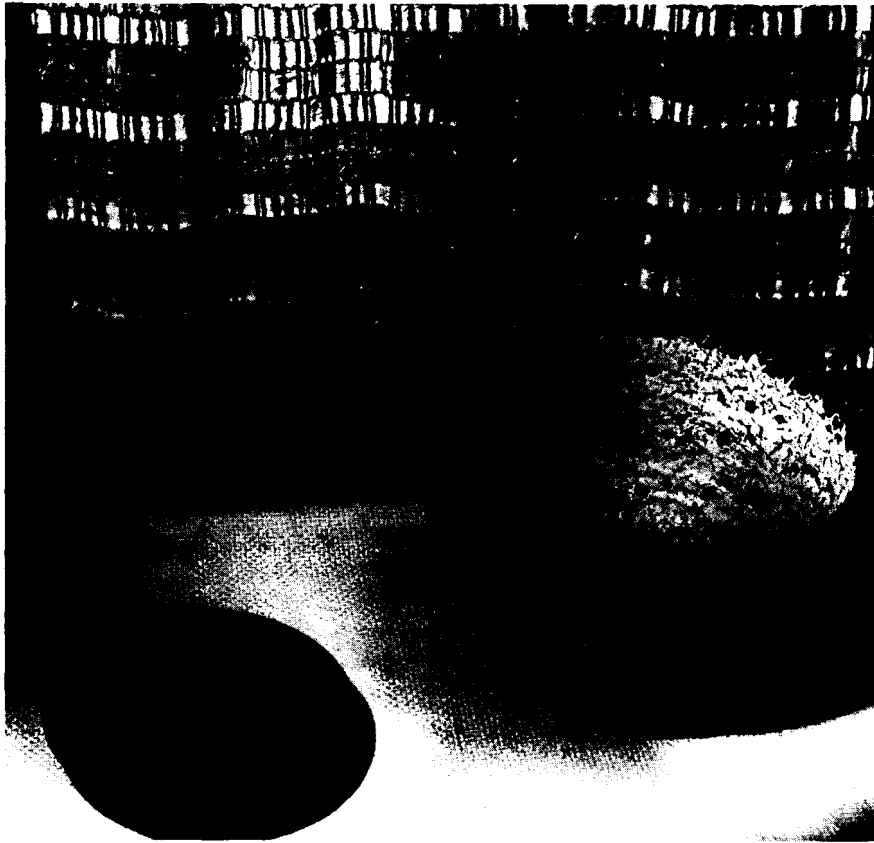
A 12-month program consisting of an on-campus residential session (3 weeks), independent study, monthly meetings with clinical preceptors, and one required seminar. Principles of management and organizational behavior, hospital development and organization, personnel management, administrative and professional relationships within the hospital, role of the patient care administrator, legal aspects, budget preparation, policy development, and continuing education.

5779. MANAGING MULTIPLE FORCES: INTERNAL AND EXTERNAL ASPECTS OF PATIENT CARE ADMINISTRATION. (Cr ar; prereq present employment as administrator of patient care [director of nursing or equiv], 5778 and #) Weckwerth, Danielsen, staff

A 12-month program consisting of on-campus and independent study that begins with a 9-day residential session each July, during which students are introduced to planning, organizing, staffing, directing, and controlling.

5798. SOCIAL, POLITICAL, ECONOMIC, AND GOVERNMENTAL FORCES AFFECTING THE ROLE AND SERVICES OF THE MENTAL HEALTH FACILITY. (25 cr; prereq 5797 or practicing administrator with advanced degree and 3 yrs of experience and #) Malban, staff

A 12-month program of an on-campus residential session (2 weeks) and off-campus independent study that includes periodic seminars and monthly classes under program preceptors. Demonstration and research projects required. Mental health; community, regional, state, and national planning; legislation; affirmative action; consumerism and citizen participation; economics; political and social issues.



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)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

1501. INTRODUCTION TO DESIGN. (3 cr; IV MTWThF; McNH 33) Blade
Awareness of design in the near environment.

• **1521. COLOR AND DESIGN.** (4 cr; limited to 24 students; \$2 lab fee; I-II MTWThF; McNH 258)
Color concepts and their applications to design.

• **1523. VISUAL PRESENTATION.** (4 cr; limited to 24 students; III-IV MTWThF; McNH 262)
Development of basic drawing skills for the designer.

• **3527. THREE-DIMENSIONAL DESIGN.** (4 cr; limited to 24 students; I-II MTWThF; McNH B3) Larkin
Study and application of principles of three-dimensional design.

• **3532. STRUCTURE FABRIC DESIGN II—June 12-22.** (3 cr; prereq 1532; \$2 lab fee; limited to 18 students; II-IX MTWThF; McNH 16) Birmingham
Studio problems. Beginning floor loom weaving.

5585. PROBLEMS IN DESIGN: GENERAL. (1-3 cr; prereq #; hrs ar) Staff
Independent study under tutorial guidance.

• **5586. PROBLEMS: HOUSING—June 11-15.** (2 cr; limited to 50 students; McNH 216) Nagle
Current developments in housing. Professional update for teachers.

• **8585. PROBLEMS: DESIGN.** (1-5 cr; prereq #) Staff

8586-8587. PROBLEMS: DESIGN. (1-5 cr per term; prereq #; hrs ar) Staff

SECOND TERM

• **1521. COLOR AND DESIGN.** (4 cr; limited to 24 students, \$2 lab fee; I-II MTWThF; McNH 258)
Color concepts and their applications to design.

Family Social Science (FSoS)

Courses with limited enrollment must be reserved in 130 Coffey Hall or 12 Johnston Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

• **1001. DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE.** (3 cr, \$1002; limited enrollment; II MTWThF; BlegH 210) Anderson, Zuengler
Application of principles from behavioral sciences to dating, courtship, mate selection, engagement, mixed marriages, roles of men and women, interaction of marital spouses, and marital stability.

• **1025. PARENTHOOD.** (4 cr; limited enrollment; III MTWThF; BlegH 10) Doyle, Johnson
Differing concepts of family roles—father, mother, son, daughter, sister, brother. Implications for parent-child and sibling interaction. Effects of parenthood on husband-wife relations.

• **5001. HUMAN SEXUAL BEHAVIOR.** (4 cr; limited enrollment; prereq 15 cr in psychology or sociology; 10:15-12:00 MW, 10:15-11:00 F; AndH 310) Maddock
Nature of sexual functions, sexual development, ethics and attitudes, research problems.

• **5200. FAMILY RELATIONSHIPS.** (5 cr, §Soc 5501; limited enrollment; prereq Psy 1001 or equiv, Soc 1001 or equiv; 2:00-3:30 TTh; BioSci 6) Hawkins
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.

5230. INDEPENDENT STUDY. (Cr ar [max 4 cr]) Staff

5240. SPECIAL TOPICS IN FAMILY SOCIAL SCIENCE: FAMILY ECONOMICS OF THE CHANGING AMERICAN FAMILY—June 18-22. (3 cr [max 16 cr]; prereq set by instructor for each topic; I-III and VI-VIII MTWThF; 179 McNH) Gaudagno

8251. PROBLEMS: FAMILY SOCIAL SCIENCE. (1-5 cr; prereq #; hrs ar) Gage

8252. PROBLEMS: FAMILY SOCIAL SCIENCE. (4 cr; prereq #; hrs ar) Gage

SECOND TERM

5230. INDEPENDENT STUDY. (Cr ar [max 4 cr]) Staff

5240. SPECIAL TOPICS IN FAMILY SOCIAL SCIENCE: CONSUMERISM—July 30-August 10. (3 cr [max 16 cr]; prereq set by instructor for each topic;)

Sec 1, Energy, Ecology, and Economics, II-IV MTWThF, McNH 179, Hogan

Sec 2, Family and Economic Development, VI-VIII MTWThF, McNH 179, Gage

8251. PROBLEMS: FAMILY SOCIAL SCIENCE. (1-5 cr; prereq #; hrs ar) Staff

8252. PROBLEMS: FAMILY SOCIAL SCIENCE. (4 cr; prereq #; hrs ar) Staff

Food Science and Nutrition (FScN)

Courses with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

1602. PRINCIPLES OF NUTRITION. (4 cr; limited to 25 students; prereq one course in biology and one course in chemistry or equiv in natural science sequence; I-II MWF, II TTh; FScN 15) Einspahr
Survey of fundamental principles of nutrition including requirements for various nutrients and results of excess or deficient intake of these nutrients.

3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE. (5 cr; prereq 3760, sr in hospitality and food service management or #; hrs ar) Staff
Planned management experience in a selected food service or hospitality business, including understanding of the operation, planning, purchasing, personnel management, financial management, supervision, and related functions.

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (1-5 cr [may be repeated for cr]; prereq Δ; \$2 lab fee; 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. (1-5 cr; prereq sr, Δ; \$2 lab fee; hrs ar) Staff
Laboratory or library research on problems related to the microbiology of dairy and food products.

• **5404. CURRENT ISSUES IN FOOD AND NUTRITION—July 2-13.** (3 cr; limited to 25 students; prereq 15 cr in food science and nutrition or #; \$2 lab fee; II-IV 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.

5740. DESIGN AND LAYOUT OF FOOD SERVICE—June 18-29. (4 cr; prereq 3740; VI-IX MTWThF; ClaOff B30) Olson

Problems related to the design and layout of remodeled and new food services.

• **5790. QUANTITY FOOD PREPARATION PRACTICES—June 18-29.** (3 cr; limited to 16 students; prereq 5790; \$2 lab fee; 8:00-12:00 MTWThF; DinC 152) Billings
Purchase, storage, preparation, service, and pricing of selected menu items. Students investigate and seek solutions to problems related to quantity food service. Opportunity to integrate lectures, laboratory experiences, and independent study with instructional programs in occupational foods. For students who have completed 5790 in a previous session.

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

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

SECOND TERM

1102. TECHNOLOGY OF FOOD PROCESSING. (4 cr; prereq high school chemistry and biology; I-II MWF, II TTh; ABLMS 125) Shapero

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

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

5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION. (1-5 cr [may be repeated for cr]; prereq Δ; \$2 lab fee; hrs ar) Staff
See First Term.

5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY. (1-5 cr; prereq sr, Δ; \$2 lab fee; hrs ar) Staff
See First Term.

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

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

Textiles and Clothing (TexC)

Course with limited enrollment must be reserved in 130 Coffey Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1602. PATTERN FITTING AND ALTERATION.** (2 cr; limited to 20 students; \$2 lab fee; V-VI T, V-VI Th; McNH 475) Heisey
Analysis of figure problems; alteration of commercial patterns to adjust to any figure problem. Development of individual patterns from commercial basic patterns.

• **3661. CULTURAL PERSPECTIVES ON DRESS.** (3 cr; limited to 50 students; prereq Anth 1102 or Soc 1001; IV MTWThF; McNH 69) Pedersen
The influence of cultural ideals and standards on dress. How dress evolves in response to society's needs, values, and technology.

● **5600. ADVANCED APPAREL DESIGN AND CONSTRUCTION PROBLEMS.** (3 cr; limited to 15 students; prereq 3621, #; \$2 lab fee; 12:00-3:00 MTWTh; McNH 480) DeLong

● **5680. SPECIAL TOPICS IN TEXTILES AND CLOTHING.** (3 cr; limited to 20 students; prereq Δ ; \$2 lab fee; 12:00-4:30 TTh; McNH B2) Carter
Review of research and methodology. The topic for this offering is "The Dyeing Medium and Color." Both theoretical and practical aspects covered. Students will have a chance to work with dyeing in a laboratory setting.

8621. READINGS IN TEXTILES. (1-3 cr; prereq #; hrs ar) R Johnson
Independent reading useful for individual programs but not available in other course offerings.

8624. CHEMICAL METROLOGY. (5 cr; prereq #; 9:00-10:30 MTWThF; McNH 363) R Johnson
Methodology and instrumentation for measurement of chemical properties of textile materials; development of perspective for standard methods; new methods development.

8625. PROBLEMS: TEXTILES AND CLOTHING. (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. (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. (3-9 cr [max 9 cr]; prereq #; hrs ar) Grindereing
Independent study in human behavioral aspects of clothing or textiles.

SECOND TERM

● **1601. BASIC CLOTHING CONSTRUCTION.** (2 cr; limited to 20 students; \$2 lab fee; V-VII T, IV-VI Th; McNH 475) LaBat
Basic principles and techniques for creating clothing.

● **5680. SPECIAL TOPICS IN TEXTILES AND CLOTHING—July 16-August 3.** (3 cr; limited to 30 students; prereq Δ ; \$2 lab fee; II-III MTWThF; McNH 470) Watkins
Review of research and methodology. The topic for this offering is "The Theory of Functional Clothing." Emphasis on clothing design that keeps use and function in mind. Includes lectures, demonstrations, discussions.

Center for Youth Development and Research (YoSt)

FIRST TERM


5120. INDEPENDENT STUDY IN YOUTH STUDIES. (Cr ar [max 12 cr per qtr]; prereq #; hrs ar) Seltzer, staff
Independent reading and/or research under faculty supervision.

SECOND TERM

5120. INDEPENDENT STUDY IN YOUTH STUDIES. (Cr ar [max 12 cr per qtr]; prereq #; hrs ar) Seltzer, staff
See First Term.

5130. SPECIAL TOPICS: Summer Seminar on Youth Work—August 26-31. (5 cr; prereq #; hrs ar) Teeter

College of Liberal Arts



College of Liberal Arts courses seek primarily 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. 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, advancement of scholastic records, 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, 220 Johnston Hall.

Afro-American Studies (Afro)

FIRST TERM

1015. BLACK PROTEST FROM COLONIAL TIMES TO THE PRESENT. (5 cr; III-IV MTWThF; BlegH 255) Ward
Analysis of events and history of black protest movements.

3001. INTRODUCTION TO WEST AFRICAN HISTORY. (4 cr; III MTWThF; BlegH 350) Coifman
Similarities and dissimilarities in the historical experience of several West African peoples. Early times to ca. 1600.

3970. DIRECTED STUDIES. (1-15 cr; prereq #) Staff

5970. DIRECTED STUDIES. (1-6 cr; qualified sr and grad students may register with # for work on tutorial basis) Staff

American Indian Studies (Amln)

FIRST TERM

3151. INDIAN SOCIETIES IN MEXICO. (4 cr; III MTWThF; BlegH 210) Dunnigan
Social and cultural survival of Indian peoples after Mexican independence.

American Studies (AmSt)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1102. AMERICAN LIFE II.** (4 cr; limited to 49 students; I MTWThF; LindH 215) Staff
Critical analysis of American culture.

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

• **8202. INTRODUCTION TO AMERICAN STUDIES.** (3 cr; limited to 12 students; prereq MA candidate; VI-VII MTh; SocSci 62B) Noble
Exposition of interdisciplinary methods and of the concept of American studies; reading of classics in American civilization; extended exploration of a topic.

8970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (Cr and hrs ar; prereq consent of program chair) Staff

SECOND TERM

• **1101. AMERICAN LIFE I.** (4 cr; limited to 49 students; I MTWThF; LindH 215) Staff
Analysis of American culture.

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

8970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (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

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (5 cr, §1115, §5102; lect II MTThF; ForH 155) Ogan
Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world.

Sec 1, II W, ForH 15

Sec 2, III W, ForH 15

3222. PEOPLES AND CULTURES OF MIDDLE AMERICA. (5 cr; prereq 1102 or #; III MTWThF; ForH 155) Ingham
Indian-Spanish speaking peoples of Middle America. Processes of acculturation that have produced contemporary cultures of Mexico and Central America.

3376. FIELD RESEARCH IN ARCHAEOLOGY. (10 cr; prereq #) Gibbon
Archaeological field excavation, survey, and research in prehistoric sites in Minnesota. Excavation techniques, recording analysis, and interpretation of archaeological materials.

3970. DIRECTED STUDIES. (Cr and hrs ar; prereq #) Staff

5151. CULTURAL CHANGE AND DEVELOPMENT. (5 cr; prereq 1102 or #; IV MTWThF; ForH 175) Miller
Processes of cultural change; invention, diffusion, and acculturation. Effects of colonialism, urbanization, and modernization. Analysis of developing societies. Applied anthropology.

5392. SEMINAR: PHILOSOPHICAL ANTHROPOLOGY. (3 cr, §UC 5507; II MTWThF; ForH 50) Penn
Survey of traditional problems associated with visions of human nature and culture.

8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (Cr and hrs ar; prereq #) Staff

8950. ADVANCED RESEARCH. (Cr and hrs ar; prereq grad, #) Staff

SECOND TERM

1101. HUMAN ORIGINS. (5 cr, §1101H; lect III MTThF; ForH 150) Spector
World prehistory as investigated by archaeologists; methods and concepts employed by archaeologists in the study of prehistoric human biological and cultural development.

Sec 1, II W, ForH 15

Sec 2, III W, ForH 15

3211. INDIANS OF NORTH AMERICA. (5 cr; prereq 1102 or #; I MTWThF; ForH 155) Johnson
Aboriginal cultures of native North America. Effects of culture contact. Contemporary problems of Indian reservations and communities.

3376. FIELD RESEARCH IN ARCHAEOLOGY. (10 cr; prereq #) Gibbon
See First Term.

3970. DIRECTED STUDIES. (Cr and hrs ar; prereq #) Staff

5141. CULTURE AND PERSONALITY. (5 cr; prereq 1102 or # [waived for majors in public health, nursing, psychology, sociology, and social work]; III MTWThF; ForH 155) Rowe
Role of culture in formation of personality. Problems of individual adjustments to demands of culture. Psychological approach to culture.

8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (Cr and hrs ar; prereq #) Staff

8950. ADVANCED RESEARCH. (Cr and hrs ar; prereq #) Staff

Arabic—See Near and Middle Eastern Studies

Art History (ArH)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1016. INTRODUCTION TO ASIAN ART. (4 cr, §3013; limited to 60 students; II MTWThF; JonesH 207B) Asher

Major themes of Indian and Far Eastern art.

● **3008. HISTORY OF ANCIENT ART.** (4 cr; limited to 55 students; IV MTWThF; JonesH 207A) Asher
Architecture, sculpture, and painting of selected early cultures; stress on those contributing to the development of Western art.

● **3012. HISTORY OF 19TH- AND 20TH-CENTURY ART.** (4 cr; limited to 65 students; III MTWThF; JonesH 207B) Cooper

Major monuments and concepts of the modern period: sculpture, architecture, painting, and prints.

● **3465. MASTER PAINTERS OF THE 19TH CENTURY.** (4 cr; limited to 65 students; IV MTWThF; JonesH 207B) Waldfogel

European artists selected for their originality, aesthetic excellence, or subsequent influence. Goya, Constable, Cezanne, and Van Gogh.

● **5442. THE ADVENT OF MODERNISM: LATER 19TH-CENTURY FRENCH PAINTING.** (5 cr; prereq one 3xxx or 5xxx course or grad student or #; limited to 55 students; II MTWThF; JonesH 207A) Waldfogel
Major styles and movements: realism, impressionism, postimpressionism, symbolism, fin de siècle.

● **5521. 20TH-CENTURY ART IN THE UNITED STATES.** (4 cr; prereq 4 cr of art history; limited to 65 students; III MTWThF; JonesH 207A) Marling

Contemporary movements in American painting and sculpture beginning in early 20th century with "the eight" and the Armory Show, 1913.

SECOND TERM

● **3009. HISTORY OF MEDIEVAL ART.** (4 cr; limited to 65 students; II MTWThF; JonesH 207B) Steyaert
Medieval architecture, painting, and sculpture from early Christian to Gothic period.

● **3011. HISTORY OF RENAISSANCE AND BAROQUE ART.** (4 cr; limited to 65 students; IV MTWThF; JonesH 207B) Canedy

The major monuments in architecture, sculpture, and painting from the early 14th century through the baroque period.

● **3935. ARTS OF AFRICA, OCEANIA, AND NORTH AMERICA.** (4 cr; limited to 65 students; III MTWThF; JonesH 207B) Smith

Survey of traditional arts and crafts of Africa, Oceania, and the Americas. Emphasis on method, theory, and cross-cultural analysis.

● **5313. ITALIAN HIGH RENAISSANCE ARCHITECTURE, SCULPTURE, AND PAINTING.** (4 cr; prereq 3011, grad student or #; limited to 65 students; II MTWThF; JonesH 207A) Canedy
Leonardo da Vinci, Michelangelo, Raphael, Titian, and lesser artists working in Florence, Rome, Venice, and northern Italy. Painting emphasized.

● **5324. 15TH-CENTURY PAINTING IN NORTHERN EUROPE.** (5 cr; prereq 3009 or 3011, grad student or #; limited to 55 students; IV MTWThF; JonesH 207A) Steyaert

Painting in the Netherlands, France, and Germany during the late Gothic period; its influences.

● **5915. ARTS AND CULTURES OF WEST AFRICA.** (4 cr; prereq jr or #; limited to 65 students; V MTWThF; JonesH 207B) Smith

Arts, crafts, and architecture of the western Sudan and Guinea coast. Historical developments, stylistics, and aesthetics investigated through a sociocultural analysis.

Arts, Studio (ArtS)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

The Department of Studio Arts covers part of the cost of expendable materials by requiring students in most of its courses to purchase fee cards from the bursar by the end of the second week of classes.

FIRST TERM

● **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, I-II MTWThF, ArtB 140, Busa

Sec 2, I-II MTWThF, ArtB 141, Myers

Sec 3, III-IV MTWThF, ArtB 160, Somberg

● **1102. DRAWING II.** (4 cr; limited to 25 students; prereq 1101; III-IV MTWThF; ArtB 151) Feinberg
Work from life and nature; introduction to color and pictorial structure.

● **1105. BEGINNING PAINTING.** (4 cr; limited to 15 students; I-II MTWThF; ArtB 161) Hendler
Contemporary and traditional surfaces in oil and acrylic media. Meets with 3120.

● **1302. SCULPTURE.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 50) Potratz
Study of structure with emphasis on form and space. Clay, plaster, wood. Mold making and casting.

● **1401. INTRODUCTION TO STUDIO ARTS.** (4 cr; limited to 170 students; III-IV MTWThF; AndH 370) 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.

● **1701. PHOTO MEDIUM.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 131) 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.

● **1801. CERAMIC PROCESSES.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 10) Hoard
Clay work by hand and forming on potter's wheel. Ceramics as creative expression, with technical considerations of clays, glazes, and kilns. Pottery and sculptural approaches.

● **3110. DRAWING.** (4 cr per qtr [12 cr max]; limited to 25 students; prereq 1102; III-IV MTWThF; ArtB 150) Gray

Drawing from model, still life, nature. Principles of anatomy.

● **3120. PAINTING.** (4 cr per qtr [12 cr max]; limited to 10 students; prereq 1105 and 8 cr of 3110 or #; I-II MTWThF; ArtB 161) Hendler

Media and problems in painting; individual projects and instruction. Meets with 1105.

● **3160. WATERCOLOR.** (4 cr per qtr [12 cr max]; limited to 15 students; prereq 1101, 1104 or #; III-IV MTWThF; ArtB 141) Myers

Introduction to transparent watercolor; gouache, casein, tempera. Figure, still life, landscape, abstract design. Meets with 5160.

● **3301. SCULPTURE: DIRECT METAL.** (4 cr; limited to 7 students; prereq 1301, 1302; I-II MTWThF; ArtB 65, 90) Baldwin

Welding and brazing. Meets with 3305, 5310, 5350.

- **3305. SCULPTURE: KINETICS.** (4 cr; limited to 7 students; prereq 1301, 1302; I-II MTWThF; ArtB 65, 90) Baldwin
Constructions, kinetics, electronics. Meets with 3301, 5310, 5350.
- **3710. PHOTOGRAPHY.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1701 or Jour 1301 or #: III-IV MTWThF; ArtB 131) Hallman
Continued work in photographic controls and processes. Introduction to related photosensitive media. Emphasis on the creative process, with attention given to individual interests and requirements.
- **3810. CERAMIC DESIGN.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1801 or #: III-IV 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.** (1-5 cr per qtr [8 cr max]; prereq 24 cr in studio arts and #)
- 3980. DIRECTED INSTRUCTION.** (1-5 cr per qtr [8 cr max]; prereq #)
Students assist in teaching a course they have completed.
- **5110. DRAWING.** (4 cr per qtr [16 cr max]; limited to 25 students; prereq 12 cr of 3110 or equiv; III-IV MTWThF; ArtB 140) Busa
Drawing in all mediums from life.
- **5160. WATERCOLOR.** (4 cr per qtr [16 cr max]; limited to 10 students; prereq 3160 or #: III-IV MTWThF; ArtB 141) Myers
Advanced watercolor techniques, aesthetic directions. Individual concepts and development of sensibilities. Meets with 3160.
- **5310. SCULPTURE: DIRECT METAL.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 3301; I-II MTWThF; ArtB 65, 90) Baldwin
Meets with 3301, 3305, 5350.
- **5350. SCULPTURE: KINETICS.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 3305; I-II MTWThF; ArtB 65, 90) Baldwin
Constructions, kinetics, electronics. Meets with 3301, 3305, 5310.
- **5810. CERAMICS.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 12 cr of 3810 or #: III-IV MTWThF; ArtB 10) Hoard
Aesthetic awareness and development; techniques and materials. Meets with 3810.
- 5970. DIRECTED STUDY.** (1-5 cr per qtr [12 cr max]; prereq 24 cr in studio arts and #)
- 8110. DRAWING.** (3 cr per qtr [9 cr max]; prereq #) Busa, Hendler, Somberg, Gray, Feinberg
- 8120. PAINTING.** (3 cr per qtr [18 cr max]; prereq #) Busa, Hendler, Somberg, Gray, Feinberg
- 8310. SCULPTURE: DIRECT METAL.** (3 cr per qtr [9 cr max]; prereq #) Baldwin
- 8330. SCULPTURE: CAST METAL.** (3 cr per qtr [9 cr max]; prereq #) Potratz
- 8350. SCULPTURE: KINETICS.** (3 cr per qtr [9 cr max]; prereq #) Baldwin
- 8710. PHOTOGRAPHY.** (3 cr per qtr [18 cr max]; prereq #) Hallman
- 8810. CERAMICS.** (3 cr per qtr [18 cr max]; prereq #) Hoard

SECOND TERM

- **1101. DRAWING I.** (4 cr; each section limited to 25 students)
See First Term.
 - Sec 1, I-II MTWThF, ArtB 140, Roode
 - Sec 2, III-IV, MTWThF, ArtB 161, Cowette
- **1102. DRAWING II.** (4 cr; limited to 25 students; prereq 1101; I-II MTWThF; ArtB 161) Cowette
See First Term.

- **1302. SCULPTURE.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 65, 90) Rose
See First Term.
- **1401. INTRODUCTION TO STUDIO ARTS.** (4 cr, limited to 170 students; III-IV MTWThF; 175 WilleyH) Bethke
See First Term.
- **1510. PRINTMAKING: INTAGLIO.** (4 cr per qtr [max 8 cr]; limited to 20 students; I-II MTWThF; ArtB 170) Bethke
Intaglio printing processes. Intensive study of etching, engraving, and collagraphic techniques in their creative context. Meets with 3510, 5510.
- **1701. PHOTO MEDIUM.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 131) Henkel
See First Term.
- **1801. CERAMIC PROCESSES.** (4 cr; limited to 20 students; VI-VII MTWThF; ArtB 10) Lane
See First Term.
- **3110. DRAWING.** (4 cr per qtr [12 cr max]; limited to 25 students; prereq 1102; III-IV MTWThF; ArtB 140) Roode
See First Term.
- **3120. PAINTING.** (4 cr per qtr [12 cr max]; limited to 10 students; prereq 1105 and 8 cr of 3110 or #: III-IV MTWThF; ArtB 151) Rowan
See First Term. Meets with 5120.
- **3160. WATERCOLOR.** (4 cr per qtr [12 cr max]; limited to 15 students; prereq 1101, 1104 or #: I-II MTWThF; ArtB 151) Rowan
See First Term. Meets with 5160.
- **3302. SCULPTURE: PLASTICS MEDIA.** (4 cr; limited to 10 students; prereq 1301, 1302; III-IV MTWThF; ArtB 50) Rose
Meets with 5320.
- **3510. PRINTMAKING: INTAGLIO.** (4 cr per qtr [12 cr max]; limited to 5 students; prereq 4 cr of 1510 or #: I-II MTWThF; ArtB 170) Bethke
Intaglio techniques on metal and collagraph. Embossing. Meets with 1510, 5510.
- **3710. PHOTOGRAPHY.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1701 or Jour 1301 or #: III-IV MTWThF; ArtB 131) Henkel
See First Term.
- **3810. CERAMIC DESIGN.** (4 cr per qtr [12 cr max]; limited to 15 students; prereq 1801 or #: III-IV MTWThF; ArtB 10) Lane
See First Term. Meets with 5810.
- 3970. DIRECTED STUDY.** (1-5 cr per qtr [8 cr max]; prereq 24 cr in studio arts and #)
- 3980. DIRECTED INSTRUCTION.** (1-5 cr per qtr [8 cr max]; prereq #)
See First Term.
- **5120. PAINTING.** (4 cr per qtr [16 cr max]; limited to 10 students; prereq 12 cr of 3120 and #: III-IV MTWThF; ArtB 151) Rowan
See First Term. Meets with 3120.
- **5160. WATERCOLOR.** (4 cr per qtr [16 cr max]; limited to 10 students; prereq 3160 or #: I-II MTWThF; ArtB 151) Rowan
See First Term. Meets with 3160.
- **5320. SCULPTURE: PLASTICS MEDIA.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 3302; III-IV MTWThF; ArtB 35) Rose
Meets with 3302.
- **5510. PRINTMAKING: INTAGLIO.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 12 cr of 3510 or #: I-II MTWThF; ArtB 170) Bethke
Color processes, intaglio, and combined techniques. Meets with 3510.

● **5810. CERAMICS.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 12 cr of 3810 or #; III-IV MTWThF; ArtB 10) Lane
See First Term. Meets with 3810

5970. DIRECTED STUDY. (1-5 cr per qtr [12 cr max]; prereq 24 cr in studio arts and #)

8110. DRAWING. (Cr ar [9 cr max]; prereq #) Rowan, Roode, Cowette

8120. PAINTING. (3 cr per qtr [18 cr max]; prereq #) Rowan, Roode, Cowette

8320. SCULPTURE: PLASTICS MEDIA. (3 cr per qtr [9 cr max]; prereq #) Rose

8510. PRINTMAKING. (3 cr per qtr [27 cr max]; prereq #) Bethke

8710. PHOTOGRAPHY. (3 cr per qtr [18 cr max]; prereq #) Henkel

8810. CERAMICS. (3 cr per qtr [18 cr max]; prereq #) Lane

Chicano Studies (Chic)

SECOND TERM

3212. LA CHICANA. (4 cr; III MTWThF; ForH 175) Trujillo
Examines the philosophy and psychology of the Chicano in order to understand the Chicana. Women of La Raza—those who have made an impact on literature, history, sociology, and politics. Literature by and about the Chicana.

Classics

*Classics (Clas)*¹

1045. BASIC PROGRAM IN TECHNICAL TERMINOLOGY AND WORD STUDY. (2 cr, §3045, ¶1048, ¶3046, ¶3048; orientation: III 1st day of class or I 2nd day of class, 308 FolH; light optional assistance labs: 1 hr ar W, 2 hrs ar ThF, 53 FolH; independent labs: I-VII MTWThF, LRC)

1048. TECHNICAL TERMS OF THE MEDICAL AND BIOLOGICAL SCIENCES. (2 cr, §3048; prereq 1045 or ¶1045 or 3045 or ¶3045; orientation: III 1st day of class or I 2nd day of class, 308 FolH; light optional assistance labs: 1 hr ar W, 2 hrs ar ThF, 53 FolH; independent labs: I-VII MTWThF, LRC)

3008. THE WORLD OF ROME. (4 cr, §5008; V MTWThF; FolH 306) Sheets
General survey of Roman civilization from its origins to the reign of Constantine. The Roman way of life as seen in art, history, literature, and philosophy. The Etruscans and the golden age of Rome under Augustus.

3045. BASIC PROGRAM IN TECHNICAL TERMINOLOGY AND WORD STUDY. (2 cr, §1045; ¶1048, ¶3048; orientation: III 1st day of class or I 2nd day of class, 308 FolH; light optional assistance labs: 1 hr ar W, 2 hrs ar ThF, 53 FolH; independent labs: I-VII MTWThF, LRC)

3048. TECHNICAL TERMS OF THE MEDICAL AND BIOLOGICAL SCIENCES. (2 cr, §1048; prereq 1045 or ¶1045 or 3045 or ¶3045; orientation: III 1st day of class or I 2nd day of class, 308 FolH; light optional assistance labs: 1 hr ar W, 2 hrs ar ThF, 53 FolH; independent labs: I-VII MTWThF, LRC)

3072. RELIGION IN ANTIQUITY: THE NEW TESTAMENT. (4 cr, §5072; prereq jr; IV MTWThF; FolH 308) Kraabel
First century Israel under Roman rule. Jesus of Nazareth. Earliest Christian communities. Jewish Christianity. Mission to gentiles. Paul the apostle. Beginnings of New Testament.

5008. THE WORLD OF ROME. (4 cr, §3008; V MTWThF; FolH 306) Sheets
Meets with 3008; students do additional work for graduate credit.

¹Knowledge of Greek or Latin is not required.

5072. RELIGION IN ANTIQUITY: THE NEW TESTAMENT. (4 cr, §3072; prereq #; IV MTWThF; FolH 308) Kraabel
Meets with 3072; students do additional work for advanced credit.

5120. FIELD RESEARCH IN ARCHAEOLOGY. (4 cr)
Field excavation, survey, and research. Techniques of excavation and exploration; interpretation of archaeological materials. Contact department for further information.

SECOND TERM

1042. GREEK AND ROMAN MYTHOLOGY. (3 cr; prereq soph; II MTWThF; FolH 202) Hershbell
Classical myths; stories of gods, demigods, and heroes that are a basic component of European cultural heritage; their artistic, religious, psychological, and anthropological implications.

5065. ANCIENT LITERARY CRITICISM. (4 cr; prereq 8 cr in English literature beyond Engl 1002 or in foreign literature or Δ; III MTWThF; FolH 202) Sonkowsky
Aristotle's *Poetics*, Horace's *Ars Poetica*, and Longinus's *On the Sublime* (in translation). History of literary value judgments in antiquity; applications of principles of criticism to ancient writers; Alexandrianism; formation of concept of the classics.

Latin (Lat)

FIRST TERM

1101-1102†. BEGINNING LATIN. (5 cr per qtr; prereq 1101 or equiv for 1102; II-IV MTWThF; FolH 204) Sheets
Mastery of structure of Latin, for attaining reading knowledge; oral reading and composition. See Special Programs section.

3001. BEGINNING LATIN: INTENSIVE ACCELERATED. (10 cr, §1101-1102-1103, §3051-3052; II-IV MTWThF; FolH 108) Miller
Ten class hours weekly, plus individual and small group sessions. Grammar, syntax, composition, and reading. See Special Programs section.

SECOND TERM

3104. LATIN READINGS. (5 cr; prereq 1104 or equiv or #; I MTWThF; FolH 302) Sonkowsky
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. (4 cr; prereq 3052 or Δ; restricted to students in depts *other* than Classics; I MTWThF; FolH 302) Sonkowsky
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)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **3100. CLINICAL AND RESEARCH OBSERVATION.** (2 cr; S-N only; limited to 10 students; prereq departmental 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. (4 cr; II-III TTh; 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. (2 or 4 cr)

Sec 1, II-III TTh, rm ar, Goldstein

Sec 2, VI-VII TTh, FolH 303, Goldstein

Sec 3, *The Nature and Nurture of the Human Voice*, 2 cr, IV TTh, FolH 303, Starr

Designed for persons in the speaking professions (i.e., teachers, actors, singers, lawyers) and for those who teach others to speak or sing. The physical, acoustical, and psychological bases of voice. Medical and functional conditions associated with voice disorders. Strategies and procedures used in management and prevention of voice problems.

5970. DIRECTED STUDIES. (Cr ar [may be repeated for cr]; prereq #) Staff

Directed readings and preparation of reports on selected subjects.

8504. SEMINAR: ARTICULATION. (3 cr; prereq 5504 or #; VI-VII MW) McDermott

Advanced study and independent research.

8520. ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY. (2, 4, or 6 cr [may be repeated for cr]; prereq #; \$2 lab fee) Broen, Starr, Haroldson

Specialized clinical practice. Evaluation and clinical management of persons with communication disorders.

8720. CLINICAL METHODS AND PRACTICE IN AUDIOLOGY. (2, 4, or 6 cr [may be repeated for cr]; prereq #; \$2 lab fee) Staff

Supervised internship experiences for graduate students working with communication disorders of persons with auditory impairment.

8990. DIRECTED RESEARCH. (Cr ar [may be repeated for cr]; prereq #; \$2 lab fee) Staff

Open to graduate students engaged in research.

SECOND TERM

• **3100. CLINICAL AND RESEARCH OBSERVATION.** (2 cr; S-N only; limited to 10 students; prereq departmental written permission) Staff
See First Term.

3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY. (4 cr; II-III TTh; FolH 303) Wellen
See First Term.

5704. NOISE AND MAN. (4 cr; prereq 5301 or #; II MTWThF; 118 Medical Research East) Ward
Temporary and permanent effects of steady, intermittent, and impulse noise on hearing and health. Annoyance and community noise. Noise measurement, reduction, and control; ear defenders and their limitations. Hearing conservation programs; preemployment testing and monitoring audiometry.

5970. DIRECTED STUDIES. (Cr ar [may be repeated for cr]; prereq #) Staff

See First Term.

8520. ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY. (2, 4, or 6 cr [may be repeated for cr];

prereq #; \$2 lab fee) Staff

See First Term.

8720. CLINICAL METHODS AND PRACTICE IN AUDIOLOGY. (2, 4, or 6 cr [may be repeated for cr]; prereq #;

\$2 lab fee) Staff

See First Term.

8990. DIRECTED RESEARCH. (Cr ar [may be repeated for cr]; prereq #; \$2 lab fee) Staff

See First Term.

Composition—See English

Criminal Justice Studies (CJS)

FIRST TERM

5101. CRIMINAL LAW. (4 cr; 8:00-9:30 TWTh; Law 35) Samaha
General criminal law, emphasizing its philosophical underpinnings. Substantive law of homicide, theft, conspiracy, and attempt; defenses of insanity, self-defense, and mistake of fact or law.

5102. CRIMINAL PROCEDURE. (4 cr; 9:30-11:00 TWTh; Law 35) Samaha
Processes by which persons are convicted of crime. Police discretion to arrest, the constitutional law of arrest, search and seizure, role of the prosecutor, plea bargaining, sentencing, and postconviction relief.

5113. COMMUNITY-BASED CORRECTIONS. (4 cr; prereq Soc 5105 or #; I MTWThF; BlegH 245)
Theory, structure, and description of programs that exist as alternatives to imprisonment.

SECOND TERM

5101. CRIMINAL LAW. (4 cr; 9:30-11:00 TWTh; Law 35) Samaha

See First Term.

5102. CRIMINAL PROCEDURE. (4 cr; 8:00-9:30 TWTh; Law 35) Samaha

See First Term.

East Asian Languages

Japanese (Jpn)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

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 register for both terms of the summer session and may not enroll in other summer courses.

1011-1012-1013†. INTENSIVE FIRST-YEAR JAPANESE. (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; KoltH S140) Copeland

Five hours with linguist; 15 hours with drillmasters, extra hours of assigned laboratory work.

Economics (Econ)

See also ID 3111, *Interplay '79: A Search for Understanding*, June 11-29.

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1001. PRINCIPLES OF MACROECONOMICS.** (4 cr, \$1004, \$1014, \$3001, \$3002; each section limited to 50 students; prereq 3rd-qtr 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, I MTWThF, BlegH 440

Sec 2, II MTWThF, BlegH 440

Sec 3, III MTWThF, BlegH 250

Sec 4, IV MTWThF, BlegH 440

Sec 5, V MTWThF, BlegH 440

● **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, II MTWThF, BlegH 235

Sec 2, III MTWThF, BlegH 235

Sec 3, IV MTWThF, BlegH 235

● **3101. MICROECONOMIC THEORY.** (4 cr, §5151; each section limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #)

Behavior of firms and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions.

Sec 1, II MTWThF, BlegH 150

Sec 2, III MTWThF, BlegH 150

● **3102. MACROECONOMIC THEORY.** (4 cr, §5152; limited to 45 students; prereq 1001, 1002, Math 1111 or equiv or #; IV MTWThF, BlegH 110)

Determinants of national income, employment, and price level; aggregate consumption and investment.

● **3501. LABOR ECONOMICS.** (4 cr, §5531; limited to 35 students; not open to economics majors; prereq 1001, 1002; IV MTWThF; BlegH 130)

Role of labor in economy; labor as a factor of production, population, and the labor force; economics of labor markets; labor market institutions; theories of wages and employment; unions and collective bargaining; public policy.

● **3701. MONEY AND BANKING.** (4 cr, §5721; limited to 30 students; prereq 1001, 1002 or equiv; not open to economics majors; I MTWThF; BlegH 150)

Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system, and monetary policy.

3970. DIRECTED STUDIES. (Cr ar; prereq 1002, #)

● **5021. ECONOMICS, ETHICS, AND ECONOMIC PHILOSOPHY.** (3-5 cr; limited to 45 students; prereq 1001, 1002 or equiv; IV MTWThF; Law 65)

Literature and issues it raises; relation of ethics to economic organization, practice, and policy. Economic philosophies; formulation of economic philosophy.

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 #)

Individual decision making by households and firms under conditions of monopoly, competition; some welfare economics.

Sec 1, II MTWThF, BlegH 150

Sec 2, III MTWThF, BlegH 150

5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT. (3 cr, §3102; limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #; IV MTWThF; BlegH 110)

Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding.

● **5401. INTERNATIONAL ECONOMICS.** (4 cr, §5431; limited to 35 students; not open to economics majors; prereq 1001, 1002 or equiv; II MTWThF; BlegH 135)

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.

● **5431. INTERNATIONAL ECONOMICS.** (4 cr, §5401; limited to 25 students; prereq 3101, 3102 or equiv or #; II MTWThF; BlegH 135)

Meets with 5401.

● **5531. LABOR ECONOMICS.** (4 cr, §3501; limited to 25 students; prereq 3101, 3102 or equiv; IV MTWThF; BlegH 130)

See 3501.

● **5621. ECONOMICS OF URBAN PROBLEMS.** (4 cr; limited to 45 students; prereq 1001, 1002 or equiv; III MTWThF; BlegH 130)

Unemployment and central city decay. Minimum guaranteed income proposals. Low income housing policies. Public policies toward health care. Financing public education. Fiscal problems of cities. Mass transit issues.

● **5721. MONEY AND BANKING.** (4 cr, §3701, §5701; limited to 30 students; prereq 3102 or equiv; I MTWThF; BlegH 150)

See 3701.

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

Areas useful to individual programs and objectives not available in regular course offerings.

8990. INDIVIDUAL GRADUATE RESEARCH. (Cr ar) Staff

SECOND TERM

● **1001. PRINCIPLES OF MACROECONOMICS.** (4 cr, §1004, §1014, §3001, §3002; each section limited to 50 students; prereq 3rd-qr fr)

See First Term.

Sec 1, I MTWThF, BlegH 120

Sec 2, II MTWThF, BlegH 120

● **1002. PRINCIPLES OF MICROECONOMICS.** (4 cr, §1005, §1015, §3001, §3002; each section limited to 50 students; prereq 3rd-qr fr)

See First Term.

Sec 1, I MTWThF, BlegH 110

Sec 2, II MTWThF, BlegH 135

Sec 3, III MTWThF, BlegH 220

Sec 4, IV MTWThF, BlegH 220

● **3101. MICROECONOMIC THEORY.** (4 cr, §5151; each section limited to 45 students; prereq 1001, 1002, Math 1111 or equiv or #)

See First Term.

Sec 1, II MTWThF, AndH 250

Sec 2, III MTWThF, BlegH 420

● **3102. MACROECONOMIC THEORY.** (4 cr, §5152; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #; IV MTWThF; BlegH 135)

See First Term.

● **3103. WELFARE ECONOMICS.** (4 cr; limited to 50 students; prereq 3101 or 3101H or equiv; II MTWThF; BlegH 5)

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.

● **3701. MONEY AND BANKING.** (4 cr, §5721; limited to 30 students; prereq 1001, 1002 or equiv; not open to economics majors; III MTWThF; BlegH 425)

See First Term.

3970. DIRECTED STUDIES. (Cr ar; prereq 1002, #)

● **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, II MTWThF, AndH 250

Sec 2, III MTWThF, BlegH 420

● **5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT.** (3 cr, §3102; limited to 15 students; prereq 1001, 1002, 1 qtr calculus, grad student or #; IV MTWThF; BlegH 135)

See First Term.

● **5721. MONEY AND BANKING.** (4 cr, §3701; limited to 25 students; prereq 3102 or equiv; III MTWThF; BlegH 120)

Meets with 3701.

● **5831. COST-BENEFIT ANALYSIS.** (4 cr; limited to 45 students; prereq 3101 . . . 3103 recommended; IV MTWThF; BlegH 110)

Principles for evaluation of benefits and costs of public projects or programs. Definition and measurement of benefits and costs. Rate of return and rate of discount. Market imperfections, risk and uncertainty.

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

8990. INDIVIDUAL GRADUATE RESEARCH. (Cr ar) Staff

English

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

English (Engl)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

● **1016. INTRODUCTION TO AMERICAN LITERATURE.** (4 cr; limited to 40 students; II MTWThF; Arch 30) Griffin
Selected texts; critical discussion and writing.

● **1019. INTRODUCTION TO MODERN LITERATURE: DRAMA.** (4 cr; limited to 40 students; III MTWThF; LindH 302) Haley
Selected texts; critical discussion and writing.

● **3111. SURVEY OF ENGLISH LITERATURE.** (4 cr; limited to 52 students; II MTWThF; LindH 305) Rosendahl
Historical survey of major figures, movements, and trends in English literature. Chaucer to Marvell, including Spenser, Shakespeare, and Donne.

3241. SHAKESPEARE. (4 cr; IV MTWThF; LindH 305) Rosendahl
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. (4 cr; I MTWThF; LindH 215) Steinmann
Plays from the middle and late periods. All sections will read *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays.

3252. THE KING JAMES BIBLE AS LITERATURE. (4 cr; IV MTWThF; Ex 193) O'Brien
The Book of Daniel, Apocrypha, and New Testament as documents in the history of literature.

3411. AMERICAN LITERATURE. (4 cr; IV MTWThF; Arch 30) Griffin
Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course, with wide reading. Beginnings through Hawthorne.

3455. AMERICAN SHORT STORY. (4 cr; III MTWThF; MMA 125) Geffen
Readings from the 18th century to the present.

● **3851. THE ENGLISH LANGUAGE.** (4 cr, \$5851; limited to 50 students; I MTWThF; LindH 229) Escure
An introduction to the English language including English grammars, phonetics and phonology, British and American dialects, and native language acquisition.

5151. 18TH-CENTURY ENGLISH NOVEL. (4 cr; II MTWThF; LindH 215) Alkon
Novels by such authors as Defoe, Richardson, Fielding, Smollett, Sterne, and Austen.

5261. MILTON. (4 cr; II MTWThF; LindH 203) O'Brien
Paradise Lost, *Samson Agonistes*, minor poems, *Areopagitica*, and often, although not always, *Paradise Regained*.

5451. AMERICAN NOVEL. (4 cr; I MTWThF; LindH 217) Geffen
Through the 19th century. Typical authors: Cooper, Hawthorne, Melville, Stowe, Twain, James.

5851. STRUCTURE OF MODERN ENGLISH. (4 cr, \$3851; III MTWThF; LindH 229) Escure
Modern English grammar: phonology, syntax, and semantics; variations and change.

5860. STUDIES IN THE ENGLISH LANGUAGE: TRADITIONAL ENGLISH GRAMMAR. (4 cr; prereq 5851 or #; III MTWThF; LindH 217) Steinmann
Investigation of such grammatical notions as parts of speech (adjective, adverb, noun, etc.), functions (subject, direct object, modifier, etc.), clauses (independent, relative, etc.), person, number, gender, case, tense, voice, aspect, mood, and agreement. Analysis of sentences and discourses. Readings in traditional grammar (Poutsma, Jespersen, Quirk, etc.)

● **5920. TOPICS IN ENGLISH AND AMERICAN LITERATURE: TIME AND LITERATURE.** (4 cr; limited to 40 students; IV MTWThF; LindH 215) Alkon
Attitudes toward time and ways of depicting time in English poems from several periods and in prose works by Defoe, Sterne, Hemingway, Orwell, Sartre, Robbe-Grillet, Vonnegut, Nabokov, and others.

● **8610. STUDIES IN 20TH-CENTURY BRITISH AND AMERICAN LITERATURE: ERNEST HEMINGWAY.** (4 cr; limited to 12 students; III-IV TTh; LindH 336) Solotaroff

SECOND TERM

● **1012. INTRODUCTION TO THE LITERATURE OF THE RENAISSANCE: 1485-1660.** (4 cr; limited to 40 students; II MTWThF; LindH 203) McClure
Typical authors: More, Sidney, Spenser, Shakespeare, Donne, Milton.

● **1018. INTRODUCTION TO MODERN LITERATURE: PROSE FICTION.** (4 cr; limited to 40 students; I MTWThF; LindH 217) Hirsch
Selected texts; critical discussion and writing.

1241. INTRODUCTION TO SHAKESPEARE. (4 cr; II MTWThF; Arch 15) Clayton
Lecture survey of Shakespeare's work, treating approximately 10 plays. For students in all colleges of the University.

3112. SURVEY OF ENGLISH LITERATURE. (4 cr; IV MTWThF; Arch 15) McClure
Historical survey of major figures, movements, and trends in English literature. Milton to Johnson, including Dryden, Swift, and Pope.

3241. SHAKESPEARE. (4 cr; III MTWThF; LindH 229) Madden
See First Term.

3242. SHAKESPEARE. (4 cr; IV MTWThF; LindH 215) Clayton
See First Term.

3412. AMERICAN LITERATURE. (4 cr; IV MTWThF; Arch 45) Roth
Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Thoreau and Melville through James.

● **3851. THE ENGLISH LANGUAGE.** (4 cr, \$5851; limited to 50 students; I MTWThF; LindH 203) Mitchell
See First Term.

● **3910. TOPICS IN ENGLISH AND AMERICAN LITERATURE: IRISH LITERATURE—AN INTRODUCTION.** (4 cr; limited to 40 students; IV MTWThF; LindH 217) Anderson
A survey of Irish literature from the *Tain* and early Irish lyrics to the end of the bardic period: the influence of this tradition on modern writers such as Yeats, Joyce, and Heaney.

● **3920. TOPICS IN ENGLISH AND AMERICAN LITERATURE: POPULAR FICTION.** (4 cr; limited to 40 students; II MTWThF; LindH 215) Roth
The nature and appeal of popular fiction studied through conventions of particular adventure forms: i.e., the western, science fiction, detective fiction, and the thriller.

5152. 19TH-CENTURY ENGLISH NOVEL. (4 cr; IV MTWThF; LindH 229) Madden
Novels by such authors as Scott, Dickens, the Brontës, Thackeray, Eliot, and Hardy.

5221. CHAUCER I: THE CANTERBURY TALES. (5 cr; II-III MTWThF; LindH 302) MacLeish
Reading of *The Canterbury Tales*. Chaucer's language. This course is a prerequisite to all other courses in Middle English literature (5215-5222).

● **5331. VICTORIAN WRITERS: BLAKE AND WORDSWORTH.** (4 cr; limited to 40 students; III MTWThF; LindH 305) Sugnet

● **5363. JAMES JOYCE.** (4 cr; limited to 40 students; II MTWThF; LindH 217) Anderson
Life and early works, particularly *Dubliners*, *A Portrait of the Artist as a Young Man*, and the first four episodes of *Ulysses*.

5432. AMERICAN POETRY. (4 cr; III MTWThF; LindH 215) Furia
Major figures; historical and intellectual background; poetic theory since 1890. Typical authors: Frost, Stevens, Pound, Eliot, Moore, Williams.

5452. AMERICAN NOVEL. (4 cr; I MTWThF; LindH 305) Furia
Late 19th and 20th centuries. Typical authors: James, Dreiser, Cather, Hemingway, Fitzgerald, Faulkner.

• **5671. THEORY OF THE NOVEL.** (4 cr; limited to 40 students; III MTWThF; LindH 203) Hirsch
British and American novels by such writers as Fielding, Austen, Dickens, James, and Joyce; special attention to the novel as a genre.

English Composition (Comp)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1001.¹ INTRODUCTORY COMPOSITION.** (4 cr; each section limited to 28 students; prereq assignment to Category 3 or 5 or completion of 0001 ... # after first day of class)
Guided practice in the fundamental structural and stylistic features of exposition and argumentation. Not an introduction to literary studies or to humanities.

Sec 1, I MTWThF, KoltH S135, Haley
Sec 2, II MTWThF, LindH 303, Brown
Sec 3, IV MTWThF, KoltH S137, Brown

• **1002.¹ INTRODUCTORY COMPOSITION.** (4 cr; limited to 28 students; prereq assignment to Category 2 or completion of 1001 ... # after first day of class; III MTWThF; LindH 315) Staff
See 1001.

• **1027.¹ INTERMEDIATE COMPOSITION.** (4 cr; limited to 25 students; prereq soph and completion of fr English or Δ ... # after first day of class; II MTWThF; LindH 315) Staff
Master of expository forms (e.g., comparison, analysis, cause-effect) and strategies of tone and diction for clear, accurate style.

3085. CONFERENCE COURSE IN ADVANCED COMPOSITION. (1-4 cr; prereq completion of fr English, Δ ; hrs ar)
Frequent writing conferences for individual students; lectures and discussion sessions in cooperation with major department; special arrangements for IT and CLA students.

SECOND TERM

• **1001.¹ INTRODUCTORY COMPOSITION.** (4 cr; limited to 28 students; prereq assignment to Category 3 or 5 or completion of 0001 ... # after first day of class; II MTWThF; KoltH S136) Staff
See First Term.

• **1002.¹ INTRODUCTORY COMPOSITION.** (4 cr; each section limited to 28 students; prereq assignment to Category 2 or completion of 1001 ... # after first day of class)
See 1001 First Term.

Sec 1, I MTWThF, KoltH S136, Sugnet
Sec 2, III MTWThF, KoltH S136, Staff

Foreign Study (FoSt)

FIRST TERM

¹Any student absent the first day (Tuesday, June 12, for first term, and Tuesday, July 17, for second term) will lose his or her place in class.

5960. SPAN SEMINAR FOR FOREIGN STUDY. (6 cr; prereq approval before Oct 1978 by a faculty selection committee [grad students must also have approval of adviser]) Singh, Asphaug/Mitchell, Gustafson, Rogers
Preparation for independent study in Haiti, Sweden, south India, or Tanzania, investigating history, social and political ambiance, and culture.

SECOND TERM

5960. SPAN INDEPENDENT PROJECT. (6 cr; prereq satisfactory completion of first term) Singh, Asphaug/- Mitchell, Gustafson, Rogers
Following an 8-week stay in Haiti, Sweden, south India, or Tanzania, participants prepare and submit a project growing from their study at home and abroad.

French and Italian

French (Fren)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1101. BEGINNING FRENCH.** (5 cr; limited to 30 students; II-III MTWThF; FolH 104)

• **1102. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school French; I-II MTWThF; FolH 105)

• **1103. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; I-II MTWThF; FolH 205)

• **1104. INTERMEDIATE FRENCH.** (5 cr; limited to 30 students; prereq 1103 or 3 yrs high school French; III-IV MTWThF; FolH 205)

• **3015. FRENCH CONVERSATION AND COMPOSITION.** (5 cr; limited to 15 students; prereq 1105; III-IV MWF; FolH 302) Robinson
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.

• **3104. INTRODUCTION TO FRENCH LITERARY TEXTS.** (5 cr; limited to 15 students; prereq 1105; V-VI MWF; FolH 302) Caplan
Principal literary genres examined through stylistic analyses and literary explications. Critical terminology; literary problems and techniques. Taught wholly or mainly in French.

• **3602. FRENCH LITERATURE IN TRANSLATION.** (5 cr [cr does not count toward French major]; limited to 40 students; taught in English; VI-VII MWF; FolH 202) Lock
See 3601.

3970. DIRECTED READINGS. (1-5 cr; prereq undergrad, Δ)

• **5311. RENAISSANCE POETRY BEFORE THE PLÉIADE.** (5 cr; limited to 15 students; prereq 3209 or above; V-VI MWF; FolH 103) Conley
The *grands rhétoriciens*, Lemaire, Marot, Saint-Gelays, Louise Labé, and others; elegy, emblem, *blason*, and *art poétique*.

8970. DIRECTED READINGS. (1-5 cr; prereq # and consent of dept chair; hrs ar) Staff

FIRST AND SECOND TERMS: TEN-WEEK COURSE

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 register in both terms of the summer session and may not enroll in other summer courses.

- **1101-1102-1103†. BEGINNING FRENCH.** (15 cr for both terms; limited to 30 students)

Sec 5, II-IV MTWThF, KoltH S133

Sec 6,

SECOND TERM

- **1102. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school French; II-III MTWThF; FolH 203)
- **1103. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; I-II MTWThF; FolH 107)
- **1105. INTERMEDIATE FRENCH.** (5 cr; limited to 30 students; prereq 1104; III-IV MTWThF; FolH 107)
- **3016. ADVANCED FRENCH COMPOSITION AND CONVERSATION.** (5 cr; limited to 15 students; prereq 3015 or #; III-IV MWF; FolH 103)
- **3601. FRENCH LITERATURE IN ENGLISH TRANSLATION.** (5 cr [cr does not count toward French major]; limited to 40 students; taught in English; IV-V MWF; FolH 201) Akehurst
Representative works from medieval times to present examined through movements, genres, or themes.
- 3970. DIRECTED READINGS.** (1-5 cr; prereq undergrad, Δ) Staff
- **5355. NOVEL OF THE 18TH CENTURY.** (5 cr; limited to 15 students; prereq 3209 or above; V-VI MWF; FolH 103) Waldauer
Emphasis on novels of Prévost, Marivaux, Rousseau, Diderot, and Laclos.
- 8970. DIRECTED READINGS.** (1-5 cr; prereq # and consent of dept chair; hrs ar) Staff

Italian (Ital)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

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 register in both terms of the summer session and may not enroll in other summer courses.

- **1101-1102-1103†. BEGINNING ITALIAN.** (15 cr for both terms; limited to 30 students, must be reserved in JohH 12; II-IV MTWThF; KoltH S134)
A course with speaking objectives based on an audiolingual approach. Students learn to understand and express fundamental structures of the language. Includes audiovisual aids.

Geography (Geog)

FIRST TERM

- 3111. GEOGRAPHY OF MINNESOTA.** (4 cr; II MTWThF; BlegH 415) Rice
Physical resources, population, and commercial production.
- 3371. URBAN GEOGRAPHY.** (4 cr; III MTWThF; BlegH 435) Sheppard
Character, distribution, and development of cities in present-day world. Internal and external locational relationships.
- 3381. POPULATION GEOGRAPHY.** (4 cr; IV MTWThF; BlegH 435) Weil
Characteristics of human populations that relate to the nature of places and regions. Differential growth of populations with consideration of spatial variations in fertility, mortality, and migration. Regional variations in relationship of population and material welfare.

- 3451. GEOGRAPHY OF SOILS.** (4 cr, §Soil 5512; I MTWThF; BlegH 340) Gersmehl
Distributions of soil-forming processes and soil types; soil differences in small areas; soil constraints on human activities in different places; regional differences in soil problems and management techniques — farming, forestry, construction, agribusiness, suburbanization, homesteading.

3970. DIRECTED STUDIES. (1-15 cr per qtr) Staff

- 5132. SOUTH AMERICA.** (4 cr; III MTWThF; BlegH 440) Mather
Physical resources, population, agriculture, manufacturing, and transportation in countries of South America.
- 5701. FIELD RESEARCH.** (4 cr; prereq 12 cr in geography and #) Brown
Field investigation in physical, cultural, and economic geography; techniques of analysis and presentation; reconstruction of environments. See Special Programs section.
- 8400. SEMINAR: PHYSICAL GEOGRAPHY.** (3 cr; prereq #) Brown
Field research seminar. See Special Programs section.
- 8970. DIRECTED READINGS.** (1-5 cr) Staff

SECOND TERM

- 1401. PHYSICAL GEOGRAPHY.** (5 cr, §NSci 1501; I MTWThF; BlegH 240) Squires
Distribution patterns of climate, relief, vegetation, and soils; regional differences in problems of physical development.
- 3111. GEOGRAPHY OF MINNESOTA.** (4 cr; II MTWThF; BlegH 440) Rice
See First Term.
- 3970. DIRECTED STUDIES.** (1-15 cr per qtr) Staff
- 5411. MEDICAL GEOGRAPHY.** (4 cr; IV MTWThF; BlegH 425) Weil
Survey of concepts and methods of medical geography; settlement patterns and disease; the demographic transition; the impact of agricultural and technological development on disease and diet; and the distribution of health practitioners and facilities.
- 8330. SEMINAR: AGRICULTURAL GEOGRAPHY.** (3 cr; prereq #; hr and rm ar) Mather
- 8970. DIRECTED READINGS.** (1-5 cr) Staff

German (Ger)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

The Summer Session and the German department will sponsor a special program using the facilities of Ludwig-Maximilians Universität, Munich, Germany. Permission of the German department is required for registration. See Special Programs section.

FIRST TERM

- 1101. BEGINNING GERMAN.** (5 cr, §1110)
Emphasis on structure, reading, and listening comprehension.
Sec 1, I-II MTWThF, FolH 102
Sec 2, III-IV MTWThF, FolH 105
- 1103. BEGINNING GERMAN.** (5 cr, §1110; prereq 1102; III-IV MTWThF; FolH 207) Wakefield
See 1101.

1210. ELEMENTARY INDIVIDUALIZED GERMAN FOR READING. (3-15 cr, §1101, §1102, §1103, §1110; I-II MTWThF; FolH 308) Fullerton

Acquisition of skill in decoding written German. Students study structure, vocabulary, and texts at their own

● **1301. INTERMEDIATE GERMAN.** (5 cr; limited to 30 students; prereq 1003 or 1103 or 15 cr of 1110 or placement; I-II MTWThF; FolH 201) Plummer
Expansion of basic skills; discussion, reading, and writing.

● **3601. GERMAN LITERATURE IN TRANSLATION.** (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; III MTWThF, ar) Liberman
Representative literary works from medieval literature, related to other literatures.

● **3641. INTRODUCTION TO GERMAN FOLKLORE.** (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; requires no knowledge of German; II MTWThF; FolH 304) Liberman
Traditional folklore genres; charms (magic), legends, fairy tales, ballads.

5510. TOPICS IN CONTEMPORARY GERMAN CULTURE. (4 cr [8 cr max]; prereq 3513 or equiv; III MTWThF, ar) Duroche
A single topic of contemporary German culture explored in depth to develop a methodology of *Landeskunde*. Taught in German.

5970. DIRECTED STUDIES. (1-5 cr) Duroche
Guided individual reading or study.

SECOND TERM

1102. BEGINNING GERMAN. (5 cr, §1110; prereq 1101; III-IV MTWThF, FolH 204)
See 1101 First Term.

1210. ELEMENTARY INDIVIDUALIZED GERMAN FOR READING. (3-15 cr, §1101, §1102, §1103, §1110; I-II MTWThF; FolH 201) Fullerton
See 1210 First Term.

● **3105. READING AND ANALYSIS OF LITERARY TEXTS: DRAMA AND PROSE.** (4 cr; limited to 25 students; required of all German majors; prereq 1302 or #: II MTWThF; FolH 204) Taraba
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.

● **3603. GERMAN LITERATURE IN TRANSLATION.** (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; III MTWThF; FolH 205) Plummer
Representative literary works from the modern period and their relationship to other literatures.

● **3610. GERMAN AUTHORS OR TOPICS IN TRANSLATION.** (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; IV MTWThF; FolH 207) Taraba

Greek—See Classics

Hebrew—See Near and Middle Eastern Studies

Hindi—See South Asian Studies

History (Hist)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

FIRST TERM

1001. INTRODUCTION TO MODERN EUROPEAN HISTORY. (4 cr, §1001H, §3001; not open to jrs, srs; I MTWThF; BlegH 210) Thayer
Development of Western Europe to 1715.

1002. INTRODUCTION TO MODERN EUROPEAN HISTORY. (4 cr, §1002H, §3002; not open to jrs, srs; IV MTWThF; BlegH 210) Tracy
Revolution, liberalism, and nationalism to 1870.

1052. ANCIENT CIVILIZATION. (4 cr, §3053; III MTWThF; BlegH 225) Evans
Greek civilization to 323 B.C.

1401. SURVEY OF LATIN AMERICAN HISTORY. (4 cr, §3401; II MTWThF; BlegH 155) Schwartz
Colonial period to 1800.

1453. ASIAN CIVILIZATIONS. (4 cr, §3453; II MTWThF; BlegH 430) Kopf
The decline of empires, European domination, cultural renaissance and nationalism.

3001. INTRODUCTION TO MODERN EUROPEAN HISTORY. (4 cr, §1001, §1001H; I MTWThF; BlegH 210) Thayer
See 1001.

3002. INTRODUCTION TO MODERN EUROPEAN HISTORY. (4 cr, §1002, §1002H; IV MTWThF; BlegH 210) Tracy
See 1002.

3052. ANCIENT CIVILIZATION (4 cr, §1053; III MTWThF; BlegH 225) Evans
See 1052.

3272. HISTORY OF SCANDINAVIA. (4 cr; II MTWThF; BlegH 430) Bomash
Scandinavia—16th, 17th, and 18th centuries.

3401. SURVEY OF LATIN AMERICAN HISTORY. (4 cr, §1401; II MTWThF; BlegH 155) Schwartz
See 1401.

3434. ISLAM AND ISLAMIC CULTURE IN AFRICA. (4 cr per qtr; III MTWThF; BlegH 350) Kaba
Processes, forms, and sociopolitical effects. Introduction and spread of Islam in Africa. The process and agents of Islamization and the rise of the Islamic ideology for political purposes.

3453. ASIAN CIVILIZATIONS. (4 cr, §1453; II MTWThF; BlegH 430) Kopf
See 1453.

3468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (4 cr, §3468; II MTWThF; BlegH 340) Allsen
Introduction of Marxism to China; rise of Communist Party; restructuring Chinese society.

3805. JACKSONIAN AMERICA. (4 cr; III MTWThF; RarigC 616) Howe
Analysis of the developing republic from the perspective of the Jacksonian era.

3822. UNITED STATES IN THE 20TH CENTURY. (4 cr; I MTWThF; RarigC 610) Berman
1920 to 1945.

3970. DIRECTED STUDIES. (1-15 cr; prereq #)
Guided individual reading or study. Open to qualified students for 1 or more quarters.

3990. DIRECTED RESEARCH. (1-15 cr; prereq #)
Qualified students, with consent of instructor, work on a tutorial basis.

5265. MODERN RUSSIA: 19TH CENTURY. (4 cr; IV MTWThF; BlegH 430) Stavrou
Political, social, and cultural developments from Alexander I to the 1905 revolution. The revolutionary movement and the consequences of the emancipation of the serfs; Russian industrialization.

5285. DIPLOMATIC HISTORY OF EUROPE IN THE 19TH AND 20TH CENTURIES. (4 cr; III MTWThF; RarigC 610) Kieft
1871-1918. The Bismarck alliance, the eastern question, overseas imperialism, World War I.

5389. RUSSIAN-AMERICAN RELATIONS 1917 TO PRESENT. (4 cr; II MTWThF; BlegH 350) Brauer
Russian-American relations since the Russian Revolution; political, diplomatic, economic, and military problems; American foreign policy.

5468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT. (4 cr, §3468; II MTWThF; BlegH 340) Allsen
See 3468.

5970. DIRECTED STUDIES. (1-15 cr; prereq #)

Qualified senior and graduate students may register for work on tutorial basis. Guided individual reading or study.

5990. DIRECTED RESEARCH. (1-15 cr; prereq #)

Qualified senior and graduate students may register for work on tutorial basis.

SECOND TERM

1003. INTRODUCTION TO MODERN EUROPEAN HISTORY. (4 cr, §1003H, §3003; not open to jrs, srs; III MTWThF; BlegH 245) Noonan
1870 to recent times.

1053. ANCIENT CIVILIZATION. (4 cr, §3051; II MTWThF; BlegH 225) Kelly
Roman civilization to 305 A.D.

1101. INTRODUCTION TO MEDIEVAL AND RENAISSANCE HISTORY. (4 cr, §1111, §3101; I MTWThF; BlegH 225) Bachrach
The early Middle Ages, decline of Rome, barbarian kingdoms, Carolingian empire.

1302. AMERICAN HISTORY. (4 cr, §1302H; IV MTWThF; BlegH 215) Spear
Modern America.

3003. INTRODUCTION TO MODERN EUROPEAN HISTORY. (4 cr, §1003, §1003H; III MTWThF; BlegH 245) Noonan
See 1003.

3053. ANCIENT CIVILIZATION. (4 cr, §1051; II MTWThF; BlegH 225) Kelly
See 1053.

3101. INTRODUCTION TO MEDIEVAL AND RENAISSANCE HISTORY. (4 cr, §1101, §1111; I MTWThF; BlegH 225) Bachrach
See 1101.

3223. EUROPEAN SOCIAL HISTORY THROUGH LITERATURE. (4 cr per qtr; IV MTWThF; BlegH 350) Rudolph
From the industrial revolution to the present.

3425. HISTORY OF MEXICO. (4 cr per qtr; I MTWThF; BlegH 350) McCaa
Political, social, and economic history of Mexico. Development of the Mexican nation.

3845. AMERICAN ECONOMIC HISTORY. (4 cr per qtr; III MTWThF; BA 130) Green
1865 to present.

3970. DIRECTED STUDIES. (1-15 cr; prereq #)
See First Term.

3990. DIRECTED RESEARCH. (1-15 cr; prereq #)
See First Term.

5231. MODERN FRANCE. (4 cr; II MTWThF; BlegH 245) Munholland
Survey of French politics and society since 1848.

• **5381. MINNESOTA HISTORY WORKSHOP—July 16-27.** (5 cr; limited to 100 students, must be reserved at 1425 University Ave SE)
See Special Programs section.

5473. SOCIAL HISTORY OF MODERN JAPAN. (4 cr; IV MTWThF; BlegH 245) Marshall
Family, school, and work in the 19th and 20th centuries.

5861. HISTORY OF AMERICAN IMMIGRATION. (4 cr; prereq #; III-IV TTh) Vecoli
Readings in the historiography of immigration and ethnic groups.

5970. DIRECTED STUDIES. (1-15 cr; prereq #)
See First Term.

Sec 2, 5 cr, must be reserved at 1425 University Ave SE.

For students who are repeating Hist 5381, Minnesota History Workshop. See Special Programs section.

5990. DIRECTED RESEARCH. (1-15 cr; prereq #)
See First Term.

Humanities (Hum)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1001. HUMANITIES IN THE MODERN WORLD I.** (5 cr, §3001, §Rhet 1301; limited to 65 students; I-II TTh; ForH 120) Archer

Eighteenth-century Europe. Old Regime through French Revolution and Napoleon; new science, Enlightenment, cult of sensibility; rococo, neoclassicism, incipient romanticism. Works by creative persons such as Pope, Voltaire, Rousseau, Diderot, Goethe, Watteau, Boucher, Hogarth, David, Goya, Mozart, Haydn.

• **1101. THE LIFE OF THE MIND: INTRODUCTION TO METHODS IN THE HUMANITIES.** (5 cr; limited to 35 students; III-IV MW; ForH 349) Tapp

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.

• **3014. EUROPEAN HERITAGE: AGE OF THE BAROQUE.** (5 cr; limited to 65 students; III-IV MW; ForH 120) Thomas

Counter-Reformation, religious wars; mannerism, baroque Rome; Spanish golden age; new science, philosophy; Netherlandish culture; court of Louis XIV; German architecture, music. Authors: Calderón, Grimmelshausen, Descartes, Molière. Artists: Bernini, Borromini, Greco, Rubens, Vermeer, Rembrandt. Composers: Palestrina, Monteverdi, Handel, Bach.

• **3101. MEANING OF HUMANITY.** (4 cr; limited to 65 students; III-IV TTh; SmithH 325) Roshwald
The essence of humanity and the factors determining its course; theories such as those of Marx, Freud, Plato.

SECOND TERM

• **1002. HUMANITIES IN THE MODERN WORLD II.** (5 cr, §3002, §Rhet 1302; limited to 65 students; II MTWThF; Arch 35) Bryan

Romanticism, liberalism, socialism; industrial revolution, materialism, cult of the individual and some counter-statements; 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.

• **1101. THE LIFE OF THE MIND: INTRODUCTION TO METHODS IN THE HUMANITIES.** (5 cr; limited to 35 students; III-IV TTh; room ar) Hershbell
See First Term.

• **3301. A TIME TO LAUGH: A STUDY OF THE COMIC SPIRIT.** (5 cr; limited to 65 students; I-II TTh, ForH 120) D'Andrea

Interdisciplinary survey of comedy through time and across world cultures in literature, drama, folk ritual and tale, social convention, language, sport, film.

Interdepartmental Study (ID)

• **3111. INTERPLAY '79: A SEARCH FOR UNDERSTANDING — June 11-29.** (4 cr; each section limited to 40 students, reserved in JohH 12; students enroll in one section each wk; one section from each of the three study areas must be included; in addition, all students attend lecture Wednesday, each week 8:30-10 ar) Nolte, Moore

The humanities, performing and visual arts, social sciences and sciences in the latter half of the 19th century; a search for understanding of their impact, then and now.

1. ARTS

Architecture — Identity Through Environment. Clemence

Sec 1, 8:30-10:00 MTThF, June 11-15, ar

Sec 21, 8:30-10:00 MTThF, June 18-22, ar

Sec 41, 8:30-10:00 MTThF, June 25-29, ar

Art History — Archaeological Discoveries and New Directions in the Arts of the 19th Century. Cooper

Sec 2, 8:30-10:00 MTThF, June 11-15, ar
Sec 22, 8:30-10:00 MTThF, June 18-22, ar
Sec 42, 8:30-10:00 MTThF, June 25-29, ar

Art History — Art as an Indicator of Social Change in America, 1850-1900. Marling

Sec 3, 8:30-10:00 MTThF, June 11-15, ar
Sec 23, 8:30-10:00 MTThF, June 18-22, ar
Sec 43, 8:30-10:00 MTThF, June 25-29, ar

Dance — Dance and Musical Theatre in the Late 19th Century. Moulton

Sec 4, 8:30-10:00 MTThF, June 11-15, ar
Sec 24, 8:30-10:00 MTThF, June 18-22, ar
Sec 44, 8:30-10:00 MTThF, June 25-29, ar

Music — Late 19th-Century Roots of 20th-Century Music. Caswell

Sec 5, 8:30-10:00 MTThF, June 11-15, ar
Sec 25, 8:30-10:00 MTThF, June 18-22, ar
Sec 45, 8:30-10:00 MTThF, June 25-29, ar

Theatre Arts — Theatre in the Late 19th Century. Feingold

Sec 6, 8:30-10:00 MTThF, June 11-15, ar
Sec 26, 8:30-10:00 MTThF, June 18-22, ar
Sec 46, 8:30-10:00 MTThF, June 25-29, ar

2. HUMANITIES

American Studies — Symbolic Approaches to American Culture. Delattre

Sec 7, 8:30-10:00 MTThF, June 11-15, ar
Sec 27, 8:30-10:00 MTThF, June 18-22, ar
Sec 47, 8:30-10:00 MTThF, June 25-29, ar

English — Modern Drama: Memory and Desire. Leyasmeyer

Sec 8, 8:30-10:00 MTThF, June 11-15, ar
Sec 28, 8:30-10:00 MTThF, June 18-22, ar
Sec 48, 8:30-10:00 MTThF, June 25-29, ar

English — Literary Impressionism and the Crisis of Value. Solotaroff

Sec 9, 8:30-10:00 MTThF, June 11-15, ar
Sec 29, 8:30-10:00 MTThF, June 18-22, ar
Sec 49, 8:30-10:00 MTThF, June 25-29, ar

History — Victorian England. Altholz

Sec 10, 8:30-10:00 MTThF, June 11-15, ar
Sec 30, 8:30-10:00 MTThF, June 18-22, ar
Sec 50, 8:30-10:00 MTThF, June 25-29, ar

Humanities — The Life of the Mind. D'Andrea

Sec 11, 8:30-10:00 MTThF, June 11-15, ar
Sec 31, 8:30-10:00 MTThF, June 18-22, ar
Sec 51, 8:30-10:00 MTThF, June 25-29, ar

Philosophy — Art and Morality in the Late 19th Century. Eaton

Sec 12, 8:30-10:00 MTThF, June 11-15, ar
Sec 32, 8:30-10:00 MTThF, June 18-22, ar
Sec 52, 8:30-10:00 MTThF, June 25-29, ar

3. SCIENCE AND SOCIAL SCIENCE

Business Administration — Societal Forces Inherent in a Changing Agricultural, Democratic, Capitalistic Culture. Duffy

Sec 13, 8:30-10:00 MTThF, June 11-15, ar
Sec 33, 8:30-10:00 MTThF, June 18-22, ar
Sec 53, 8:30-10:00 MTThF, June 25-29, ar

Economics — The Development of Economics. Harlan Smith

Sec 14, 9:30-11:00 MTThF, June 11-15, ar
Sec 34, 9:30-11:00 MTThF, June 18-22, ar
Sec 54, 9:30-11:00 MTThF, June 25-29, ar

History of Medicine — The Triumph of Scientific Medicine: 1850-1915. Dale Smith

Sec 15, 8:30-10:00 MTThF, June 11-15, ar
Sec 35, 8:30-10:00 MTThF, June 18-22, ar
Sec 55, 8:30-10:00 MTThF, June 25-29, ar

History of Science and Technology — Physical Science in the 19th Century: Spirit, Institutions, Discoveries, and Influence. Stuewer

Sec 16, 8:30-10:00 MTThF, June 11-15, ar
Sec 36, 8:30-10:00 MTThF, June 18-22, ar
Sec 56, 8:30-10:00 MTThF, June 25-29, ar

Political Science — Culture and Society in the Social Thought of the 19th Century. Fogelman

Sec 17, 8:30-10:00 MTThF, June 11-15, ar
Sec 37, 8:30-10:00 MTThF, June 18-22, ar
Sec 57, 8:30-10:00 MTThF, June 25-29, ar

Psychology — Scientific Study of the Human Mind. LaBerge

Sec 18, 8:30-10:00 MTThF, June 11-15, ar
Sec 38, 8:30-10:00 MTThF, June 18-22, ar
Sec 58, 8:30-10:00 MTThF, June 25-29, ar

There will be mail registration for ID 3111, Interstudy '79: A Search for Understanding. For further information and registration materials, please contact the Summer Session Office, 135 Johnston Hall, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455; (612) 373-2925.

Independent study is available through registration in ID 3970 for 3 to 15 credits. Similar independent study courses may be taken for 1 to 5 credits through registration in Literature and Fine Arts (LFA), Natural Science (NSci), or Social Science (SSci) 3970 (to arrange projects, consult the Office for Special Learning Opportunities, B18 Johnston Hall, 373-7550), or for varying credit through registration in departmental courses 3970 or 5970. LFA, NSci, and SSci 3970 descriptions are the same as that of ID 3970 except for credit offering.

3970. DIRECTED STUDIES. (3-15 cr; prereq consent of 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)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses"). Departmental consent for courses marked with a delta (Δ) must be obtained in 102 Murphy Hall.

FIRST TERM

1005. VISUAL COMMUNICATION. (3 cr; prereq 3rd-qr fr; II MTWThF; ForH 55) Brown
Functions of visual communication in news and advertising for print and electronic media. Evaluation and criticism of current typography, photography. Lectures (CCTV), recitations; projects, critiques.

3776. MASS COMMUNICATIONS LAW. (4 cr; prereq 1001 or 1011, 1101 or #; II MTWThF; MurH 308) Kielbowicz

Origins and background of principles of press law. The press and the First Amendment. Libel and its defenses. Confidentiality of sources. Pornography, free press and fair trial. Freedom of information or the public's right to know. Access to the media. Privacy. Advertising law, lobbying, antitrust laws. The regulation of broadcasting.

5182. PUBLICATION WORKSHOP—June 12-29. (4 cr; for those who plan to advise high school or college newspapers, yearbooks, magazines; not open to journalism majors; 1:00-4:30 MTWThF; MurH 308) Staff
Intensive study of the role of high school newspaper and yearbook; analysis of content; study of design and makeup, typography, photography processes. Specially planned for secondary school publication advisers. See Special Programs section.

5221. PUBLICATION GRAPHICS. (4 cr; prereq 3121 or 3231 or 8 cr in 3xxx- or 5xxx-level courses in art and design; III MTWThF; MurH 315-320) Wilson
Processes in graphic communication. Technique and production of illustration. Significant graphic arts developments.

5353. PHOTOGRAPHIC COMMUNICATION. (4 cr; prereq 1005, 3121 or #3121 or 3241, Δ; III MTWThF; MurH 20) Brown

Photographic communication in the mass media. Multichannel communication theories, communicative overtones. Visual sources, layout, objectivity in editing. Experimental creative projects.

5501. COMMUNICATION AND PUBLIC OPINION I. (4 cr. §Soc 5355; prereq 15 cr in social science depts; II MTWThF; MurH 311) 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. (4 cr; prereq 15 cr in social science depts...# for nonmajors; III MTWThF; MurH 311) Lindsay

History and development of public relations practices and principles. Processes and applications in a variety of institutional settings. Critique of public relations in contemporary society.

5801. INTERNATIONAL COMMUNICATION. (4 cr; prereq 15 cr in social science depts; IV MTWThF; MurH 308) Carter

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.

5970. ADVANCED PROJECTS IN JOURNALISM. (1-4 cr [may be repeated for max 8 cr]; prereq journalism major, B avg, #) Staff

8990. SPECIAL PROBLEMS IN MASS COMMUNICATION. (4 cr; for grad major or minor in mass communication; prereq #) Staff
Individual research.

SECOND TERM

• **1101. REPORTING.** (5 cr; limited to 20 students; prereq C or better in 1001 and 1005 or grad status; type 25 wpm, and Δ; III-IV MTWThF; MurH 212) Hage
Study and practice in fact gathering and journalistic writing. Problems in judgment and handling of news and news features.

1201. PRINCIPLES OF ADVERTISING. (4 cr; prereq 1001 recommended for journalism majors; II MTWThF; MurH 311)

Theories, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, radio, television as advertising media.

• **3241. ADVERTISING COPYWRITING.** (4 cr; limited to 20 students; prereq 2.50 avg in 1001, 1005, and 1201. Comp 1027 where required by sequence, admission to major status, type 25 wpm, Δ; III-IV MTWThF; MurH 210) Harris

Advertising appeals and strategy; development and presentation of advertising for print and broadcast. Individual and group projects.

5144. URBAN JOURNALISM I: THEORY AND PRACTICE. (4 cr; prereq 3121, 5131 or grad student or professional experience or #; IV MTWThF; MurH 207) Ismach

Urban problems and mass media role and performance; specialized reporting and commentary on urban media policy and news gathering techniques; analysis of media content; reporting projects and appropriate readings.

5251. PSYCHOLOGY OF ADVERTISING. (4 cr, §Psy 5751; prereq Psy 1001; IV MTWThF; MurH 308) Jones
Psychological principles, research techniques, and applications in advertising and selling. Consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.

5261. ADVERTISING: MEDIA ANALYSIS. (4 cr; prereq 2.50 avg in 1001, 1005, 1201. Comp 1027 where required by sequence, Mktg 3000, type 25 wpm)

Characteristics of the print and electronic media, their role in advertising; selection and scheduling; rate structures and policies; evaluation and use of media and market measurements and data.

5601. HISTORY OF JOURNALISM. (4 cr; III MTWThF; MurH 308) Emery

Development of American newspapers and periodicals from beginnings in Europe to present day; rise of radio and television; relation of communications developments to political, economic, and social trends.

5721. MASS MEDIA IN A DYNAMIC SOCIETY. (4 cr; prereq 1201 or 3121 or journalism major...# for others; II MTWThF; MurH 308) Ismach

Economic, political, and social determinants of character and content of mass communications. Patterns of operation, effect on content, and relative social utility. Theory of mass society.

5970. ADVANCED PROJECTS IN JOURNALISM. (1-4 cr [may be repeated for max 8 cr]; prereq journalism major, B avg, #) Staff

8990. SPECIAL PROBLEMS IN MASS COMMUNICATION. (4 cr; for grad major or minor in mass communication; prereq #) Staff

See First Term.

Latin—See Classics

Library School (Lib)¹

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **5101. INTRODUCTION TO LIBRARIES AND LIBRARIANSHIP.** (5 cr; limited to 50 students; V-VI MTWTh, VH 1) Olson

Librarianship as a profession; development of libraries as social agencies; principles of library administration and management.

5204. PRINT MATERIALS IN LIBRARIES. (3 cr; prereq 5101, 5221, 5401; II-III MW; SmithH 111) Olson
Selection, evaluation, and use of books, periodicals, and other printed sources of information and recreation for youths in school and public libraries; reading patterns of children and adolescents, and implications for selection of printed materials to meet the requirements, purposes, and abilities of different age groups.

¹The Library School is a professional school that offers only graduate degrees and courses. Courses numbered 8000 and above are open only to graduate students and to librarians who hold a fifth-year degree in library science. Courses numbered at the 5000 level are open to anyone who has been admitted to the Graduate School or to any undergraduate in the College of Liberal Arts or the College of Education. A student who does not fall in one of the above categories must have registration for any library science course approved by an adviser in the Library School office, 419 Walter Library.

● **5221. RECORDS OF KNOWLEDGE.** (4 cr; limited to 50 students; I-II MTWTh, SmithH 315) Coghlan
History and development of the records of knowledge in relation to the communication problems of society; principles of selection and dissemination to meet library clientele information needs.

● **8224. SUBJECT BIBLIOGRAPHY.** (4 cr; limited to 25 students; prereq 5101, 5221, 5401; IV-V TTh; WaLib 339) Coghlan

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.

● **8304. ADULT SERVICES.** (5 cr; limited to 20 students; prereq 5101, 5221, 5401; IV-V MWF; WaLib 339) Rohde

Nature of the adult clientele; selection of library materials and development of library services to meet changing adult needs and interests.

8970. INDEPENDENT STUDY. (Cr ar; prereq #) Staff

8990. LIBRARY RESEARCH. (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

● **5401. ORGANIZATION OF INFORMATION I.** (4 cr; limited to 50 students; IV-V MTWTh; Ph 131)
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.

8241. HISTORY OF BOOKS AND PRINTING. (4 cr; prereq 5101, 5221, 5401; I-II TTh; WaLib 339) Maack
Bookmaking in its various forms from earliest times to the present. Development of the alphabet and the manuscript book; invention and spread of printing; design of the modern book with emphasis on aesthetic and technical aspects.

● **8402. ORGANIZATION OF INFORMATION II.** (4 cr; limited to 25 students; prereq 5101, 5221, 5401; I-II MW; WaLib 339)

Advanced study of methods and problems involved in the description, subject organization, and retrieval of records of knowledge and information in bibliographies, library catalogs, and machine-based systems.

● **8950. SELECTED TOPICS IN LIBRARY SCIENCE.** (3 cr; sec 1 limited to 25 students; sec 2 limited to 15 students; prereq 5101, 5221, 5401; 10:30-12:30 and 2:00-4:00 MTWThF; WaLib 339) McClaskey

Sec 1. Library Services to the Handicapped—July 17-27. Planning and development of library and information services for special library users, including persons with visual, auditory, and physical impairments; psychological and behavioral manifestations of various disabilities; and overview of current library services, applicable technologies, and federal and state programs that can assist in program development.

Sec 2. Storytelling—August 6-16. In-depth study and discussion of selected materials considered in relationship to storytelling, storytelling techniques and experience.

8970. INDEPENDENT STUDY. (Cr ar; prereq #) Staff

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

See First Term.

Linguistics (Ling)

FIRST TERM

1001. THE NATURE OF HUMAN LANGUAGE. (4 cr; may not be used as prereq for advanced courses in linguistics; III-IV MWF; ChEng 240) Downing

Facts and theories concerning human language and their relevance to the study of human behavior.

3301. PHONETICS. (5 cr, §5003, §5301; prereq 3001 or 13001 or #; VI-VII MTWThF; Arch 50) Houlihan
Physiology and acoustics of speech sounds; practice and drill in production and perception. Meets with 5003 and 5301.

5001. INTRODUCTION TO LINGUISTICS. (5 cr, §3001, §3005; prereq grad standing or #; III-IV MWF, III TTh; FolH 203) Kac, Hutchinson

Survey of phonetics, phonology, morphology, syntax, semantics, and historical-comparative linguistics; language learning and the psychology of language; linguistic universals; language in society.

5003. APPLIED PHONETICS. (5 cr, §3301, §5301; not open to linguistics majors; prereq 5001 or 15001 or #; VI-VII MTWThF; Arch 50) Houlihan

Primarily for teachers of English as a second language. Meets with 3301 and 5301.

5301. PHONETICS. (5 cr, §3301, §5003; prereq 3001 or 5001 or 15001 or #; VI-VII MTWThF; Arch 50) Houlihan

See 3301. Meets with 3301 and 5003.

SECOND TERM

5721. ENGLISH AS A SECOND LANGUAGE: METHODS. (4 cr; prereq 3001 or 5001 or #; III-IV MWF; FolH 102) Godfrey

Linguistics applied to teaching English as a second language.

Music (Mus)

(See also ID 3111, Interplay '79: A Search for Understanding, June 11-29; and Music Education under College of Education)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "reserved Courses").

FIRST TERM

1001. FUNDAMENTALS OF MUSIC. (4 cr; for non-music majors)

Basic musical symbols, vocabulary, rhythm, design, scale structures, intervals, chords. Development of basic piano skills; playing simple accompaniments.

Sec 1, II MTWThF, WuH 320, Anderson

Sec 2, III MTWThF, WuH 320, Anderson

● **1051. PIANO CLASS FOR NON-MUSIC MAJORS.** (2 cr; limited to 24 students; III MTWThF; MusEd 200) Hilley

Basic beginning keyboard skills of sight-reading, harmonization, transposition, and improvisation for non-musicians.

● **1052. PIANO CLASS FOR NON-MUSIC MAJORS.** (2 cr; limited to 24 students; prereq 1051; IV MTWThF; MusEd 200) Hilley

Basic beginning keyboard skills of sight-reading, harmonization, transposition, and improvisation for non-musicians.

1507. SURVEY OF MELODIC AND HARMONIC PROCEDURES. (3 cr; prereq #; I MTWThF; WuH 7) Gross
Principles of melodic and harmonic structure.

1517. EAR-TRAINING AND SIGHT-SINGING. (3 cr; prereq #; II MTWThF; WuH 7) Gross
Development of aural skills with concentration on sight-singing, interval recognition, melodic and harmonic dictation, and vocal improvisation.

1804. WORLD MUSIC. (4 cr; II MTWThF; ScH 4) 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.

● **3791. INTRODUCTION TO ELECTRONIC MUSIC.** (4 cr; limited to 25 students; prereq 4 cr in music or #; III-IV TWTh; ScH 103) Ultan

Musical literature to which electronic materials contribute. Listening, discussions, and readings. Exercises in use of equipment.

3970. DIRECTED STUDIES. (1-15 cr; prereq #, Δ; hrs ar; ScH 104) Staff
Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students.

5384. CHORAL CONDUCTING. (4 cr; prereq #; IV MTWThF; WuH 7) Lancaster
Hand techniques, sound control, articulation, breath control, intonation, etc.

5388. INSTRUMENTAL CONDUCTING. (4 cr; prereq #; IV MTWThF; WuH 320) Massmann
Conducting techniques, score analysis, performance practice.

5430. UNIVERSITY CHORUS. (1 cr; prereq audition; VII MTWThF; WuH 30) Lancaster

5602. HISTORY OF OPERA. (3 cr; prereq 9 cr in history of music, art, theatre or European history from 1600 or #; VI MTWThF; WuH 7) Sutton

Origins of opera; development as a musicodramatic form examined through analysis of libretto and music of representative masterpieces of the late Renaissance, baroque, classical, romantic, and contemporary periods.

5664. CHARLES IVES: LIFE AND WORKS. (4 cr; V MTWThF; ScH 3) Riedel
Ives's compositions, Ives and American transcendentalism, Ives and the Progressive Party, Ives as a 19th- and 20th-century composer.

5811. TRADITIONAL INDIAN MUSIC: THE SCARED AND THE PROFANE. (5 cr; IV MTWThF; ScH 4) Kagan
Vedic chant and regional folk music. Musical analysis and associations with belief systems, social institutions, history, and aesthetic expression. Music theory of India, notational systems, tonal and rhythmic materials, classifications, musical forms, and performance practice.

5950. TOPICS IN MUSIC

Sec 1, Introduction to Church Music, 4 cr, prereq BA in music or religious studies, III MTWThF, ScH 3, Riedel. Types of prose and poetry used. Vocal and instrumental music. High art and congregational music. Forms of worship. Theology and church music. Sociology of church music. Church music and related arts.

Sec 2, Vocal Techniques for Choral Directors, 4 cr, prereq sr or grad student and #, VI MTWThF, WuH 30, Jorgenson

A practicum for choral directors. Vocal tract physiology, empirical and scientific approaches to vocal development, choral voicing.

8990x.* SPECIAL PROBLEMS. (2-12 cr; prereq 5841; hrs ar; ScH 104) Riedel, Utan

Courses in Applied Music

Offerings in applied music are classified according to seven modes: elective (with or without credit), principal, major, secondary required, secondary elective, principal beyond requirement, major beyond requirement; and three levels: 1xxx (prefix 1), 3xxx (prefix 3), and graduate level (prefix 8). A student may not register for a course in applied music for credit until he or she has passed the required applied entrance examination. The examining committee will determine the mode(s) for which a student may register. Students should consult with the Department 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: \$85 for 0-2 credits. Music and music education majors at the 12xx, 13xx, or 14xx level in their major instrument pay \$35 for 2 credits. Music and music education majors at the 32xx, 33xx, or 34xx level (prerequisite 12 credits of 12xx or 13xx and qualifying exam) 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 \$30 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.*

COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Instructor
Fee	\$ 85	\$ 35	\$ 35	\$ 35	\$ 30	\$ 30	\$ 30	
Piano	1101	1201	1301	1401	1501	1601	1701	Weiser, McNab, Ivory
Harpichord	1102	1202	1302	1402	1502	1602	1702	Ar
Organ	1103	1203	1303	1403	1503	1603	1703	Fleischer Lancaster
Voice	1104	1204	1304	1404	1504	1604	1704	Schuessler, Ware, Davis, Robinson, Wilson, Wittich
Violin	1105	1205	1305	1405	1505	1605	1705	Ar
Viola	1106	1206	1306	1406	1506	1606	1706	Ar
Cello	1107	1207	1307	1407	1507	1607	1707	Jamieson
Double Bass	1108	1208	1308	1408	1508	1608	1708	Ar
Flute	1109	1209	1309	1409	1509	1609	1709	D Eagle, E Eagle, Zeitlin
Oboe	1111	1211	1311	1411	1511	1611	1711	Angelucci, Capps, Holub
Clarinet	1112	1212	1312	1412	1512	1612	1712	Haugen, Williams
Saxophone	1113	1213	1313	1413	1513	1613	1713	Haugen, Williams
Bassoon	1114	1214	1314	1414	1514	1614	1714	Ar
French Horn	1115	1215	1315	1415	1515	1615	1715	Gaska
Trumpet	1116	1216	1316	1416	1516	1616	1716	Baldwin, Hasselmann, Schlueter

Trombone	1117	1217	1317	1417	1517	1617	1717	Zellmer
Baritone	1118	1218	1318	1418	1518	1618	1718	Ricketts
Tuba	1119	1219	1319	1419	1519	1619	1719	Tolbert
Percussion	1121	1221	1321	1421	1521	1621	1721	Fine
Harp	1122	1222	1322	1422	1522	1622	1722	Miller
Guitar	1123	1223	1323	1423	1523	1623	1723	McGuire, Van
Accordion	1124	1224	1324	1424	1524	1624	1724	Malmberg
Sitar	1125				1525			Ar
Piano	3101	3201	3301	3401	3501	3601	3701	Weiser, McNab, Ivory
Harpichord	3102	3202	3302	3402	3502	3602	3702	Ar
Organ	3103	3203	3303	3403	3503	3603	3703	Fleischer, Lancaster
Voice	3104	3204	3304	3404	3504	3604	3704	Schuessler, Ware, Davis, Robinson, Wilson, Wittich
Violin	3105	3205	3305	3405	3505	3605	3705	Ar
Viola	3106	3206	3306	3406	3506	3606	3706	Ar
Cello	3107	3207	3307	3407	3507	3607	3707	Jamieson
Double Bass	3108	3208	3308	3408	3508	3608	3708	Ar
Flute	3109	3209	3309	3409	3509	3609	3709	D Eagle, E Eagle, Zeitlin
Oboe	3111	3211	3311	3411	3511	3611	3711	Angelucci, Capps, Holub
Clarinet	3112	3212	3312	3412	3512	3612	3712	Haugen, Williams
Saxophone	3113	3213	3313	3413	3513	3613	3713	Haugen, Williams
Bassoon	3114	3214	3314	3414	3514	3614	3714	Ar
French Horn	3115	3215	3315	3415	3515	3615	3715	Gaska
Trumpet	3116	3216	3316	3416	3516	3616	3716	Baldwin, Hasselmann, Schlueter
Trombone	3117	3217	3317	3417	3517	3617	3717	Zellmer
Baritone	3118	3218	3318	3418	3518	3618	3718	Ricketts
Tuba	3119	3219	3319	3419	3519	3619	3719	Tolbert
Percussion	3121	3221	3321	3421	3521	3621	3721	Fine
Harp	3122	3222	3322	3422	3522	3622	3722	Miller
Guitar	3123	3223	3323	3423	3523	3623	3723	McGuire, Van
Accordion	3124	3224	3324	3424	3524	3624	3724	Malmberg
Sitar	3125				3525			Ar
Piano	8101	8201	8301	8401	8501	8601	8701	Weiser, McNab, Ivory
Harpichord	8102	8202	8302	8402	8502	8602	8702	Ar
Organ	8103	8203	8303	8403	8503	8603	8703	Fleischer, Lancaster
Voice	8104	8204	8304	8404	8504	8604	8704	Schuessler, Ware, Davis, Robinson, Wilson, Wittich
Violin	8105	8205	8305	8405	8505	8605	8705	Ar
Viola	8106	8206	8306	8406	8506	8606	8706	Ar
Cello	8107	8207	8307	8407	8507	8607	8707	Jamieson
Double Bass	8108	8208	8308	8408	8508	8608	8708	Ar
Flute	8109	8209	8309	8409	8509	8609	8709	D Eagle, E Eagle, Zeitlin
Oboe	8111	8211	8311	8411	8511	8611	8711	Angelucci, Capps, Holub
Clarinet	8112	8212	8312	8412	8512	8612	8712	Haugen, Williams
Saxophone	8113	8213	8313	8413	8513	8613	8713	Haugen, Williams
Bassoon	8114	8214	8314	8414	8514	8614	8714	Ar
French Horn	8115	8215	8315	8415	8515	8615	8715	Gaska
Trumpet	8116	8216	8316	8416	8516	8616	8716	Baldwin, Hasselmann, Schlueter
Trombone	8117	8217	8317	8417	8517	8617	8717	Zellmer
Baritone	8118	8218	8318	8418	8518	8618	8718	Ricketts
Tuba	8119	8219	8319	8419	8519	8619	8719	Tolbert
Percussion	8121	8221	8321	8421	8521	8621	8721	Fine
Harp	8122	8222	8322	8422	8522	8622	8722	Miller
Guitar	8123	8223	8323	8423	8523	8623	8723	McGuire, Van
Accordion	8124	8224	8324	8424	8524	8624	8724	Malmberg
Sitar	8125				8525			Ar

SECOND TERM

1001. FUNDAMENTALS OF MUSIC. (4 cr; for non-music majors)

See First Term.

Sec 1, II MTWThF, WuH 320, Baldwin

Sec 2, III MTWThF, WuH 320, Baldwin

1161. VOICE: CLASS LESSONS. (2 cr; IV MTWThF; ScH 3) Ware

Fundamentals of vocal production: posture, respiration, phonation, articulation.

1508. SURVEY OF MELODIC AND HARMONIC PROCEDURES. (3 cr; prereq #: I MTWThF; ScH 3) Fetler

See 1507 First Term.

1518. EAR-TRAINING AND SIGHT-SINGING. (3 cr; prereq #: II MTWThF; ScH 3) Fetler

See 1517 First Term.

3970. DIRECTED STUDIES. (1-15 cr; prereq #: Δ; hrs ar; ScH 104) Staff

See First Term.

5370. VOCAL PERFORMANCE SEMINAR. (2 cr; prereq 18 cr in applied voice and #: VII MTWThF; ScH 108)

Ware

Vocal performance in a seminar setting. Performance problems—stage deportment, interpretation, vocal technique, lyric diction.

5950. TOPICS IN MUSIC: Contemporary Musical Styles, 4 cr, prereq undergrad degree in music or #, IV MTWThF, ScH 103, Jackson

Analysis of major compositions and historical documents by Bartok, Boulez, Cage, Copland, Cowell, Crumb, Debussy, Schoenberg, Stravinsky, Varese, Webern.

8990x.* SPECIAL PROBLEMS. (2-12 cr; prereq 5841; hrs ar; ScH 104) Cardamone-Jackson, Fetler

Courses in Applied Music

See First Term.

COURSES IN APPLIED MUSIC (MusA)

Instrument	Elective	Principal	Major	Secondary Required	Secondary Elective	Principal Beyond Requirement	Major Beyond Requirement	Instructor
Fee	\$ 85	\$ 35	\$ 35	\$ 35	\$ 30	\$ 30	\$ 30	
Piano	1101	1201	1301	1401	1501	1601	1701	Freed
Harpichord	1102	1202	1302	1402	1502	1602	1702	Ar
Organ	1103	1203	1303	1403	1503	1603	1703	Fleischer Lancaster
Voice	1104	1204	1304	1404	1504	1604	1704	Ware, Davis, Robinson, Wilson, Wittich,
Violin	1105	1205	1305	1405	1505	1605	1705	Ar
Viola	1106	1206	1306	1406	1506	1606	1706	Ar
Cello	1107	1207	1307	1407	1507	1607	1707	Jarmieson
Double Bass	1108	1208	1308	1408	1508	1608	1708	Ar
Flute	1109	1209	1309	1409	1509	1609	1709	D Eagle, E Eagle, Zeitlin
Oboe	1111	1211	1311	1411	1511	1611	1711	Angelucci, Capps, Holub
Clarinet	1112	1212	1312	1412	1512	1612	1712	Anderson, Haugen, Williams
Saxophone	1113	1213	1313	1413	1513	1613	1713	Anderson, Haugen, Williams
Bassoon	1114	1214	1314	1414	1514	1614	1714	Ar
French Horn	1115	1215	1315	1415	1515	1615	1715	Gaska
Trumpet	1116	1216	1316	1416	1516	1616	1716	Hasselmann, Schlueter
Trombone	1117	1217	1317	1417	1517	1617	1717	Zellmer
Baritone	1118	1218	1318	1418	1518	1618	1718	Ricketts

Tuba	1119	1219	1319	1419	1519	1619	1719	Tolbert
Percussion	1121	1221	1321	1421	1521	1621	1721	Fine
Harp	1122	1222	1322	1422	1522	1622	1722	Miller
Guitar	1123	1223	1323	1423	1523	1623	1723	McGuire
Accordion	1124	1224	1324	1424	1524	1624	1724	Malmberg
Sitar	1125				1525			Ar
Piano	3101	3201	3301	3401	3501	3601	3701	Freed
Harpsichord	3102	3202	3302	3402	3502	3602	3702	Ar
Organ	3103	3203	3303	3403	3503	3603	3703	Fleischer, Lancaster
Voice	3104	3204	3304	3404	3504	3604	3704	Ware, Davis, Robinson, Wilson, Wittich
Violin	3105	3205	3305	3405	3505	3605	3705	Ar
Viola	3106	3206	3306	3406	3506	3606	3706	Ar
Cello	3107	3207	3307	3407	3507	3607	3707	Jamieson
Double Bass	3108	3208	3308	3408	3508	3608	3708	Ar
Flute	3109	3209	3309	3409	3509	3609	3709	D Eagle, E Eagle, Zeitlin
Oboe	3111	3211	3311	3411	3511	3611	3711	Angelucci, Capps, Holub
Clarinet	3112	3212	3312	3412	3512	3612	3712	Anderson, Haugen, Williams
Saxophone	3113	3213	3313	3413	3513	3613	3713	Anderson, Haugen, Williams
Bassoon	3114	3214	3314	3414	3514	3614	3714	Ar
French Horn	3115	3215	3315	3415	3515	3615	3715	Gaska
Trumpet	3116	3216	3316	3416	3516	3616	3716	Hasselmann, Schlueter
Trombone	3117	3217	3317	3417	3517	3617	3717	Zellmer
Baritone	3118	3218	3318	3418	3518	3618	3718	Ricketts
Tuba	3119	3219	3319	3419	3519	3619	3719	Tolbert
Percussion	3121	3221	3321	3421	3521	3621	3721	Fine
Harp	3122	3222	3322	3422	3522	3622	3722	Miller
Guitar	3123	3223	3323	3423	3523	3623	3723	McGuire
Accordion	3124	3224	3324	3424	3524	3624	3724	Malmberg
Sitar	3125				3525			Ar
Piano	8101	8201	8301	8401	8501	8601	8701	Freed
Harpsichord	8102	8202	8302	8402	8502	8602	8702	Ar
Organ	8103	8203	8303	8403	8503	8603	8703	Fleischer, Lancaster
Voice	8104	8204	8304	8404	8504	8604	8704	Ware, Davis, Robinson, Wilson, Wittich
Violin	8105	8205	8305	8405	8505	8605	8705	Ar
Viola	8106	8206	8306	8406	8506	8606	8706	Ar
Cello	8107	8207	8307	8407	8507	8607	8707	Jamieson
Double Bass	8108	8208	8308	8408	8508	8608	8708	Ar
Flute	8109	8209	8309	8409	8509	8609	8709	D Eagle, E Eagle, Zeitlin
Oboe	8111	8211	8311	8411	8511	8611	8711	Angelucci, Capps, Holub
Clarinet	8112	8212	8312	8412	8512	8612	8712	Anderson, Haugen, Williams
Saxophone	8113	8213	8313	8413	8513	8613	8713	Anderson, Haugen, Williams
Bassoon	8114	8214	8314	8414	8514	8614	8714	Ar
French Horn	8115	8215	8315	8415	8515	8615	8715	Gaska
Trumpet	8116	8216	8316	8416	8516	8616	8716	Hasselmann, Schlueter
Trombone	8117	8217	8317	8417	8517	8617	8717	Zellmer
Baritone	8118	8218	8318	8418	8518	8618	8718	Ricketts
Tuba	8119	8219	8319	8419	8519	8619	8719	Tolbert
Percussion	8121	8221	8321	8421	8521	8621	8721	Fine
Harp	8122	8222	8322	8422	8522	8622	8722	Miller
Guitar	8123	8223	8323	8423	8523	8623	8723	McGuire
Accordion	8124	8224	8324	8424	8524	8624	8724	Malmberg
Sitar	8125				8525			Ar

Natural Science (NSci)

SECOND TERM

1005. PHYSICAL WORLD: CHEMISTRY. (4 cr, §Chem 1001-1002, §Chem 1004-1005, §Chem 1031-1032, §Chem 1014; prereq 1 yr high school algebra...high school chemistry and NSci 1004 recommended; II MTWThF; SciCB 175)

Fundamental concepts of chemistry, the structure of matter, and the important reactions and products of our physical world. Scientific methods and principles are developed from lecture and experiments to help students understand their environment and problems faced in improving it.

Near and Middle Eastern Studies

Ancient Near Eastern and Jewish Studies (ANEJ)

FIRST TERM

5970. DIRECTED STUDIES. (1-4 cr; prereq #)
Guided individual reading or study.

SECOND TERM

5970. DIRECTED STUDIES. (1-4 cr; prereq #)
See First Term.

Arabic (Arab)

FIRST TERM

1201. COLLOQUIAL ARABIC (formerly 3101). (5 cr; II-III MTWThF; FolH 103) Farah
Study of one modern dialect. Laboratory practice.

Hebrew (Hebr)

FIRST TERM

3980. DIRECTED INSTRUCTION. (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. (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or #)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

A concentrated program of study in which undergraduate and graduate students may earn 15 credit hours, the equivalent of a full year's sequence in language. Students must register in both terms of the summer session and may not enroll in other summer courses.

1101-1102-1103. BEGINNING HEBREW ("ULPAN"). (15 cr for both terms; I-III MTWThF; AndH 270) Reisman

Specially designed summer program combining language study with learning experiences in Israeli culture and group activities that stimulate active use of the language. Introduction to speaking, reading, and listening comprehension of modern Hebrew. May serve as a basis for biblical study.

SECOND TERM

3980. DIRECTED INSTRUCTION. (1-5 cr; prereq #)
See First Term.

5970. DIRECTED READINGS. (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or #)

Jewish Studies (JwSt)

FIRST TERM

5970. DIRECTED STUDIES. (1-4 cr; prereq #)
Guided individual reading or study.

SECOND TERM

3126. MODERN JUDAISM. (4 cr; II MTWThF; FolH 308) 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. (1-4 cr; prereq #)
See First Term.

Middle Eastern Studies (MidE)

FIRST TERM

1036. THE RELIGION OF ISLAM. (4 cr, §RelS 1036; IV MTWThF; FolH 103) Farah
The rise of Islam in historical context; the role of Muhammad, Koran, traditions; fundamentals and observances of the faith; sectarian movements; the spread of Islam into Asia and Africa; Baha'i and Black Muslim components; reformist movements and change.

Personal Orientation (PO)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1001. HOW TO STUDY.** (2 cr [does not count toward BA degree]; limited to 30 students; I MTWThF; Jones 2)

Practical assistance in developing efficient study habits, organizing materials, preparing for examinations, and improving speed and comprehension of reading.

SECOND TERM

• **1001. HOW TO STUDY.** (2 cr [does not count toward BA degree]; limited to 30 students; I MTWThF; Jones 2)

See First Term.

Philosophy (Phil)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

FIRST TERM

- 1001. LOGIC.** (5 cr; III MTWThF; ForH 55) Lewis
Application of formal techniques for evaluating arguments.
- 1002. INTRODUCTION TO PHILOSOPHY.** (5 cr; II MTWThF; ForH 150) Buchanan
Problems, principal methods and schools of philosophy; historical and contemporary views.
- 3001. GENERAL HISTORY OF WESTERN PHILOSOPHY.** (5 cr; IV MTWThF; ForH 285) Harper
Greek philosophy, pre-Socratics, Socrates, Plato, Aristotle.
- 3302. MORAL PROBLEMS OF CONTEMPORARY SOCIETY.** (5 cr; III MTWThF; ForH 150) Root
Selected problems of current interest.
- 3502. INTRODUCTION TO AESTHETICS.** (5 cr; II MTWThF; ForH 175) Staff
Development of aesthetic theories from Plato to Tolstoy.
- 3970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 5760. SELECTED TOPICS IN PHILOSOPHY: MEDICAL ETHICS.** (5 cr per qtr; prereq 5 3xxx-5xxx cr in philosophy or #; IV MTWThF; KolH S139) Dolan
Moral problems confronting physicians, patients, and others concerned with medical treatment, medical research, and public health policy.
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 8970. DIRECTED STUDY AND RESEARCH.** (1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

SECOND TERM

- 1001. LOGIC.** (5 cr; II MTWThF; HSUnitA 2-580) Hanson
See First Term.
- 1002. INTRODUCTION TO PHILOSOPHY.** (5 cr; III MTWThF; ForH 120) Mason
See First Term.
- 3003. GENERAL HISTORY OF WESTERN PHILOSOPHY.** (5 cr; IV MTWThF; ForH 115) Savage
Modern philosophy from Descartes through Hume.
- 3302. MORAL PROBLEMS OF CONTEMPORARY SOCIETY.** (5 cr; II MTWThF; ForH 150) Staff
See First Term.
- 3970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 8970. DIRECTED STUDY AND RESEARCH.** (1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

Political Science (Pol)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

FIRST TERM

- 1001. AMERICAN GOVERNMENT AND POLITICS.** (5 cr; III-IV TWTh; AndH 350) Shaw
Principles, organization, processes, functions of government, and the interplay of political forces in the United States. Attention throughout to current issues.

1041. CONTEMPORARY POLITICAL IDEOLOGIES. (4 cr; III MTWThF; AndH 250) Fogelman
Major modern ideologies such as liberalism, democracy, conservatism, socialism, communism, fascism, nationalism, imperialism, racism. Adequacy of alternative ideologies for analysis and solution of political and social problems.

1051. INTRODUCTION TO POLITICAL ANALYSIS. (5 cr; I-II TWTh; RarigC 616) Kvakiv
Formation of political communities, political participation, policy making, compliance, legitimacy, political development, types of political systems. Empirical and normative problems. Comparisons among major countries.

3308. THE UNITED STATES CONGRESS. (4 cr; prereq 1001 or #; V MTWThF; BlegH 215) Morris
Internal organization, committee system, party leadership, norms, recruitment; legislative policy making; relationship with the president and bureaucracy; interest groups, political party, and constituency influences on the congressional process.

3659. AMERICAN POLITICAL THOUGHT. (4 cr; prereq 1051 or 9 cr in social science or #) Ball
From colonial times to present: Puritanism; Revolution; Constitution, utopianism; sectionalism and pluralism; anarchist, socialist, populist, and syndicalist thought; social Darwinism; conservatism; political thought in law and literature.

3810. TOPICS IN INTERNATIONAL POLITICS: INTERNATIONAL POLITICS OF PETROLEUM. (4 cr; II MTWThF; BlegH 130) Sampson
This course considers Middle East politics from the perspective of relations between nation states of that region. Attention will be devoted to the impact of international petroleum issues, non-state groups, and the super powers on relations between Middle East nations. Major foci of the course are Iran and the Persian/Arabian Gulf and the Arab/Israel/Iran situation. Course requirements are two tests and a final exam.

5303. THE AMERICAN DEMOCRACY. (4 cr; prereq 1001 or 6 cr in social science or #; I MTWThF; BlegH 105) Flanigan
The American political system, its institutions and processes. Political decision making, influence, and elites. Ideals and reality of democracy in the United States.

5737. POLITICAL PARTIES. (4 cr; prereq 1001 or #; IV MTWThF; BlegH 225) Walcott
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.

SECOND TERM

1001. AMERICAN GOVERNMENT AND POLITICS. (5 cr; II-III TWTh; AndH 350) Sullivan
See First Term.

1025. WORLD POLITICS. (4 cr; I MTWThF; BlegH 255) Duvall
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.

3310. POWERLINES, PROTESTS, AND PROPOSITION 13. (4 cr; prereq 1001 or #; IV MTWThF; BlegH 120) Eyestone
Recent political protest movements—their origins, leadership, and effect on public policy. Case studies of recent protests and their relationship to formal governmental institutions.

3661. PROBLEMS OF DEMOCRACY. (4 cr; prereq 1051 or 9 cr in social science or #; III MTWThF; BlegH 205) Sibley
Postulates and implications; moral foundations; democratic theory and the economic order; liberty and authority; equality; representation; participation; majority rule; critics of democracy; social science and democratic theory.

5441. WESTERN EUROPEAN GOVERNMENT AND POLITICS. (5 cr; prereq 1051 or 12 cr in social science or #; I-II TWTh; RarigC 616) Shively
Political institutions in their social settings; power and responsibility; governmental stability; political decision making, government, and economic order.

5455. LATIN AMERICAN GOVERNMENT AND POLITICS. (5 cr; prereq 1051 or #; III-IV TWTh; AndH 230) Wynia
Latin American political heritage, political processes, contemporary public policy issues; problems of social, economic, and political change in selected countries.

5741. POLITICAL BEHAVIOR OF WOMEN. (4 cr; prereq 1001 or 1051 or #; II MTWThF; BlegH 255) Gray
Women as political actors. Mass political behavior, women's political movements, women in political parties and elective office, the status of women in different societies.

Portuguese—See Spanish and Portuguese

Psychology (Psy)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.
Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1001. GENERAL PSYCHOLOGY. (5 cr; I-II MTWThF; NH 45)
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; \$2 lab fee)
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, II-IV MF, II-III W, EtH 150
Sec 2, VI-VIII MF, VI-VII W, EtH 160

3011. INTRODUCTION TO PSYCHOLOGY OF LEARNING. (4 cr; prereq 1001, 1005 or Biol 1107 or #; II MTWThF; EtH N119) Trapold
Basic methods in study of learning. Fundamental concepts and principles governing the learning process.

3031. SENSATION AND PERCEPTION. (4 cr; prereq 1001, 1004; IV MTWThF; EtH N119)
Psychological, biological, and physical aspects of sensory experience in humans and animals. Major emphasis on vision and hearing.

3101. INTRODUCTION TO PERSONALITY. (4 cr, §5101; prereq 1001; II MTWThF; SmithH 325) Tellegen
Concepts of personality, personality theory, empirical research in the field of personality, personality assessment.

3201. INTRODUCTION TO SOCIAL PSYCHOLOGY. (4 cr; prereq 1001; III MTWThF; MMA 100)
Theories and research in social psychology. Effects upon the individual's attitudes and behavior of other persons, mass communications, and group membership.

3604. INTRODUCTION TO ABNORMAL PSYCHOLOGY. (4 cr, §5604-5605; prereq 1001; VI MTWThF; AH 150) Kendall
Surveys the field of abnormal psychology. Etiologies of behavioral disorders; available treatment.

3970. DIRECTED STUDIES. (1-8 cr; prereq #; hrs ar) Lofquist
Independent study or small seminars; designed to permit students to pursue their interests through special reading or study.

3990H. HONORS COURSE: PROJECT IN PSYCHOLOGY. (Cr ar; prereq sr, #; hrs ar) Lofquist
Individual library study or empirical investigation.

5011. THEORIES OF LEARNING AND COGNITION. (4 cr; prereq 3011, except for students in honors sequence and grad students; III MTWThF; EtH N119) Peterson
Major theories of learning and contemporary theories of information processing and cognition.

5014. PSYCHOLOGY OF HUMAN LEARNING AND MEMORY. (4 cr; prereq 1005, except for students in honors sequence and grad students; V MTWThF; EtH N119)
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.

5125-5126. DIFFERENTIAL PSYCHOLOGY. (4 cr per qtr; prereq 5862 or #, honors candidate or grad student; I-II MTWThF; Arch 20) Bouchard
Introduction to methodology. Quantitative studies of nature of psychological traits and influence of age, sex, heredity, and environment in causation of individual and group differences in ability and temperament.

8519. PRACTICUM IN REHABILITATION COUNSELING. (3 cr; prereq 5803 or #; hrs ar)
Counseling experience with physically and emotionally disabled clients in approved public and private rehabilitation agencies.

8520. FIELDWORK IN APPLIED PSYCHOLOGY. (Cr ar; prereq #; hrs ar)

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (Cr ar; prereq #; hrs ar)

8614. PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT. (2 cr; prereq student in clinical psychology program, #CIPsy 8206 or #; hrs ar)
Theory and practice in clinical application of assessment techniques. Observation, administration, scoring, and interpretation is the focus of the laboratory experience.

8620. CLERKSHIP IN CLINICAL PSYCHOLOGY. (Cr ar; prereq #; hrs ar)
Field experience in professional work in clinical settings.

8630. PRACTICUM IN CLINICAL CHILD PSYCHOLOGY. (3 cr; prereq #; hrs ar)
Supervised experience in psychodiagnostic work with emotionally disturbed children and their families.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (2-4 cr; prereq PhD candidate in clinical psychology program and consent of director of clinical psychology training program; hrs ar)

8980. DIRECTED TEACHING: PSYCHOLOGY. (Cr ar; prereq #) Lofquist

8990. RESEARCH PROBLEMS. (Cr and hrs ar) Lofquist

SECOND TERM

1001. GENERAL PSYCHOLOGY. (5 cr; I-II MTWThF; NH 45)
See First Term.

● **1005. INTRODUCTORY LABORATORY PSYCHOLOGY.** (4 cr; each section limited to 24 students; prereq soph, 1004; \$2 lab fee)
See 1004 First Term.

Sec 1, II-IV MF, II-III W, EtH 50
Sec 2, VI-VIII MF, VI-VII W, EtH 60

3061. INTRODUCTION TO PHYSIOLOGICAL PSYCHOLOGY. (4 cr, §5061; prereq 1001, 1005 or Biol 1011 or #; IV MTWThF; EtH N119) Roberts
Survey of neural mechanisms of motivation, emotion, sleep-wakefulness cycle, learning, and communication in animals and humans.

3617. INTRODUCTION TO CLINICAL PSYCHOLOGY. (4 cr; prereq 3604, 3801 or 5604; V MTWThF; EtH 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. (4 cr; prereq 1001 or equiv; III MTWThF; AndH 230)
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. (1-8 cr; prereq #; hrs ar) Lofquist
See First Term.

3990H. HONORS COURSE: PROJECT IN PSYCHOLOGY. (Cr ar; prereq sr, #; hrs ar) Lofquist
See First Term.

5045. THE PSYCHOLOGY OF MOTIVATION. (4 cr; prereq 3011 or # for undergrad students; II MTWThF; EltH N257) Trapold
Survey of classic and contemporary research and theory pertaining to motivation in animal and human behavior. Emphasis on the role of motivation in systematic accounts of behavior.

5071. ANIMAL PSYCHOLOGY. (4 cr; prereq 3011 or 5012; III MTWThF; EltH N119) Peterson
Historical, philosophical, and biological foundations; consciousness; motivation; learning; reasoning; judgment; abnormal behavior; social influences.

5751. PSYCHOLOGY OF ADVERTISING. (4 cr, §Jour 5251; prereq 1001; IV MTWThF; MurH 308) Jones
Psychological principles, research techniques, and applications in advertising and selling. Relevant consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.

8519. PRACTICUM IN REHABILITATION COUNSELING. (3 cr; prereq 5803 or #; hrs ar)
See First Term.

8520. FIELDWORK IN APPLIED PSYCHOLOGY. (Cr ar; prereq #; hrs ar)

8560. INTERNSHIP IN COUNSELING PSYCHOLOGY. (Cr ar; prereq #; hrs ar)

8614. PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT. (2 cr; prereq student in clinical psychology program, ¶CIPsy 8206 or #; hrs ar)
See First Term.

8620. CLERKSHIP IN CLINICAL PSYCHOLOGY. (Cr ar; prereq #; hrs ar)
See First Term.

8630. PRACTICUM IN CLINICAL CHILD PSYCHOLOGY. (3 cr; prereq #; hrs ar)
See First Term.

8670. INTERNSHIP IN CLINICAL PSYCHOLOGY. (2-4 cr; prereq PhD candidate in clinical psychology program and consent of director of clinical psychology training program; hrs ar)

8980. DIRECTED TEACHING: PSYCHOLOGY. (Cr ar; prereq #) Lofquist

8990.* RESEARCH PROBLEMS. (Cr and hrs ar) Lofquist

Public Affairs (PA)

FIRST TERM

3970. DIRECTED STUDIES. (1-15 cr; prereq #)

5114. WORKSHOP ON MINNESOTA GOVERNMENT. (3 cr; VI-VII TWTh; BlegH 335) Warp, others
Background study through lecture, panel discussion, and seminar sessions of selected public policy issues that currently confront Minnesota's governmental units.

5661. ISSUES IN AGING. (4 cr; prereq grad student or #; I-III MTh; Law 45) Bader
Policy-relevant findings of gerontological research. Focus on current and potential approaches of and constraints on decision makers, bureaucrats, and practitioners. Existing legislation and programs designed for older Americans.

5771. ADMINISTRATIVE INTERNSHIP. (3 cr; prereq Δ; hrs ar) Warp
Fieldwork in an approved administrative agency under the joint supervision of an employee of the agency and a member of the faculty. Rotation through various assignments, solution of special problems, seminar discussion of experiences, and preparation of an internship report.

8981. INDIVIDUAL READINGS, RESEARCH IN PUBLIC POLICY ANALYSIS, ADMINISTRATION. (Cr ar; prereq #)

SECOND TERM

3970. DIRECTED STUDIES. (1-15 cr; prereq #)

5115. WORKSHOP ON MINNESOTA GOVERNMENT. (3 cr; VI-VII TWTh; BlegH 335) Warp, others
See 5114 First Term.

5781. ADMINISTRATIVE INTERNSHIP. (3 cr; prereq #; hrs ar) Warp
See 5771 First Term.

8991. INDIVIDUAL READINGS, RESEARCH IN PUBLIC POLICY ANALYSIS, ADMINISTRATION. (Cr ar; prereq #)

SPECIAL TERM: AUGUST 20-SEPTEMBER 21

Econ 3101/5151. ELEMENTS OF ECONOMIC ANALYSIS, FIRM AND HOUSEHOLD. (4 cr; prereq Econ 1001, 1002, 1 qtr calculus, grad student or #; II MTWThF; BlegH 415) Kudrle
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.

Religious Studies (RelS)

See also Clas 3072/5072, Religion in Antiquity: The New Testament, first term, under Classics; and JwSt 3126, Modern Judaism, second term, under Jewish Studies.

FIRST TERM

1035. RELIGIONS OF THE 20TH-CENTURY WORLD: CHRISTIANITY. (4 cr; II MTWThF; BlegH 245) Kraebel

The thought and institutions of Christianity with emphasis on the present day. Origins in Judaism; the New Testament. Continuing theological issues, leaders and opponents of the church, the piety of the average Christian. Religious pluralism: Christianity in 20th-century America.

1036. THE RELIGION OF ISLAM. (4 cr, §MidE 1036; IV MTWThF; FolH 103) Farah
The rise of Islam. The role of Muhammad, Koran, traditions; fundamentals and observances of the faith; sectarian movements; the spread of Islam into Asia and Africa; Baha'i and Black Muslim components; reformist movements and change.

5970. DIRECTED STUDIES. (3-5 cr; prereq Δ)

Russian—See Slavic and East European Languages

Scandinavian (Scan)

FIRST TERM

3602. THE TALES OF HANS CHRISTIAN ANDERSEN. (4 cr; III MTWThF; FolH 102) Mishler
Hans Christian Andersen's stories and tales (read in English).

5421. FINNISH FOLKLORE: THE KALEVALA. (4 cr; I MTWThF; FolH 208) Vähämäki
The Finnish national epos from a folkloristic point of view. Readings in translation.

5614. THE DRAMA OF IBSEN AND STRINDBERG. (4 cr; prereq # for majors; II MTWThF; FolH 203) Stockenström
Selected plays of Scandinavia's two major dramatists, viewed in the context of modern theatre (readings in translation for nonmajors).

Slavic and East European Languages

Russian (Russ)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

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 register in both terms of the summer session and may not enroll in other summer courses.

1101-1102-1103. BEGINNING INTENSIVE RUSSIAN. (15 cr for both terms; I-III MTWThF; EtH 350) Speaking, reading, and understanding Russian through acquisition of basic patterns of speech.

Social Work (SW)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

● **1001. INTRODUCTION TO SOCIAL WELFARE AND COMMUNITY SERVICES.** (5 cr; limited to 50 students; II-III MTWTh; BlegH 5) Au Claire

A sampling of the fields of community-based social services, representative of societal responses to needs. Characteristics of such services reviewed historically, dynamically, and comparatively.

● **5010. SEMINAR: SPECIAL TOPICS—TITLE XX IN THE SOCIAL SERVICES.** (3 cr; limited to 30 students; prereq 1001, 3005, and jr, sr or grad major in social work; IV-V MW; Arch 20) Hoshino
Rules, regulations, and philosophy underlying this legislation; impact of Title XX on social services at the state and local levels.

8010. FIELD INSTRUCTION I. (4 cr or cr ar by # [max 12 cr required]; prereq #: hrs ar)

8020. FIELD INSTRUCTION II. (4 cr or cr ar by # [max 12 cr required]; prereq 8010; hrs ar)

● **8407. STRATEGIES OF FAMILY INTERVENTION.** (3 cr; limited to 20 students; prereq 8401 or #: II-III TTh; ForH 160) Markwell

Seminar on methods of helping families cope with interpersonal problems.

SECOND TERM

● **5010. SEMINAR: SPECIAL TOPICS.** (3 cr; each section limited to 30 students; prereq 1001, 3005, and jr, sr or grad major in social work)

Sec 1, Psychology of Women: Critical Issues in the Practice of Social Work, VI-VII TTh, Arch 20, Compton
Feminine development, discrimination, impact of feminist movement on family life and on women and personality through various life stages. Focus on implications for the practice of social work.

Sec 2, Changing the Organization From Within, III-IV MW, BlegH 330, W Stewart
Organizational theory and administrative principles and how one works with these to help an organization more effectively achieve its mission or deliver its services.

8010. FIELD INSTRUCTION I. (4 cr or cr ar by #: prereq #: hrs ar) Yesner

8020. FIELD INSTRUCTION II. (4 cr or cr ar by #: prereq 8010; hrs ar) Yesner

● **8406. SUPERVISION AND CONSULTATION IN SOCIAL WORK PRACTICE.** (3 cr; limited to 40 students; prereq 8401 or #: I-II TTh, BlegH 145) Compton

Principles and practices of administration, education, support, consultation, and staff development

Sociology (Soc)

FIRST TERM

1001. INTRODUCTION TO SOCIOLOGY. (4 cr; III MTWThF; AndH 230) Johnson
A survey of the main fields of sociology and current social problems.

1002. AMERICAN COMMUNITY. (4 cr; V MTWThF; BlegH 110) Staff
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. SOCIOLOGY OF LAW AND SOCIAL CONTROL ORGANIZATIONS. (4 cr; prereq 1001 or equiv; VI MTWThF; BlegH 225) Inverarity
Societal reaction to deviance through law and its implementation by social control organizations such as schools, public and private welfare agencies, and criminal justice, juvenile justice, and mental health systems. Recommended to be taken prior to 3103.

3214. INDIVIDUAL LIFE-STYLES AND TRANSITIONS. (4 cr; prereq soph; IV MTWThF; BlegH 115) Reynolds

A review of behaviors (activities, personal associations), orientations (values, attitudes, and beliefs), and personal interpretations of typical individuals; their relationship to social characteristics; and the effects of transitions—anticipated (educational/occupational choice, marriage, etc.) and unexpected (unemployment, illness, etc.)

3503. SEX, ROMANCE, AND RELATIONSHIPS. (4 cr; prereq 1001; VII MTWThF; BlegH 120) Albert
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.

3811. COMPUTER USAGE FOR SOCIAL STATISTICS. (1 cr; S-N only; †3801 recommended; V Th)
Elementary computer usage in social statistics applications. Use of statistical program packages for analysis of sociological usages.

3957. SOCIAL GERONTOLOGY: ELDERS IN AMERICAN SOCIETY. (4 cr; prereq 1001 or #: I MTWThF; BlegH 110) Staff
Situations and problems facing aging people in modern societies. Aspects of human aging from a sociological perspective.

3970. DIRECTED STUDIES. (1-15 cr per qtr; prereq #)
Guided individual reading or study.

5111. SOCIOLOGY OF DEVIANT BEHAVIOR. (4 cr; prereq 3103 or #: II MTWThF; RangC 610) Lauderdale
Sociological conceptions of the nature of deviant behavior, social processes associated with the careers of deviants, and the relationship of deviancy to the problems of social control.

5201. INTRODUCTION TO SOCIAL PSYCHOLOGY. (4 cr [no cr for sociology majors]; prereq 8 cr in sociology, anthropology, psychology, political science or economics; V MTWThF; BlegH 430) Reynolds
Research and theory regarding relation of individual social groups. Socialization processes; effects of social interaction and isolation; individual behavior under conditions of social organization and disorganization; cultural influence and its limits.

5970. DIRECTED STUDIES. (1-15 cr per qtr; prereq #)
Guided individual reading or study.

SECOND TERM

1001. INTRODUCTION TO SOCIOLOGY. (4 cr; II MTWThF; AndH 230) Bradley
See First Term.

3103. CRIMINOLOGY. (4 cr, §3101; prereq 1001 or equiv...3102 recommended; VII MTWThF; BlegH 205) Lauderdale
General survey of field of criminology.

3405. INEQUALITY: INTRODUCTION TO STRATIFICATION. (4 cr; prereq 1001; VI MTWThF; BlegH 205) Staff
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.

3501. THE FAMILY SYSTEM. (4 cr; prereq 1001 or 3201, 3401 or #: III MTWThF; BlegH 225) Johnson
Evolution of family, development of unity or disunity, roles of family members, methods of investigation.

3551. WORLD POPULATION PROBLEMS. (4 cr; V MTWThF; BlegH 105) Kennedy
Population growth and natural resources, basic population dynamics, fertility and mortality in less developed and industrialized nations, population forecasts, population policies to reduce fertility.

3970. DIRECTED STUDIES. (1-15 cr per qtr; prereq #)
See First Term.

5401. SOCIAL ORGANIZATION. (4 cr [no cr for sociology majors], §3505; prereq 8 cr in sociology, anthropology, psychology, political science or economics; II MTWThF; BlegH 230) O'Brien
Organization and structure of social groups; basic culture patterns of economic, political, and social institutions. Integration and disintegration of social groups and institutions. Essentials of social dynamics.

5951. MINORITY GROUP RELATIONS. (4 cr; prereq 3201 or 5201, 5401 or equiv or #; I MTWThF; BlegH 430) Sykes
Systems of ethnic stratification; race relations in American society.

5953. SOCIOLOGY OF EDUCATION. (4 cr, §HEd 5190; prereq 3201, 3401 or 5201, 5401 or equiv or #; 9:05-11:35 TTh; BuH 120) Harkins

5970. DIRECTED STUDIES. (1-15 cr per qtr; prereq #)
See First Term.

Spanish and Portuguese

Spanish (Span)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1101. BEGINNING SPANISH: ORAL APPROACH. (5 cr; each section limited to 30 students)
Emphasis on speaking and understanding Spanish; pronunciation; writing and reading skills; basic grammar; cultural aspects of language and civilizations of Spain and Spanish America.

Sec 1, I-II MTWThF, FolH 107
Sec 2, I-II MTWThF, FolH 202

• **1102. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school Spanish; II-III MTWThF; FolH 207)
See 1101.

• **1103. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; II-III MTWThF; KoltH S132)
See 1101.

• **1104. INTERMEDIATE SPANISH, ORAL APPROACH: INTERPRETATION OF MODERN PROBLEMS.** (4 cr; limited to 30 students; prereq 1103 or 3 yrs high school Spanish; 9:40-11:05 MTWThF; KoltH S137)
Continued emphasis on speaking and comprehension; development of reading and writing skills based on materials from Spain and Spanish America dealing with current issues. Grammar review; frequent compositions and oral presentations to build vocabulary.

• **3001. SPANISH PRONUNCIATION: STANDARD, COLLOQUIAL, DIALECTAL.** (2 cr; limited to 20 students; prereq 1105 or #; II MWF; FolH 302) Mantini
Correct contemporary standard Spanish pronunciation; listening and imitation exercises, weekly progress recordings, and private interviews. Introduction to local, regional, and social variants of the language of Spain and Spanish America.

3002. READING FOR SPEED AND COMPREHENSION. (2 cr; prereq 1105 or #; III MTWF; FolH 306) Mantini
Concentrated, individualized approach to sharpen reading skills, expand vocabulary, improve comprehension. Sight-reading drills, speed tests, word study, reading aloud. Variety of practical and literary materials at graded levels of difficulty.

3601. SPANISH AMERICA: REVOLUTION AND THE NEW LITERARY CONSCIOUSNESS. (4 cr; IV MTWThF; FolH 201) Vidal
Avant-garde movements in the fiction of the Latin American continent; correspondence to revolutionary trends in Spanish-speaking countries. Famous novels. Taught in English.

3614. DON QUIJOTE: A STUDY OF LOST ILLUSIONS. (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]; taught in English; III MTWThF; FolH 201) Jones
Study of the novel in many facets: the "madness" of its characters, the relation of their actions and attitudes to the theme of reality/illusion and to the society of their times.

5584. CONTEMPORARY SPANISH-AMERICAN NOVEL. (4 cr; prereq one 3xxx or 5xxx Spanish or Portuguese literature course, Δ; V MTWThF; FolH 108) Vidal
Structural and thematic changes since the 1950s. Socioeconomic origins, ideological background and implications: psychoanalysis, problems of myth, critique of conceptions of history, existentialism. Fuentes, Donoso, Asturias, Vargas Llosa, Garcia Marquez, Carpentier.

5732. SPANISH DIALECTOLOGY: REGIONAL AND SOCIAL DIALECTS OF MODERN SPANISH AMERICA. (4 cr; prereq 5729 or #; IV MTWThF; FolH 208) Narvaez
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.

5970. DIRECTED READINGS. (1-5 cr per qtr [15 cr max]; for MA and PhD candidates; prereq # and Δ; hrs ar) Staff
To fill gaps in students' preparation, especially when courses in certain indispensable topics, figures, periods, or issues have not been offered. Readings in Spanish and/or Spanish-American areas.

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (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

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 register in both terms of the summer session and may not enroll in other summer courses.

• **1101-1102-1103. BEGINNING SPANISH.** (15 cr for both terms; limited to 30 students; I-II MTWThF; KoltH S134)
See 1101 First Term.
Sec 5, I-II MTWThF, KoltH S138
Sec 6, I-II MTWThF, KoltH S139

SECOND TERM

• **1101. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; I-II MTWThF; FolH 205)
See First Term.
• **1102. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school Spanish; II-III MTWThF, FolH 207)
See 1101 First Term.

• **1103. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; II-III MTWThF; FolH 104)
See 1101 First Term.

• **1105. INTERMEDIATE SPANISH, ORAL APPROACH: DISCUSSIONS OF MODERN LITERATURE AND THE PRESS.** (4 cr; limited to 25 students; prereq 1104 or 4 yrs high school Spanish; 9:40-11:05 MTWThF; FolH 304)
See 1104 First Term.

3004. WRITTEN COMMUNICATION: FORMAL AND INFORMAL. (3 cr; prereq 1105 or equiv; IV MTWThF; FolH 108) Rodriguez

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.

3005. ORAL COMMUNICATION: SPEAKING AND LISTENING. (3 cr; prereq 1105 or equiv; III MTWThF; FolH 108) Sullivan

Dialogues, group discussions, simulated situational conversations, interviews, skits, debates based on themes from sound and video tapes, records, speakers from Spain and Spanish America. Emphasis on fluency in speaking and understanding of oral expression.

• **3610. TOPICS: SPANISH, SPANISH-AMERICAN LITERATURE IN TRANSLATION: MACHO MYSTIQUE IN HISPANIC LITERATURE.** (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]; limited to 25 students; taught in English; IV MTWThF; FolH 202) Sullivan

Hispanic and/or Latin American groups of writers; universal themes, literary motifs, relationships between literature and other disciplines.

5015. METHODS OF TRANSLATION. (4 cr; prereq 10 cr from 3001—3005 series or #; V MTWThF; FolH 209) Sousa

Meaning, use, and theories of translation. Techniques and problems of translation from Spanish and Portuguese to English and vice versa. Translation patterns, use of special vocabularies and other adjuncts needed to understand both languages. Practical vocabulary and usage for various fields of work.

5910. TOPICS IN SPANISH AND SPANISH-AMERICAN LITERATURE: THE THEATRE OF CERVANTES. (4 cr per qtr [12 cr max]; prereq 3104 or SpPt 3104 or Δ; VI MTWThF; FolH 209) Spadaccini
Trends during the golden age of Spanish theatre, and the relationship of Cervantine theatre to the traditions as well as to Cervantes' prose fiction.

5970. DIRECTED READINGS. (1-5 cr per qtr [15 cr max]; for MA and PhD candidates; prereq # and Δ; hrs ar) Staff

See First Term.

8970. DIRECTED READINGS IN ROMANCE LANGUAGES. (Cr and hrs ar) Staff

See First Term.

Portuguese (Port)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST AND SECOND TERMS: TEN-WEEK COURSE

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 register in both terms of the summer session and may not enroll in other summer courses.

• **1001-1002-1003†. BEGINNING PORTUGUESE.** (15 cr for both terms; limited to 25 students; II-III MTWThF; FolH 208)

Emphasis on speaking and understanding Portuguese; pronunciation (Brazilian speech stressed); gradual introduction to writing and reading skills; basic grammar; cultural aspects of language and civilizations of Portuguese-speaking world.

Speech-Communication (Spch)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

For special department offerings see the Small Group Communication Workshop in the Special Programs section.

FIRST TERM

• **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, I MTWThF, FolH 406

Sec 2, II MTWThF, FolH 307, Bantz

1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS. (4 cr; II MTWThF; FolH 306)

Variables in intrapersonal, interpersonal, and group communication.

• **3203. RADIO PRODUCTION.** (4 cr; limited to 20 students; I MTWThF; EdH Radio Studio)

Equipment and staff organization; program design and presentation. Organization, writing, production, direction, and performance of radio news, music, dramatic, and documentary programs.

3401. THEORIES OF INTERPERSONAL COMMUNICATION. (4 cr; prereq 1102 or #; Psy 1001; IV MTWThF; FolH 306) Bantz

Theories of interpersonal communication and their usefulness for particular purposes.

3970. DIRECTED STUDIES. (Cr or [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. (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.

5402. PROBLEMS IN INTERPERSONAL COMMUNICATION. (4 cr; prereq 3401 or #; II MTWThF, FolH 305) Cashman

Factors that contribute to misunderstanding, disagreement, and cessation of contact in dyads.

• **5404. LANGUAGE, CULTURE, AND EDUCATION.** (4 cr, §SeEd 5404; limited to 20 students; prereq 1102, 3401 or #; III MTWThF; PeiH 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.

• **5411. SMALL GROUP COMMUNICATION.** (4 cr; limited to 30 students; A-N only; prereq 3641 or #; IV MTWThF; FolH 406) Bormann

Communication within the small, task-oriented group. Group cohesiveness, leadership, role structure, information processing, decision making.

• **5414. AUTHORITY AND POWER IN TASK-ORIENTED COMMUNICATION — June 12-24, July 9.** (4 cr; limited to 60 students; S-N only; prereq 3641 or #; 4:15-6:15 June 12-15, 18-22, July 9; 9:00-5:30 June 16, 17, 23, 24; FolH 306, 307, 308) Shapiro

Authority and power in task-oriented groups. Tavistock-type small group, intergroup, and large group laboratory experiences. Verbal and nonverbal processes that operate in and among groups to facilitate or inhibit effective leadership and followership. See Special Programs section.

5441. COMMUNICATION IN HUMAN ORGANIZATIONS. (4 cr; prereq 1102 or 3401, 3641 or 5411, or grad student; V MTWThF, FolH 406) Bormann

Communication in organizational settings. Organizational structure and dynamics and their effect upon the communication process. Individual projects.

5970. READINGS IN SPEECH. (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. (3 cr; prereq 3401, 5402, and #; VI-VII MW; FolH 304) Cashman

Designed for those who 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. (Cr ar)

Open to graduate students engaged in research on special problems.

SECOND TERM

● **1101. FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION.** (4 cr; limited to 24 students; I MTWThF; FolH 306)

See First Term.

1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS. (4 cr; II MTWThF; FolH 306) Jensen

See First Term.

● **3201. INTRODUCTION TO BROADCASTING PRODUCTION.** (4 cr; limited to 24 students; \$2 lab fee; IV-VI MTWThF; RarigC 610) Bart

Students must register concurrently in 3204. Basic practice and theory. Projects in performance, scripting, and studio production.

3204. TELEVISION PRODUCTION. (4 cr; limited to 24 students; \$2 lab fee; IV-VI MTWThF; RarigC 610) Bart
Students must register concurrently in 3201. Advanced experience in producing and directing through a variety of in-studio projects.

3211. DETERMINANTS OF BROADCAST PROGRAMMING. (4 cr; II MTWThF; FolH 305) Browne
Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. "Problem" areas in programming.

3601. APPROACHES TO PUBLIC DISCOURSE. (4 cr; prereq 1101; III MTWThF; FolH 306) Scott
Theoretical systems intended to explain or direct the creation and practice of public discourse. From traditional rhetoric to contemporary perspectives.

● **3641. DISCUSSION AND CONFERENCE METHODS.** (4 cr; limited to 30 students; prereq 1101 or 1101H or #; IV MTWThF; FolH 306) Jensen

Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings.

3970. DIRECTED STUDIES. (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. (1-4 cr per qtr [max 8 cr...cr does not count toward speech-communication major]; S-N only; prereq #, Δ)

See First Term.

5232. INTERNATIONAL BROADCASTING. (4 cr; prereq 12 cr in political science or #; IV-V MTW; FolH 305) Browne

International broadcasting in the United States, Great Britain, the Soviet Union, Japan, and other countries. Theories of informing and persuading through direct broadcast and exchange of programs; regulatory agreements; spectrum control; social and legal implications of broadcasting via satellite.

5422. INTERVIEWING AND COMMUNICATION. (4 cr; prereq 1101, 6 cr in social science or #; I MTWThF; FolH 406) Scott

Theory and practice in the information interview. Interpersonal perception, empathy, and cognitive structure in dyadic communication. Experience in interviewing and communication analysis. Research in interpersonal and mass communication.

5451. INTERCULTURAL SPEECH-COMMUNICATION. (4 cr, §UC 3701; prereq 3401, Anth 1002 or other course in cultural anthropology or #; IV MTWThF; FolH 406) Howell
Successful interpersonal communication across cultures. Linguistic and nonverbal variables. Emphasis on North Americans abroad, communication with host nationals.

5970. READINGS IN SPEECH. (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ)

See First Term.

8431. SEMINAR: PERSUASION. (3 cr; prereq 5431; VI-VII TTh; FolH 307) Howell
Contemporary public address. Literature of persuasion, methods in study of persuasion.

8990. RESEARCH. (Cr ar)

See First Term.

Statistics (Stat)

FIRST TERM

1051. INTRODUCTION TO IDEAS OF STATISTICS. (4 cr; prereq high school higher algebra; II MTWThF and III WF; VH 2)
Presentation and analysis of data. Probabilistic models for inference. Inference and decision procedures. Emphasis on concepts rather than computation.

5121. THEORY OF STATISTICS. (4 cr, §5131-5132-5133; prereq Math 1231 or 1331 or 1621; III TTh, IV MTWThF; VH 2)
Univariate and multivariate distributions, law of large numbers, sampling, likelihood methods, estimation and hypothesis testing.

SECOND TERM

3091. INTRODUCTION TO PROBABILITY AND STATISTICS. (4 cr, §5121 §5131; prereq differential and integral calculus; II MTWThF, III WF; VH 2)
Elementary probability and probability distributions, sampling and elements of statistical inference. Treatment is more mathematical than 1051.

5122. THEORY OF STATISTICS. (4 cr, §5131-5132-5133; prereq 5121, Math 1231 or equiv; III TTh, IV MTWThF; VH 2)
Confidence intervals, testing hypotheses, regression, analysis of variance and covariance, distribution-free methods.

Studio Arts — See Arts, Studio

Theatre Arts (Th)

See also ID 3111, Interplay '79: A Search for Understanding, June 11-29.

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1502. MAKEUP FOR THE ACTOR. (2 cr; prereq 1504, clean shaven face; VI-VII MWF; RarigC 45) Crellin
Theory and practice in the art of stage makeup.

1504. ELEMENTS OF TECHNICAL THEATRE. (4 cr; prereq 1101 or 11101; VI MTWTh, IV-V F; RarigC 190; lab ar) Crellin, Montgomery
The practice of the arts and crafts of the theatre: scenery construction and painting, stage operation, theatre lighting, costuming.

• **3326. THEATRE DANCE.** (2 cr; limited to 22 students; prereq 1326; III MTWThF; RarigC 10) Moulton
Dance techniques for actors; practice and performance of dances in the theatre.

3711. STAGE DIRECTION. (4 cr, §3708, §5711; prereq 1321; III-IV MTWTh; RarigC 185) Wolfe
Theory of direction; concept and analysis. Blocking and production of short scenes.

3980. DIRECTED INSTRUCTION. (1-3 cr per qtr [8 cr max]; prereq completion of course in which teaching
will be done and Δ) Staff

5100. THEATRE PRACTICUM. (2-6 cr; prereq written Δ, consent of theatre practicum committee)
Thompson.

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. (1 cr; [9 cr max]; prereq written permission; S-N only) Thompson
Participation in the rehearsals and performances of a major University Theatre production.

5186. AMERICAN THEATRE. (4 cr; prereq sr or grad theatre major or #; VI-VII MTWTh; RarigC 75) Wolfe
The theatre as an aspect of American culture from 1752 to present.

5718. THEATRE MANAGEMENT AND PROMOTION. (4 cr; prereq 1504, sr or grad student or #; I-II MTWTh;
RarigC 75) Neely

Theory and practice in ticket office procedures, house management, publicity, and promotion; special problems
in college, community, children's, and professional theatres.

5823. ORAL INTERPRETATION OF SHAKESPEARE. (4 cr; prereq 1504, 3801 or grad student; VI-VII
MTWTh; RarigC 20) Thompson

Trends in the oral performance of Shakespeare's plays on the stage and the readers' platform. Study of
recordings and Shakespeare theatre criticism. Rehearsal and performance of selected scenes.

5950. TOPICS IN THEATRE. (1-5 cr per qtr [max 12 cr]; prereq # and Δ)

Sec 1, Workshop: Stage Lighting on a Budget, 2 cr, VI-VII TTh, RarigC 275, Montgomery

5970. DIRECTED READINGS. (2-6 cr; prereq 9 cr in theatre, # and Δ) Staff
Directed reading and preparation of reports on selected subjects.

8980. DIRECTED INSTRUCTION. (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. (Cr ar; prereq # and Δ) Staff

Open to graduate students engaged in research on special problems.

SPECIAL TERMS: THREE-WEEK COURSES (July 16-August 3) AND ONE-WEEK WORKSHOPS (Dates Specified)

• **1321. BEGINNING ACTING: CREATIVE APPROACH.** (4 cr; limited to 20 students; prereq 1101, 1504 or
§1504 and 3rd-4th fr or above; III-V MWF, III-IV TTh; RarigC 10) Berry
Beginning Stanislavskian technique and improvisational exercises leading to elementary scene study.

• **1328. MIME: MASK I.** (2 cr; limited to 20 students; prereq 1321; I-II MTWThF; RarigC 10) Berry
Corporeal actor training based on LeCoq methods, basic exercises, improvisation, and the neutral mask.

3513. TECHNICAL THEATRE PRODUCTION I. (4 cr; prereq 1504; III-V MWF, III-IV TTh; RarigC 190)
Brockman, Josal

Theory and practice of design and preparation of stage scenery and properties. Lab arranged.

3801. ORAL INTERPRETATION OF FICTION. (4 cr; prereq 1504 or 1804 or Spch 1101; III-V MWF, III-IV
TTh; RarigC 90) Congdon

Selected short stories. Solo and group readings.

3980. DIRECTED INSTRUCTION. (1-3 cr per qtr [8 cr max]; prereq completion of course in which teaching
will be done and Δ) Staff

5100. THEATRE PRACTICUM. (2-6 cr; prereq written Δ, consent of theatre practicum committee) Josal
See First Term.

5110. THEATRE PERFORMANCE. (1 cr; prereq written permission; S-N only) Adey
See First Term.

5540. SCENE PAINTING TECHNIQUES. (4 cr; prereq 3513 or #; I-II MTWThF; RarigC 130) Brockman
Practical study of materials, layout, and painting techniques used in theatre. Painting styles and texturing
techniques.

5711. STAGE DIRECTION. (4 cr, §3708, 3711; prereq 1321; sr and grad students only; III-V MWF, III-IV TTh;
RarigC 185) Adey

Theory of direction: concept and analysis. Exercises in blocking and production of short scenes.

5720. PLAYS IN PRODUCTION AND PERFORMANCE. (2-4 cr; max 6 cr for undergrads; prereq 5712 and
written permission) Adey

Work on campus or in the field with a community, high school, touring, or professional theatre group for
experience in stage direction.

5802. ORAL INTERPRETATION OF POETRY. (4 cr; prereq 1504, 3801 or grad student; III-V MWF, III-IV TTh;
RarigC 20) Fredricks

Lyric poems. Solo and group readings.

5950. TOPICS IN THEATRE. (1-5 cr per qtr [max 12 cr]; prereq # and Δ)
Selected topics.

Sec 1, Workshop: Problems of Directing, July 16-20, 2 cr, VI-IX MTWThF, RarigC 185, Adey

Theory of direction: concept, analysis, and problems in producing the play. Exercises in craft and
experimental techniques, production of short scenes.

5970. DIRECTED READINGS. (2-6 cr; prereq 9 cr in theatre, # and Δ) Staff
See First Term.

8518. SEMINAR: VISUAL ARTS OF DRAMA. (3 cr; prereq theatre major or #; VI-VII TTh; RarigC 275) Josal
Aesthetic theories of plastic and poetic arts; relationship to visual aspects of the dramatic production. Theory of
art as a symbol.

8980. DIRECTED INSTRUCTION. (1-3 cr) Staff
See First Term.

8990. RESEARCH. (Cr ar; prereq # and Δ) Staff
See First Term.

Urban Studies (UrbS)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions
under "Reserved Courses").

FIRST TERM

• **3101. URBAN STUDIES COLLOQUIA.** (2 cr per qtr; S-N only; prereq #; limited to 20 students per group; II-
III MW; BlegH 360) Osmera
Introduction to urban problems and problem-solving techniques.

3900. INTERNSHIP. (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ; 5:30-7:30 pm M; SocSci 860) Osmera
A weekly seminar integrating the internship experience with the academic program. Should be taken during or
immediately after the internship.

SECOND TERM

3900. INTERNSHIP. (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ; 5:30-7:30 pm M; SocSci 860) Osmera
See First Term.

Women's Studies (WoSt)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1005. INTRODUCTION TO WOMEN'S STUDIES. (4 cr; II MTWThF; AndH 250)
History of feminism, nationally and locally; women's issues; biological and learned behaviors.

• **3103. THE MODERN FEMINIST NOVEL.** (4 cr; limited to 30 students; prereq fr English or equiv; III MTWThF; ForH 285) Wanhala
Selected 20th century novels by British and American women.

SECOND TERM

1006. INTRODUCTION TO WOMEN'S STUDIES. (4 cr; II MTWThF; BlegH 260)
See 1005 First Term.

5101. HISTORY OF FEMINISM. (4 cr; prereq 1005, 1006; II MTWThF; AndH 250)
Feminist thought and movements; feminists' acts since 1790, especially in the United States and Great Britain; other international references.

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)

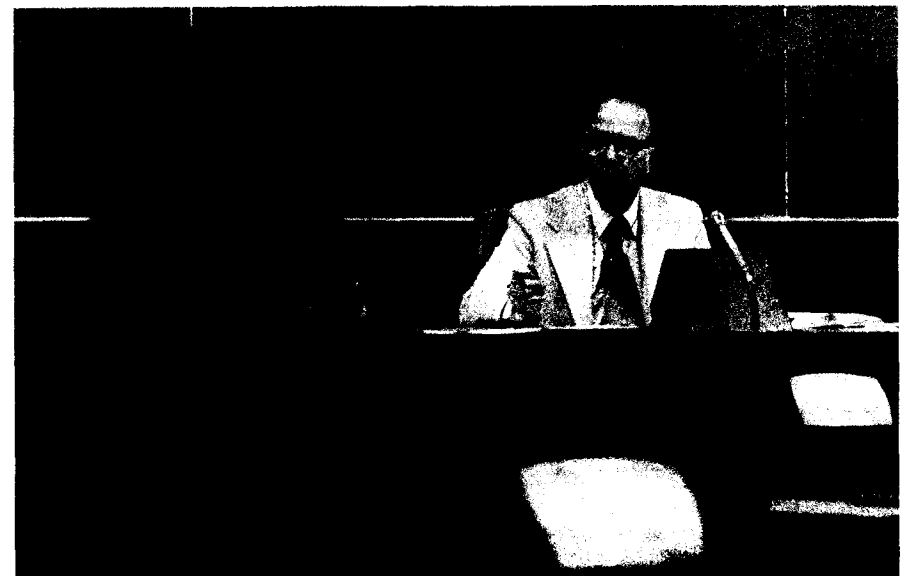
Courses with limited enrollment must be reserved in 108 Armory (see instructions under "Reserved Courses").

FIRST TERM

• **1014. WORLD MILITARY HISTORY.** (5 cr, §1011, §1012, §1013, §Hist 1951, §1952, §1953, §1954; limited to 50 students; prereq Δ; I-II 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

• **1024. FOUNDATIONS OF NATIONAL POWER.** (5 cr; limited to 50 students; prereq Δ; I-II MTWThF; Armory 116A)
Introduction to contemporary international relations; basic factors involved in a nation's capacity for developing power; varying levels of military force available to implement policy.



Institute of Technology

SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

Architecture (Arch)

See also the College of Liberal Arts listing for ID 3111, Interplay '79: A Search for Understanding.

All courses must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

1021. ARCHITECTURAL THEORY AND HISTORY. (4 cr; reserved course; 1021 is prereq to all architectural history courses; III-IV MWF; Arch 25) Winterowd
The philosophy and principles of architecture as an art, development of architecture from ancient times to the present.

5056. MODERN ARCHITECTURE. (4 cr; reserved course; prereq 1021 or #; III-IV MW, IV F; Arch 35) Ohlhausen
History of architecture in America and Europe from the late 19th century until the present time.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

• **3082-3083. ARCHITECTURAL DESIGN I.** (6 cr per qtr; limited enrollment; prereq 3081; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) Blair
Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making.

- **3092-3093. ARCHITECTURAL DESIGN II.** (6 cr per qtr; limited enrollment; prereq 3091; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) Blair
Architectural problems with emphasis on development of structure as an integral part of design; site planning.
- **5111. ARCHITECTURAL DESIGN III.** (6 cr; limited enrollment; prereq 3093; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
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.
- **5112. ARCHITECTURAL DESIGN III.** (6 cr; limited enrollment; prereq 5111; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
See 5111.
- **5113. ARCHITECTURAL DESIGN III.** (6 cr; limited enrollment; prereq 5112; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
See 5111.
- **5121. ARCHITECTURAL DESIGN IV.** (9 cr; limited enrollment; prereq 5113, CE 3062; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
Building design and development in the urban context. Individual and collaborative effort; urban problems; reporting on and preparation of large-scale proposals.
- **5122. ARCHITECTURAL DESIGN IV.** (9 cr; limited enrollment; prereq 5121; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
See 5121.

SECOND TERM

- **1022. HISTORY OF ENVIRONMENTAL DEVELOPMENT: LANDSCAPE ARCHITECTURE.** (4 cr; reserved course; prereq 1021; III-IV MWF; Arch 25) Winterowd
Introduction to landscape architecture. Forces and individuals that shaped the form of landscape in 19th- and early 20th-century America.
- **1041. ART FOR ARCHITECTURE STUDENTS.** (2 cr; limited enrollment; II-IV T; Arch 10)
Freehand drawing. Emphasis on development of graphics and delineation. Various techniques and media are employed.

SCHOOL OF CHEMISTRY

Chemistry (Chem)

Courses with limited enrollment must be reserved in 5 Lind Hall by IT students and in 12 Johnston Hall by other students unless otherwise indicated (see instructions under "Reserved Courses").

A deposit card is necessary for all laboratory courses; see page x.

FIRST TERM

- **1001. CHEMICAL PRINCIPLES AND COVALENT SYSTEMS.** (5 cr, 1001-1002†, §1004-1005, §1014, §1031-1032; primarily for forestry and nursing students; a terminal course; limited enrollment, reserved in JohH 12; prereq 2 yrs high school mathematics...high school chemistry recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 375; rec V MWF; lab VI-VIII MWF, SmithH ar) 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.

- **1004. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr, 1004-1005†, §1001-1002, §1014, §1031, §1032; limited enrollment, reserved in CofH 130 for Ag, For, HE...LindH 5 for IT...JohH 12 for other students; primarily for non-chemistry majors; prereq placement index of Y or predicted mathematics GPA 1.90 on ACT, Math 0009 or college course in algebra...4 yrs high school mathematics...high school chemistry and physics recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 325; rec V MWF; lab VI-VIII 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.

- **1006. PRINCIPLES OF SOLUTION CHEMISTRY.** (4 cr; limited enrollment, reserved in CofH 130 for Ag, For, HE...LindH 5 for IT...JohH 12 for other students; prereq 1005 or 1032; \$2 lab fee; lect II MTWThF, SciCB 175; lab V-VIII MWF, SmithH ar)
Lecture and laboratory work related to chemistry of selected cations and anions. Detection and behavior of these ions; heterogeneous and homogeneous equilibria systems. Oxidation-reduction systematics: complex ion formation as it relates to aqueous solution chemistry; general metal ion chemical phenomena interrelated with structure.

- **3100. QUANTITATIVE ANALYSIS.** (3 cr, 3100-3101†; limited enrollment; for non-chemistry majors; prereq 1005; V-VI MWF; Owre 12)
(Lecture) Modern quantitative methods of analysis.

- **3101. QUANTITATIVE ANALYSIS.** (2 cr, 3100-3101†; limited enrollment; for non-chemistry majors; prereq 3100 or §3100; \$2 lab fee; I-III MTWThF; SmithH 310)
(Laboratory) Modern quantitative methods of analysis including elementary physicochemical procedures.

- **3301. ELEMENTARY ORGANIC CHEMISTRY.** (4 cr; limited enrollment; for non-chemistry majors; prereq 1005 or 1032 or equiv; I-II MTWTh; SmithH 100)
Important classes of organic compounds, both aliphatic and aromatic, and heterocyclic compounds.

- **3305. ELEMENTARY ORGANIC CHEMISTRY LABORATORY.** (2 cr; limited enrollment; prereq 3301 or §3301; \$2 lab fee; lect III T, SmithH 100; lab III-VI WTh, SmithH 349, Kolth 398)
See 3301.

- **3499. SENIOR THESIS.** (Cr ar; must be reserved in LindH 5; prereq #, 4th yr; \$2 lab fee)
Written final senior thesis report.

- **3970. DIRECTED STUDY.** (Cr ar; prereq #; \$2 lab fee)
On- or off-campus learning experiences, individually arranged between a student and faculty member, in areas not covered by regular courses.

- **5520. ELEMENTARY PHYSICAL CHEMISTRY.** (3 cr; limited enrollment, reserved in LindH 5; prereq 1 yr college chemistry, Phys 1291 and 1295 or §Phys 1291 and §1295 or 1106 with #, Math 3211; I-II MWF; SmithH 225)
Brief general survey. Chemical thermodynamics.

- **8990. RESEARCH IN CHEMISTRY.** (Cr and hrs ar; prereq Δ)

- **8991. SPECIAL TOPICS.** (Cr and hrs ar; prereq Δ)

SECOND TERM

- **1002. CHEMICAL PRINCIPLES AND COVALENT SYSTEMS.** (5 cr, 1001-1002†, §1004-1005, §1014, §1031-1032; primarily for forestry and nursing students; a terminal course; limited enrollment, reserved in JohH 12; prereq 2 yrs high school mathematics...high school chemistry recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 375; rec IV MWF; lab VI-VIII MWF, SmithH ar)
See 1001 First Term.

- **1005. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr, 1004-1005†, §1001-1002, §1014, §1031, §1032; limited enrollment, reserved in CofH 130 for Ag, For, HE...LindH 5 for IT...JohH 12 for other students; primarily for non-chemistry majors; prereq placement index of Y or predicted mathematics GPA 1.90 on ACT, Math 0009 or college course in algebra...4 yrs high school mathematics...high school chemistry and physics recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 325; rec V MWF; lab VI-VIII MWF, SmithH ar)
See 1004 First Term.

- **NSci 1005. NATURAL SCIENCE – STRUCTURE AND PROPERTIES**
See Natural Science under College of Liberal Arts.

● **3302. ELEMENTARY ORGANIC CHEMISTRY.** (4 cr; limited enrollment; prereq 3301 or equiv; I-II MTWTh; SmithH 100)
See 3301 First Term.

● **3306. ELEMENTARY ORGANIC CHEMISTRY LABORATORY.** (2 cr; limited enrollment; prereq 3302 or ¶3302; \$2 lab fee; lect III T, SmithH 100; lab III-VI WTh, SmithH 349, KoltH 398)
See 3301 First Term.

● **3499. SENIOR THESIS.** (Cr ar; must be reserved in LindH 5; prereq #, 4th yr; \$2 lab fee)
See First Term.

3970. DIRECTED STUDY. (Cr ar; prereq #; \$2 lab fee)
See First Term.

● **5126. MODERN ANALYTICAL CHEMISTRY.** (4 cr; limited enrollment, reserved in LindH 5; primarily for chemical engineering majors; prereq 3332 and 3335; \$2 lab fee; lect V-VI TTh, KoltH S137; lab I-IV MTWTh, KoltH 297, 299)
Strategies and techniques for solving modern analytical problems. The use of modern instruments in analysis.

● **5133. CHEMICAL INSTRUMENTATION AND ANALYSIS.** (5 cr, \$5126; limited enrollment, reserved in LindH 5; prereq 1133, 5534; \$2 lab fee; lect V-VI TTh, KoltH S137; lab I-IV MTWThF, KoltH 297, 299)
An introduction to the methodology and practices of solving analytical problems. Application of modern instrumental techniques to analysis.

● **5521. ELEMENTARY PHYSICAL CHEMISTRY.** (3 cr; limited enrollment, reserved in LindH 5; prereq 1 yr college chemistry, Phys 1291 and 1295 or ¶Phys 1291 and ¶1295 or 1106 with #, Math 3211; I-II MWF; SmithH 225)
See 5520 First Term.

8990. RESEARCH IN CHEMISTRY. (Cr and hrs ar; prereq Δ)

8992. SPECIAL TOPICS. (Cr and hrs ar; prereq Δ)

COMPUTER SCIENCE (CSci)

All courses must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

3101. A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING. (4 cr; prereq Math 1231 or Math 1331 or Math 1621 or #; intended for non-CSci majors; \$2 lab fee; IV MTWThF; Ph 133) Ibarra
FORTRAN computer language with extensions; applications; programming techniques. Brings students to advanced-level competence in FORTRAN programming. Integral nonscheduled laboratory.

3104. INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING. (4 cr; prereq Math 1231 or Math 1331 or Math 1621 or #; intended for CSci majors; \$2 lab fee; II MTWThF; Ph 133) Schneider
Problem-solving techniques, stepwise refinement, modularization. Algorithms, introduction to evaluation criteria, representation of algorithms, flow charts, metalanguages. The PASCAL language. Elements of programming styles, program checking. Documentation. Comparison of PASCAL and FORTRAN.

3105. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES I. (4 cr; prereq 1100 or equiv programming knowledge or #, Math 1231 or Math 1331 or Math 1621 or #; informal lab; \$2 lab fee; III MTWThF; Ph 133) Maly
Algorithms, their properties and representation. Elementary concepts in linguistics: syntax, semantics, ambiguities. FORTRAN as a language; applications of FORTRAN to different algorithms; e.g., iteration and recursion, sequential and binary searching, numerical methods.

SECOND TERM

3104. INTRODUCTION TO PROGRAMMING AND PROBLEM SOLVING. (4 cr; prereq Math 1231 or Math 1331 or Math 1621 or #; intended for CSci majors; \$2 lab fee; II MTWThF; Ph 133) Bruell
See First Term.

3106. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES II. (4 cr; prereq 3105 or #; informal lab; \$2 lab fee; III MTWThF; Ph 133) Frankowski

Algorithms for nonnumerical data types. Tree structures, lists, strings, simulations, sorting, hashing, elementary graph theory, game playing. Languages for string processing and symbol manipulation; SNOBOL. Language translation. Students will write FORTRAN and SNOBOL programs in several of the above areas.

5107. COMPUTER GRAPHICS. (4 cr; prereq 3107 or 5101 or #; \$2 lab fee; II MTWThF; MechE 302) Giloi
Definition of interactive computer graphics, its goals and problems. A model system. Data structures for computer graphics, picture structure, and transformations. Perspective views of three-dimensional objects. Structures of graphical programming languages. Interaction handling.

5121. INTRODUCTION TO DATA STRUCTURES. (4 cr; prereq 3106 or #; \$2 lab fee; III-IV TTh, III F; MechE 302) Sahn

Basic concepts of data and their representation. Linear lists and strings. Array structures and allocations. Symbol tables and searching techniques; hash coding techniques. Tree structures. Storage systems and structures. Storage allocation. Multilinked structures. Sorting.

5299. MICROPROGRAMMING. (4 cr; prereq 5102, 5201 or #; \$2 lab fee; III-IV MW, IV F; MechE 221) Berg
Microprogramming as a technique for designing and implementing computer systems. Theoretical foundations and architecture. User programmable machines. Students will implement and document applications.

SCHOOL OF EARTH SCIENCES

Geology and Geophysics (Geo)

All courses must be reserved in 5 Lind Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

● **1001. PHYSICAL GEOLOGY.** (5 cr; limited to 52 students, reserved in LindH 5 for IT and JohH 12 for others; \$2 lab fee; lect II 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.

Lab 1, III-IV MWF, ForH 180

Lab 2, VI-VII MWF, ForH 180

3099. PROBLEMS IN GEOLOGY AND GEOPHYSICS. (1-6 cr; prereq 8 and Δ)
Individual research or problem selected on the basis of individual interests and background.

● **5051. PHYSICAL GEOLOGY FOR TEACHERS.** (4 cr, §1001, §1111; limited to 8 students, reserved in LindH 5 for IT and JohH 12 for others; only for students holding degrees in education; prereq 1 term college chemistry or physics; \$2 lab fee; lect II MTWThF, seminar V TTh; PillsH 110) Sawkins
Scientific methods and nature of the earth. Main features of the physical world and of the processes that have formed them.

Lab 1, III-IV MWF, ForH 180

Lab 2, VI-VII MWF, ForH 180

5110. FIELD GEOLOGY. (9 cr; limited to students majoring in geology, geophysics or geoen지니어ing; prereq 3103 and #; \$2 lab fee)

Measurement of stratigraphic sections. Fossils and igneous, sedimentary, and metamorphic rocks. Geological surveying on aerial photographs and topographic maps. Preparation of geologic maps and cross sections. Structural and geomorphic features and geologic setting of mineral deposits. Course to be held in Gunnison, Colorado.

SECOND TERM

● **5110. FIELD GEOLOGY.** (9 cr; limited to students majoring in geology, geophysics or geoen지니어ing; prereq 3103 and #; \$2 lab fee)
See First Term.

COLLEGE OF ENGINEERING

Aerospace Engineering and Mechanics (AEM)

All courses must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

1015. STATICS. (4 cr, §1011; prereq Phys 1271, Math 1231; I-II MWF, II TTh; Arch 15)
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.

3036. DYNAMICS. (4 cr; prereq 1011 or 1015, §Math 3221; III-IV MWF, III TTh; Arch 15)
Review of particle dynamics. Mechanical systems and the rigid-body model. Equilibrium. Kinematics and dynamics of plane systems. Technical applications.

• **5001. AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY TEACHERS** — July 2-13. (4 cr; enrollment limited to 30 students; 1:00-5:30 MTWThF; Mech E 212) Kaldahl, Aerospace Engineering and Mechanics faculty
Lectures, film reviews, construction and demonstration of classroom aids, involvement with the NASA space-mobile, flight experience, and field trips cover such topics as satellites and probes, model rocketry including a launch, astronaut in space, principles of flight, conventional aircraft, space age education tools. Visits to local aerospace facility and to major aerospace installation in the country. See Special Programs section.

8800. SELECTED TOPICS IN MECHANICS AND MATERIALS. (0-4 cr per qtr; prereq #)
Topics of current interest.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

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

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

SECOND TERM

3016. DEFORMABLE BODY MECHANICS. (4 cr; prereq 1011 or 1015, §Math 3221; III-IV MWF, III TTh; 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.

8810. SELECTED TOPICS IN FLUID MECHANICS. (0-4 cr per qtr; prereq #)
Topics of current interest.

Chemical Engineering and Materials Science

Chemical Engineering (ChEn)

Courses so designated must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

5901-5902-5903. SPECIAL PROBLEMS. (Cr ar; reserved course)

8850. GENERAL SURVEY OF CHEMICAL ENGINEERING. (Cr ar)

8901-8902-8903. RESEARCH. (Cr ar)

SECOND TERM

5901-5902-5903. SPECIAL PROBLEMS. (Cr ar; reserved course)

8850. GENERAL SURVEY OF CHEMICAL ENGINEERING. (Cr ar)

8901-8902-8903. RESEARCH. (Cr ar)

Metallurgy/Materials Science (MatS)

Courses so designated must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

• **3400. MECHANICAL PROPERTIES OF MATERIALS.** (4 cr; reserved course; prereq 2nd-year IT student)
Structure and properties of metals, alloys, and polymers; heat treatment; alloy selection and metal processing.

Sec 1, I-II MWF, ChEng 240

Sec 2, I-II MWF, MinMet 116

• **5011. INTRODUCTION TO SCIENCE OF MATERIALS.** (4 cr; reserved course; prereq 3rd-year IT student; I-II MWF; MinMet 116)

Introduction to the relationships between atomic structure and physical properties of metals, semiconductors, glasses, polymers, ceramics, and composites.

5481, 5482, 5483. SPECIAL PROBLEMS. (Cr ar; reserved course; prereq sr)

8480, 8481, 8482. SELECTED TOPICS: MATERIALS SCIENCE, ENGINEERING. (Cr ar)

SECOND TERM

5481-5482-5483. SPECIAL PROBLEMS. (Cr ar; reserved course; prereq sr)

8480-8481-8482. SELECTED TOPICS: MATERIALS SCIENCE, ENGINEERING. (Cr ar)

Electrical Engineering (EE)

Courses with limited enrollment must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

• **1510. ELEMENTS OF ELECTRICAL ENGINEERING.** (5 cr; each section limited to 14 students; prereq Math 3211, 3221, Phys 1291 or §Phys 1291; \$2 lab fee; I-II MTWThF; MechE 221)

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-order circuits.

Lab 1, III-V TTh, ElectE 121

Lab 2, V-VII TF, ElectE 121

FIRST AND SECOND TERMS: TEN-WEEK COURSES

• **3000. CIRCUITS.** (4 cr; each section limited to 14 students; not for EE majors; prereq Phys 1291, Math 3221 or §Math 3221; \$2 lab fee; lect I MWF; Arch 40)

Linear passive circuits; natural and forced response. Steady-state AC analysis; resonance.

Lab 1, I-II Th, ElectE 121

Lab 2, V-VI Th, ElectE 118

Lab 3, VI-VII W, ElectE 118

- **3001. ELECTRONICS.** (4 cr; each section limited to 14 students; not for EE majors; prereq 3010 or 3000 or ¶3000; \$2 lab fee; lect II MWF; Arch 40)
Network theorems; two-ports, active device models; vacuum diodes, semiconductors, amplifiers, nonlinear devices; logic circuits. (Note that concurrent enrollment is now permitted in EE 3000 and 3001).
Lab 1, I-II T, ElectE 118
Lab 2, I-II Th, ElectE 118
Lab 3, VI-VII M, ElectE 118
- **3010. CIRCUITS, SIGNALS, AND SYSTEMS I.** (4 cr, §1501; limited enrollment; prereq 1510; IV MWF, VI-VII M; Arch 55)
Modeling of lumped-parameter networks. Second-order circuits. Sinusoidal steady-state analysis. Two-port networks.
- **3012. CIRCUITS, SIGNALS, AND SYSTEMS III.** (4 cr, §5001; limited enrollment; prereq 3011; II MWF, I-II T; Arch 10)
Continuous, discrete-time systems. Feedback: stability, applications.
- **3050. ELECTRONICS.** (4 cr; limited enrollment; prereq 3010 or ¶3010; I MWF, VI-VII W; Arch 10)
Diode circuits and applications. Semiconductor properties. P-N junctions. Junction diodes; JFET characteristics; MOSFET characteristics, FET amplifiers; biasing.
- **3100. ELECTROMAGNETIC FIELDS I.** (4 cr; limited enrollment; prereq Phys 1291, Math 3231 or ¶Math 3231 with #; III MWF, III-IV Th; Arch 55)
Electrostatic, magnetostatic, and electromagnetic field theory based on fundamental experimental laws, including properties of dielectric and magnetic materials.
- **3400. JUNIOR ELECTRICAL ENGINEERING LABORATORY.** (3 cr; each section limited to 12 students; prereq 3050 or ¶3050; \$2 lab fee)
Lab 1, I-IV T, ElectE 205
Lab 2, V-VIII Th, ElectE 205
- **3402. JUNIOR ELECTRICAL ENGINEERING LABORATORY.** (2 cr; each section limited to 12 students; prereq 5050 or ¶5050; \$2 lab fee)
Lab 1, V-VIII T, ElectE 216
Lab 2, I-IV Th, ElectE 216
Lab 3, V-VIII Th, ElectE 216
- **3476. INDUSTRIAL ASSIGNMENT I.** (2 cr; limited enrollment; prereq regis in engineering intern program)
Industrial work assignment in engineering intern program. Grade based on formal written report covering the quarter's work assignment.
- **3477. INDUSTRIAL ASSIGNMENT II.** (2 cr; limited enrollment; prereq 3476)
See 3476.
- **3478. INDUSTRIAL ASSIGNMENT III.** (2 cr; limited enrollment; prereq 3477)
See 3476.
- **3479. INDUSTRIAL ASSIGNMENT IV.** (2 cr; limited enrollment; prereq 3478)
See 3476.
- **5050. NONLINEAR ELECTRONIC CIRCUITS.** (4 cr; limited enrollment; prereq 3051, 3012 or ¶3012; III MWF, VI-VII M; Arch 10)
Linear wave-shaping circuits. Piece-wise linear circuit analysis. Switching models of diodes and transistors. Transistor logic circuits. Bistable multivibrators. Astable multivibrators. Nearly sinusoidal oscillators.
- **5051. INTRODUCTION TO LOGIC DESIGN.** (4 cr, §5060, §5350; limited enrollment; prereq 3051 or #; IV MTWF; Arch 10)
Integrated logic circuits. Design using logic circuits, memory elements, sequential circuits. Transmission lines and digital signals.
- **5100. ELECTROMAGNETIC FIELDS III.** (4 cr; limited enrollment; prereq 3101; I MWF, VI-VII W; Arch 55)
Plane-wave propagation, transmission lines, antennas, and other topics.

- **5101. ELECTROMAGNETIC FIELDS LABORATORY.** (1 cr; each section limited to 12 students; prereq 3401, 5100 or ¶5100; \$2 lab fee)
Lab 1, V-VIII alt T, ElectE 204
Lab 2, I-IV alt Th, ElectE 204
Lab 3, V-VIII alt Th, ElectE 204

Mechanical Engineering

Industrial Engineering/Operations Research (IEOR)

Courses with limited enrollment must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- **5030. QUALITY CONTROL AND RELIABILITY.** (4 cr; limited to 30 students; prereq 5000, Math 1231, ME 3900; lect IV-V MTWTh; MechE 202) 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

- **5040. INTRODUCTION TO OPERATIONS RESEARCH.** (4 cr; limited to 30 students; prereq 5000, Math 1231; lect III MTWTh; MechE 202) White, Arora
Linear programming, algebra and geometry of linear models, simplex method, sensitivity testing, and duality; network models, network algorithms, and dynamic models.

SECOND TERM

- **5000. INTRODUCTION TO INDUSTRIAL ENGINEERING ANALYSIS.** (4 cr; limited to 30 students; prereq Math 1231; lect I-II TWThF; MechE 108) 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)

Courses with limited enrollment must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- **3201. MECHANICAL ENGINEERING SYSTEMS ANALYSIS.** (4 cr; limited to 30 students; prereq Math 3221; V-VI MTWTh; MechE 102) Frohrib
Modeling and analytic description of mechanical systems. Properties of linear models with emphasis on automatic computation solution. Necessary background includes differential equations.
- **3205. ENGINEERING SYSTEMS DESIGN.** (4 cr; limited to 30 students; prereq engineering system dynamics and kinematics [3201, 3203]; III-IV TWThF; MechE 302) 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.

● **3301. THERMODYNAMICS.** (4 cr; limited to 30 students; prereq introductory thermodynamics and basic calculus, Chem 1014 or Phys 1281, Math 3221 or equiv; III TWTh, IV MTWThF; MechE 221) 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.

● **5460. INTERNAL COMBUSTION ENGINES.** (4 cr; limited to 30 students; prereq 3301 or equiv; V-VI 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

● **3740. INDUSTRIAL ASSIGNMENT.** (2 cr per qtr [may be repeated for cr]; prereq regis in engineering intern program) Springer
Engineering intern industry laboratory assignment (work quarter). Grade based on formal written report covering the industrial work assignment.

SECOND TERM

● **3303. APPLIED THERMODYNAMICS.** (4 cr; limited to 30 students; prereq 3301; III-IV TWThF; MechE 108) Murphy
Application of laws of thermodynamics to chemically reacting systems and engineering systems. Vapor cycles, gas engine cycles, propulsion systems, refrigeration, and air-water vapor mixtures.

● **5260. ENGINEERING MATERIALS AND PROCESSING.** (4 cr; limited to 30 students; prereq Phys 1291, Chem 1004, and 1st-yr calculus; \$2 lab fee; VI MTWThF; MechE 302) Donath
Introduction to materials and processing including physical and metallurgical properties, consolidation, etc. Material processing including machining, welding, and deformation processes.

Lab 1, VII-IX TTh, MechE 70
Lab 2, VII-IX MW, MechE 70

● **5342. HEAT TRANSFER.** (4 cr; limited to 30 students; prereq Math 3221, CE 3400 or equiv; V-VI MWThF; MechE 108) Scott
Steady and unsteady conduction of heat. Convection heat transfer in boundary layer and duct flows; forced and free convection; condensation and boiling; heat exchangers. Heat transfer by thermal radiation; radiative properties of black bodies and real surfaces.

SCHOOL OF MATHEMATICS

Mathematics (Math)

Courses with limited enrollment must be reserved in 5 Lind Hall or 12 Johnston Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

● **0009. PREPARATORY MATHEMATICS.** (No cr; limited enrollment, reserved in JohH 12)
Designed to supplement the background in algebra for those whose background is insufficient. Covers most of the material of high school elementary and higher algebra courses, with emphasis on the latter.

Sec 1, I-II MTWThF, VH 311
Sec 2, III-IV MTWThF, VH 311

● **1005. FOUNDATIONS OF ARITHMETIC.** (3 cr [not available for CLA cr]; limited enrollment, reserved in JohH 12; prereq 1 yr elementary algebra and 1 yr high school geometry or equiv or Δ ; III MTWThF; KoltH S135)
Logical and axiomatic basis of the rules for arithmetical operations with integers, rational numbers, and real irrational numbers as necessary background for teaching arithmetic in elementary school. History of the subject and its role in our culture and civilization.

● **1008. TRIGONOMETRY.** (3 cr [available for cr if taken before 1201, even to students with high school trigonometry]; limited enrollment, reserved in JohH 12; prereq plane geometry and high school higher algebra or 0009...1111 allowed)

Analytic trigonometry emphasizing identities, equations, and properties of the functions; right and oblique triangles without logarithmic computation.

Sec 1, II MTWThF, KoltH S135
Sec 2, IV MTWThF, KoltH S135

● **1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY.** (5 cr, §1201; limited enrollment, reserved in JohH 12; prereq 0009 or high school higher algebra and satisfactory math placement score)
(For students requiring only some analytic geometry and college algebra without trigonometry, or for those whose background does not include logarithms. Students who plan to take several quarters of mathematics should take 1201 if they qualify.) 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, I-II MTWThF, MechE 202
Sec 2, III-IV MTWThF, Arch 50

● **1131. FINITE MATHEMATICS.** (5 cr; limited enrollment, reserved in JohH 12; prereq 0009 or high school higher algebra and math placement score; III-IV MTWThF; VH 207)
(For students in the social sciences, behavioral sciences, and pre-business administration.) Elementary computer programming, logical analysis, probability and stochastic models, Markov chains, linear systems and programming, matrix operations, and applications.

● **1142. INTRODUCTION TO CALCULUS.** (5 cr, §1211; limited enrollment, reserved in JohH 12; prereq 1111 or 1201 or math placement score)
(For students in pre-business administration, pre-pharmacy, and others requiring a minimal amount of calculus. Students who plan to take several quarters of mathematics should register for the sequence 1211-1221-1231.) Derivatives, integrals, differential equations, maxima and minima, partial differentiation, applications.

Sec 1, I-II MTWThF, VH 20
Sec 2, III-IV MTWThF, VH 20

● **1201. PRE-CALCULUS.** (5 cr, §1111; limited enrollment; prereq 0009 or high school higher algebra and 1008 or high school trigonometry)
(For students who intend to take a calculus sequence.) Inequalities, analytical geometry, complex numbers, binomial theorem, mathematical induction, functions and graphs, and trigonometric, exponential, and logarithmic functions.

Sec 1, I-II MTWThF, VH 209
Sec 2, III-IV MTWThF, VH 209

● **1211. ANALYSIS I.** (5 cr, §1142, §1311; limited enrollment; prereq grade of C or better in 1201 or high school higher algebra, trigonometry, geometry and math placement score)
Analytic geometry and calculus of one variable, applications. Infinite series and sequences.

Sec 1, I-II MTWThF, Arch 45
Sec 2, III-IV MTWThF, Arch 45

● **1221. ANALYSIS II.** (5 cr, §1321; limited enrollment; prereq grade of C or better in 1211 or equiv) See 1211.

Sec 1, I-II MTWThF, VH 16
Sec 2, III-IV MTWThF, VH 16

● **1231. ANALYSIS III.** (5 cr, §1331; limited enrollment; prereq grade of C or better in 1221 or equiv) See 1211.

Sec 1, I-II MTWThF, VH 1
Sec 2, III-IV MTWThF, Arch 5

● **3142. INTRODUCTION TO LINEAR ALGEBRA.** (4 cr, §3221, §3511, §5242; limited enrollment, reserved in JohH 12; prereq 2 qtrs calculus; II MTWThF, III WF; VH 206)

Vectors, systems of linear equations, matrices, determinants, eigenvalues, applications. Techniques and some proofs of theorems.

● **3211. ANALYSIS IV.** (5 cr, §3521; limited enrollment; 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, I-II MTWThF, Arch 35
Sec 2, III-IV MTWThF, VH 211

● **3221. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS.** (5 cr, §3142, §3511; limited enrollment, reserved in LindH 5; prereq grade of C or better in 1231 or equiv; III-IV MTWThF; MechE 212)

Vectors, systems of linear equations, matrices, determinants, bases, eigenvalues. Linear differential equations and systems with constant coefficients, initial value problem and general solution, variation of parameters for inhomogeneous equations.

● **3231. VECTOR ANALYSIS.** (4 cr, §5601-5602; limited enrollment, reserved in LindH 5; prereq grade of C or better in 3211 or equiv; II MTWThF, III MWF; VH 364)

Scalar and vector products, derivatives, geometry of space curves, del operator, line and surface integrals, divergence and Stokes' theorem, transformation of coordinates, dyadics, applications. Mostly a technique course, intended mainly for students whose interests are not theoretical but who wish to learn the relevant mathematical facts and methods.

● **5209. THEORY OF NUMBERS.** (4 cr; limited enrollment, reserved in JohH 12; prereq 3211 or 3511; II MTWThF, III WF; KoltH S136)

Elementary properties of integers; prime and composite numbers; Euclid's algorithms; congruences; theorems of Fermat and Wilson; primitive roots; indices; Diophantine equations.

● **5242. LINEAR ALGEBRA WITH APPLICATIONS.** (4 cr, §282; limited enrollment; prereq 3221 or 3142 or 3511; II MTWThF, III WF; VH 301)

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.** (4 cr; limited enrollment, reserved in LindH 5; prereq 3211 and 3221 or equiv; III TTh, IV MTWThF; KoltH S138)

Integrated study of 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.

● **5601. ADVANCED CALCULUS.** (4 cr; limited enrollment; prereq 3211 or equiv; III TTh, IV MTWThF; KoltH S136)

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.

SECOND TERM

● **0009. PREPARATORY MATHEMATICS.** (No cr; limited enrollment, reserved in JohH 12; I-II MTWThF; VH 364)

See First Term.

● **1006. FOUNDATIONS OF ARITHMETIC.** (3 cr; limited enrollment, reserved in JohH 12; prereq 1005; III MTWThF; KoltH S135)

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.** (3 cr; [available for cr if taken before 1201, even to students with high school trigonometry]; limited enrollment, reserved in JohH 12; prereq plane geometry and high school higher algebra or 0009...1111 allowed).

See First Term.

Sec 1, II MTWThF, KoltH S135
Sec 2, IV MTWThF, KoltH S135

● **1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY.** (5 cr, §1201; limited enrollment, reserved in JohH 12; prereq 0009 or high school higher algebra and satisfactory math placement score)

See First Term.

Sec 1, I-II MTWThF, VH 20
Sec 2, III-IV MTWThF, VH 20

● **1142. INTRODUCTION TO CALCULUS.** (5 cr, §1211; limited enrollment, reserved in JohH 12; prereq 1111 or 1201)

See First Term.

Sec 1, I-II MTWThF, VH 211
Sec 2, III-IV MTWThF, BlegH 10

● **1201. PRE-CALCULUS.** (5 cr, §1111; limited enrollment; prereq 0009 or high school higher algebra and 1008 or high school trigonometry)

See First Term.

Sec 1, I-II MTWThF, VHK 209
Sec 2, III-IV MTWThF, VH 209

● **1211. ANALYSIS I.** (5 cr, §1142, §1311; limited enrollment; prereq grade of C or better in 1201 or high school higher algebra, trigonometry, geometry and math placement score)

See First Term.

Sec 1, I-II MTWThF, VH 311
Sec 2, III-IV MTWThF, VH 311

● **1221. ANALYSIS II.** (5 cr, §1321; limited enrollment; prereq grade of C or better in 1211 or equiv) See 1211 First Term.

Sec 1, I-II MTWThF, Arch 45
Sec 2, III-IV MTWThF, VH 1

● **1231. ANALYSIS III.** (5 cr, §1331; limited enrollment; prereq grade of C or better in 1221 or equiv) See 1211 First Term.

Sec 1, I-II MTWThF, VH 16
Sec 2, III-IV MTWThF, VH 16

● **3211. ANALYSIS IV.** (5 cr, §3521; limited enrollment; prereq grade of C or better in 1231 or equiv; III-IV MTWThF; Arch 5)

See First Term.

● **3221. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS.** (5 cr, §3142, §3511; limited enrollment, reserved in LindH 5; prereq grade of C or better in 1231 or equiv)

See First Term.

Sec 1, I-II MTWThF, Arch 5
Sec 2, III-IV MTWThF, VH 211

● **3231. VECTOR ANALYSIS.** (4 cr, §5601-5602; limited enrollment, reserved in LindH 5; prereq grade of C or better in 3211 or equiv; III MTWThF, IV MWF; VH 207)

See First Term.

● **5243. LINEAR ALGEBRA WITH APPLICATIONS.** (4 cr, §5283-5284; limited enrollment; prereq 5242; II MTWThF, III WF; KoltH S132)

See 5242 First Term.

● **5458. METHODS OF APPLIED MATHEMATICS.** (4 cr; limited enrollment, reserved in LindH 5; prereq 5457, or 3211 and 3221 or equiv; III TTh, IV MTWThF; KoltH S132)

See 5457 First Term.

● **5602. ADVANCED CALCULUS.** (4 cr; limited enrollment; prereq 5601; III TTh, IV MTWThF; KoltH S137) Line and surface integrals; Stokes' theorem; convergence of infinite series; orthogonal functions; uniform convergence; integration and differentiation of series.

- **5679. PROBABILITY.** (4 cr, §5681; limited enrollment; prereq 3211 or 3411 or 3521; II MTWThF, III WF; KoltH S137)

Elementary principles of probability, total and compound probability, expectation, repeated trials. Other possible topics: Stirling's formula, the probability integral, geometrical probability, probability of causes, Bayes' theorem, errors of observation, principle of least squares.

SCHOOL OF PHYSICS AND ASTRONOMY

Astronomy (Ast)

FIRST TERM

1011. DESCRIPTIVE ASTRONOMY. (4 cr, §1021; II-III MWF; Ph 210) van der Hulst
Survey of the sun, moon, planets, and stars; description of the galaxy and universe to which the sun belongs. Nonmathematical.

● **1015. DESCRIPTIVE ASTRONOMY LAB.** (1 cr; S-N only; limited to 20 students; prereq 1011; \$2 lab fee; 4 lab hrs per wk; V-VI MW, Ph 342; 9:00-10:00 pm, Ph 450)

Physics (Phys)

Courses with limited enrollment must be reserved in 5 Lind Hall by IT students and in 12 Johnston Hall by others (see instructions under "Reserved Courses").

FIRST TERM

1004. PHYSICAL WORLD: PHYSICS. (4 cr; §equiv courses in physics; prereq 1 yr high school algebra; II MTWThF and I TTh; Ph 150)

Topics from astronomy and physics selected to illustrate the methods of science and to acquaint students with the physical universe.

● **1005. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 48 students; prereq 1004 or §1004; \$2 lab fee) Laboratory experiments offered in conjunction with 1004. Lab section assigned first 2 days of class.

1031. GENERAL PHYSICS. (4 cr; primarily for students interested in technical topics; prereq high school algebra and plane geometry; I MTWThF, II MWF; Ph 170)

Demonstration lectures, problem sessions, and laboratory exercises. Applications of physics. Mechanics, random processes, gases and fluids, electrical circuits, feedback and control, waves, light, optical instruments, atoms and spectra, nuclei, and radioactivity.

● **1035. GENERAL PHYSICS LAB.** (1 cr; S-N only; limited to 96 students; prereq 1031 or §1031; \$2 lab fee) Laboratory experiments offered in conjunction with 1031. Lab section assigned first 2 days of class.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

1271. GENERAL PHYSICS. (4 cr; prereq Math 1221 or §Math 1221 or Math 1321 or §Math 1321 or Math 1621 or §Math 1621; may be taken with or without lab 1275; I MTWThF; Ph 166)
Calculus-level general physics course. Mechanics.

● **1275. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 64 students; prereq 1271 or §1271; \$2 lab fee; 2 lab hrs per wk ar)
Laboratory exercises in mechanics.

● **1281. GENERAL PHYSICS.** (4 cr; prereq 1271, Math 1231 or §Math 1231 or Math 1331 or §Math 1331 or Math 1621 or §Math 1621; may be taken with or without lab 1285; III MTWThF; Ph 170)
Calculus-level general physics course. Heat and electricity.

● **1285. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 48 students; prereq 1281 or §1281; \$2 lab fee; 2 lab hrs per wk ar)
Laboratory exercises in heat and electricity.

1291. GENERAL PHYSICS. (4 cr; prereq 1281; may be taken with or without lab 1295; III MTWThF; Ph 150)
Calculus-level general physics course. Magnetism and optics.

● **1295. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 64 students; prereq 1291 or §1291; \$2 lab fee; 2 lab hrs per wk ar)
Laboratory exercises in magnetism and optics.

SECOND TERM

1032. GENERAL PHYSICS. (4 cr; primarily for students interested in topics useful in various technical areas; prereq 1031; I MTWThF, II MWF; Ph 170)
See 1031 First Term.

● **1036. GENERAL PHYSICS LAB.** (1 cr; S-N only; limited to 96 students; prereq 1032 or §1032; \$2 lab fee) Laboratory experiments offered in conjunction with 1032. Lab section assigned first 2 days of class.

University College

University College offers three nontraditional degree programs and two nondegree programs designed to promote flexible learning experiences.

The oldest of the degree programs is the Inter-College Program (213 Temporary North of Appleby). It has no fixed curriculum and draws upon the entire University for its courses. Its purpose is to provide flexibility in the educational program of the undergraduate who finds none of the standard curricula of the other schools and colleges of the University suited to her or his particular interests or objectives. The student may arrange a study program that includes suitable amounts of work in two or more schools or colleges. Upon completing this approved program, the student is granted either a B.A. or a B.S. degree. An applicant for admission should be at least a third-quarter sophomore who has completed at least 1 full quarter, or its equivalent, at the University of Minnesota.

The other two degree programs are experimental in nature. University Without Walls (201 Westbrook Hall) serves students who have met barriers in their attempts to participate in traditional undergraduate programs. The UWW staff assists students in defining educational goals and in locating University and other appropriate resources for reaching those goals.

The University Scholars Program (105 Walter Library) allows a student and faculty adviser the freedom to construct a baccalaureate degree program based on individually tailored educational goals and learning experiences. To be eligible, a student should have completed 2 years of college work and must be nominated by a faculty sponsor who agrees to serve as the student's adviser in the program, supervising and assessing the student's work.

The two nondegree programs sponsored by University College are the Foreign Studies Program and an independent study program. The Foreign Studies Program (1246 Social Sciences Building) is an individualized, interdisciplinary minor that integrates a foreign study experience and related course work with a major in any University of Minnesota college.

University College makes available to students regularly enrolled in any undergraduate college of the University an opportunity for intercollegiate independent study. A student may earn from 3 to 15 degree credits registering for independent study projects through UC 3075. The student designs his or her own project and works with an appropriate faculty member who supervises and evaluates the project.

University College also sponsors cross-college course work. Information about any of the above programs or current pilot programs may be obtained at 105 Walter Library.

University College (UC)

FIRST TERM

3075. INDEPENDENT STUDY. (Cr ar; prereq Δ)

3201. DIRECTED STUDIES. (Cr ar; S-N only; prereq UWW student, Δ)

3401. DIRECTED STUDIES. (Cr ar; prereq University Scholars student, Δ)

5201. DOSSIER EXAMINATION. (Cr ar; S-N only; prereq UWW student, submission of dossier)

5506. CULTURE THEORY: SOCIAL SCIENCES. (3 cr; IV MTWThF; ForH 50) Penn

The concept of culture from the standpoint of two seemingly conflicting conceptions: humanistic and social scientific.

5507. SEMINAR: PHILOSOPHICAL ANTHROPOLOGY. (3 cr, §Anth 5392; II MTWThF; ForH 50) Penn
Traditional problems associated with visions of human nature and culture.

SECOND TERM

3075. INDEPENDENT STUDY. (Cr ar; prereq Δ)

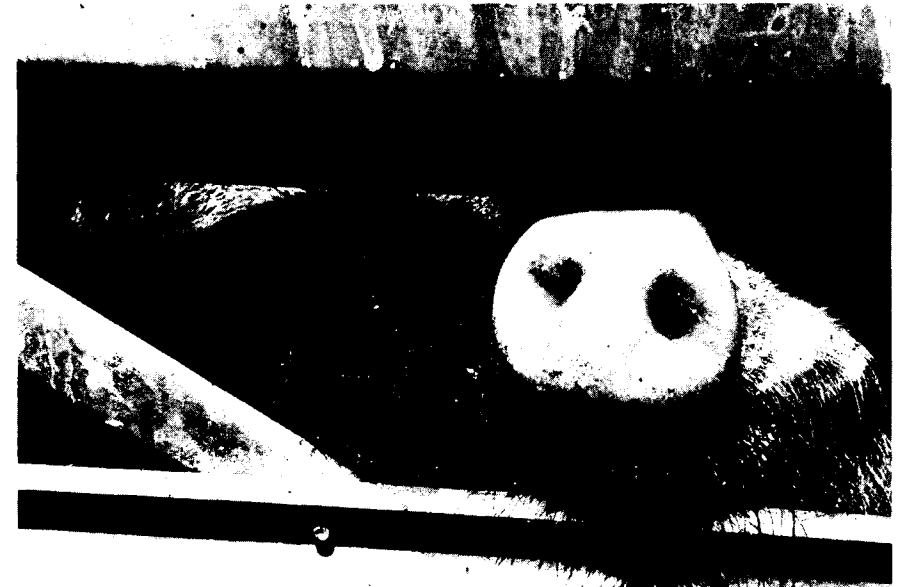
3201. DIRECTED STUDIES. (Cr ar; S-N only; prereq UWW student, Δ)

3401. DIRECTED STUDIES. (Cr ar; prereq University Scholars student, Δ)

5201. DOSSIER EXAMINATION. (Cr ar; S-N only; prereq UWW student, submission of dossier)

College of Veterinary Medicine

(All classes scheduled by arrangement)



College of Veterinary Medicine (CVM)

FIRST TERM

5760. CLINICS. (16 cr; prereq #: I-IX MTWThF; VetH) 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 MANAGEMENT. (0.5 cr; prereq regis vet med, 4th year or grad student or *) D Johnson
Introduction to herd health management, general epidemiology, disease surveillance and economics of farming.

5183. EQUINE HERD HEALTH MANAGEMENT. (0.5 cr; prereq regis vet med, 4th year or grad student or #) Peterson
Breeding management of the horse, reproduction, applied nutrition, housing, preventive medicine programs, and equine management practices.

5364. EQUINE LAMENESS. (2 cr; prereq regis vet med, 4th year, 5352 or #) Booth
A comprehensive discussion of all major musculoskeletal diseases affecting the horse that contribute to lameness.

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (Cr ar; prereq 5650 or equiv or #) Anderson, Diesch, Pullen, Robinson
Individual study arranged with faculty member.

SECOND TERM

5182. SHEEP AND GOAT HERD HEALTH MANAGEMENT. (0.5 cr, prereq regis vet med, 4th year or grad student or #) Robinson
Breeds of sheep and goats and breeding management, reproduction, applied nutrition, housing, preventive medicine programs and sheep and goat management practices.

5364. EQUINE LAMENESS. (2 cr; prereq regis vet med, 4th year, 5352 or #) Booth
See First Term.

5572. REPRODUCTIVE PATTERNS AND INFERTILITY IN THE DOG AND CAT. (1 cr; prereq 5570, regis vet med, 4th year or grad student or #) S Johnston
Lectures on reproductive patterns, breeding management, artificial insemination, and infertility in dogs and cats.

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (Cr ar; prereq 5650 or equiv or #) Anderson, Diesch, Pullen, Robinson
See First Term.

Small Animal Clinical Sciences (SACS)

FIRST TERM

8391. ADVANCED SMALL ANIMAL SURGERY. (Cr ar; prereq 5350 or equiv, #) Wallace
Surgery of the various systems in small animals with preoperative and postoperative evaluation and treatment.

8490. ADVANCED VETERINARY RADIOLOGY. (Cr ar; prereq 5450 or equiv, #) Jessen, Hanlon
Lecture and laboratory. Radiological diagnostic procedures and interpretation as applied to veterinary medicine.

SECOND TERM

8391. ADVANCED SMALL ANIMAL SURGERY. (Cr ar; prereq 5350 or equiv, #) Wallace
See First Term.

8490. ADVANCED VETERINARY RADIOLOGY. (Cr ar; prereq 5450 or equiv, #) Jessen, Hanlon
See First Term.

Veterinary Biology (VB)

FIRST TERM

5149.* TOPICS OF ORGANOLGY. (1-5 cr [may be repeated for cr]; prereq 8110 or equiv, #) Staff
Lecture and laboratory presentation of selected organ systems of domestic and laboratory animals.

8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY. (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. (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. (3 cr; prereq 8135, #) Fletcher
Principles, methods, and laboratory exercises in investigating the central nervous system of domestic animals.

8349. RESEARCH IN PHYSIOLOGY. (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. (Cr ar; prereq 5401 or equiv, #) Staff

SECOND TERM

5149.* TOPICS OF ORGANOLGY. (1-5 cr [may be repeated for cr]; prereq 8110 or equiv, #) Staff
See First Term.

8112-8113-8114. RESEARCH PROPOSITIONS IN MORPHOLOGY. (2 cr per qtr; prereq #) Staff
See First Term.

8134-8135. COMPARATIVE VETERINARY NEUROLOGY. (4 cr per qtr; prereq 5100, #) Fletcher
See First Term.

8136. EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY. (3 cr; prereq 8135, #) Fletcher
See First Term.

8349. RESEARCH IN PHYSIOLOGY. (Cr ar, §AnSc 8830; prereq #) Staff
See First Term.

8448. PROBLEMS IN VETERINARY PHARMACOLOGY. (Cr ar; prereq 5401 or equiv, #) Staff

Veterinary Pathobiology (VPB)

FIRST TERM

5521. SURGICAL PATHOLOGY. (3 cr; prereq #) Barnes, staff
Preparation and interpretation of surgical and necropsy specimens.

5522. DIAGNOSTIC PATHOLOGY. (5 cr; prereq #) Barnes
History, necropsy lesions, laboratory results, and histopathology in the diagnosis of animal diseases.

5709. POULTRY DISEASE PREVENTION AND NUTRITION. (2 cr; prereq regis vet med, 4th year or grad student or #) Pomeroy
Principles and applications of preventive poultry disease programs, management and nutrition.

8530. ONCOLOGY. (4 cr; prereq #) Kurtz

8531. VETERINARY NECROPSIES. (1-5 cr; prereq 5503 or equiv) Ruth, staff
Necropsy techniques, examination of tissue sections, and preparation of records.

8532. COMPARATIVE NEUROPATHOLOGY. (2 cr; prereq #) Kurtz
Gross and microscopic pathology of spontaneous neurologic diseases of animals.

8533. PROBLEMS: PATHOLOGY. (Cr ar; prereq #) Johnson, staff

8534. PROBLEMS: CLINICAL PATHOLOGY. (Cr ar; prereq #) Perman, Stevens

8648. PROBLEMS IN VETERINARY PARASITOLOGY. (Cr ar; prereq 5602 or equiv, #) Griffiths

8720. ADVANCED VETERINARY MICROBIOLOGY. (Cr ar; prereq #) Staff
Special topics, techniques, collateral reading, and conferences.

8721. ADVANCED POULTRY DISEASES. (Cr ar; prereq 5704, #) Pomeroy, Newman
Investigation of infectious disease problems of poultry.

8725. CELL CULTURE TECHNIQUES. (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. (3 cr; prereq #) Barnes, staff
See First Term.

5522. DIAGNOSTIC PATHOLOGY. (5 cr; prereq #) Barnes
See First Term.

8531. VETERINARY NECROPSIES. (1-5 cr; prereq 5503 or equiv) Ruth, staff
See First Term.

8533. PROBLEMS: PATHOLOGY. (Cr ar; prereq #) Johnson, staff

8534. PROBLEMS: CLINICAL PATHOLOGY. (Cr ar; prereq #) Perman, Stevens

8648. PROBLEMS IN VETERINARY PARASITOLOGY. (Cr. ar; prereq 5602 or equiv, #) Bemrick, Schlothauer

8720. ADVANCED VETERINARY MICROBIOLOGY. (Cr ar; prereq #) Staff
See First Term.

8721. ADVANCED POULTRY DISEASES. (Cr ar; prereq 5704, #) Pomeroy, Newman, Halvorson
See First Term.

BUILDING ABBREVIATIONS

MINNEAPOLIS

East Bank

Aero, Aeronautical Engineering Building
AH, Appleby Hall
Annex, Music Annex (321½ 14th Ave SE)
Arch, Architecture Building
Armory, Armory Building

BFAB, Bierman Field Athletic Building
Bo, Botany Building
BoG, Botany Greenhouse
BoynHS, Boynton Health Service
BuH, Burton Hall

CD, Child Development Building
CenH, Centennial Hall
CH, Cooke Hall
ChEng, Chemical Engineering Building
ChRC, Children's Rehabilitation Center
CMJ, Coffman Memorial Union
ComH, Comstock Hall

DiehH, Diehl Hall
DVCCRC, Dwan Variety Club Cardiovascular
Research Center (formerly Health Sciences
Unit K-E)

ECDO, Education Career Development Office
(1425 University Ave SE)
EconRes, Economics Research Building
EdH, Eddy Hall
ElectE, Electrical Engineering Building
Elth, Elliott Hall
Ex, Experimental Engineering Building

FieldHse, University Field House
FolH, Folwell Hall
ForH, Ford Hall
FraH, 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

Jach, Jackson Hall
JOAd, Jackson-Owre Addition
JohH, Johnston Hall
JonesH, Jones Hall

KlaCt, Klaeber Court
Kolth, Kolthoff Hall (Smith Hall Annex)

LindH, Lind Hall (formerly Main Engineering)
LinL, Linac Laboratory
LyonL, Lyon Laboratories

MasonH, Masonic Memorial Hospital
Mayo, Mayo Memorial Building
MDH, Minnesota Department of Health
MechE, Mechanical Engineering Building
MinMet, Mines and Metallurgy Building
MirdH, Millard Hall
MMA, Mayo Memorial Auditorium
MNH, Bell Museum of Natural History
MorH, Morrill Hall
MRRC, Mineral Resources Research Center
MUHi, Marshall-University High School
(1313 5th St SE)
MurH, Murphy Hall
MusEd, Music Education

NCCE, Nolte Center for Continuing Education
NH, Nicholson Hall
NMA, Northrop Memorial Auditorium
NorrisH, Norris Hall (formerly Norris
Gymnasium for Women)

Owre, Owre Hall

PB, Poucher Building
PeikG, Peik Hall Gymnasium
PeikH, Peik Hall
Ph, Tate Laboratory of Physics
Pih, Pioneer Hall
Pillsh, Pillsbury Hall
PoH, Powell Hall
PolDB, Police Department Building
Pt, Pattee Hall
PWB, Phillips-Wangensteen Building
(formerly Health Sciences Unit B-C)

RampA, Parking Ramp (Washington Ave at
Union St)
RampB, Parking Ramp (South of Coffman
Union)

SaH, Sanford Hall
ScH, Scott Hall
SciCB, Science Classroom Building
ShAn, Shops Annex
ShH, Shevlin Hall
SmithH, Smith Hall
SpSci, Space Science Center
Stad, Stadium

TerH, Territorial Hall
TNCE, Temporary, North Court of Engineering
TNM, Temporary, North of Appleby
(formerly Mines)
TSCE, Temporary, South Court of Engineering

VCHH, Variety Club Heart Hospital
VFWCRC, VFW Cancer Research Center
VH, Vincent Hall

WaLib, Walter Library
WeH, Westbrook Hall

AndH, Anderson Hall
ArtB, Art Building

BA, Business Administration Building
BlegH, Blegen Hall

Law, Law School

MdbH, Middlebrook Hall

ABLMS, Andrew Boss Laboratory (Meat Science)
AdmServ, Administrative Services Building
(2610 University Ave)
AgEng, Agricultural Engineering Building
AgLib, Agriculture Library
Agr, Agronomy Building
AgrSH, Agronomy Seed House

BaH, Bailey Hall
BB, Bull Barn
BCB, Beef Cattle Barn
BeH, Berry House (1304 Cleveland Ave N)
BFH, Botany Field House
BioSci, Biological Sciences Center

CI, Crop Improvement Building
CISS, Crop Improvement Seed Stocks Building
ClaOff, Classroom-Office Building
CoffH, Coffey Hall
CrRes, Crops Research Building

DCB, Dairy Cattle Barn
DinC, Dining Center

EntFW, Entomology, Fisheries, and Wildlife
Building

FCFH, Farm Crops Field House
FP, Forest Products Building
FScN, Food Science and Nutrition

GH, Green Hall
GorL, Gortner Laboratory of Biochemistry
Gym, Gymnasium

HB, Horse Barn
HckrH, Haecker Hall
HodsonH, Hodson Hall
HortS, Horticultural Sciences Building (new)
HS, Health Service Building

WmsA, Williams Arena
WmsonH, Williamson Hall
WuH, Wulling Hall

Z, Zoology Building

West Bank

OMWL, O. Meredith Wilson Library

RarigC, Rarig Center

SBkSt, Smith Bookstore
SocSci, Social Sciences Building

WilleyH, Willey Hall

ST. PAUL

LSpav, Livestock Pavilion

McNH, McNeal Hall
MS, Machinery Shop

NCFor, North Central Forest Experiment
Station
NorH, North Hall
NWGH, Northwest Greenhouses

PalmC, Palmer Classroom Building
PavAn, Pavilion Annex
PetH, Peters Hall
PG, Poultry Group
PISci, Plant Sciences Building
PM, Post-Mortem
PPFL, Plant Pathology Field Laboratory

RustL, Rust Laboratory (USDA)

SB, Swine Barn
ShB, Sheep Barn
SheepR, Sheep Research
SnH, Snyder Hall
So, 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
VetH, Veterinary Hospitals
VetB, Veterinary Isolation Building
VetS, Veterinary Science Building

WeiH, Weigley House
WRL, Weed Research Laboratory

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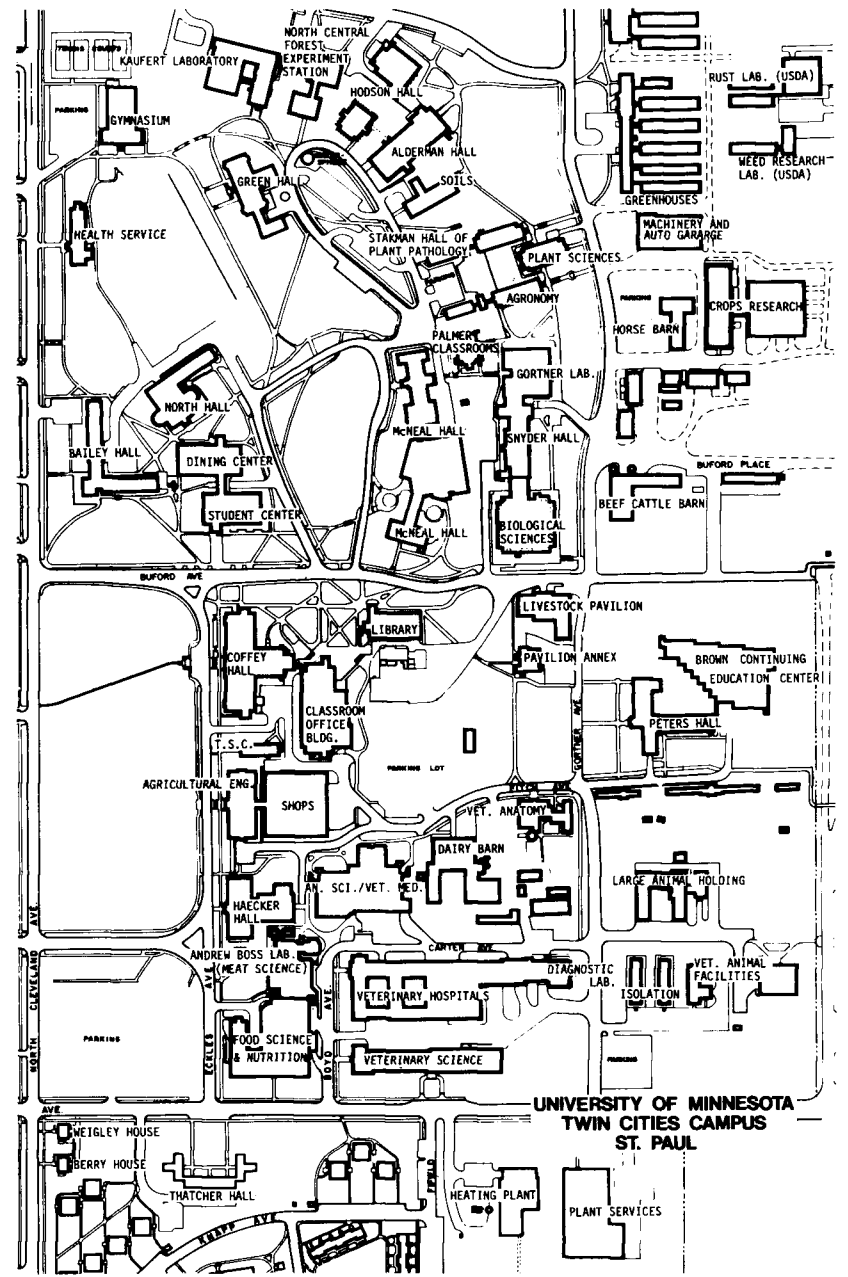
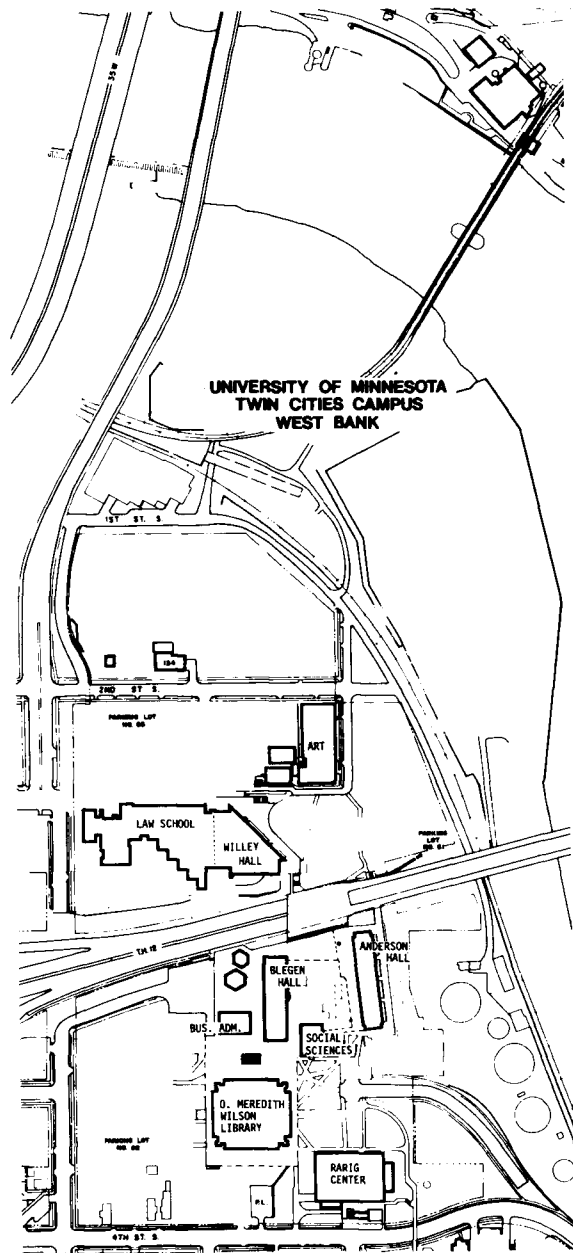
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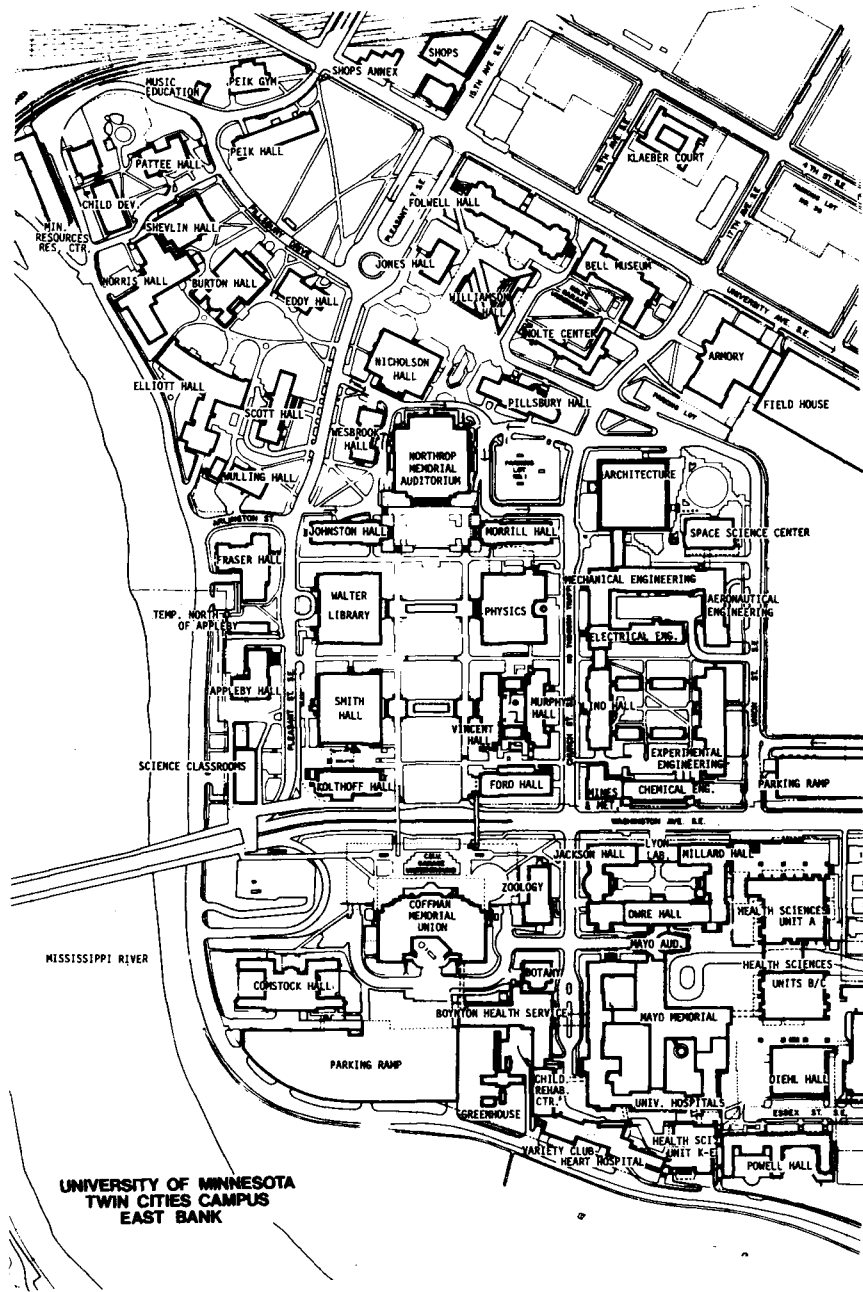
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Lake Itasca Biology Session

Summer 1979

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Lake Itasca Biology Session

First Term June 10-July 14 • Second Term July 15-August 18



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.

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 Section 504 of the Rehabilitation Act of 1973, and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Lillian H. Williams, Director, Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 100 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, (612) 373-7969, or to the Director of the Office of Civil Rights, Department of Health, Education, and Welfare, 330 Independence Avenue S.W., Washington, D.C. 20201.

ACCESS TO STUDENT EDUCATIONAL RECORDS

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

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

Students are notified annually of their right to review their educational records. The regents' policy, including a directory of student records, is available for review at the information booth in Williamson Hall, Minneapolis campus, 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.

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, 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 for study not only varied ecosystems but also 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 arrange with the chairman to pursue research in various fields of terrestrial and freshwater biology during any season.

COURSE WORK AND RESEARCH

The variety of courses available in both terms I and II allows 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 the chairman.

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 has ample room for study and important journals and books basic to fieldwork. Other journals and books are available from the University Libraries.

ADMISSION AND REGISTRATION INFORMATION

ADMISSION

Courses are open to all qualified graduate and undergraduate students who have completed the usual preliminary course work in biological subjects. General rules for admission of undergraduates to the summer session apply to the **Biology Session**. Students are advised to review these regulations in the general *Summer Session Bulletin*.

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

Graduate Students—Any student who holds a bachelor's degree and plans to use credits earned in summer session toward a graduate degree or expects to receive graduate credit for such work should apply for admission directly to the Graduate School. The application must be submitted complete in every detail — one official transcript from each college attended, the credentials examination fee (if required), and any required test results — at least 4 weeks prior to the opening of the summer term in which the student expects to register (Thursday, May 10, 1979, for first term; Thursday, June 14, 1979, for second term).

A student currently enrolled in an advanced degree program of a graduate school at another accredited college or university in the United States may request permission to register in the Graduate School of the University of Minnesota as a transient graduate student by completing Graduate School form 57. No credentials examination fee or supporting materials are required for the transient student form. Permission to register as a transient student will be granted, to the applicant who qualifies, for 1 summer session (terms I and/or II) or 1 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, University of Minnesota, Minneapolis, Minnesota 55455.

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

Malvin and Josephine Herz Foundation Fellowship is offered to encourage an outstanding student in ornithological research. For information and applications write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Fishery and Wildlife Management Spring and Summer Scholarships are provided by the Minnehaha Chapter, Izaak Walton League, Question Club of Minneapolis, the James R. Beer Memorial Scholarship of the Minnesota Student Chapter of the Wildlife Society and the Harriet Parmelee Memorial Scholarship. For information and applications write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

University of North Dakota Biology Scholarship, for tuition and fees, is open to any University of North Dakota student attending summer term I or II. Students wishing to be considered should write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

EMPLOYMENT OPPORTUNITIES

A very limited number of jobs (kitchen, library, office, shops, etc.) are available to undergraduate and graduate students on a competitive basis. Interested persons should request an application form from the chairman.

RESERVATIONS

Since both the housing facilities and the enrollment size of each class are limited, early application for reservations is recommended. Students should complete the Request for Reservation form found on page 5 of this bulletin and mail it to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. *This form must be accompanied by a recent transcript of the student's academic record, a listing of courses being taken at present, a deposit of \$40 for one term and \$80 for two terms, and a letter of evaluation from the student's adviser or supervisor.* The deposit will be applied toward the tuition fee at the time of registration or will be returned to the student if space is not available.

Assignments to classes will be verified no later than April 10. They will be determined on the basis of need, date of application, prerequisites for the courses desired, scholarship, and letters of recommendation. Late applications will be accepted up to the day of registration (June 10 for first term and July 15 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. Class reservation cards will be held for students who have been notified of acceptance after submission of the Request for Reservation.

Class reservation cards may be picked up at 130 Coffey Hall in St. Paul during regular summer session registration periods. Whenever possible, students should complete their registration at the Office of Admissions and Records on the Twin Cities campus (either Minneapolis or St. Paul).

Registration by out-of-town students can be completed at the station on June 10 for first term or on July 15 for second term. The necessary cards will be held with the reservation.

Students may register each term for 10 credits or less. A maximum load may include one 10-credit course, or two 5-credit courses, or one 5-credit course and a research problem (1 to 5 credits). Students enrolling for both summer terms are advised to register for no more than three 5-credit courses. EBB 5834 (5 credits) requires a great deal of time.

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. In the event of cancellations, students on the waiting list will be accommodated first.

Changes in registration must be approved by the chairman and are strongly discouraged after registration day (June 10, first term; July 15, second term). No changes in registration are permitted after the second meeting of class. Dropping a course, for any reason, must be approved by the chairman, following consultation between the student and instructor.

CANCELLATION

Late cancellations often result in vacancies in classes that earlier could have been filled by persons wishing to attend the Biology Session. Cancellation for any reason should be reported immediately to the chairman by phone, followed by a statement in writing.

TUITION, FEES, AND OTHER COSTS

ACADEMIC FEES

The following fees are payable each 5-week term by every regular registrant on or before June 10 or July 15.¹

	5 credits	10 credits
Tuition	\$90.00	\$180.00
Student Services Fee	17.00	17.00
Laboratory Fee	<u>8.50</u>	<u>8.50</u>
	\$115.50	\$205.50

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 \$3 record service fee.

Students enrolled in the Graduate School who have completed all of their graduate work with the exception of the thesis may register for thesis work only upon payment of \$69 tuition and the student services and laboratory fees per term.

Independent investigators will pay a research table fee of \$5 per week and the laboratory fee of \$8.50 per term.

LATE FEES

Tuition and fees are payable at the time of registration: on or before June 10 for first term or July 15 for second term. Late fees will be charged as follows:

June 11-15 or July 16-20	\$6
June 18-22 or July 23-27	\$10
Thereafter	\$20

¹The tuition fee stated above was charged in the 1978 session. Final determination of tuition for the 1979 session had not been made at the time this bulletin was printed.

No registration will be accepted after June 10 or July 15 without the approval of the chairman of the Field Biology Program and payment of the late fee.

ROOM AND BOARD COSTS

There is a service charge of \$25 per term for dormitory facilities. A charge of \$165 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. A charge, determined on an actual cost basis, will be made to each student using them. Costs usually range from less than \$1 to \$15. Courses that commonly utilize University vehicles for long or frequent field trips are: Biol 5950, Bot 5801, 5821, 8970; EBB 5814, 5815, 5817, 5834; PIPa 5102; Soil 5532.

ON-CAMPUS ARRANGEMENTS

TRANSPORTATION

Public transportation is available by bus to and from Park Rapids or Bemidji and by air to and from Bemidji. The depots are 24 and 42 miles from the station respectively. Students will be met upon arrival if prior arrangements are made with the chairman. 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.

MARRIED STUDENT ACCOMMODATIONS

Married students who wish to bring their families may find accommodations off campus in one of the many resorts in the vicinity. A list of addresses of these facilities will be furnished 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 married students and their spouses and children have top priority for use of the campground. The weekly charge is \$5. Applications should be made well in advance of the session.

ACCOMMODATIONS FOR VISITORS

There are no facilities at the station for accommodating guests of students. Students expecting guests must make arrangements for their housing off campus. Meals for guests can be arranged at the Itasca Dining Club if meal tickets are purchased in advance.

MEALS

The Itasca Dining Club, a cooperative formed each year by the students and managed for them by the chairman, serves meals in an attractive dining hall located on the lakeshore. 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 (especially shoes or boots for fieldwork), a warm jacket, rain gear, a swimming suit, a flashlight, notebooks, pocket field manuals, 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

Students will be furnished medical care and up to 15 days of hospitalization at the nearest medical facility in case of emergency illness or accident and on approval of the chairman. These benefits will not include such items as physical examinations, treatment of chronic conditions, or payment for drugs. A registered nurse will be on duty at the station.

MAIL

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

RECREATION

Recreational opportunities such as swimming, fishing, canoeing, and hiking in the park 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 outstanding films on field biology will be scheduled.

RULES OF CAMP

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

Off campus and within park boundaries Minnesota State Park regulations govern. The State Park entry sticker (\$5) must be bought for private cars at the park entrance.

Staff and Faculty

ADMINISTRATIVE STAFF

Office

David F. Pamelee, Director
Diane M. Berube, Principal Secretary

Buildings and Grounds

Robert P. Boyle, Resident Manager

Research

David M. Bosanko, Resident Biologist

Library

Rose Mary Schaefer, Librarian

Bookstore

Vera Boyle, Manager

Dining Club

Gary Bennett, Chef

Infirmary

Karen Hammen, R.N.

SUMMER FACULTY

Jeffrey R. Baylis, Assistant Professor, Department of Zoology, University of Wisconsin, Madison, is an ethologist with an interest in the evolution of animal communication systems, especially that involved in courtship behavior. His research interests are in courtship in fishes, and courtship in singing behavior, and mockingbirds.

Frank D. Bowers, Assistant Professor, University of Wisconsin, Stevens Point, is currently studying the systematics and floristics of certain North and Central American bryophytes with a special interest in Wisconsin mosses.

Edward J. Cushing, Professor, University of Minnesota, is interested in the structure and composition of terrestrial ecosystems and the Pleistocene and recent history of plant communities.

Rudolph T. Franklin, Associate Professor, University of Georgia, is interested in the ecology, behavior, and biological control of forest insects, especially the bark beetles and certain weevils of the coniferous forests.

Eville Gorham, Professor of Ecology and Botany, University of Minnesota, is concerned with chemical and other aspects of the ecology of lakes and wetlands, and is studying the influence of lake dimensions upon thermal stratification and summer anoxia in the Itasca region.

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

Bernd Heinrich, Professor, University of California, Berkeley, is studying temperature regulation, energetics, and foraging patterns of insects.

Miron L. Heinselman, Adjunct Professor of Ecology, University of Minnesota and retired forest ecologist, U. S. Forest Service, has studied the natural role of fire in northern forest ecosystems, particularly in the Boundary Waters Canoe Area Wilderness, and the history of peatland development in Minnesota's "Big Bog" region.

Stephen P. Hubbell, Associate Professor, University of Iowa, is a population and community ecologist working on foraging strategies of social insects and behavioral aspects of resource partitioning. He has a broad interest in theoretical ecology.

Frances C. James, Associate Professor, Florida State University, is an ecologist interested in habitat relationships of birds, bird behavior, and geographic variation in morphology.

A. Ross Kiester, Assistant Professor, Department of Biology, University of Chicago is interested in the evolution of life history patterns, demography and behavior; herpetology, theoretical ecology and behavior; and relations of philosophy in evolutionary biology.

Richard L. Meyer, Professor, University of Arkansas, is engaged in research on the chrysophytes and dinoflagellates of the Itasca region and in investigation of phytoplankton ecology in reservoirs and lakes.

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

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

Michael R. Ross, Assistant Professor, University of Massachusetts, is interested in the reproductive behavior, movement patterns, and population dynamics of cyprinoid fishes.

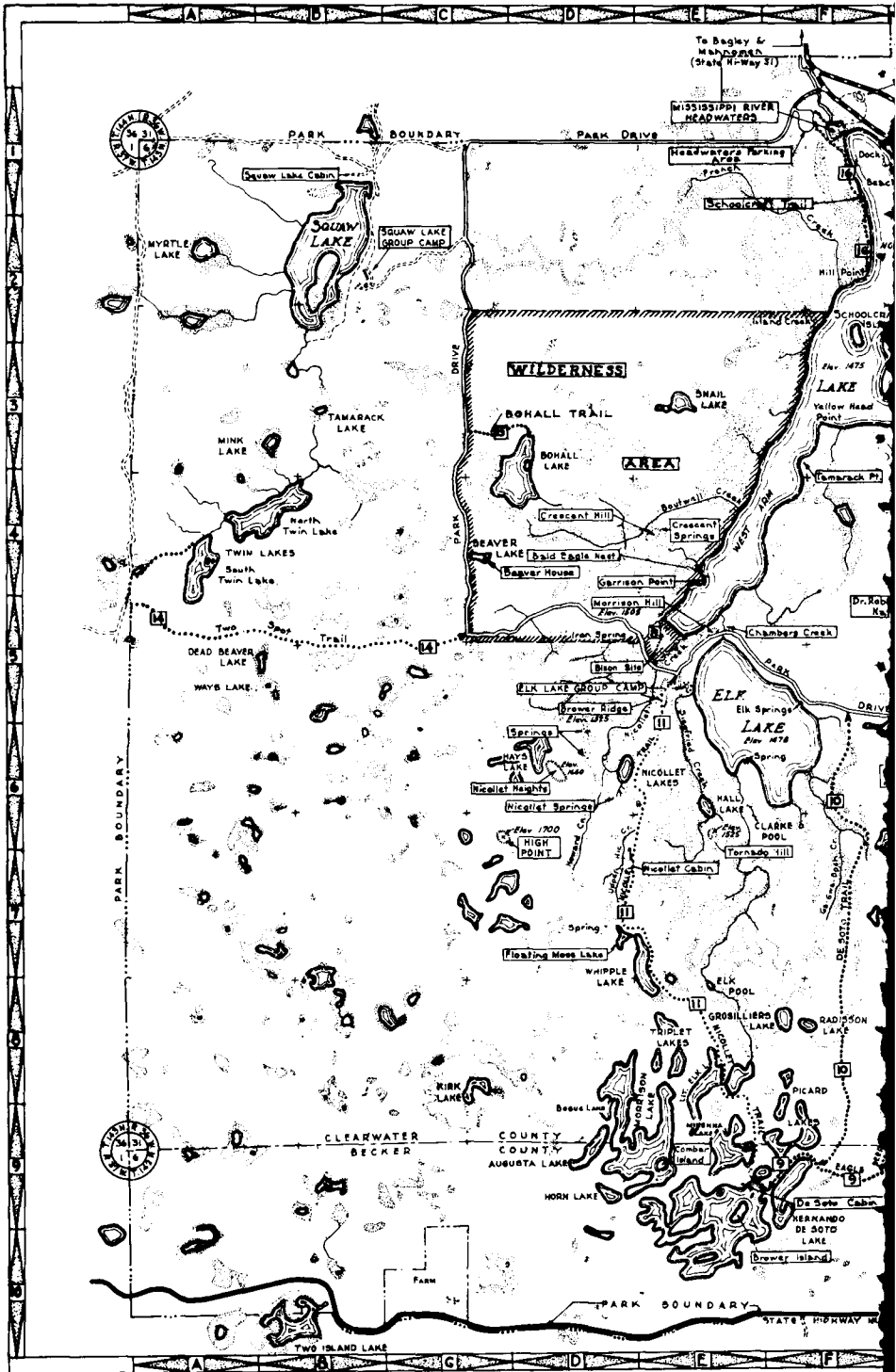
W. Herbert Senft, Assistant Professor of Biology, Ball State University, is an aquatic ecologist interested in factors regulating algal abundance and growth in freshwater ecosystems. His current research focuses upon the seasonal succession of phytoplankton species in small ponds and the trophic classification of Indiana lakes.

Michael S. Singer, Assistant Professor of Zoology, University of Texas, Austin, is a population ecologist whose current research focuses on food plant specialization and microevolution in the checkerspot butterfly.

Elwin L. Stewart, Assistant Professor of Plant Pathology, University of Minnesota, has specialized in the taxonomy and ecology of mycorrhizal hypogeous fungi and worked on fungi isolated from decaying wood products. He is currently involved in mycorrhizae research.

John W. Thomson, Professor, University of Wisconsin, specializes in research on the taxonomy and ecology of lichens of North America and the Arctic and also teaches higher plant taxonomy. He has published in the field of higher plant taxonomy as well as in lichenology.

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



MAP LEGEND

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

TRAILS

SELF GUIDING NATURE TRAILS

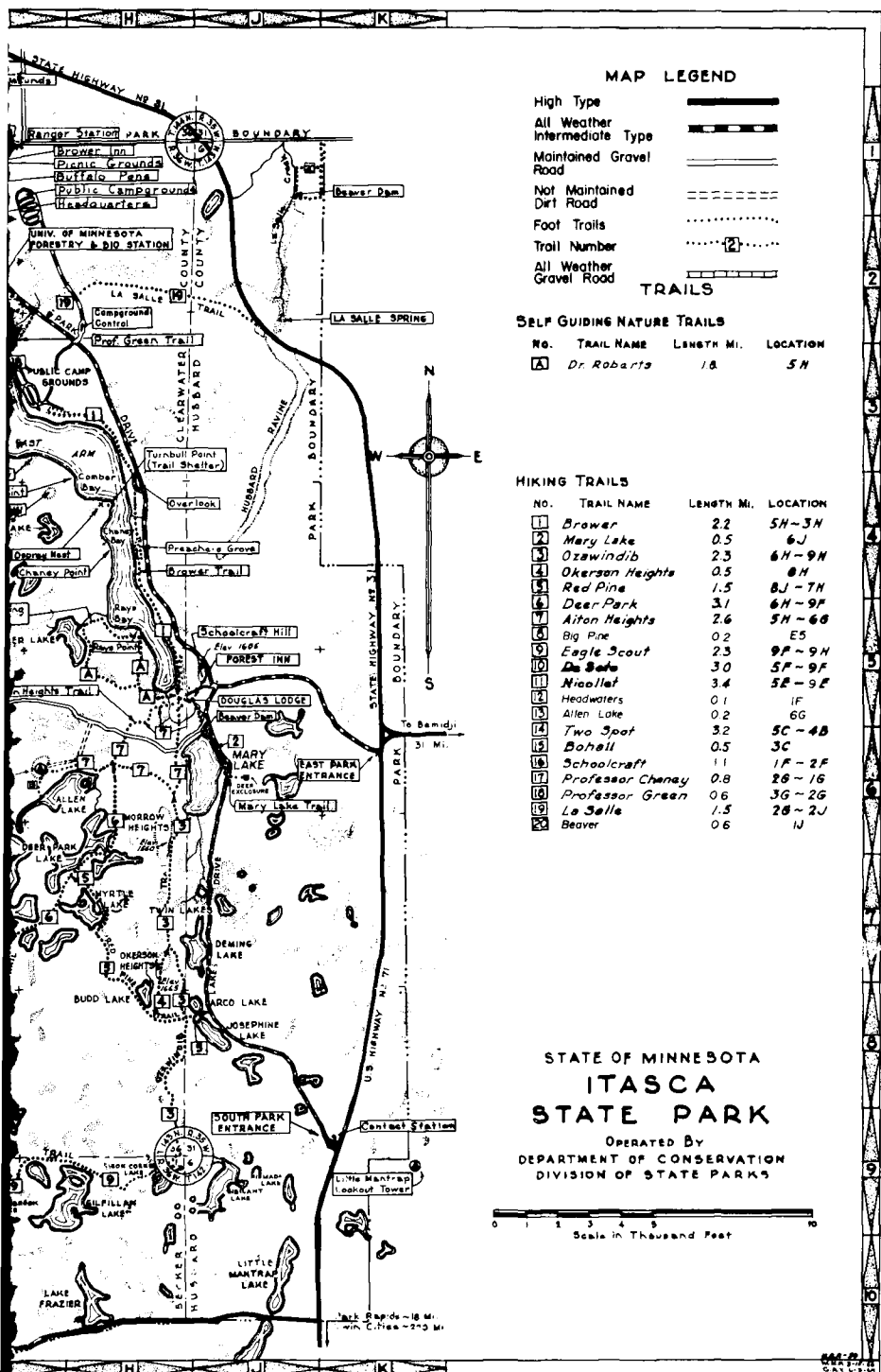
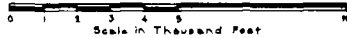
NO.	TRAIL NAME	LENGTH MI.	LOCATION
1	Dr. Roberts	1.8	5H

HIKING TRAILS

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

STATE OF MINNESOTA ITASCA STATE PARK

OPERATED BY
DEPARTMENT OF CONSERVATION
DIVISION OF STATE PARKS



Courses of Instruction

¶ Means "concurrent registration."

Means "consent of instructor is required."

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

BIOLOGY (Biol)

5870. ITASCA SEMINAR. (Cr ar; prereq #) Staff

Topic selected and scheduled by interested staff members and students during registration.

5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY; OR SOIL SCIENCE. (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.

5950. SPECIAL TOPICS IN BIOLOGY: FIRE IN FOREST ECOSYSTEMS. (10 cr; limited to 20 students; prereq courses in ecology, zoology or forestry, or #; hrs ar; I term) Heinselman

Field studies and lectures on the natural role of fire in northern conifer forests. Fire history methods, stand origin mapping, ecology of fire-adapted plants and animals. Study areas in virgin forests of Itasca, in the Boundary Waters Wilderness, and nearby wildfire areas.

BOTANY (Bot)

3990. RESEARCH PROBLEMS. (1-5 cr; prereq #) Staff

Individual research for undergraduates.

5801. SUMMER FLORA OF MINNESOTA. (5 cr; limited to 20 students; prereq course in taxonomy; MTh; I term) Morley

Survey of the summer flowering plants and ferns of the state with particular reference to local flora. Identification by technical keys; important plant families; field recognition of common species; habitat preferences; collecting methods; literature; taxonomic methods.

5805. AQUATIC FLOWERING PLANTS. (5 cr; limited to 20 students; prereq course in taxonomy; MTh; II term) Thomson

The higher plants of aquatic and marsh habitats. Identification and collection; association of species; relations to the habitat; adaptive morphology and food value to wildlife.

5811. FRESHWATER ALGAE. (5 cr; limited to 20 students; prereq 10 cr botany, biology, or zoology; TF; I term) Meyer

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.

5815. BRYOPHYTES. (5 cr; limited to 20 students; prereq 10 cr biology or #; TF; II term) Bowers

Field and laboratory study of the mosses and liverworts of Minnesota with emphasis on their local ecology and taxonomy.

8970. SPECIAL TOPICS: BIOLOGY OF THE FERNS. (5 cr; limited to 20 students; prereq #; undergraduates should enroll in Bot 3970; WS; II term) Wagner

Field and laboratory study of the lower vascular plants including the ferns, horsetails, club mosses, and quillworts, their evolution, classification, morphology, and ecology. Emphasis on field exploration for rare taxa, including natural hybrid forms, and life cycles.

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

ECOLOGY AND BEHAVIORAL BIOLOGY (EBB)

- 5812. AQUATIC ECOLOGY.** (5 cr; limited to 20 students; prereq 15 cr biology, 5 cr chemistry; WS; I term) Senft
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.
- 5814. COMMUNITY STRUCTURE AND FUNCTIONING.** (5 cr; limited to 20 students; prereq course in ecology; TF; II term) Cushing
Communities represented in Itasca Park and vicinity and their dynamic relationships. Relationships of local communities to the flora and fauna of Minnesota as a whole. Use of modern methods of community analysis and measurement.
- 5815. FIELD ETHOLOGY.** (10 cr; 2 sections; limited to 15 students per section; prereq course in behavior or ecology; course in statistics recommended; hrs ar; I term) Baylis, Kiester
Field course emphasizing the methods of studying behavior of wild animals. Quantitative techniques; sound recording, motion picture photography, sound tape and film analysis, capturing and marking techniques. An individual research project and term paper on the social behavior of one species is required. Individual projects require considerable outside time.
- 5820. WETLAND ECOLOGY.** (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.
- 5834. FIELD ORNITHOLOGY.** (5 cr; limited to 15 students; prereq Biol 1106 or equiv; TF; I term) James
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.
- 8800. ADVANCED FIELD ECOLOGY.** (10 cr; limited to 24 students; prereq admission to a grad program and #1; hrs ar; II term) Hubbell, Heinrich, Singer (coordinator)
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.

ENTOMOLOGY (Ent)

- 5020. FIELD ENTOMOLOGY.** (5 cr; limited to 15 students; prereq introductory biology; MTh; I term) Franklin
Insect fauna in various natural habitats of the park and surrounding areas. Field trips, collection and identification of insects, and studies of general morphology, life histories, and habitats of local species.

FISHERIES (FW)

- 5456. FIELD ECOLOGY OF FISHES.** (5 cr; limited to 15 students; prereq EBB 3004; WS; II term) Ross
Ecological studies, observation and identification of fishes in their natural habitat including life histories, reproduction, behavior, food habits, interrelationships with other fishes and general habitat requirements. Collection methods in streams and lakes.

¹For consent of the instructors, address inquiries to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

PLANT PATHOLOGY (PIPa)

5102. INTRODUCTORY MYCOLOGY. (5 cr; limited to 15 students; prereq 6 cr botany; MTh; II term) Stewart

Survey of the major groups of fungi. Lectures on taxonomy, morphology, evolution, ecology, mycological techniques, and modern familial, generic and species concepts. Field trips and research projects. Field collecting and identification stressed.

SOIL SCIENCE (Soil)

5532. SOILS AND THE ECOSYSTEM. (5 cr; limited to 20 students; prereq course in ecology; WS; I term) Grigal

Functional and structural aspects of soils as a compound of the ecosystem. Interrelationships of soil and vegetation of the landscape.

PROPOSED COURSE PROGRAMS

To help students make the most effective use of the academic resources of the Biology Session, the following projected program of courses is presented. Changes in the projected schedule may be made to take advantage of especially competent staff members or to meet enrollment needs.

Annual Course Offerings

Bot 5801, 5805, 5811

EBB 5812, 5814, 5815, 5834

Ent 5020

PIPa 5102

Proposed Courses for 1980

Biol 5950. SPECIAL TOPICS IN BIOLOGY: Fire in Forest Ecology

Bot 5821. Lichens

EBB 8800. Advanced Field Ecology

FW 5456. Field Ecology of Fishes

SPRING TERM

A number of courses are offered at the Forestry and Biological Station during spring quarter. Most of these courses commence on the Twin Cities campus and move to Itasca on about May 1 for a 5-week period of intensive fieldwork during an attractive time of year. Interested persons should contact the Chairman of the Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Proposed Courses for 1980 Spring Term

Bot 5206. Minnesota Vascular Plants

EBB 5817. Vertebrate Ecology (5 cr)

EBB 5834. Field Ornithology (5 cr)

FW 5106. Wildlife Biology (Cr ar)



Recent Research Publications

- BAKER, A. L. and A. J. BROOK. Optical density profiles as an aid to the study of microstratified phytoplankton populations in lakes. *Archiv fur Hydrobiol.* 69(2):214-233. 1971.
- BENTON, A. H., O. R. LARSON and B. A. VENHUIZEN. Siphonaptera from Itasca State Park region. *J. Minn. Acad. Sci.*, 37:91-92. 1971.
- FISHBECK, D. W. and J. C. UNDERHILL. Distribution of stripe polymorphism in wood frogs, *Rana sylvatica* LeConte, from Minnesota. *Copeia*, 2:253-259. 1971.
- GOOD, R. E. and N. F. GOOD. Vegetation of a Minnesota prairie and a comparison of methods. *Amer. Midl. Nat.*, 85(1):228-231. 1971.
- GORHAM, E. and R. H. HOFSTETTER. The penetration of bog peats and lake sediments by tritium from atmospheric fallout. *Ecology*, 52:898-902. 1971.
- HEDEEN, STANLEY E. Growth of the tadpoles of the mink frog, *Rana septentrionalis*. *Herpetologica*, 27(2):160-165. 1971.
- MEYER, RICHARD L. The life history and systematic position of *Derepexis* (Chrysophyceae). *J. Phycol.*, 7:66. 1971.
- MEYER, R. L. and A. J. BROOK. Freshwater algae from Itasca State Park, Minnesota. IV. Cyanophyta, Rhodophyta, Chloromonodophyceae and Cryptophyceae. *Nova Hedwigia*, 22:649-658. 1971.
- PARMELEE, DAVID F. Nesting of ring-billed gulls on Leech Lake, Cass County, Minnesota. *Loon*, 43(3):72-74. 1971.
- SHAFFER, ELLEN. Incidence of trematode infection of snails in a small Minnesota lake. *J. Minn. Acad. Sci.*, 37(1):27-30. 1971.
- SHAY, C. T. The Itasca bison kill site: an ecological analysis. Minnesota Historical Society. 1971.
- THIERET, JOHN W. Observations on some aquatic plants in northwestern Minnesota. *The Michigan Botanist*, 10:117-124. 1971.
- UTTER, J. M., E. A. LEFEBVRE and J. S. GREENLAW. A technique for sampling blood from small passerines. *Auk*, 88(1):169-171. 1971.
- MORLEY, T. Deciduous trees of Minnesota; a winter key. *J. Minn. Acad. Sci.*, 38:27-36. 1972
- PARMELEE, DAVID F. and RICHARD J. OEHLENSCHLAGER. Connecticut warbler nest in Hubbard County, Minnesota. *Loon*, 44(1):5-6. 1972.
- SCHMID, WILLIAM D. Nocturnalism and variance in ambient water vapor pressure. *Physiol. Zool.*, 45(4):302-309. 1972.
- TARAPCHAK, STEVE. Studies on xanthophyceae of the Red Lakes wetlands, Minnesota. *Nova Hedwigia*, 23:1-45. 1972.
- WEAVER, MARGARET G. and ROBERT L. SHAFFER. Higher fungi of Minnesota. II. *J. Minn. Acad. Sci.*, 38:46-52. 1972.
- 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.
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Graduate Student Theses

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- NELSON, DABBY M. Ecology of the cisco, *Coregonus artedii*, in two Minnesota lakes. Ph.D. Thesis. 1970.
- ANTHONY, R. S. Mechanism of varve formation in Lake of the Clouds, Lake County, Minnesota. M.S. Thesis. 1971.
- BALL, I. J. Movements, habitat use, and behavior of wood duck (*Aix sponsa*) broods in north-central Minnesota as determined by radio tracking. M.S. Thesis. 1971.
- BLAND, R. D. The spatial distribution of desmids in certain northern Minnesota lakes. Ph.D. Thesis. 1971.
- BROWN, E. B. Some aspects of the ecology of the small, winter-active mammals of a field and adjacent woods in Itasca State Park, Minnesota. Ph.D. Thesis. 1971.
- GILMER, DAVID S. Home range and habitat use of breeding mallards (*Anas platyrhynchos*) and wood ducks (*Aix sponsa*) in north-central Minnesota as determined by radio tracking. Ph.D. Thesis. 1971.
- LANG, JEFFREY W. Overwintering of three species of snakes in northwestern Minnesota. M.S. Thesis, University of North Dakota. 1971.
- STARK, DONNA M. I. A paleolimnological study of Elk Lake in Itasca State Park, Clearwater County, Minnesota. Ph.D. Thesis. 1971.
- URBAN, RICHARD D. The psammion dynamics on bars and beaches of two small northwestern Minnesota streams. Ph.D. Thesis, University of North Dakota. 1971.
- BOERNKE, WILLIAM E. Adaptations of the amphibian ornithine-urea cycle enzyme, arginase. Ph.D. Thesis. 1972.
- BURGER, JOANNA. Breeding adaptations of Franklin's gull (*Larus pipixcan*) to a marsh habitat. Ph.D. Thesis. 1972.
- KNUDSON, MERLE L. Functional analysis of song in the spotted sandpiper, *Actitis macularia* (L.). M.S. Thesis, University of North Dakota. 1972.
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- BAKER, ALAN L. Microstratification of phytoplankton in selected Minnesota lakes. Ph.D. Thesis. 1973.
- BAKKO, EUGENE. Comparative study of water balance of four sciurid rodents. Ph.D. Thesis. 1973.
- KLEMER, ANDREW R. Factors affecting the vertical distribution of a blue-green alga. Ph.D. Thesis. 1973.
- COINER, SUSAN T. Some aspects of the behavior and physiology of the chipmunk, *Tamias striatus*. M.S. Thesis. 1974.
- PIVORUN, EDWARD B. Studies on thermoregulation and metabolism of hibernating chipmunks. Ph.D. Thesis. 1974.
- HALL, RONALD J. Life history, drift, and production rate of the steam mayfly (*Tricorythodes athratus* McDunnough) in the headwaters of the Mississippi River. Ph.D. Thesis. 1975.
- HAMAS, MICHAEL J. Ecological and physiological adaptations for breeding in the belted kingfisher (*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.
- AASENG, NORMAN EDWARD. The history, nature, and extent of the major logging operations in Itasca State Park (1901-1919). M.S. Thesis. 1976.
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- WINTER, J. D. Movements and behavior of largemouth bass (*Micropterus salmoides*) and steelhead (*Salmo gairdneri*) determined by radio telemetry. Ph.D. Thesis. 1976.
- COINER, SUSAN T. A comparison of seasonal patterns in epithelial sodium transport among three species of ranid frogs from different habitats. Ph.D. Thesis. 1977.
- PEZALLA, VIRGINIA A. MOYLE. The behavioral ecology of a dragonfly, *Libellula pulchella*. Ph.D. Thesis. 1977.





Condensed Course Schedule¹

I TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5801	Bot 5811	EBB 5812	Bot 5801	Bot 5811	EBB 5812
Ent 5020	EBB 5834	Soil 5532	Ent 5020	EBB 5834	Soil 5532

Biol 5950 (10 credit course) and EBB 5815 (10 credit course) to be arranged..

II TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5805	Bot 5815	Bot 8970	Bot 5805	Bot 5815	Bot 8970
PIPa 5102	EBB 5814	FW 5456	PIPa 5102	EBB 5814	FW 5456

EBB 5820 (8 credit course) and EBB 8800 (10 credit course) to be arranged

¹Schedule only one course per day.

Request for Reservation—ITASCA BIOLOGY SESSION

Name _____ Date _____

Current Address _____

City _____ State _____ Zip _____

Telephone: Office _____ Home _____

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

Status by Summer 1979: _____

University or College Now Attending: _____

If U of M, College in Which Last Enrolled _____ Year _____

TERM I

TERM II

Dept. _____ No. _____ Dept. _____ No. _____

Dept. _____ No. _____ Dept. _____ No. _____

(See condensed course schedule to avoid conflicts)

I wish a reservation in a:

STUDENT CABIN _____ CAMPGROUND SITE _____ RESORT _____ (check one)

Enclosed find a \$40 or \$80 deposit (check or money order payable to the University of Minnesota) to be credited to the tuition fee upon completion of registration. A letter of evaluation from my adviser or supervisor and a recent transcript of my academic record including a listing of all courses being taken at present, are enclosed or will be sent directly (circle one).

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