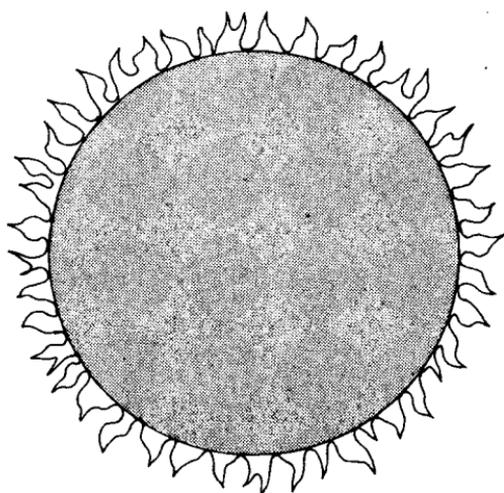


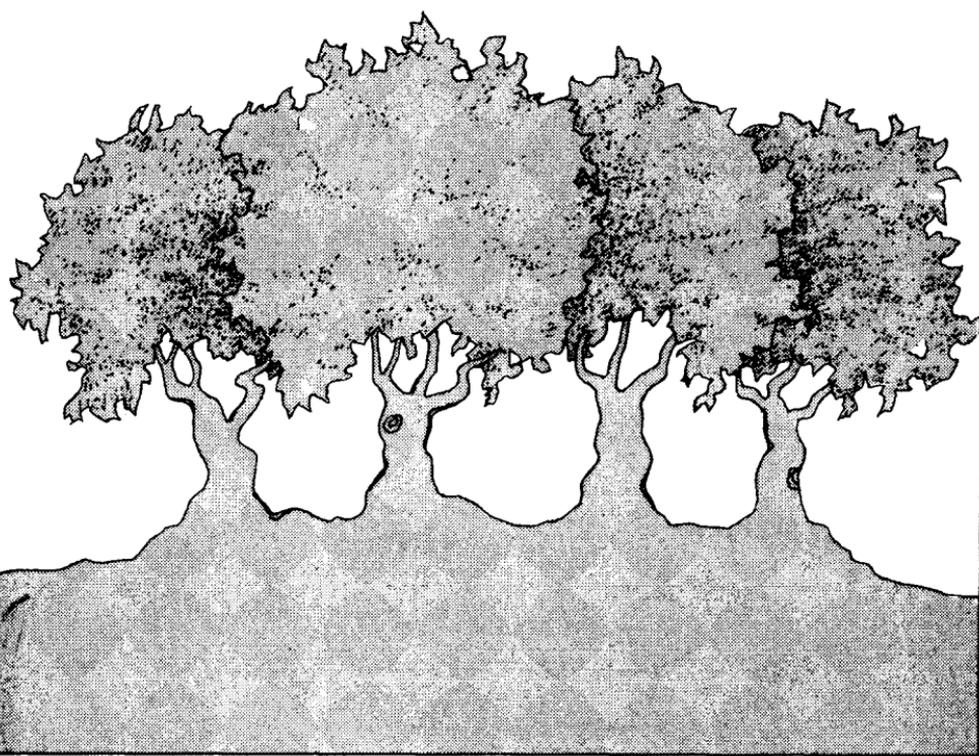
University of Minnesota Bulletin

MARCH 18, 1976

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SUMMER SESSION 1976



Board of Regents

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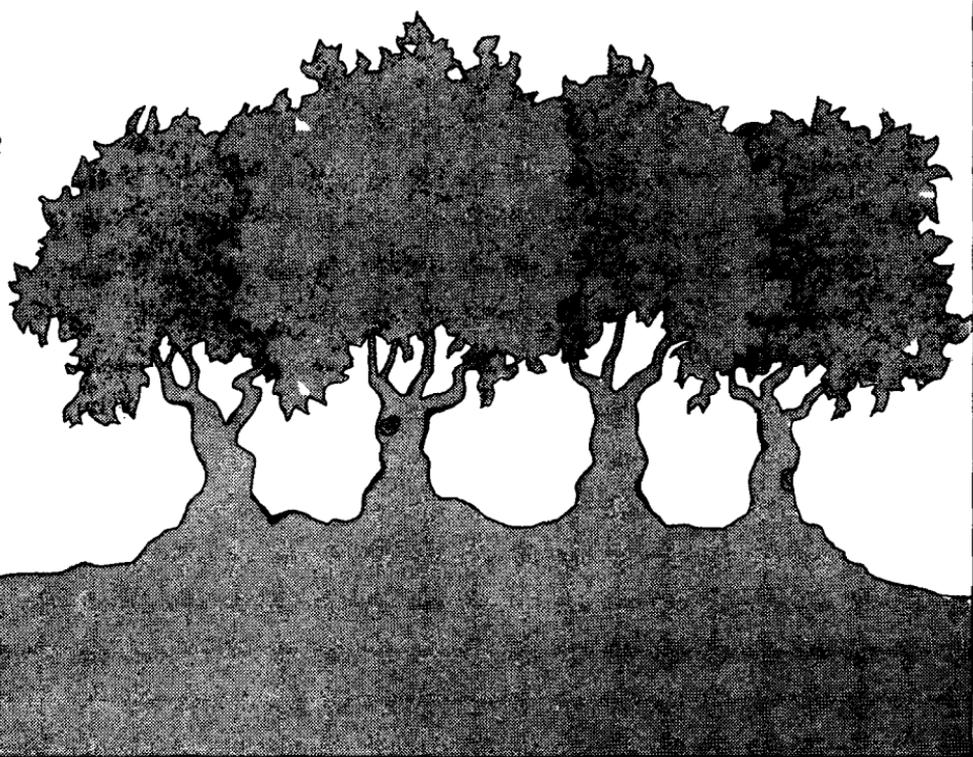
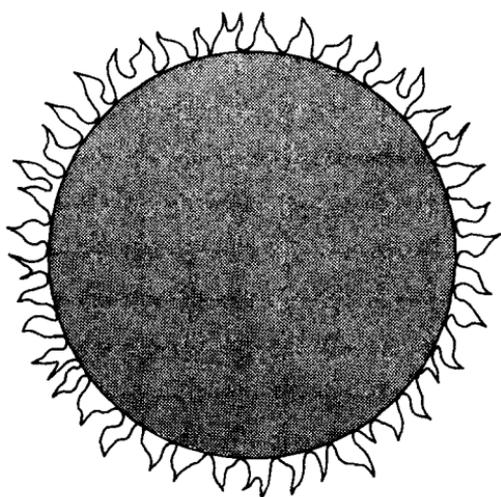
Willard L. Thompson, Director, Summer Session

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
1976**



Calendar

May 13	Graduate School application deadline for first term admission.
June 1-4	Registration period. Students may register for first term or second term or both terms at this time.
June 7-11	Registration closed.
June 14	Last day to register for first term, and to pay fees without incurring late fee. Late fees assessed according to the following schedule: June 15-18 \$ 6 June 21-25 \$10 Thereafter \$20
June 15	FIRST TERM CLASSES BEGIN.
June 17	Graduate School application deadline for second term admission.
June 18	Thesis registration deadline for graduate students.
July 5	Holiday.
July 14-16	Registration period for second term.
July 16	Last day of class for first term. Final Oral Exam Report and all other forms due (graduate students only).
July 19	Last day to register for second term, and to pay fees without incurring late fee. Late fees assessed according to the following schedule: July 20-23 \$ 6 July 26-30 \$10 Thereafter \$20
July 20	SECOND TERM CLASSES BEGIN.
July 30	Two bound copies of Master's or doctoral thesis due.
August 20	Last day of class for second term.

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— 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 15, and second term classes on TUESDAY, JULY 20, EXCEPT where a Monday starting date is specified.

All students not regularly enrolled spring quarter 1976 must be prepared to show their United States Social Security numbers.

The Board of Regents has committed itself and the University of Minnesota to the policy that there shall be no discrimination in the treatment of persons because of race, creed, color, sex, or national origin. This is a guiding policy in the admission of students in all colleges and in their academic pursuits. It is also to be a governing principle in University-owned and University-approved housing, in food services, student unions, extracurricular activities, and all other student and staff services. This policy must also be adhered to in the employment of students either by the University or by outsiders through the University and in the employment of faculty and civil service staff.

The University of Minnesota abides by the provisions of Title IX, federal legislation forbidding discrimination on the basis of sex, and abides by all other federal and state laws regarding equal opportunity.

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 it is possible for graduate students to 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 given if the equivalent course listed after the section mark has been taken for credit.
- ¶ Means "concurrent registration" in the course which it precedes.
- ‡ Consent of instructor must be obtained.
- △ Consent of division, department, or school offering course must be obtained.
- ** A special fee is charged. See section on Course Fees.

Following each course title is a parenthetical statement of credits, class limits, prerequisites, class hours, days of the week, location of the class, and course instructor.

Prerequisites—Entrance into certain courses requires that the student have completed or be concurrently enrolled in other specified courses, or possess particular qualifications or class standing. If no prerequisites are listed, there are none, except as the course number indicates a 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 which must be taken in sequence are prerequisites, only the last course of the sequence is listed.

When no abbreviated departmental prefix precedes the course number 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" (you must have had either course 1011 or 1017 of the same department and Psychology 1002).

Work equivalent to a prerequisite course (having the same content) is ordinarily accepted in lieu of that prerequisite. Note that instructors may, in some instances, waive prerequisites at their discretion.

Hours and Days—Class hours are identified by roman numerals and continue for 50 minutes after the beginning 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* the third hours Tuesdays and Thursdays, the hyphen always indicating "through." A class listed I, III meets first *and* third hours. Days of the week are abbreviated M, T, W, Th, F, S.

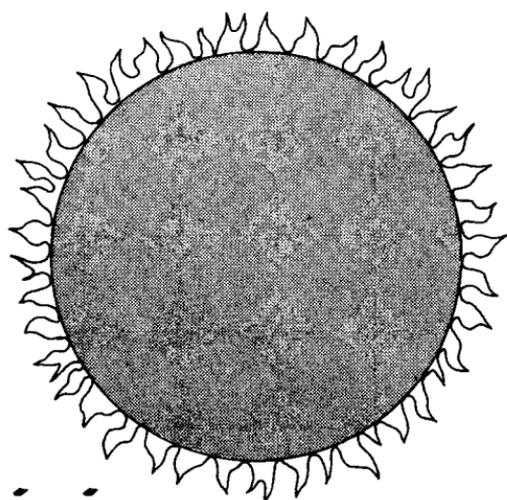
Many courses, especially those in the College of Business Administration, meet for longer than the regular 50 minutes, and these extended periods are indicated in the course description. To avoid conflicts, check such listings carefully *before* registering.

Reserved Courses—Courses with limited enrollment must be reserved in the college offices listed with each department. Registration instructions may be found in the next section of this bulletin.

Missing Information—When hours, days, or places of meeting are missing, consult the instructor or department offering the course.

Changes made subsequent to publication of this bulletin are published in supplements to the *Summer Session Bulletin*.





*Summer Admission
and Registration*



DATES OF SUMMER SESSION

The Summer Session consists of two 5-week terms—June 14 through July 16 and July 19 through August 20. Students may register for subjects of their choice in either or both terms.

Payment of fees for the first term without assessment of late fees closes at 3:30 p.m. on Monday, June 14. First term classes in Minneapolis (East and West Banks) and St. Paul begin Tuesday, June 15, at 8:00 a.m.

Payment of fees for the second term without assessment of late fees closes at 3:30 p.m. on Monday, July 19. Second term classes begin Tuesday, July 20.

Most individual courses are planned for completion in a single term.

Admission

Summer Session courses are open to high school graduates and students with previous college work. In addition to regularly admitted students beginning or continuing in degree programs of University of Minnesota colleges, Summer Session registration is open to other high school graduates and college students through summer-only status.

SUMMER-ONLY STUDENTS

Summer-only enrollment indicates that you are not currently pursuing a degree from the University of Minnesota and allows you to register in the simplest possible manner. Attendance as a summer-only student is open to the following:

1. Any high school graduate.
2. Former University of Minnesota students who are not now pursuing degrees from the University (including Minnesota graduates).
3. Students with college work at schools other than the University of Minnesota (Twin Cities Campus) who do not plan to obtain degrees from the University or who have not been admitted as degree candidates for Summer Session 1976.
4. Others who have the approval of the Office of Admissions.

Attendance as a summer-only student does not guarantee admission to regular degree programs in colleges of the University of Minnesota.

ADMISSION TO DEGREE PROGRAMS FOR THE SUMMER SESSION

All students who expect to receive a degree from the University of Minnesota must file an application, any necessary credentials, and a \$10 credentials examination fee (\$15 for Graduate School) in order to gain regular admission to a college of the University. Summer-only registration by itself will not qualify a student for entry into a University degree program.

Prospective applicants should consult the *General Information Bulletin* for detailed requirements governing admission and granting of degrees. This bulletin, specific college bulletins, and brochures may be obtained by writing to the Office of Admissions and Records, University of Minnesota, Minneapolis, Minnesota 55455. Zip codes MUST accompany requests for bulletins and brochures.

Freshmen

High school graduates may be admitted, in either summer term, to those University of Minnesota colleges (Twin Cities Campus) which regularly

admit freshmen to begin their studies. The EXCEPTION is the College of Liberal Arts, which does not admit new students to begin degree programs in the summer. Students who plan to enter one of the College of Liberal Arts degree programs and wish to begin during the summer may apply for fall quarter admission and take Summer Session courses as summer-only students. Summer courses completed satisfactorily will become part of their degree credits after these students have been admitted and have registered in one of the regular quarters of the school year. Summer-only students admitted to degree programs for fall quarter will attend the orientation-registration program with the rest of the students beginning fall quarter.

To be assured full consideration in time for admission to a degree program (for all colleges except CLA) and registration for Summer Session, the freshman application must be received by the Office of Admissions and Records by May 1. All freshman applicants are required to 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 with previous college work may be admitted to degree programs of most colleges and schools of the University of Minnesota during the Summer Session. EXCEPTIONS are some professional and paraprofessional programs which begin course sequences during a specified term, and the College of Liberal Arts. 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 (see the *General Information Bulletin*).

GRADUATE STUDENTS

The Graduate School presents excellent opportunities for advanced study and research in many fields. It brings together in a single academic unit all the programs and offerings of the University at a level of advanced instruction that may lead to the degrees of 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 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 from an approved college or university, 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. The procedures that have been set up for admission to the Graduate School must still be followed.

Admission and Registration

Students planning to use credits earned in Summer Session toward a graduate degree 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—at least 4 weeks prior to the opening of the quarter or summer term in which the student expects to register (Thursday, May 13, 1976, for first term; and Thursday, June 17, 1976, for second term). Application forms and Graduate School bulletins may be obtained from: Graduate School, 307 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Holders of the Bachelor's degree 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 may register as special summer-only students. These students, if they subsequently decide to make application for admission to the Graduate School, may transfer *only their first term's work as an adult special or summer-only student* to their graduate program. Only courses of graduate level 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 1 term, the student who expects to obtain a Master's degree shall 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, please refer to the current *Graduate School Bulletin*.

Deadline Dates for Summer Session Graduation

Theses of all graduate degree candidates must be completed and registered in the Graduate School, and final degree examinations must be passed and required forms submitted by the following dates for graduation at the close of the Summer Session:

Thesis registration—June 18, 1976

Final Oral Examination Report and all other forms due—July 16, 1976

Two bound copies of the Master's (Plan A) or doctoral thesis—July 30, 1976

Degree date (no ceremony)—August 20, 1976

HIGH SCHOOL STUDENTS

Outstanding high school students who have special interests which 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 for these students is usually restricted to those courses at the 1xxx level. Credits earned will be counted toward graduation if the student later enrolls in the University.

Interested students must make application 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

In order that the short Summer Session terms may prove of maximum value, and that late entrants will not disrupt courses in progress, students are expected to complete their registration during the specified registration period. All students not regularly enrolled during spring quarter 1976 must be prepared to show their United States Social Security numbers.

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

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

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 offices and should register through the college in which they were last enrolled. Registration permits are required.

● Students in residence some previous quarter(s) (exclusive of registration as a summer-only student or in Continuing Education and Extension classes) also may register on these announced dates through the college in which they were last enrolled. A registration permit from that college is required and may be obtained in Morrill Hall (Coffey Hall for 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.

SUMMER-ONLY STUDENTS

Persons who should register as summer-only students are listed on page 9. They will register according to the following schedule:

First Term

Dates: June 1 through June 4 and on June 14 (registration is closed June 7 through June 11).

Time: 8 a.m. to 3 p.m. (in-service teachers registering through the College of Education may register until 4 p.m., June 1-4).

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: June 1 through June 4 and on June 14; July 14 through July 16 and on July 19 (registration is closed June 7 through June 11, and June 15 through July 13).

Time: See first term.

Place: See first term.

SENIOR CITIZEN EDUCATION PROGRAM

Minnesota residents age 62 and over may attend University classes, subject to academic prerequisites, 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 a grade, 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 16 for first term courses and on July 21 for second term courses. Persons who wish to register should come to 18 Johnston Hall between 8 a.m. and 4 p.m. and should bring identification to verify age and Minnesota residency.

COLLEGE REGISTRATION OFFICES

Agriculture, 130 Coffey Hall (St. Paul)

Biological Sciences, P190 Kolthoff Hall

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 Ave. S.E. (Burton Hall on June 14)

Forestry, 130 Coffey Hall (St. Paul)

General College, 20 Nicholson Hall

Graduate School, 316 Johnston Hall

(Students registered in the Graduate School in spring quarter 1976 may obtain registration materials in their major departments. All students planning to register in the Graduate School should see page 10 for information.)

Home Economics, 130 Coffey Hall (St. Paul)

Institute of Technology, 105 Lind Hall (formerly Main Engineering)

Liberal Arts

Regular Students, college offices

Summer-Only Students, Johnston Hall, first floor lobby

Medical Technology, 5307 Powell Hall

Medicine, 1360 Mayo Memorial Building

Military Science, 108 Armory Building

Mortuary Science, 114 Vincent Hall

Nursing, 3320 Powell Hall

Pharmacy, 100 Appleby Hall

Physical and Occupational Therapy, 860 Mayo Memorial Building

Public Health, 1325 Mayo Memorial Building

University College, 105 Walter Library

Veterinary Medicine, 130 Coffey Hall (St. Paul)

REGISTRATION PROCEDURE

1. Obtain registration permit.

Students in residence spring quarter: at your regular college office.

Students in residence some previous quarter (exclusive of registration as a summer-only student or in Continuing Education and Extension courses): in Morrill Hall, at the window of the college you last attended.

Summer-only students: no registration permit 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 blanks and class reservation cards and obtain fee statements in Morrill Hall. (On June 14 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, and Graduate School students whose majors are based in St. Paul turn in their registration blanks and class reservation cards and obtain their fee statements at 130 Coffey Hall, St. Paul.

6. Pay fees at the Bursar's Office on the first floor of Morrill Hall; the West Bank Bursar's Office; Cashier's Office, 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 not later than Monday, June 14, for first term, or Monday, July 19, for second 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 should refer to the *Graduate School Bulletin* for information on the Graduate School's policy.)

The University of Minnesota reserves the right to cancel any and all courses in which the registration is insufficient to warrant continuation of the course.

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 and must be attached to the student's registration form when it is turned in for a statement of fees.

Ten-week courses are listed under first term.

ITASCA BIOLOGY SESSION—FIRST TERM

Botany

5801, 5811

Ecology and Behavioral Biology

5812, 5815, 5817

Entomology

5020

Zoology

5814, 5834, 5843, 5869

ITASCA BIOLOGY SESSION—SECOND TERM

Botany	Plant Pathology
5805, 5821	5102
Ecology and Behavioral Biology	Soil Science
5813, 5814, 5818, 5822	5642
Entomology	Zoology
5130	5819

SUMMER SESSION—FIRST TERM

Accounting	Electrical Engineering
1050, 1051, 3101, 5125, 5135, 5270, 5310	All courses
Aerospace Engineering and Mechanics	Elementary Education
All courses	All courses under 5602 <i>except</i> 3604, and 8300
Agricultural Education	English
8001	1016, 1018, 3851, 8240
American Indian Studies	Family Social Science
1021, 3061	All courses <i>except</i> 5230, 8251, 8252
American Studies	Finance
1101, 8203	3000, 3300, 3500
Anthropology	Forest Resources
3376	5406
Architecture	French
All courses	All courses <i>except</i> 8970
Art Education	General College
3001, 5020	All courses
Art History	Geology and Geophysics
All courses	All courses
Arts, Studio	German
All courses under 3970, and 5110, 5120, 5160, 5330, 5400, 5420, 5510, 5810, 8400	All courses <i>except</i> 8261
Biology	History and Philosophy of Education
1011, 3012, 3041	3090
Botany	Humanities
1009, 5142	All courses <i>except</i> 3970
Business Education	Indic
5112, 5114, 5116	5530
Business Law	Industrial Education
8158	5100, 5101, 5102, 5103, 5600
Chemical Engineering	Industrial Engineering/Operations Research
5901-5902-5903	5030, 5040
Chemistry	Institute of Technology
All courses <i>except</i> 8990, 8991	3501
Child Psychology	Journalism and Mass Communication
5330	1101, 1301, 3241, 3486
Civil and Mineral Engineering	Library
5097	5221, 5401, 8224, 8304, 8402
Communication	Linguistics
1001	5705
Communication Disorders	Management
3100, 3101, 5900	3001, 3002, 8001, 8006
Composition	Management Information Systems
0001, 1001, 1002, 1027	3098, 3099, 5101
Computer Science	Marketing
All courses	3000, 8000
Counseling and Student Personnel Psychology	Mathematics
5101, 5110, 5130, 5131, 5310, 5620, 8502	All courses
Design	Mathematics Education
1521, 5585, 5586	All courses <i>except</i> 5980, 8980
Distributive Education	Mechanical Engineering
5325, 5400	All courses
Ecology and Behavioral Biology	Metallurgy/Materials Science
5041	3400, 5481-5482-5483
Economics	Military Science
All courses <i>except</i> 3970, 5152, 5970, 8990	1014
Education: Adult, Higher, Teacher	Mortuary Science
5103	All courses
Educational Administration	Music
All courses under 8270	1001, 3791, 5950

Music Education
 3011
 Natural Science
 1004
 Nursing
 8003
 Operations Analysis and Management
 3055
 Personal Orientation
 1001
 Physical Education
 All courses under 5122, and 5620, 5740
 Physics
 1031, 1275, 1285, 1295
 Portuguese
 1001-1002-1003, 3603
 Psychological Foundations
 3380, 5110, 5120, 5121, 5305
 Psychology
 1004
 Public Health
 5032, 5040, 8004
 Quantitative Analysis
 1050
 Recreation, Park, and Leisure Studies
 3150, 5900
 Rhetoric
 1147, 1220, 1222, 1401, 3551, 3562
 School Health Education
 3330, 5402
 School Psychology
 5300, 5514
 Secondary Education
 3150, 3155, 3320, 5003, 5004, 5113, 5114,
 5122, 5129, 5150, 5153, 5170, 5172, 5191,
 5192, 5321, 5326, 5344, 5394, 5404
 Social Work
 1001, 5101, 8407
 Soil Science
 5565
 Spanish
 All courses under 5582
 Special Education
 5150, 5301, 5302, 5601, 5610, 5611
 Speech-Communication
 1101, 3201, 3203, 3641, 5404, 5411, 5414,
 5422
 Textiles and Clothing
 All courses under 8625
 Theatre Arts
 1321, 1326, 1502, 3311, 3312, 5334, 5711,
 5823, 8311
 Transportation
 3054
 Vocational Education
 5300
 Women's Studies
 All courses

SUMMER SESSION—SECOND TERM

Accounting
 1050, 1051, 3102, 5125, 5310
 Aerospace Engineering and Mechanics
 All courses
 Agricultural Education
 8001
 American Indian Studies
 1022
 American Studies
 1103
 Anthropology
 1101, 1102, 3378
 Architecture
 All courses
 Art Education
 3009, 3010, 3030
 Art History
 All courses
 Arts, Studio
 All courses under 3970, and 5110, 5120,
 5320, 5520
 Biology
 1011, 1103, 1106, 3011
 Business Administration
 3002
 Business Education
 5112
 Chemical Engineering
 5901-5902-5903
 Chemistry
 All courses except 8102, 8990, 8992
 Communication Disorders
 3100, 3101
 Composition
 1001, 1002
 Computer Science
 All courses
 Counseling and Student Personnel Psychology
 5101, 5110, 5130, 5620
 Distributive Education
 5600
 Ecology and Behavioral Biology
 3001
 Economics
 All courses except 3970, 5152, 5970, 8990
 Education: Adult, Higher, Teacher
 5199
 Educational Administration
 All courses under 8270
 Electrical Engineering
 All courses
 Elementary Education
 All courses under 5602
 English
 1014, 1016, 3851
 Finance
 3000, 3100, 3300, 3500
 French
 All courses under 3970, and 5415
 General College
 All courses
 Geology and Geophysics
 All courses
 German
 All courses
 History
 5381
 History and Philosophy of Education
 3090
 Humanities
 All courses except 3970
 Industrial Education
 5100, 5101, 5102, 5103, 5600

Industrial Engineering/Operations Research 5000	Personal Orientation 1001
Institute of Technology 3501	Physical Education All courses under 5110, and 5700
Journalism and Mass Communication 1101, 3121	Physics 1032
Library All courses except 8970, 8990	Psychological Foundations 3380, 5305
Management 3001, 3004	Psychology 1005
Management Information Systems 5100	Quantitative Analysis 1050
Marketing 3000	Rhetoric 1147, 1222, 3551, 5700
Mathematics All courses	School Health Education 1500
Mathematics Education 5101, 5355, 5366	Secondary Education 5131, 5152, 5153, 5173, 5176, 5194, 5394
Mechanical Engineering All courses	Social Work 3984, 5010, 5201, 5401, 8406, 8450
Metallurgy/Materials Science 5481-5482-5483	Spanish All courses under 5373, and 5713
Microbiology 8121	Special Education 5105, 5150, 5302, 5601
Military Science 1024	Speech-Communication 1101, 3201, 3204, 3605, 5411
Mortuary Science All courses	Textiles and Clothing 5601
Music 1001	Theatre Arts 3801, 5711, 5803
Music Education 3011	Transportation 3064, 8264
Nursing 8003	Vocational Education 5101, 5102, 5300
Operations Analysis and Management 3055	Women's Studies All courses

TUITION AND INCIDENTAL FEES††

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	\$14.00
STUDENT SERVICES FEE	
Per term; not included in tuition fee	\$24.28

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 \$9.25—see page 19.) 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 of \$6.75 will be charged.

Note—Regular tuition fees as provided during the academic year will be charged all students in medicine, nursing, dentistry, and occupational therapy. Special tuition fees are collected for the Itasca Biology Session.

Summer tuition in the College of Veterinary Medicine will be calculated as follows:

1976—regular Summer Session tuition

††Fees are subject to change.

- 1977—55% of academic year tuition
- 1978—78% of academic year tuition
- 1979—100% of academic year tuition

Graduate students who have passed their preliminary oral examinations and have been accepted for candidacy for the Ph.D. degree may register for 6 credits or less or for thesis-only for \$50 per summer term, with the student services fee optional to maintain required continuous registration.

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 Direct Personal 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 \$9.25 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 blank, must be presented at the appropriate college window for each summer term when registering. Students who fail to apply for the exemption prior to registration may apply for a refund during the first week of classes of each summer term.

Health insurance which pays for medical care costs limited by deductible and coinsurance features cannot 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 student may decline to pay the 50 cents per term fee at the time of registration or may obtain a refund of the fee at a location and date which will be announced in the college newspaper (Duluth, Morris, and Twin Cities Campuses).

COURSE FEES

(All fees are per term unless otherwise indicated)

Students taking the following courses will pay course fees in addition to tuition as follows:

HEALTH SERVICE (field trips and foreign study)

Required of students on University field trips such as those in anthropology, civil engineering, geology, mines, etc.—\$12.25 per summer term

Students in University-sponsored foreign travel groups are required to enroll in the Blue Cross-Blue Shield program or take out other adequate insurance

ITASCA BIOLOGICAL STATION

Laboratory Fee—\$8.50

Research Table Fee—\$5.00 per week††

MATHEMATICS

Math 0009—\$70 plus student services fee

MODERN LANGUAGES

French—\$75 for program in Besançon, France

German—\$75 for programs in Erlangen and Bochum, Germany

Spanish—\$75 for program in Salamanca, Spain

MUSIC††

Courses in applied music carry either 2 credits (minimum of 5 hours of private lessons) or 4 credits (minimum of 10 hours of private lessons) per summer term. Fees for non-music majors are based on individual lessons: \$75 (0-2 credits) or \$150 (4 credits). Music and music education majors at the 12xx or 13xx level in their major instrument pay \$65 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) are eligible for a reduced rate of \$25 per 2 credits. M.F.A. and D.F.A. students taking applied music at the 83xx level also are eligible for the reduced rate of \$25 per 2 credits.

PHYSICAL EDUCATION

PE 1205—\$20 per term

PUBLIC HEALTH

5755 (Administrative Residency)—\$150

8002 (September Field Course)—\$50

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 (25¢ per hour for each additional hour per week)

Organ—25¢ per hour

PHYSICAL EDUCATION**

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—Nonstudents

Speech Therapy (days)—\$2 per term

Speech Therapy (evenings)—\$2.50 per term

Consultation (outpatient)—\$5

Evaluation (outpatient)—\$20

Summer Session Intensive Therapy—\$125

†† In lieu of tuition.

‡‡The 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.

**Locker, towel, and gym clothing rental fees are for one or both terms.

SPEECH AND HEARING CLINIC—Students

Special Clinical Treatment—\$5 per term

MISCELLANEOUS

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

Credentials Examination Fee—\$10 (\$15 for Graduate School)

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

Laboratory Fee—\$4 (required in certain laboratory courses)

Large Diploma—\$7.50

Master's Thesis Binding—\$5

Ph.D. Thesis Binding—\$25

Special Examination—\$20

Record Service Fee—\$3 (required of all new students)

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

REGULATIONS GOVERNING GRANTING OF DEGREES

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

1. 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 its equivalent as determined by the faculty of the college offering the course.

2. Recommendation by the faculty.

3. Residence Requirement—The student must earn at least 1 year's credit 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 under such rules as may be established by each college for such exemptions. 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 of all financial obligations due the University.

5. Attendance at Commencement is optional. Students planning to graduate during the summer may attend Commencement in June or December.

6. Graduation Fee—each degree, \$10.

7. Placement Service Fee—required of candidates for degrees from:

Duluth	\$10
College of Education (except Nursing Education)	15
Morris (optional)	10

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 and pharmacy cards are \$10; biochemistry (College of Biological Sciences and Medical School) and art cards are \$5.

Laboratory material 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 shall be allowed a 100 percent refund of fees. Students who cancel after having attended classes shall be allowed 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 with the consent of the department concerned. The procedure for registration as auditor is the same as for registration for credit, except that "auditor" should be indicated on the registration sheet in the credits column.

AMOUNT OF WORK

A maximum of 10 credits is considered a full program for either term. Registration for a greater number 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.

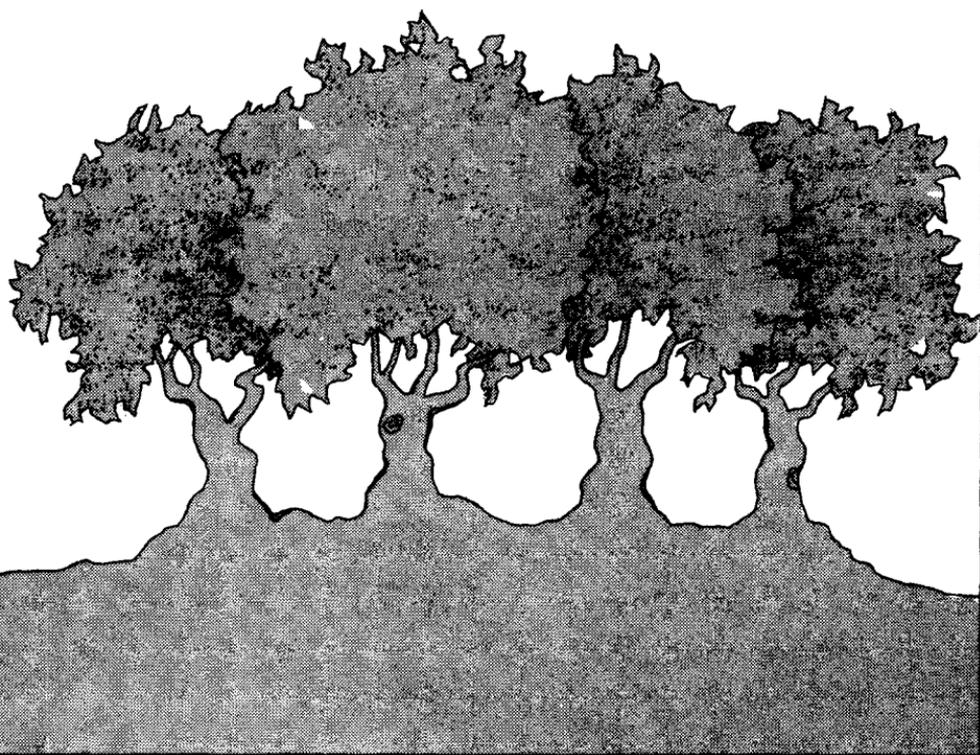
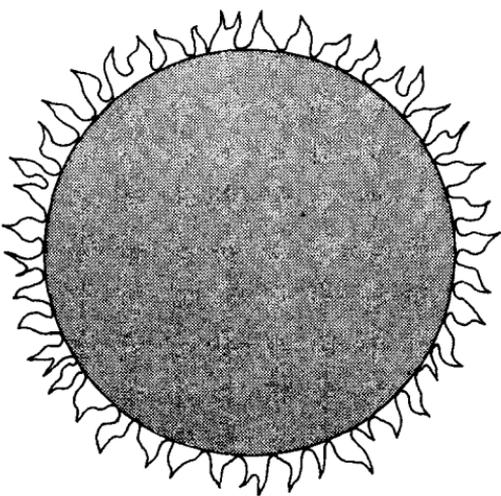
FINAL EXAMINATIONS

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

GRADING

Grading procedures for the Twin Cities, Duluth, and Morris Campuses involve two systems: A-B-C-D-N and S-N, with the N grade indicating no credit or no record. Students should check with their college offices to find out which courses may be taken S-N and should indicate on their registration blanks which type of evaluation is desired for each course. An excellent explanation of the system appears in the current *College of Liberal Arts Bulletin*. Graduate students should consult the *Graduate School Bulletin* section on grading.

*The University
Services
Cultural and
Recreational
Opportunities*



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 which 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 which offers a wide variety of 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 made as early as possible. For information and application forms write to: Housing Office, Comstock Hall-East, University of Minnesota, Minneapolis, Minnesota 55455. The Housing Office telephone number is (612) 373-7542.

St. Paul Residence Hall

Bailey Hall is an attractive coeducational residence hall offering comfortable accommodations in large double rooms. Spaces are available for Summer Session students and for conference participants.

A room and 7-day (19 meal) board contract will be offered for the first term only. Meals will be served beginning the first day of regularly scheduled classes. A room-only contract *may* be available for second term only. For application forms and information write to: Housing Office, Comstock Hall-East, University of Minnesota, Minneapolis, Minnesota 55455. The Housing Office telephone number is (612) 373-7542.

Off-Campus Housing—Private Residence

Rooms in private homes, rooming houses, fraternities, and sororities are available. Vacancy listings for all types of off-campus housing (including sublets, apartments, and houses) are available beginning in May.

Information about housing facilities and assistance in locating off-campus residence accommodations may be secured from the Housing Office, Comstock Hall-East, University of Minnesota, Minneapolis, Minnesota 55455, for Minneapolis, and Housing Office, 190 Coffey Hall, 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 (612) 373-0822.

CAMPUS BUS SERVICE

Complete information on Minneapolis-St. Paul Campus and East-West Bank bus service and buses to and from the Como Avenue Parking Complex is available from the University Transit Services Office, 2818 Como Avenue S.E. (telephone 373-0374). Transit Services also offers information on city bus routes serving the University area, including express bus service between the campus and selected Twin Cities residential areas. Schedules and fares are subject to change; call Transit Services for current information.

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

Free transportation between the Minneapolis and St. Paul Campuses is available Monday through Friday on special buses labeled "Line 13—Intercampus."

During both summer terms, intercampus buses will 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 (Line 13-U) will travel via University Avenue between 7:25 a.m. and 4:55 p.m.

Bus schedules may have changed slightly since this bulletin went to press. Current schedules and route maps are available at the information counters in Coffman Union, the West Bank Union, Morrill Hall, and the St. Paul Student Center. Schedules also are posted at each bus stop along the route.

Route Key:

Line 13-A: Travels from the St. Paul Campus to West Bank (and vice versa) via Cleveland, Larpenteur, and Como Avenues.

Line 13-G: Travels from the St. Paul Campus to West Bank (and vice versa) via the "Grove," Larpenteur, and Como Avenues.

Line 13-J: Travels from the St. Paul Campus to Jones Hall (and vice versa) via Cleveland, Larpenteur, and Como Avenues.

Line 13-U: Travels from the St. Paul Campus to West Bank (and vice versa) via University Avenue.

There is no charge to ride the intercampus buses, providing one boards and exits at on-campus stops. If one boards or exits at any off-campus stop, the fare is 30¢ or one punch of a special reduced-fare discount card. These discount cards, which allow 20 rides for \$4, can be purchased at any University Bursar or Cashier Office.

East-West Bank Bus—Lines 13-A, 13-G, 13-U, and 24

Free bus service also is available 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., Monday through Friday. Buses labeled "To Jones Hall" (Lines 13-A, 13-G, and 24) will travel between Blegen Hall and Jones Hall. Buses labeled "Lyon Lab" (Line 13-U) will travel between Blegen Hall and Lyon Laboratory. Schedules are posted at each stop.

Current schedules and route maps are available at the information counters in Coffman Union, the West Bank Union, Morrill Hall, and the St. Paul Student Center.

Como Avenue Remote Parking Complex

FREE parking is available for over 700 cars at the Como Avenue Parking Complex, located near the intersection of Como Avenue and 29th Avenue S.E. (just a few blocks west of Highway 280). Follow the "U of M Parking" signs in the area. A 15¢ fare (30¢ 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 \$3 can be purchased at any University Bursar or Cashier Office.

LOCKER RENTAL SERVICE

To rent a campus locker, purchase a Locker Deposit Card for \$7 at any University Bursar or Cashier Office and take it to one of the following locker rental offices:

For East Bank lockers: Locker Service Center in Coffman Union (376-3003)

For West Bank lockers: 110 Anderson Hall (373-4658)

For St. Paul Campus lockers: 212 McNeal Hall, 130 and 231 Classroom-Office Building (376-3003)

Rental rate (including padlock) is \$1 per Summer Session for full-size lockers and 60¢ per Summer Session for half-size lockers. Refunds for the unused portion of the \$7 deposit can be obtained when the locker is vacated.

LOCKER LOCATIONS

East Bank

Aeronautical Engineering
Appleby Hall
Architecture Building
Chemical Engineering
Civil Engineering
Electrical Engineering
Fraser Hall
Johnston Hall
Lind Hall
Murphy Hall
Nicholson Hall
Peik Hall
Scott Hall
Smith Hall
Vincent Hall

West Bank

Auditorium Classroom Building
Blegen Hall
Rarig Center
Studio Art Building
Wilson Library

St. Paul

Agricultural Engineering
Classroom-Office Building
McNeal Hall

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 4:15 p.m. in Minneapolis and 8:30 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, offers counseling on a year-round basis to all students. This is a University-wide service for 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 improvement, family relationships, peer relationships, and sex-related problems. 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

For students on the Minneapolis or St. Paul Campus who need a job to help meet school expenses, the Student Employment Service, 30 Wulling Hall, Minneapolis Campus, will aid in finding 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, the student's qualifications, need, and the hours available. Frequently a job will provide valuable experience as well as financial assistance. Work for board and room is usually available.

BOYNTON HEALTH SERVICE

The Boynton Health Service provides outpatient and hospital services during the Summer Session on a basis similar to that of any other quarter of the year, with the same staff of physicians, dentists, and nurses on duty. General outpatient services are provided without further charge to all students who have paid the student services fee. For certain services such as dentistry, prescription drugs, and eye glasses, 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 and/or public assistance may apply for exemption from purchasing the University-sponsored hospital insurance. 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 and policy number under which they have coverage or to give their Medicaid or public assistance number.

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

LIBRARY FACILITIES AND SERVICES

The University Libraries system, with over 4,000,000 volumes, is one of the ten largest of its kind in the United States. It provides the basic resources for the teaching and research needs of the students and faculty of the University. There are many library units on campus, with the O. Meredith Wilson Library serving as the headquarters for the library system. The library handbook, *University of Minnesota Libraries, Twin Cities Campus: A Guide*, serves to direct the user to the correct location of needed 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 containing 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 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 Kerlan Collection of Children's Literature; 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 which houses resources relating 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 library hours are posted in each library or may be obtained by telephoning the library in question, as listed in the *Student-Staff Directory*.

THE MINNESOTA UNION

All Twin Cities Campus students, by virtue of payment of the student services fee, become members of the Minnesota Union, an association of students, faculty, staff, and alumni. The Minnesota Union is organized through a coordinating board of three constituent governing bodies to provide the services, conveniences, and amenities needed by members of the University community in their daily lives together. The union attempts to conduct programs geared to the intellectual, cultural, social, and recreational needs of the community, and to provide opportunities for significant student participation and leadership.

Two major building facilities, the St. Paul Student Center and Coffman Memorial Union, exist to further the goals of the Minnesota Union, and the West Bank Union operates decentralized facilities and services.

Coffman Memorial Union

The Coffman Memorial Union, opened in 1940, has recently undergone major remodeling to make it comfortable and serviceable for an increased University population. Your comments on the effectiveness of the union's programs, services, and facilities are solicited by the union's administration.

Coffman Union provides a diversified program for the summer student including art exhibits, music programs, dances, and a comprehensive offering of mini-courses ranging from batik to yoga. Consult *Socially Speaking*, the *Minnesota Daily*, and the Coffman Union Program Council calendar for specific program events.

Students are encouraged to serve on planning committees and provide leadership for events. Visit the Program Office for committee opportunities and information on programs.

Facilities include table tennis. . . bowling lanes. . . billiards. . . an outing equipment rental center. . . an art craft studio for general hobby/craft activities (woodworking, leatherwork, ceramics, jewelry, photography). . . a cafeteria for dining. . . a commuters' lunchroom with vending machines. . . coeducational lounges for relaxing and studying. . . an outdoor terrace for lounging or dining. . . a spacious ballroom for informal dancing, parties, lectures, and special activities. . . the

Student Store and other shopping areas. . . the University Post Office. . .and barber and beauty shops. The building is joined to a parking ramp by an enclosed walkway.

Coffman Union is open from 7 a.m. to 10 p.m. weekdays. Rooms can be reserved for group meetings and luncheons.

West Bank Union

West Bank Union (WBU) programs are planned to provide learning experiences (forums, debates, lectures), to assist with special interests (film archives, mime classes), and to entertain (films, theatre, music). They are organized by those interested, with assistance from an elected student board and staff advisers. Student ideas for and assistance in planning and presenting programs are welcomed—stop in at 110 Anderson Hall if interested.

The WBU Common Room in Anderson Hall provides facilities for lounging, music listening, leisure reading, and table games.

The WBU Service Center is the place on West Bank for activities information, lost-and-found, locker rentals, meeting room reservations, and general assistance.

The WBU Gallery exhibits student and faculty artwork. Located in the Auditorium Classroom Building, lower concourse, it includes an archive of films made on campus during the year.

St. Paul Student Center

The air-conditioned St. Paul Student Center is open throughout the Summer Session. Complete information 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, a workshop, television, magazines, conference rooms, and a games area with bowling lanes, table tennis, and billiard tables. Outings equipment is available for rental. Meeting rooms are available for groups.

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

Building hours are from 7 a.m. to 10 p.m. weekdays.

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 entertainments provided by a large city—all are within easy access by public or private transportation. Trips to the famous 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 at scheduled hours.

Baseball and softball diamonds at Bierman Field.

An 18-hole golf course, a 9-hole (par 3) golf course, and tennis courts which 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 inter-campus bus.

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

CONCERTS AND LECTURES

Through the Department of Concerts and Lectures, Summer Session provides a variety of free entertainment. Blues, jazz, folk, opera, symphonic, modern, and chamber music, and 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.

UNIVERSITY THEATRE

A summer of Bicentennial entertainment will be offered by the University Theatre this season. An American musical, directed by Robert Moulton, will play from June 15 through August 22 on the Minnesota Centennial Showboat at its Mississippi River location below the Minneapolis Campus; two plays for children will run from June 26 through July 30 in the red-and-white-striped Peppermint Tent near the Showboat; and George M. Cohan's famous mystery, *Seven Keys to Baldpate*, will be presented in the Rarig Center's Stoll Theatre July 8, 9, 10, 15, 16, and 17.

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 with 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 is free and is open from 9 a.m. to 5 p.m., Monday through Saturday, until 9 p.m. on Wednesday, and from 2 to 5 p.m. on Sunday. Free 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 which also sells records of bird and animal calls, prints, and stationery. Call (612) 373-2423 for tour appointments or further information.

UNIVERSITY GALLERY

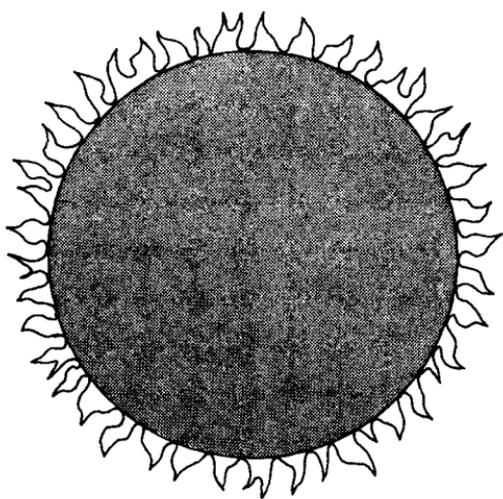
The University Gallery, located on the third and fourth floors of Northrop Memorial Auditorium, presents frequently changing exhibitions of photographs, paintings, sculpture, prints, and decorative arts.

Gallery facilities serve students to supplement classroom, studio, and library experience in the arts. Research and specialized materials are available from the Gallery's collection.

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

Gallery hours are 11 a.m. to 4 p.m. Monday through Friday, and 2 to 5 p.m. on Sunday. The main office is located in 110 Northrop Memorial Auditorium (telephone 373-3424).

*Workshops,
Institutes,
and Other
Special
Programs*



The Bicentennial

The Summer Session offers you many opportunities to observe this Bicentennial summer by learning about American history, politics, and arts. The following is just a sampling of the courses that deal with some aspect of past or present life in the United States—you'll find many more as you look through the course listings.

Check the Department of History for courses covering various periods (1301, colonial and early national America; 1302, modern America) and particular subjects (3882, History of American Foreign Relations; 5341, American Economic History).

The history of our government is traced through such Department of Political Science offerings as The American Democracy (5303) and American Government and Politics (1001). The department also offers courses on urban politics (1027) and state government (5315) in the United States. A course is planned by the Department of Speech-Communication in History and Criticism of American Public Address (5618), an examination of political speech from the Revolution to the present.

The arts in America are well represented in the summer's courses in many departments: the Departments of Architecture and Art History both have scheduled courses in American architecture (5055 and 5546, respectively); the Department of Theatre Arts will analyze the theatre as an aspect of American culture from 1752 to the present (5186); a Department of Music course (5702) will survey American music, colonial to contemporary, including American Indian music, sacred music, and jazz; and the Department of Afro-American Studies will offer a survey of the musical achievements of Black Americans through the nineteenth and early twentieth centuries (3105).

Almost one-third of the Department of English courses will deal with American literature, including an introductory course (1016), two parts of a survey sequence (3412, Thoreau and Melville through James; 3413, Stephen Crane through the 1930's), and courses dealing with specific genres (3455, short story; 5451, novel) and authors (3566, Faulkner; 5930, Hemingway). American English (5831) will trace the evolution of the English language in this country and its development in regional variations.

The Program in American Studies, providing a framework for exploration of various aspects of American life and the relationships among them, will offer courses in individualism (1101) and nationalism (1103) in the United States. America's first major advocate for the preservation of wilderness, Henry David Thoreau, will be the subject of a Department of Philosophy course (5760) which also will emphasize Thoreau's investigations of political obligation and the meaning of life.

College of Agriculture

FIELD STUDY IN INTERNATIONAL AGRICULTURE: THE MEDITERRANEAN

The University of Minnesota, in collaboration with five other institutions of the Committee on Institutional Cooperation (CIC), has planned a 6-week field study program in agricultural production and marketing and natural resource issues that will run from June 14 through July 26 (see Agri 3101). Intended for juniors and seniors in agriculture and forestry from the CIC universities (others will be considered on an individual basis), the course is offered for 8 quarter (5 semester) credits. Field and classroom instruction will be conducted for approximately one week in each of the following areas: Spain, southern France, southern Italy and Sicily, Tunisia, and Morocco. Participants will study such topics as income distribution, rural migration, natural resource ownership, and international dimensions of agriculture and agricultural science. Instruction will include field trips, case studies, interviews with farmers, technicians, and government officials, and supervised independent work. A brochure with complete information is available in the Summer Session office.

College of Education

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 and research during the summer terms.

Nursery School—The Nursery School will be in session from 8:50 a.m. to 12 noon Monday through Friday, beginning June 16 and closing July 16. Applications for the enrollment of children will be received at the office of the Nursery School, 184 Child Development Building, 373-9853. Tuition is \$60 for the term. Parents are responsible for the transportation of their children to and from the school.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Secondary Education

Language Arts—Two workshops for secondary language arts teachers have been scheduled for the period July 20 through August 6. SeEd 5194, Curriculum Development in Secondary English and Speech, will provide theoretical and thematic bases for the development of language arts curricula. Historical patterns, recurring problems, and current trends will be examined, with emphasis on the nature and function of language arts in secondary schools today.

The second offering, SeEd 5350, Current Developments in English and Speech Education, is designed to help teachers plan courses and programs integrating the various components of the language arts curriculum. Participants will explore ways to incorporate film, television, popular arts, and "futures" into language arts courses, and ways in which basic skills can be taught without distorting the curriculum. Attention will be given to establishing objectives, individualizing instruction, using small group and creative dramatics techniques, and developing procedures for evaluating courses and assessing student progress. Teachers are encouraged to enroll individually or in faculty groups.

Intensive Workshop for Teachers and Prospective Teachers of French—SeEd 5191, section 1, will meet 6 hours daily, June 14-25, providing experience for American teachers of French in language, corrective phonetics, and language teaching methodology from a French point of view. *All classes will be conducted in French* by instructors Georges Zask, director of the Center for Applied Linguistics, University of Besançon, and Janina Zask, also of the Center for Applied Linguistics. Participants will receive 6 graduate-level credits for the workshop. For further information, contact Professor Helen L. Jorstad, 230 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Study Abroad for In-Service Teachers—The foreign language cultural materials work-ins will again be offered at three locations in Europe, from July 1 to August 12, to acquaint in-service teachers with aspects of the foreign culture that appeal to their students; to gain background in contemporary French, German, and Spanish life; to collect culturally authentic materials; and to develop materials for classroom use. Each section is open to 30 participants with a minimum of 1 year of teaching experience. Each participant will contract with the work-in director to design a program of travel and work to meet his or her own needs and will register for 12 credits in the appropriate section of SeEd 5192. Deadline for application is May 3. Those interested should request information from Professor Helen L. Jorstad, 230 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

The site for section 1 is Besançon, France, a university city on the Doubs River in the Jura Mountains. The Université de Besançon, connected with the Centre de Linguistique Appliquée, is an internationally known center for the training of teachers of French as a foreign language.

Section 2 is offered at Erlangen, Germany, at the Universität Erlangen which is known for its Deutsch als Fremdsprache section. Erlangen is located in Bavaria, only 20 minutes from Nürnberg.

Section 3 will be held in Salamanca, in the heart of old Spain, at the Universidad Pontificia de Salamanca, where Miguel de Cervantes, Hernan Cortes, and Miguel de Unamuno once studied. Founded in 1218, it is considered one of the most important institutions of higher learning in Europe, and is known throughout Spain for its department of pedagogy.

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

Administrator Development Seminar—Assessment and counseling, skill development, and contemporary issues in the field are the main topics of a program offered only in the summer to students in educational administration

at the program entrance level. Applicants for admission to degree programs in educational administration are encouraged to participate.

Work in EdAd 5130, Administrator Development Seminar, is combined with EdAd 5139, Laboratory in Decision Making (see the Course Descriptions section for registration requirements). Participation in the full 9-credit block is mandatory. Preapplication is required; inquiries should be addressed to the Department of Educational Administration, 225 Health Services Building, University of Minnesota, St. Paul, Minnesota 55108.

School Management Information Systems—EdAd 8214 is offered for 3 credits from June 30 through July 16 for teachers, counselors, principals, and other administrative personnel involved in educational decision making. The basic techniques required to generate, maintain, and gain access to computer-based management information systems will be covered. Laboratory sessions will be held in cooperation with TIES (Total Information for Educational Systems).

Public School Personnel Programs—EdAd 8227 will be offered for 3 credits from July 20 through August 3, providing basic personnel administration background for teachers, administrators, and other educational personnel. Simulations and role play exercises will be used to develop knowledge and skills in the selection, assignment, evaluation, and development of educational personnel. Other topics will include grievance processing, negotiations and collective bargaining, and salary and fringe benefit scheduling.

Practicum in School Community Relations—EdAd 5231 is offered for 3 credits from June 15 through June 29 to help educators develop and use the tools necessary to become an effective role communicator within an ongoing school-community relations program. Faculty, consulting specialists, and students will deal clinically with internal and external communications, working with the news media, community organization, communicating with parents, establishing a building-level public relations program, and other topics. These themes will be developed in workshop periods, group critique sessions, idea exchanges, and in individual consultation.

Educational Administration Two-Year Programs and Doctoral Programs

Several pertinent courses, workshops, and seminars are available this summer for students pursuing advanced graduate programs leading to the Specialist Certificate in school administration: elementary and secondary school principals, superintendents, school business administrators, and superintendents of Intermediate units.

The Department of Educational Administration also offers programs leading to the doctor of education (Ed.D.) and doctor of philosophy (Ph.D.) degrees for administrators in elementary and secondary schools and educational agencies. These programs emphasize a breadth of preparation in education and substantively related fields and include heavy concentration in the history and philosophy of education, social psychology, and curriculum and instruction.

Brochures describing the 2-year and doctoral programs are available from the Department of Educational Administration, 225 Health Services Building, 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 will register for 6 credits in an intensive workshop on modern dance as a creative activity and as a performing art, scheduled from July 20 to August 10 and taught by James Cunningham and the Acme Dance Company of New York. The company has performed and conducted workshops throughout the United States and also has been involved in Artists in the Schools residencies. Emphasis of the workshop will be on modern dance technique, dance improvisation and composition, dance repertory theatre, dance for children, movement for actors, and arts administration. Because enrollment is limited to 145 students, those interested in participating are encouraged to make early inquiry to Nadine Jette, 68 Norris Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Coaching of Individual, Dual, or Team Sports—A concentrated 6-day offering on coaching track and field, open to men and women, is scheduled June 15 through 22 (see PE 5740). Instructors for the workshop are Dean Anderson, assistant coach of the University of Minnesota cross-country and track and field team, and Roy Griak, head coach for the men's cross-country and track and field team at the University of Minnesota, assistant coach of the U.S. Olympic team in 1972, assistant coach of the U.S. National team, and head coach of the 1975 U.S. Pan American track and field team. Students will receive both practical and theoretical instruction in the techniques of coaching track and field. A written assignment and a final examination will be required.

Physical Education for the Elementary School Child—This workshop, scheduled from June 15 through 28, will focus on movement experiences for young children, emphasizing psychomotor, cognitive, affective, and social development through the medium of movement. It is designed for preschool educators, kindergarten and primary grade teachers, and physical educators. Instructors will be Dianna (Wisty) Rorabacher, who has had extensive experience conducting movement programs for young children, and Jerilyn Plack, coordinator of the Expanding Movement Program at the University of Minnesota. (See PE 5710.)

Recreation, Park, and Leisure Studies

Leadership in Nature Recreation—Rec 3150 will deal with outdoor recreation programming and leadership with emphasis on organizing, guiding, and protecting groups of all ages in outdoor recreation settings. Topics will include expedition and group behavior, outdoor leadership, equipment, trip planning, administration of organized outdoor recreation programs, camping for conservation, and techniques for backpacking and taking canoe trips. The class is for people with a general interest and background in outdoor recreation as well as for those seeking specific outdoor leadership training. Lectures will be weekday afternoons, June 28-July 13. Section 1 will go on a backpacking trip the weekend of July 2-4. Section 2 will go on a canoe trip the weekend of July 9-11. In addition to tuition, there will be a charge of approximately \$12 for

equipment rental and food for the trips. Further information may be obtained from Leo McAvoy, 204 Cooke Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Contemporary Issues in Leisure Services will offer an interdisciplinary approach to the leisure and educational resources of a wild river, with emphasis on preparation for leadership in outdoor recreation and outdoor education. The workshop will be presented June 14 through 19 in a variety of settings. Some formal classes will be conducted at Cooke Hall on June 14 and June 19; however, most of the time will be devoted to a 5-day (June 14-18) canoe trip down the Namekagon and St. Croix Rivers, part of the federal wild and scenic rivers systems. The workshop will stress the practical application of outdoor education methods, group leadership practices in outdoor settings, the administration of state and federal wild rivers systems, and the availability of and man's impact upon the recreational, educational, historical, and cultural resources of the wild river environment. This workshop is open to college juniors, seniors, and graduate students with basic canoeing experience. An information sheet is available from Elizabeth Griffin, 204 Cooke Hall, University of Minnesota, Minneapolis, Minnesota 55455. In addition to tuition, there will be a charge of \$18 for canoe and equipment rental, \$9 for transportation, and \$18 for food, totaling \$45. (See Rec 5900.)

School Health Education

Death Education in Contemporary Society—This joint offering of the School of Public Health, Department of Mortuary Science, and the School Health Education Division of the School of Physical Education, Recreation, and School Health Education is designed to prepare education seniors, teachers, school nurses, and mortuary science majors to cope with the problems of death education. The course examines concepts and attitudes toward death, grief, and bereavement including information relevant for elementary and secondary schools; motivations toward suicide and suicide attempts; and the school's role in suicide prevention. Registration is limited to 80 students. Classes meet from June 15 through July 2. (See Hlth 5402 and PubH 5040.)

Educational Aspects of Drug Use and Abuse—See Course Descriptions section, Hlth 5400.

DEPARTMENT OF PSYCHOEDUCATIONAL STUDIES

Counseling and Student Personnel Psychology

CSPP 5300, a 3-credit workshop in career guidance and career development education, will be offered for personnel working in school settings. An attempt will be made to relate the content of the workshop to students' needs and interests. Typical topics that may be discussed include concepts of career and work and the role they play throughout the life-span; current national developments in career education; philosophical bases for career development education; models of career development education; process models for effecting change; and staging in-service education programs. Participants will meet in workshop sessions daily, June 21 through July 2.

Special Education

Special Education Resource Teaching—SpEd 5302, section 2, will be offered during second term and is designed to provide a broad orientation to and understanding of the organization and development of resource programs. Traditional special education delivery systems (dimensions and attributes of resource programs presently in operation, competencies and functions of resource teachers) will be analyzed. Special attention will be given to program evaluation and the indirect service functions (i.e., consultation, collaboration, and training) of resource personnel. The workshop is prerequisite to the SERT internship. Credits earned may be applied to the M.A. degree or Specialist Certificate. Enrollment will be limited to students who have already completed SLBP and/or EMR certification requirements. Requests for information should be directed to Dr. Stanley L. Deno, Department of Psychoeducational Studies, 108 Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Teaching Children With Emotional Disturbances—A 12-credit institute (SpEd 5302, section 1, and SpEd 5601, section 1) centering on course work and practica related to SLBP:ED certification will be offered from June 14 through August 6. Credits earned may be applied to SLBP:ED certification, the M.A. degree, or another graduate degree, with the consent of the student's adviser. Highest priority for enrollment is given to adult special and graduate students in special education seeking SLBP:ED certification. Teachers, administrators, and other professionals seeking knowledge and skills related to educational programming for disturbed children also will be admitted. The workshop includes an intensive practicum experience, extensive course work, individual assignments, and student selected learning experiences. Requests for information and/or admission should be directed to Professor Robert W. McCauley, Special Education Programs, 106 Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Teaching Exceptional Children (SLBP Resource or Clinical Teacher Sequence)—The special education staff will offer practica related to SLBP:LD teacher certification in a training institute first term. The 6 credits earned in SpEd 5610 and SpEd 5611 may also be applied to graduate degrees by students admitted to the Graduate School. Institute participants will work with learning-disabled children, concentrating on academic skills, remediation, and the quality of interaction between teacher and learner. Enrollment will be limited to students who have completed SpEd 5110 and SpEd 5111 during the academic year 1975-76. Requests for information about the institute should be directed to Professor Virginia Bruininks, Department of Psychoeducational Studies, 109A Pattee Hall, University of Minnesota, Minneapolis, Minnesota 55455.

DEPARTMENT OF SOCIAL, PSYCHOLOGICAL, AND PHILOSOPHIC FOUNDATIONS OF EDUCATION

Human Relations

Introduction to Human Relations—PsyF 3380 fulfills one-half of the College of Education's human relations requirement for *undergraduate* students. It is

designed to assist the student to respect human diversity and personal rights, to develop positive feelings toward all humanity, to more fully understand attitudes and behavior, and to become familiar with the major theoretical approaches which apply to the processes by which personality development occurs. Scheduled in a lecture/laboratory format during each term, the course is open only to juniors and seniors in College of Education programs.

Workshop in Human Relations—This 6-credit workshop, PsyF 5305, meets the state of Minnesota requirement (Edu 521) for course work and experience in human relations. It is intended to improve classroom and school learning climates and human communication by helping participants achieve learning goals: understanding the contributions and life-styles of the various racial, cultural, and economic groups in our society; recognizing and dealing with dehumanizing biases, discrimination, and prejudices; creating learning environments which contribute to the self-esteem of all persons and to positive interpersonal relations; and respecting human diversity and personal rights. The course is offered during each term and is not open to undergraduate students.

Questions about requirements and registration for either human relations course should be addressed to Professor Chester Oden, 206 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Among the special offerings in the vocational education fields are Special Topics in Administration (VoEd 5102, July 20-30); Philosophy and Practice of Vocational Education (VoEd 5300, offered both summer terms); and Special Topics in Curriculum (VoEd 5101), sections 1 and 2 on careers (see below) and section 3 on small business management (August 9-20). Students in 5101 section 3 will utilize the curriculum materials, accounting procedures, and business analysis concepts developed as part of a USOE grant.

Career Education Conference—VoEd 5101, sections 1 and 2, will feature nationally prominent guest speakers discussing curriculum development in career education. All-day sessions will be aimed at developing participants' leadership abilities in planning and implementing career education programs in elementary and secondary schools. Section 1 (1 credit) will meet August 1-4 at a cost to participants of \$60.00, plus the \$3.00 record service fee where applicable. Section 2 (3 credits) also will meet August 1-4, and includes a curriculum workshop on August 5 and 6. Section 2 participants will pay \$92.85, plus the record service fee if applicable. Advance application is required by June 15. For additional information or registration materials, write Professor Mary Klarens, 270 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455, or call (612) 373-9722 or 373-9724.

Business Education

Word Processing—Business and office education teachers may meet state certification requirements through registration in Program Developments in Business Education, BsEd 5112 (July 6-16), an introduction to the concept of

word processing and word processing hardware and their applications in business firms of various sizes. In the second term, the same course will focus on research and materials and methods used in teaching word processing and business communications.

Office Occupational Experience—Business and office education teachers who need to fulfill occupational experience requirements for vocational certification may earn the equivalent of 2 hours of work experience for each hour on the job through registration in BsEd 5114 in the first term. Individuals are responsible for securing their own employment and must have their work station approved by the program coordinator prior to registration. Information is available from Charles Hopkins, 254 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Teacher Coordinator—BsEd 5107, Materials and Methods in Office Education, is scheduled during first term, June 15-July 2. During second term, BsEd 5104, Office Coordination Techniques, is offered July 20-30. Both are required for office education teacher-coordination certification.

Distributive Education

School-Business Relationships—DE 5400, scheduled June 15-18, will focus on concepts of interpersonal influence to increase effectiveness of educators in working with local business personnel in such things as promotion, public relations, sponsor development, and problem solving.

Teaching Salesmanship—New ideas and procedures for teaching selling skills will be presented by knowledgeable salespersons in DE 5325, scheduled the week of June 21-25.

Competency-Based Curriculum Development—In section 1 of DE 5600, School-Based Projects (July 20-30), in-service teachers will identify relevant competencies, instructional strategies, and materials for teaching distributive education. The materials developed will be written into an instructional guide for distributive education teachers.

Coordination Techniques—Concurrent registration in DE 5105 and 5106 (July 6-16) will combine study of coordination theory and principles with application to specific situations.

Home Economics Education

Supervisors of home economics education programs and student teachers are invited to share in a discussion of issues related to the field and to learn techniques and skills in a workshop June 15-25. (See HEEEd 5325.)

A short workshop, HEEEd 5430 (July 6-16), is planned to assist in-service teachers in teaching values, and two sections of HEEEd 5415 will deal with teaching family life education (July 6-16) and consumer education (July 20-30).

Teachers also may be interested in the College of Home Economics listings for new courses and courses needed for recertification in family life or consumer homemaking programs.

Industrial Education

The Industrial Materials Laboratory for Nonmajors (Ind 5400), designed for elementary teachers, recreation and park personnel, and occupational therapists interested in using wood and metal, will include planning, construction, and finishing of projects; basic hand and power tools; and the application of construction activities to the accomplishment of goals in these fields.

Those interested in fulfilling the work experience required for industrial arts or vocational certification 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—with 1 University credit 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, University of Minnesota, Minneapolis, Minnesota 55455.

COURSES OFFERED THROUGH OTHER COLLEGES

Among courses and workshops offered through colleges other than Education specifically for teachers or in areas of importance to educators are the following: workshops for teachers in forestry (FR 5406), aerospace engineering (AEM 5001), Minnesota history (Hist 5381), and teaching English as a second language (Ling 5705); Measurement and the Metric System (I of T 3501); a workshop for advisers of high school yearbooks, newspapers, and magazines (Jour 5182); and courses in physical geology (Geo 5051), Indian civilization (Indc 5530), and transformational grammar (Ling 5751) planned particularly for teachers.

College of Forestry

Forestry Workshop for Teachers—The College of Forestry sponsors a 5-credit workshop for teachers at the Cloquet Forestry Center, Cloquet, Minnesota. The course, FR 5406, will be held for 2 weeks during the first term, June 14 through 25.

Forest ecosystems and forest management are studied by teachers in lecture and laboratory sessions. In field exercises, techniques and materials are developed for the teaching of principles of forestry in indoor and outdoor classrooms. Tours to forest and wildlife research and management units and utilization locations and discussions of contemporary forestry issues by guest lecturers are planned.

Objectives of the course are threefold: (1) to increase the student's understanding of and ability to interpret to others the forest ecosystem, (2) to convey to the student an appreciation of the various roles of the forest and the processes of forest management in modern society, and (3) to impart skills and teaching techniques and to develop materials usable in teaching an awareness for the forest ecosystem and forest management in indoor and outdoor classrooms.

College of Liberal Arts

FOREIGN TRAVEL AND STUDY

SPAN Study Abroad

SPAN, the Student Project for Amity Among Nations, sponsors foreign 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 1976 student groups will study in the Dominican Republic, Hungary, Pakistan, and Turkey.

The SPAN program involves extensive preparation, 8 to 10 weeks abroad, and production of a research paper. Preparation, through the year preceding the summer abroad, includes study of the language, history, social and political ambience, and culture of the area to be visited. Each "country group" of about a dozen students meets regularly with its 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 papers, major academic reports growing from their study at home and abroad. Satisfactory completion of a paper earns 12 quarter credits in the Foreign Studies Seminar, FS 5960.

Students must apply for SPAN appointments no later than the fall quarter preceding the summer abroad. Information about future applications may be obtained from Professor Theofanis Stavrou, History Department, 652 Social Sciences Building, or the SPAN Office, 103 Nolte Center, 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 at the Ruhr-Universität in Bochum, Germany, during first term. CLA credit courses to be offered (in German) include conversation and composition, independent study, contemporary Germany, and modern German literature. Permission of the German Department is required. Consult the department or the Summer Session office for further information.

FIELDWORK OPPORTUNITIES

Archaeological Field Session

Archaeological field methods and techniques, Anth 3378 and 8508, are scheduled for undergraduate and graduate students during the first term. Students with permission to enroll will participate in the excavation of prehistoric archaeological sites in Minnesota. Undergraduate students and graduate students without previous field training register for Anth 3376; graduate students with field experience register for Anth 8508. Those seeking permission to register must apply before April 15, 1976, to the Archaeology Laboratory, S-48 Ford Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Classics—Ancient Near Eastern

From June 21 to August 13, the Tel Aviv University's Institute of Archaeology will conduct excavations at Tel Beersheva under the direction of Professor Yohanan Aharoni. Up to 4 credits received for participation in Clas 5120 are applicable to the completion of a major in ancient Near Eastern studies. For further information, consult Steven Derfler, 373-0186.

Field Experience Learning

Students who have arranged volunteer or salaried summer projects in appropriate settings may often register under directed studies course numbers for credit. Those with Urban Corps or Governor's Internship experience, as well as those who have planned projects or would like to do so, may consult advisers in departments or in the Office for Special Learning Opportunities (201A Westbrook Hall, 373-7550) about planning such projects for credit.

Registration for these projects, when approved, is under departmental course numbers 3970 or 5970, or appropriate Interdepartmental Directed Studies number 3970 (see page 192).

Geography Field Session

A field research seminar (Geog 5701 and 8700) will be held July 19 through August 6 in the area from the Twin Cities to the Big Horn Mountains of Wyoming and the Yellowstone River of Montana. It will focus on the historical geography of the century following 1804, including occupation of the Great Plains by the American Indian and the coming of the frontier settlers, the era of the cattleman and the sodbuster, and the current controversy over water, energy, and recreation.

Reservations must be made by July 15. For costs, details of the program, transportation arrangements, and information on the field expense subsidy, consult Professor Fred Lukermann, Department of Geography, 585 Social Sciences Building, University of Minnesota, Minneapolis, Minnesota 55455.

INTENSIVE LANGUAGE STUDY

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

Intensive Beginning Latin is intended for two kinds of students without previous knowledge of the language:

- 1) Graduate and undergraduate students of high ability and motivation. Previous study of another language is desirable. Undergraduates should register for Lat 3051-3052-3106 (15 credits). Graduate students may take Lat 3051-3052-8120 (13 credits, 3 of which are graduate credits).
- 2) Undergraduate students who have studied little or no foreign language but desire the equivalent of 3 quarters of college Latin should register for Lat 1101-1102-1103 (15 credits).

For further information consult the Department of Classics, 310 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455, or phone Professor Gerald Erickson at (612) 373-5918.

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

OTHER SPECIAL OPPORTUNITIES

Comparative Literature

Professor John Freccero, chairman of the Italian Department at Yale University and a distinguished Italian scholar, will teach a first term comparative literature course subtitled *Infernal Rhetoric from Virgil to Dante and the Marquis de Sade*. The course, Ital 5900, will be taught in English, and students may do the reading in the original or in translation.

Composition

The English Department will offer a first term workshop, Comp 0001, for review of basic grammar and essential writing skills. The workshop is designed primarily for high school students who will be entering the University in the fall and want to improve their basic understanding of language as well as gain practice in composition. Successful completion of this course will enable students to register for Comp 1002. For details, consult the director of composition, English Department.

English: Shakespeare

Two advanced courses in Shakespeare will be offered this summer. One, Engl 5940, involving intensive study of two or three plays, is for students with an interest in Shakespeare's plays as verbal and dramatic art. Some prior study of Shakespeare would be helpful but is not required. The other, Engl 8240, is a graduate seminar. One play will be studied in common in the two courses. Graduate students may wish to register for both courses.

Journalism and Mass Communication

The annual 3-week Publications Workshop, June 15 through July 2, is designed principally for high school journalism teachers and newspaper, yearbook, and magazine advisers but 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 19 through August 13. Details may be obtained from MHSPA, 110 Murphy Hall, University of Minnesota, Minneapolis, Minnesota 55455. Those workshops do not offer college credit.

Linguistics

A workshop in teaching English as a second language will be offered this summer for teachers whose major field of study is not English as a second language. The workshop (Ling 5705) will meet weekday mornings, July 12-30.

Ling 5751, Applied Transformational Grammar, is planned for those who teach English and written composition in secondary schools. The course is offered only during the summer.

Media Generalist Certification Program

The media generalist certification program is offered cooperatively by the College of Education and the Library School. Certified audiovisual coordinators, school librarians, or others interested in media applications in schools who wish to apply for certification as media generalists should write for program and application information to Robert D. Tennyson, Director, Media Generalist Program, College of Education, 117 Burton Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Minnesota History Workshop

Designed for elementary and secondary school teachers, the Minnesota History Workshop (July 19-30) offers study of the academic content 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.

Small Group Communication Workshop

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 15 through 26.

FOR HIGH SCHOOL STUDENTS

High School Forensics Workshop

During the first term, the Department of Speech-Communication will offer a forensics workshop for high school students interested in competitive speech activities. College speech students who wish to observe the work of high school

students should apply to Barry Brummett or Steve Mudd, 404 Folwell Hall, University of Minnesota, Minneapolis, Minnesota 55455.

High School Music Project

The Department of Music, in cooperation with the Minnesota Orchestra, will invite 160 specially qualified high school musicians to spend 4 weeks on campus to participate in the annual music project. The program, running from June 13 to July 11, will include intensive band, orchestra, and chorus rehearsals and concert performances; introduction to composition and "creative music"; music theory and literature; private applied vocal lessons; repertory and coaching sessions; chamber music rehearsals and orchestral repertory sessions with the Minnesota Orchestra; weekly solo recitals and chamber concerts; and social and recreational activities.

Auditions for admission to the program are open to all high school students in the Midwest. Information and application forms should be requested from Professor Richard E. Sieber, 320 Wesbrook Hall, University of Minnesota, Minneapolis, Minnesota 55455.

High School Theatre Workshop

Staging musical comedy will be emphasized in this year's high school program sponsored by the Department of Theatre Arts during the first term. Guest director Frank Plut of Robbinsdale (Minnesota) High School also will conduct classes in acting, movement, voice production, and theatre history. Enrollment is limited to 32 high school students completing their sophomore, junior, or senior years. Information is available from Mrs. Peggy Remer, 110 Rarig Center, University of Minnesota, Minneapolis, Minnesota 55455.

College students also may participate; they register for Th 5714, Staging the High School Musical.

Department of Military Science

UNIVERSITY ARMY ROTC SUMMER PROGRAM

In addition to a baccalaureate degree in any major, University of Minnesota students have the opportunity to qualify for a commission as a lieutenant in the United States Army by enrolling in the University's 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 to both ROTC and non-ROTC students, women as well as men. Enrollment in the summer course can enable students to continue in Army ROTC during the regular academic term through compressing either the freshman or sophomore year of ROTC work during the Summer Session. It is not possible, however, to compress both years in the Summer Session.

Details may be obtained from the Department of Military Science, 108 Armory, University of Minnesota, Minneapolis, Minnesota 55455, or by telephone, 373-2212 or 373-2213.

School of Public Health

Two courses, Death Education in Contemporary Society and Educational Aspects of Drug Use and Abuse, offered in cooperation with the College of Education, are 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 20-July 10. This program, which carries full 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, University of Minnesota, Minneapolis, Minnesota 55455.

INTERDISCIPLINARY TEAM BUILDING: RESIDENTIAL LABORATORY AND TEAM FIELD PROJECT

A 12-credit course, PubH 8004, will be offered for students and community workers in the health sciences (social workers, nurses, therapists, health educators, pharmacists, administrators, planners, environmentalists, physicians, dentists) who are interested in applying the interdisciplinary team approach to community health problems. The course will begin and end with intensive 1-week residential sessions focusing on skill development in resource sharing and utilization, communications, giving and receiving feedback, problem solving, sharing leadership roles, negotiation, conflict utilization, and process intervention to improve the outcome of the projects. Interdisciplinary teams will select their own projects at the opening residential session. Students will apply their professional and team skills and learning to their community project for the 4-week period between the residential sessions. An interdisciplinary faculty will provide ongoing consultation for each team.

WATER QUALITY INVESTIGATIONS

Two special courses on training and research techniques in water quality investigation will be offered first term to specialists who have an interest in water quality control. They will be offered at Duluth, Minnesota, and will be headquartered at the Limnological Research Station of the University of Minnesota, Duluth. Activities will include formal lectures, laboratory work, and field operations. The latter will be centered around Knife River Harbor where two fully equipped research vessels are available for the scheduled field studies. The course will be limited in registration and will run from June 14 to July 16.

For detailed information write to the Environmental Health Program, School of Public Health, Box 197 Mayo Memorial Building, University of Minnesota, Minneapolis, Minnesota 55455.

Institute of Technology

AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY SCHOOL TEACHERS

This workshop for elementary and secondary school teachers will be held in Minneapolis from July 5 to 17. Offered under the cooperation of the National Aeronautics and Space Administration (Lewis Center), Civil Air Patrol Liaison Personnel (United States Air Force), Minnesota Department of Aeronautics, and the 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 which can be used as the basis for new or existing classroom programs. Participation in the workshop is by application, and enrollment will be limited. Application forms and further information may be obtained from the Aerospace Workshop Coordinator, 107 Aerospace Engineering Building, University of Minnesota, Minneapolis, Minnesota 55455.

See listing under Aerospace Engineering and Mechanics for course description (AEM 5001).

GEOLOGY FIELD STUDY

Fieldwork in geology (Geo 5110) will be conducted at Wasatch-Uinta Field Camp in Park City, Utah, and in Gunnison, Colorado, from mid-June through the end of July. Geophysics undergraduates have the option of attending the Colorado School of Mines. The program is sponsored through the Committee on Institutional Cooperation by the Twin Cities and Duluth Campuses of the University of Minnesota, the University of Wisconsin at Madison, and the University of Iowa at Iowa City.

METRIC MEASUREMENT

In December 1975, Congress passed and the President signed into law the Metric Conversion Act, officially launching a coordinated metric conversion program in the United States. Measurement and the Metric System (I of T 3501) offers an opportunity for anyone concerned—teachers, engineers, businessmen and women, mechanics, nurses, homemakers—to become familiar with the measurement system that will predominate within the next 10 years. No technical background is necessary for this course, offered for 4 credits first term and in a 2-credit, 2-week workshop second term.

Committee on Institutional Cooperation

The University of Minnesota cooperates with other universities through the Committee on Institutional Cooperation (CIC) to sponsor summer programs including field study in the biological and environmental sciences as well as studies in the arts and humanities. Interested students may consult a CIC catalog in the Summer Session office, 135 Johnston Hall.

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

See Geology Field Study (page 50) and the College of Agriculture (page 35).

Summer Arts Study Center

ONE- AND TWO-WEEK COURSES OF STUDY AND CREATIVITY OFFERED BY CONTINUING EDUCATION AND EXTENSION

Located at one of northern Minnesota's finest resorts, the Summer Arts Study Center provides an environment conducive to intensive study and creative activity in various areas of the arts. A faculty of leaders in the academic and professional worlds offers 1- and 2-week workshops in the humanities, theatre, music, and studio arts.

The 2 months of classes, sponsored by the Continuing Education and Extension Division in cooperation with the Grand Rapids Performing Arts Council, begin June 14 at Quadna Mountain Resort, Hill City, Minnesota. In this "arts community," faculty and students share ideas and discussions in and outside the classroom, in an atmosphere of total involvement.

The workshops are for people with a general background in the arts as well as for those seeking advanced work with an expert in a particular field. University of Minnesota graduate and undergraduate credit (quarter hours) is available.

STUDIO ARTS

ART AESTHETICS (Arts 5420) ● August 2-6

Twentieth-century art explored in an informal lecture/seminar format. Comparisons with other periods, various motivations, religious connotations, and historical sequences. Students in the Drawing and Painting or Sculpture workshops may register concurrently in this course.

Instructor: Katherine Nash

\$65

3 credits

DRAWING AND PAINTING (Arts 5420) ● July 26-August 6

Development of a critical awareness of meaningful organization of visual elements with emphasis on the fundamentals of pictorial structure and guidance for the student in developing a personal expression. Work with model, still life, landscape and/or abstraction. Individual instruction, group discussions, and critiques. Various media used such as pencil, charcoal, oil, or acrylic paint. Students may also register for Art Aesthetics during the second week of this workshop.

Instructor: Lynn Gray

\$80

4 credits

DRAWING AND PAINTING: NATURE OBSERVATION (Degn 3524/5563) ● July 5-9

Nature as an inspiration for design. Study of the micro-mini world with magnifying glass. Materials, techniques, and principles of design in a variety of paper colors and surfaces using water base pigments, paints, dyes, inks, and natural plant materials.

Instructor: Richard Abell

\$65, plus a laboratory fee of \$10

3 credits

GLASSBLOWING (Arts 5420) ● June 14-25

A studio course in offhand glassblowing using bench, blowpipe, and melting furnace. Techniques of shaping (both sculptural and functional), coloring, finishing, and assembling.

Instructor: Douglas Johnson

\$80, plus a laboratory fee of \$25

4 credits

GUM PRINTING (Photography) (Arts 5420) ● July 5-9

Gum bichromate printing, a revived turn-of-the-century pigment process, which uses watercolor paints as a part of the emulsion. This painterly process allows a wide range of unique images. The student will use kodalith, make gum emulsions, and expose and develop gum prints. Includes student critiques and lectures. Students should have a knowledge of basic black and white printing or a good photographic or graphic arts background.

Instructor: David Husom

\$65, plus a laboratory fee of \$14

3 credits

LANDSCAPE PAINTING (Problems: Design in Nature) (Degn 5565) ● June 14-18

Configuration and the elements of configuration in landscape painting: point, line, plane, color, value, and texture. Two hours per day in lecture; 8 hours in studio work, drawing, analysis, and observation. Group and individual studio work with the instructor.

Instructor: Eugene Larkin

\$65

3 credits

LANDSCAPE PAINTING (Arts 5420) ● June 21-25

Painting from nature in watercolor, oils, acrylics, or pastels; the infinite variety of visual forms in a landscape.

Instructor: William Rood

\$65

3 credits

PAINTING IN OIL OR ACRYLICS (Arts 3420/5420) ● July 19-23

Individual student attention in oil or acrylic painting. Beginners receive fundamental instruction in the techniques of oils or acrylics, while advanced students work toward development of personal style. Students may work in abstract or realistic forms; the emphasis will be on self-expression. Discussion, lectures, slides, and individual and class critiques.

Instructor: Herman Somberg

\$65

3 credits

BEGINNING PHOTOGRAPHY (Arts 1420) ● June 14-18

A practical introduction to photography. Use of the camera, demonstrations, projects, and printing in the Art Center's darkroom facility. Students must bring a camera and light meter or a camera with a built-in meter. Limited to 20 students.

Instructor: David Husom

\$65, plus a laboratory fee of \$16

3 credits

INTERMEDIATE PHOTOGRAPHY (Arts 5420) ● June 21-25 or June 28-July 2

Relationship of the photographic image to decisions made throughout the photographic process; refinement of this process and of a personal photographic point of view. Field trip, lectures, slide demonstrations, and discussion of the work produced during the workshop. Participants will need their own cameras. Limited to 20 students in each class.

Instructor: Frank Gohike

\$65, plus a laboratory fee of \$16

3 credits

POTTERY (Arts 5420) ● July 12-23

A studio course that will include raku, bonfire, salt, stoneware firing methods; kiln building and home studio setup; propane, oil, and "alternative" fuels. Potter's wheels, refractories, and other materials will be available, or bring your own. Limited to 30 students; beginners to advanced welcome.

Instructor: Douglas Johnson

\$80, plus a laboratory fee of \$25

4 credits

SCULPTURE (Arts 5420) ● July 26-August 6

Metal casting using the ceramic shell process. Attention to aesthetic development through presentations and critiques. Students may register concurrently in the Art Aesthetics workshop.

Instructor: Kent Smith

\$80, plus a laboratory fee of \$20

4 credits

CRAFTS

FABRIC DESIGN, SURFACE PRINTING ON FABRIC/PAPER/WOOD

(Dagn 3531/5531) ● June 21-25

Students will make paper; print and organize design repeats with found objects and vegetable printing; study monoprinting, stencil, and lacquer resist silk screen; and explore linoleum and cut-wood shapes for the near environment and personal adornment on fabrics.

Instructor: Richard Abell

\$65, plus a laboratory fee of \$25

3 credits

FABRIC DESIGN, SURFACE DYEING (Dagn 3531/5531) ● June 26-July 2

Dyeing and discharge on fabrics and yardage for banners and personal adornment through the use of fold and tie-dyeing and wax pressure resists. Soft sculpture and reverse appliqué in felt.

Instructor: Richard Abell

\$65, plus a laboratory fee of \$25

3 credits

FIBER DESIGN, FIBER SCULPTURE/NONLOOM TECHNIQUES: THE STRUCTURE

(Dagn 3532/5532) ● July 5-9

Sculptural forms, fiber manipulation, and assemblage using crochet, wrappings, coiling, twining, plaiting, macrame, and embroidery. Independent direction for all levels of experience. Enrollment limited to 25.

Instructor: Charlene Burningham

\$65, plus a laboratory fee of \$25

3 credits

FIBER DESIGN, FIBER SCULPTURE/LOOM TECHNIQUES: THE STRUCTURE

(Dagn 3532/5532) ● July 12-16

Two-layer tapestry techniques on primitive looms; pattern and design. Creation of a two-layered wall concept or a free hanging three-dimensional sculptural object. Independent direction for all levels of experience.

Instructor: Charlene Burningham

\$65, plus a laboratory fee of \$25

3 credits

PROBLEMS: JEWELRY MAKING (Dagn 5587) ● June 28-July 2

Basic techniques in the casting of sterling silver and gold jewelry: wax model designing, spruing, investing, wax elimination, vacuum casting, finishing, rubber mold reproduction techniques. Previous experience in jewelry making is helpful but is not a prerequisite.

Instructor: James Roy

\$65, plus a laboratory fee of \$15

3 credits

PROBLEMS: JEWELRY MAKING (Dagn 5587) ● July 26-30 or August 2-6

Basic techniques in the fabrication of sterling silver jewelry: soldering, hinging, riveting, forging, repoussé, and chasing. Previous experience in jewelry making is helpful but is not a prerequisite. Individually assigned projects.

Instructor: Joseph Ordos

\$65, plus a laboratory fee of \$15

3 credits

MUSIC

AMERICAN FIDDLE TRADITION (Ethnomusicology) (Mus 5950) ● August 2-6

A performance workshop for anyone with basic ability in violin or fiddle playing. Repertoire, techniques, oral transmission, cultural heritage, and potential use as a pedagogical tool and subject for regional collecting projects. A limited number of mandolin, banjo, and guitar players are welcome as well. America's country dance tunes such as breakdowns, reels, hornpipes, and waltzes; Minnesota's Scandinavian-American schottisches and waltzes; ragtime fiddle tunes; bluegrass styles. Students must specify instrument at the time of preregistration. Limited to 20 students on violin.

Instructor: Alan Kagan

\$65

3 credits

CONDUCTING THE MUSICAL SHOW (MuEd 5750) ● August 2-6

Production of musical theatre and reviews including show selection, audition procedures, score preparation, rehearsal organization, theatre acoustics, orchestration, arranging, editing, and conducting and rehearsal techniques. Participants will rehearse as an ensemble accompanying the Musical Comedy workshop. Joint rehearsal sessions will deal with solo and chorus coordination, musical arrangements for particular production needs, and conducting and rehearsal techniques. Students should indicate on the preregistration form their principal performing instrument as well as any doubling capacity. Limited to 25 students.

Instructor: Stephen Schultz
\$65

3 credits

CLASSICAL GUITAR (Mus 5950) ● July 19-23

Beginners will gain knowledge of rudimentary techniques and of problems and potentialities of classical guitar; intermediate students will reinforce and expand basic skills; advanced students will participate in a performance seminar. The performance seminar for advanced students will be limited to 14 students and will follow the master class format. General evening sessions will include discussion of score, books, methods, recordings, and periodicals; question and answer periods; and some ensemble work. All students must have a standard classical guitar with nylon strings. Beginners must have knowledge of music fundamentals; intermediates must know the fundamentals of classical guitar technique and have a working knowledge of the fingerboard from the first to the fifth fret, and be able to sight-read materials in first position. Admission to the advanced section is by audition (in person or on tape of 10-15 minutes); arrange auditions with or send tapes directly to Mr. Van at 930 Delaware Avenue, St. Paul, Minnesota 55118. Indicate your level of proficiency on the preregistration form.

Instructor: Jeffrey Van
\$65

3 credits

MUSICAL COMEDY (Mus 5950) ● July 26-August 6

Stage music and movement: chorus and solo rehearsal techniques, vocal coaching, stage movement, choreography, interpretation, and developing the "musical comedy" sound and dance styles. The first week will cover variety shows, reviews, and preparation for musical comedy; the second week will be devoted to the production of one act of a musical comedy. Students will register for 2 credits in Mus 5950 and 2 credits in Th 5950 for a total of 4 credits. Limited to 40 students.

Instructors: Robert Moulton and Vern Sutton
\$80, plus a laboratory fee of \$20

4 credits

ROCK AND POP (MuEd 5750) ● July 26-30

Implications and applications of rock and popular music for the classroom; origins and development of rock with a brief historical overview. For elementary classroom teachers and music specialists, junior high music generalists, and humanities teachers. Materials and techniques for the use of rock, pop, and jazz music in the nonperformance classroom situation (general music). Creation of visual aids for classroom use and use of recordings and teacher constructed visual aids.

Instructor: Robert W. Haller
\$65

3 credits

ROCK AND POP PROJECTS (MuEd 5750) ● August 2-6

A continuation of previous Summer Arts Study Center Rock and Pop workshops; materials and techniques for the use of rock, pop, and jazz music in the classroom. Historical development of rock and jazz with in-depth consideration of several artists and/or groups, descriptive analyses of recorded selections, and investigation of lyric content of several songs.

Instructor: Robert W. Haller
\$65

3 credits

VOCAL JAZZ ENSEMBLE (MuEd 5750) ● June 21-25

Practical treatment of swing choir and vocal jazz ensemble formation, rehearsals, and materials. How to create a medley, published music available, arranging, jazz voice projection and tone color, rhythmic understanding, instrumental accompaniment, amplification equipment, and format of swing choir festivals.

Instructor: Douglas Anderson
\$65, plus a laboratory fee of \$5

3 credits

THEATRE

THEATRICAL DIRECTION—A BEGINNING (Th 5171, UMD) • July 19-23

Play directing for the novice: specific problems inherent in play production; fundamental concepts and techniques of play direction; the director's position; play selection; tryouts and casting; working with the actor.

Instructor: Roger Schultz

\$65

3 credits

TOPICS IN THEATRE: ACTING (Th 5950) • June 14-18

Practical application of techniques used in the director-actor relationship including the use of improvisation and extension. Emphasis on solving specific actor problems. Students prepare scenes and work out actor-director problems that arise.

Instructor: Warren Frost

\$65

2 credits

TOPICS IN THEATRE: MUSICAL COMEDY (Th 5950) • July 28-August 8

See Music 5950. Students will register for 2 credits in Mus 5950 and 2 credits in Th 5950 for a total of 4 credits. Limited to 40 students.

Instructors: Robert Moulton and Vern Sutton

\$80, plus a laboratory fee of \$20

4 credits

TOPICS IN THEATRE: DRAMA IN EDUCATION (Th 5950) • July 12-16

For elementary and secondary teachers. Creative dramatics, improvisation, role playing and simulation, techniques teachers can use in presenting subject matter in the classroom, and the teaching process. Theoretical basis of these techniques used in the English educational system, practice in their use as a class exercise, and discussions of ways they can be applied in various teaching situations.

Instructor: Diana Devlin

\$65

2 credits

TOPICS IN THEATRE: MIME (Th 5950) • June 14-18

Basic techniques and vocabulary of mime explored via class exercises, demonstrations, and group work. Mimetic vocabulary necessary to communicate imaginary situations, objects, and emotions; basic mime movement; centering and meditation techniques useful in developing stage presence.

Instructor: David Feldshuh

\$65

2 credits

OTHER COURSES

POETRY AND POETRY WRITING (Engl 5910) • June 28-July 2

Strategies, themes, and styles in contemporary poetry. Assignments and poetry games useful for teaching at all levels. Reading lists, a visiting poet, an evening or two of poetry films, and an open poetry reading on the last night included. Students will write as well as read.

Instructor: Michael Dennis Browne

\$65

3 credits

ADVANCED FICTION WRITING (Engl 5101) • June 28-July 2

The creative process and the technical aspects of writing fiction. Emphasis on the short story form with discussions of various elements such as characterization, point of view, scene, summary, plot, language, theme, and style. The class will read and analyze contemporary American short stories, especially ones published in the last few years. Discussion of novel writing. Practical matters concerning writing, how writers approach the act of creating, and how to develop one's own voice, how to submit manuscripts, and publishing.

Instructor: Paulette Bates

\$65

3 credits

GREEK TRAGEDY IN TRANSLATION (Class 5062) • June 21-25

Greek drama and its influence on drama and literature of the twentieth century. The origins and nature of Greek drama as illustrated by plays of Aeschylus, Sophocles and Euripides; influence of the Greek dramatists on O'Neill, Miller, Sartre, Eliot, and Cocteau.

Instructor: Jackson Herahbell

\$65

3 credits

ADVANCED SHAKESPEARE (Engl 5940) • July 28-30

The second tetralogy of history plays (*Richard II, Henry IV, Parts I and II, and Henry V*) as historical fiction and as dramatic verbal art representative of Shakespearean comedy and tragedy. Emphasis on Shakespeare's language as a source of enlightenment and excitement in itself, as the reader's means of access to the plays, and as an obstacle for the twentieth-century American reader.

Instructor: Thomas Clayton
\$85

3 credits

Additional Courses

Information on classes in human relations, piano pedagogy, and stage combat, finalized too late to be included in this bulletin, is available from the Summer Arts Study Center Office, 1128 LaSalle Avenue, Minneapolis, Minnesota 55403, telephone (612) 373-1925. Summer Arts Study Center catalogues are available in 320 Wesbrook Hall, Minneapolis Campus.

COURSE APPLICATION FORM

**Mail to: Summer Arts Study Center
1128 LaSalle Avenue
Minneapolis, Minnesota 55403**

**Telephone: (612) 373-1925
or 373-4947**

Please enroll me in the following classes:

(course title as listed)	(course number)	(dates)
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(course title as listed)	(course number)	(dates)
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Include additional information as indicated in course descriptions.

Name _____

Address _____

City _____ State _____ Zip _____

Position _____ Firm or institution _____

FULL TUITION AND FEES MUST BE INCLUDED TO HOLD A PLACE

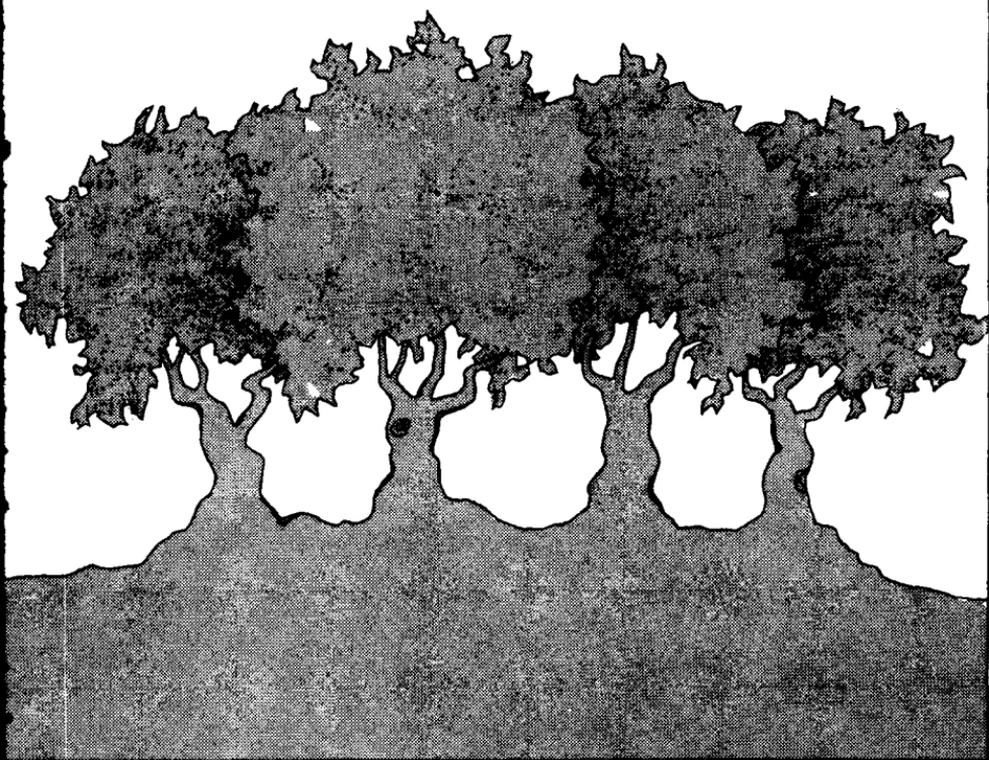
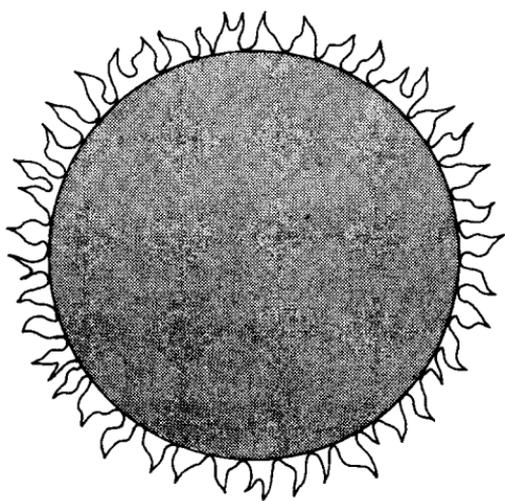
Tuition Enclosed \$ _____

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, MN 55748**

*Course
Descriptions*



College of Agriculture

The College of Agriculture offers many courses during the summer, primarily for graduate students. Most departments correlate thesis and problem work with work at the Agricultural Experiment Station.

High school teachers of agriculture may take advanced courses in those agricultural fields which are applicable to the requirements of the Department of Agricultural Education (see College of Education section).

In addition to regularly scheduled classes, the summer program includes readings, seminars, special problems, and concentrated courses.

Information concerning admission to the Graduate School should be obtained from the Dean of the Graduate School, 322 Johnston Hall, 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.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq §; not for grad cr) Helmberger
Professional experience in agribusiness firms or government agencies obtained through supervised practical experience; evaluative reports and consultations with faculty advisers and employers.
- 5130. LAND RESOURCE USE—June 14-June 25.** (3 cr; not open to AgEc majors; prereq 1020, 1030; 1:00-4:00 MTWThF; ClaOff B42) Waelti
Land as a factor in production; rural and urban utilization; rents and land values; land classification; taxation; exchange; public land management.
- 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.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq §; not for grad cr) Helmberger
See First Term.
- 5140. AGRICULTURAL PRODUCTION—July 19-30.** (3 cr; not open to AgEc majors; prereq 1020-1030; 8:00-11:00 MTWThF; ClaOff B26) Fuller, Hasbargen
Application of managerial and economic analysis to the planning and evaluation of farm firms. Use of hand procedures and computerized decision aids in obtaining credit, budgeting and evaluating farm plans.
- 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 §; \$4 lab fee; 2 lect and 6 lab hrs per wk; I-III MTWTh, I-IV F; AgEng 20 and 35) Kleene
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; prereq 12 cr in agricultural engineering technology and §; not for grad cr) 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.
- 5020. PROGRAM PLANNING AND INSTRUCTIONAL METHODS IN AGRICULTURAL MECHANICS—June 14-July 2.** (4 cr; prereq 10 cr in agricultural engineering technology, AgEd 3031 or †AgEd 3031; \$4 lab fee; V-VIII 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.
- 5032. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—ELECTRICAL POWER AND PROCESSING.** (1-3 cr; prereq 5020 or §; special problems as 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 specific agricultural mechanics instructional program.

SECOND TERM

- 5005. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 12 cr in agricultural engineering technology and §; not for grad cr) Flikke
See First Term.
- 5033. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—FARM BUILDINGS AND ENVIRONMENTAL CONTROL.** (1-3 cr; prereq 5020 or §; special problems as ar; AgEng 218) Bear
See 5032 First Term.

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.
- 3101. SUMMER STUDY-TRAVEL PROGRAM: FIELD STUDIES IN INTERNATIONAL AGRICULTURE.** (8 cr; prereq 3100) Purvis
Organized each summer on a rotating basis by CIC universities to provide opportunity for individual and group study of problems related to agriculture and natural resources in foreign countries. The University of Minnesota College of Agriculture is leading a study-travel program to the Mediterranean (Morocco, Tunisia, Spain, and Italy) in 1976. See Special Programs section.
- 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)

FIRST TERM

Agronomy

- 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; prereq §; not for grad cr) Smith, Cardwell
Supervised practical professional 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.

Plant Breeding

- 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

SECOND TERM

Agronomy

- 1020. SPECIAL PROBLEMS.** (1-3 cr; prereq §) Smith, Cardwell
See First Term.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq §; not for grad cr) 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

- 8310.* ORIENTATION TO FIELD CROP BREEDING.** (1 cr; prereq 5020 or §) Lambert
See First Term.
- 8330.* RESEARCH IN PLANT GENETICS.** (Cr ar) Staff

Animal Science (AnSc)

FIRST TERM

- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 90 college cr, 15 cr in animal science and §; not for grad cr) Williams
Up to 12 weeks of planned experience in a selected position in animal production and related industries; evaluative reports and consultations with faculty advisers and employers.
- 5501. HORSE PRODUCTION—June 14-25.** (3 cr; 9:15-12:00 MTWThF; PetH 110) Jordan
Breeds, selection, diseases, feeding, reproduction, management, and color inheritance of light horses. Demonstrations of equitation, tack, and farriery.
- 5710. SPECIAL PROBLEMS.** (Cr ar; open to students who have completed pertinent prereqs with §)
Staff
Research in an area of animal science under the supervision of a staff member. A written report on the research is required.
- 8810.* RESEARCH IN ANIMAL SCIENCE.** (Cr and hrs ar; prereq §) Staff
Research including experimental studies in the disciplines associated with animal production and research, with special emphasis on interdisciplinary studies embracing environmental and managerial considerations.
- 8820.* RESEARCH IN ANIMAL GENETICS.** (Cr and hrs ar; prereq §) Staff
Research in quantitative genetics, cytogenetics, and other areas related to animal breeding.
- 8830.* RESEARCH IN ANIMAL PHYSIOLOGY.** (Cr and hrs ar; prereq §) Staff
Individual research under faculty direction. Topics to be determined by consultation; may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.
- 8840.* RESEARCH IN ANIMAL NUTRITION.** (Cr and hrs ar; prereq §) Staff
Research in selected areas of animal nutrition. Topics and species studied determined by consultation with adviser.
- 8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY.** (Cr and hrs ar; prereq §) Staff
Individual, original research, under staff direction, on selected problems involving the chemical, biochemical, and physiological aspects of muscle and meat technology. The topic may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.

SECOND TERM

- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 90 college cr, 15 cr in animal science and §; not for grad cr) Williams
See First Term.
- 5401. SWINE NUTRITION—July 19-30.** (2 cr; prereq 1401; 8:15-10:00 MTWThF; PetH 110) Staff
Nutrient requirements of swine; feed supplies, their composition and utilization in formulation of adequate diets. Role of feed additives, their use and limitations. Nutritional interrelationships and feeding systems.
- 5405. POULTRY NUTRITION—July 19-30.** (2 cr; prereq 1401; 10:15-12:00 MTWThF; PetH 110) Staff
Nutrient requirements of chickens and turkeys; feed supplies, their composition and utilization in formulation of adequate diets. Role of feed additives, their use and limitations. Least cost formulations, nutritional interrelationships, and feeding systems.
- 5710. SPECIAL PROBLEMS.** (Cr ar; open to students who have completed pertinent prereqs with §)
Staff
See First Term.
- 8810.* RESEARCH IN ANIMAL SCIENCE.** (Cr and hrs ar; prereq §) Staff
See First Term.
- 8820.* RESEARCH IN ANIMAL GENETICS.** (Cr and hrs ar; prereq §) Staff
See First Term.
- 8830.* RESEARCH IN ANIMAL PHYSIOLOGY.** (Cr and hrs ar; prereq §) Staff
See First Term.
- 8840.* RESEARCH IN ANIMAL NUTRITION.** (Cr and hrs ar; prereq §) Staff
See First Term.
- 8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY.** (Cr and hrs ar; prereq §) Staff
See First Term.

Entomology, Fisheries, and Wildlife**

Ample opportunity for research work in various phases of entomology, fishery biology, and wildlife biology will be afforded 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 mounting, preservation of insect larvae, preparation of microscopic mounts of minute insects; labeling, classifying, and cataloging specimens of insects for scientific study.
- 5901. ADVANCED WORK IN ENTOMOLOGY.** (Cr ar; prereq §) Staff
Library and laboratory research in various lines of entomology.
- 8500.* RESEARCH IN ENTOMOLOGY.** (Cr ar; prereq §) Brooks-Wallace, Chiang, Cook, Cutkomp, Furgala, Harein, Kulman, Peterson, Price, Richards, Radcliffe

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 §) Brooks-Wallace, Chiang, Cook, Cutkomp, Furgala, Harein, Kulman, Peterson, Price, Richards, Radcliffe

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.
- 8364.* RESEARCH IN FISHERY BIOLOGY.** (Cr ar; prereq §) Staff
- 8377.* RESEARCH IN WILDLIFE BIOLOGY.** (Cr ar; prereq §) Frenzel, Marshall, Tester, Duke, Jordan, Siniff, Cooper

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 §) Frenzel, Marshall, Tester, Duke, Jordan, Siniff, Cooper

**For additional courses, see Biology Session.

Food Science and Nutrition (FScN)

FIRST TERM

- 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.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 15 cr in food science and nutrition and \$; not for grad cr) Thomas, staff
Up to 12 weeks of planned experience in a selected position in the food industry; evaluative reports and consultations with faculty advisers and employers.
- 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION.** (1-5 cr [may be repeated for cr]; prereq \$; \$4 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 or \$; \$4 lab fee; hrs ar) Busta
Laboratory or library research on problems related to the microbiology of dairy and food products.
- 5404. CURRENT ISSUES IN FOOD AND NUTRITION—June 21-25.** (2 cr; prereq 15 cr in food science and nutrition or \$; \$4 lab fee; 8:30-12:00 MTWThF; FScN 15) Staff
Evaluation of popular and scientific literature as it deals with nutrition, food additives, food safety, food fads, health foods, environmental contamination, the consumer movement, naturally occurring food toxicants, processed foods, synthetic foods, organically grown foods.
- 8401. INDEPENDENT STUDY: FOOD SCIENCE.** (1-5 cr; prereq \$; hrs ar) Morris, staff
Independent study and written reports.
- 8621. INDEPENDENT STUDY: NUTRITION.** (1-9 cr; prereq \$; hrs ar) Morse, staff
Independent study and written reports.

SECOND TERM

- 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.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 15 cr in food science and nutrition and \$; not for grad cr) Thomas, staff
See First Term.
- 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION.** (1-5 cr [may be repeated for cr]; prereq \$; \$4 lab fee; hrs ar) Staff
See First Term.
- 5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY.** (1-5 cr; prereq sr or \$; \$4 lab fee; hrs ar) Busta
See First Term.
- 8401. INDEPENDENT STUDY: FOOD SCIENCE.** (1-5 cr; prereq \$; hrs ar) Morris, staff
See First Term.
- 8621. INDEPENDENT STUDY: NUTRITION.** (1-9 cr; prereq \$; hrs ar) Morse, staff
See First Term.

Horticultural Science (Hort)

FIRST TERM

- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 8 cr upper division horticulture courses) Hard
Up to 12 weeks of planned experience in a selected position in the horticulture industry; evaluative reports and consultations with faculty advisers and employers.

SECOND TERM

5000. PROFESSIONAL EXPERIENCE PROGRAM. (1-6 cr; prereq 8 cr upper division horticulture courses) Hard
See First Term.

Plant Pathology (PIPa)**

FIRST AND SECOND TERMS: TEN-WEEK COURSES

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

- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 15 cr in plant pathology and \$; not for grad cr) Wood
Up to 12 weeks of experience in a selected agricultural industry; open to advanced students in the plant health technology program; evaluative reports and consultations with faculty advisers and employers.
- 5013. DISEASES OF ECONOMIC PLANTS.** (2 cr; prereq 1001 or equiv... 15100 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) 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 \$) Bantari
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.
- 8501.* CURRENT TOPICS, PROBLEMS: PLANT NEMATOLOGY.** (Cr ar; prereq 5500 or \$) MacDonald
Taxonomy or ecology of plant parasitic nematodes.

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; limited to 32 students, reserved in JohH 12; I MTWThF; ForH 115) Griffin
For students, teachers, and business or professional people of average reading ability wishing 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.

**For additional course, see Biology Session.

- 1220. PRINCIPLES OF HUMAN COMMUNICATION.** (3 cr; limited to 75 students; III MTWThF; HckrH 100) Connolly
Dimensions of human communication: origins and nature of language; development of language in the individual; theories of intrapersonal, interpersonal, and small group communication; role of public speaking in America; and impact and development of the mass media. Emphasis on the relationship between language and human values, attitudes, beliefs, and behaviors.
- 1222. PUBLIC SPEAKING.** (4 cr; limited to 18 students; prereq satisfaction of fr communication requirements; II MTWThF; HckrH 222) McBride
A practical course in the fundamentals of speechmaking. Particular emphasis upon organizing and delivering the speech.
- 1401. INTRODUCTION TO LITERATURE.** (4 cr; limited to 35 students; IV MTWThF; HckrH 209) Savage
Analysis of literary structural forms and stylistic devices: poetry, drama, and prose fiction.
- 3551. PROFESSIONAL WRITING.** (4 cr; limited to 23 students; prereq jr; III MTWThF; HckrH 111) Wright
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; environmental impact statement.
- 3562. SCIENTIFIC AND TECHNICAL WRITING.** (4 cr; limited to 23 students; prereq jr; II MTWThF; HckrH 111) Ferguson
Methods of exposition in scientific and technical writing; types of reports; audience analysis; practice in report writing.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq §; not for grad cr) Schuelke
Internship in technical communication designed to give majors practical on-the-job experience with communication problems. Students intern as writers or editors either at the University of Minnesota or in industry.

SECOND TERM

- 1147. EFFICIENT READING.** (3 cr; limited to 32 students, reserved in JohH 12; II MTWThF; ForH 115) Price
See First Term.
- 1222. PUBLIC SPEAKING.** (4 cr; limited to 18 students; prereq satisfaction of fr communication requirements; II MTWThF; HckrH 222) Holloway
See First Term.
- 3551. PROFESSIONAL WRITING.** (4 cr; each section limited to 23 students; prereq jr)
See First Term.
Sec 1, II MTWThF, HckrH 111, Horberg
Sec 2, III MTWThF, HckrH 111, Veeder
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq §; not for grad cr) Schuelke
See First Term.
- 5700. COMMUNICATION IN TECHNOLOGICAL AND ENVIRONMENTAL IMPACT ASSESSMENT.** (4 cr; limited to 15 students; prereq sr or grad, course in statistics, and §; 11:15-1:15 TTh; HckrH 224) Schuelke
Theories and processes involved in technological assessment and environmental impact statement preparation. Evaluation of case studies of technological assessments and forecasts and environmental impact statements. Planning of process and project management in an actual impact assessment will constitute the term project.

Soil Science (Soil)**

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

**For additional course, see Biology Session.

FIRST TERM

5000. PROFESSIONAL EXPERIENCE PROGRAM. (1-6 cr; prereq 12 cr in soils and §; not for grad cr)
Staff

Up to 12 weeks of planned experience in a selected position related to soil science; evaluative reports and consultations with faculty advisers and employers.

5114.* SPECIAL PROBLEMS IN SOILS. (1-5 cr [may be repeated for 10 cr max]; prereq 1122 or §)

Martin, Adams, Arneman, Baker, Blake, Caldwell, Farnham, Rust, Schmidt, Gast, 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) 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, Farnham, Rust, Schmidt, Gast, 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

5000. PROFESSIONAL EXPERIENCE PROGRAM. (1-6 cr; prereq 12 cr in soils and §; not for grad cr)

Staff
See First Term.

5114.* SPECIAL PROBLEMS IN SOILS. (1-5 cr [may be repeated for 10 cr max]; prereq 1122 or §)

Martin, Adams, Arneman, Baker, Blake, Caldwell, Farnham, Rust, Schmidt, Gast, Grava, Ham, Grigal

See First Term.

8124.* RESEARCH PROBLEMS IN SOILS. (2-5 cr; hrs ar) Martin, Adams, Arneman, Baker, Blake,

Caldwell, Farnham, Rust, Schmidt, Gast, Grava, Ham, Grigal

See First Term.

College of Biological Sciences

The College of Biological Sciences provides a visible structure for the coordination and unification of basic biological research and training activities throughout the University. Information concerning its undergraduate programs, leading to a bachelor of science degree, may be obtained from the *College of Biological Sciences Bulletin* or the college office in P190 Kolthoff Hall.

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

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 a field station should refer to the section on the Biology Session and to the special bulletin available upon request from: Summer Session, 135 Johnston Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Biochemistry (BioC)

FIRST TERM

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

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

SECOND TERM

3990. UNDERGRADUATE RESEARCH. (1-3 cr; prereq sr biochemistry major) Staff
See First Term.

5001. BIOCHEMISTRY. (3 cr, §Biol 3021; for grad students; prereq Biol 1011, Chem 3302 or §; 10:45-12:05 MTWThF; AndH 250) Staff
Biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents and cellular regulatory mechanisms.

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

Biology (Biol)**

Courses with limited enrollment must be reserved in P190 Kolthoff Hall unless otherwise indicated (see instructions under "Reserved Courses").

**For additional courses, see Biology Session.

FIRST TERM

- 1011. GENERAL BIOLOGY.** (5 cr; limited enrollment, reserved in JohH 12 or CofH 130; \$4 lab fee; lect 12:20-1:30 MTWThF, NH 45; lab 1, III-IV MTWTh, lab 2, 1:40-3:20 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 multi media presentation of lectures.
- 3012. PLANT BIOLOGY.** (5 cr; limited to 40 students; prereq 1011, Chem 1005; \$4 lab fee; lect V MTWThF, BioSci 6; lab 1, VI-VIII MWF, BioSci 151, lab 2, VI-VIII MWF, BioSci 163) Koukkari
Plant diversity and evolution; structure and function of the plant cell and of the whole organism; growth and development of plants.
- 3041. ECOLOGY.** (5 cr; limited to 30 students; prereq 1011 plus 10 addtl cr in biology, Math 1231 or §; \$4 lab fee; lect III MTWThF, BioSci 6; lab 1, VII-VIII TTh, lab 2, VII-VIII MW, BioSci 225) McBrayer
Interactions of plant and animal populations and their environments. The organization, functioning, and development of ecological systems; population growth and regulation. Modern man's impact on the biosphere.
- 5602. CELL BIOLOGY.** (3 cr, §3032; prereq 1011; III MTWThF; BioSci 12) Cunningham
Organization and function of plant, animal, and bacterial cells; fine structure, composition, assembly and metabolic interactions, and cytogenetics.

SECOND TERM

- 1011. GENERAL BIOLOGY.** (5 cr; limited enrollment, reserved in JohH 12 or CofH 130; \$4 lab fee; lect 12:20-1:30 MTWThF, NH 45; lab 1, III-IV MTWTh, lab 2, 1:40-3:20 MTWTh, Kolth S160, and ar) Kerr
See First Term.
- 1103. GENERAL BOTANY.** (5 cr; limited to 40 students, reserved in JohH 12 or CofH 130; prereq 1011; \$4 lab fee; lect V MTWThF, BioSci 12; lab 1, III-IV MTWTh, lab 2, VI-VII MTWTh, BioSci 182)
Levels of organization of plants, plant functions, plant growth and development, plant reproduction.
- 1106. GENERAL ZOOLOGY.** (5 cr; limited to 96 students, reserved in JohH 12 or CofH 130; prereq 1011; \$4 lab fee; lect V MTWThF, AndH 250; lab 1, VI-VIII MW, lab 2, VI-VIII TTh, Kolth P168) Underhill
Survey of animal phyla; considerations of structure, function, behavior, adaptation, and evolutionary relationships.
- 3011. ANIMAL BIOLOGY.** (5 cr; limited to 40 students; prereq 1011, Chem 1005; \$4 lab fee; lect V MTWThF, Z 102; lab 1, II-IV TTh, lab 2, VI-VIII TTh, Z 101D) Herman
Survey of types of animals; emphasis on the varied ways in which different animals have solved similar problems.
- 3021. BIOCHEMISTRY.** (4 cr; prereq 1011, Chem 3302; 10:45-12:05 MTWThF; AndH 250)
Introduction to the biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents, and cellular regulatory mechanisms.

Botany (Bot)**

Courses with limited enrollment must be reserved in P190 Kolthoff Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1009. MINNESOTA PLANT LIFE.** (4 cr; limited to 45 students; suitable for nonmajors; \$4 lab fee; lect II MTW, Z102; dem III-IV MTW, Bo 301; field trips 8:30 am-12:30 pm Th) Bonnewell
Identification of the more common and conspicuous Minnesota plants with some discussion of their basic distinctions, life cycles, habitat requirements, distribution, and ecological relations.
- 3990. RESEARCH PROBLEMS.** (1-5 cr; prereq §) Staff
Individual research for undergraduates.

**For additional courses, see Biology Session.

- 5141. SURVEY OF PLANT PHYSIOLOGY.** (3 cr, \$PIPH 5141; prereq Biol 1103 or 3012, course in organic chemistry or biochemistry; V MTWThF; BioSci 12) Soulen
Physiological processes in living plants, with emphasis on higher plants. Growth and development, energy relations, mineral nutrition, water relations, respiration, photosynthesis, and nitrogen metabolism.
- 5142. PLANT PHYSIOLOGY LABORATORY.** (2 cr; limited to 16 students; prereq 5141 or 5141; \$4 lab fee; VI-VIII TTh; BioSci 198) Soulen
Laboratory course to accompany 5141.
- 8990. RESEARCH PROBLEMS.** (Cr ar; prereq #) Staff

SECOND TERM

- 3990. RESEARCH PROBLEMS.** (1-5 cr; prereq #) Staff
See First Term.
- 8990. RESEARCH PROBLEMS.** (Cr ar; prereq #) Staff

Ecology and Behavioral Biology (EBB)**

Courses with limited enrollment must be reserved in 12 Johnston Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

- 5041. ECOLOGY.** (4 cr; for grad students; limited to 10 students, reserved in KoltH P190; prereq 1011 plus 10 addtl cr in biology, Math 1231 or #; \$4 lab fee; lect III MTWThF, BioSci 6; lab 1, VII-VIII TTh, lab 2, VII-VIII MW, BioSci 225) McBrayer
Interactions of plant and animal populations and their environments. The organization, functioning, and development of ecological systems; population growth and regulation. Modern man's impact on the biosphere.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq Δ) McKinney, Parmelee, Phillips, Tester, Tordoff, Wood, Birney, Bright, Corbin, Regal, Hopkins, Pace
- 8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY.** (Cr ar; prereq #) McKinney, Parmelee, Phillips, Tester, Tordoff, Wood, Birney, Bright, Corbin, Regal, Hopkins, Pace

SECOND TERM

- 3001. INTRODUCTION TO ECOLOGY.** (4 cr, \$Biol 1104; not open to biology majors; limited enrollment; I MTWThF; AndH 250)
Basic concepts in ecology dealing with organization, development, and functioning of ecosystems; population growth and regulation. Man's impact on such systems.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq Δ) McKinney, Parmelee, Phillips, Tester, Tordoff, Wood, Birney, Bright, Corbin, Regal, Hopkins, Pace
- 8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY.** (Cr ar; prereq #) McKinney, Parmelee, Phillips, Tester, Tordoff, Wood, Birney, Bright, Corbin, Regal, Hopkins, Pace

Genetics and Cell Biology (GCB)

FIRST TERM

- 3022. GENETICS.** (4 cr; designed primarily for students other than CBS majors and CLA biology majors; prereq Biol 1002, 1011 or equiv; IV MTWThF; PalmC 10)
The mechanisms of heredity; their implications for biological populations, and applications to practical problems.
- 3970. INDEPENDENT STUDY.** (Cr ar; prereq #) Staff
Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature.

**For additional courses, see Biology Session.

- 3990. LABORATORY RESEARCH.** (Cr ar; prereq #) Staff
Individual projects on selected topics and problems.
- 5022. GENETICS.** (3 cr; for grad students except those in genetics; IV MTWThF; PalmC 10)
See 3022.
- 8970. DIRECTED STUDIES.** (Cr ar; prereq #) Staff
- 8990. RESEARCH.** (Cr ar) Staff

SECOND TERM

- 3970. INDEPENDENT STUDY.** (Cr ar; prereq #) Staff
See First Term.
- 3990. LABORATORY RESEARCH.** (Cr ar; prereq #) Staff
See First Term.
- 8970. DIRECTED STUDIES.** (Cr ar; prereq #) Staff
- 8990. RESEARCH.** (Cr ar) Staff

Zoology (Zool)**

FIRST TERM

- 3990. INDIVIDUAL WORK IN SOME SPECIAL DISCIPLINE.** (Cr ar; prereq Biol 1106 or 3011 and #)
Staff
- 5096. EVOLUTION.** (4 cr; prereq Biol 1106 or 3011; III MTWThF; Owre 12) Merrell
Survey of evidence for and causes of biological evolution.
- 8990. RESEARCH.** (Cr ar) Staff

SECOND TERM

- 3990. INDIVIDUAL WORK IN SOME SPECIAL DISCIPLINE.** (Cr ar; prereq Biol 1106 or 3011 and #)
Staff
- 8990. RESEARCH.** (Cr ar) Staff

**For additional courses, see Biology Session.

Biology Session

Held at the Lake Itasca Forestry and Biological Station

During two 5-week terms of the Summer Session (June 13-July 17 and July 18-August 21), an excellent opportunity for fieldwork in terrestrial and freshwater biology in its most fundamental aspects is presented at Itasca State Park, approximately 220 miles northwest of the Twin Cities.

Classes will be conducted cooperatively by various departments in the College of Agriculture and the College of Biological Sciences. Interested persons may find the following opportunities 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 for independent research in terrestrial and freshwater biology.

For the *Lake Itasca Biology Session Bulletin*, describing in detail the opportunities and facilities at the station, write to: Director of Summer Session, 135 Johnston Hall, 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 courses 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 form for this purpose is included in the *Lake Itasca Biology Session Bulletin*. This Request for Reservation form should be mailed to: Chairman of Field Biology Program, 349 Bell Museum of Natural History, 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 for use by the student when he or she registers at the station on June 13 or July 18.

FEES AND EXPENSES

The following fees are payable by each registrant on or before June 13 or July 18 and must be paid before registration is completed:

Tuition Fee**	\$14.00 per credit
Student Services Fee**	\$14.00 per term
Laboratory Fee	\$ 8.50 per term

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.

In addition, 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 \$130 for the 5-week period. A charge of \$20 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 includes the use of microscopes, nets, boats, and various kinds of equipment and supplies.

The estimated cost of \$308 for each 5-week term does not include books, various class supplies, traveling expenses including class field trips, clothing, laundry, and minor incidental personal expenses.

Tuition and fees are payable on or before June 13 and July 18. After June 13 or July 18 a late fee will be charged according to the following schedule:

June 14-18 or July 19-23	\$ 6
June 21-25 or July 26-30	10
Thereafter	20

No registration will be accepted after June 13 or July 18 without the approval of the chairman. Fee statements dated June 13 may be paid on June 14, without penalty. However, fee statements dated June 14 will carry the late fee described above.

Biology (Biol)

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; OR ZOOLOGY. (Cr ar; prereq §) Staff

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; OR ZOOLOGY. (Cr ar; prereq §) Staff

Botany (Bot)

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

**Subject to change.

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; WS) Morley
- 5811. FRESHWATER ALGAE.** (5 cr; limited to 20 students; prereq 10 cr in botany, biology, or zoology; TF) Schlichting
- 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; WS) Ownbey
- 5821. LICHENS.** (5 cr; limited to 20 students; prereq 10 cr in botany or zoology; MTh) Wetmore
- 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").

FIRST TERM

- 5812. AQUATIC ECOLOGY.** (5 cr; limited to 20 students; prereq 15 cr in biology and 5 cr in chemistry; MTh) Frey
- 5815. FIELD ETHOLOGY.** (5 cr; limited to 15 students; prereq course in behavior or ecology; TF) Oring
- 5817. VERTEBRATE ECOLOGY.** (5 cr; limited to 15 students; prereq course in ecology; MTh) Tester

SECOND TERM

- 5813. TOPICS IN LIMNOLOGY.** (5 cr; limited to 12 students; prereq introductory course in limnology [5812 or 5601 or equiv]...Bot 5811 recommended; TF) Megard
- 5814. COMMUNITY STRUCTURE AND FUNCTIONING.** (5 cr; limited to 20 students; prereq course in ecology; TF) Cushing
- 5818. QUANTITATIVE ECOLOGY.** (5 cr; limited to 15 students; prereq 9 cr in ecology, 1 qtr of statistics or §; WS) Taylor
- 5822. REGIONAL LIMNOLOGY.** (5 cr; limited to 20 students; prereq 15 cr in biology, 10 cr in chemistry; MTh) Gorham

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) Beer

SECOND TERM

- 5130. AQUATIC ENTOMOLOGY.** (5 cr; limited to 15 students; prereq Ent 3175 or 5020 or equiv or §; MTh) Deonier

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)

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

SECOND TERM

5642. MICROBIAL ECOLOGY. (5 cr; limited to 12 students; prereq course in microbiology, experience with radioisotopes recommended; WS) Crawford

Zoology (Zool)

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

FIRST TERM

5814. NATURAL HISTORY OF INVERTEBRATES. (5 cr; limited to 20 students; prereq Biol 1106 or equiv; WS) Gilbertson

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

5843. ANIMAL PARASITES. (5 cr; limited to 15 students; prereq Biol 1106 or equiv; MTh) Etges

5869. PHYSIOLOGICAL ECOLOGY. (5 cr; limited to 15 students; prereq course in physiology or ecology; WS) Schmid

SECOND TERM

5819. NATURAL HISTORY OF VERTEBRATES. (5 cr; limited to 20 students; prereq Biol 1106 or equiv; TF) Schmid

College of Business Administration

ADMISSION

For admission to the College of Business Administration a student must have satisfied the requirements of the 2-year prebusiness curriculum. These requirements may be completed at another institution. A student must have approximately 90 credits, with a minimum 2.50 overall grade point average. See the Prebusiness Planning Folder and the *College of Business Administration Bulletin*, both of which are available at 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-qtr fr; A-N only)
Introduction to basic financial accounting concepts and their application to the recording and reporting of business events.
Sec 3, I-II MTWTh, BlegH 110, Barrett
Sec 4, III-IV MTWTh, BlegH 110
Sec 5, V-VI MTWTh, BlegH 110
Sec 6, 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.
Sec 3, I-II MTWTh, BlegH 145
- 3101. ACCOUNTING THEORY AND PRACTICE I.** (4 cr; limited to 35 students; prereq 1051; I-II MTWTh; BlegH 220) Cumming
The search for principles and postulates for income determination and for valuation. Measurement problems and funds concepts.
- 3201. COST ACCOUNTING.** (4 cr; prereq 1051, MIS 3099, OAM 3055; \$4 lab fee; III-IV MTWTh; BlegH 220) Ricketts
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; III-IV MTWTh; BlegH 125) Berryman
The external and internal auditor's role and functions. Audit standards, ethics, procedures, legal responsibilities.
- 5270. REPORTING FOR MANAGEMENT CONTROL.** (4 cr; limited to 35 students; prereq 3201; I-II MTWTh; BlegH 420) Gray
Responsibility accounting; transfer pricing problems, capital budgeting; management control systems.

- 5310. CURRENT TOPICS IN FINANCIAL ACCOUNTING.** (4 cr [may be repeated for cr]; limited to 35 students; prereq 5135 and #: I-II MTWTh; BlegH 240) Jacobs
Current topic(s) in financial accounting.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 1050. PRINCIPLES OF ACCOUNTING I.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 3rd-qtr fr; A-N only)
See First Term.
Sec 1, I-II MTh, BlegH 230
Sec 2, III-IV MTh, BlegH 230
- 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 TF, BlegH 230
Sec 2, III-IV TF, BlegH 230
- 5135. INCOME TAX ACCOUNTING.** (4 cr; each section limited to 35 students; prereq 1051)
Individual, partnership, and corporate taxation; emphasizing income tax planning.
Sec 1, I-II MTh, BlegH 210, Berryman
Sec 2, III-IV MTh, BlegH 210, Jacobs

SECOND TERM

- 1050. PRINCIPLES OF ACCOUNTING I.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 3rd-qtr fr; A-N only)
See First Term.
Sec 3, I-II MTWTh, BlegH 110
Sec 4, III-IV MTWTh, BlegH 110
- 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 3, I-II MTWTh, BlegH 145
Sec 4, III-IV MTWTh, BlegH 145
- 3102. ACCOUNTING THEORY AND PRACTICE II.** (4 cr; limited to 35 students; prereq 3101; I-II MTWTh; BlegH 125)
Concepts and problems in accounting for specific assets and equities.
- 5125. AUDITING PRINCIPLES AND PROCEDURES.** (4 cr; limited to 40 students; prereq 3102 and 3201; III-IV MTWTh; BlegH 220) Berryman
See First Term.
- 5310. CURRENT TOPICS IN FINANCIAL ACCOUNTING.** (4 cr [may be repeated for cr]; limited to 35 students; prereq 5135 and #: I-II MTWTh; BlegH 220) Jacobs
See First Term.

Business Administration (BA)

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

SECOND TERM

- 3002. BUSINESS AND SOCIETY.** (4 cr; each section limited to 50 students) Buchholz
The strategic and dynamic relations of business and society in a goals-oriented and problem-solving context. The interfaces of business institutions with the physical environment, social milieu, political process, and economic activity. National priorities vs. the respective roles of the private and public sectors concerning the challenges confronting U.S. society. Assessment of the concept, determinants, and indicators of the "quality of life" and the social responsibilities of business.
Sec 1, III-IV MTWThF, BlegH 120
Sec 2, VI-VII MTWThF, BlegH 120

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. Law affecting the relationship between principal and agent, master and servant, and employer and employee.

Sec 1, I MTWThF, BlegH 150

Sec 2, II MTWThF, BlegH 150

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 150

Sec 2, II MTWThF, BlegH 150

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 40 students; prereq Acct 1051; 12:20-2:15 MWF; BlegH 415) Rosko

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), and the nation's financial markets.

3300. INVESTMENT MANAGEMENT. (4 cr, §8300; limited to 40 students; prereq 3000; 10:10-12:40 TTh; BlegH 260) Alexander

A comprehensive introduction to investment decision making from the viewpoints of both individual and institutional investors. Principal focus is on risk-return relationships of various marketable securities. Analytical techniques of security selection and portfolio management in the context of the nation's changing securities markets.

3500. REAL ESTATE INVESTMENT ANALYSIS. (4 cr; limited to 30 students; prereq Econ 1002 or equiv; 1:25-4:25 TTh; BlegH 330) Rosko

Analysis of investments in real property. Economic aspects of such investments 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.

8990. READINGS AND RESEARCH IN FINANCE. (Cr ar; prereq consent of adviser and § in field covered)

Advanced readings in finance. Experimental subject areas and materials for seminar discussion. Opportunities for individualized readings and research programs developed under faculty supervision.

SECOND TERM

3000. FINANCE FUNDAMENTALS. (4 cr, §8000; limited to 45 students; prereq Acct 1051; 12:20-2:15 MWF; BlegH 415) Rosko

See First Term.

3100. FINANCIAL MANAGEMENT. (4 cr, §8100; limited to 30 students; prereq 3000; 9:05-10:45 MWF; BlegH 340) Stover

A broad case-oriented course building on concepts introduced in 3000. The viewpoint of a corporation's principal financial officer is generally used. Case discussions, augmented by lectures and readings, enable students to apply finance principles in actual business situations. Experience in problem definition, specification of alternatives, analysis, and decisions. Effective verbal and written communication is stressed.

- 3300. INVESTMENT MANAGEMENT.** (4 cr, §8300; limited to 40 students; prereq 3000; 12:20-1:20 MTWThF; BlegH 420) Jessup
See First Term.
- 3500. REAL ESTATE INVESTMENT ANALYSIS.** (4 cr; limited to 30 students; prereq Econ 1002 or equiv; 1:25-4:25 TTh; BlegH 425) Rosko
See First Term.
- 8990. READINGS AND RESEARCH IN FINANCE.** (Cr ar; prereq consent of adviser and \$ in field covered)
See First Term.

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; 7:45-9:00 MTWTh; BlegH 130)
Labor markets, manpower 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; 9:15-10:30 MTWTh; BlegH 205)
The problems of human relations arising in modern organizations and approaches to their solution. Philosophies and theories of human relations and their translation into policy. Discussion, cases, role playing, and skill building sessions.
- 8000. GRADUATE TOPICS IN INDUSTRIAL RELATIONS.** (Cr ar; prereq 8002 and \$; I-II MTWTh; BlegH 245)
Selected topics in industrial relations.
- 8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES.** (5 cr, §3002; prereq Econ 1001, 1002, Psy 1001; 7:45-11:00 MTWTh; BlegH 130)
See 3002.
- 8007. COLLECTIVE BARGAINING NEGOTIATIONS: PROCESSES IN THE PUBLIC AND PRIVATE SECTORS.** (4 cr; prereq 8002 or \$; VI-VII MTWTh; BlegH 245)
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 which characterize employee-employer bargaining relationships.
- 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 manpower resources.

SECOND TERM

- 3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES.** (4 cr, §8002; prereq Econ 1001, 1002, Psy 1001; 7:45-9:00 MTWTh; BlegH 130)
See First Term.
- 3007. COLLECTIVE BARGAINING NEGOTIATIONS AND MODERN LABOR RELATIONS.** (4 cr; 9:15-10:30 MTWTh; BlegH 420)
Collective bargaining negotiations between employers and/or employer associations and unions. Relevant policies of employers, unions, and the public; background of the labor movement; current practices in labor relations; and significant trends.
- 3010. HUMAN RELATIONS AND APPLIED ORGANIZATION THEORY.** (4 cr; 10:45-12:00 MTWTh; BlegH 420)
See First Term.
- 8000. GRADUATE TOPICS IN INDUSTRIAL RELATIONS.** (Cr ar; prereq 8002 and \$; II-III MWF; BlegH 245)
See First Term.

8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES. (5 cr, §3002; prereq Econ 1001, 1002, Psy 1001; 7:45-9:00 MTWTh; BlegH 130)

See 3002 First Term.

8006. LABOR MARKETS: PROCESSES AND DYNAMICS. (4 cr; prereq 8002 or §; IV-V MTWTh; BlegH 245)

Basic concepts, applications, and data sources pertinent to examining the usefulness of market analysis for manpower 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.

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; I-II MTWThF; BlegH 415)

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.

3002. PSYCHOLOGY IN MANAGEMENT. (4 cr, §8006; limited to 30 students; III-IV MTWThF; BlegH 105) Heinen

Development and application of behavior principles, methods, and skills which 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.

8001. FUNDAMENTALS OF MANAGEMENT. (4 cr, §3001; limited to 35 students; III-IV MTWThF; BlegH 415)

Concepts, theory, research, and operational problems. Factors and relationships necessary to establish and achieve organizational objectives: goals, policies, procedures; the planning process; control systems, organizational structure and behavior; leadership. Case studies to develop analytic skills and to provide insight into management problems.

8006. PSYCHOLOGY IN MANAGEMENT. (4 cr, §3002; limited to 30 students; I-II MTWThF; BlegH 105) Heinen

See 3002.

SECOND TERM

3001. FUNDAMENTALS OF MANAGEMENT. (4 cr, §8001; limited to 50 students; III-IV MTWThF; BlegH 415)

See First Term.

3004. BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION. (5 cr; limited to 35 students; prereq sr and completion of business core or final core course; I-II MTWThF; BlegH 330) Hoh

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.

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; \$4 lab fee; V MW; BlegH 230)
An introduction to the COBOL language used primarily for programming computer data processing applications. Self-paced instruction involving programming in COBOL of a structured set of problems, taking short quizzes, and participating in a programming laboratory.
- 3099. INTRODUCTION TO PROGRAMMING USING FORTRAN.** (1 cr; S-N only; limited to 50 students; \$4 lab fee; V TTh; BlegH 230)
An introduction to FORTRAN, an algebraic language suitable for programming a variety of quantitative problems typical of the College of Business curriculum. Self-paced instruction involving programming in FORTRAN of a structured set of problems, taking short quizzes, and participating in a programming laboratory.
- 5101. INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS.** (4 cr; limited to 45 students; III-IV MTWTh; BlegH 150)
An overview of the field of management information systems: the relationship of information, management, and systems; what the manager should know about the computer; information systems for operational, tactical, and strategic decision making; administration and control of MIS development; and behavioral aspects of information processing.

SECOND TERM

- 5100. COMPUTERS AND SYSTEMS DESIGN.** (4 cr, \$8208; limited to 55 students; prereq 3098 or 3099 or 13098 or 13099; III-IV MTWTh; BlegH 130)
The computer as a tool: hardware components and their function, operation systems, how a computer works, instructing a computer. The role and nature of programming languages, acquiring computer services, new developments in computer systems, selected uses of the computer, the computer industry, standards.

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 40 students, section 2 limited to 50 students; prereq Econ 1002 or equiv)
Basic policy and strategy issues in marketing and the environmental factors that affect these issues. Legal, behavioral, ethical, competitive, economic, and technological factors as they affect product, pricing, promotion, and marketing channel decisions.
Sec 1, 7:45-9:00 MTWThF, BlegH 155
Sec 2, 10:45-12:00 MTWThF, BlegH 250
- 3065. RETAIL MANAGEMENT.** (4 cr, \$8065; prereq 3000; 9:45-11:00 MTWThF; BlegH 425) Drury
Retailing principles, problems, and trends as they relate to various types of retailing institutions. Trade journal and supplementary readings for in-store study (buying and pricing) with a local retailer.
- 3077. ADVERTISING AND SALES PROMOTION.** (4 cr, \$8077, \$8078; prereq 3000; 7:30-9:30 MTWThF; AndH 250) Fallon
The promotion function in marketing; media, audience, message. Establishing objectives for advertising and sales promotion, budget and media allocation decisions, sales promotion, mix components, advertiser-agency structure and relationships, measuring advertising and sales promotion effectiveness, and socioeconomic considerations.
- 8000. PRINCIPLES OF MARKETING.** (4 cr, \$3000; limited to 20 students; prereq Econ 1002 or equiv; 7:45-9:00 MTWThF; BlegH 430)
See 3000.
- 8078. MARKETING COMMUNICATIONS.** (4 cr, \$3077, \$8077; prereq 3000 or 8000; 11:15-12:30 MTWThF; BlegH 335) Ross
Design and evaluation of marketing communications; communication theory, theories of persuasion and attitude change, message creation and execution, marketing communications media and audience research data, and methods of measuring communications effectiveness. Deals primarily with communications theory and research and does not include the management of marketing communications activity.

SECOND TERM

- 3000. PRINCIPLES OF MARKETING.** (4 cr, \$8000; limited to 50 students; prereq Econ 1002 or equiv; 7:45-9:00 MTWThF; BlegH 235)
See First Term.
- 3095. MARKETING RESEARCH.** (4 cr, \$8095; prereq 3000, OAM 3055 or equiv; 7:45-9:00 MTWThF; BlegH 335)
Survey, observational, and experimental techniques. Application of these techniques to selected marketing problems. Class project involves utilizing one or more of these techniques to study an actual marketing problem.
- 3098. INTRODUCTION TO CONSUMER BEHAVIOR.** (4 cr, \$8098; prereq 3000; 9:15-10:30 MTWThF; BlegH 425)
Application of the behavioral sciences to understanding human behavior in the marketplace. Perception, learning, attitude theory and measurement, persuasion, motivation, personality, social and cultural influences, family decision making, the social influence process, consumer decision-making strategies, managerial implications of consumer research and "consumerism."
- 8098. INTRODUCTION TO CONSUMER BEHAVIOR.** (4 cr, \$3098; prereq 3000 or 8000; 11:15-12:30 MTWThF; BlegH 335) Ross
See 3098.

Operations Analysis and Management (OAM)

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

FIRST TERM

- 3055. INTRODUCTION TO MANAGEMENT SCIENCES.** (4 cr; each section limited to 40 students; prereq QA 1050, Math 1142 or equiv; \$4 lab fee)
The use of analytical approaches and techniques within business contexts. Emphasis on the role of mathematical models, statistical techniques related to data acquisition, and the use of computers and computer techniques in solving organizational problems. Examples to illustrate the use of both deterministic and stochastic models. Laboratory session will include problem solving and case analysis.
Sec 1, I-II MTWTh, AndH 370
Sec 2, III-IV MTWTh, BlegH 420

SECOND TERM

- 3055. INTRODUCTION TO MANAGEMENT SCIENCES.** (4 cr; limited to 40 students; prereq QA 1050, Math 1142 or equiv; \$4 lab fee; I-II MTWTh; BlegH 150)
See First Term.

Quantitative Analysis (QA)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1050. ELEMENTARY MANAGERIAL STATISTICS.** (4 cr; limited to 45 students; prereq Math 1141 or equiv or Math 1131; \$4 lab fee; I-II MTWTh; BlegH 250)
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.

SECOND TERM

- 1050. ELEMENTARY MANAGERIAL STATISTICS.** (4 cr; limited to 45 students; prereq Math 1141 or equiv or Math 1131; \$4 lab fee; I-II MTWTh; BlegH 250)
See First Term.

Risk Management and Insurance (Ins)

FIRST TERM

- 3100. RISK MANAGEMENT AND INSURANCE.** (4 cr, §8100; 7:30-8:45 MTWTh; BlegH 120) 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; 9:00-10:15 MTWTh; BlegH 5) 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; 7:30-8:45 MTWTh; BlegH 120) Whitman
See 3100.
- 8200. LIFE AND HEALTH INSURANCE.** (4 cr, §3200; prereq 8100 or equiv; 9:00-10:15 MTWTh; BlegH 5) Whitman
See 3200.
- 8990. READINGS IN RISK MANAGEMENT AND INSURANCE.** (Cr ar; prereq consent of adviser and § in field covered)
Readings useful to the student's individual program and objectives but not available in regular course offerings.

SECOND TERM

- 3100. RISK MANAGEMENT AND INSURANCE.** (4 cr, §8100; 9:00-10:15 MTWTh; BlegH 10)
See First Term.
- 8100. RISK MANAGEMENT AND INSURANCE.** (4 cr, §3100; 9:00-10:15 MTWTh; BlegH 10)
See 3100 First Term.
- 8990. READINGS IN RISK MANAGEMENT AND INSURANCE.** (Cr ar; prereq consent of adviser and § in field covered)
See First Term.

Transportation (Tran)

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

FIRST TERM

- 3054. FUNDAMENTALS OF TRANSPORTATION.** (4 cr, §8154; 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 235

SECOND TERM

- 3064. BUSINESS LOGISTICS.** (5 cr, §8264; limited to 40 students; prereq 3054; 7:30-8:50 MTWThF; BlegH 425)
Control of the flow of physical products by the firm. Rate negotiation, transportation alternatives, logistics information systems, inventory control, warehouse operations and location, and logistics system design.
- 8264. BUSINESS LOGISTICS.** (5 cr, §3064; limited to 10 students; prereq 3054 or 8154; 7:30-8:50 MTWThF; BlegH 425)
See 3064.

College of Education

Those expecting to become candidates for Bachelors' degrees or M.Ed. degrees 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 on the basis of which they wish to request advanced standing. Summer admissions are possible in the following B.S. degree programs: business education, distributive education, industrial education, music education, and school health education. Students interested in specific degree programs are encouraged to contact the Education Career Development Office (ECDO) at 1425 University Avenue Southeast at once 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 sections on Admission and Registration); they are classified as "summer-only" students. Those wishing to enter the Graduate School should apply immediately for admission to the Graduate School (see Admission section).

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, for information about requirements of the teaching profession, and for counseling. Appointments should be made at 1425 University Avenue Southeast.

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 Southeast.

DETAILED DESCRIPTION OF COURSES

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

Although normally classes are *not* scheduled on the final registration days (June 14 and July 19), some College of Education short-term workshops *will* meet on those dates.

GRADUATE CREDIT FOR WORKSHOPS

The amount of graduate credit in workshops which 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 certain groups of students completing programs in the College of Education: (a) regularly approved applicants for student teaching in the nursery school-kindergarten program; (b) secondary education seniors needing 3 credits or less for completion of graduation requirements in the first term; (c) some students in special education. Application must be made prior to April 16 in the Education Career Development Office, 1425 University Avenue Southeast. 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)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 3301. CHILD PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology; III MTWThF; Arch 50)
Maratsos
Introduction to science of child behavior; emphasis upon critical review of theories and research.
- 5303. ADOLESCENT PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology; II MTWThF; Arch 40)
Keating
Physical, cognitive, and social development during adolescence.
- 5311. BEHAVIOR PROBLEMS.** (4 cr; prereq 3301 or equiv; IV MTWThF; MurH 308) French, Keniston
Types, origin, development, and treatment of behavior difficulties in normal children.
- 5313. PSYCHOLOGY OF ATYPICAL CHILDREN.** (4 cr; prereq 3301 or equiv; I MTWThF; Pt 214)
Brown
Problems of research, assessment, and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, linguistic, intellectual, and physical deviation.
- 5315. INTRODUCTION TO MENTAL RETARDATION.** (4 cr, §SpEd 5120; prereq 3301 or equiv; II MTWThF; Pt 215) Warfield
Psychological and educational problems related to the mentally retarded. Meets with SpEd 5120.
- 5319. CLINICAL PROCEDURES WITH CHILDREN.** (4 cr; prereq 12 cr in child psychology, psychology, educational psychology, or sociology; I MTWThF; CD 216) Gross
Methods of clinical psychology; basic concepts and research problems in clinical work with children; primarily for students not majoring in clinical psychology.
- 5330. DIRECTED EXPERIENCES WITH CHILDREN.** (4 cr; S-N only; limited to 20 students; prior application required; prereq 3301, §; III MTWThF; CD 105) Gramm, Vrane
Intellectual and/or social development of children as individuals or members of peer groups. Experiences offered in case study, social behavior, cognitive stimulation of children.

- 5331. PROCESSES OF SOCIALIZATION OF CHILDREN.** (4 cr; prereq 3301 or grad; V MTWThF; Arch 5) Lougee
Processes of social learning; identification, imitation, reward and punishment, internalization, and object choice.
- 5335. PEER RELATIONS.** (4 cr; prereq 5331; II MTWThF; CD 105) Gecy
Peer influences, social interactions and social relations; developmental changes.
- 5343. COGNITIVE DEVELOPMENT.** (4 cr; prereq 3301; V MTWThF; CD 105) Gordon
Development of cognitive processes; discussion of relevant theory, research literature, and methodology.
- 5345. LANGUAGE DEVELOPMENT.** (4 cr; prereq 3301; IV MTWThF; CD 105) Kuczaj
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

- 3301. CHILD PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology; III MTWThF; Arch 50)
Cleaves
See First Term.
- 5303. ADOLESCENT PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology; II MTWThF; WuH 230) Grotevant
See First Term.
- 5311. BEHAVIOR PROBLEMS.** (4 cr; prereq 3301 or equiv; II MTWThF; Arch 30) Tomlinson
See First Term.
- 5315. INTRODUCTION TO MENTAL RETARDATION.** (4 cr, §SpEd 5120; prereq 3301 or equiv; IV MTWThF; Pt 215) Warfield
See First Term. Meets with SpEd 5120.
- 5319. CLINICAL PROCEDURES WITH CHILDREN.** (4 cr; prereq 12 cr in child psychology, psychology, educational psychology, or sociology; I MTWThF; CD 216) Reed
See First Term.
- 5331. PROCESSES OF SOCIALIZATION OF CHILDREN.** (4 cr; prereq 3301 or grad; V MTWThF; CD 216) Grueneich
See First Term.
- 5339. PARENT-CHILD RELATIONS.** (4 cr; prereq 5331; IV MTWThF; CD 105) Clark
Parent-child relationships and evaluation of relevant research literature.
- 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 35 students; III-IV MTWThF; WuH 240) Kremer
Introduction to pictorial expression, design, and the function of art in the school environment.
- 5020. ADVANCED CONTEMPORARY CRAFTS.** (4 cr; limited to 30 students; prereq 3020; \$4 lab fee; I-II MTWThF; WuH 120) Kremer
In-depth experiences in techniques of metal jewelry with emphasis on design criteria, equipment, materials, and process.
- 5389. APPLICATION OF AESTHETIC THEORY IN EDUCATION.** (3 cr; III MTWThF; WuH 110) Slettehaug
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 \$) Slettehaug
Independent project under direction; gathering data, developing proposals, experimenting with evaluating innovative practices.
- 5900. PROFESSIONAL PROBLEMS.** (3 cr; prereq MEd student; hrs ar) Slettehaug
Independent study for M.Ed. candidates integrating learning from art education, art, and education.
- 8300. RESEARCH IN ART EDUCATION.** (3 cr; IV MTWThF; WuH 110) Slettehaug
Research techniques.
- 8306. SEMINAR: ART EDUCATION.** (1 cr; VI T; WuH 110) Slettehaug
Reports, evaluation of problems, recent literature.
- 8900.* PROBLEMS: ART EDUCATION.** (Cr ar; prereq \$) Slettehaug
Independent projects under staff guidance may include advanced studio practice or technical problems requiring experimental or library research.

SECOND TERM

- 3009. WEAVING WITHOUT A LOOM.** (4 cr; limited to 25 students; I-II MTWThF; WuH 340) Smits
Developing fundamental weaving skills employing inexpensive equipment and techniques without the use of the floor loom.
- 3010. INTRODUCTION TO WEAVING.** (3 cr; limited to 20 students; \$4 lab fee; III-IV MTWThF; WuH 340) Smits
Equipment, design, setting up and operation of table and floor looms.
- 3030. PUPPETRY.** (3 cr; limited to 30 students; III-IV MTWThF; WuH 220) Olson
Construction, manipulation, and stage techniques for basic puppet types.
- 3309. INDEPENDENT STUDY.** (1-4 cr [max 4 cr]; prereq 3306, 3307; hrs ar) Olson
Individual exploration and study of basic types of art expression with the opportunity for in-depth professional research and creative involvement in one area of interest.
- 5302. CURRICULUM BUILDING IN ART EDUCATION: Innovations.** (4 cr; III MTWThF; WuH 110) Day
Selection, evaluation, and organization of material for teaching units and projects.
- 5316. INTERCULTURAL EDUCATION THROUGH ART.** (3 cr; II MTWThF; WuH 240) Olson
Approaches to international understanding through recognition of aesthetic contributions of diverse peoples to American life.
- 5386. IMPROVING ART PROGRAMS IN THE SCHOOLS.** (4 cr; prereq tchg exper or \$; I MTWThF; WuH 110) Day
For teachers of art: critical examination of present art programs in the schools.
- 5605. PRACTICUM.** (3-9 cr; prereq \$; hrs ar) Day, Olson
See First Term.
- 5900. PROFESSIONAL PROBLEMS.** (3 cr; prereq MEd student; hrs ar) Day, Olson
See First Term.
- 8900.* PROBLEMS: ART EDUCATION.** (Cr ar; prereq \$; hrs ar) Day, Olson
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

- 5103.†† ADULT EDUCATION WORKSHOP.** (1-12 cr [max 12 cr]; each section limited to 35 students; prereq practicing adult educator and §)
Study of topic appropriate to the activities and interests of the participants.
Sec 1, Individual Reading Programs in ABE Groups, 3 cr, 3:30-6:00 TTh, FolH 204, Park
Sec 2, Needs Assessment in Adult Education, 3 cr, 12:30-3:00 TTh, FolH 204, Copeland Park
- 5205. FIELD EXPERIENCE IN ADULT EDUCATION.** (4-8 cr [max 8 cr]; prereq §) Copeland, Willie, Park
- 5401. ADULT LEARNING AND DEVELOPMENT THROUGH THE LIFE SPAN.** (3 cr; 10:00-12:30 TTh; Jones 1) Williams
Physiological, social, and cultural bases of adult behavior; motivation, socialization, personality change as applied to education of adults.
- 8228.* PROBLEMS: HIGHER EDUCATION.** (Cr and hrs ar; prereq §) Keller, Williams
- 8251. CURRICULUM TRENDS IN AMERICAN COLLEGES.** (3 cr; prereq 8250, yr of grad study in any field or 18 cr in education; III-IV MWF; Jones 1) Schomberg
Principles in development of college programs; current curricula in liberal arts and professional fields; general education courses and sequences.
- 8252. EFFECTIVE COLLEGE TEACHING.** (3 cr; prereq 8250 and yr of grad study in any field or 18 cr in education; 1:30-4:00 TTh; Bu 125) Williams
Teaching-learning relationship; study and appraisal of methods employed to encourage, guide, and evaluate students' learning.
- 8284.* PROBLEMS: TEACHER EDUCATION.** (3-9 cr; prereq §; hrs ar) E Anderson
- 8302.* PROBLEMS: ADULT EDUCATION.** (3-9 cr; prereq §) Copeland, Willie, Park
Individual research in area of adult education.

SECOND TERM

- 5199.†† WORKSHOP: TEACHER EDUCATION—August 2-18.** (1-12 cr [max 12 cr]; limited to 35 students; prereq tchg exper and §; 1:00-5:00 MTWThF; 2630 University Ave S.E.) Bruning
Topics in teacher education appropriate to the activities and interests of the participants. This 6-credit offering will focus on the place of communication skills in the development of human sexuality.
- 8228.* PROBLEMS: HIGHER EDUCATION.** (Cr and hrs ar; prereq §) Keller
- 8250. HIGHER EDUCATION IN THE UNITED STATES.** (3 cr; prereq yr of grad study in any field or 18 cr in education; I MTWThF; Bu 125) Keller
Development, present status, and outlook for American colleges; purposes; current and projected programs; trends in curriculum, instruction, and administration; evaluation of outcomes.
- 8284.* PROBLEMS: TEACHER EDUCATION.** (3-9 cr; prereq §; hrs ar) Bruning

Elementary Education (Elem)

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

FIRST TERM

- 3604.‡‡ STUDENT TEACHING IN THE NURSERY SCHOOL.** (3-6 cr; S-N only; prereq approval of major adviser and director of student tchg; hrs ar) Coulter, Sternberg, Yelensky
- 5100. ELEMENTARY SCHOOL CURRICULUM.** (3 cr; limited to 40 students; prereq 3101; III MTWThF; Bu 120) Mitchell

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

‡‡Student teaching is open only to students in regular degree programs of the College of Education. Application must be made prior to April 16. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

- 5108. SUPERVISION AND IMPROVEMENT OF INSTRUCTION.** (3 cr; limited to 35 students; prereq 9 cr in education; IV MTWThF; Bu 125) Lambert
- 5120. PLANNING AND EVALUATION OF EDUCATIONAL ALTERNATIVES.** (3 cr; limited to 35 students; II MTWThF; CD 218) Mitchell
Survey of alternative school concepts and designs; examination of curricular programs and materials; procedures for systematic study of options within a classroom, school, or school system.
- 5300. LITERATURE FOR THE ELEMENTARY SCHOOL.** (3 cr; limited to 40 students; II MTWThF; Bu 123) Odland
- 5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL—June 15-30.** (3 cr; limited to 35 students; prereq 3316 or elem tchg exper; III-IV MTWThF; Jones 4) Chase
- 5317. MATERIALS LABORATORY FOR TEACHING ENGLISH IN ELEMENTARY SCHOOLS.** (3 cr; limited to 40 students; prereq 3316 or elem tchg exper; I MTWThF; Jones 4)
Examination and evaluation of textbooks, programmed materials, and audiovisual resources for elementary school language arts instruction.
- 5318. CREATIVE WRITING FOR AND BY CHILDREN—July 1-16.** (3-6 cr; [max 6 cr]; limited to 30 students; prereq 3300 or 3336 or elem tchg exper and §; III-IV MTWThF; CD 216) Chase
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 of children's books will be involved in this offering for 3 credits.
- 5319. TEACHING FOREIGN LANGUAGE IN ELEMENTARY SCHOOL—June 28-July 16.** (3 cr; limited to 30 students; prereq elem education major with foreign language minor and §; 9:00-11:15 MTWThF; Arch 20) Jorstad
Methods and materials for teaching foreign language in elementary school; laboratory sections for each of languages represented in student's minor concentrations (French, German, Spanish).
- 5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL.** (3 cr; limited to 50 students; prereq 9 cr in education; II MTWThF; Arch 45)
For graduate students and summer students who hold a Bachelor's degree.
- 5334. READING DIFFICULTIES.** (3 cr; each section limited to 40 students; prereq 5331 or SeEd 5344)
Sec 1, I MTWThF, CD 218
Sec 2, III MTWThF, Pt 102
- 5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES.** (3 cr; students registering for sec 1 of this course are required to register concurrently in the same-numbered sec of Elem 5336; each section limited to 23 students; prereq 5334) Jacobson
Relationship to psychological factors and clinical remedial correction.
Sec 1, IV-V MTWThF, Seward School
Sec 2, IV-V MTWThF, Seward School
- 5336. CLINICAL PRACTICE IN REMEDIAL TEACHING.** (3 cr; students registering for sec 1 of this course are required to register concurrently in the same-numbered sec of Elem 5335; each section limited to 23 students; prereq 5334 or 5107 and §)
Remedial tutoring of individual children who have difficulty in school learning.
Sec 1, II-III MTWThF, Seward School
Sec 2, II-III MTWThF, Seward School
- 5337. BEGINNING READING INSTRUCTION.** (3 cr; limited to 40 students; prereq 3331 and §; V MTWThF; Bu 120) D Pearson
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.
- 5338. TEACHING READING IN THE INTERMEDIATE GRADES.** (3 cr; limited to 40 students; prereq 3331 and §; III MTWThF; Pt 215)
For teachers and specialists interested in problems of teaching reading beyond the decoding stage; emphasis on comprehension strategies, basic study skills, and reading in the content areas.
- 5348.†† WORKSHOP: OUTDOOR SCIENCE EDUCATION—June 15-July 2 and July 9-11.** (3 cr; limited to 30 students; prereq elem tchg exper; VI-VII MWF; PeikH 385) Humphreys

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

Classroom and fieldwork activities dealing with models, materials, and methods in the outdoor setting; consideration of broad topics such as ecological relationships, cyclic processes and change as well as more specific topics such as rocks and minerals, plants and animals, and stargazing. Students will be responsible for transportation, camping equipment, and food costs for the 2½-day Kettle River, upper St. Croix canoe trip. For further information contact Alan Humphreys, 370 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.

- 5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES.** (3 cr; limited to 30 students; prereq 5349; IV-V MWF; PeikH 385) Humphreys
Experiences in the use of educational materials and media common to teaching modern elementary school science.
- 5361. TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL.** (3 cr; limited to 50 students; prereq 3101 or equiv; II MTWThF; Pt 214) Ellis
For graduate students and summer students who hold a Bachelor's degree in elementary education.
- 5363.†† WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES.** (Cr ar [max 9 cr]; limited to 35 students; prereq elem tchg exper and §; III MTWThF; Pt 214) Ellis
This offering for 3 credits will include analysis of new instructional materials and recent curriculum developments in the field; training in innovative instructional procedures; and use of inquiry strategies in elementary school social studies.
- 5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION.** (3 cr; limited to 40 students; prereq tchg exper in kindergarten or primary school or §; II MTWThF; Jones 4) Hansen
Continuing needs of children in our changing culture; current practices and recent research; not intended for kindergarten certification requirements.
- 5377. EARLY CHILDHOOD EDUCATION: MATERIALS AND RESOURCES.** (3 cr; limited to 30 students; prereq 3377 or 5376 and tchg exper; IV MTWThF; CD 218) 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, Chase, Hansen, Jackson, Lambert, Odland, Stochl, Ellis, Humphreys, D Pearson, Post, Mitchell
- 6300. RESEARCH IN SPECIAL COLLECTIONS OF CHILDREN'S LITERATURE.** (1-3 cr [max 6 cr]; limited to 15 students; I MTWThF; Bu 125) Odland
This offering for 3 credits will include 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 Kerlan or other accessible collection.
- 6916.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar; prereq §) Dykstra, Chase
- 6931.* PROBLEMS: TEACHING READING.** (Cr and hrs ar; prereq 5331 or SeEd 5344 and §) Dykstra, Chase, Odland, D Pearson
- 6961.* PROBLEMS: TEACHING SOCIAL STUDIES.** (Cr and hrs ar; prereq 5361 or SeEd 5155 or 8104 and §) Ellis
- 6976.* PROBLEMS: TEACHING KINDERGARTEN.** (3 cr; prereq §; hrs ar) Hansen
- 6991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION.** (Cr and hrs ar; prereq §) Dykstra, Chase, Hansen, Jackson, Lambert, Odland, Stochl, Ellis, Humphreys, D Pearson, Post, Mitchell

SECOND TERM

- 5100. ELEMENTARY SCHOOL CURRICULUM—July 20-August 6.** (3 cr; limited to 40 students; prereq 3101; I-II MTWThF; Aero 225)
- 5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 20-August 6.** (3 cr; limited to 40 students; III-IV MTWThF; Bu 120) Aulls
- 5109. SUPERVISORY STRATEGIES IN PLANNING, OBSERVING, CONFERENCEING—July 20-August 6.** (3 cr; limited to 40 students; prereq §; I-II MTWThF; CD 218) McNergney
Responsibilities of the supervising teacher; material development and practice in basic supervisory skills and functions.

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

- 5317. MATERIALS LABORATORY FOR TEACHING ENGLISH IN ELEMENTARY SCHOOLS—July 20-August 6.** (3 cr; limited to 40 students; prereq 3316 or elem tchg exper; V-VI MTWThF; Bu 125)
See First Term.
- 5334. READING DIFFICULTIES—July 20-August 6.** (3 cr; limited to 40 students; prereq 5331 or SeEd 5344; I-II MTWThF; Pt 111)
- 5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES—July 20-August 6.** (3 cr; limited to 23 students; prereq 5334; III-IV MTWThF; Pt 111)
See First Term.
- 5338. TEACHING READING IN THE INTERMEDIATE GRADES—July 20-August 6.** (3 cr; limited to 40 students; prereq 3331 and §; VI-VII MTWThF; Bu 120) Aulls
See First Term.
- 5348.†† WORKSHOP: OUTDOOR SCIENCE EDUCATION—August 9-16.** (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 with participants 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, University of Minnesota, Minneapolis, Minnesota 55455.
- 5362. MATERIALS LABORATORY FOR ELEMENTARY SOCIAL STUDIES TEACHERS—July 20-August 6.** (3 cr; limited to 40 students; prereq 3361 or 5361 or §; I-II MTWThF; Pt 214) Cogan
Printed, audiovisual, and other materials; investigation and evaluation of teaching materials and devices.
- 5363.†† WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES—July 20-August 6.** (Cr ar [max 9 cr]; limited to 35 students; prereq elem tchg exper and §; III-IV MTWThF; Pt 214) Cogan
See First Term. This offering for 3 credits.
- 5602. PRACTICUM: IMPROVEMENT OF TEACHING.** (3 cr; prereq MEd student in elem education, §; S-N only; hrs ar) Dykstra, Jackson, Stochl, Cogan, R Johnson, Aulls, McNergney
- 8916.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar; prereq §) Dykstra
- 8931.* PROBLEMS: TEACHING READING.** (Cr and hrs ar; prereq 5331 or SeEd 5344 and §) Dykstra, Aulls
- 8961.* PROBLEMS: TEACHING SOCIAL STUDIES.** (Cr and hrs ar; prereq 5361 or SeEd 5155 or 8104 and §) Cogan
- 8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION.** (Cr and hrs ar; prereq §) Dykstra, Jackson, Stochl, Cogan, R Johnson, Aulls, McNergney

Mathematics Education (MthE)

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

FIRST TERM

- 5101.†† WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS.** (1-12 cr [max 12 cr]; limited to 35 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.
- 5301. INSTRUCTIONAL LEADERSHIP IN ELEMENTARY SCHOOL MATHEMATICS.** (3 cr; limited to 35 students; not open to majors in mathematics education; prereq §; II MTWThF; PeikH 375) Jackson
Current trends in methods, materials, content, and evaluation; program development and research; intended for supervisors and principals.

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

- 5321. MATERIALS LABORATORY FOR ELEMENTARY SCHOOL MATHEMATICS INSTRUCTION.** (3 cr; limited to 24 students; prereq 5311 or Elem 3391 or §; VI-VIII TTh; PeikH 336)
Post
Printed and programmed materials, audiovisual aids, community resources; laboratory projects and techniques for using mathematical devices and instruments.
- 5322. MATERIALS LABORATORY FOR SECONDARY SCHOOL MATHEMATICS INSTRUCTION.** (3 cr; limited to 24 students; prereq 5312 or §; IV-VI MW; PeikH 375) House
Sources and types of materials, laboratory projects and techniques of using mathematics devices and instruments, visual aids, and community resources.
- 5332. NEW CONTENT AND METHODS IN SECONDARY SCHOOL MATHEMATICS INSTRUCTION.** (3 cr; limited to 35 students; prereq 5312 or §; II MTWThF; PeikH 315) House
Trends and experimentation with content; special programs for the gifted and slow learner; methods in mathematics; program evaluation.
- 5355. MATHEMATICS FOR SLOW LEARNING CHILDREN.** (3 cr; limited to 40 students; prereq 5311 or Elem 3391 or §; IV-V MWTh; PeikH 315) Post
Units of instruction emphasizing mathematical concepts essential for vocational competence; experimental materials and methods designed to improve performance of low achievers.
- 5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION.** (3-9 cr [max 9 cr]; prereq §) Jackson, Stochl, Post, House
Survey of recent literature; design and preparation of reports on special problems.
- 8980.* PROBLEMS: MATHEMATICS EDUCATION.** (Cr ar; prereq 8500 or 8570) Stochl, Post, House, Jackson

SECOND TERM

- 5101.†† WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS—July 20-August 6.** (1-12 cr [max 12 cr]; limited to 35 students; not open to majors in mathematics education; prereq §; III-IV MTWThF; PeikH 375) Stochl
See First Term. This offering for 3 credits.
- 5355. MATHEMATICS FOR SLOW LEARNING CHILDREN—July 20-August 6.** (3 cr; limited to 35 students; prereq 5311 or Elem 3391 or §; I-II MTWThF; PeikH 375) Jackson
See First Term.
- 5366. COMPUTER-ASSISTED MATHEMATICS INSTRUCTION—July 20-August 6.** (3 cr; limited to 24 students; prereq 5311 or 5312 or SeEd 3365 or §; \$4 lab fee; VI-VII MTWThF; PeikH 315, 336) D C Johnson
Role of the computer in a mathematics department; its contribution to learning concepts, problem solving, and computational skill; consideration of various types of equipment and languages, programming of problems, instructional materials.
- 5980. DIRECTED STUDIES IN MATHEMATICS EDUCATION.** (3-9 cr [max 9 cr]; prereq §) Jackson, D C Johnson, Stochl
See First Term.
- 8980.* PROBLEMS: MATHEMATICS EDUCATION.** (Cr ar; prereq 8500 or 8570) Jackson, D C Johnson, 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

- 1515. WOODWIND TECHNIQUES.** (4 cr; V-VI TWTh; NMA 5) Schultz
Playing experience on all woodwind instruments; basic concepts of teaching with study of methods and materials.
- 1525. BRASS TECHNIQUES.** (4 cr; prereq music education major or §; V-VI TWTh; NMA 4) Turrentine
Theory and technical development of instruments, elementary instruction in performing, special attention to routine class instruction.

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

- 3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL.** (4 cr; each section limited to 20 students; prereq Mus 1001 or exemption)
For nonmusic majors; methods and materials in teaching singing, rhythm, music reading, creativity, classroom instruments, fundamentals, appreciation in K-6.
Sec 1, II MTWThF, ScH 4, Caswell
Sec 2, III MTWThF, ScH 4, Turrentine
- 3314. PIANO IMPROVISATION METHODS AND MATERIALS.** (2 cr; prereq 6 cr in piano and Mus 1503, 1513, 1523; I MTWThF; MusEd 103) Buckner
Methods and materials for developing basic improvisational skills in junior high and senior high school; aural development.
- 3701. BEGINNING CONDUCTING.** (3 cr; prereq Mus 1506, 1516; III MTWThF; NMA 4) Schultz
Fundamentals, rehearsal techniques; score reading and arranging; literature and materials for instrumental performance in elementary and secondary schools.
- 5231. SUPERVISION AND ADMINISTRATION OF ELEMENTARY MUSIC.** (3 cr; prereq major or minor in music or music education; V MTWThF; ScH 103) Borg
Analysis and evaluation of instructional techniques; supervisory and administrative techniques; readings; new trends.
- 5306. TEACHING MUSIC LITERATURE.** (3 cr; prereq 3011 or 3302 or §; III MTWThF; ScH 103) Borg
Principles, methods, and materials for teaching music history (appreciation) in grades K-12.
- 5327. TECHNIQUES AND MATERIALS: ORFF-SCHULWERK APPROACH.** (4 cr; IV MTWThF; ScH 4) Caswell
Demonstration and class practice in teaching and performance skills of Orff-Schulwerk instrument playing; the recorder; movement, improvisation, singing, and creation of musical forms; techniques to encourage children to create and improvise song, instrumental music, and related bodily movement; class exercises in adapting indigenous and foreign ethnic musical material for school use.
- 5970. INDEPENDENT STUDY.** (1-4 cr; prereq consent of adviser and of dept; hrs ar; ScH 104) Caswell, Turrentine, Borg, Schultz
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) Caswell, Turrentine, Borg, Schultz
Individual projects.

SECOND TERM

- 3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL.** (4 cr; limited to 20 students; prereq Mus 1001 or exemption; II MTWThF; ScH 4) Borg
See First Term.
- 3851-3852. CLINICAL INTERNSHIP IN MUSIC THERAPY.** (2 cr each; prereq Δ ; hrs ar; MusEd 2) Jellison
Six-month resident internship in music therapy at an affiliated, approved hospital or clinic.
- 5311. MUSIC FOR EXCEPTIONAL CHILDREN.** (3 cr; prereq 3011 or §; III MTWThF; ScH 3) Borg
Trends; methods and materials for a functional program of singing, playing, rhythm, listening, and creative activities for mentally and physically handicapped and gifted pupils.
- 5525. ADVANCED BRASS TECHNIQUES—July 20-30.** (3 cr; prereq 1525 or §; 1:00-4:00 MTWThF; NMA 4) Turrentine
Practical performance with lectures and discussion of research in performance technique.
- 5534. ADVANCED PERCUSSION TECHNIQUES—July 20-30.** (3 cr; 9:00-12:00 MTWThF; NMA 4) Schultz
Contemporary approaches to teaching percussion in the elementary, junior high, and high school; emphasis on performing techniques; playing of teaching materials, solo and ensemble repertoire.
- 5970. INDEPENDENT STUDY.** (1-4 cr; prereq consent of adviser and of dept; hrs ar; ScH 104) Turrentine, Borg, Schultz
See First Term.
- 8990.* RESEARCH PROBLEMS.** (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScH 104) Turrentine, Borg, Schultz
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

- 3151. DIRECTED STUDY.** (1-9 cr; prereq Δ) Stochl
Analysis of specific instructional, curricular, organizational, and operational situations or problems in secondary education.
- 3320. BASES FOR INSTRUCTION IN LANGUAGE IN SECONDARY ENGLISH CURRICULA.** (3 cr; limited to 35 students; II MTWThF; PeikH 175) Michlin
Implications of recent developments in linguistic theory for English language instruction; special attention to studies of oral and written language development of children and adolescents; relevance of instruction in grammar(s); nonstandard dialects; review of language materials used in schools; practice in development of materials and short instructional episodes.
- 3600. †† STUDENT TEACHING.** (Cr ar; prereq Δ) Stochl
Supervised teaching for students wishing to elect credits in student teaching in addition to regular requirements.
- 5003. EDUCATIONAL TECHNOLOGY: COMPUTERS IN THE CLASSROOM.** (1 cr, \$5102; limited to 30 students; \$4 lab fee; I TTh; EdH Annex 64) Tennyson
Introduction to the use of computer technology in instruction; self-instructional, computer-managed module.
- 5004. EDUCATIONAL TECHNOLOGY: CLASSROOM VIDEO.** (1 cr, \$5102; limited to 30 students; \$4 lab fee; I MW; PeikH 335) Tennyson
Introduction to the use of video technology in instruction; self-instructional, computer-managed module.
- 5113. INTRODUCTION TO CURRICULUM DEVELOPMENT.** (3 cr; limited to 30 students; prereq 3155 or equiv; II MTWThF; Pt 102) Kimpston
Environment of the secondary school in relation to educational philosophy, goals, objectives; systematic planning for assessing educational needs; current alternative designs for curriculum and instruction.
- 5114. PRINCIPLES OF CURRICULUM DESIGN: INTERDISCIPLINARY APPROACHES.** (3 cr; limited to 40 students; III MTWThF; PeikH 315) Stockton
Systematic approaches presented and evaluated emphasizing the development of interdisciplinary curricula.
- 5122. LANGUAGE CONVERSATION FOR TEACHERS—July 1-August 12.** (4 cr; limited to 30 students; prereq Δ) Lange
Improving conversational skills and vocabulary; analyses and resources and their application to the American classroom. This offering is only available to undergraduate students involved in foreign language workshops abroad this summer.
- 5129. TRENDS AND ISSUES IN SECONDARY CURRICULUM—June 15-30.** (3 cr; limited to 40 students; prereq 5113 or equiv; 1:00-3:00 MTWThF; Bu 123) Stockton
Comprehensive perspective on the secondary school curriculum; analysis and interpretation of the status which confronts subject fields.
- 5150. ADVANCED METHODS OF TEACHING THE SOCIAL STUDIES.** (3 cr; limited to 40 students; IV 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
Opportunity to work individually or in teams on curricular, instructional, or evaluation problems within the school.
- 5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES: Interdisciplinary Approaches to Social Studies and Science Teaching—June 15-25.** (1-3 cr [max 12 cr]; limited to 40 students; 8:00-11:00 MTWThF and 4 hrs ar; PeikH 165) Glenn

††Student teaching is open only to students in regular degree programs of the College of Education. Application must be made prior to April 16. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

- 5156. PRACTICUM IN SOCIAL STUDIES INSTRUCTIONAL TECHNIQUES.** (1 cr; prereq 5150, 5152; hrs ar) Glenn
Includes production of videotape episodes to demonstrate competency in the use of materials and techniques of instruction; required for all M.A., M.Ed., and Ph.D. candidates.
- 5170. MODELS AND PROCEDURES FOR CURRICULUM PLANNING.** (3 cr; limited to 40 students; prereq 5113 or Elem 5100; IV MTWThF; Bu 120) Kimpston
Review and employment of model for planning and designing a systematic plan for curriculum change.
- 5172. SUPERVISION OF SECONDARY INSTRUCTION.** (3 cr; limited to 40 students; prereq 5113; IV-V TWTh; Pt 102) E Anderson
Achievement of appropriate teaching expectations focusing on problems of personnel responsible for their improvement.
- 5191††. WORKSHOP: TEACHING OF FOREIGN LANGUAGES.** (1-10 cr [max 10 cr]; each section limited to 30 students)
Related specifically to the needs of the in-service teacher; topics, location, and duration will be highly flexible.
- Sec 1, Teaching of Foreign Languages: Intensive French for Teachers, June 14-25, 9:00-4:00 MTWThF, Arch 20, G and J Zask**
A 6-credit offering for American teachers of French in language and language teaching methodology from a French point of view. *All classes will be conducted in French* by French natives. Three topics: phonétique corrective; enseignement du vocabulaire; and méthodologie de l'enseignement du français, langue étrangère. See Special Programs section.
- Sec 2, Materials for Foreign Languages in the Elementary School, June 28-July 16, 11:15-1:30 MTWThF, Arch 20, Jorstad**
Methods for teaching FLES; preparation of lessons, units, and supplementary materials for young students. Completion of a practicum with elementary-age children, may lead to endorsement to teach FLES. This offering for 3 credits is open to elementary and secondary teachers of languages. Further information is available from Professor Helen Jorstad, 230 Peik Hall, University of Minnesota, Minneapolis, Minnesota 55455.
- 5192.†† FOREIGN LANGUAGE WORKSHOP: DEVELOPMENT OF MATERIALS AND SHORT COURSES FOR INDIVIDUALIZED INSTRUCTION—July 1-August 12.** (3-12 cr; each section limited to 30 students)
For foreign language teachers to develop and test new types of curriculum materials in French, German, or Spanish, including independent study units, learning packages, mini-courses, quarter courses, small group projects, and enrichment materials to be tried out with high school students, revised, and published for the benefit of teachers of the state. Three sections will be offered in the locations listed below. Students will register for 12 credits in the appropriate section. Deadline for advance application is May 3; interested students should write to Professor Helen Jorstad, University of Minnesota, 230 Peik Hall, Minneapolis, Minnesota 55455. See Special Programs section.
- Sec 1, Besançon, France, Lange
Sec 2, Erlangen, Germany, Clifford
Sec 3, Salamanca, Spain, Jacobson
- 5203. RESOURCE MANAGEMENT IN INSTRUCTIONAL PROGRAMS.** (3 cr; prereq 5000 or 5; \$4 lab fee; IV 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.
- 5205. APPLICATIONS OF COMPUTERS IN EDUCATION.** (2 cr; prereq 5003; II-III TTh; EdH Annex 64) Tennyson
Examination of computer uses for education; instruction, simulation, counseling, testing, and information retrieval; computer-managed course.
- 5207. APPLICATIONS OF TELEVISION IN EDUCATION.** (2 cr; prereq 5004; \$4 lab fee; II MWF; PeikH 335) Davis
Current uses of video systems in education.
- 5209. APPLICATIONS OF AUDIO AND VISUALS IN EDUCATION.** (2 cr, \$5105; \$4 lab fee; IV-V TTh; EdH Annex 64) Tennyson
Characteristics, advantages, limitations, and practical classroom use of audiovisual materials of nonprojected and projected types; practice in operation of audiovisual equipment.

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

- 5215. PREPARATION OF MEDIA MATERIALS: VIDEO.** (2 cr; prereq 5201, 5207; \$4 lab fee; III MWF; PeikH 335) Davis
 Prototype development of instructional materials using video materials.
- 5321. TEACHING LITERATURE IN SECONDARY SCHOOLS.** (3 cr; limited to 40 students; prereq grad, MEd student or jr-sr high school tchg exper; III MTWThF; PeikH 225) Beach
 Current theory and methods of instruction; research and response to literature and reading; adolescent literature; growth assessment; curriculum design and evaluation.
- 5326.†† WORKSHOP: FILM STUDIES.** (3 cr; limited to 40 students; \$4 lab fee; V-VI MTWThF; EdH Annex 64) Beach
 Application of film as extension and as alternative to study of traditional literary forms; as context or stimulus for discussion, for reading, for writing; analysis and evaluation of range of film and published materials available for use with secondary school students in film-study classes.
- 5344. TEACHING READING IN CONTENT AREAS.** (3 cr; limited to 40 students; prereq 9 cr in education; IV MTWThF; PeikH 225) Patberg
 Procedures, objectives, and materials for teaching reading in subject-matter fields.
- 5351. DIRECTED STUDY.** (Cr ar [max 6 cr]; S-N optional; prereq \$) Stochl
 Individual or group work on curricular, instructional, or evaluation problems.
- 5394.†† WORKSHOP: SCIENCE EDUCATION.** (1-12 cr [max 12 cr]; each section limited to 35 students) Gennaro
 Analysis of issues, materials, and instructional techniques on current topics of relevance to secondary school and college science teachers.
Sec 1, Interdisciplinary Approaches to the Teaching of Science and Social Studies, June 15-25, 3 cr, I-III MTWThF and 6 hrs ar, PeikH 175
 Curricular materials and techniques useful for teaching junior and senior high school students, topics in environmental education, animal behavior and psychology, evolution, and anthropology.
Sec 2, Teaching Genetics, July 6-16, 3 cr, I-III MTWThF, and 6 hrs ar, PeikH 385
 Curricular materials and instructional techniques useful for teaching genetics in junior and senior high schools.
- 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 35 students; II MTWThF; PeikH 225) Piché
 Psychological and social-psychological perspectives for the study of language-communication; dimensions of language variation (dialects, codes, registers); implications for program development and instructional practices.
- 5509. DIRECTED INDIVIDUAL STUDY.** (1-6 cr [max 6 cr]) R Tennyson
 Review of literature in research and theory of instructional systems.
- 5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS.** (1-12 cr [max 12 cr]; prereq MEd student in English education) Piché, Beach
 Individual or group work on curricular, instructional, or evaluation problems and projects applicable to school situations.
- 8501.* PROBLEMS: INSTRUCTIONAL SYSTEMS.** (Cr ar; prereq \$) Tennyson
 Individual empirical investigation.
- 8801.* PROBLEMS: TEACHING SOCIAL STUDIES.** (3-9 cr; prereq 5150, 5152, 5156, 8104 or \$; hrs ar) Glenn
 Individual research.
- 8825.* PROBLEMS: SECONDARY SCHOOL SUPERVISION.** (Cr and hrs ar; prereq \$) E Anderson
 An individual problems course on improvement of instruction.
- 8871.* PROBLEMS: CURRICULUM CONSTRUCTION.** (Cr and hrs ar; prereq \$) Gennaro, Jorstad, Kimpston
- 8895. READINGS IN ENGLISH AND MODERN LANGUAGE EDUCATION.** (1-3 cr) Piché, Beach, Jorstad
 Readings in high school English or modern language instruction.

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

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

For those qualified to undertake individual research.

8936. FIELD STUDY IN GENERAL CURRICULUM. (6-9 cr; prereq 2; hrs ar) Kimpston

FIRST AND SECOND TERMS: EIGHT-WEEK COURSES

3150. INTRODUCTION TO SECONDARY SCHOOL TEACHING—June 15-August 6. (5 cr; limited to 25 students; prereq 5 cr introductory psychology; I-III MWF; SmithH 111)

Secondary education; purposes, history, organization, curriculum, pupils; organization of instructional units; teaching profession; lecture, discussion section; individual youth leadership project.

3155. INTRODUCTION TO SECONDARY SCHOOL TEACHING—June 15-August 6. (5 cr; each section limited to 25 students; prereq 5 cr introductory psychology)

Individual differences and educational measurement; statistics, standardized tests, teacher-made tests, marking and promotion, educational research; psychology of learning and human development; lecture, discussion section; individual youth leadership project.

Sec 1, I-III MWF, Ph 157

Sec 2, I-III MWF, Ph 236A

SECOND TERM

3151. DIRECTED STUDY. (1-9 cr; prereq Δ) Stochl

See First Term.

5000. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL SYSTEMS—July 22-August 12. (1 cr, \$5102; \$4 lab fee; III-V Th; EdH Annex 64) Tennyson

Introduction to use of technology in instruction; self-instructional, computer-managed module on instructional systems.

5001. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL MEDIA—July 20-August 10. (1 cr, \$5102; \$4 lab fee; III-V T; EdH Annex 64) Tennyson

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

5002. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL EQUIPMENT RESOURCES—July 21-August 11. (1 cr, \$5102; \$4 lab fee; III-V W; EdH Annex 64) Tennyson

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

5113. INTRODUCTION TO CURRICULUM DEVELOPMENT—July 20-August 6. (3 cr; prereq 3155 or equiv; III-IV MTWThF; CD 216) Kimpston

See First Term.

5131. INSTRUCTIONAL, SIMULATIONS AND LEARNING GAMES: DEVELOPMENT AND CLASSROOM USE. (3 cr; limited to 24 students; IV-V MTWThF; PeikH 315, 336) D C Johnson

Background, development factors, subject-matter models, procedures for use of materials; analysis of the value of such material.

5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION. (1-12 cr [max 12]) Mackey

See First Term.

5152. TECHNIQUES OF INSTRUCTION IN SOCIAL STUDIES. (3 cr; limited to 40 students; 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—July 26-August 6. (1-3 cr [max 12 cr]; limited to 40 students; 8:00-11:00 MTWThF; PeikH 165) Mackey

This offering for 3 credits.

5156. PRACTICUM IN SOCIAL STUDIES INSTRUCTIONAL TECHNIQUES. (1 cr; prereq 5150, 5152) Mackey

See First Term.

5173. DESIGN OF CURRICULUM INSTRUCTIONAL MATERIALS—July 20-August 4. (1-12 cr; limited to 40 students; 1:00-3:30 MTWThF; Bu 123) Kimpston

Development and implementation of systematic principles and procedures; writing of goals and objectives, selection of content, development of activities, identification/selection of resources, evaluative activities for measuring objective attainment. This offering for 3 credits.

- 5176. CLASSROOM RESEARCH IN ENGLISH EDUCATION AND READING—July 20-August 6.** (3 cr; limited to 30 students; prereq MEd student in Engl educ or §; I-II MTWThF; PeikH 225) Graves
Review and analysis of current studies; design and analyses for school-based research.
- 5194. CURRICULUM DEVELOPMENT IN SECONDARY ENGLISH AND SPEECH—July 20-August 6.** (3 cr; limited to 40 students; prereq 3326 or equiv; II MTWThF; EItH N119) Brunetti
Analysis and evaluation of curricula and trends; emphasis on articulation. See Special Programs section.
- 5201. SYSTEMS APPROACH TO DESIGN OF INSTRUCTION.** (3 cr; prereq 5000; \$4 lab fee; II MTWTh; EdH Annex 84) Tennyson
Instructional materials design in accordance with systems principles including design of a specific unit of courseware.
- 5322. TEACHING COMPOSITION AND COMMUNICATION IN JUNIOR AND SENIOR HIGH SCHOOLS.** (3 cr; IV MTWThF; PeikH 225) Michlin
Contemporary directions in rhetorical theory and analysis of recent curriculum developments bearing on the teaching of oral and written composition.
- 5350. CURRENT DEVELOPMENTS IN ENGLISH AND SPEECH EDUCATION—July 20-August 6.** (1-6 cr [max 12 cr]; V-VI MTWThF; PeikH 225) Brunetti
New instructional approaches, new materials, current issues and problems in English and language arts education. This offering, for 3 credits *only*, will focus on integrating the language arts curriculum: designing new programs, planning new electives, and revising existing courses to include elements of language, literature, and composition; dealing with basic skills; incorporating film, electronic media, and the popular arts; individualizing the curriculum; developing means to evaluate courses. See Special Programs section.
- 5351. DIRECTED STUDY.** (Cr ar [max 6 cr]); S-N optional; prereq §) Stochl
See First Term.
- 5394.†† WORKSHOP: SCIENCE EDUCATION.** (1-12 cr [max 12 cr]; each section limited to 35 students) Boeck
See First Term.
Sec 1, Practical Physics, July 20-30, 3 cr, I-III MTWThF and 6 hrs ar, PeikH 385
Practical applications of physics in daily living.
Sec 2, Evaluation in Science Instruction, August 2-13, 3 cr, I-III MTWThF and 6 hrs ar, PeikH 385
- 5395. SCHOOL-BASED PROJECTS IN SCIENCE EDUCATION.** (1-12 cr [max 12 cr]; prereq MEd student in science education) Boeck
See First Term.
- 5509. DIRECTED INDIVIDUAL STUDY.** (1-6 cr [max 6 cr]) R Tennyson
See First Term.
- 5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS.** (1-12 cr [max 12 cr]; prereq MEd student in English education) Brunetti, Graves
See First Term.
- 8801.* PROBLEMS: INSTRUCTIONAL SYSTEMS.** (Cr ar; prereq §) R Tennyson
See First Term.
- 8801.* PROBLEMS: TEACHING SOCIAL STUDIES.** (3-9 cr; prereq 5150, 5152, 5156, 8104 or §; hrs ar) Gardner, Mackey
See First Term.
- 8871.* PROBLEMS: CURRICULUM CONSTRUCTION.** (Cr and hrs ar; prereq §) Boeck, Kimpston
- 8895. READINGS IN ENGLISH AND MODERN LANGUAGE EDUCATION.** (1-3 cr) Brunetti, Graves
See First Term.
- 8896.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar) Brunetti, Graves
See First Term.
- 8936. FIELD STUDY IN GENERAL CURRICULUM.** (6-9 cr; prereq §; hrs ar) Kimpston

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").

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

FIRST TERM

5130. ADMINISTRATOR DEVELOPMENT SEMINAR. (3-9 cr [max 9]; each section limited to 25 students)

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 certification programs. Preapplication is required. First term (sections 1 and 2) participants will register concurrently for 3 credits in EdAd 5130 and 3 credits in EdAd 5139 in the same-numbered section. In second term section 1 and 2 students will register for 3 credits in EdAd 5130 in the appropriate section. Second term participants (section 3) will register for 3 credits in EdAd 5130 during the first term and will register concurrently for 3 credits in EdAd 5130 in the same-numbered section and 3 credits in EdAd 5139 during second term. See Special Programs section.

Sec 1, 3 cr, II-VII MTWThF, BioSci 64, Alkire
Sec 2, 3 cr, II-VII MTWThF, BioSci 70, Jackson
Sec 3, 3 cr, hrs ar, Morgan

5139. LABORATORY IN DECISION MAKING. (1-4 cr per qtr; each section limited to 25 students)

Contribution of recent research and theory to effective administration; analysis of administrative behavior in realistic settings and relations of administration to human behavior. See Special Programs section.

Sec 1, 3 cr, II-VII MTWThF, BioSci 64, Alkire
Sec 2, 3 cr, II-VII MTWThF, BioSci 70, Jackson

5231. PRACTICUM IN SCHOOL-COMMUNITY RELATIONS—June 15-29. (1-4 cr; S-N optional; limited to 35 students; 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.

8202. POLITICS OF EDUCATION. (3 cr; limited to 25 students; IV MTWThF; ClaOff B25) 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.

8214. SCHOOL MANAGEMENT INFORMATION SYSTEMS—June 30-July 16. (3 cr, §8222; limited to 35 students; prereq 8220, 8212; 2:00-5:00 MTWThF; CofH 120) Morris

Basic techniques required to generate, maintain, and access the computer based management information system in education. See Special Programs section.

8215. THE ELEMENTARY SCHOOL PRINCIPALSHIP. (3 cr; limited to 30 students; prereq 8201 and 8202 or §; II MTWThF; ClaOff 27) Lambert

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

8218. SEMINAR: THE SOCIAL ORGANIZATION OF SCHOOLS. (3 cr; limited to 30 students; prereq educational administration major or §; IV-V MWF; ClaOff 27) Popper

Structural components of school organization examined within the framework of social system theory; classifications of system properties and observation in operational contexts investigated by means of empirical models.

8220. QUANTITATIVE FOUNDATIONS FOR MANAGEMENT METHODS. (3 cr; limited to 35 students; III MTWThF; ClaOff B30) Morris

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

8224. LEGAL IMPLICATIONS OF ACTS BY SCHOOL BOARDS, ADMINISTRATORS, AND TEACHERS. (3 cr; limited to 35 students; I MTWThF; ClaOff B25) 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; limited to 25 students; II MTWThF; ClaOff B25) Hooker

Analysis of court decisions, statutes, and administrative regulations related to equality of educational opportunity and equal protection under the law.

8248. SEMINAR: METROPOLITAN SCHOOL GOVERNANCE. (3 cr; limited to 25 students; prereq 8202; III MTWThF; ClaOff B25) Mazzoni

Impact of metropolitanization on policy issues confronting public schools in core cities; strategies proposed for restructuring educational governance emphasizing the Twin Cities metropolitan area.

- 8253. ADMINISTRATION IN HIGHER EDUCATION.** (3 cr; limited to 30 students; prereq Educ 8250; II MTWThF; ClaOff B30) Keller
Control, faculty and employee personnel administration, budget making and administration, financial accounting and reporting, protection of college funds, public relations.
- 8264. THE SECONDARY SCHOOL PRINCIPALSHIP.** (3 cr; limited to 35 students; I MTWThF; ClaOff B35) Nickerson
The role of the principal: qualifications, duties, and problems including current issues and factors of staff and student relationships.
- 8265. ADMINISTERING THE HIGH SCHOOL PROGRAM.** (3 cr; limited to 35 students; III MTWThF; ClaOff B35) Nickerson
Practices and procedures in scheduling, improving the curriculum, community relations, records and reports, school services, and program evaluation.
- 8270.* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION.** (Cr and hrs ar; prereq \$) Lambert, Alkire
- 8271.* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION.** (Cr and hrs ar; prereq \$) Nickerson, Popper, Mazzoni, Jackson
- 8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION.** (1-3 cr per qtr; hrs ar) Hooker, Keller, Lambert, Nickerson, Popper, Alkire, Mazzoni, Morgan, Morris, Jackson
For superintendents and principals qualified to make intensive studies of a school system.
- 8273.* FIELD STUDY.** (0-10 cr; prereq \$; hrs ar) Hooker, Keller, Lambert, Nickerson, Popper, Alkire, Mazzoni, Morgan, Morris, Jackson
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.** (3 cr; limited to 35 students; prereq \$; III MTWThF; ClaOff B30)
Procedures in establishing and improving educational programs for exceptional children.
- 5130. ADMINISTRATOR DEVELOPMENT SEMINAR.** (3-9 cr [max 9 cr]; each section limited to 25 students)
See First Term.
Sec 1, 3 cr, hrs ar, Alkire
Sec 2, 3 cr, hrs ar, Jackson
Sec 3, 3 cr, II-VII MTWThF, BioSci 64, Morgan
- 5139. LABORATORY IN DECISION MAKING.** (1-4 cr per qtr; limited to 25 students; II-VII MTWThF; BioSci 64) Morgan
See First Term. This offering for 3 credits.
- 8201. FORMAL ORGANIZATIONS IN EDUCATION.** (3 cr; limited to 30 students; IV-V MWF; ClaOff B25) Popper
Focus on schools; organizations as social systems; individual behavior in organization roles; technical or production processes and management control systems.
- 8202. POLITICS OF EDUCATION.** (3 cr; limited to 25 students; I MTWThF; ClaOff B25) Mazzoni
See First Term.
- 8210. ECONOMICS OF EDUCATION.** (3 cr; limited to 30 students; I MTWThF; ClaOff B30)
Application of economic concepts to education, human capital, cost-benefit analyses of educational expenditures, rates of return to investment, economic decision making; sources of revenue, alternative tax sources, federal, state, and local distribution systems.
- 8221. QUANTITATIVE MODELS FOR PROGRAM ANALYSIS AND RESEARCH.** (3 cr; limited to 35 students; prereq 8220; III MTWThF; ClaOff B25) 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—July 20-August 3.** (3 cr; limited to 35 students; 1:00-4:00 MTWThF; ClaOff B30) Mansergh
Selection, assignment, evaluation, and development of school personnel; salary and conditions of service; policies of administrative, instructional, and noninstructional personnel. See Special Programs section.

- 8238. SEMINAR: THEORY AND RESEARCH.** (3 cr; limited to 30 students; prereq 8218, 8235, educational administration major or §; II MTWThF; ClaOff B25) 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, Mazzoni, Jackson
- 8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION.** (1-3 cr per qtr; hrs ar) Hendrix, Keller, Popper, Alkire, Mansergh, Mazzoni, Morgan, Jackson
See First Term.
- 8273.* FIELD STUDY.** (0-10 cr; prereq §; hrs ar) Hendrix, Keller, Popper, Alkire, Mansergh, Mazzoni, Morgan, Jackson
See First Term.

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION

Physical Education (PE)

Nonprofessional Physical Education—Students interested in meeting a college requirement for physical education or in taking activity courses for elective credit may register for PE 1007, 1014, 1038, 1050, 1107, 1138, 1306, 1410.

Professional Physical Education—Courses are offered at the advanced and graduate level and in the undergraduate major in physical education. Many of these courses apply toward meeting the certification 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 offered this summer that apply toward meeting the requirements in the various programs are as follows:

1. An Advanced Degree in Physical Education—PE 5110, 5121, 5122, 5125, 5130, 5134, 5136, 5152, 5162, 5620, 5700, 5710, 5740, 5750, 5980, 5981, 5983, 8980, 8981
2. Undergraduate Major in Physical Education—PE 3111, 3113, 3115, 3125, 3176
3. State of Minnesota Coaching Credential—PE 3110, 3111, 3113, 3115, 3125, 3143, 3176, 5620

Elementary School Majors—PE 3327 and Hlth 3330 are 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 health status related to their ability to participate safely in the course activities seek advice from a physician.

ACTIVITY COURSES—NONPROFESSIONAL (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 24 students; \$4 lab fee; II MTWTh; NorrisH 58) Chien
Course for nonswimmers includes aquatic breathing, floating, bobbing, treading, finning, human stroke, elementary backstroke, sidestroke, front crawl.
- 1014. CONDITIONING.** (1 cr; limited to 40 students; \$4 lab fee; I MTWTh; St Paul Gym) Conrad
Improvement of physical fitness and general appearance through running, circuit training, and progressive exercises of various types.
- 1038. TENNIS.** (1 cr; each section limited to 24 students; \$4 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, I MTWTh, CH 325, Tennis Courts, Ben-Sira
Sec 2, II MTWTh, CH 325, Tennis Courts, Morgan
- 1050. GOLF.** (1 cr; each section limited to 24 students; \$4 lab fee) Dorn
Emphasizes fundamentals of grip, stance, and swing in addition to etiquette and rules.
Sec 1, 12:30-1:45 MW, NorrisH 60, Golf Course
Sec 2, 12:30-1:45 TTh, NorrisH 60, Golf Course
- 1107. SWIMMING.** (1 cr; limited to 24 students; prereq 1007 or equiv; \$4 lab fee; III MTWTh; NorrisH 58) Conrad
- 1138. TENNIS.** (1 cr; limited to 24 students; prereq 1038 or equiv; \$4 lab fee; III MTWTh; Tennis Cts, CH 325) Morgan
- 1410. WATER SAFETY INSTRUCTOR.** (2 cr; limited to 22 students; prereq current American Red Cross Senior Lifesaving Certificate; \$4 lab fee; I-II MTWThF; CH Pool 15) Mowerson
For those interested in obtaining the Red Cross Swimming Instructor's Certificate.

PROFESSIONAL COURSES (PE)

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

FIRST TERM

- 3110. HUMAN ANATOMY.** (3 cr; limited to 35 students; II MTWThF; CH 206) Serfass
Emphasizes bones, nerves, and muscles and their significance in physical education.
- 3115. PHYSIOLOGICAL APPLICATION TO SPORTS.** (3 cr, \$PubH 3385, \$3386; limited to 30 students; III MTWThF; CH 206) Alexander
Consideration of 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 Certificate.
- 3125. PHILOSOPHY OF PHYSICAL EDUCATION AND SPORT.** (3 cr; limited to 35 students; I MTWThF; CH 215) Osterhoudt
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.
- 3176. SWIMMING AND DIVING COACHING.** (2 cr; limited to 25 students; prereq 1600 or 1800 or \$; IV MTWThF; CH 15, 215) Mowerson
Instruction in and practice of the basic techniques used in competitive swimming and diving; rules and regulations governing staging of competition.
- 5122. APPLIED PHYSIOLOGY.** (3 cr; prereq PubH 3386 or Phsl 3051 or equiv; IV MTWThF; CH 214) Serfass
Application of concepts in human physiology to exercise physiology, sports training and physical activities with particular reference to respiratory and cardiovascular systems.

- 5125. ADVANCED PHILOSOPHY OF PHYSICAL EDUCATION AND SPORT.** (3 cr; prereq 3125 or §; III MTWThF; CH 214) Osterhoudt
Examination of comprehensive, systematic, and revealing accounts of the status of physical education and sport with respect to reality, knowledge, and value.
- 5134. PERCEPTUAL-MOTOR DEVELOPMENT IN CHILDHOOD.** (3 cr; prereq 3113 or §; III MTWThF; BFAB 125) Plack
The motoric dimension of perception: emphasis on developmental tenets of perception, diagnosis, and remediation of perceptual-motor deficiencies and related research.
- 5152. CURRICULUM DEVELOPMENT.** (3 cr; prereq 5151 or equiv; I MTWThF; CH 214) Young
Trends, issues, and problems at selected levels of interest: elementary, secondary, junior college; for experienced teachers.
- 5162. PRACTICUM: CONSTRUCTION OF WRITTEN TESTS.** (3-6 cr, §H1th 5160; prereq PsyF 5120 or §; V MTWThF; CH 214) Shick
Practical experience in the development of written tests with emphasis on test design and evaluation of the items.
- 5620. PRACTICUM: PREVENTION AND CARE OF ATHLETIC INJURIES—June 28-July 9.** (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.
- 5710.†† WORKSHOP: PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL CHILD—June 15-29.** (1-12 cr [max 12 cr]; S-N at option of dept; 1:30-4:00 MTWThF; NorrisH 3, 153, 153a) Plack, Rorabacher
Current trends, instructional techniques, and resource materials. This offering for 3 credits will focus on movement experiences for young children and is designed for preschool educators, kindergarten and primary grade teachers, and physical educators. See Special Programs section.
- 5740.†† WORKSHOP: COACHING OF INDIVIDUAL, DUAL, OR TEAM SPORTS—June 15-22.** (1-12 cr [max 12 cr]; limited to 50 students; 12:00-5:00 MTWThF; BFAB 125) Griak, Anderson
Instruction at the advanced level including analyses of skills, game strategies, specific techniques of coaching, and methods of training and conditioning. This offering for 3 credits will focus on track and field. See Special Programs section.
- 5750. ATHLETICS IN CONTEMPORARY SOCIETY: Administration of Women's Programs.** (3-9 cr; prereq sr or grad; IV MTWThF; CH 206) Jaeger
Contemporary issues; background or organizational and management problems of inter-scholastic and intercollegiate athletics. This offering for 3 credits.
- 5980. INTRODUCTION TO RESEARCH.** (3 cr, §H1th 5980; prereq §; II MTWThF; CH 214) Shick
Methods and design for research in health, physical education, and recreation.
- 5981. PROBLEMS.** (Cr and hrs ar; prereq MEd candidate, §) Alexander, Jaeger, Osterhoudt, Plack, Serfass, Shick, Young
Focus on teaching of physical education.
- 5983. READINGS: PHYSICAL EDUCATION.** (1-3 cr; prereq sr honor or grad student, §) Alexander, Jaeger, Osterhoudt, Plack, Serfass, Shick, Young
Independent study under tutorial guidance.
- 8980.* RESEARCH PROBLEMS.** (1 cr; prereq 5980, PsyF 5110 or §; S-N only; V MTWThF; CH 224) Alexander
Designing and reporting on individual problems; required of all M.A. and Ph.D. candidates.
- 8981.* RESEARCH PROBLEMS.** (Cr and hrs ar; prereq 8980 or §; S-N only) Alexander, Jaeger, Osterhoudt, Plack, Serfass, Shick, Young
Individual problems.

ACTIVITY COURSES—NONPROFESSIONAL (PE)

(Open to all students)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

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

SECOND TERM

- 1007. SWIMMING.** (1 cr; limited to 24 students; \$4 lab fee; I MTWTh; CH 15) Paulson
See First Term.
- 1038. TENNIS.** (1 cr; each section limited to 24 students; \$4 lab fee)
See First Term.
Sec 1, I MTWTh, CH 325, Jandris
Sec 2, II MTWTh, St Paul Gym, Kundla
Sec 3, III MTWTh, CH 325, Paulson
Sec 4, III MTWTh, St Paul Gym, Kundla
- 1050. GOLF.** (1 cr; each section limited to 24 students; \$4 lab fee) Tennesen
See First Term.
Sec 1, 12:30-1:45 MW, NorrisH 60, Golf Course
Sec 2, 12:30-1:45 TTh, NorrisH 60, Golf Course
- 1107. SWIMMING.** (1 cr; limited to 24 students; prereq 1007 or equiv; \$4 lab fee; II MTWTh; CH 15)
Workinger
- 1138. TENNIS.** (1 cr; limited to 24 students; prereq 1038 or equiv; \$4 lab fee; II MTWTh; CH 325,
Tennis Courts) Jandris
See First Term.
- 1306. SENIOR LIFESAVING.** (1 cr; limited to 24 students; prereq ability to swim 440 yds; \$4 lab fee;
III MTWThF; CH Pool 15) Workinger
Designed for students interested in obtaining the Red Cross Lifesaving Certificate.

PROFESSIONAL COURSES (PE)

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

SECOND TERM

- 3111. MECHANICS OF MOVEMENT.** (3 cr; limited to 35 students; prereq Anat 1027; IV MTWThF; CH
215) Stoner
Structure of the body, principles and mechanics of bodily movements.
- 3113. MOTOR LEARNING AND MOTOR DEVELOPMENT.** (4 cr; limited to 35 students; II MTWThF;
CH 215) Johnson
Examination of motor growth and development of children, adolescents, and adults with
emphasis on sociopsychological factors.
- 3143. ORGANIZATION AND MANAGEMENT OF SPORT** (3 cr; limited to 35 students; prereq 2 cr
coaching course; I MTWThF; CH 215) LaPoint
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 elementary education major; I MTWThF;
NorrisH 3, 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 observations of children, microteaching, skill analysis, and group discus-
sions.
- 5110. SUPERVISION OF SCHOOL HEALTH AND PHYSICAL EDUCATION.** (3 cr, \$Hlth 5110; prereq
\$; III MTWThF; CH 214) LaPoint
Functions; adaptations of accepted procedures for observation, guidance, and training of
teachers.
- 5121. CONTRIBUTIONS OF BASIC SCIENCE TO PHYSICAL EDUCATION.** (3 cr; prereq \$; II
MTWThF; CH 214) Stoner
Recent research in related physical sciences; applications in selected areas.
- 5126. ADVANCED PSYCHOLOGICAL AND SOCIOLOGICAL DIMENSIONS OF PHYSICAL ACTIVITY.** (3
cr; prereq \$; I MTWThF; CH 214) Krotee
Advanced insight into the substance, nature, and significance of this dimension of physical
activity; focus on current research, issues, and trends as well as potential practical contribu-
tions.

- 5130. MOTOR LEARNING AND HUMAN PERFORMANCE.** (3 cr; prereq 3113 or §; IV MTWThF; CH 214) R Johnson
Mechanisms of human motor skill learning; emphasis on theories of motor learning and control of movement, motor memory, and individual differences.
- 5136. PSYCHOLOGY OF COACHING.** (3 cr; prereq 3113 or §; V MTWThF; BFAB 125) Krotee
Psychological aspects of coaching at the elementary, secondary, and college levels.
- 5700.†† WORKSHOP: DANCE IN EDUCATION—July 20-August 10.** (Cr ar [max 12 cr]; limited to 145 students; 9:00-5:00 MTWThF; NorrisH 151, 153, 153a, Dance Studio) Jette, staff
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. See Special Programs section for details.
- 5981. PROBLEMS.** (Cr and hrs ar; prereq MEd candidate, §) Krotee, LaPoint, Stoner, Johnson
See First Term.
- 5983. READINGS: PHYSICAL EDUCATION.** (1-3 cr; prereq sr honor or grad student, §) Krotee, LaPoint, Stoner, Johnson
See First Term.
- 8981.* RESEARCH PROBLEMS.** (Cr and hrs ar; prereq 8980 or §; S-N only) Krotee, LaPoint, Stoner, Johnson
See First Term.

Recreation, Park, and Leisure Studies (Rec)

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

FIRST TERM

- 1700. FIELD EXPERIENCE.** (1-15 cr; prereq students in Recreation for Special Groups program only; S-N only; hrs ar) Smith
Supervised experiences in selected agencies.
- 3150. LEADERSHIP IN NATURE RECREATION—June 28-July 13.** (3 cr; section 1 limited to 11 students, section 2 limited to 9 students; prereq 10 cr in physical, biological science) McAvoy
Identity and scope of nature recreation field; classwork and field trips. This offering will focus on methods of organizing, guiding, and protecting groups in outdoor recreation settings with a practical field application on either a backpacking or canoe trip. See Special Programs section.
Sec 1, 1:30-3:00 MTWThF, CH 206, with a weekend backpacking trip July 2-4
Sec 2, 1:30-3:00 MTWThF, CH 206, with a weekend canoe trip July 9-11
- 3700. SENIOR INTERNSHIP.** (1-12 cr; prereq 1525, sr, recreation major or minor, ¶3701 and §; S-N only; hrs ar) Chapman, McAvoy
Supervised experiences in selected agencies.
- 3701. SENIOR SEMINAR.** (3 cr; prereq 1525, sr, recreation major or minor, ¶3700 and §; I-II MTh; CH 206) McAvoy
Guided individual and group conferences.
- 5210. INTRODUCTION TO THERAPEUTIC RECREATION.** (3 cr; prereq §; III MTWThF; CH 215) Chapman
General field as background for the recreation leader, hospital administrator, and other personnel.
- 5630. PRACTICUM: THERAPEUTIC RECREATION.** (3-9 cr, §8630; prereq 12 cr in recreation; hrs ar) Chapman
Supervised experiences in program operation; administrative and supervisory duties.
- 5640. PRACTICUM: PUBLIC RECREATION AND PARKS.** (3-9 cr, §8640; prereq 12 cr in recreation; hrs ar) Chapman
Supervised experiences in program operation; administrative and supervisory duties.

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

- 5900.†† WORKSHOP: CONTEMPORARY ISSUES IN LEISURE SERVICES—June 14-19.** (1-12 cr [max 12 cr]; limited to 18 students; prereq Δ ; all day MTWThFS; CH 214) Griffin
This 3-credit offering will focus on the leisure and educational resources of a wild river. See Special Programs section.
- 5981. PROBLEMS.** (Cr and hrs ar; prereq MEd candidate, $\$$) Chapman
Focus on conduct of recreation programs.
- 5983. READINGS: RECREATION.** (1-3 cr; prereq sr, honor, grad, MEd student or $\$$; hrs ar) Chapman
Independent study under tutorial guidance.
- 8981.* RESEARCH PROBLEMS.** (Cr and hrs ar; prereq 8980 or $\$$; S-N only) Chapman
Individual problems.

SECOND TERM

- 1700. FIELD EXPERIENCE.** (1-15 cr; prereq students in Recreation for Special Groups program only; S-N only; hrs ar) Smith
See First Term.
- 3700. SENIOR INTERNSHIP.** (1-12 cr; prereq 1525, sr, recreation major or minor, ∇ 3701 and $\$$; S-N only; I T; CH 206) Schultz
See First Term.
- 3900. DIRECTED STUDY.** (3 cr [max 9 cr]; S-N optional; prereq recreation majors only, Δ ; hrs ar) Schultz
Self-directed study preceded by classroom study and possession of basic competence.
- 5630. PRACTICUM: THERAPEUTIC RECREATION.** (3-9 cr, $\$$ 8630; prereq 12 cr in recreation; hrs ar) Schultz
See First Term.
- 5640. PRACTICUM: PUBLIC RECREATION AND PARKS.** (3-9 cr, $\$$ 8640; prereq 12 cr in recreation; hrs ar) Schultz
See First Term.
- 5981. PROBLEMS.** (Cr and hrs ar; prereq MEd candidate, $\$$) Schultz
See First Term.
- 5983. READINGS: RECREATION.** (1-3 cr; prereq sr, honor, grad, MEd student or $\$$; hrs ar) Schultz
See First Term.

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 which apply to the undergraduate major in school and community health education are Hlth 1500 and 5120.
2. Courses offered this summer which apply to advanced and graduate degrees in school health education are Hlth 5120, 5140, 5150, 5160, 5300, 5400, 5402, 5685, 5981, 5983, 8980.

FIRST TERM

- 3330. TEACHING HEALTH IN THE ELEMENTARY SCHOOL.** (3 cr; limited to 40 students; prereq elementary education major; II MTWThF; NorrisH 201) Borstad
Content (including critical health issues) and methods of instruction in health education for the elementary school.

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

- 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.
- 5180. PRACTICUM: CONSTRUCTION OF WRITTEN TESTS.** (3-6 cr, \$PE 5162; prereq PsyF 5120; II MTWThF; CH 214) Shick
Practical experience in the development of written tests with emphasis on test design and evaluation of the items.
- 5400. TOPICS: EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE—July 6-18.** (3 cr, \$PubH 5032; prereq education sr, certified teacher, or school nurse; 1:00-4:30 MTWThF; HSUnitA 2-571/2-585) Cobb, Rothenberger
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.
- 5402. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 15-July 2.** (3 cr, \$PubH 5040, \$Mort 5040; limited to 80 students; prereq education sr, certified teacher, health science major, mortuary science major, school or public health nurse or \$; 1:30-4:00 MTWThF; HSUnitA 2-520) Fredlund, Lindgren, Slater
Basic background information on concepts and attitudes toward death, grief, and bereavement with emphasis on instructional aspects for the elementary and secondary schools; role of the school in suicide prevention. See Special Programs section.
- 5885. SCHOOL-BASED PROJECTS IN SCHOOL HEALTH EDUCATION.** (1-12 cr [max 12 cr]; prereq \$; hrs ar) Cobb, Lindgren
Individual or group projects applicable to local school situations such as curricular, instructional, or evaluative problems.
- 5980. INTRODUCTION TO RESEARCH.** (3 cr, \$PE 5980; prereq \$; II MTWThF; CH 214) Shick
Methods and design for research in health, physical education, and recreation.
- 5981. PROBLEMS.** (Cr and hrs ar; prereq \$) Cobb
Focus on teaching school health education.
- 5983. READINGS: HEALTH EDUCATION.** (1-3 cr; prereq sr honor, grad, \$) Cobb
Independent study under tutorial guidance.
- 8980.* RESEARCH PROBLEMS.** (1 cr; S-N only; prereq PE 5980, PsyF 5110 or \$; V MTWThF; CH 224) Jaeger
Designing and reporting on individual problems; required of all M.A. and Ph.D. candidates.

SECOND TERM

- 1500. AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY.** (2 cr; limited to 35 students; IV MTWThF; NorrisH 201) Lindgren
Lectures, demonstrations, and practice in first aid and personal safety; ARC Standard First Aid and Personal Safety Certificate awarded upon recommendation of instructor.
- 5120. ROLE OF THE SCHOOL HEALTH EDUCATOR IN HEALTH APPRAISAL.** (3 cr; III MTWThF; NorrisH 3) Lindgren
Role of school medical and dental advisers, nurse, teachers, and other school personnel in protection and maintenance phases.
- 5150. FAMILY LIFE AND SEX EDUCATION IN THE SECONDARY SCHOOLS.** (3 cr; prereq FSoS 5001 or \$; II MTWThF; NorrisH 3) Tanner
Concepts, appropriate materials, and methods for teaching in the junior and senior high schools.
- 5300. CONTEMPORARY PROBLEMS IN SCHOOL HEALTH EDUCATION.** (3 cr; IV MTWThF; NorrisH 3) Tanner
Instructional and individual problems.

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

- 5101. FOUNDATIONS OF CAREER DEVELOPMENT.** (3 cr; limited to 40 students; III-IV MW, 1 hr ar; Bu 123) Hansen
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; III-IV TTh, 1 hr ar; Bu 123) Shaffer
For persons whose professional work includes counseling and interviewing; not for certification as school counselors. Emphasis on counseling relationship and principles of interviewing; utilizes case studies, role playing, and demonstration.
- 5130. INTRODUCTION TO GUIDANCE.** (3 cr; limited to 40 students; I-II MWF; Jones 2) 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.
- 5131. GROUP PROCEDURES IN GUIDANCE.** (3 cr; limited to 35 students; prereq 9 cr in education, 5130 or §; VI-VII TTh; Bu 120) Shaffer
Content and materials for home room groups, occupation units, and other guidance courses in junior and senior high school.
- 5300.†† WORKSHOP: CAREER DEVELOPMENT—June 21-July 2.** (1-6 cr per qtr [max 12 cr]; prereq §; 10:15-1:00 MTWThF; FraH B1, B20) Tennyson
For counselors, teachers, and administrators; aspects of intervention theory in relation to psychological principles; counseling, career development, assessment, psychological education, and consultation. This offering for 3 credits. See Special Programs section.
- 5310. CAREER DEVELOPMENT AND COUNSELING OF WOMEN.** (3 cr; limited to 30 students; VI-VII MW; Bu 125) Hansen
Theory, research, fact, trends regarding the role and status of women in relation to work; counseling skills, strategies, interventions for facilitating female career development.
- 5320. GROUP COUNSELING: PRINCIPLES AND PROCEDURES.** (3 cr; prereq counseling certification or §; VI-VII MW; Bu 120) 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.
- 5620. PRACTICUM IN GROUP COUNSELING.** (1-6 cr [max 6 cr]; limited to 6 students; prereq counseling certification and §; VIII-IX MW; Bu 129) A Anderson
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 3 credits each term.
- 5900. INDEPENDENT STUDY: GUIDANCE AND COUNSELING.** (Cr and hrs ar; prereq §) Hansen, Tennyson, A Anderson, Shaffer
Independent study in areas of special interest to students.
- 8900.* RESEARCH METHODS IN COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY.** (1-3 cr [max 9 cr]; prereq MA student and §; hrs ar) Hansen, Tennyson, Shaffer, A Anderson
Research methodology and techniques; critical examination of literature; participation in formulating and executing a research proposal.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

- 8502. DOCTORAL SEMINAR: COUNSELING AND STUDENT DEVELOPMENT PSYCHOLOGY.** (Cr ar [max 6 cr]; limited to 12 students; prereq doctoral student in CSPP and §; II-III TTh; Jones 5) Parker
Seminar on issues in the field. Three credits for 10 weeks.

SECOND TERM

- 5101. FOUNDATIONS OF CAREER DEVELOPMENT.** (3 cr; limited to 40 students; III-IV MW, 1 hr ar; Bu 125) Tennyson
See First Term.
- 5110. COUNSELING PROCEDURES.** (3 cr; limited to 35 students; III-IV TTh, 1 hr ar; Bu 125) Shaffer
See First Term.

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

- 5130. INTRODUCTION TO GUIDANCE.** (3 cr; limited to 40 students; I-II MWF; Bu 123)
Tennyson
See First Term.
- 5620. PRACTICUM IN GROUP COUNSELING.** (1-6 cr [max 6 cr]; limited to 6 students; prereq counseling certification and §; VI-VII TTh; Bu 139C) Shaffer
See First Term. Students must register both terms for 3 credits each term.
- 5900. INDEPENDENT STUDY: GUIDANCE AND COUNSELING.** (Cr and hrs ar; prereq §) 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) Tennyson, Shaffer
See First Term.

School Psychology (SchP)

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

FIRST TERM

- 5300.††WORKSHOP: DEVELOPMENTAL EDUCATION.** (6 cr; limited to 35 students; prereq §; S-N optional; 8:30-11:30 MTWThF; E1H N508) Erickson, Sprinthall
Concepts and techniques of psychological and developmental education applied to assessed needs of specific groups of educators; emphasis on practical application of developmental psychological approaches to improve the effectiveness of educational programming in conceptual, moral, or ego development; positive self-identity; or interpersonal and affective growth. Not intended to meet certification requirements in school psychology. Students are required to register concurrently in 5514. Preapplication is required; write Professor Norman Sprinthall, N548 Elliott Hall, University of Minnesota, Minneapolis, Minnesota 55455.
- 5514. METHODS OF PSYCHOLOGICAL INTERVENTION IN THE CLASSROOM: GROUP.** (3 cr; limited to 35 students; prereq §; S-N optional; 11:30-12:30 MTWThF; E1H N508) Erickson, Sprinthall
A practical use of group techniques to broaden the accommodative power of the classroom in meeting developmental needs of a variety of students. Not intended to meet certification requirements in school psychology. Students are required to register concurrently in 5300. Preapplication is required; see 5300.
- 5910. DIRECTED READINGS: PSYCHOLOGICAL EDUCATION.** (1-5 cr [max 6 cr]; S-N optional; hrs ar) Erickson, Sprinthall
Theoretical and research literature in deliberate psychological education and other classroom intervention; designed to facilitate psychological growth and effectiveness. Not intended to meet certification requirements in school psychology.
- 8510. SEMINAR: SCHOOL PSYCHOLOGY.** (Cr ar; prereq §; hrs ar) Ysseldyke
Intensive study of significant topics from the behavioral sciences as such topics apply to contemporary educational problems. This offering for 3 credits.
- 8600. CLINICAL PRACTICE IN SCHOOL PSYCHOLOGY.** (1-5 cr; prereq 8310; hrs ar) Lindborg
Supervised diagnosis and treatment of children referred to psychoeducational settings; training in a broad range of approaches to problems of adjustment in school-age children, their families, schools, and community settings.
- 8700. INTERNSHIP: SCHOOL PSYCHOLOGICAL SERVICES.** (5-15 cr; prereq 8610, §; hrs ar) Weinberg
Advanced field experience; for doctoral candidates in school psychology.
- 8900.* RESEARCH PROBLEMS.** (Cr ar; prereq §; hrs ar) Weinberg
- 8910. DIRECTED STUDY IN SCHOOL PSYCHOLOGY.** (1-5 cr; prereq §; hrs ar) Weinberg
Reading and critical analysis of research on selected problems in school psychology.

SECOND TERM

- 8600. CLINICAL PRACTICE IN SCHOOL PSYCHOLOGY.** (1-5 cr; prereq 8310; hrs ar) Lindborg
See First Term.
- 8700. INTERNSHIP: SCHOOL PSYCHOLOGICAL SERVICES.** (5-15 cr; prereq 8610, §; hrs ar) Lindborg
See First Term.

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

8900.* RESEARCH PROBLEMS. (Cr ar; prereq §; hrs ar) Ysseldyke

8910. DIRECTED STUDY IN SCHOOL PSYCHOLOGY. (1-5 cr; prereq §; hrs ar) Ysseldyke
See First Term.

Special Education (SpEd)

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

FIRST TERM

5100. CHILDHOOD LANGUAGE DEVELOPMENT: CLASSROOM IMPLICATIONS. (3 cr; IV MTWThF; Pt 215)

Recent trends and findings in the study of language acquisition; classroom implications for the education of exceptional children.

5101. EDUCATION OF EXCEPTIONAL CHILDREN. (3 cr; III MTWThF; PillsH 110) Force

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

5107. MAINSTREAMING: ISSUES IN INDIVIDUALIZING INSTRUCTION. (3 cr; II MTWThF; CD 216) S
Pike Hall, Reynolds

Mandate for, implications of, and problems in the implementation of systems models and practical classroom practices which facilitate the education of the handicapped within regular classroom settings.

5112. EDUCATION OF LEARNING-DISABLED CHILDREN. (3 cr; III MTWThF; WuH 130) 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; II MTWThF; Pt 215) Warfield

Issues which relate to educational practices; community planning; educational philosophy, administration and organization, and programming. Meets concurrently with CPsy 5315.

5131. EDUCATIONAL PROBLEMS OF THE NEUROLOGICALLY IMPAIRED. (3 cr; prereq 5101 or §; V MTWThF; Pt 111) Force

Problems in development, learning, and adjustment produced by neurological impairment; study and development of materials to meet educational needs; observations of teaching and personal conferences.

5150. EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN. (3 cr; limited to 50 students; prereq grad or §; V-VII MW; Pt 215) McCauley

Discussion and evaluation of curricula, materials, and methods for instruction of disturbed and delinquent children in hospital, training school, and public school settings.

5155. PSYCHOEDUCATIONAL INTERVENTIONS: PSYCHOTIC CHILDREN. (3 cr; prereq 12 cr in psychology, child psychology, or special education; IV MTWThF; Pt 111) Stuecher

Introduction to psychopathology of children with psychotic characteristics; emphasis on psychoeducational intervention programs and teaching strategies.

5180. EDUCATION OF THE DISADVANTAGED. (3 cr; prereq 12 cr in psychology, educational psychology, or sociology; VI MTWThF; Pt 102) Wood

Educational needs of children handicapped by behavior related to deficiencies of physical and/or cultural environment; adaptations of educational programs.

5190. OUTSTANDING ABILITIES AND THE EDUCATIONAL PROCESS. (3 cr; III MTWThF; Pt 111) Rubin

The origin and development of terms such as giftedness, creativity, genius, talent, and intelligence; implications for educational practice; current issues and trends.

5301. CONTINGENCY MANAGEMENT IN SPECIAL EDUCATION SYSTEMS. (3 cr; each section limited to 20 students)

Behavior modification, precision teaching, and contingency contracting applied to problems in teaching exceptional children and adults.

Sec 1, II MTWThF, Pt 111

Sec 2, hrs ar

5601. PRACTICUM: SPECIAL EDUCATION. (Cr ar; section 2 limited to 10 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 Eight-Week Courses.

Sec 2, cr and hrs ar

- 5610. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY I.** (3 cr; limited to 95 Institute participants only; prereq ¶5110 and §; S-N optional; I-V MTWThF) V Bruininks
Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5110. Prior application required. See Special Programs section.
- 5611. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY II.** (3 cr; limited to 95 Institute participants only; prereq 5610, ¶5111, and §; S-N optional; I-V MTWThF) V Bruininks
Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5111. Prior application required. See Special Programs section.
- 5900. INDEPENDENT STUDY: SPECIAL EDUCATION.** (Cr ar [max 12 cr]; prereq §; hrs ar) Wood
- 8601. ADVANCED PRACTICUM.** (Cr ar; prereq §; hrs ar) Force, 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) Wood, Balow, Force, Rubin, V Bruininks, McCauley

FIRST AND SECOND TERMS: EIGHT-WEEK COURSES

- 5302.†† WORKSHOP: SPECIAL EDUCATION.** (Cr ar; section 1 limited to 20 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, June 14-August 6, 6 cr, I-V MTWThF, McCauley
- 5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 1 limited to 20 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, June 14-August 6, 6 cr, I-V MTWThF, McCauley

SECOND TERM

- 5100. CHILDHOOD LANGUAGE DEVELOPMENT: CLASSROOM IMPLICATIONS.** (3 cr; IV MTWThF; Pt 102)
See First Term.
- 5101. EDUCATION OF EXCEPTIONAL CHILDREN.** (3 cr; III MTWThF; Pt 215) Force
See First Term.
- 5105. IMPLEMENTING COURT DECISIONS ON EDUCATION OF THE HANDICAPPED.** (2-4 cr; limited to 40 students; III MTWThF; Arch 30) Balow
Analysis of recent litigation and legislation; emphasis on implementation of right to education, right to treatment, labeling, due process, and related issues. This offering for 3 credits.
- 5112. EDUCATION OF LEARNING-DISABLED CHILDREN.** (3 cr; III MTWThF; Pt 102) Ysseldyke
See First Term.
- 5120. INTRODUCTION TO MENTAL RETARDATION.** (4 cr, §CPsy 5315; prereq 5101; IV MTWThF; Pt 215) Warfield
See First Term.
- 5150. EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN.** (3 cr; limited to 50 students; prereq grad student or §; V-VII MW; Pt 215) McCauley
See First Term.
- 5180. EDUCATION OF THE DISADVANTAGED.** (3 cr; prereq 12 cr in psychology, educational psychology, or sociology; VI MTWThF; Pt 111)
See First Term.
- 5301. CONTINGENCY MANAGEMENT IN SPECIAL EDUCATION SYSTEMS.** (3 cr; I MTWThF; Pt 102) Deno
See First Term.

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

- 5302.†† WORKSHOP: SPECIAL EDUCATION—August 9-20.** (Cr ar; section 2 limited to 25 students; prereq §) Deno, Mirkin
Laboratory approach provides opportunities for school personnel to study specific problems related to special education. Prior application required. See Special Programs section. See also section 1 listed under Eight-Week courses.
Sec 2, 4 cr, II-VII MTWThF, Peikh 275
- 5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 2 limited to 10 students; S-N optional; prereq §)
See First Term. See also section 1 under Eight-Week Courses.
Sec 2, hrs ar, R Bruininks
- 5900. INDEPENDENT STUDY: SPECIAL EDUCATION.** (Cr ar [max 12 cr]; prereq §; hrs ar) R Bruininks
- 6601. ADVANCED PRACTICUM.** (Cr ar; prereq §; hrs ar) R Bruininks, Force
See First Term.
- 8900.* PROBLEMS.** (Cr ar; prereq §; hrs ar) Balow, R Bruininks, Force, Deno, McCauley

DEPARTMENT OF SOCIAL, PSYCHOLOGICAL, AND PHILOSOPHIC 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.** (3 cr; each section limited to 20 students; prereq education jr, sr; S-N only; lect 8:00-9:00 MTW; MechE 4) Redman
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. See Special Programs section.
Sec 1, 9:00-10:00 MTW, MechE 302
Sec 2, 9:00-10:00 MTW, Aero 211
Sec 3, 9:00-10:00 MTW, Aero 215
Sec 4, 9:00-10:00 MTW, Aero 309
Sec 5, 9:00-10:00 MTW, Aero 313
- 5110. INTRODUCTORY STATISTICAL METHODS.** (3 cr; each section limited to 40 students) Collier
(Not equivalent to 8110, 8310) Basic statistical techniques; comprehension of literature using elementary concepts and methods.
Sec 1, I MTWThF, EIH N647
Sec 2, II MTWThF, EIH N647
- 5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM.** (3 cr; limited to 35 students; II MTWThF; Bu 125) Terwilliger
Principles and methods for construction, evaluation, and improvement of classroom measures; techniques for describing results statistically; use of measurement in evaluating instruction and student performance; assignment of grades.
- 5121. BASIC PRINCIPLES OF MEASUREMENT.** (3 cr; limited to 35 students; prereq 5110 or 8110 or Psy 3801 or equiv; III MTWThF; Bu 125) Terwilliger
Fundamental concepts, principles, and methods in educational and psychological measurement; educationally useful properties of tests; types and uses of derived scores; factors influencing reliability and validity.
- 5141. PSYCHOLOGY OF SCHOOL LEARNING.** (3 cr; II MTWThF; Arch 55)
Survey of psychological conceptions of the learner, the schooling process and the implications of these conceptions for education.

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

- 5162. PERSONALITY AND SOCIAL DEVELOPMENT.** (3 cr; prereq 5 cr introductory psychology; I MTWThF; Bu 123) Lawrence
Major concepts and research findings in adjustment and development with special emphasis on educational implications.
- 5305.†† WORKSHOP IN HUMAN RELATIONS.** (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; each section limited to 20 students; S-N only; lect 8:00-9:00 MTWTh; MechE 18) 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. See Special Programs section.
Sec 1, 9:00-11:00 MTWTh, Aero 317
Sec 2, 9:00-11:00 MTWTh, Aero 319
Sec 3, 9:00-11:00 MTWTh, Aero 321
Sec 4, 9:00-11:00 MTWTh, Aero 327
- 5900. DIRECTED STUDY.** (Cr ar; prereq §; hrs ar) MacEachern
- 8110. STATISTICAL METHODS.** (3 cr; prereq 5110 or Psy 3801 or equiv; I MTWThF; Bu 120) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.
- 8120.* METHODS IN EDUCATIONAL RESEARCH.** (3 cr; II MTWThF; WuH 130) D Anderson
Methods and techniques employed in investigation and report of educational problems. Suggested for all candidates for graduate degrees.
- 8900.* RESEARCH PROBLEMS.** (Cr ar; prereq §; hrs ar) Collier, D Anderson, Terwilliger, MacEachern
- 8910.* PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY.** (Cr and hrs ar) Collier, MacEachern
Recent developments in statistical science; applications to educational and psychological problems.
- 8920.* PROBLEMS: MEASUREMENT.** (1-3 cr [max 9 cr]; hrs ar) Terwilliger
Intensive study and individual research.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

- 8112. STATISTICAL METHODS (PARTS I AND II).** (3 cr total for both parts; prereq 8111; II MWF; Bu 120) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

SECOND TERM

- 3380. INTRODUCTION TO HUMAN RELATIONS—July 20-30.** (3 cr; each section limited to 20 students; prereq education jr, sr; S-N only; lect 12:00-1:00 MTWThF; MechE 4) Redman
See First Term and Special Programs section.
Sec 1, 1:00-3:00 MTWThF, Kolth S132
Sec 2, 1:00-3:00 MTWThF, Kolth S133
Sec 3, 1:00-3:00 MTWThF, Kolth S134
Sec 4, 1:00-3:00 MTWThF, Kolth S135
Sec 5, 1:00-3:00 MTWThF, Kolth S136
- 5110. INTRODUCTORY STATISTICAL METHODS.** (3 cr; IV MTWThF; Bu 123) Stecklein
See First Term.
- 5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM.** (3 cr; II MTWThF; Bu 125) Stecklein
See First Term.
- 5141. PSYCHOLOGY OF SCHOOL LEARNING.** (3 cr; II MTWThF; CD 105)
See First Term.
- 5305.†† WORKSHOP IN HUMAN RELATIONS—July 20-August 6.** (1-6 cr [max 6], §CSPP 5305, §Educ 5305; each section limited to 20 students; S-N only; lect 12:00-1:00 MTWThF; MechE 18) Oden

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

See First Term and Special Programs section. This offering for 6 credits.

Sec 1, 1:00-4:00 MTWThF, Kolth S137

Sec 2, 1:00-4:00 MTWThF, Kolth S138

Sec 3, 1:00-4:00 MTWThF, Kolth S139

Sec 4, 1:00-4:00 MTWThF, Kolth S140

5900. DIRECTED STUDY. (Cr ar; prereq §; hrs ar) MacEachern

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

8130. COMPUTER APPLICATION TO STATISTICAL ANALYSES. (3 cr, §8116; prereq 8112 or equiv; \$4 lab fee; III MTWThF; Bu 123) D Anderson
Use of computer to analyze data from the behavioral sciences; interpretation of results; attention to large-scale problems.

8900.* RESEARCH PROBLEMS. (Cr ar; prereq §; hrs ar) Stecklein, D Anderson, MacEachern

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) Stecklein
See First Term.

8921.* PROBLEMS: EVALUATION. (Cr ar; prereq 5621 or 8525; hrs ar) D Anderson
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.

Social and Philosophic 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 50 students; prereq sr; IV MTWThF; Arch 15) 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, Weidman

5190. SOCIOLOGY OF EDUCATION. (3 cr, §Soc 5953; III MTWThF; BlegH 404) Weidman
Advanced studies in the social aspects of education; including the school as a socialization process, the social structure of education, the role of the school in social change.

5192. SOCIOLOGY OF HIGHER EDUCATION. (3 cr, §Soc 5958; prereq introductory statistics or §; IV MTWThF; BlegH 360) Weidman
Advanced studies in the social aspects of higher education; socialization of students, comparative institutional organization, role structure; emphasis on theory and empirical research.

5209. EDUCATION IN FUTURE SOCIAL SYSTEMS. (3 cr, §5212; II MTWThF; Arch 15) Harkins
Interdisciplinary inquiry into problems of social specialization and generalization; projections and analysis of long-range (30 years or more) social and technologic trends related to education.

8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION. (Cr ar; prereq §; hrs ar) Harkins, Weidman
For graduate students interested in research and original work in these areas.

SECOND TERM

- 3090. THE SCHOOL AND SOCIETY.** (3 cr; limited to 50 students; prereq sr; III MTWThF; Arch 15)
Weidman
See First Term.
- 3099. DIRECTED STUDY.** (1-6 cr; prereq §; hrs ar) Harkins, Weidman
- 5125. ADOLESCENCE IN CHANGING SOCIAL INSTITUTIONS.** (3 cr; IV MTWThF; CD 218) Weidman
Special status and conditions of adolescents in industrial societies; participation of youth in the socializing institutions: family, education, economic, religious, and political; problems related to adolescent development; emphasis on school peer relations.
- 5175. INTRODUCTION TO SYSTEMS THEORY IN SOCIAL SCIENCE AND EDUCATION.** (3 cr; II MTWThF; Arch 15) Harkins
Fundamental aspects of general systems theory; readings; basic modeling techniques.
- 5210. SOCIAL FORECASTING AND EDUCATIONAL FUTURES.** (3 cr; IV MTWThF; Arch 15) Harkins
Application of social sciences in their academic and applied dimensions to formal education, including the social-scientific and systems orientations toward communities; emphasis on short-range social and educational planning—near-present to a few years hence.
- 8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION.** (Cr ar; prereq §; hrs ar) Harkins, Weidman
See First Term.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Agricultural Education (AgEd)

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

FIRST TERM

- 5027. PRACTICUM: EXTENSION EXPERIENCES.** (2-6 cr [max 6 cr]; prereq §; hrs 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.
- 5041.†† WORKSHOP: AGRICULTURAL EDUCATION TECHNOLOGY—July 12-16.** (1-6 cr [max 6 cr]; I-IV, VI-VIII MTWThF) 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. Taught in Faribault, Minnesota.
- 5071. SUPERVISED OCCUPATIONAL EXPERIENCES IN AGRICULTURE—June 14-25.** (3 cr; I-IV MTWThF; ClaOff 130) Leske
Organization and administration of an occupational experience program in agriculture for high schools and area schools.
- 5072. PRACTICUM: AGRICULTURAL BUSINESS AND INDUSTRY—June 28-July 2.** (1-3 cr [max 9 cr]; I-IV and VI-VIII MTWThF; ClaOff 130) Leske, Norenberg
Observation, study, and experience in agricultural business and industry with application to educational programs in agriculture.
- 5090. INDEPENDENT STUDY.** (1-3 cr; prereq sr; hrs ar) Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R 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) Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R Peterson
Preparation of a paper dealing with studies in agricultural education applied to professional responsibilities.

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

- 5128. METHODS OF TEACHING—June 14-July 2.** (3 cr; prereq non-agricultural education major and/or §; I-II MTWThF; ClaOff 143) R Peterson
Methods of teaching agriculture or related subjects; developing competencies in planning, organizing, implementing, and evaluating instruction with practice in instructional techniques.
- 5129. CURRICULUM PLANNING—June 14-July 2.** (3 cr; prereq 5128 or ¶5128, non-agricultural education major and/or §; III-IV MTWThF; ClaOff 143) Marvin
Methods and procedures in planning a curriculum to teach within a specific subject matter area; curriculum construction for use in native country setting.
- 8001.* RESEARCH IN AGRICULTURAL EDUCATION.** (Cr ar; each section limited to 20 students; prereq 15 cr in education)
Selecting problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts.
Sec 1, **June 14-25**, 3 cr, I-IV and VI-VIII MTWThF, ClaOff 143, Swanson
Sec 2, hrs ar, Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R Peterson
- 8091. FIELD PROBLEMS.** (3 cr; hrs ar) Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R Peterson
Making investigations, gathering data, and formulating plans regarding agricultural education.

SECOND TERM

- 5027. PRACTICUM: EXTENSION EXPERIENCES.** (2-6 cr [max 6 cr]; prereq §; hrs ar) Norenberg
See First Term.
- 5032. HIGH SCHOOL CURRICULUM IN AGRICULTURE—July 19-30.** (3 cr; prereq 10 cr in education; I-IV MTWThF; ClaOff 143) R Peterson
Philosophy, organization, and administration of instruction in agriculture departments in secondary schools.
- 5051. ENTERPRISE ANALYSIS—July 19-30.** (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—August 9-13.** (3 cr; prereq §; I-IV and VI-VIII MTWThF; ClaOff 143) Marvin
Administrative structure and function of subcollegiate programs.
- 5090. INDEPENDENT STUDY.** (1-3 cr; prereq sr; hrs ar) Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R Peterson
See First Term.
- 5095. INDEPENDENT STUDY.** (3 cr; prereq MEd student in agricultural education; hrs ar) Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R Peterson
See First Term.
- 8001.* RESEARCH IN AGRICULTURAL EDUCATION.** (Cr ar; each section limited to 20 students; prereq 15 cr in education)
See First Term.
Sec 1, **August 2-6**, 3 cr, I-IV and VI-VIII MTWThF, ClaOff 143, Swanson
Sec 2, hrs ar, Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R Peterson
- 8091. FIELD PROBLEMS.** (3 cr; hrs ar) Marvin, Bear, Persons, M Peterson, Swanson, Copa, Leske, Norenberg, R Peterson
See First Term.

Business Education (BsEd)

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

FIRST TERM

- 5102. TEACHING THE BASIC BUSINESS SUBJECTS—June 15-July 2.** (3 cr; I-II MTWThF; Jones 1) Hopkins
Recent trends and developments in teaching general business, economic geography, marketing, business law, and consumer education.

- 5107. MATERIALS AND METHODS IN OFFICE EDUCATION—June 15-July 2.** (3 cr; \$4 lab fee; III-IV MTWThF; PeikH 265) Lambrecht
Recent research and developments in teaching office procedures and the preparatory and related classes for office education.
- 5112. PROGRAM DEVELOPMENTS IN BUSINESS EDUCATION: Word Processing Concepts and Hardware—July 6-16.** (1-12 cr [max 12 cr]; limited to 30 students; I-IV MTWThF; PeikH 265) Lambrecht
Developments emerging from research and local, state, and national programs and projects; introduction to the concepts of word processing and application of word processing in business firms of various sizes; instruction and practice in the operation of word processing hardware; implications for teaching. This offering for 3 credits. See Special Programs section.
- 5114. OFFICE OCCUPATIONAL EXPERIENCE.** (3-12 cr, §SeEd 3100; limited to 20 students; prereq §; S-N optional; 5:30-6:30 pm T and hr ar; PeikH 255) Hopkins
Observation and practice in business offices; weekly seminars on application to teaching and guidance of high school and post-high school students. Each 3-credit offering requires 250 hours of work; may not apply for credit toward an advanced degree. See Special Programs section.
- 5116. SCHOOL-BASED PROJECTS IN BUSINESS EDUCATION.** (1-12 cr [max 12 cr]; limited to 20 students; prereq §; hrs ar) Hopkins, Lambrecht
Individual or group work on curricular, instructional, or evaluation problems and projects applicable to local school situations.
- 5390. DIRECTED STUDIES IN BUSINESS EDUCATION.** (1-6 cr [max 6 cr]; prereq §; hrs ar) Hopkins, Lambrecht
Opportunity for individual learning experiences not covered by regular courses.
- 8300. SEMINAR: RESEARCH IN BUSINESS AND ECONOMIC EDUCATION.** (1 cr; prereq §; S-N only; hrs ar) Hopkins
Primarily for doctoral-level students; planning and evaluation of research and individual projects.
- 8600. INTERNSHIP: BUSINESS EDUCATION.** (3-12 cr; hrs ar) Hopkins
In-service experience in a business education specialist role; supervised experience in communication, planning, decision making, materials, curriculum development, and supervising and working with people.
- 8900.* PROBLEMS: BUSINESS EDUCATION.** (Cr and hrs ar; prereq §; S-N only) Hopkins, Lambrecht
Investigations in field of student's interest.

SECOND TERM

- 5104. OFFICE COORDINATION TECHNIQUES—July 20-30.** (3 cr, §DE 5105; \$4 lab fee; I-III MTWThF; PeikH 255) McLean
Problems in the cooperative program; guidance and selection; placing students in offices; job adjustments; developing and evaluating the training program.
- 5112. PROGRAM DEVELOPMENTS IN BUSINESS EDUCATION: Business Communications and Word Processing—July 20-30.** (1-12 cr [max 12 cr]; limited to 30 students; V-VII MTWThF; PeikH 265) McLean
Developments emerging from research and local, state, and national programs and projects. Research and materials for developing composition, verbal communication, and dictation skills (particularly appropriate for word processing administrative staff) and for developing grammatical, vocabulary, listening, and transcription skills (particularly appropriate for correspondence centers); methods of teaching word processing and business communications. This offering for 3 credits. See Special Programs section.
- 5116. SCHOOL-BASED PROJECTS IN BUSINESS EDUCATION.** (1-12 cr [max 12 cr]; prereq §; hrs ar) McLean
See First Term.
- 5390. DIRECTED STUDIES IN BUSINESS EDUCATION.** (1-6 cr [max 6 cr]; prereq §; hrs ar) McLean
See First Term.
- 8900.* PROBLEMS: BUSINESS EDUCATION.** (Cr and hrs ar; prereq §; S-N only) McLean
See First Term.

Distributive Education (DE)

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

FIRST TERM

- 3601. STUDENT TEACHING IN DISTRIBUTIVE EDUCATION.** (3-12 cr [max 12 cr]; prereq SeEd 3155 or §) Ashmun
- 5105. COORDINATION TECHNIQUES—July 6-16.** (2 cr; I-II MTWThF; PeikH 275) Ashmun
Problems of coordinators in cooperative vocational education; guidance and selection; placing students in work stations, assisting job adjustments, developing the training program. This course should be taken concurrently with DE 5106 or HEED 5106 for certification purposes. See Special Programs section.
- 5106. COORDINATION TECHNIQUES IN COOPERATIVE DISTRIBUTIVE EDUCATION—July 6-16.** (2 cr; prereq 5105 or ¶5105; III-IV MTWThF; PeikH 275) Ashmun
Applications in secondary and postsecondary cooperative and project plan programs; certification course for distributive education teacher coordinators. This course should be taken concurrently with DE 5105 for certification purposes.
- 5325. DIRECTED OCCUPATIONAL EXPERIENCE AND SEMINAR—June 21-25.** (3-9 cr; limited to 35 students; prereq Δ; II-IV, VI-VIII MTWThF; PeikH 275) Wilson
Current operating practices and career opportunities in business and industry, combining planned experiences in work environments and related seminars. This offering for 3 credits presents the business point of view on teaching selling skills. See Special Programs section.
- 5400. PROGRAM DEVELOPMENTS IN DISTRIBUTIVE EDUCATION: School-Business Relationships—June 15-18.** (1-12 cr [max 12 cr]; limited to 35 students; prereq §; I-IV, VI-VIII MTWThF; PeikH 275) Ashmun
Problems, practices, methodology, and relationships on topics of concern to distributive education personnel. This offering for 3 credits deals with improving school-business relationships through interpersonal influence techniques. See Special Programs section.
- 5600. SCHOOL-BASED PROJECTS IN DISTRIBUTIVE EDUCATION.** (1-12 cr [max 12 cr]; prereq Δ; hrs ar) Ashmun
School-related experiences on an individual or group basis involving curricular, instructional, developmental, or evaluative problems and projects applicable to local school situations.
- 5900. DIRECTED STUDY: DISTRIBUTIVE EDUCATION.** (1-6 cr [max 6 cr]; prereq Δ; S-N optional; hrs ar) Ashmun
Individually arranged learning experiences in instruction, curricula, organization, operation, and evaluation.
- 8300. SEMINAR: RESEARCH IN DISTRIBUTIVE EDUCATION.** (1 cr; prereq doctoral student or §; hrs ar) Ashmun
- 8600. INTERNSHIP: DISTRIBUTIVE EDUCATION.** (3-9 cr; hrs ar) Ashmun
- 8900.* PROBLEMS: DISTRIBUTIVE EDUCATION.** (Cr ar; prereq §; hrs ar) Ashmun

SECOND TERM

- 5600. SCHOOL-BASED PROJECTS IN DISTRIBUTIVE EDUCATION.** (1-12 cr [max 12 cr]; each section limited to 20 students; prereq Δ)
See First Term and Special Programs section.
Sec 1, Group Curriculum Project—July 20-30, 3 cr, II-IV, VI-VIII MTWThF, PeikH 275, Klaurens
Sec 2, Individual Projects, cr and hrs ar, for MEEd students, Ashmun
- 5900. DIRECTED STUDY: DISTRIBUTIVE EDUCATION.** (1-6 cr [max 6 cr]; prereq Δ; S-N optional; hrs ar) Ashmun, Klaurens
See First Term.
- 8600. INTERNSHIP: DISTRIBUTIVE EDUCATION.** (3-9 cr; hrs ar) Ashmun, Klaurens
- 8900.* PROBLEMS: DISTRIBUTIVE EDUCATION.** (Cr ar; prereq §; hrs ar) Ashmun, Klaurens

Home Economics Education (HEEd)

FIRST TERM

- 5300. HOME ECONOMICS CURRICULUM—June 15-25.** (3 cr; prereq 3530 and §; I-III MTWThF; McNH 197) Brown
Examination of research and literature; development of units of study and programs at elementary and secondary levels; production and evaluation of materials.

- 5325. TRENDS IN HOME ECONOMICS EDUCATION—June 15-25.** (3 cr; prereq 5300 or 5305; VI-VIII MTWThF; ClaOff B36) McFadden
Current status; purposes, programs, content emphasis, research, problems, and issues in the field. This offering will emphasize supervision.
- 5415.†† WORKSHOP: MATERIALS FOR INSTRUCTION—July 6-16.** (1-4 cr; prereq grad or teacher in service; I-III MTWThF; McNH 197)
Problems in selection and use of new materials for instruction in home economics. This offering for 3 credits will emphasize family life.
- 5430.†† WORKSHOP: CONTEMPORARY PROBLEMS IN HOME ECONOMICS EDUCATION—July 6-16.** (3 or 4 cr [max 12 cr]; prereq Δ ; I-III MTWThF; McNH 198) Brown
Consideration of a topic of current concern in home economics education. This offering for 3 credits will emphasize values.
- 5900. READINGS IN HOME ECONOMICS EDUCATION.** (1-3 cr; prereq $\$$) Brown, McFadden
Independent study under tutorial guidance. This offering for 3 credits.
- 5910. INTEGRATING PAPER.** (3 cr; prereq MEd student; hrs ar) McFadden
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) Brown, McFadden
Independent study of current educational problems.

SECOND TERM

- 5415.†† WORKSHOP: MATERIALS FOR INSTRUCTION—July 20-30.** (1-4 cr; prereq grad or teacher in service; I-III MTWThF; ClaOff B36)
See First Term. This offering for 3 credits will emphasize consumer education.

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) Loebis
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) Loebis
Individualized advanced skill development in areas of forming, block and brick, commercial plumbing, industrial circuitry, landscaping, finishing, and advanced construction codes.
- 3112. CONSTRUCTION: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3111, $\$$; hrs ar) Loebis
Students contract with AVTI instructor and industrial education coordinator for specialized work in areas of cabinet making, plumbing and electrical design, interior design, and code inspection.
- 3120. GRAPHIC COMMUNICATIONS: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1622, $\$$; hrs ar) Loebis
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) Loebis
Individualized advanced skill development in areas of color separation, web press operation, drafting design, color renditions, air brush.
- 3122. GRAPHIC COMMUNICATIONS: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3121, $\$$; hrs ar) Loebis
Students contract with AVTI instructor and industrial education coordinator for specialized work in areas of graphic design, printing management, computer drafting, production planning.
- 3130. MANUFACTURING: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1632, $\$$; hrs ar) Loebis
Individualized technical skill development in areas of welding, lathe operation, milling machine operation, sheet metal construction.

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

- 3131. MANUFACTURING: ADVANCED.** (3 or 6 or 9 cr; prereq 3130; §; hrs ar) Loebis
Individualized advanced skill development in areas of numerical control and machine setup inspection, electric discharge machining, TIG welding.
- 3132. MANUFACTURING: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3131, §; hrs ar) Loebis
Students contract with AVTI instructor and industrial education coordinator for specialized work in areas of tool design and making, materials testing, quality control, powder metal.
- 3140. POWER AND ENERGY: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1642, §; hrs ar) Loebis
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) Loebis
Individualized advanced skill development in areas of digital, hydraulic, and pneumatic system design, electronic maintenance and repair, and alternative energy sources.
- 3142. POWER AND ENERGY: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3141, §; hrs ar) Loebis
Students contract with AVTI instructor and industrial education coordinator for specialized work in areas of production system, electronics, and power plant design.
- 3150. TRANSPORTATION: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1652, §; hrs ar) Loebis
Individualized technical skill development in areas of small gas and marine engine repair, automotive tune-up, cooling systems, brakes, and autobody repair.
- 3151. TRANSPORTATION: ADVANCED.** (3 or 6 or 9 cr; prereq 3150, §; hrs ar) Loebis
Individualized advanced skill development in areas of diesel engine repair, auto engine overhaul, front end repair, automatic transmission, aircraft engine maintenance, chassis straightening.
- 3152. TRANSPORTATION: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3151, §; hrs ar) Loebis
Students contract with AVTI instructor and industrial education coordinator for specialized work in areas of engine modification, chassis and airframe design, experimental vehicle testing.
- 5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [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 per qtr [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 per qtr [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 cr per qtr [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.
- 5303. INSTRUCTIONAL AIDS.** (3 cr; prereq 3360 or 5360 or equiv; V MTWThF; PeikH 41A) Irvin
Planning, construction, use.
- 5309. CONFERENCE LEADING FOR INDUSTRY.** (3 cr; prereq §; I MTWThF; PeikH 41A) Kavanaugh
Purposes, advantages, and limitations of method; techniques of procedure; experience in planning, leading, and evaluating conferences and in writing summaries.
- 5330. INDUSTRIAL COURSE CONSTRUCTION.** (3 cr, §3340; III MTWThF; PeikH 41A) Kavanaugh
Principles and techniques; experience in planning, organizing, and building a teaching guide.
- 5400. INSTRUCTIONAL MATERIALS LABORATORY FOR NONMAJORS.** (3 cr; prereq tchg exper or §; II MTWThF; PeikH 41A) Irvin
For students needing manipulative skills and craftwork activities in their teaching; individual and group projects. See Special Programs section.
- 8900-8901-8902.* RESEARCH PROBLEMS.** (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar) Bjorkquist, Irvin, Kavanaugh, Moss, Pucel, Smith
Individual conferences.

SECOND TERM

- 3110. CONSTRUCTION: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1612, §; hrs ar) Loebis
See First Term.
- 3111. CONSTRUCTION: ADVANCED.** (3 or 6 or 9 cr; prereq 3110, §; hrs ar) Loebis
See First Term.
- 3112. CONSTRUCTION: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3111, §; hrs ar) Loebis
See First Term.
- 3120. GRAPHIC COMMUNICATIONS: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1622, §; hrs ar) Loebis
See First Term.
- 3121. GRAPHIC COMMUNICATIONS: ADVANCED.** (3 or 6 or 9 cr; prereq 3120, §; hrs ar) Loebis
See First Term.
- 3122. GRAPHIC COMMUNICATIONS: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3121, §; hrs ar)
Loebis
See First Term.
- 3130. MANUFACTURING: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1632, §; hrs ar) Loebis
See First Term.
- 3131. MANUFACTURING: ADVANCED.** (3 or 6 or 9 cr; prereq 3130, §; hrs ar) Loebis
See First Term.
- 3132. MANUFACTURING: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3131, §; hrs ar) Loebis
See First Term.
- 3140. POWER AND ENERGY: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1642, §; hrs ar) Loebis
See First Term.
- 3141. POWER AND ENERGY: ADVANCED.** (3 or 6 or 9 cr; prereq 3140, §; hrs ar) Loebis
See First Term.
- 3142. POWER AND ENERGY: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3141, §; hrs ar) Loebis
See First Term.
- 3150. TRANSPORTATION: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1652, §; hrs ar) Loebis
See First Term.
- 3151. TRANSPORTATION: ADVANCED.** (3 or 6 or 9 cr; prereq 3150, §; hrs ar) Loebis
See First Term.
- 3152. TRANSPORTATION: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3151, §; hrs ar) Loebis
See First Term.
- 5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr]; limited to 15
students; prereq §; hrs ar) Miletich
See First Term.
- 5101. PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr];
limited to 15 students; prereq §; hrs ar) Miletich
See First Term.
- 5102. POWER/ENERGY OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr]; limited to 15
students; prereq §; hrs ar) Miletich
See First Term.
- 5103. CONSTRUCTION OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr]; limited to 15
students; prereq §; hrs ar) Miletich
See First Term.
- 5320. VOCATIONAL GUIDANCE.** (3 cr; prereq SeEd 3155; I MTWThF; PeikH 41A) Bjorkquist
History of educational and vocational guidance movement; typical public school means and
methods; types and uses of occupational information; duties of the counselor; organization
and relationships.
- 5600. INSTRUCTIONAL MATERIALS LABORATORY: Power and Energy—July 20-30.** (3-6-9 cr;
limited to 24 students; prereq major, tchg exper or §; II-IV MTWThF; PeikH 41A)
Wentling
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, Kavanaugh, Moss, Pucel, Smith, Wentling
See First Term.

Vocational Education (VoEd)

Courses with limited enrollment must be reserved at 125 Peik Hall (see instructions under "Reserved Courses").

FIRST TERM

5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—July 6-16. (3 cr; limited to 50 students; VI-VIII MTWThF; ClaOff B25) McFadden

Interpretation of the purposes of vocational education in varying socioeconomic contexts; analysis of vocational fields in regard to recipients, practices, legislation, and funding.

SECOND TERM

5101. SPECIAL TOPICS IN CURRICULUM. (1-6 cr [max 9 cr]; sec 1 limited to 300 students, sec 2 limited to 100 students, sec 3 limited to 24 students; prereq §)

Topics will vary with each offering but will deal with development and evaluation of curricula and/or curriculum materials. Sections 1 and 2: a career exploration conference offered jointly with McGraw Hill Publishing Co. emphasizing development of leadership capabilities for teachers of all subject matter areas having responsibility for developing and implementing career education programs in school settings. Conference participants may register in section 1 for 1 credit; those who wish additional credit for developing a curriculum plan for use in the classroom may register in section 2 for 3 credits. Advance application is required; see Special Programs section.

Sec 1, Career Exploration, August 1-4, 1 cr, I-IV, VI-VIII MTW, AndH 210, 310, 330, 350, 370, hrs ar Sunday, Ashmun, Klaurens

Sec 2, Career Exploration: Curriculum, August 1-6, 3 cr, I-IV, VI-VIII MTWThF, AndH 210, 310, 330, 350, 370, hrs ar Sunday, Ashmun, Klaurens

Sec 3, Small Business Management Education, August 9-20, 3 cr, I-IV MTWThF, ClaOff B42, Persons

Organization, implementation, and operation of a small business management education program for adults.

5102. SPECIAL TOPICS IN ADMINISTRATION: Planning Vocational Programs—July 20-30. (1-6 cr [max 9 cr]; limited to 24 students; prereq §; VI-VIII MTWThF; Pt 102) Copa

Topics will vary with each offering but will deal with leadership and management of vocational education programs. This offering for 3 credits features several national leaders who will explore various models and techniques for gathering and utilizing data to make program planning decisions.

5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—August 2-13. (3 cr; limited to 50 students; II-IV MTWThF; Arch 60) Kavanaugh

See First Term.

College of Forestry

Undergraduate forestry field studies are provided 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 field work is required of all forestry students majoring in forest resources and forest science. Required courses at Itasca are FR 3100, Important Forest Plants (2 credits); FR 3101, Forest Ecology (3 credits); and FR 3201, Field Forest Measurements (1 credit). This intensive field training provides all students entering professional forestry courses in the junior year with an introduction to forestry in an outstanding field setting and is timed to interfere as little as possible with summer employment.

About one-half of the basic nonforestry courses required for graduation in all College of Forestry curricula are available during the Summer Session on the Twin Cities Campus through various departments as listed elsewhere in this bulletin. Students with deficiencies or those desiring to graduate early can effectively utilize the Summer Session offerings to complete required courses in the biological and physical sciences, mathematics, social sciences, communications, etc.

Graduate course offerings are largely limited to the "research problem" area and are for graduate students majoring in some field of forestry.

OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION ††

(SPECIAL TERM FOR FORESTRY STUDENTS—AUGUST 31-SEPTEMBER 23)

The field training session is required of all forest resources and forest science majors and must be completed between the sophomore and junior years. Freshman and sophomore courses listed in the *College of Forestry Bulletin* must be completed before the Itasca Forestry Session. Transfer students must have been accepted for admission into the College of Forestry, and registration for Itasca is administered at the same time as the fall quarter registration in early August. The schedule is arranged to occupy the student's full time for 5½ days per week. The session consists largely of field or laboratory work. All students must register for the following courses.

††For additional courses, see Biology Session.

Forest Resources (FR)

- 3100. IMPORTANT FOREST PLANTS.** (2 cr) Scholten
Identification of forest plants as related to forest types.
- 3101. FOREST ECOLOGY.** (3 cr) Sucoff
Ecological principles. Silvical characteristics of trees and shrub species. Forest communities and environmental factors. The ecology of recreational areas.
- 3201. FIELD FOREST MEASUREMENTS.** (1 cr; prereq Math 1008) Hallgren
Introduction to and use of instruments in forest mensuration.

OFFERED ON THE ST. PAUL CAMPUS

Forest Products (ForP)

FIRST TERM

- 8300.* RESEARCH PROBLEMS IN FOREST PRODUCTS ENGINEERING.** (Cr ar) Bowyer, Erickson, Gertjejansen, Haygreen, Hossfeld, Neuman
- 8301.* RESEARCH PROBLEMS IN FOREST UTILIZATION.** (Cr ar) Bowyer, Erickson, Gertjejansen, Haygreen, Hossfeld, Neuman, Thompson

SECOND TERM

- 8300.* RESEARCH PROBLEMS IN FOREST PRODUCTS ENGINEERING.** (Cr ar) Bowyer, Erickson, Gertjejansen, Haygreen, Hossfeld, Neuman
- 8301.* RESEARCH PROBLEMS IN FOREST UTILIZATION.** (Cr ar) Bowyer, Erickson, Gertjejansen, Haygreen, Hossfeld, Neuman, Thompson

Forest Resources (FR)

FIRST TERM

- 8100.* RESEARCH PROBLEMS IN SILVICULTURE.** (Cr ar) Bakuzis, Brown, Hansen, Scholten, White, Alm
- 8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY.** (Cr ar) Sucoff
- 8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS.** (Cr ar) Mohn
- 8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY.** (Cr ar) Brooks, Mace
- 8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT.** (Cr ar) Brown, Irving, Hallgren, Rose
- 8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS.** (Cr ar) Skok, Ellefson, Gregersen
- 8202.* RESEARCH PROBLEMS IN FOREST MEASUREMENTS.** (Cr ar) 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

SECOND TERM

- 8100.* RESEARCH PROBLEMS IN SILVICULTURE.** (Cr ar) Bakuzis, Brown, Hansen, Scholten, White, Alm
- 8101.* RESEARCH PROBLEMS IN FOREST TREE PHYSIOLOGY.** (Cr ar) Sucoff
- 8102.* RESEARCH PROBLEMS IN FOREST TREE GENETICS.** (Cr ar) Mohn

- 8103.* RESEARCH PROBLEMS IN FOREST HYDROLOGY.** (Cr ar) Brooks, Mace
- 8200.* RESEARCH PROBLEMS IN FOREST MANAGEMENT.** (Cr ar) Brown, Irving, Hallgren, Rose
- 8201.* RESEARCH PROBLEMS IN FOREST ECONOMICS.** (Cr ar) Skok, Ellefson, Gregersen
- 8202.* RESEARCH PROBLEMS IN FOREST MEASUREMENTS.** (Cr ar) 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

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

- 5406. FORESTRY WORKSHOP FOR TEACHERS—June 14-25.** (5 cr; limited to 40 students; prereq teacher or §) Miles, Splett, staff
Study of forest ecosystems and forest management in lecture and laboratory sessions. In field exercises, techniques and materials are developed for the teaching of principles of forestry in indoor and outdoor classrooms. Tours to forest and wildlife research and management units and utilization locations and discussions of contemporary forestry issues by guest lecturers. See Special Programs section.
- 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, selecting subjects from a free-choice curriculum. 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 his or her 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, recreation for special groups, 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 degrees offered through the General College. Information about the associate in arts (A.A.), bachelor of general studies (B.G.S.) and bachelor of applied studies (B.A.S.) degrees can be found on pages 13-16 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. They can be used to develop an overview of a field, but students deciding upon a major should register for the basic courses offered by the department in which they hope 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 one 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 they earn grades demonstrating ability to meet the level of academic competition characteristic of the college they hope to enter.

Students and prospective students are urged to bring problems and questions to the General College Student Personnel 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

- 1111. SCIENCE IN CONTEXT: WEATHER AND CLIMATE.** (5 cr; limited to 75 students; \$4 lab fee; 2 lab hrs per wk; I-II MTWThF; SciCB 175) A Johnson
Day-to-day and long-range weather patterns in terms of interactions among atmosphere, oceans, land surfaces, and motions of the earth. Fair weather, storms, seasonal changes, air pollution, and water resource problems. Basic principles of science are applied to problems of analyzing and forecasting weather, interpreting climates and climatic change, and realizing the great extent to which man is changing his atmospheric environment.
- 1131. BIOLOGICAL SCIENCE: PRINCIPLES.** (5 cr; limited to 75 students; \$4 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 man, 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: CHEMISTRY.** (5 cr; limited to 75 students; III-IV MTWThF; SciCB 175) 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 topics which may vary from quarter to quarter. Student should gain general understanding of both content and process of the science of chemistry.
- 1252. THE WORLD: INTERNATIONAL RELATIONS.** (5 cr; limited to 48 students; III-IV MTWThF; NH 216) Jones
Considers basic problems of international relations: war, conflict of ideologies, developing nations, international trade, and international law and organizations. Since authorities on international relations often differ in methods of analysis, students learn about several important analytical systems, apply them to problems, and thus develop approach of their own.
- 1261. CURRENT HISTORY.** (4 cr; limited to 38 students; I-II TWThF; NH 122) Moen
Background and contemporary status of major foreign or domestic developments such as challenge of Common Market; dangers to peace in such divided regions as Ireland, India, Germany, and Palestine; forms of modern communism; law in American society; and democracy in American education. Development of alertness to news media and ability to make critical judgments about current events. Topics usually vary from quarter to quarter.
- 1285. SOCIAL SCIENCE: CULTURAL ANTHROPOLOGY.** (5 cr; limited to 50 students; IV-V MTWThF; NH 213) F Johnson
Human culture viewed as integrated system of behavior patterns learned and shared that serves to guide behavior of all members in given society. Development of generalizations about influence of culture on human behavior by analyzing and comparing ways of life in particular cultures. Any and all cultures deemed worthy of such study. Power of culture to shape personality and power of persons to alter cultures are two emphases.
- 1357. PHILOSOPHY: MAN'S RELIGIOUS BELIEFS.** (5 cr; limited to 50 students; I-II MTWThF; NH 207) Zanoni
Beliefs, rituals, and attitudes of the world's major religions in their historical, social, and cultural settings.
- 1371. LITERATURE: READING SHORT STORIES.** (3 cr; limited to 50 students; II MTWThF; NH 213) A Kurak
Student reads representative short stories by American, British, and Continental writers. How individual writers have used the short story to express their ideas about human experience.
- 1405. COMMUNICATION SKILLS: FUNDAMENTALS OF USAGE AND STYLE.** (3 cr; limited to 30 students; students are to report to NH 109 between 9 am and noon Tuesday, June 15) V Kurak
Grammatical principles and punctuation. In some sections, where approach is primarily oral, students listen to and imitate grammatical patterns and record and play back these patterns in order to "hear" English style.

- 1421. WRITING LABORATORY: PERSONAL WRITING.** (4 cr; each section limited to 25 students)
Student reads and writes 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, Reisman
Sec 2, III-IV TWThF, NH 209, Rathburn
- 1431. FUNDAMENTAL COLLEGE MATHEMATICS I.** (2 cr; limited to 50 students; prereq §; I MTWThF; FoIH 109, 110) Denny
One of a three-part series of courses intended for students who have gaps in their mathematics background. Topics chosen, as needed, from number theory, algebra, and geometry. (Meets with 1432.)
- 1432. FUNDAMENTAL COLLEGE MATHEMATICS II.** (1 cr; limited to 50 students; prereq §; I MTWThF; FoIH 109, 110) Denny
See 1431.
- 1436. INTRODUCTION TO COMMERCIAL ART.** (3 cr; limited to 25 students; prereq art experience or §; III-IV TWThF; NH 102) Gates
Emphasis on design, lettering, graphic expression, and commercial processes.
- 1450. ACCOUNTING FUNDAMENTALS I.** (4 cr; limited to 40 students; III-IV TWThF; NH 207) Roger Larson
The basic accounting cycle, including balance sheet and income statement methodology, and end-of-period adjustments, for both service and merchandising businesses. Special journals and accounting procedures for inventories, payables, and receivables.
- 1701. INDIVIDUAL ADJUSTMENT.** (4 cr; limited to 38 students; III-IV TWThF; NH 122) Anderson
Psychological concepts of personal and social adjustment. Students study their own personality development and adjustment to gain better understanding and acceptance of themselves and of others. Class discussion and individual projects based to large extent on students' experiences, needs, and interests.
- 1723. HOME LIFE: BEHAVIOR PROBLEMS OF CHILDREN.** (4 cr; limited to 48 students; I-II TWThF; NH 216) Latts
Identification and causes of maladaptive behavior, coping with children demonstrating such behavior. Dynamics of behavior pathology; behavior problems seen at home, in school, and in social relationships; effects of heredity, family experience, peer-group pressure, and socioeconomic class.
- 3531. WRITING FOR BUSINESS AND THE PROFESSIONS.** (4 cr; limited to 25 students; prereq 1412 or 1413 or 1421...1415 or 1422 recommended; III-IV TWThF; NH 107) Hansen
Students write letters, informal and formal reports, recommendations, proposals, summaries, memos—i.e., the forms of writing used in business; in health, education, and welfare; and in legal professions. Content adapted to vocational needs of students enrolled. Form, clarity, economy of expression, and suitable tone are stressed. Typed final drafts are required.

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.
- 1236. UNITED STATES: CRIME AND DELINQUENCY.** (4 cr; limited to 50 students; III-IV TWThF; NH 213) F Harris
Crime and delinquency within setting of the community. Various types of criminality and processes through which individuals become involved in delinquent behavior. Methods of crime control and treatment. Development of a theoretic framework to guide functioning of correctional institutions.
- 1282. FIELDS OF APPLIED PSYCHOLOGY.** (5 cr; limited to 48 students; III-IV MTWThF; NH 216) Borow
Use of psychological principles in study of human affairs. Contributions of psychological research in fields such as teaching and learning; 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.
- 1291. SOCIAL SCIENCE: THE WORLD TODAY—GEOGRAPHY AT HOME AND ABROAD.** (5 cr; limited to 50 students; I-II MTWThF; NH 213) Steinhauer
Interaction of the opposing forces of culture and physical environment in the world today. Comparison of the student's own geographic region with other world regions. Twin Cities, Minnesota, Upper Midwest, United States, Russia, and Japan observed within framework of entire earth and world patterns.

- 1311. ART: GENERAL ARTS.** (4 cr; limited to 38 students; II MTWThF; NH 122) Byrne
Basic similarities which underlie all art forms in terms of human needs. Concentrates upon painting, sculpture, music, architecture, and literature.
- 1401. COMMUNICATION SKILLS: VOCABULARY DEVELOPMENT.** (3 cr; limited to 38 students; IV MTWThF; NH 122) Koch
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.
- 1422. WRITING LABORATORY: COMMUNICATING IN SOCIETY.** (4 cr; each section limited to 30 students; prereq 1412 or 1413 or 1421)
How people communicate in society and how they perceive, think about, and 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.
Sec 1, I-II TWThF, NH 209, Kivits
Sec 2, III-IV TWThF, NH 209, Wyvell
- 1445. MATHEMATICS: INTERMEDIATE ALGEBRA.** (5 cr; limited to 40 students; prereq 1 yr high school algebra; III-IV MTWThF; FolH 104) Policoff
Concepts and manipulative skills necessary for students to compete in a college algebra course. 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.
- 1465. ORAL COMMUNICATION: INTERPERSONAL COMMUNICATION.** (3 cr; limited to 25 students; III MTWThF; NH 107) Hagen
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 our fellowman 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.
- 1511. INTRODUCTION TO MODERN BUSINESS.** (5 cr; limited to 40 students; III-IV MTWThF; NH 207) Kroll
Overview of economic environment in which business operates. Production, finance, personnel, and marketing. Intended for both business and general education students.
- 1534. PRACTICAL LAW.** (5 cr; limited to 45 students; I-II MTWThF; NH 207) Hower
Common legal problems: formation and discharge of contracts, torts (personal injury and property damage suits), criminal law, bailments, nature and classification of real and personal property, and joint ownership and tenancy.

Health Sciences

SCHOOL OF DENTISTRY

Dental Hygiene (DH)

FIRST TERM

- 1054. BIOMATERIALS.** (3 cr; lect III-IV M, HSUnitA 5-125, VI-VII W, HSUnitA 5-125) Young
Lab 1, II-IV TF, HSUnitA 5-140
Lab 2, II-IV WTh, HSUnitA 5-140
- 3053. DENTAL PROPHYLAXIS.** (3 cr) Haider
Sec 1, I-II M, HSUnitA 5-125, clinic ar
Sec 2, VIII-XI W, HSUnitA 5-125, clinic ar
- 3276. CLINICAL ROENTGENOGRAPHY.** (2 cr) Beck

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 1250. OFFICE MANAGEMENT.** (2 cr; VI-VII Th; MlrDH 213 first term, HSUnitA 2-520 second term)
Hangge
- 3055. DENTAL PROPHYLAXIS.** (3 cr) Haider
Sec 1, VI M, HSUnitA 5-125, clinic ar
Sec 2, VIII Th, HSUnitA 5-181, clinic ar

SECOND TERM

- 3054. DENTAL PROPHYLAXIS.** (3 cr) Haider
Sec 1, III-IV T, HSUnitA 5-125, clinic ar
Sec 2, VI-VII T, HSUnitA 5-125, clinic ar

Dentistry

The School of Dentistry will offer instruction for undergraduate students in the clinical disciplines for those who elect to continue their clinical experience during the summer months.

The following courses are available for graduate students (hours to be arranged).

Endodontics (Endo)

FIRST TERM

- 5303. ADVANCED CLINICAL ENDODONTICS.** (Cr ar) Jensen
Diagnosis and treatment of clinical cases. Students assigned complex cases and explore new and unique techniques.

- 8004. RESEARCH IN ENDODONTICS.** (Cr ar) Jensen
Organized literature review in areas of specific interest to student, selection of thesis project, and completion of research and thesis.
- 8313. SEMINAR: ENDODONTICS.** (2 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.** (Cr ar) Jensen
See First Term.
- 8004. RESEARCH IN ENDODONTICS.** (Cr ar) Jensen
See First Term.
- 8313. SEMINAR: ENDODONTICS.** (2 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 week=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)
- 8002. TUTORIAL IN ORAL BIOLOGY.** (Cr ar [may be repeated for cr]; 2 hrs per week=1 cr)
- 8024. TOPICS IN ORAL BIOLOGY.** (1-3 cr [may be repeated for cr]; prereq #)

Oral Pathology (OPat)

FIRST TERM

- 8004. HISTOPATHOLOGY.** (1 cr) Vickers
Weekly presentation of various pathologic cases in which methods of diagnosis are stressed. Clinical or radiographic aspects are regularly utilized. This course encompasses the spectrum of oral and paraoral pathology.
- 8006. CURRENT LITERATURE REVIEW AND TOPICS.** (2 cr) Sedano
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.
- 8008. CLINICAL ORAL PATHOLOGY CONFERENCE.** (2 cr) Sedano
Weekly "grand rounds" with patient presentation and discussion of symptomatology, diagnosis, prognosis, and treatment.
- 8010. CURRENT LITERATURE REVIEW AND TOPICS.** (2 cr) Sedano
See 8006.
- 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.

- 8016. HISTOPATHOLOGY.** (2 cr) Sedano
Exclusively for graduate students and residents not specializing in oral pathology but wishing additional information concerning causes, diagnosis, or cellular basis of oral diseases. Histologic aspects of various oral and paraoral diseases will be demonstrated and clinical and radiologic information utilized.

SECOND TERM

- 8004. HISTOPATHOLOGY.** (1 cr) Vickers
See First Term.
- 8006. CURRENT LITERATURE REVIEW AND TOPICS.** (2 cr) Sedano
See First Term.
- 8008. CLINICAL ORAL PATHOLOGY CONFERENCE.** (2 cr) Sedano
See First Term.
- 8010. CURRENT LITERATURE REVIEW AND TOPICS.** (2 cr) Sedano
See 8006 First Term.
- 8014. EXFOLIATIVE CYTOLOGY OF THE ORAL MUCOSA.** (2 cr) Witkop
See First Term.
- 8016. HISTOPATHOLOGY.** (2 cr) Sedano
See First Term.

Oral Radiology (ORad)

FIRST TERM

- 8100. ORAL RADIOLOGY SEMINAR.** (1 cr; prereq \$) Beck, Kuba
- 8900. ORAL RADIOLOGY RESEARCH.** (Cr ar; prereq \$) Beck, Kuba

SECOND TERM

- 8100. ORAL RADIOLOGY SEMINAR.** (1 cr; prereq \$) Beck, Kuba
- 8900. ORAL RADIOLOGY RESEARCH.** (Cr ar; prereq \$) Beck, Kuba

Oral Surgery (OSur)

FIRST TERM

- 8250. ADVANCED ORAL SURGERY.** (Cr ar) Waite
Assigned clinics in University, Veterans Administration, Hennepin County General, and St. Paul-Ramsey Hospitals 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) Ogle
Oral surgical subjects on a seminar basis.
- 8252. RESEARCH IN ORAL SURGERY.** (Cr ar) Nelson
Research in fields related to oral surgery.
- 8253. PROBLEMS IN ORAL SURGERY.** (Cr ar) Ogle
Current literature review; experience in surgical techniques.
- 8254. TOPICS.** (1 cr) Waite, Isaacson
Surgical orthodontic techniques on seminar basis.
- 8255. GENERAL SURGERY.** (Cr ar) Christensen, Miller, Stiegler
Clinical rotation on the general surgical service at Fairview Hospital, Minneapolis. Includes seminars, clinics, and operating room experience.

SECOND TERM

- 8250. ADVANCED ORAL SURGERY.** (Cr ar) Waite
See First Term.
- 8251. SEMINAR: ORAL SURGERY.** (1 cr) Ogle
See First Term.
- 8252. RESEARCH IN ORAL SURGERY.** (Cr ar) Nelson
See First Term.
- 8253. PROBLEMS IN ORAL SURGERY.** (Cr ar) Ogle
See First Term.
- 8254. TOPICS.** (1 cr) Waite, Isaacson
See First Term.
- 8255. GENERAL SURGERY.** (Cr ar) Christensen, Miller, Stiegler
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.

Elective Courses

- 8215. RESEARCH IN ORTHODONTICS.** (Cr ar; prereq \$)
- 8219. TOPICS IN ORTHODONTICS.** (Cr ar; prereq \$)
Studies in special topics for advanced students.

SECOND TERM

Required Courses for Graduate Students

- 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.

Elective Courses

- 8215. RESEARCH IN ORTHODONTICS.** (Cr ar; prereq \$)
- 8219. TOPICS IN ORTHODONTICS.** (Cr ar; prereq \$)
See First Term.

Pediatric Dentistry (Pedo)

FIRST TERM

- 5414. ADVANCED CLINICAL PEDODONTICS.** (Cr ar; prereq \$) Till, Walker
Assignment of patients for treatment of difficult or unusual pedodontic problems under direct faculty supervision.
- 5415. DENTAL TEACHING.** (Cr ar; elective) Till, Walker
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 \$)
- 8290. HOSPITAL PEDODONTICS I.** (Cr ar; prereq \$)
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 \$)
Diagnosis and treatment of pedodontic problems under direct faculty supervision at Hennepin County General Hospital. Includes participation on a rotation basis in seminars in pediatrics and anesthesia conducted by staff faculty. Pre-op and post-op seminar discussion and evaluation of treatment plans.
- 8294. PEDODONTIC DIAGNOSIS AND TREATMENT PLANNING.** (Cr ar; prereq \$) Till, Walker
Systematic approach to diagnosis and treatment planning for various pedodontic problems.

SECOND TERM

- 5414. ADVANCED CLINICAL PEDODONTICS.** (Cr ar; prereq \$) Till, Walker
See First Term.
- 5415. DENTAL TEACHING.** (Cr ar; elective) Till, Walker
See First Term.
- 8001. RESEARCH IN PEDIATRIC DENTISTRY.** (Cr ar; prereq \$)
- 8290. HOSPITAL PEDODONTICS I.** (Cr ar; prereq \$)
See First Term.
- 8291. HOSPITAL PEDODONTICS II.** (Cr ar; prereq \$)
See First Term.
- 8294. PEDODONTIC DIAGNOSIS AND TREATMENT PLANNING.** (Cr ar; prereq \$) Till, Walker
See First Term.
- 8295. INDEPENDENT PEDODONTIC STUDY.** (Cr ar; prereq \$) Till, Walker
Preparation of a position paper on an assigned topic, including a review of pertinent literature.

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. Practice of curettage, gingival resection, splinting of teeth, and balancing the occlusion.
- 8100. RESEARCH IN PERIODONTOLOGY.** (Cr ar)
Opportunity to take part in many phases of work under way in laboratory for 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, Sudo, Dennis, Gawronski
Etiology and treatment of periodontal disease, histopathology of periodontal symptoms, research in periodontics.

SECOND TERM

- 8000. ADVANCED CLINICAL PERIODONTOLOGY.** (Cr ar) Pihlstrom
See First Term.
- 8100. RESEARCH IN PERIODONTOLOGY.** (Cr ar) Pihlstrom
See First Term.
- 8200. LECTURES IN PERIODONTOLOGY.** (Cr ar) Pihlstrom
See First Term.
- 8300. SEMINAR: PERIODONTOLOGY.** (Cr ar) Philstrom, Sudo, Dennis, Gawronski
See First Term.

Prosthodontics (Pros)

FIRST TERM

- 8001. RESEARCH IN PROSTHODONTICS.** (Cr ar [may be repeated for cr]) Goodkind
Arranged with individual students upon application after a critical review of current and historical literature pertaining to the problem.
- 8005. ADVANCED CLINICAL PROSTHODONTICS II.** (Cr ar [may be repeated for cr]; prereq §)
Goodkind, Meyer
Experience in prosthodontic treatment of patients having systemic complications.
- 8030. INTRODUCTION TO COMPREHENSIVE MAXILLOFACIAL CARE.** (Cr and hrs ar; prereq §)
Kersten
Milestones in development of maxillofacial prosthetics and interdisciplinary relationships in treatment of maxillofacial patient.

SECOND TERM

- 8001. RESEARCH IN PROSTHODONTICS.** (Cr ar [may be repeated for cr]) Goodkind
See First Term.
- 8005. ADVANCED CLINICAL PROSTHODONTICS II.** (Cr ar [may be repeated for cr]; prereq §)
Goodkind, Meyer
See First Term.

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 one or more of the following sources: the *Medical School Bulletin*, the *Graduate Programs in the Health Sciences Bulletin*, the *Graduate School Bulletin*, or bulletins 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 within 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 specific programs.

Anatomy (Anat)

FIRST TERM

- 3870. SPECIAL PROBLEMS.** (Cr ar; prereq §) Staff
Individual projects and research experience.

- 8156. ADVANCED ANATOMY.** (Cr ar; prereq \S) Staff
Individual problems in gross anatomy, embryology, histology, or neuroanatomy.
- 8204. RESEARCH IN ANATOMY.** (Cr ar; prereq \S) Staff
Gross anatomy, cytochemistry, histology, endocrinology, embryology, hematology, or neuroanatomy.

SECOND TERM

- 3970. SPECIAL PROBLEMS.** (Cr ar; prereq \S) Staff
See First Term.
- 8156. ADVANCED ANATOMY.** (Cr ar; prereq \S) Staff
See First Term.
- 8204. RESEARCH IN ANATOMY.** (Cr ar; prereq \S) 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) Van 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 ventilation management, resuscitation, evaluation of the unconscious patient, choice of agents and techniques, practice administration of general and regional anesthesia, pre- and post-anesthetic management.
- 5182. EXTERNSHIP IN RESPIRATORY PROBLEMS.** (9 cr; University Hospitals) Van Bergen, staff
Primarily for family practice, medical and surgical tracks. Two weeks spent on fundamentals of airway and ventilation management in anesthetized patients. Four weeks spent on management of clinical respiratory problems, Respiratory Ward and Pulmonary Function Testing Laboratory.
- 5183. EXTERNSHIP IN PEDIATRIC ANESTHESIOLOGY.** (9 cr; University Hospitals) Van Bergen, staff
Primarily for pediatric and surgical tracks. Two weeks spent on fundamentals of airway and ventilation management in anesthetized adult and 4 weeks on anesthetic management of pediatric surgical patients.
- 5185. EXTERNSHIP IN ANESTHESIOLOGY FOR SURGICAL SPECIALTIES.** (9 cr; University Hospitals) Van Bergen, staff
Primarily for surgical track students with specialty preference. Two weeks spent on fundamentals of airway and ventilation management in adults anesthetized for general surgery and 4 weeks on anesthetic management of patients on services of student's special interest.

Required Courses for Graduate Students

- 8265. GENERAL ANESTHESIA.** (12 cr) Van Bergen, staff
Instruction and experience in general anesthesia.
- 8266. REGIONAL ANESTHESIA.** (4 cr) Van Bergen, 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) Van Bergen, staff
Selection of proper anesthetic agent and technique, premedication and observation of recovery from anesthesia.
- 8268. SEMINAR: ANESTHESIOLOGY.** (2 cr; 1108 PoH) Van Bergen, 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) Van Bergen, 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 5743 or 5101) Staff
Special work arranged with qualified students.
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 5743 or 5101) Staff
See First Term.
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)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Elective Courses

5557. **SPECIAL TOPICS IN BEHAVIORAL SCIENCE.** (1 cr; prereq 0555, 0556; hrs ar) Kelly, staff
5567. **COMMUNICATIONS.** (1 cr; hrs ar) Cassata
8201. **CLINICAL FAMILY MEDICINE.** (9 cr; hrs ar) Ciriacy, staff
8203. **FAMILY PRACTICE IN THE COMMUNITY.** (Cr and hrs ar) Spencer
8207. **SEMINAR: COMMON DISEASES SEEN IN FAMILY PRACTICE.** (1 cr; hrs ar) Ciriacy, staff
8208. **FAMILY MEDICINE CONFERENCE.** (1 cr; hrs ar) Ciriacy, staff
8209. **FAMILY MEDICINE X-RAY CONFERENCE.** (1 cr; hrs ar) Ciriacy, staff
8210. **FAMILY MEDICINE GRAND ROUNDS.** (1 cr per yr; hrs ar) McConnell
8212. **CLINICAL PSYCHIATRY ROUNDS.** (1 cr; hrs ar) Kelly, staff
8253. **RESEARCH PROBLEMS.** (Cr ar; prereq \$; hrs ar) O'Leary, staff

Interdepartmental Medicine (InMd)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

5103. **INTRODUCTION TO CLINICAL MEDICINE.** (2 cr; prereq 5100, 5101, 5102) Fortuny, staff
5110. **MEDICAL GENETICS.** (2 cr; prereq §) J Yunis, staff
5225. **REPRODUCTION.** (Cr ar; prereq regis med) Obstetrics and Gynecology staff
5227. **SKIN.** (Cr ar; prereq regis med) Manick, staff
5229. **EYE.** (Cr ar; prereq regis med) Letson, staff
5233. **HUMAN SEXUALITY.** (Cr ar; prereq regis med) Maddock, staff

Laboratory Medicine and Pathology (LaMP)

Courses for Medical and Undergraduate Students

(Phase A pathology [5101], which began in March, will continue through July 30.)

SPECIAL TERMS: THREE- AND 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 General Hospital).** (Cr ar; prereq Phase B) Staff
5115. **SURGICAL PATHOLOGY (Veterans Hospital).** (Cr ar; prereq Phase B) Staff
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 General Hospital).** (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 (Methodist Hospital).** (Cr ar; prereq Phase B) Staff
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
5183. **CLINICAL AND LABORATORY IMMUNOLOGY.** (Cr ar; prereq §) E Yunis
5184. **IMMUNOHEMATOLOGY IN BLOOD BANKING.** (Cr ar; prereq §) McCullough
5185. **LABORATORY PROBLEMS IN BLOOD COAGULATION.** (Cr ar; prereq §) Edson
5186. **CLINICAL PATHOLOGY EXTERNSHIP (Hennepin County General Hospital).** (Cr ar; prereq §) Strom
5187. **CLINICAL PATHOLOGY EXTERNSHIP (Mt. Sinai Hospital).** (Cr ar; prereq §) Ward
5189. **CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank).** (Cr ar; prereq §) Polesky
5191. **GENERAL CLINICAL MICROBIOLOGY.** (Cr ar; prereq §) Balfour
5193. **CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital).** (Cr ar; prereq §) Nollet
5194. **COMPUTER APPLICATIONS IN MEDICINE.** (Cr ar; prereq §) Ackerman, Ellis, Gatewood
5195. **COMPUTER APPLICATIONS IN MEDICAL RESEARCH.** (Cr ar; prereq §) Ackerman, Ellis

- 5197. CLINICAL PATHOLOGY BIOCHEMISTRY (St. Paul-Ramsey Hospital).** (Cr ar; prereq \$) Lakatua, Haus
- 5199. CLINICAL GENETICS.** (Cr ar; prereq \$) J Yunis
- 5200. DIAGNOSTIC MICROBIOLOGY FOR THE PRACTICING PHYSICIAN.** (Cr ar; prereq \$) Balfour
- 5201. DIAGNOSTIC LABORATORY PROCEDURES FOR THE PRACTICING PHYSICIAN.** (Cr ar; prereq \$) Bradley

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
- 5179. CHEMISTRY SEMINAR.** (1 cr; prereq \$) Benson, staff
- 5180. ADVANCED CHEMISTRY.** (Cr ar; prereq \$) Benson, staff
- 5194. COMPUTER APPLICATIONS IN MEDICINE.** (4 cr; prereq \$) Ackerman, Ellis, Gatewood
- 5195. COMPUTER APPLICATIONS IN MEDICAL RESEARCH.** (Cr ar; prereq \$) Ackerman, Ellis
- 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

- 5136. ANAEROBIC BACTERIOLOGY.** (4 cr; prereq biochemistry, medical microbiology, diagnostic microbiology or \$) Blazevic
- 5139. ADVANCED MICROBIOLOGY.** (Cr ar; prereq \$) J Yunis
- 5169. RESEARCH: HUMAN GENETICS.** (Cr ar; prereq \$) J Yunis
- 5170. ADVANCED PROBLEMS: MEDICAL GENETICS.** (Cr ar; prereq \$) J Yunis, others
- 5179. CHEMISTRY SEMINAR.** (1 cr; prereq \$) Benson, staff
- 5180. ADVANCED CHEMISTRY.** (Cr ar; prereq \$) Benson, staff
- 5194. COMPUTER APPLICATIONS IN MEDICINE.** (4 cr; prereq \$) Ackerman, Ellis, Gatewood
- 5195. COMPUTER APPLICATIONS IN MEDICAL RESEARCH.** (Cr ar; prereq \$) Ackerman, Ellis
- 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

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 5086, §)
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.
- 5133. MEDICAL MYCOLOGY.** (3 cr, §LaMP 5133; prereq §; VI-IX TTh; HSUnitA 2-242) Ederer, Hoffer
Laboratory diagnosis of infections caused by yeasts, dermatophytes, and systemic fungi.

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.
- 5136. ANAEROBIC BACTERIOLOGY.** (4 cr, §LaMP 5136; prereq §; lect IV, VI TTh, HSUnitA 2-580; lab VII-IX TTh, HSUnitA 2-242) Blazevic
Anaerobic respiration in bacteria. Methods of anaerobic culture. Taxonomy and classification of anaerobes. Biochemical and gas chromatographic differentiation of anaerobes. The role of anaerobes in disease.

Medicine (Med)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Elective Courses

- 5501. MEDICAL ONCOLOGY EXTERNSHIP AT UNIVERSITY HOSPITALS.** (9 cr per period; report at 411 MasonH first day of elective) Kennedy
Training in internal medicine with emphasis on the total care of patients with cancer by assuming direct patient responsibilities as a co-intern.
- 5502. MEDICINE EXTERNSHIP.** (9 cr per period; offered all periods; report to the Dept of Medicine of the assigned hospital at 8:30 am on the first day of the elective) Murray
Introduction to the diagnosis, treatment, and management of patients on medical wards, allowing as much individual patient care responsibility as possible.
- 5505. INFECTIOUS DISEASE RESEARCH AT UNIVERSITY HOSPITALS.** (18 cr; offered all periods) Sabath, Williams, Verhoef
Students actively participate in investigation of a problem in infectious diseases. This may be a clinical or laboratory based problem dealing with diagnosis, treatment, natural history, or epidemiology of infections. Studies regarding antibiotic action, resistance testing, and toxicity are especially encouraged.
- 5509. RESEARCH IN RHEUMATOLOGY.** (18 cr per period) Caperton
Opportunity for research in broad area of rheumatology, with emphasis on immune mechanisms of injury, inflammatory reactions, innovative therapeutic trials in induced disease. Broad latitude allowed student in designing individual research project. Multidisciplinary approach encouraged. Contact Dr. Caperton before beginning elective.

- 5510. RESEARCH IN INFECTIOUS DISEASE.** (9 cr per period; offered all periods) Hall
Research under the supervision of Dr. Wendall Hall or Dr. Horace Zinneman, Veterans Administration Hospital.
- 5511. RESEARCH IN GASTROENTEROLOGY.** (9 cr per period; offered all periods; hrs ar) Levitt
Arrangements made with Dr. Levitt at University Hospitals. Students will be assigned to a staff member and participate in some aspects of his or her program.
- 5512. RESEARCH IN HEMATOLOGY AT UNIVERSITY HOSPITALS.** (9 cr per period; offered all periods; report at C313 first day of elective) Jacob
To acquaint the student who is specifically interested in research with a problem or problems currently under investigation in hematology.
- 5521. INFECTIOUS DISEASES, CLINICAL ASPECTS AT UNIVERSITY HOSPITALS.** (9 cr per period; offered all periods; report to C315 Mayo) Sabath, Williams
Students participate in clinical evaluation and management of inpatient problems and in formal conferences, and have an opportunity to observe role of the clinical microbiology laboratory in the practice of clinical infectious disease.
- 5522. MEDICAL GASTROENTEROLOGY.** (9 cr per period; offered all periods; report to GI Section, University Hospitals, VFW Bldg, Room 462) Bond
This elective will provide the opportunity for the student to do work-ups and attend teaching rounds working with patients with gastrointestinal disease, attend intrahospital as well as interhospital conferences, and gain outpatient clinical experience. Students may express a preference for base hospital when registering.
- 5523. MEDICAL ENDOCRINOLOGY, METABOLISM AND CLINICAL PHARMACOLOGY.** (9 cr per period; offered all periods; report to HSUnitA 14-236 at 8:15 am on the first day of each period) Barbosa
This elective will provide an introductory experience in clinical endocrinology and metabolic disease. Emphasis will be placed on clinical diagnosis, efficient and incisive work-ups and clinical management in both inpatient and outpatient settings. Students may express a preference for base hospital when registering. A clinical externship is available in the Clinical Research Center of University Hospitals each period.
- 5524. CLINICAL INFECTIOUS DISEASES.** (9 cr per period; offered all periods) Hall
Emphasis will be on inpatients on all hospital services with clinical problems related to infection. Antibiotic use, relevant laboratory procedures, and the approach to the patient with infectious disease. Students may express a preference for base hospital when registering.
- 5525. CARDIOVASCULAR MEDICINE.** (9 cr per period; offered periods 3-8; hrs ar) Richman
The first week of each period includes four half-day introductory sessions on basic cardiology for all students. Students initially report to the Cardiology Section at the Veterans Administration Hospital for an orientation session. Student's preference for a base hospital will be honored in accordance with positions available at each hospital.
- 5528. CLINICAL HEMATOLOGY.** (9 cr per period; offered all periods; report to C313 Mayo first day at 8:30 am) Howe
Clinical and research aspects of hematology. Course structured to the student's specific goals, but generally the student will be given initial responsibility for proposing diagnoses and treatment plans for patients with hematologic diseases.
- 5531. CLINICAL RHEUMATOLOGY AT UNIVERSITY HOSPITALS.** (4.5 cr per period; offered periods 3-8; hrs ar) Caperton
Clinical aspects of diseases of rheumatic and immunologic nature including the broad aspects of collagen disease, autoimmune disease, and all types of arthritic and musculoskeletal disease.
- 5532. PULMONARY DISEASE.** (9 cr per period; offered all periods; report to 3rd floor HSUnitK-E first day of elective at 9:00 am) Drage
This elective will stress evaluation of clinical pulmonary problems and pathophysiology of pulmonary disease. Students may express a preference for base hospital when registering.
- 5533. CLINICAL ALLERGY AT UNIVERSITY HOSPITALS.** (4.5 cr or 9 cr per period; offered all periods; hrs ar) Blumenthal
Practical features of doing an allergic and immunologic work-up and of treating patients in a safe and medically acceptable fashion.
- 5554. FLUID, ELECTROLYTE, ACID-BASE METABOLISM AT VETERANS HOSPITAL.** (9 cr per period; offered all periods; report to the Dialysis Unit, Bldg 1, fifth floor, VA Hospital, at 8 am on the first day of the period) Masler
The prevention, diagnosis, and treatment of acid-base (A/B) and fluid and electrolyte (F/E) disorders. The student will be a member of a consulting team which evaluates patients with A/B and F/E abnormalities associated with a variety of medical and surgical diseases.

- 5562. MEDICAL NEPHROLOGY.** (9 cr per period; offered all periods) Shapiro
Evaluation and treatment of patients with acute and chronic renal disease, acid-base and electrolyte disturbances, and hypertension.
- 5572. AMBULATORY INTERNAL MEDICINE AT ST. PAUL-RAMSEY HOSPITAL.** (9 cr per period; offered all periods; report to Dr. Spilane's office) Spilane
Ambulatory care of patients with general internal medicine and subspecialty medical problems. Students will participate in the care of a diverse group of patients in the various general internal medicine clinics and subspecialty internal medicine clinics at St. Paul-Ramsey Hospital.
- 5590. PRECEPTORSHIPS IN INTERNAL MEDICINE.** (9 cr per period; offered all periods; hrs ar) Fuller
The student will work with physicians either in rural or city clinics by arrangement.
- 5595. INTRODUCTION TO THE PSYCHOLOGICAL ASPECTS OF MEDICAL CARE.** (Cr ar; offered all periods; hrs ar) Wilder, Simon, others
An introductory program emphasizing student-patient interviews on closed-circuit TV, reading seminars, diagnostic conferences, supervised psychotherapies. The focus will be on patients characteristic of a medical practice population.

Microbiology (MicB)

Courses with limited enrollment must be reserved in 11-244 Health Sciences Unit A (see instructions under "Reserved Courses").

FIRST TERM

- 5970. SPECIAL PROBLEMS.** (Cr ar; prereq \$)
- 8122. ADVANCED MICROBIOLOGY LABORATORY.** (3 cr; prereq 5321, 5424 or \$; \$4 lab fee; 8:30-11:30 MTWThF; HSUnitA 2-252) Rogers, Germaine
Experimentation in physiology, genetics, and virology.
- 8990. RESEARCH IN MICROBIOLOGY.** (Cr and hrs ar) Staff
Graduate students with the requisite preliminary training may elect research project outside their thesis work.

SECOND TERM

- 5970. SPECIAL PROBLEMS.** (Cr ar; prereq \$)
- 8112. MICROBIAL GENETICS.** (2 cr; prereq \$; VII MTWThF; HSUnitA 2-585)
Genetics of microorganisms; mutation, recombination, control of phage and animal viruses.
- 8121. ADVANCED IMMUNOLOGY LABORATORY.** (2 cr; limited to 10 students) Schmidtke, Gray
Current methods and experimentation in immunology.
Sec 1, II-IV MW
Sec 2, II-IV TTh
- 8990. RESEARCH IN MICROBIOLOGY.** (Cr and hrs ar) Staff
See First Term.

SPECIAL TERMS: MAY 24-JULY 2 AND JULY 5-30

- 5206. MICROBIOLOGY FOR MEDICAL STUDENTS.** (4 cr; prereq regis med fr or grad) 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.
Lect II MTThF, HSUnitA 2-650
Lab A III-IV M, VII-VIII and ½ IX W, HSUnitA 2-252
Lab B VII-VIII and ½ IX M, III-IV W, HSUnitA 2-252

Neurology (Neur)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 5120. SELECTED PROBLEMS IN NEUROLOGY.** (Cr ar; prereq regis med) Baker, staff

5510. **EXTERNSHIPS IN CLINICAL NEUROLOGY.** (Cr ar; prereq regis med) Baker, staff
5540. **NEUROCHEMISTRY.** (Cr ar; prereq regis med) Berry, Cohen, Lin
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, Bland
5550. **NEUROPATHOLOGY.** (4.5 cr; prereq regis med) Sung, Matri
5570. **IMMUNOLOGY.** (Cr ar; prereq regis med) Ansari
8200. **CLINICAL NEUROLOGY.** (Cr ar) Baker, staff
8201. **CLINICAL PEDIATRIC NEUROLOGY.** (Cr ar) Swaiman, staff
8202. **RESEARCH.** (Cr ar) Baker, staff
8203. **APPLIED ELECTROENCEPHALOGRAPHY.** (Cr ar) Torres
8204. **APPLIED ELECTROMYOGRAPHY.** (Cr ar) Kennedy, Bland
8205. **APPLIED NEUROPATHOLOGY.** (Cr ar) Sung, Matri
8236. **RESEARCH: NEUROPATHOLOGY.** (Cr ar) Sung, Matri
8705. **NEUROLOGICAL-NEUROSURGICAL CONFERENCE.** (1 cr, §Rad 5163, §Surg 8318) Baker, Peterson

Neurosurgery (NSur)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Required Courses for Undergraduate Students

5127. **CLINICAL LECTURES IN NEUROSURGERY.** (1 cr per yr; prereq regis med) Staff

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 General Hospital).** (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; Friday) Staff
A review of X-ray films and case histories on neurosurgical service.
5540. **NEUROSURGICAL CONFERENCE.** (1 cr; prereq regis med; Saturday) 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 will be emphasized.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Required Courses for Graduate Students

8305. **NEUROSURGICAL DIAGNOSIS.** (4 cr; MTWThF) Chou, French, Seljeskog
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
Neurosurgical fellow acts as house surgeon at University and affiliated hospitals.
- 8311. OPERATIVE NEUROSURGERY.** (4 cr; MTWThF) Chou, French, Seljeskog
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
Problems in experimental or clinical surgery.
- 8318. NEURORADIOLOGICAL CONFERENCE.** (1 cr; Friday) Chou, French, Seljeskog
A review of X-ray films and case histories on neurosurgical service.
- 8320. NEUROSURGICAL CONFERENCE.** (2 cr; Saturday) Chou, French, Seljeskog, Bloedel
In-depth review of selected topics in basic and clinical neurosurgery.
- 8322. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART I.** (1 cr; Tuesday, offered Su and W)
Staff
Review and discussion of topics.
- 8323. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART II.** (1 cr; Tuesday; prereq 8322; offered F and S) Staff
Advanced review and discussion of topics.
- 8330. NEUROSURGERY LITERATURE SEMINAR.** (2 cr; 1st and 2nd Thursday evenings) Staff
Review and discussion of current literature relating to neurosurgery and the neurosciences.

Obstetrics and Gynecology (Obst)

SPECIAL TERMS: JUNE 21-JULY 30 AND AUGUST 2-SEPTEMBER 10

Elective Courses for Undergraduate Students

- 5500. EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY.** (9 cr; prereq Phase D med students)
Foreman, staff
Clinical experience which includes total care of inpatients and outpatients on obstetrics and gynecology service at Hennepin County General Hospital, 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.** (4.5 cr; prereq 5500) 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.** (9 cr; prereq 5500) Foreman, staff
Full-time clinical experience as acting intern on obstetrical and gynecological service at Hennepin County General Hospital or St. Paul-Ramsey Hospital.
- 5550. PSYCHIATRIC ASPECTS OF OBSTETRICS AND GYNECOLOGY.** (4.5 cr; prereq Phase D med students) Foreman, Bernstein
Clinical course. Psychiatric problems relating to reproductive system.
- 5560. RESEARCH IN REPRODUCTION.** (9 cr; prereq Phase D med students) Foreman, Notation
Topics selected for each student.
- 5590. PRECEPTORSHIP IN OBSTETRICS AND GYNECOLOGY.** (9 cr; prereq 5500) Foreman
Two full-time preceptorships in clinical obstetrics and gynecology, one in Little Falls and one in St. Cloud, 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) Lund, staff
- 8205. ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Lund, staff
- 8209. ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Lund, staff
- 8210. ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Lund, staff
- 8213. ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Lund, staff
- 8217. SEMINAR IN OBSTETRICS AND GYNECOLOGY.** (Cr ar) Lund, staff

- 8221. SEMINAR IN OBSTETRICS AND GYNECOLOGY. (Cr ar) Lund, staff
- 8222. GYNECOLOGICAL ONCOLOGY. (Cr ar) Lund, staff
- 8223. GYNECOLOGICAL ONCOLOGY. (Cr ar) Lund, staff
- 8224. GYNECOLOGICAL ENDOCRINOLOGY—PART I. (Cr ar) Lund, staff
- 8225. GYNECOLOGICAL ENDOCRINOLOGY—PART II. (Cr ar) Lund, staff
- 8226. OBSTETRICAL PHYSIOLOGY AND ANESTHESIOLOGY. (Cr ar) Lund, staff
- 8230. RESEARCH IN REPRODUCTION. (Cr ar) Lund, staff

Ophthalmology (Oph)

FIRST TERM

- 8101. CLINICAL OPHTHALMOLOGY. (8 cr; 8:00-5:00 MTWThF; OP Clin) Harris, staff
- 8106. STRABISMUS MANAGEMENT. (1 cr; 8:00-9:00 Th; Mayo A675) Letson
- 8131. PRACTICAL OCULAR SURGERY. (3 cr; 8:30-12:00 MTWThF; Oper Rm) Harris, staff
- 8151. BASIC AND APPLIED OPHTHALMOLOGY. (2 cr; 8:00-12:00 S; HSUnitA 2-585 and 2-571)
Harris, staff
- 8152. OPHTHALMOLOGY LABORATORY. (15 cr; 8:00-5:00 MTWThF; DiehIH 251) Harris, staff

SECOND TERM

- 8101. CLINICAL OPHTHALMOLOGY. (8 cr; 8:00-5:00 MTWThF; OP Clin) Harris, staff
- 8106. STRABISMUS MANAGEMENT. (1 cr; 8:00-9:00 Th; Mayo A675) Letson
- 8131. PRACTICAL OCULAR SURGERY. (3 cr; 8:30-12:00 MTWThF; Oper Rm) Harris, staff
- 8152. OPHTHALMOLOGY LABORATORY. (15 cr; 8:00-5:00 MTWThF; DiehIH 251) Harris, staff

Orthopedic 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 GENERAL HOSPITAL. (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, Premer, Lai
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 General Hospital.
- 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, Lai
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, Premer, Lai
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, Premer, Lai
Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities.
- 8411. ORTHOPEDIC OPERATIVE SURGERY.** (5 cr) Thompson, Bradford, House, Premer, Lai
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, Lai
Problems in experimental or clinical surgery, University Hospitals.

Otolaryngology (Otol)

SPECIAL TERMS: THREE-, SIX-, AND TWELVE-WEEK COURSES, JUNE 21-SEPTEMBER 10

- 5500. GENERAL—ENT ELECTIVE.** (4.5 cr)
- 5501. ACTING INTERNSHIP—ENT ELECTIVE.** (9 cr)
- 5503. RESEARCH: BASIC SCIENCE—ENT ELECTIVE.** (9 or 18 cr)

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 8 through July 30; 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
- 5125. **IMMUNOPATHOLOGY.** (2 cr; prereq §) Kersey
- 5126. **TECHNIQUES IN IMMUNOPATHOLOGY.** (1 cr; prereq 5125) Kersey
- 5140. **SEMINAR: EXPERIMENTAL CHRONOBIOLOGY.** (1 cr; prereq §) Halberg
- 5141. **PROBLEMS IN EXPERIMENTAL CHRONOBIOLOGY.** (Cr ar; prereq §) Halberg
- 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 General Hospital, St. Paul-Ramsey Hospital, St. Paul Children's Hospital, Minneapolis Children's Health Center). (Cr ar) Nesbit
- 5502. **PEDIATRIC ACTING INTERNSHIP** (University Hospitals, Hennepin County General Hospital, St. Paul-Ramsey Hospital, St. Paul Children's Hospital, Minneapolis Children's Health Center). (Cr ar) Nesbit
- 5510. **OUTPATIENT EXTERNSHIP AT MINNEAPOLIS PUBLIC HEALTH DEPARTMENT CHILD CARE CLINICS.** (Cr ar) Deinard
- 5511. **PEDIATRIC OUTPATIENT AT UNIVERSITY HOSPITALS.** (Cr ar) Satran
- 5513. **OUTPATIENT EXTERNSHIP AT COMMUNITY UNIVERSITY HEALTH CARE CENTER.** (Cr ar) Smeiker
- 5515. **CHILD DEVELOPMENT AT ST PAUL-RAMSEY HOSPITAL.** (Cr ar) Venters
- 5531. **CHILD CARE CLINIC PROGRAM.** (Cr ar) Fisch
- 5532. **CLINICAL IMMUNOLOGY AT UNIVERSITY HOSPITALS.** (Cr ar) Fish
- 5534. **PEDIATRIC CARDIOLOGY AT UNIVERSITY HOSPITALS.** (Cr ar) Lucas
- 5535. **INFECTIOUS DISEASE.** (Cr ar) Quie

5536. PEDIATRIC HEMATOLOGY ONCOLOGY AT UNIVERSITY HOSPITALS. (Cr ar) Krivit
5537. PEDIATRIC ENDOCRINOLOGY AND METABOLISM AT UNIVERSITY HOSPITALS. (Cr ar) Ulstrom
5538. PEDIATRIC GASTROENTEROLOGY. (Cr ar) Sharp
5539. NEONATAL MEDICINE EXTERNSHIP (ICU). (Cr ar) Reynolds
5540. PEDIATRIC NEUROLOGY AT UNIVERSITY HOSPITALS. (Cr ar) Swaiman
5542. CLINICAL PHARMACOLOGY AT UNIVERSITY HOSPITALS. (Cr ar) Mirkin
5543. NEPHROLOGY AT UNIVERSITY HOSPITALS. (Cr ar) Michael
5544. PULMONARY DISEASE IN PEDIATRICS. (Cr ar) Warwick
5546. PEDIATRIC PATHOLOGY AT UNIVERSITY HOSPITALS. (Cr ar) Burke
5547. TOPICS IN MATERNAL AND CHILD HEALTH. (Cr ar; prereq 5500, 5501, or 5502) tenBensel
5548. PEDIATRIC GENETICS AT UNIVERSITY HOSPITALS. (Cr ar) Desnick
5549. EXPERIENCE IN MEDICAL EDUCATION. (Cr ar) Moller
8200. GRADUATE SEMINAR: PEDIATRICS. (1.5 cr) J Anderson, 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 1½ yrs of general grad pediatric training; prereq \$) Staff
8208. PEDIATRIC RESEARCH. (Cr ar; prereq \$) Anderson, 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-AUGUST 31

8200. PHYSICAL MEDICINE SERVICE. (Cr and hrs ar) Staff
8205. READINGS. (1 cr; I-II M; MIRDH 118) 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

FIRST AND SECOND TERMS: TWELVE-WEEK COURSES

- 5396, 5397. CLINICAL EDUCATION. (15 cr per qtr; 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
- 8130. SEMINAR: CURRENT LITERATURE.** (1 cr; prereq §) Graduate 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
- 8130. SEMINAR: CURRENT LITERATURE.** (1 cr; prereq §) Graduate 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; \$4 lab fee; lect VI MW, IV TTh, VI-VII F, HSUnitA 2-530, VII-VIII TTh, HSUnitA 2-650; lab VII-IX MW, HSUnitA 3-110) Staff
Introduction to human physiology.
- 5111. HUMAN PHYSIOLOGY—May 24-July 30.** (5 cr; primarily for Phase A4 med students; prereq 5110; \$4 lab fee; lect I MTThF, HSUnitA 2-650; lab 1 VII-X T, lab 2 VII-X Th, lab 3 VII-X F, HSUnitA 3-110) Staff
- 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
- 8111. HUMAN PHYSIOLOGY—May 24-July 30.** (5 cr; prereq 8110, anatomy, biochemistry; \$4 lab fee; lect I MTThF, HSUnitA 2-650; lab 1 VII-X T, lab 2 VII-X Th, lab 3 VII-X F, HSUnitA 3-110) 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

Psychiatry

Adult Psychiatry (AdPy)

SPECIAL TERM: JUNE 23-SEPTEMBER 12

- 5109. CLINICAL PSYCHIATRY.** (9 cr per period) Olson
Contact George W. Knabe, Jr. M.D., St. Luke's Hospital, 915 E. First Street, Duluth; telephone (218) 727-6636, extension 660.
- 5110. EXTERNSHIP IN PSYCHIATRY.** (9 cr per period) Cowan
See 5109.
- 5120. CLINICAL EXPERIENCE IN INTERVIEWING AND DIAGNOSTIC SKILLS (Veterans Hospital).** (9 cr per period) Posey
- 5500. COMBINED INPATIENT AND CRISIS INTERVENTION CENTER (Hennepin County General Hospital).** (9 cr per period; hrs ar) 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; hrs ar) Wiemer
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.
- 5503. CLINICAL PSYCHIATRY (Fairview Hospital).** (9 cr per period; hrs ar) Haberle
Student will take an active part in all therapies under the supervision of an attending psychiatrist. Performing a mental examination; assessing dynamic factors producing the current clinical picture, etc.
- 5505. DAY TREATMENT PROGRAM (Hennepin County General Hospital).** (9 cr per period; hrs ar) Jepsen
Participation for an extensive period in the intensive psychiatric treatment of approximately 30 patients, enabling the student to know them as individuals and to gain awareness of group process.
- 5506. ADULT OUTPATIENT AND PSYCHIATRIC LIAISON SERVICE (Hennepin County General Hospital).** (9 cr per period; hrs ar) Pollock
The student, under supervision of a staff psychiatrist, will be assigned new ambulatory patients to evaluate for intake assignment and engage in short intervention, when feasible.
- 5507. CLINICAL RESEARCH (University Hospitals, Station 61).** (9 cr per period; hrs ar) Heston
General adult psychiatry with special emphasis on pharmacology treatment and research. Inpatients and outpatients.
- 5508. ADULT PSYCHIATRY (University Hospitals, Station 60).** (9 cr per period; hrs ar) Hastings
General adult psychiatry with emphasis on acutely ill patients and outpatient follow-up.
- 5511. UNIVERSITY HOSPITALS CONSULTATION.** (9 cr per period; hrs ar) Popkin
Students will assist in psychiatric consultation to other services in University Hospitals under direct supervision of staff.
- 5513. DRUG ABUSE, ALCOHOLISM (St. Mary's Hospital).** (9 cr per period; hrs ar) Dorsey
Involvement in inpatient service and outpatient follow-up program.
- 5514. DRUG ABUSE, ALCOHOLISM (Veterans Hospital).** (9 cr per period; hrs ar) Heilman
- 5515. NEUROPSYCHOLOGY (University Hospitals).** (9 cr per period; hrs ar) Meier
- 5517. ALCOHOL AND DRUG ADDICTION (St. Cloud Hospital).** (9 cr per period; hrs ar) Warner
Participation as a physician member of a multidisciplinary program with emphasis on the team approach.
- 5518. COMMUNITY PSYCHIATRY (Five-County Human Development Program, Inc., Brahm).** (9 cr per period; hrs ar) Staff
Participation as a physician member of a multidisciplinary team composed of health science students and mental health professionals.

- 5519. CLINICAL PSYCHIATRY (Abbot Hospital).** (9 cr per period; hrs ar) 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; hrs ar) Nagobads
Experience in outpatient community psychiatry; would be meaningful for students considering family practice.
- 5522. ADOLESCENT AND YOUNG ADULT PSYCHIATRY (University Hospitals, Station 62).** (9 cr per period; hrs ar) Greenberg
Student will be primary therapist (supervised) for selected patients.
- 5530. INDEPENDENT STUDY.** (9 cr per period; hrs ar) Staff
- 5550. GERIATRIC PSYCHIATRY.** (9 cr per period; hrs ar) Garetz
- 5602. CLINICAL PSYCHOPHARMACOLOGY SEMINAR.** (1 cr; hrs ar) Abuzzahab

SPECIAL TERM: JULY 1-SEPTEMBER 12

- 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 ASSIGNMENTS.** (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
- 8215. CURRENT RESEARCH.** (1 cr; hrs ar) Hambidge
- 8221. SEMINAR: CURRENT LITERATURE (Hennepin County General Hospital).** (1 cr; hrs ar) Simon
- 8230. CASE CENTER CONFERENCE.** (1 cr; hrs ar) Hausman
- 8238. CASE CONFERENCE PSYCHOLOGICAL MEDICINE (Veterans Hospital).** (1 cr; hrs ar) Wilder
- 8263. SUPERVISION IN INTENSIVE PSYCHOANALYTICALLY ORIENTED PSYCHOTHERAPY.** (2 cr; hrs ar) Garetz
- 8970. DIRECTED STUDY.** (up to 9 cr per qtr; hrs ar) Staff

Child and Adolescent Psychiatry (CAPy)

FIRST TERM

- 5204. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; prereq med student, §; hrs ar) Greenberg
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, §; 9:00-10:00 T) Lawton, Hong
Therapeutic techniques utilized in child, adolescent, and family psychiatry are reviewed through presentation and discussion of ongoing cases.
- 5502. GRAND ROUNDS.** (1 cr; prereq med student, §; 4:00-5:30 W; C608 Mayo) Greenberg
By means of clinical and didactic presentations and discussions by students, faculty, and invited guests, current diagnostic, therapeutic, and theoretical issues in child, adolescent, and family psychiatry are reviewed.
- 5601. INTRODUCTORY READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; hrs ar) Koch, Hong
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; 4:00-5:00 Th)
Greenberg
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, Hong
See 5204.
- 8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; 9:00-10:00 T) Lawton, Hong
See 5206.
- 8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY.** (3-6 cr; 15-30 hrs per wk)
Cline
Supervised diagnostic and therapeutic experiences in an outpatient setting.
- 8212. CLINICAL INPATIENT CHILD PSYCHIATRY.** (Cr ar; 15-30 hrs per wk) Miner, Greenberg
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.** (Cr and hrs ar) Greenberg, Rigas
Supervised diagnostic and therapeutic experiences in an inpatient, multidisciplinary adolescent psychiatry unit with an emphasis on group and milieu therapies.
- 8228. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY.** (1 cr; hrs ar) Greenberg, Yellin
Research design, methodology, and current research projects are reviewed with faculty and invited guests.
- 8233. MENTAL HEALTH ADMINISTRATION AND TRAINING SEMINAR.** (1 cr; hrs ar) Greenberg, Hong
Styles of mental health administration and the role of the child psychiatrist; ongoing evaluation of the child psychiatry residency training program.
- 8301. SEMINAR IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; 4:00-5:30 W; C608 Mayo) Greenberg, Hong, staff
See 5502.

SECOND TERM

- 5204. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; prereq med student, §; hrs ar) Greenberg
See First Term.
- 5206. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; prereq med student, §; 9:00-10:00 T) Lawton, Hong
See First Term.
- 5502. GRAND ROUNDS.** (1 cr; prereq med student, §; 4:00-5:30 W; C608 Mayo) Greenberg
See First Term.
- 5601. INTRODUCTORY READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; hrs ar) Koch, Hong
See First Term.
- 8100. READINGS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; 4:00-5:00 Th)
Greenberg
See First Term.
- 8110. DIAGNOSTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; hrs ar)
Greenberg, Hong
See 5204 First Term.
- 8120. THERAPEUTIC METHODS IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; 9:00-10:00 T) Lawton, Hong
See 5206 First Term.
- 8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY.** (3-6 cr; 15-30 hrs per wk)
Cline
See First Term.
- 8212. CLINICAL INPATIENT CHILD PSYCHIATRY.** (Cr ar; 15-30 hrs per wk) Miner, Greenberg
See First Term.

- 8214. INPATIENT CLINICAL ADOLESCENT PSYCHIATRY.** (Cr and hrs ar) Greenberg, Rigas
See First Term.
- 8226. RESEARCH IN CHILD AND ADOLESCENT PSYCHIATRY.** (1 cr; hrs ar) Greenberg, Yellin
See First Term.
- 8233. MENTAL HEALTH ADMINISTRATION AND TRAINING SEMINAR.** (1 cr; hrs ar) Greenberg,
Hong
See First Term.
- 8301. SEMINAR IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; 4:00-5:30 W; C608
Mayo) Greenberg, Hong, staff
See 5502 First Term.

Health Care Psychology (HCPy)

FIRST TERM

- 5611. TECHNIQUES OF EVALUATION.** (1 cr; prereq regis med; hrs ar) Westermeyer
- 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

- 5611. TECHNIQUES OF EVALUATION.** (1 cr; prereq regis med; hrs ar) Westermeyer
- 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

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
- 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 General Hospital).** (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 which 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 which 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 which 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 which 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 21-JULY 30 AND AUGUST 2-SEPTEMBER 10

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 1-JULY 30 AND AUGUST 2-SEPTEMBER 3

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. TRANSPLANTATION 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, Smith, Kim
5506. **CANCER DIAGNOSIS AND TREATMENT.** (Cr ar; prereq regis med) Levitt, Jones, Smith, Kim
5507. **ADVANCED EXTERNSHIP IN RADIATION THERAPY.** (Cr ar; prereq regis med) Levitt, Jones, Smith, Kim
5508. **SPECIAL PROBLEMS IN RADIATION BIOLOGY.** (Cr ar)
5510. **BASIC PRINCIPLES OF RADIOLOGICAL PHYSICS.** (1 cr; 3:00-4:00 F; Rigler Lib) 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 3) 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

5190. **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

5040. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 15-July 2. (3 cr, §PubH 5040, §Hlth 5402; limited to 80 students; prereq mortuary science major, education sr, certified teacher, health science major, school or public health nurse or §; 1:30-4:00 MTWThF; HSUnitA 2-520) Fredlund, Lindgren, Slater

Basic background information on concepts and attitudes toward death, grief, and bereavement with emphasis on instructional aspects for the elementary and secondary schools and the role of the school in suicide prevention.

FIRST AND SECOND TERMS: TEN-WEEK 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 §3080)
Funeral service survey based on practicum experiences. Assigned reading of funeral service literature.

3090. INDEPENDENT STUDY. (Cr ar; prereq sr)

SCHOOL OF NURSING

Nursing (Nurs)

Courses with limited enrollment must be reserved in 3320 Powell Hall (see instructions under "Reserved Courses").

FIRST TERM

- 5201. ROLE OF NURSING WITHIN HEALTH CARE.** (2 cr; prereq §)
Introduction to nursing within the context of health care delivery systems. Philosophies of nursing, with implications for nursing practice and nursing education.
- 5205. TOOLS I.** (1 cr; prereq 5201 or §)
Tools of assessment and maintenance of health. Based on principles from the biological, physical, and behavioral sciences.
- 8003. HEALTH ASSESSMENT** (5-6 cr; limited enrollment; prereq §) Burns
Designed to prepare the nurse to objectify her/his nursing assessment. Emphasis on normal health will help to distinguish abnormal from normal. Classroom and clinical experiences in history taking and physical assessment organized within a systematic framework. Emphasis on the incorporation of the assessment skills into the student's nursing framework.
- 8021. RESEARCH IN NURSING.** (3 cr)
Research needs and possible ways in which selected research efforts might be undertaken.
- 8050. PROBLEMS IN NURSING.** (1-4 cr; prereq △) Staff
Individual study of a problem.
- 8060. ADVANCED CLINICAL NURSING.** (3-9 cr; prereq 8102 or 8203 or 8302 and 8313 or 8302 and 8352) Staff
Hypothesis generation and testing in general nursing for the purpose of developing creative and critical approaches to nursing.
- 8203. PSYCHIATRIC NURSING—COMMUNITY.** (4 cr; prereq 8202)
Community mental health problems, community resources, and psychiatric nurse's role in the community.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 5615. SYNTHESIS IN COMPLEX NURSING SITUATIONS.** (4 cr; prereq 5611, 5612, 5613, 5614)
Synthesis of previous knowledge and skill areas for comprehensive and effective care of individuals and groups with various problems of health and deviations from health. Focus on cooperation and collaboration with others to achieve nursing goals.
- 5701. MATERNITY NURSING.** (4-5 cr; prereq two of the following: 5611, 5612, 5613 or 5614)
Application of previous learnings to "high risk" families during the reproductive process.
- 5799. SELF-DIRECTED STUDY AS A MEANS OF ACCOMPLISHING NURSING ELECTIVES.** (1-10 cr; prereq two of the following: 5611, 5612, 5613, 5614; contract with faculty member)
A means to accomplish the required nursing elective credits.
- 5999. CLINICAL STUDY.** (1 cr; contract with faculty member)
A clinical study to answer a nursing question.
- 8060. ADVANCED CLINICAL NURSING.** (3-9 cr; prereq 8102 or 8203 or 8302 and 8313 or 8302 and 8352) Staff
See First Term.
- 8504. CURRICULUM DEVELOPMENT AND EVALUATION IN NURSING.** (4-6 cr; prereq 2nd-yr grad student, §) Staff
Educational programs in nursing. Analysis of strategies for curriculum development and evaluation.

SECOND TERM

- 5206. TOOLS I.** (1 cr; prereq 5205 or §)
See 5205 First Term.
- 5207. SYNTHESIS.** (2 cr; prereq 5202, 5203, 5204, 5205, growth and development)
Synthesis of first-level studies of systematic process, adaptation, helping relationships, and tools to provide nursing care for healthy children and adults.
- 8003. HEALTH ASSESSMENT.** (5-6 cr; limited enrollment; prereq §) Burns
See First Term.
- 8060. ADVANCED CLINICAL NURSING.** (3-9 cr; prereq 8102 or 8203 or 8302 and 8313 or 8302 and 8352) Staff
See First Term.

COLLEGE OF PHARMACY

Pharmacy (Phar)

FIRST TERM

- 5610. FUNDAMENTAL PRINCIPLES AND PROCESSES.** (3 cr; prereq Math 1142)
Introduction to principal laws of physical chemistry and their applications to quantitative aspects of pharmaceutical systems.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 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.
- 5260. MANAGEMENT OF PHARMACEUTICAL SYSTEMS.** (4 cr)
The health care system, drug distribution, drug use control, and dissemination of drug information.
- 5265. DRUGS AND THE ELDERLY.** (2 cr; prereq \$)
Psychological, sociological, physiological/pharmacological, and economic aspects of aging and drug utilization among the elderly.
- 5266. DRUGS AND THE ELDERLY WORKSHOP.** (1-3 cr; prereq 5265 or \$)
Seminar/discussion/workshop sessions on specific drug problems, communication skills with the elderly, and problem solving techniques. Clinical experiences include home visitations to individuals identified as having drug problems and presentations to senior citizens groups on a variety of drug-related subjects.
- 5270. CLINICAL CLERKSHIP.** (4 cr)
Supervised delivery of pharmaceutical services at University Hospitals or affiliated institutions, or other practice settings.
- 5281. OVER-THE-COUNTER PREPARATIONS.** (2 cr; prereq 3rd-yr pharmacy student)
Evaluation of nonprescription medication, and preparation of student for triage role in preventive medicine.
- 5291. HOSPITAL PHARMACY.** (2 cr; lect and hospital visitations)
History, organization, and administration of pharmaceutical services in institutional settings.
- 5299. SPECIAL PROBLEMS.** (Cr ar; prereq \$)
- 5301. CLINICAL THERAPEUTICS.** (3 cr; prereq 5350, Phcl 5102, or \$)
Clinical therapeutics of common disease entities.
- 5670. BIOPHARMACEUTICS—DRUG INFORMATION EVALUATION.** (4 cr; prereq 5330, Phcl 5102, or \$)
Processes of drug absorption, distribution, metabolism, and excretion in vivo. Statistical methods and procedures for critical evaluation of current drug literature.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq \$)

SECOND TERM

- 5696. PARENTERAL PRODUCTS.** (3 cr; prereq 5640, MicB 3103 or \$)
Principles and procedures involved in manufacture of parenteral products.

SCHOOL OF PUBLIC HEALTH

Public Health (PubH)

Courses with limited enrollment must be reserved in 1325 Mayo (see instructions under "Reserved Courses").

FIRST TERM

- 3001. PERSONAL AND COMMUNITY HEALTH.** (3 cr, §3004; meets with 3004, 3034; III-IV MTWThF; HSUnitA 2-620) Greene
Fundamental principles of health conservation and disease prevention.
- 3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH.** (4 cr, §3001, §3034; III-IV MTWThF; HSUnitA 2-620) Greene, Schwanke
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.
- 3034. TOPICS IN ALCOHOL AND DRUG ABUSE—June 15–June 25.** (2 cr, §3004; meets with 3001, 3004; III-IV MTWThF; HSUnitA 2-620) Schwanke
Selected readings in alcohol and drug abuse with discussion based on these readings.
- 5005. TOPICS IN PUBLIC HEALTH.** (Cr ar; prereq §) Staff
Selected readings in public health with discussion based on these readings.
- 5006. INTRODUCTION TO COMMUNITY HEALTH.** (5 cr, §Nurs 5625; open to nursing students, nurses, or other health professionals; prereq courses in personal health and microbiology; I-II MTWThF; HSUnitA 2-530) Greene, Rothenberger
Lectures, discussions, seminars, individualized readings on critical and current issues in community health, emphasizing public health programs and controversies.
- 5007. HEALTH LEADERSHIP AND EFFECTING CHANGE.** (4 cr, §HSU 5007; 4:00-6:00 MW; HSUnitA 2-548) Sloan, staff
Leadership qualities and their effect on organizational behavior. Various theories of change and their practical application to the field of health. The changing role of the health professional.
- 5032. EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE—July 6–July 16.** (3 cr, §Hlth 5400; limited to 50 students; prereq education sr, certified tchr or school nurse; 1:00-4:30 MTWThF; HSUnitA 2-571/585) Rothenberger, Cobb
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 school.
- 5040. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 15–July 2.** (3 cr, §Hlth 5402, §Mort 5040; limited to 80 students; prereq education sr, certified tchr, school nurse, mortuary science major, or §; 1:30-4:00 MTWThF; HSUnitA 2-520) Fredlund, Lindgren, Slater
Basic background information on concepts and attitudes toward death, grief, and bereavement, with emphasis on instructional aspects for the elementary and secondary schools and the role of the school in suicide prevention.
- 5061/5062. COMMUNITY HEALTH EDUCATION LABORATORY.** (total of 6 cr for 5061 and 5062 ... students must register for both courses this term; prereq 5054, 5055, 5056; 20 hrs per wk) Mills, Craig
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.
- 5083. PATIENT EDUCATION IN REPRESENTATIVE HEALTH CARE SETTINGS.** (3 cr; prereq §) Craig, Mills, Veninga
Current theories, principles, methods, procedures, and techniques applicable to patient education in a variety of health care settings; i.e., hospitals, health maintenance organizations, clinics, and health agency services. Planning, implementation, and evaluation of patient education.
- 5098. TOPICS IN PUBLIC HEALTH EDUCATION.** (Cr ar; prereq §) Craig, Mills, Veninga
Selected readings; seminars on readings.
- 5500. PUBLIC HEALTH—NORMAL GROWTH AND DEVELOPMENT.** (4 cr; prereq §; III-IV MTThF; Mayo 1250) Pflug, Leonard
Theoretical approaches to the assessment of psychosocial and cognitive development of man; family development; systematized approach to nursing process; introduction to selected developmental and psychosocial screening tests. Application through selected laboratory exercises and experiences.
- 5520. FIELD EXPERIENCE: PHYSICAL AND OCCUPATIONAL THERAPY IN COMMUNITY AGENCIES.** (Cr ar; prereq §) E Anderson
Advisory service and planning in-service programs for nursing staff; selected experience in local, county, and state health departments.

- 5575. TOPICS: PUBLIC HEALTH NURSING.** (Cr ar; prereq \$) Staff
Selected readings in public health nursing with discussion based on these readings.
- 5600. FIELD EXPERIENCE IN PUBLIC HEALTH NUTRITION.** (Cr ar; prereq \$) Stief, 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 \$) Stief
- 5609. TOPICS: PUBLIC HEALTH NUTRITION.** (Cr ar; prereq \$) Stief
- 5610. PRINCIPLES AND ISSUES IN MATERNAL AND CHILD HEALTH.** (3 cr; I-II TTH; HSUnitA 2-620)
ten Bensel
Current issues related to the health needs of families, mothers, and children with emphasis on the principles of primary care, health maintenance, preventive care, organization, and evaluation.
- 5614. FIELD EXPERIENCE IN MATERNAL AND CHILD HEALTH.** (Cr ar; prereq 5610, 5611 or \$) ten Bensel, staff
Field experiences are selected by the student to meet his or her career goals.
- 5649. TOPICS: MATERNAL AND CHILD HEALTH.** (Cr ar; prereq \$) ten Bensel, staff
Selected readings in maternal and child health with discussion based on these readings.
- 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 \$) Block
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.
- 8510. DIRECTED RESEARCH: PUBLIC HEALTH NURSING.** (Cr ar; prereq 5510) Staff
Guided study in research designs.
- 8511. DIRECTED RESEARCH: PUBLIC HEALTH NURSING.** (Cr ar; prereq 5510, 8510) Staff
Guided completion of a research study.
- 8519. DIRECTED RESEARCH: PHYSICAL AND OCCUPATIONAL THERAPY.** (6 cr; prereq 5510, 8510) E Anderson
Guided study in research related to occupational or physical therapy in community health programs.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 5069. COMMUNITY HEALTH EDUCATION PRACTICE.** (6 cr; prereq school health education major, \$) Mills, Craig
Experience as health educator in selected community health agencies and institutions.
- 8004. FIELD INSTRUCTION IN PUBLIC HEALTH.** (12 cr; limited to 45 students; prereq grad student in public health, social work, or other health sciences and \$; 24-36 hrs per wk)
This offering: Interdisciplinary Team Building. An intensive residential workshop format combined with team field project involvement. Development of skills such as resource sharing, communications, problem solving, conflict utilization, and process intervention to improve the outcome of the selected project. See Special Programs section.

SECOND TERM

- 5005. TOPICS IN PUBLIC HEALTH.** (Cr ar; prereq \$) Staff
See First Term.

- 5098. TOPICS IN PUBLIC HEALTH EDUCATION.** (Cr ar; prereq §) Craig, Mills, Veninga
See First Term.
- 5300. COMPARATIVE MEDICINE AND PUBLIC HEALTH.** (2 cr; prereq §) R Anderson,
Diesch
Survey of comparative medicine in man's 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.
- 5520. FIELD EXPERIENCE: PHYSICAL AND OCCUPATIONAL THERAPY IN COMMUNITY
AGENCIES.** (Cr ar; prereq §) E Anderson
See First Term.
- 5575. TOPICS: PUBLIC HEALTH NURSING.** (Cr ar; prereq §)
See First Term.
- 5600. FIELD COURSE IN PUBLIC HEALTH NUTRITION.** (Cr ar; prereq §)
See First Term.
- 5601. SEMINAR: PUBLIC HEALTH NUTRITION.** (Cr ar; prereq §) Stief
- 5609. TOPICS: PUBLIC HEALTH NUTRITION.** (Cr ar; prereq §) Stief
- 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
See First Term.
- 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
Section 1—Environmental health students only. Section 2—All other students major-
ing in public health.
- 8510. DIRECTED RESEARCH: PUBLIC HEALTH NURSING.** (Cr ar; prereq 5510) Staff
See First Term.
- 8511. DIRECTED RESEARCH: PUBLIC HEALTH NURSING.** (6 cr; prereq 5510, 8510) Staff
See First Term.

Biometry (PubH)

FIRST TERM

- 5400. INTRODUCTION TO QUANTITATIVE METHODS IN THE HEALTH AND LIFE SCIENCES.** (3 cr;
for students majoring in the biological and health sciences; prereq Biol 1011, Chem
1005, Math 1231. §; 1 MTWThF; HSUnitA 2-533) McHugh
Basic quantitative methods for the design and analysis of clinical and laboratory studies in
biology and the health sciences.
- 5450. BIOMETRY I.** (3 cr; prereq §5451...familiarity with basic concepts of calculus desirable; 1V
MTWThF; Owre 111) Staff
Basic concepts in probability; binomial, Poisson, and normal probability models; estimation
and testing statistical hypotheses of parameters of probability models.
- 5451. BIOMETRY LABORATORY I.** (2 cr; prereq §5450; 111 TThF, ForH 150; 7 morning hrs per wk
ar...afternoon hrs by special ar only) Staff
Application of concepts of probability to the development of probability models for random
phenomena in the biological and medical sciences.

- 5456. BIOMETRY CONSULTING SEMINAR.** (3 cr; prereq biometry major; II MTWThF; HSUnitA 2-146)
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

- 5403. COMPUTER APPLICATIONS IN HOSPITAL AND HEALTH CARE ADMINISTRATION.** (3 cr; prereq hospital and health care administration students only...others with §) Staff
Introduction to digital computer applications in hospital and health care administration.
- 5405. BIOMETRIC METHODS IN ENVIRONMENTAL HEALTH I.** (3 cr; prereq environmental health student or §; I-III MWF; Mayo 1220) Bearman
Variation; frequency distribution; demographic techniques; probability; introduction to data analysis.
- 5406. BIOMETRIC METHODS IN ENVIRONMENTAL HEALTH II.** (3 cr; prereq 5405) Johnson
Estimation; tests of significance; Poisson distribution; serial dilutions and most probable number; elements of bioassay; radiologic statistics.
- 5452. BIOMETRY II.** (3 cr; prereq 5450 and §5453; IV MTWThF; Owre 111) Staff
Further consideration of testing statistical hypotheses and interval estimation; X applied to frequency data; regression analysis; correlation; analysis of variance; contrasts and multiple comparison techniques.
- 5453. BIOMETRY LABORATORY II.** (2 cr; prereq §5452; III TThF, ForH 150; 7 morning hrs per wk. . .afternoon hrs by special ar only) Staff
Application of concepts of testing and estimation of the parameters of the basic probability models; application of X^2 to goodness of fit and heterogeneity tests; application of regression to bioassay; application of analysis of variance to bioassay.
- 5456. BIOMETRY CONSULTING SEMINAR.** (3 cr; prereq biometry major) Boen, staff
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 and 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 man.
- 8170. RESEARCH: ENVIRONMENTAL BIOLOGY.** (Cr ar; prereq \$) Greene, Odlaug
- 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 \$) Caplan
- 8220. RESEARCH: FOOD SANITATION.** (Cr ar; prereq \$) Pflug
- 8230. RESEARCH: INSTITUTIONAL ENVIRONMENTAL HEALTH.** (Cr ar; prereq \$) Michaelsen
- 8240. RESEARCH: WATER HYGIENE.** (Cr ar; prereq \$) Straub
- 8248. WATER QUALITY INVESTIGATION AND RESEARCH TECHNIQUES.** (6 cr; prereq \$) Odlaug, staff
Field techniques and special research methods for establishing pollution baselines; recognition and appraisal of advancing eutrophication. See Special Programs section.
- 8249. WATER QUALITY RESEARCH.** (6 cr; prereq \$) Odlaug, staff
Design and implementation of independent short-term research activity; literature review, statistical design, and data processing. See Special Programs section.

SECOND TERM

- 5150. TOPICS IN ENVIRONMENTAL HEALTH.** (Cr ar; prereq \$) Staff
See First Term.
- 5155. ENVIRONMENTAL HEALTH.** (4 cr; prereq environmental health student or \$) Straub, staff
Methods of promoting man's health by controlling environmental factors relating to air, water, food wastes, accidents, housing, radiation, industrial hygiene.
- 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 \$) Greene
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 \$) Caplan
8220. **RESEARCH: FOOD SANITATION.** (Cr ar; prereq \$) Pflug
8230. **RESEARCH: INSTITUTIONAL ENVIRONMENTAL HEALTH.** (Cr ar; prereq \$) Michaelsen
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

5775. **MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES.** (15 cr; prereq 1 yr experience as health care facility administrator and \$) Weckwerth, staff
Twelve-month program of on-campus residential (3 weeks) and off-campus independent study which includes periodic seminars 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
Twelve-month program of on-campus residential (3 weeks) and off-campus independent study which includes periodic seminars and monthly classes under program preceptors. Board of trustees, medical staff, nursing, hospital law, medical records, planning, community health systems, continuing health education.
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 twelve-month program of on-campus residential sessions (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.
5792. **LEGAL ISSUES IN HEALTH CARE ADMINISTRATION.** (3 cr; prereq \$) Holloway
Law and legal liability associated with hospitals and other health care organizations.

- 5793. HOSPITAL FINANCIAL STATEMENT ANALYSIS.** (3 cr; prereq §) Oszustowicz
A case study involving the review and analysis of actual hospital financial statements, cost reports, and other supportive documents. Designed to test the student's ability to apply course material presented in the fall, winter, and spring quarters, and to familiarize the student with basic financial documents.
- 5794. FINANCIAL MANAGEMENT SEMINARS.** (3 cr; prereq 5764, 5791) Oszustowicz
Major financial management topics. Special outside experts in the fields of public accounting, investment banking, lease financing, insurance counseling, hospital-based physician financial negotiation, etc., present papers on the applicability of their profession to the field. The history as well as current state of wage-price freeze regulations as applicable to the health care industry.
- 5799. MENTAL HEALTH ADMINISTRATION SEMINAR.** (2 cr; restricted to and required of students enrolled in mental health administration training) Peterson
Readings, group discussions, 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 §) 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

- 5755.** ADMINISTRATIVE RESIDENCY.** (Cr ar; prereq §) Dornblaser, staff, and 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.
- 5777. EXTERNAL FORCES AFFECTING HEALTH CARE DELIVERY.** (25 cr; prereq 5776 or §) Weckwerth, staff
A ten-month program of on-campus residential (3 weeks) and off-campus study which includes three regional seminars covering financing, manpower, organizing, social policy, and project planning and design. Requires a project which can be either a management study or a research thesis. Each student must verbally present and defend the project in symposium at end of course.
- 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] and successful completion of 5778 and §) Weckwerth, Danielsen, Gordon, staff
A twelve-month program of on-campus (3 weeks) and independent study which begins with a one-week introductory residential session each August. Seminars—which will focus on planning, organizing and staffing, directing and controlling—will be scheduled during the initial phase of the course. Students must complete a demonstration or research project. Students return to campus for the Course II windup session the following summer at which time they will share the process and conclusion of their projects with their peers.

College of Home Economics

Undergraduate and graduate majors in the various fields of the College of Home Economics will be served by 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 also serve secondary school consumer homemaking teachers for certification purposes. Further information may be obtained by writing Natalie Gallagher, College of Home Economics, University of Minnesota, St. Paul, Minnesota 55108. (See also Home Economics Education and Vocational and Technical Education 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

- 1521. COLOR AND DESIGN.** (4 cr; limited to 24 students; \$4 lab fee; I-II MTWThF; McNH B3) Ginthner
Color concepts and their application to design.
- 3415. TWENTIETH-CENTURY INTERIORS AND FURNISHINGS.** (3 cr; grad students should register for 5585, sec 1...paper required; IV MTWThF; McNH 316) Nagle
In-depth study of 20th-century design for interiors and furnishings from Victorian times to the present.
- 5509. HISTORY OF DECORATIVE ARTS: METAL, CERAMICS, GLASS, AND WOOD.** (3-4 cr; prereq 5505 or equiv; VI MTWThF; McNH 305) Blade
Study of glass, ceramics, metal work, wood, and other materials from selected historical periods. Application to interior design.
- 5585. PROBLEMS IN DESIGN: GENERAL—June 14-18.** (2 cr; limited to 24 students; prereq §; \$4 lab fee) Watkins
Internationally known goldsmith from London will teach life drawing with emphasis on body forms in adornment. See also section 1 under 3415.
Sec 2, VI-VIII MTWThF and ar, McNH 10
- 5586. PROBLEMS: HOUSING.** (2 cr per sec; must be reserved; I-III MTWThF; McNH 212) Esteros, others
Sec 1, Critical Problems in Housing, June 14-18
Sec 2, Teaching Housing in Secondary Schools, June 21-25
Sec 3, The Community as Classroom, July 6-8
Sec 4, Housing Research Implications for Design, July 12-16
- 8586-8587. PROBLEMS: DESIGN.** (1-5 cr per qtr; prereq §; hrs ar) Esteros

SECOND TERM

- 5584. READINGS IN DESIGN.** (1-3 cr; prereq §; hrs ar) Esteros
- 5586. PROBLEMS IN DESIGN: HOUSING AND/OR INTERIORS.** (3-4 cr [may be repeated for max 12 cr]; prereq §; hrs ar) Esteros
- 8586-8587. PROBLEMS: DESIGN.** (1-5 cr per qtr; prereq §; hrs ar) Esteros

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 280) Englund
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.
- 1002. DYNAMICS OF DATING, COURTSHIP, MARRIAGE.** (3 cr, §1001; limited enrollment; prereq jr or sr, married or engaged students; II MTWThF; ClaOff B35) Bell
See 1001.
- 1025. PARENTHOOD.** (4 cr; limited enrollment; III MTWThF; BlegH 340) Doyle
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; III MTWThF; AndH 210) Kraska
Nature of sexual functions, sexual development, ethics and attitudes, research problems.
- 5025. PARENTING.** (4 cr; limited enrollment; prereq 1025, 5200 or 5202; IV MTWThF; NorH 307) Fowler
Examination of parenting methods focused on child development from infancy through adolescence. Students identify parenting techniques, develop their own parenting approach, and conduct parenting classes.
- 5200. FAMILY RELATIONSHIPS.** (5 cr, § Soc 5501; limited enrollment; prereq Psy 1001 or equiv, Soc 1001 or equiv; VI MTWThF; EntFW 495) Peterson
Family as an institution and system of relationships. Survey of current developments in study of family. Changes in American society and their influence on family life.
- 5230. INDEPENDENT STUDY.** (Cr ar [max 4 cr]) Gage, Hey, Olson, Fowler
- 5240. SPECIAL TOPICS IN FAMILY SOCIAL SCIENCE.** (2-6 cr per qtr [max 16 cr]; limited enrollment; prereq set by instructor for each topic)
Sec 1, Problems in Family Financial Management, 3-4 cr, prereq 3260 or 5260, 3001, II MTWThF, ClaOff B36, Gage
Family financial management processes; modification of financial management behavior by application of social/operant learning technologies.
Sec 2, Life-Styles, 4 cr, V MTWThF, EntFW 495, Budd
- 8251. PROBLEMS: FAMILY SOCIAL SCIENCE.** (1-5 cr; prereq §; hrs ar) Hey, Olson
- 8252. PROBLEMS: FAMILY SOCIAL SCIENCE.** (4 cr; prereq §; hrs ar) Hey, Olson

SECOND TERM

- 5230. INDEPENDENT STUDY.** (Cr ar [max 4 cr]) Gage, Hey, Olson, Fowler
- 8251. PROBLEMS: FAMILY SOCIAL SCIENCE.** (1-5 cr; prereq §; hrs ar) Hey, Olson
- 8252. PROBLEMS: FAMILY SOCIAL SCIENCE.** (4 cr; prereq §; hrs ar) Hey, Olson

Food Science and Nutrition (FScN)

FIRST TERM

- 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.

- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 15 cr in food science and nutrition and §; not for grad cr) Thomas, staff
Up to 12 weeks of planned experience in a selected position in the food industry; evaluative reports and consultations with faculty advisers and employers.
- 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION.** (1-5 cr [may be repeated for cr.]; prereq §; \$4 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 or §; \$4 lab fee; hrs ar) Busta
Laboratory or library research on problems related to the microbiology of dairy and food products.
- 5404. CURRENT ISSUES IN FOOD AND NUTRITION—June 21-25.** (2 cr; prereq 15 cr in food science and nutrition or §; \$4 lab fee; 8:30-12:00 MTWThF; FScN 15) Staff
Evaluation of popular and scientific literature as it deals with nutrition, food additives, food safety, food fads, health foods, environmental contamination, the consumer movement, naturally occurring food toxicants, processed foods, synthetic foods, organically grown foods.
- 8401. INDEPENDENT STUDY: FOOD SCIENCE.** (1-5 cr; prereq §; hrs ar) Morris, staff
Independent study and written reports.
- 8621. INDEPENDENT STUDY: NUTRITION.** (1-9 cr; prereq §; hrs ar) Morse, staff
Independent study and written reports.

SECOND TERM

- 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.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr; prereq 15 cr in food science and nutrition and §; not for grad cr) Thomas, staff
See First Term.
- 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION.** (1-5 cr [may be repeated for cr.]; prereq §; \$4 lab fee; hrs ar) Staff
See First Term.
- 5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY.** (1-5 cr; prereq sr or §; \$4 lab fee; hrs ar) Busta
See First Term.
- 8401. INDEPENDENT STUDY: FOOD SCIENCE.** (1-5 cr; prereq §; hrs ar) Morris, staff
See First Term.
- 8621. INDEPENDENT STUDY: NUTRITION.** (1-9 cr; prereq §; hrs ar) Morse, staff
See First Term.

Textiles and Clothing (TexC)

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

FIRST TERM

- 3621. TEXTILES.** (5 cr; limited to 28 students; prereq soph, Chem 1005, or NSci 1005, or §; \$4 lab fee; lect II MTWThF, lab III-IV MTWTh, 4 hrs ar; McNH 322) Franzen
Basic physical, chemical, and biological characteristics of fiber, yarn, and fabric structure; interrelationship with choice, maintenance, and performance of consumer textiles.
- 3622. TEXTILES FOR INTERIORS.** (3 cr; limited to 20 students; prereq 3621, §; \$4 lab fee; IV-V MTWThF, McNH 280) Sieben
Developments and trends with reference to fiber, yarn, construction, and finish of textiles for upholstery, and floor, wall, and window coverings.
- 5622. ISSUES AND TRENDS IN TEXTILE CONSUMER PROTECTION—June 14-18.** (3 cr; limited to 35 students; I-III, VI-VIII MTWThF; BioSci 12) Johnson
The needs of the textile consumer for protection from deception and hazard; critical analysis of federal, state, and local legislation as well as voluntary industrial systems; case histories; change mechanisms.

- 5623. TEXTILE STRUCTURING—June 21-25.** (3 cr; limited to 35 students; \$4 lab fee; I-III, VI-VIII MTWThF; BioSci 18) Ball
Classical and nonclassical operations for forming textiles and the resultant spectrum of textile construction; development of a realistic limiting perspective for textile design and a more rational base for predicting hazard and performance in service and recycling. Emphasis this offering on knits.
- 5662. FAMILY CLOTHING PROBLEMS.** (3 cr; limited to 30 students; prereq 3621, AgEc 1030 or Econ 1002, Soc 1001, Psy 1001, or §; II MTWThF; McNH 273) Williams
Clothing problems as part of the consumption process of individuals, families, and households; personal, social, and economic factors affecting the acquisition, use, maintenance, and discard of clothing.
- 5664. FASHION THEORY AND ANALYSIS.** (4 cr; limited to 20 students; prereq Soc 1001, Psy 1001; VI-VIII MTh; ClaOff 31) Grindereing
Fashion theories and factors which influence fashion adoption and diffusion. Fashion trends.
- 8625. PROBLEMS: TEXTILES AND CLOTHING.** (3-9 cr [max 9 cr]; prereq §; hrs ar) Johnson
Independent study in the physical behavioral aspects of textiles and/or clothing.
- 8661. READINGS IN CLOTHING.** (1-3 cr; prereq 12 cr in textiles and clothing, §; 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 per qtr [max 9 cr]; prereq §; hrs ar) Grindereing
Independent study in human behavioral aspects of clothing and/or textiles.

SECOND TERM

- 5601. PROBLEMS IN CLOTHING CONSTRUCTION.** (3 cr per qtr [max 10 cr]; limited to 15 students; prereq §; \$4 lab fee; V-VI MTWThF; McNH 470) Nemecek
Discussion of and laboratory work in clothing construction problems. Topics vary with demand. Emphasis this offering on clothing for physical irregularities.
- 8661. READINGS IN CLOTHING.** (1-3 cr; prereq 12 cr in textiles and clothing, §; hrs ar) Grindereing
See First Term.
- 8663. PROBLEMS: CLOTHING AND TEXTILES.** (3-9 cr per qtr [max 9 cr]; prereq §; hrs ar) Grindereing
See First Term.

Center for Youth Development and Research (YoSt)

FIRST TERM

- 5120. INDEPENDENT STUDY IN YOUTH STUDIES.** (Cr ar [max 4 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 4 cr per qtr]; prereq §; hrs ar) Seltzer, staff
See First Term.

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. Though many courses are designed for specialized or professional interests, almost all contribute to general education. They 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 the necessary prerequisites.

Admission to Summer Session is described in an early section of this bulletin. Information about costs, housing, and recreational opportunities may be found in this bulletin and in the *General Information Bulletin*. 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, 30 Johnston Hall.

Afro-American Studies (Afro)

FIRST TERM

- 3062. THE BLACK FAMILY.** (4 cr; prereq 1442 or Hist 3865 or §; IV MTWTh; BlegH 255) Tucker
The contemporary Black family.
- 5301. AFRICAN LITERATURE.** (4 cr; II-III MTWTh; BlegH 360) Pike
Literature of continental Africa from oral traditions to contemporary writings in English, French, and the vernacular. All readings in English.
- 5970. DIRECTED STUDIES.** (1-6 cr; qualified sr and grad students may register with § for work on tutorial basis) Staff

SECOND TERM

- 1025. BLACK AMERICANS: SOCIALIZATION, PERSONALITY, AND BEHAVIOR.** (4 cr; II MTWTh; BlegH 260) Taborn
Development of the Black psyche and of the Black person and Black culture.
- 3105. BLACK MUSIC PRIOR TO WORLD WAR I.** (5 cr, §Mus 3708; III-IV MTWTh; BlegH 205) Southall
Musical contributions and achievements of Black Americans in the United States during the 19th and early 20th centuries.

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 (Amin)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1021. BEGINNING OJIBWE. (5 cr; limited to 20 students; II-III MTWThF; BlegH 115) Barstow, Northbird

Speaking and oral comprehension of basic Ojibwe speech patterns. Reading knowledge developed in later part of course.

3061. AMERICAN INDIANS IN THE MODERN WORLD. (4 cr; limited to 50 students; prereq 1101, 1102 or Anth 1002, or §; IV MTWThF; BlegH 425) Voights

Brief review of the history of Indian-White contacts. Impact of federal policy on American Indians. Adaptation of American Indian cultures in modern times.

5112. INDIANS OF THE SOUTHWEST. (4 cr; prereq 3061 or §; III MTWThF; BlegH 430) Dunnigan
Relationships between Indians and other ethnic groups in the southwestern United States and northwest Mexico from an ethnohistorical perspective.

SECOND TERM

1022. BEGINNING OJIBWE. (5 cr; limited to 20 students; II-III MTWThF; BlegH 115) Barstow, Northbird
See 1021 First Term.

5215. AMERICAN INDIAN TRADITIONAL DANCE. (4 cr; prereq §; V MTWThF; BlegH 205) Wapp
Various traditional dances of native North Americans. History, step patterns, and songs of selected American Indian dances.

5920. SEMINAR IN AMERICAN INDIAN STUDIES. (Cr ar; prereq will be stated when topic is announced; V MTWThF; BlegH 350) Thornton
Seminar concerned with American Indian history. Topic to be announced.

American Studies (AmSt)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1101. AMERICAN LIFE I. (4 cr; limited to 49 students; I MTWThF; LindH 215) S Shreve
Individualism in American life and thought.

3970. DIRECTED STUDIES. (1-15 cr; prereq §, Δ) Staff

8203. INTRODUCTION TO AMERICAN STUDIES. (3 cr; limited to 12 students; prereq MA candidate and Δ; VI-VII MTh; SocSci 628) Noble

Exposition of interdisciplinary methods and of the concept of American studies; reading of classics in American civilization; extended exploration of a topic.

9970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (Cr and hrs ar; prereq consent of program chpn) Staff

SECOND TERM

1103. AMERICAN LIFE III. (4 cr; limited to 49 students; I MTWThF; LindH 215) Otteson
Rise of American nationalism and its place in the modern world.

3970. DIRECTED STUDIES. (1-15 cr; prereq §, Δ) Staff

8970. INDEPENDENT READINGS IN AMERICAN CIVILIZATION. (Cr and hrs ar; prereq consent of program chpn) Staff

Anthropology (Anth)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

Anth 1101 and 1102 are required for the major effective summer 1976. Both courses may be used to help fulfill CLA distribution requirements under Group C—Man and Society.

FIRST TERM

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (5 cr; limited enrollment; lect IV MTWTh; Ph 186) Prell-Foldes
Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world.

Sec 1, I F, ForH 285

Sec 2, III F, ForH 115

3376. FIELD RESEARCH IN ARCHAEOLOGY. (8 cr [may not be repeated for cr]; limited to 16 students; prereq 1101, §) Johnson

Archaeological field excavation, survey, and research in prehistoric sites in Minnesota. Intensive training in excavation techniques, recordation, analysis and interpretation of archaeological materials. Field research to be conducted at Kathio State Park. See Special Programs section.

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]; IV MTWThF; VH 2) Rowe
Role of culture in formation of personality. Problems of individual adjustments to demands of culture. Psychological approach to culture.

5151. CULTURAL CHANGE AND DEVELOPMENT. (5 cr; prereq 1102 or §; III MTWThF; MurH 308) Miller

Processes of cultural change; invention, diffusion, and acculturation. Effects of colonialism, urbanization, and modernization. Analysis of developing societies. Applied anthropology.

8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (Cr and hrs ar; prereq §) Johnson

8950. ADVANCED RESEARCH. (Cr and hrs ar; prereq grad, §) Staff

SECOND TERM

1101. INTRODUCTION TO PREHISTORY. (5 cr; limited enrollment; lect III MTWThF; Ph 166) Gibbon
Introduction to world prehistory as investigated by archaeologists; basic methods and concepts employed by archaeologists in the study of prehistoric human biological and cultural development.

Sec 1, I T, VH 113

Sec 2, II T, VH 113

Sec 3, II W, VH 113

Sec 4, IV W, VH 113

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (5 cr; IV MTWThF; Ph 133) Spencer

See First Term.

3376. FIELD RESEARCH IN ARCHAEOLOGY. (8 cr [may not be repeated for cr]; limited to 16 students; prereq 1101, §) Spector

See First Term.

3970. DIRECTED STUDIES. (Cr and hrs ar; prereq §) Staff

- 5181. LANGUAGE AND CULTURE.** (5 cr; prereq 1102 or §; II MTWThF; ForH 120) Sarles
Relation of language to behavior; languages as systems of thought, logic, and orientation and their impacts on cultures; analysis of selected linguistic and cultural systems; glottochronology.
- 5291. PEOPLES AND CULTURES OF THE PACIFIC.** (5 cr; prereq 1102 or §; I MTWThF; ForH 115) Schaefer
Life in the South Pacific. Comparison of cultures in Polynesia and Micronesia. Impact of Western culture on island societies. Place of Oceania in anthropological thought.
- 8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY.** (Cr and hrs ar; prereq §) Spector
- 8950. ADVANCED RESEARCH.** (Cr and hrs ar; prereq grad, §) Staff

Art History (ArH)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1001. INTRODUCTION TO THE VISUAL ARTS.** (4 cr, §3001; limited to 80 students; II MTWThF; Arch 25) Torbert
Basic problems of art. Examples from major visual arts as basis for examination of the nature of art, problems of design, materials, and techniques; presented topically rather than chronologically.
- 1015. ART IN WESTERN CIVILIZATION.** (4 cr; limited to 144 students; IV MTW, Arch 25; discussion V MTW, Jones 207) Waldfoegel
Major achievements of Western man in the arts seen in their historical and cultural setting. Sir Kenneth Clark's series of 13 hour-length films entitled "Civilisation" takes the place of lectures. Strongly interdisciplinary.
- 3001. PRINCIPLES OF THE VISUAL ARTS.** (4 cr, §1001; limited to 64 students; II MTWThF; Arch 25) Torbert
Similar to 1001 in organization and content with expanded reading and contact with works of art.
- 3008. HISTORY OF ANCIENT ART.** (4 cr, §1008; limited to 144 students; V MTWThF; Arch 25) Asher
Architecture, sculpture, and painting of selected early cultures with stress on those contributing to the development of Western art.
- 5441. EARLY 19TH-CENTURY EUROPEAN PAINTING.** (5 cr; limited to 65 students; prereq 3 cr art history, 19th-century history, literature or §; II MTWThF; Jones 207B) Waldfoegel
Neoclassicism: the impact of the new understanding of the past, personality, and nature on art and the artist's response to technology and new social and political structures.
- 5548. AMERICAN ARCHITECTURE FROM 1860 TO 1914.** (5 cr; limited to 65 students; prereq sr, grad or §; IV MTWThF; Jones 207B) Torbert
American developments and European influences from the Civil War to about 1914. New materials and structural methods. Emphasis on Hunt, Richardson, McKim, Mead, and White, Sullivan, early Wright, etc.
- 5777. PAINTING OF INDIA.** (5 cr; prereq 4 cr art history or §; limited to 65 students; III MTWThF; Jones 207B) Asher
Indian painting, beginning with the early tradition of mural painting; miniature painting from the 12th century onward.
- 8994. SEMINAR: MUSEOLOGY I: INTRODUCTION TO MUSEUM PRINCIPLES AND PRACTICES.** (6 cr; limited to 18 students; required for MA candidates in museology; prereq §; II-IV MTWThF; Jones 101)
Intensive investigation of museum history, bibliography, organization, and current problems. Lectures and discussions supplemented by field trips to observe museum operations and to meet with museum personnel.

SECOND TERM

- 3011. HISTORY OF RENAISSANCE AND BAROQUE ART.** (4 cr; limited to 144 students; II MTWThF; Arch 25) Canedy
The major monuments in architecture, sculpture, and painting from the early 14th century through the Baroque period.

- 3012. HISTORY OF 19TH- AND 20TH-CENTURY ART.** (4 cr; limited to 144 students; V MTWThF; Arch 25) Paskus
Major monuments and concepts of the modern period: sculpture, architecture, painting, and prints.
- 3013. INTRODUCTION TO FAR EASTERN ART.** (4 cr, \$1016; limited to 144 students; IV MTWThF; Arch 25) Poor
Selected major themes of Far Eastern art. The arts of China and Japan (not an inclusive historical survey).
- 5307. 15TH-CENTURY ITALIAN ARCHITECTURE, SCULPTURE, AND PAINTING.** (5 cr; limited to 65 students; prereq 3011 or §; IV MTWThF; Jones 207B) Canedy
Early Renaissance art from Brunelleschi to Bellini; development of the "repertory" of monument types that survived to modern times.
- 5463. EARLY 20TH-CENTURY PAINTING.** (5 cr; limited to 65 students; prereq one American or modern art course or §; III MTWThF; Jones 207B) Paskus
Topics and/or movements in modern painting mainly before the mid-1920's.
- 5767. JAPANESE PAINTING.** (4 cr; limited to 65 students; II MTWThF; Jones 207B) Poor
Japanese pictorial arts from earliest to modern times; works that best exemplify developments of indigenous traditions.

Arts, Studio (Arts)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

The Studio Arts Department 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, Hendler
Sec 2, I-II MTWThF, ArtB 161, Feinberg
Sec 3, III-IV MTWThF, ArtB 141, Myers
- 1102. DRAWING II.** (4 cr; each section limited to 25 students; prereq 1101)
Work from life and nature; introduction to color and pictorial structure.
Sec 1, I-II MTWThF, ArtB 151, Morrison
Sec 2, I-II MTWThF, ArtB 150, Abbott
- 1104. COLOR.** (4 cr; limited to 25 students; prereq 1102; I-II MTWThF; ArtB 160) Somberg
Intensive investigation of color and its visual implication.
- 1105. BEGINNING PAINTING.** (4 cr; limited to 25 students; prereq 1104; III-IV MTWThF; ArtB 151) Somberg
Contemporary and traditional surfaces in oil and acrylic media.
- 1301. SCULPTURE.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 50) Baldwin
Intensive study of structure with emphasis on form and space. Construction in metal.
- 1302. SCULPTURE.** (4 cr; limited to 20 students; III-IV MTWThF; ArtB 50) Baldwin
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 310) 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 discussion.
- 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.

- 1701. PHOTO MEDIUM.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 131) Klipper
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; HoIB 157) 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) Abbott
Drawing from model, still life, nature. Principles of anatomy.
- 3120. PAINTING.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1105 and 12 cr of 3110 or §; III-IV MTWThF; ArtB 161) Feinberg
Media and problems in painting; individual projects and instruction.
- 3160. WATERCOLOR.** (4 cr per qtr [12 cr max]; limited to 15 students; prereq 1101, 1104, or §; I-II MTWThF; ArtB 141) Myers
Introduction to transparent watercolor; gouache, casein, tempera. Figure, still life, landscape, abstract design. Meets with 5160.
- 3303. CAST METAL SCULPTURE.** (4 cr; prereq 1301, 1302; limited to 10 students; I-II MTWThF; HoIB) Potratz
Lost wax and sand casting in bronze, aluminum. Meets with 5330.
- 3420. WORKSHOP: SCULPTURE.** (4 cr; limited to 10 students; III-IV MTWThF; HoIB) Potratz
Cast iron sculpture; intensive workshop; construction of cupola; casting structure in iron. Meets with 5420.
- 3510. PRINTMAKING: INTAGLIO.** (4 cr per qtr [12 cr max]; limited to 10 students; prereq 4 cr of 1510 or §; III-IV MTWThF; ArtB 170) Bethke
Intaglio techniques on metal and collagraph. Embossing. Meets with 5510.
- 3701. FILMMAKING.** (4 cr; limited to 10 students; III-IV MTWThF; ArtB 120) Iimura
Practical aspects of making films. Meets with 3720.
- 3710. PHOTOGRAPHY.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1701 or Jour 1301 or §; III-IV MTWThF; ArtB 131) Klipper
Continued work in photographic controls and processes. Introduction to related photo-sensitive media. Emphasis on the creative process, with attention given to individual interests and requirements.
- 3720. FILM WORKSHOP.** (4 cr per qtr [12 cr max]; limited to 10 students; prereq §; III-IV MTWThF; ArtB 120) Iimura
The motion picture as an art form. Production of descriptive and experimental work. Meets with 3701.
- 3810. CERAMIC DESIGN.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1801 or §; III-IV MTWThF; HoIB 157) 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; prereq 24 cr in studio arts and §)
- 3980. DIRECTED INSTRUCTION.** (1-5 cr [8 cr max]; prereq §)
Students assist in teaching a course they have studied.
- 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.
- 5120. PAINTING.** (4 cr per qtr [16 cr max]; limited to 20 students; prereq 12 cr of 3120 and §; III-IV MTWThF; ArtB 151) Morrison
Various media. Individual problems.
- 5160. WATERCOLOR.** (4 cr per qtr [16 cr max]; prereq 3160 or §; limited to 10 students; I-II MTWThF; ArtB 141) Myers
Advanced watercolor techniques, aesthetic directions. Individual concepts and development of sensibilities. Meets with 3160.
- 5330. CAST METAL SCULPTURE.** (4 cr per qtr [16 cr max]; prereq 3303; limited to 5 students; I-II MTWThF; HoIB) Potratz
Lost wax and sand casting in bronze, aluminum. Meets with 3303.
- 5400. 20TH-CENTURY ART THEORIES.** (2 cr; limited to 12 students; prereq §; I-II MTWThF; ArtB 215) Busa
A seminar. Meets with 8400.

- 5420. WORKSHOP: SCULPTURE.** (4 cr; limited to 5 students; III-IV MTWThF; HoIB) Potratz
Cast iron sculpture; intensive workshop; construction of cupola; casting sculpture in iron.
Meets with 3420.
- 5510. PRINTMAKING: INTAGLIO.** (4 cr per qtr [16 cr max]); limited to 10 students; prereq 12 cr of 3510 or §; III-IV 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; HoIB 157) Hoard
Aesthetic awareness and development; techniques and materials. Meets with 3810.
- 5970. DIRECTED STUDY.** (1-5 cr; prereq 24 cr in studio arts and §)
- 8110. DRAWING.** (3 cr per qtr [9 cr max]); prereq §) Busa, Hendler, Morrison
- 8120. PAINTING.** (3 cr per qtr [18 cr max]); prereq §) Busa, Hendler, Morrison
- 8330. CAST METAL SCULPTURE.** (3 cr per qtr [9 cr max]); prereq §) Potratz
- 8400. 20TH-CENTURY ART THEORIES.** (2 cr; limited to 10 students; prereq §; I-II MTWThF; ArtB 215) Busa
A seminar. Meets with 5400.
- 8510. PRINTMAKING.** (3 cr per qtr [27 cr max]); prereq §) Myers, Bethke
- 8710. PHOTOGRAPHY.** (3 cr per qtr [18 cr max]); prereq §) Klipper
- 8810. CERAMICS.** (3 cr per qtr [18 cr max]); prereq §) Hoard

SECOND TERM

- 1101. DRAWING I.** (4 cr; limited to 25 students; III-IV MTWThF; ArtB 140) Abbott
See First Term.
- 1102. DRAWING II.** (4 cr; limited to 25 students; prereq 1101; I-II MTWThF; ArtB 141) Cowette
See First Term.
- 1302. SCULPTURE.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 50) Rose
See First Term.
- 1520. PRINTMAKING: LITHOGRAPHY.** (4 cr per qtr [8 cr max]); limited to 20 students; prereq 1101 or §; I-II MTWThF; ArtB 176) Priede
Planographic printing processes from stones and metal plates. Basic techniques of image making, processing, printing, and presentation in a creative context.
- 1701. PHOTO MEDIUM.** (4 cr; each section limited to 20 students) Stockwell
See First Term.
Sec 1, I-II MTWThF, ArtB 131
Sec 2, III-IV MTWThF, ArtB 131
- 3110. DRAWING.** (4 cr per qtr [12 cr max]); limited to 25 students; prereq 1102; I-II MTWThF; ArtB 140) Abbott
See First Term.
- 3120. PAINTING.** (4 cr per qtr [12 cr max]); limited to 20 students; prereq 1105 and 12 cr of 3110 or §; III-IV MTWThF; ArtB 161) Cowette
See First Term.
- 3302. PLASTICS MEDIA: WOOD, STONE CARVING.** (4 cr; limited to 10 students; prereq 1301, 1302; III-IV MTWThF; ArtB 50) Rose
Meets with 5320.
- 3520. PRINTMAKING: LITHOGRAPHY.** (4 cr per qtr [12 cr max]); limited to 10 students; prereq 1520 or §; III-IV MTWThF; ArtB 176) Priede
Planographic techniques on stones and plates. Meets with 5520.
- 3970. DIRECTED STUDY.** (1-5 cr; prereq 24 cr in studio arts and §)
- 3980. DIRECTED INSTRUCTION.** (1-5 cr [8 cr max]); prereq §)
See First Term.
- 5110. DRAWING.** (4 cr per qtr [16 cr max]); limited to 25 students; prereq 12 cr of 3110 or equiv; I-II MTWThF; ArtB 151) Rowan
See First Term.
- 5120. PAINTING.** (4 cr per qtr [16 cr max]); limited to 20 students; prereq 12 cr of 3120 and §; III-IV MTWThF; ArtB 151) Rowan
See First Term.

- 5320. PLASTICS MEDIA: WOOD, STONE CARVING.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 3302; III-IV MTWThF; ArtB 50) Rose
Meets with 3302.
- 5520. PRINTMAKING: LITHOGRAPHY.** (4 cr per qtr [16 cr max]; limited to 10 students; prereq 12 cr of 3520; III-IV MTWThF; ArtB 176) Priede
Specialized work in color printing and planographic techniques. Meets with 3520.
- 5970. DIRECTED STUDY.** (1-5 cr; prereq 24 cr in studio arts and §)
- 8110. DRAWING.** (3 cr per qtr [9 cr max]; prereq §) Rowan
- 8120. PAINTING.** (3 cr per qtr [18 cr max]; prereq §) Rowan
- 8320. PLASTICS MEDIA: WOOD, STONE CARVING.** (3 cr per qtr [9 cr max]; prereq §) Rose
- 8510. PRINTMAKING.** (3 cr per qtr [27 cr max]; prereq §) Priede

Chicano Studies (Chic)

FIRST TERM

- 1107. INTRODUCTION: THE CHICANO IN CONTEMPORARY SOCIETY.** (4 cr; II MTWThF; ForH 130) Gonzalez
Conditions which led to Chicano social, political, economic, and cultural consciousness and the forms in which that consciousness was expressed. The farmworker struggle, land-grant litigation, urban strife, and education.
- 3113. BILINGUAL EDUCATION: METHODS AND MATERIALS AT THE ELEMENTARY AND PRE-SCHOOL LEVELS.** (5 cr; IV MTWThF; ForH 130) Gonzalez
Physical dexterity activities as well as intellectual and mental development exercises through the memorization of rhymes, rounds, songs, dances, and other cultural material for use with preschool and elementary students. All material is in Spanish and can be adapted or analogously compared to equivalents in English or in other languages and cultures.

SECOND TERM

- 3212. LA CHICANA.** (4 cr; III MTWThF; ForH 130) Gaitan
Examines the philosophy and psychology of the Chicana in order to understand the Chicana. Women of La Raza—those who have made an impact in literature, history, sociology, and politics. Literature by and about the Chicana will be read and examined.
- 3511. CHICANO LITERATURE: TEXT AND CONTEXT.** (4 cr; IV MTWThF; ForH 170) Gaitan
Readings and analysis of fiction, poetry, and drama by Chicano writers, including Rodolfo Gonzales, Alurista, J. A. Villarreal, Tomas Ribera, Luis Valdez, and others.

Classics

Classics (Clas) ††

FIRST TERM

- 1008. THE WORLD OF ROME.** (3 cr, §5008; II MTWTh; FoIH 203) Rochefort
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. Special attention paid to the Etruscans and to the golden age of Rome under Augustus.
- 1019. MAGIC, WITCHCRAFT, AND THE OCCULT IN GREECE AND ROME.** (4 cr; V MTWThF; FoIH 308) Erickson
Reading, lecture, and discussion on magic and witchcraft in classical literature and mythology; on the practice of magic as observed from papyri, epigraphical, and literary evidence; and on beliefs and practices concerning prophecy and the interpretation of dreams. The changing role of witchcraft and divine possession from earlier to later antiquity and the relation of these phenomena to changes in economic and social conditions.

††No knowledge of Greek or Latin is required.

- 3042. CLASSICAL MYTHOLOGY: METHODOLOGY, INTERPRETATION, AND TRADITION.** (4 cr, §5145; prereq soph, a course on myth or §; IV MTWThF; FoIH 304) Rochefort
Methodologies for the interpretation of myth, such as those of Müller, Jung, and Levi-Strauss, examined on the basis of classical mythology; successive reinterpretations and applications of selected myths in literature, art, music, and modern sociological disciplines.
- 5008. THE WORLD OF ROME.** (3 cr, §1008; II MTWTh; FoIH 203) Rochefort
Meets with 1008, with additional independent work required.
- 5145. GREEK AND ROMAN MYTHOLOGY.** (3 cr, §3042; IV MTWThF; FoIH 304) Rochefort
Same classwork as 3042 but with special independent reading and research assignments selected in consultation with the instructor.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

- 5120. FIELD RESEARCH IN ARCHAEOLOGY.** (3-6 cr for both terms; prereq written §) Kraabel
Restricted to students presently involved in the Beer Sheva project.

SECOND TERM

- 1007. THE WORLD OF GREECE.** (3 cr, §5007; II MTWTh; FoIH 209) Ruebel
General survey of Greek civilization from the world of Homer to the age of Alexander. The Greek view of life as seen in art, history, literature, and philosophy. Special attention paid to the golden age of Greece in the fifth century B.C. and to the expansion of the Greek spirit under Alexander.
- 1045. GREEK AND ROMAN MYTHOLOGY.** (3 cr, §1042, §1142, §3042, §5145; III MTWTh; FoIH 201) Moritz
Classical myths dealing with gods, demigods, and heroes. The myths as stories and as a basic component of the European cultural heritage, including artistic, religious, psychological, and anthropological interpretations. Distinctions between myth and legend, mythology and mythology. Special attention to the use of myths in modern literature.
- 5007. THE WORLD OF GREECE.** (3 cr, §1007; II MTWTh; FoIH 209) Ruebel
Meets with 1007, with additional independent work required.

Greek (Grk)

SECOND TERM

- 3970. DIRECTED STUDY.** (1-5 cr; prereq § and Δ)
Pursuit of individual interests in reading and/or study.
- 5970. DIRECTED STUDY.** (1-5 cr; prereq § and Δ)
See 3970.

Latin (Lat)

FIRST TERM

- 3970. DIRECTED STUDY.** (1-5 cr; prereq § and Δ)
Pursuit of individual interests in reading and/or study.
- 5970. DIRECTED STUDY.** (1-5 cr; prereq § and Δ)
See 3970.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Concentrated programs of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must register for one of the sequences for both terms of the Summer Session and may not enroll in other courses in the Summer Session.

1101-1102-1103†. INTENSIVE BEGINNING LATIN. (15 cr for both terms, §3051-3052-3106, §8120; I-II, IV MTWThF; FolH 207) Erickson, Sonkowsky
Specially designed summer program. Structure of Latin, reading, practice in oral reading and composition. See Special Programs section.

3051-3052 and 3106† or 8120†. INTENSIVE BEGINNING LATIN. (15 cr for both terms with 3106, or 13 cr for both terms with 8120, §1101-1102-1103; prereq grad for 8120; I-II, IV MTWThF; FolH 207) Erickson, Sonkowsky
Specially designed summer program. Meets initially with 1101-1102-1103. Previous experience in another foreign language is desirable. See Special Programs section.

SECOND TERM

3970. DIRECTED STUDY. (1-5 cr; prereq § and Δ)
See First Term.

5970. DIRECTED STUDY. (1-5 cr; prereq § and Δ)
See 3970 First Term.

Communication (Comm)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1001. COMMUNICATION. (4 cr, §Comp 1001, §Comp 1006H; limited to 28 students; II MTWThF; FolH 208) Jensen
The process of communication, language, and nonverbal means of communicating; clarity and appropriateness in expository discourse; writing and speaking with direction and criticism.

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. (1 cr [may be repeated for cr]; S-N only; limited to 10 students; prereq 2nd-qr jrs and srs majoring in communication disorders, §) 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; limited to 40 students; II MTWThF; FolH 303) McDermott

Concepts basic to understanding normal and abnormal speech and hearing functions. Selected communication problems. Strategies and systems of delivery of clinical services.

5900. TOPICS IN COMMUNICATION DISORDERS. (4 cr; each section limited to 25 students) Freeman

Sec 1, Organization and Administration of School Programs, II-III MW, ForH 60

Problems involved in the organization and administration of programs for speech and language handicapped children. Procedures for establishing and improving programs; related research.

Sec 2, Evaluation and Management of Preschool Language Problems, II-III TTh, ForH 60

Criteria for identification and inclusion in a preschool language program; the development of remedial language programs; related research.

5970. DIRECTED STUDIES. (Cr or [may be repeated for cr]; prereq §) Broen, Chaiklin, McDermott, Moller, Speaks, Starr, Ward

Directed readings and preparation of reports on selected subjects.

8507. SEMINAR: CLEFT PALATE. (3 cr; prereq 5507 or §; IV-V MWF; HSUnitA 6-274) Starr
Critical review of research on communication problems of persons with cleft palates.

- 8520. ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY.** (2, 4, or 6 cr [may be repeated for cr]; prereq §; \$4 lab fee) Broen, Haroldson, McDermott, Moller, Starr
Specialized clinical practice. Evaluation and clinical management of persons with communication disorders.
- 8714. SELECTION AND USE OF HEARING AIDS.** (3 cr; prereq 5305 or §; IV MTWTh; room ar) Chaiklin
Nature and types of amplifying systems used with the hearing impaired. Electroacoustic characteristics including gain, power, acoustic response, distortion, etc. Principles and methods of selection and usage relative to types of hearing disorders.
- 8720. CLINICAL METHODS AND PRACTICE IN AUDIOLOGY.** (2, 4, or 6 cr [may be repeated for cr]; prereq §; \$4 lab fee) Chaiklin, Marth
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 §; \$4 lab fee) Broen, Chaiklin, McDermott, Speaks, Starr, Ward
Open to graduate students engaged in research.

SECOND TERM

- 3100. CLINICAL AND RESEARCH OBSERVATION.** (1 cr [may be repeated for cr]; S-N only; limited to 10 students; prereq 2nd-qr yrs and srs majoring in communication disorders, §) Staff
See First Term.
- 3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY.** (4 cr; limited to 40 students; I-II-III TTh; FoH 303) Haroldson
See First Term.
- 5704. NOISE AND MAN.** (4 cr; prereq 5301 or §; I-II WF; 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 §) Starr, Ward, Moller
See First Term.
- 8520. ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY.** (2, 4, or 6 cr [may be repeated for cr]; prereq §; \$4 lab fee) Starr, Moller
See First Term.
- 8720. CLINICAL METHODS AND PRACTICE IN AUDIOLOGY.** (2, 4, or 6 cr [may be repeated for cr]; prereq §; \$4 lab fee) Staff
See First Term.
- 8990. DIRECTED RESEARCH.** (Cr ar [may be repeated for cr]; prereq §; \$4 lab fee) Starr, Ward
See First Term.

Criminal Justice Studies (CJS)

FIRST TERM

- 5101. CRIMINAL LAW.** (4 cr; 8:00-9:30 TWTh; AndH 270) Samaha
General criminal law with particular attention to 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; AndH 270)
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.

SECOND TERM

- 5101. CRIMINAL LAW.** (4 cr; 9:30-11:00 TWTh; AndH 270)
See First Term.
- 5102. CRIMINAL PROCEDURE.** (4 cr; 8:00-9:30 TWTh; AndH 270) Samaha
See First Term.

East Asian Languages

Japanese (Jpn)

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 for both terms of the Summer Session and may not enroll in other courses in the Summer Session.

1011-1012-1013†. INTENSIVE FIRST-YEAR JAPANESE. (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; KolTH S139)

Five hours with linguist, 15 hours with drillmasters, extra hours of assigned laboratory work.

Economics (Econ)

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 440

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 qtr fr)

Demand and supply, competition and monopoly, and the distribution of income.

Sec 1, II MTWThF, BlegH 340

Sec 2, III MTWThF, BlegH 240

3101. MICROECONOMIC THEORY. (4 cr, §5151; each section limited to 40 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 215

Sec 2, III MTWThF, BlegH 215

Sec 3, IV MTWThF, BlegH 340

3102. MACROECONOMIC THEORY. (4 cr, §5152; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or §; IV MTWThF; BlegH 240)

Determinants of national income, employment, and price level; aggregate consumption and investment.

3501. LABOR ECONOMICS. (4 cr, §3551; limited to 40 students; not open to economics majors; prereq 1001, 1002; III MTWThF; BlegH 330)

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.

3551. LABOR ECONOMICS. (4 cr, §3501; limited to 40 students; prereq 3101, 3102 or equiv; III MTWThF; BlegH 330)

See 3501.

- 3701. MONEY AND BANKING.** (4 cr, §3751; limited to 40 students; prereq 1001, 1002 or equiv; not open to economics majors; II MTWThF; BlegH 155)
Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system, and monetary policy.
- 3711. MACROECONOMIC POLICY.** (4 cr, §3731; limited to 40 students; prereq 1001, 1002; not open to economics majors; III MTWThF; BlegH 120)
Problems raised by conflicts among the policy objectives of full employment, price stability, desired rate of growth, balance of payments equilibrium, desired mix of public and private sector outputs. Policy instruments: fiscal policy, monetary policy, wage-price guidelines, exchange rate adjustment.
- 3731. MACROECONOMIC POLICY.** (4 cr, §3711; limited to 40 students; prereq 3102; III MTWThF; BlegH 120)
See 3711.
- 3751. MONEY AND BANKING.** (4 cr, §3701; limited to 40 students; prereq 3102 or equiv; II MTWThF; BlegH 155)
See 3701.
- 3970. DIRECTED STUDY.** (Cr ar; prereq 1002, §)
- 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD.** (3 cr, §3101; must be reserved in JohH 12; prereq 1001, 1002, 1 qtr calculus, grad or §)
Individual decision making by households and firms under conditions of monopoly, competition; some welfare economics.
Sec 1, II MTWThF, BlegH 215
Sec 2, III MTWThF, BlegH 215
Sec 3, IV MTWThF, BlegH 340
- 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT.** (3 cr, §3102; prereq 1001, 1002, 1 qtr calculus, grad or §; IV MTWThF; BlegH 240)
Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding.
- 5401. INTERNATIONAL ECONOMICS.** (4 cr, §5431; limited to 40 students; not open to economics majors; prereq 1001, 1002 or equiv; IV MTWThF; BlegH 155)
The case for free trade. Effects of tariffs; protection of infant industries; common markets. Balancing international receipts and payments, the role of exchange rate changes, international monetary reform.
- 5431. INTERNATIONAL ECONOMICS.** (4 cr, §5401; limited to 40 students; prereq 3101, 3102 or equiv or §; IV MTWThF; BlegH 155)
See 5401.
- 5611. ECONOMICS OF ENVIRONMENTAL CONTROL.** (4 cr; limited to 50 students; prereq 1001, 1002 or equiv; III MTWThF; BlegH 145)
Pollution as an external diseconomy; use of taxes and subsidies to reduce pollution. Replenishable resources; maximum sustainable yield; role of the discount rate; taxation to protect yields and minimize harvesting costs. Nonreplenishable resources; controlling rates of depletion.
- 5621. ECONOMICS OF URBAN PROBLEMS.** (4 cr; limited to 50 students; prereq 1001, 1002 or equiv; IV MTWThF; BlegH 145)
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.
- 5970. DIRECTED STUDY.** (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-qtr fr)
See First Term.
Sec 1, I MTWThF, BlegH 120
Sec 2, III MTWThF, BlegH 135
- 1002. PRINCIPLES OF MICROECONOMICS.** (4 cr, §1005, §3001, §3002; each section limited to 45 students; prereq 3rd-qtr fr)
See First Term.

Sec 1, I MTWThF, BlegH 440
Sec 2, II MTWThF, BlegH 440
Sec 3, III MTWThF, BlegH 440
Sec 4, IV MTWThF, BlegH 440

- 3101. MICROECONOMIC THEORY.** (4 cr; each section limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or §)
See First Term.
Sec 1, II MTWThF, BlegH 155
Sec 2, III MTWThF, BlegH 155
- 3102. MACROECONOMIC THEORY.** (4 cr, §5152; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or §; IV MTWThF; BlegH 155)
See First Term.
- 3131. WELFARE ECONOMICS.** (4 cr; limited to 45 students; prereq 3101 or 3101H or equiv; III MTWThF; BlegH 330)
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.
- 3601. INDUSTRIAL ORGANIZATION AND ANTITRUST POLICY.** (4 cr, §3651; limited to 40 students; not open to economics majors; prereq 1001, 1002 or equiv; IV MTWThF; BlegH 240)
Economic aspects of antitrust and related policies. Relations between market structure and economic efficiency and welfare. Economic origins of monopoly and other restraints on competition. Purposes and effects of antitrust and related legislation.
- 3651. INDUSTRIAL ORGANIZATION AND ANTITRUST POLICY.** (4 cr, §3601; limited to 40 students; prereq 3101...3131 recommended; IV MTWThF; BlegH 240)
See 3601.
- 3801. ELEMENTS OF PUBLIC FINANCE.** (4 cr, §3851; limited to 40 students; prereq 1001, 1002 or equiv; not open to economics majors; III MTWThF; BlegH 240)
Tax and expenditure policies. Impact of tax structure on the distribution of income. Evaluation of public programs. Optimal mix of public and private sector outputs.
- 3851. ELEMENTS OF PUBLIC FINANCE.** (4 cr, §3801; limited to 40 students; prereq 3101... 3131 recommended; III MTWThF; BlegH 240)
See 3801.
- 3970. DIRECTED STUDY.** (Cr ar; prereq 1002, §)
- 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD.** (3 cr, §3101; must be reserved in JohH 12; prereq 1001, 1002, 1 qtr calculus, grad or §)
See First Term.
Sec 1, II MTWThF, BlegH 155
Sec 2, III MTWThF, BlegH 155
- 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT.** (3 cr, §3102; prereq 1001, 1002, 1 qtr calculus, grad or §; IV MTWThF; BlegH 155)
See First Term.
- 5301. ECONOMIC DEVELOPMENT.** (4 cr, §5331; limited to 40 students; not open to economics majors; prereq 1001, 1002 or equiv; II MTWThF; BlegH 240)
Problems of economic growth in low income countries. Theory of aggregate and per capita income growth. Role of population growth, productivity increases, and capital formation. Allocation of resources between consumption and investment and among sectors. International assistance and trade.
- 5331. ECONOMIC DEVELOPMENT.** (4 cr, §5301; limited to 40 students; prereq 3101, 3102 or equiv or §; II MTWThF; BlegH 240)
See 5301.
- 5401. INTERNATIONAL ECONOMICS.** (4 cr, §5431; limited to 40 students; not open to economics majors; prereq 1001, 1002 or equiv; IV MTWThF; BlegH 135)
See First Term.
- 5431. INTERNATIONAL ECONOMICS.** (4 cr, §5401; limited to 40 students; prereq 3101, 3102 or equiv or §; IV MTWThF; BlegH 135)
See 5401 First Term.
- 5970. DIRECTED STUDY.** (Cr ar; prereq §) Staff
See First Term.
- 6990. INDIVIDUAL GRADUATE RESEARCH.** (Cr ar) Staff

English

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; IV MTWThF; LindH 203) Ross
Close reading of a few selected texts with emphasis on critical discussion and writing.
- 1018. INTRODUCTION TO MODERN LITERATURE: PROSE FICTION.** (4 cr; limited to 40 students; III MTWThF; LindH 203) MacLeish
See 1016.
- 3111. SURVEY OF ENGLISH LITERATURE.** (4 cr; III MTWThF; LindH 302) Rosendahl
An historical survey of the major figures, movements, and trends in English literature from Chaucer to Marvell, including such figures as Spenser, Shakespeare, and Donne.
- 3241. SHAKESPEARE.** (4 cr; IV MTWThF; LindH 217) O'Brien
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.
- 3251. THE KING JAMES BIBLE AS LITERATURE.** (4 cr; II MTWThF; LindH 217) O'Brien
The Old Testament and literary tradition. Readings in the historical narratives, prophets, psalms, and wisdom literature.
- 3351. 20TH-CENTURY BRITISH POETRY.** (4 cr; III MTWThF; LindH 217) Reed
- 3413. AMERICAN LITERATURE.** (4 cr; IV MTWThF; LindH 305) Furia
Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course, with wide reading. Stephen Crane through the 1930's.
- 3455. AMERICAN SHORT STORY.** (4 cr; II MTWThF; LindH 305) Furia
Readings from the 18th century to present.
- 3851. THE ENGLISH LANGUAGE.** (4 cr, §5851; limited to 50 students; I MTWThF; LindH 305) MacLeish
An introduction to the English language including some grammars of English, English phonetics and phonology, British and American dialects, and native-language acquisition.
- 5153. 20TH-CENTURY ENGLISH NOVEL.** (4 cr; I MTWThF; LindH 203) Reed
Selected novels by such modern authors as Conrad, Ford, Joyce, Woolf, Lawrence, Forster, Cary, and Waugh.
- 5221. CHAUCER I: THE CANTERBURY TALES.** (5 cr; III-IV MTWThF; LindH 340) McNally
Reading of *The Canterbury Tales* and introduction to Chaucer's language. This course is a prerequisite to all other courses in Middle English literature (5215-5222).
- 5261. MILTON.** (4 cr; III MTWThF; LindH 215) L Durham
Paradise Lost, *Samson Agonistes*, minor poems, *Areopagitica*, and often, although not always, *Paradise Regained*.
- 5311. ROMANTIC WRITERS: KEATS AND BYRON.** (4 cr; III MTWThF; LindH 315) Clarke
- 5363. JAMES JOYCE.** (4 cr; I MTWThF; LindH 229) Anderson
Life and early works, particularly *Dubliners*, *A Portrait of the Artist as a Young Man*, and the first four episodes of *Ulysses*.
- 5593. BLACK WRITERS OF THE UNITED STATES.** (4 cr; III MTWThF; LindH 229) Anderson
Prose, poetry, and drama, with emphasis on writers of the 20th century.
- 5610. 20TH-CENTURY WRITERS: JAMES AND CONRAD.** (4 cr; IV MTWThF; LindH 303) Clarke
- 5851. STRUCTURE OF MODERN ENGLISH.** (4 cr, §3851; II MTWThF; LindH 229) Steinmann
Survey of modern English grammar dealing with English phonology, syntax, and semantics; variations and change in English.
- 5910. TOPICS IN ENGLISH AND AMERICAN LITERATURE: RITUAL, MYTH, AND LITERATURE.** (4 cr; I MTWThF; LindH 217) L Durham
The relationship of sacred cosmologies and ritualistic forms to the "worlds" represented in various literary genres; specifically, drama, lyric and narrative poetry, and the novel.

5940. FIGURES IN ENGLISH AND AMERICAN LITERATURE: SHAKESPEARE. (4 cr; II MTWThF; LindH 315) Clayton

8240. SHAKESPEARE. (4 cr; limited to 12 students; III-IV MTh; LindH 336) Clayton

SECOND TERM

1014. INTRODUCTION TO ROMANTIC LITERATURE: 1789-1832. (4 cr; limited to 40 students; II MTWThF; LindH 217) Clarke

Typical authors: Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.

1016. INTRODUCTION TO AMERICAN LITERATURE. (4 cr; limited to 40 students; III MTWThF; LindH 302) Griffin

See First Term.

3113. SURVEY OF ENGLISH LITERATURE. (4 cr; III MTWThF; LindH 229) Wright

An historical survey of the major figures, movements, and trends in English literature from Blake to Yeats, including authors such as Wordsworth, Coleridge, Keats, Tennyson, and Browning.

3241. SHAKESPEARE. (4 cr; IV MTWThF; LindH 305) Madden

See First Term.

3242. SHAKESPEARE. (4 cr; I MTWThF; LindH 305) Hurrell

Plays from the middle and late periods. All sections will read *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays.

3412. AMERICAN LITERATURE. (4 cr; II MTWThF; LindH 305) Geffen

Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes; lecture course with wide reading. Thoreau and Melville through James.

3566. WILLIAM FAULKNER. (4 cr; IV MTWThF; LindH 229) Geffen

3851. THE ENGLISH LANGUAGE. (4 cr, 5851; limited to 50 students; III MTWThF; LindH 305) R Brown

See First Term.

5152. 19TH-CENTURY ENGLISH NOVEL. (4 cr; II MTWThF; LindH 229) Madden

Selected novels by such authors as Scott, Dickens, the Brontës, Thackeray, Eliot, and Hardy.

5175. DRAMA SINCE 1920. (4 cr; III MTWThF; LindH 215) Hurrell

Survey of chief dramatists, English, American, and Continental.

5414. CONTEMPORARY AMERICAN LITERATURE. (4 cr; I MTWThF; LindH 229) Solotaroff

Important authors, intellectual currents, movements, conventions, genres, and themes since 1940.

5451. AMERICAN NOVEL. (4 cr; I MTWThF; LindH 217) Griffin

Through the 19th century.

5610. 20TH-CENTURY WRITERS: D. H. LAWRENCE. (4 cr; IV MTWThF; LindH 302) Clarke

5831. AMERICAN ENGLISH. (4 cr; prereq 5851 or 5; II MTWThF; LindH 203) Mitchell

History of the English language in the United States; significant regional variation.

5940. FIGURES IN ENGLISH AND AMERICAN LITERATURE: HEMINGWAY. (4 cr; III MTWThF; LindH 203) Solotaroff

English Composition (Comp)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

0001.†† PREPARATORY COMPOSITION. (§1001; each section limited to 12 students; prereq assignment to category 4 or Δ)

A workshop for the review of basic grammar and essential writing skills. Students remaining in the course until ready to enter Comp 1002 or Comm 1001 will receive 4 credits.

††Any student absent the first day (Tuesday, June 15, for first term, and Tuesday, July 20, for second term) will lose his/her place in class.

- Sec 1, II MTWThF, LindH 320
- Sec 2, II MTWThF, LindH 303
- Sec 3, II MTWThF, LindH 302
- Sec 4, II MTWThF, LindH 215
- Sec 5, II MTWThF, LindH 203

1001.†† INTRODUCTORY COMPOSITION. (4 cr; each section limited to 28 students; prereq assignment to Category 1, 2, 3 or 5...§ 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, LindH 325, Haley
- Sec 2, II MTWThF, LindH 325, Haley
- Sec 3, IV MTWThF, LindH 325, McClure

1002.†† INTRODUCTORY COMPOSITION. (4 cr; limited to 28 students; prereq 0001 or 1001 or assignment to Category 1, 2, 3 or 5 and Δ...§ after first day of class; IV MTWThF; LindH 320) Steinmann

See 1001.

1027.†† INTERMEDIATE COMPOSITION. (4 cr; limited to 25 students; prereq completion of freshman English...§ after first day of class; II MTWThF; LindH 340) Ross
 Mastery of expository forms (e.g., comparison, analysis, cause-effect, evaluation) and strategies of tone and diction for clear, accurate style.

3085. CONFERENCE COURSE IN ADVANCED COMPOSITION. (1-4 cr; prereq completion of freshman 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.†† INTRODUCTORY COMPOSITION. (4 cr; limited to 28 students; prereq assignment to Category 1, 2, 3 or 5...§ after first day of class; I MTWThF; LindH 325) R Brown

See First Term.

1002.†† INTRODUCTORY COMPOSITION. (4 cr; limited to 28 students; prereq assignment to Category 1, 2, 3 or 5 and Δ...§ after first day of class)

See 1001 First Term.

- Sec 1, II MTWThF, LindH 325, Sugnet
- Sec 2, IV MTWThF, LindH 325, Nelson

Foreign Study (FoSt)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

5960. SEMINAR FOR FOREIGN STUDY I AND II. (12 cr for both terms; prereq approval before Oct 1975 by a faculty selection committee [grad students must also have approval of adviser]) Huff, Johnson, Khan, Kheim

Directed field study (SPAN program) in Turkey, the Dominican Republic, Pakistan, and Hungary, investigating current economic, political, educational, cultural, and religious patterns of life. Each student studies the country carefully before leaving and writes a comprehensive report of his or her findings upon returning. See Special Programs section.

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; each section limited to 30 students)

- Sec 1, II-III MTWThF, Aero 21
- Sec 2, II-III MTWThF, NH 209A

††Any student absent the first day (Tuesday, June 15, for first term, and Tuesday, July 20, for second term) will lose his/her place in class.

- 1102. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school French; I-II MTWThF; KolH S134)
- 1103. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; I-II MTWThF; FolH 201)
- 1104. INTERMEDIATE FRENCH.** (5 cr; limited to 30 students; prereq 1103 or 3 yrs high school French; II-III MTWThF; KolH S136)
- 3015. FRENCH CONVERSATION AND COMPOSITION.** (5 cr; limited to 15 students; prereq 1105; IV MWF, III-IV TTh; FolH 203) Caplan
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.
- 3601. FRENCH LITERATURE IN ENGLISH TRANSLATION.** (5 cr [cr does not count toward French major]; limited to 45 students; taught in English; IV-V MW; FolH 105) Antal
Representative works examined through movements, genres, or themes.
- 3602. FRENCH LITERATURE IN ENGLISH TRANSLATION.** (5 cr [does not count toward French major]; limited to 45 students; taught in English; IV-V TTh; FolH 105) Lock
See 3601.
- 3970. DIRECTED READINGS.** (1-5 cr; each section limited to 10 students; prereq undergrad, Δ)
 Sec 1, General Topics
 Sec 2, Early French Literature in Translation, Antal
 Sec 3, Modern French Literature in Translation, Lock
- 5481. BAUDELAIRE.** (5 cr; limited to 25 students; prereq 3209 or above; V-VI MWF; FolH 103) Robinson
- 8970. DIRECTED READINGS.** (1-5 cr; prereq § and consent of dept chpn; hrs ar) Staff

SECOND TERM

- 1102. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school French; II-III MTWThF; FolH 102)
- 1103. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; I-II MTWThF; FolH 208)
- 1104. INTERMEDIATE FRENCH.** (5 cr; limited to 30 students; prereq 1103 or 3 yrs high school French; I-II MTWThF; FolH 201)
- 1105. INTERMEDIATE FRENCH.** (5 cr; limited to 30 students; prereq 1104; II-III MTWThF; FolH 305)
- 3016. ADVANCED FRENCH COMPOSITION AND CONVERSATION.** (5 cr; limited to 15 students; prereq 3015 or §; III MWF, III-IV TTh; FolH 208) Akehurst
- 3603. 20TH-CENTURY FRENCH THEATRE IN TRANSLATION.** (5 cr [cr does not count toward French major]; limited to 45 students; taught in English; IV-V MW; FolH 201) O'Donnell
Significant plays of major 20th-century French dramatists: Apollinaire, Artaud, Cocteau, Giraudoux, Claudel, Anouilh, Sartre, Camus, Beckett, Genet, Ionesco, and others.
- 3970. DIRECTED READINGS.** (1-5 cr; prereq undergrad, Δ) Staff
- 5415. RABELAIS.** (5 cr; limited to 25 students; prereq 3209 or above; V-VI TTh; FolH 108) Davidson
Gargantua and *Pantagruel* in original text.
- 8970. DIRECTED READINGS.** (1-5 cr; prereq § and consent of dept chpn; hrs ar) Staff

Italian (Ital)

FIRST TERM

- 5900. TOPICS IN ITALIAN LITERATURE: INFERNAL RHETORIC FROM VIRGIL TO DANTE AND THE MARQUIS DE SADE.** (5 cr; prereq §; VI-VII TTh; FolH 104) Freccero
Traditional texts that portray conditions of evil, from both religious and philosophical standpoints, with a view toward revealing their essentially rhetorical nature. Works include the sixth book of the *Aeneid*, Dante's *Inferno*, and selected passages from Cervantes, Milton, and de Sade. See Special Programs section.

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 courses in the Summer Session.

1101-1102-1103†. BEGINNING ITALIAN. (15 cr for both terms; II-IV MTWThF; FoH 107)

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

1302. HUMAN GEOGRAPHY. (4 cr, §1301; I MTWThF; BlegH 435) Ostergren

Geography of population and principal ways of life; capacity of earth for future population.

3111. GEOGRAPHY OF MINNESOTA. (4 cr; I MTWThF; BlegH 135) Rice

Physical resources, population, and commercial production. Field trips in eastern Minnesota.

3141. AFRICA. (4 cr; II MTWThF; BlegH 330) Scott

Regional differentiation of human groups and environments; culture contact and problems of underdeveloped countries south of the Sahara.

3331. ECONOMIC GEOGRAPHY. (4 cr; III MTWThF; BlegH 435) R Adams

World patterns of economic activity; levels of development; appraisal of resources, production, circulation, and consumption; principles, models, and planning of economic behavior.

5381. SERVICES AND LOCATION THEORY. (4 cr; prereq 3331 or §; IV MTWThF; BlegH 435) R Adams

Localization of economic activity; case studies of industries and services; location factors, models, and theory.

8970. DIRECTED READINGS. (1-5 cr) Staff

SECOND TERM

1401. PHYSICAL GEOGRAPHY. (5 cr; II MTWThF; BlegH 435) Squires

Major features of distribution patterns of climate, relief, vegetation, and soils; regional differences in problems of physical development.

3101. GEOGRAPHY OF UNITED STATES AND CANADA. (4 cr; III MTWThF; BlegH 5) Gersmehl

Interaction of the aspirations and abilities of different groups of people with the complexities of the natural environment to produce regional differentiation in the U.S. and Canada.

3161. EUROPE. (4 cr; I MTWThF; BlegH 420) Ostergren

Broad cultural-economic realms in Europe (excluding U.S.S.R.); survey of areal organization of each realm.

5173. NORDEN. (4 cr; II MTWThF; BlegH 415) Rice

Cultural and political development of Scandinavia, Finland, and Iceland. Effects of changing resource appraisal upon patterns of economic activity and human occupancy.

5701. FIELD RESEARCH—July 19-August 6. (4 cr; prereq 12 cr in geography and §) Lukermann
See 8700 and Special Programs section.

8700. SEMINAR: HISTORICAL FIELD—July 19-August 6. (6 cr; prereq §) Lukermann
Field research seminar. See Special Programs section.

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 at the Ruhr-Universität, Bochum, Germany. Permission of the German Department is required for registration. See Special Programs section.

FIRST TERM

- 1101. BEGINNING GERMAN.** (5 cr; each section limited to 20 students)
Sec 1, I-II MTWThF, FolH 108, Clausing
Sec 2, I-II MTWThF, FolH 103, Alley
Sec 3, III-IV MTWThF, FolH 103, Alley
- 1103. BEGINNING GERMAN.** (5 cr; limited to 25 students; prereq 1102 or 2 yrs high school German; II-III MTWThF; FolH 102)
- 1301. INTERMEDIATE GERMAN.** (5 cr; limited to 25 students; prereq 1003 or 1103 or 3rd qtr of 1110 or 3 yrs high school German; II-III MTWThF; FolH 202)
- 3104. READING AND ANALYSIS OF LITERARY TEXTS: SELECTED PROSE AND DRAMA.** (4 cr; limited to 25 students; required of all German majors; prereq 1301 or 4 yrs high school German; III MTWThF; FolH 208) Taraba
- 3541. 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; IV MTWThF; FolH 209) Clausing
Survey and assessment of folklore phenomena including German fairy tales, legends, and myths; proverbs, sayings, nursery rhymes, riddles, jokes, and anecdotes; popular music and folk songs; superstitions and customs. The development of these phenomena, content and message of various examples of these genres, their utilization and importance in the cultures of German-speaking areas.
- 3603. GERMAN LITERATURE IN TRANSLATION: MODERN PERIOD.** (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 209) Menze
Representative literary works of modern times read in translation and related to other literatures.
- 3610. MODERN GERMAN AUTHORS IN TRANSLATION: HEINRICH BÖLL.** (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; III MTWThF; FolH 209) Weiss
Study in depth of the works of Heinrich Böll.
- 5371. THE RADIO PLAY AS LITERARY FORM.** (4 cr; limited to 15 students; prereq 3104, 3105, 3 addtl German literature courses or equiv; VI-VII TTh; FolH 108) Weiss
Representative radio plays by such authors as Dürrenmatt, Frisch, Eich, Jens, Böll, and Grass; unique features dictated by broadcasting medium.
- 8261. GERMAN LITERATURE SINCE WORLD WAR II.** (3 cr; VI-VII MW; FolH 108)

SECOND TERM

- 1102. BEGINNING GERMAN.** (5 cr; each section limited to 25 students; prereq 1101 or 1 yr high school German)
Sec 1, I-II MTWThF, HSUnitA 2-580, Plummer
Sec 2, I-II MTWThF, KoltH S134
- 3105. READING AND ANALYSIS OF LITERARY TEXTS: SELECTED DRAMA AND POETRY.** (4 cr; limited to 25 students; required of all German majors; prereq 1301 or 4 yrs high school German; III MTWThF; FolH 203) Taraba
- 3310. STUDIES IN MODERN GERMAN AUTHORS: THOMAS MANN.** (4 cr; limited to 20 students; prereq 3104 and 3105, or §; IV MTWTh; FolH 203) Hirschbach
- 3501. CONTEMPORARY GERMANY.** (4 cr; limited to 30 students; prereq 1 yr college German or 3 yrs high school German; II MTWThF; FolH 202) Hirschbach
Culture and civilization of present-day Germany.

- 3604. GERMAN LITERATURE IN TRANSLATION AND THE FILM.** (4 cr; limited to 60 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; requires no knowledge of German; may be taken for cr toward a major or minor by doing a portion of the reading in German; \$4 lab fee; III-IV MTWTh; HSUnitA 2-520) Plummer
Modern German culture seen through literature and the film. Representative works related to historical and intellectual developments in modern Germany. Novelistic and cinematic treatment of similar thematic material.
- 3610. MODERN GERMAN AUTHORS IN TRANSLATION: FRIEDRICH NIETZSCHE.** (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; VI MTWThF; FolH 208) Taraba
Study in depth of the works of Friedrich Nietzsche.

History (Hist)

FIRST TERM

- 1001. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr; not open to jrs, srs; III MTWThF; AndH 230) Thayer
Development of Western Europe to 1715.
- 1003. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr; not open to jrs, srs; II MTWThF; AndH 330) Kieft
1870 to recent times.
- 1052. ANCIENT CIVILIZATION.** (5 cr; IV MTWThF; BlegH 130) Jones
Greek civilization, 750 to 323 B.C.
- 1302. AMERICAN HISTORY.** (4 cr; prereq soph or CDS student; II MTWThF; BlegH 10) Berman
Modern America.
- 1402. SURVEY OF LATIN-AMERICAN HISTORY.** (5 cr, §3402; I MTWThF; BlegH 205) Schwartz
Modernization and social change in Latin America from independence (1830) to the present.
- 1431. HISTORY OF AFRICA.** (4 cr, §3431; IV MTWThF; BlegH 135) Kaba
African history to 1500. Internal dynamics and genius of early African society.
- 3001. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1001; III MTWThF; AndH 230)
Thayer
See 1001.
- 3003. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1003; II MTWThF; AndH 330)
Kieft
See 1003.
- 3052. ANCIENT CIVILIZATION.** (3 cr, §1052; IV MTWThF; BlegH 130) Jones
See 1052.
- 3402. SURVEY OF LATIN-AMERICAN HISTORY.** (5 cr, §1402; I MTWThF; BlegH 205) Schwartz
See 1402.
- 3431. HISTORY OF AFRICA.** (4 cr, §1431; IV MTWThF; BlegH 135) Kaba
See 1431.
- 3471. 20TH-CENTURY JAPAN.** (4 cr, §5471; III MTWThF; AndH 250) Marshall
The modern transformation, 1870's to 1970's.
- 3609. MILITARY HISTORY OF MEDIEVAL WESTERN EUROPE.** (5 cr; I MTWThF; BlegH 260)
Bachrach
Concept and conduct of war in Western Europe in the Middle Ages and the relation between military organization and society.
- 3707. SOCIAL AND ECONOMIC HISTORY OF MODERN EUROPE.** (4 cr; III MTWThF; BlegH 335)
Rudolph
Changes in population, economy, and society and their interrelationship; industrialization and its impact; social and revolutionary movements; socialist and market systems; 1750-1900.
- 3882. HISTORY OF AMERICAN FOREIGN RELATIONS.** (4 cr; III MTWThF; BlegH 350) Brauer
America's commercial expansion, involvement in war, and role as a superpower in the twentieth century.
- 3970. DIRECTED STUDIES.** (1-15 cr; qualified students may register with \$ for work on tutorial basis)

- 3990. DIRECTED RESEARCH.** (1-15 cr; qualified students may register with § for work on tutorial basis)
- 5212. FRENCH REVOLUTION AND NAPOLEON.** (4 cr; II MTWThF; BlegH 404) Bamford
France and the Revolution: 1789-1799.
- 5266. MODERN RUSSIA: THE 20TH CENTURY.** (4 cr; IV MTWThF; BlegH 235) Stavrou
Fall of Russian monarchy, revolutions, and Soviet regime.
- 5286. DIPLOMATIC HISTORY OF EUROPE IN THE 19TH AND 20TH CENTURIES.** (4 cr; IV MTWThF; BlegH 215) Kieft
1918 to the present: post-World War I peace settlement, causes of World War II, evolution of Cold War, the Middle East.
- 5295. SOCIAL AND ECONOMIC HISTORY OF RUSSIA AND EASTERN EUROPE.** (4 cr; II MTWThF; BlegH 335) Rudolph
1917 to present: economic and social structure and change; Soviet industrialization and modern socialist economies.
- 5433. PROBLEMS IN CONTEMPORARY AFRICA.** (4 cr; II MTWThF; BlegH 430) Kaba
Problems of postindependence nation-building and integration.
- 5471. 20TH-CENTURY JAPAN.** (5 cr, §3471; III MTWThF; AndH 250) Marshall
See 3471.
- 5822. AMERICAN HISTORY IN THE 20TH CENTURY.** (4 cr; prereq §; VI-VII MTh; BlegH 360) Chambers
- 5970. DIRECTED STUDIES.** (1-15 cr; qualified sr and grad students may register with § for work on tutorial basis)
- 5990. DIRECTED RESEARCH.** (1-15 cr; qualified sr and grad students may register with § for work on tutorial basis)

SECOND TERM

- 1002. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr; not open to jrs, srs; III MTWThF; BlegH 235) Tracy
Revolution, liberalism, and nationalism to 1870.
- 1053. ANCIENT CIVILIZATION.** (5 cr; II MTWThF; BlegH 215) Kelly
Roman civilization to 305 A.D.
- 1151. ENGLISH HISTORY.** (4 cr; II MTWThF; BlegH 120) Lehmborg
England to the crisis of the seventeenth century.
- 1301. AMERICAN HISTORY.** (4 cr; prereq soph or CDS student; III MTWThF; BlegH 150) Noble
Colonial, early national period through sectional crisis.
- 1302. AMERICAN HISTORY.** (4 cr; prereq soph or CDS student; IV MTWThF; BlegH 150) Spear
See First Term.
- 3002. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1002; III MTWThF; BlegH 235) Tracy
See 1002.
- 3053. ANCIENT CIVILIZATION.** (3 cr, §1053; II MTWThF; BlegH 215) Kelly
See 1053.
- 3151. ENGLISH HISTORY.** (4 cr, §1151; II MTWThF; BlegH 120) Lehmborg
See 1151.
- 3485. CHINA'S RESPONSE TO THE WEST, 1750-1911.** (4 cr; IV MTWThF; BlegH 125) Farmer
Decline of imperial system; Western impact; cultural crisis and revolution.
- 3467. REPUBLICAN CHINA: THE NATIONALIST REVOLUTION, 1900 TO PRESENT.** (4 cr; II MTWThF; BlegH 205) Farmer
Development of Chinese nationalism, interventions of Soviet Union, Japan, and the United States, failure of Kuomintang.
- 3823. UNITED STATES IN THE 20TH CENTURY.** (4 cr; III MTWThF; BlegH 215) Spear
Major political, economic, intellectual, and social trends; the development of a corporate society; American imperialism and the rise to globalism; reform movements from Populism to the New Left; 1945 to present.
- 3970. DIRECTED STUDIES.** (1-15 cr; qualified students may register with § for work on tutorial basis)
- 3990. DIRECTED RESEARCH.** (1-15 cr; qualified students may register with § for work on tutorial basis)

- 5243. HISTORY OF GERMANY.** (4 cr; 2:00-4:15 MTh; AndH 250) Pflanze
From 1815 to 1933.
- 5341. AMERICAN ECONOMIC HISTORY.** (4 cr; II MTWThF; BlegH 255) Green
Colonial period to 1865.
- 5381. MINNESOTA HISTORY WORKSHOP—July 19-30.** (5 cr; limited to 100 students, must be reserved in JohH 12)
See Special Programs section.
- 5465. CHINA'S RESPONSE TO THE WEST, 1750-1911.** (4 cr, §3465; IV MTWThF; BlegH 125) Farmer
See 3465.
- 5487. REPUBLICAN CHINA: THE NATIONALIST REVOLUTION, 1900 TO PRESENT.** (4 cr, §3467; II MTWThF; BlegH 205) Farmer
See 3467.
- 5970. DIRECTED STUDIES.** (1-15 cr; qualified sr and grad students may register with § for work on tutorial basis)
- 5990. DIRECTED RESEARCH.** (1-15 cr; qualified sr and grad students may register with § for work on tutorial basis)

Humanities (Hum)

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; limited to 65 students; I-II MW; ForH 120)
Leppert
Old Regime, French Revolution and Napoleonic era, neoclassicism and romanticism. Pope, Voltaire, Rousseau, Burke, Goethe, and Tolstoy.
- 3006. THE CREATIVE IMAGINATION IN THE 20TH CENTURY.** (5 cr; limited to 65 students; III-IV TTh; ForH 155) Bauer
Aspects of creativity in the 20th century, studied through major works of painters, sculptors, musicians, and writers such as Marcel Duchamp, Pablo Picasso, John Cage, and Andre Gide. The choice of artists will vary.
- 3009. MAN BEFORE HISTORY: THE GOLDEN AGE.** (5 cr; limited to 65 students; III-IV TTh; ForH 120) Ames
A search for meaning in the myth of a lost terrestrial paradise: the abundant plain of Eden or worldwide technological mastery? Scientific evidence of the cultural advances of prehistoric man. Correlations with literature, folklore, and certain anomalies of archaeology, geography, and psychology. Readings in Campbell, Fairervis, Gordon, Milton, de Santillana.
- 3101. THE MEANING OF HUMANITY.** (4 cr; limited to 65 students; III MTWTh; Arch 40) Roshwald
The essence of man and the factors determining his course, explored through theories such as those of Marx, Freud, Plato.
- 3910. TOPICS IN HUMANITIES: Modern Israel.** (4 cr; limited to 30 students; prereq jr, sr or §; IV MTWTh; ForH 160) Roshwald
- 3970. DIRECTED STUDIES.** (Cr and hrs ar; prereq §) Staff
- 5030. HUMANITIES PROSEMINAR.** (3 cr; limited to 15 students; prereq sr; III-IV TTh; KolH S137)
Tapp
The relationships between history, literature, and the arts; topics to be determined by the class after a discussion of alternatives offered by the instructor. Student reports, papers. Audiovisual aids available.

SECOND TERM

- 1001. HUMANITIES IN THE MODERN WORLD I.** (5 cr, §3001, §Rhet 1301; limited to 65 students; IV MTWThF; ForH 120) Lowry
See First Term.
- 3004. HUMANITIES IN THE MODERN WORLD.** (5 cr, §1004, §Rhet 3381; limited to 65 students; prereq jr or sr; I MTWThF; ForH 120) Bryan
Humanities between the two world wars. Communism, fascism, Freudianism, modern art and philosophy, existentialism. Lenin, Freud, Joyce, T. S. Eliot, Kafka, and others.

- 3011. EUROPEAN HERITAGE: GREEK HERITAGE.** (5 cr, \$1011, \$Rhet 3321; limited to 65 students; prereq jr or sr; II MTWThF; ForH 130) Hershbell
The Heroic Age: Homer. The Golden Age of Athens: Aeschylus, Sophocles. The philosophers: Plato, Aristotle.
- 3970. DIRECTED STUDIES.** (Cr and hrs ar; prereq §) Staff

Interdepartmental Study (ID)

ID courses are available under course ID 3970 for 3 to 15 credits. Similar independent study courses may be taken for 1 to 5 credits under Literature and Fine Arts (LFA), Natural Science (NSci), or Social Science (SSci) 3970 (to arrange projects, consult the Office for Special Learning Opportunities, 201A Wesbrook Hall, 373-7550), or under varying credit limitations under departmental courses 3970 or 5970.

- 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.

LFA, NSci, and SSci 3970 descriptions are the same as that of ID 3970 except for credit limitation.

Journalism and Mass Communication (Jour)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1005. VISUAL COMMUNICATION.** (3 cr; prereq 3rd-qr fr; III MTWThF; Arch 30) 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.
- 1101. REPORTING.** (5 cr; limited to 20 students; prereq C or better in 1001 and 1005 or grad status, a passing score on the Minnesota English Test, type 25 wpm, and Δ ...photo-communication students must also pass 1301 with a C or better; III-IV MTWThF; MurH 212) Ismach
Study and practice in fact gathering and journalistic writing. Problems in judgment and handling of news and news features.
- 1301. BEGINNING PHOTOJOURNALISM.** (4 cr; limited to 16 students; prereq soph with C or better in 1001, 1005, Δ ; I MTWThF; MurH 20) Brown
Photography as creative means of communication. Fundamentals of photography; use of news cameras; basic darkroom processes. Lectures and laboratory.
- 3241. ADVERTISING COPYWRITING.** (4 cr; limited to 20 students; prereq 2.50 avg in 1001, 1005, and 1201, Comp 1027 where required by sequence, a passing score on the Minnesota English Test, type 25 wpm, and Δ ...or Δ where waiver of prereqs is warranted; III-IV MTWThF; MurH 210) Harris
Advertising appeals and strategy; development and presentation of advertising for print and broadcast. Individual and group projects.
- 3486. RADIO AND TELEVISION SCRIPTWRITING.** (4 cr; limited to 20 students; prereq 3121 or 3241 and § for journalism majors...1001 and § for speech-radio majors; II MTWThF; MurH 302) Harris
Planning and writing scripts for broadcast in variety of program areas.
- 5182. PUBLICATION WORKSHOP—June 15-July 2.** (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) Wilson
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; \$4 lab fee; III MTWThF; MurH 315-20) Wilson
Processes in graphic communication. Technique and production of illustration. Significant graphic arts developments.
- 5251. PSYCHOLOGY OF ADVERTISING.** (4 cr, §Psy 5751; prereq Psy 1001; IV MTWThF; SciCB 375)
Psychological principles, research techniques, and applications in advertising and selling. Consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.
- 5501. COMMUNICATION AND PUBLIC OPINION I.** (4 cr, §Soc 5355; prereq 15 cr in social science depts; I MTWThF; MurH 308) Ismach
Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation.
- 5601. HISTORY OF JOURNALISM.** (4 cr; II 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.
- 5970. ADVANCED PROJECTS IN JOURNALISM** (1-4 cr [may be repeated for max 8 cr]; prereq journalism major, B avg, §) Staff
- 8603. SEMINAR: HISTORY OF MASS COMMUNICATION.** (4 cr; prereq 5601, §; IV MTWThF; MurH 302) Emery
Documentary research in history and development of U.S. mass media.
- 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, a passing score on the Minnesota English Test, type 25 wpm, and Δ ...photocommunication students must also pass 1301 with a C or better; III-IV MTWThF; MurH 212) Sim
See First Term.
- 1201. PRINCIPLES OF ADVERTISING.** (4 cr; prereq 1001 recommended for journalism majors; I MTWThF; MurH 311) Freund
Theory, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, radio, television as advertising media.
- 3021. MASS COMMUNICATION AND THE NEWS.** (4 cr; not open to journalism majors; I MTWThF; MurH 302) Sim
The mass media in contemporary society; structure, organization, professional norms, and audience composition. Press and broadcasting, role of journalism in news dissemination.
- 3121. PUBLIC AFFAIRS REPORTING.** (4 cr; limited to 20 students; prereq 2.50 avg in 1001, 1005, and 1101, Comp 1027 where required by sequence, type 40 wpm, and Δ ... or Δ where waiver of prereqs is warranted; II MTWThF; MurH 212) Dennis
Reporting and editing news of courts and municipal, county, state, federal administrative and legislative agencies.
- 3776. MASS COMMUNICATIONS LAW.** (4 cr; prereq 1001 or 1011, 1101 or §; IV MTWThF; MurH 311) Gillmor
Origins and background of principles of press law. The press and the First Amendment. Libel and its defenses. Confidentiality of newsmen's 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 advertising.
- 5261. ADVERTISING: MEDIA ANALYSIS.** (4 cr; prereq 2.50 avg in 1001, 1005, and 1201...Comp 1027, pass Minnesota English Test, type 25 wpm, Δ ; III MTWThF; MurH 311) Freund
Characteristics of the print and electronic media; their role in advertising; selection and scheduling; rate structure and policies; evaluation and use of media and market measurements and data.
- 5549. PUBLIC RELATIONS.** (4 cr; prereq 15 cr in social science depts...§ for nonmajors; II MTWThF; MurH 311) Lindsay
History and development of public relations practice and principles. Process and applications in a variety of institutional settings. Critique of public relations in contemporary society.
- 5611. DEVELOPMENT OF AMERICAN BROADCASTING.** (4 cr; IV MTWThF; MurH 308) Lindsay
Historical and economic development of radio and television in United States; government regulation, self-regulation, forms of social control; issues in contemporary broadcasting.

- 5721. MASS MEDIA IN A DYNAMIC SOCIETY.** (4 cr; prereq 1201 or 3121 for journalism majors ...others §; II MTWThF; MurH 308) Gillmor
Economic, political, and social determinants of character and content of mass communications. Patterns of operations, 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
- 8721. COMMUNICATION AGENCIES AS SOCIAL INSTITUTIONS.** (4 cr; prereq 5721 or equiv, §; IV MTWThF; MurH 30) Dennis
Influence of political, social, and economic forces upon character and performance of mass media. Media influence, organization, and responsibilities.
- 8990. SPECIAL PROBLEMS IN MASS COMMUNICATION.** (4 cr; for grad major or minor in mass communication; prereq §) Staff
See First Term.

Library School (Lib)††

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 5204. PRINT MATERIALS IN LIBRARIES.** (3 cr; prereq 5101, 5221, 5401; II MTWThF; VH 314) Olson
Selection, evaluation, and use of books, periodicals, and other printed sources of information and recreation for youth in school and public libraries; reading patterns of children and adolescents, and implications for selection of printed materials to meet the requirements, purposes, and abilities of different age groups.
- 5221. RECORDS OF KNOWLEDGE.** (4 cr; limited to 50 students; \$4 lab fee; I-II MTWTh; VH 2) Amundson
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.
- 5301. READING, LISTENING, AND VIEWING GUIDANCE.** (3 cr; prereq 5101, 5221, 5401; IV MTWThF; KolH S133) Olson
Philosophy and objectives of library service in schools and children's departments; guidance techniques; planning library programs. Relevant research related to reading, viewing, and listening; professional literature from various fields pertinent to understanding children and adolescents.
- 5401. ORGANIZATION OF INFORMATION I.** (4 cr; limited to 50 students; \$4 lab fee; IV-V MTWTh; Ph 145) Klempler
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.
- 8103. PUBLIC LIBRARIES.** (4 cr; prereq 5101, 5221, 5401; \$4 lab fee; VI-VII MW; WaLib 339) McClaskey
Development of public library services with emphasis on the growth of cooperative library systems and interrelationships with all types of libraries; social change and problem solving as related to research, literature, organization, administration, and legal factors.
- 8224. SUBJECT BIBLIOGRAPHY.** (4 cr; limited to 25 students; prereq 5101, 5221, 5401; IV-V TTh; WaLib 339) Amundson
The world of learning and the various disciplines as they have developed in the United States, and study of the bibliographic apparatus in relation to the structure of the disciplines.
- 8233. HISTORY OF CHILDREN'S LITERATURE.** (4 cr; prereq 5101, 5221, 5401; VI-VII TTh; WaLib 339) McClaskey

††The graduate Library School is a professional school. 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 below 8000 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 a library science course approved by an adviser in the Library School office, 419 Walter Library.

The history and study of children's literature in relation to social history with special reference to current applications for library services.

8304. ADULT SERVICES. (5 cr; limited to 20 students; prereq 5101, 5221, 5401; III-IV 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.

8402. ORGANIZATION OF INFORMATION II. (4 cr; limited to 25 students; prereq 5101, 5221, 5401; I-II MW; WaLib 339) Klemperer

Advanced study of methods and problems in the description, subject organization, and retrieval of records of knowledge and information in bibliographies, library catalogs, and machine-based systems.

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

5101. INTRODUCTION TO LIBRARIES AND LIBRARIANSHIP. (5 cr; limited to 50 students; \$4 lab fee; II-III MTWTh; Ph 145) Peterson

Librarianship as a profession; development of libraries as social agencies; principles of library administration and management.

8223. GENERAL BIBLIOGRAPHY. (4 cr; limited to 30 students; prereq 5101, 5221, 5401; IV-V MW; WaLib 339) Thomas

Major national and trade bibliographies of the world with emphasis on those of the United States, Great Britain, France, Germany, and Russia; their use in selection and acquisition of print and nonprint materials and in the preparation of bibliographies.

8224. SUBJECT BIBLIOGRAPHY. (4 cr; limited to 25 students; prereq 5101, 5221, 5401; IV-V TTh; WaLib 339) Thomas

See First Term.

8402. ORGANIZATION OF INFORMATION II. (4 cr; limited to 25 students; prereq 5101, 5221, 5401; II-III MW; WaLib 339) Brekhus

See First Term.

8411. LIBRARY MECHANIZATION AND SYSTEMS ANALYSIS. (4 cr; limited to 25 students; prereq 5101, 5221, 5401; III-IV TTh; WaLib 339) Brekhus

Systems analysis as applied to library operations; data representation and coding systems; application of technological developments such as microforms and computers to library operations.

8970. INDEPENDENT STUDY. (Cr ar; prereq §) Staff

8990. LIBRARY RESEARCH. (Cr ar; prereq §) Staff

See First Term.

Linguistics (Ling)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

3001. INTRODUCTION TO LINGUISTICS. (4 cr, §5001, §3005; VI-VII MWF; FolH 104) Iverson

Syntax, semantics, phonology; language learning and psychology of language; universals of language; language in society; language change; educational applications; history of linguistics.

3301. PHONETICS. (4 cr, §5003, §5301; prereq 3001 or §3001 or §; III-IV MWF, wkly lab, 1 hr ar; FolH 104) Houlihan

Physiology and acoustics of speech sounds; practice and drill in production and perception. Meets with 5301 and 5003.

5001. INTRODUCTION TO LINGUISTICS. (4 cr, §3001, §3005; VI-VII MWF; FolH 209) Kac

See 3001.

- 5003. APPLIED PHONETICS.** (4 cr, §3301, §5301; prereq 5001 or 15001 or §; III-IV MWF, wky lab, 1 hr ar; FolH 104) Houlihan
Primarily for teachers of English as a second language. Meets with 3301 and 5301.
- 5301. PHONETICS.** (4 cr, §3301, §5003; prereq 3001 or 5001 or 15001 or §; III-IV MWF, wky lab, 1 hr ar; FolH 104) Houlihan
See 3301. Meets with 3301 and 5003.
- 5705. WORKSHOP: ENGLISH AS A SECOND LANGUAGE—July 12-30.** (6 cr; not open to ESL majors; limited to 100 students; 8:30-10:00, 10:30-12:00 MTWThF; FolH 308) Robinett, staff
Current issues in teaching English as a second language; grammatical, phonological, and lexical systems of English; testing and evaluation; classroom applications to skills of listening, speaking, reading, writing, and evaluation of instructional materials. Lectures and discussion sessions. See *Special Programs* section.
- 5751. APPLIED TRANSFORMATIONAL GRAMMAR.** (4 cr; VI-VII MWF; FolH 202) Hutchinson
Transformational grammar from 1957 to present; techniques of grammar construction, evaluation, and presentation; role of grammar in teaching composition skills. See *Special Programs* section.

Music (Mus)

(See also *Music Education under College of Education*)

Courses with limited enrollment and others so indicated must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1001. FUNDAMENTALS OF MUSIC.** (4 cr; each section limited to 24 students; for nonmusic majors)
Basic musical symbols, vocabulary, rhythm, design, scale structures, intervals, chords. Development of basic piano skills; playing simple accompaniments.
Sec 1, II MTWThF, MusEd 200, Byrne
Sec 2, IV MTWThF, MusEd 200, Byrne
- 1507. SURVEY OF MELODIC AND HARMONIC PROCEDURES.** (3 cr; prereq §; I MTWThF; WuH 7A) Humphries
Principles of melodic and harmonic structure.
- 1517. EAR-TRAINING AND SIGHT-SINGING.** (3 cr; prereq §; II MTWThF; WuH 7A) Humphries
Development of aural skills with concentration on sight-singing, interval recognition, melodic and harmonic dictation, and vocal improvisation.
- 1804. WORLD MUSIC.** (4 cr; V MTWThF; ScH 4) Kagan
Music in universal perspective. Traits distinguishing styles and cultural factors that influence musical creativity. Music of different cultures in juxtaposition to examine forms and traits, to develop listening abilities and an understanding of man's musical expression.
- 3791. INTRODUCTION TO ELECTRONIC MUSIC.** (4 cr; limited to 24 students; prereq 4 cr in music or §; III MTWThF; ScH 103) Ultan
Musical literature to which electronic materials contribute. Listeners, discussions, and readings. Exercises in the use of equipment.
- 3970. DIRECTED STUDIES.** (1-15 cr; prereq §, Δ; hrs ar; ScH 104) Riedel, Ultan, Humphries
Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students.
- 5384. CHORAL CONDUCTING.** (4 cr; prereq §; III MTWThF; WuH 7A) Lancaster
Advanced study of choral conducting—hand techniques, sound control, articulation, breath control, intonation, etc.
- 5663. LASSO AND PALESTRINA.** (4 cr; prereq 8 cr in music history or Renaissance and baroque art, or political history to 1700, or general history of Western philosophy or §; V MTWThF; WuH 320) Riedel
Council of Trent. Influence of 16th century on sacred music. Lasso's cosmopolitan style, Palestrina's a cappella style. Palestrina style, 17th, 18th centuries. Caecilianism of 19th, 20th centuries.
- 5702. AMERICAN MUSIC.** (4 cr; prereq 1606 or 8 cr in American history or American studies or §; VI MTWThF; WuH 320) Riedel
From colonial times to present. American Indian music; sacred music in America, Puritan New England to the present time; jazz; music education; the symphony orchestra; contemporary music.

- 5755. CHORAL LITERATURE: CLASSICAL ERA THROUGH THE 20TH CENTURY.** (4 cr; prereq sr or grad and §; IV MTWThF; WuH 7A) Lancaster
Sacred and secular choral works of the Classical era through the 20th century.
- 5863. MUSICAL INSTRUMENTS OF THE WORLD.** (4 cr; IV MTWThF; ScH 3) Kagan
Organology; classification and comparative study of musical instruments in all cultures; history, distribution, structure, technology, acoustics. Instruments in literature, myths, iconography.
- 5950. TOPICS IN MUSIC.** (1-5 cr; cr and prereq designated according to each offering; must be reserved)
Sec 1, Romantic Opera, 4 cr, VII MTWThF; WuH 7A, Sutton
Operatic development during the 19th century; contributions of Wagner and Verdi; nationalism in opera; musicological problems; additional topics determined by students' interests and resources.
Sec 2, Selected Topics, hrs ar, ScH 104, Ultan
- 8990x.* SPECIAL PROBLEMS.** (2-12 cr; prereq 5841; hrs ar; ScH 104) Riedel

Courses in Applied Music

Offerings in applied music are classified according to three modes: elective (with or without credit), applied, and performance; and five levels: 0xxx (prefix 0, no credit), 1xxx (prefix 1), 3xxx (prefix 3), and graduate levels 5xxx and 8xxx (prefixes 5 and 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 Music Department, 106 Scott Hall, regarding the mode and level of applied music appropriate for fulfillment of specific requirements in each 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 either 2 credits (minimum of 5 hours of private lessons) or 4 credits (minimum of 10 hours of private lessons) per summer term. Fees for non-music majors are based on individual lessons: \$75 (0-2 credits) or \$150 (4 credits). Music and music education majors at the 12xx or 13xx level in their major instrument pay \$65 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) are eligible for a reduced rate of \$25 per 2 credits. M.F.A. and D.F.A. students taking applied music at the 83xx level also are eligible for the reduced rate of \$25 per 2 credits.

The music fees are treated as course fees; that is, they are applied *in addition* to tuition for all students in all quarters including the summer terms.

COURSES IN APPLIED MUSIC

Instrument	Non-Cr	Applied: Elective			Applied			Applied: Performance			Instructor
		1xxx Level	3xxx Level	Grad	1xxx Level	3xxx Level	Grad	1xxx Level	3xxx Level	Grad	
Piano	0101	1101	3101	5101	1201	3201	8201	1301	3301	8301	Freed, Weiser
Harpichord	0102	1102	3102	5102	1202	3202	8202	1302	3302	8302	Burris
Organ	0103	1103	3103	5103	1203	3203	8203	1303	3303	8303	Fleischer
Voice	0104	1104	3104	5104	1204	3204	8204	1304	3304	8304	Ware, Wilson, Wittich
Violin	0105	1105	3105	5105	1205	3205	8205	1305	3305	8305	Tartaglia, Adams, Gregorian
Viola	0106	1106	3106	5106	1206	3206	8206	1306	3306	8306	Ar
Cello	0107	1107	3107	5107	1207	3207	8207	1307	3307	8307	Jamieson
Double Bass	0108	1108	3108	5108	1208	3208	8208	1308	3308	8308	Clute
Flute	0109	1109	3109	5109	1209	3209	8209	1309	3309	8309	Eagle, Niosi, Opava, Zeitlin
Oboe	0111	1111	3111	5111	1211	3211	8211	1311	3311	8311	Angelucci, Cappa, Holub
Clarinet	0112	1112	3112	5112	1212	3212	8212	1312	3312	8312	Haugen, Hedling, Williams
Saxophone	0113	1113	3113	5113	1213	3213	8213	1313	3313	8313	Haugen, Williams
Bassoon	0114	1114	3114	5114	1214	3214	8214	1314	3314	8314	Miller
French Horn	0115	1115	3115	5115	1215	3215	8215	1315	3315	8315	Gaska, McAfee
Trumpet	0116	1116	3116	5116	1216	3216	8216	1316	3316	8316	Baldwin, Hasselmann, Schlueter, Volpe
Trombone	0117	1117	3117	5117	1217	3217	8217	1317	3317	8317	Zellmer
Baritone	0118	1118	3118	5118	1218	3218	8218	1318	3318	8318	Ricketts
Tuba	0119	1119	3119	5119	1219	3219	8219	1319	3319	8319	Tolbert, Walton
Percussion	0121	1121	3121	5121	1221	3221	8221	1321	3321	8321	Fine
Harp	0122	1122	3122	5122	1222	3222	8222	1322	3322	8322	Miller
Guitar	0123	1123	3123	5123	1223	3223	8223	1323	3323	8323	Pederson, Van
Accordion	0124	1124	3124	5124	1224	3224	8224	1324	3324	8324	Malmberg
Sitar	0125	1125	3125	5125	1225	3225	8225	1325	3325	8325	Ar

SECOND TERM

- 1001. FUNDAMENTALS OF MUSIC.** (4 cr; each section limited to 24 students; for nonmusic majors)
See First Term.
Sec 1, II MTWThF, MusEd 200, Byrne
Sec 2, III MTWThF, MusEd 200, Byrne
- 1508. SURVEY OF MELODIC AND HARMONIC PROCEDURES.** (3 cr; prereq §; I MTWThF; WuH 7A)
Humphries
See 1507 First Term.
- 1518. EAR-TRAINING AND SIGHT-SINGING.** (3 cr; prereq §; II MTWThF; WuH 7A) Humphries
See 1517 First Term.
- 3541-3542-3543. COUNTERPOINT.** (2 cr per qtr; prereq 1506; II MTWThF; ScH 103) Fetter
Strict 16th-century and Bach style counterpoint in two and three parts; writing of canons, motets, inventions, fugues. A creative course. Writing musical examples by means of analysis within prescribed styles.
- 3970. DIRECTED STUDIES.** (1-15 cr; prereq §, Δ; hrs ar; ScH 332) Humphries
See First Term.
- 5375. VOCAL PEDAGOGY.** (4 cr; prereq 18 cr applied voice, MuEd 3431, and/or §; IV MTWThF; ScH 103) Schuessler
Anatomical study of the vocal mechanism. Principles and techniques of vocal production. Teaching methods and application of knowledge in a directed teaching situation.
- 5511. ADVANCED EAR TRAINING I.** (3 cr; prereq 1516 or §; I MTWThF; ScH 103) Fetter
Dictation of melodic, harmonic, and rhythmic materials in a variety of styles. Introduction to contemporary sonorities.
- 5551, 5552, 5553. COMPOSITION I.** (2 cr per qtr; prereq 1506; hrs ar; ScH 203) Fetter
Original work in various forms. Techniques and styles of composition, development of original approaches.
- 5554, 5555, 5556. COMPOSITION II.** (2 cr per qtr; prereq 3543, 5553; hrs ar; ScH 203) Fetter
Original work in various forms.
- 5666. STRAVINSKY.** (4 cr; III MTWThF; ScH 103) Cardamone
Changing styles and aesthetic principles of Stravinsky as seen in representative compositions and writings; contributions to artistic life in Europe and America (particularly ballet).
- 8551, 8552, 8553. COMPOSITION III.** (3 cr per qtr; prereq grads who have completed undergrad major sequence in music theory and composition incl 3543, 5503, 5553, 5563; hrs ar; ScH 203) Fetter
Original works in various forms. Emphasis on advanced work in composition.
- 8990x.* SPECIAL PROBLEMS.** (2-12 cr; prereq 5841; hrs ar; ScH 203) Fetter

Courses in Applied Music

See First Term.

COURSES IN APPLIED MUSIC

Instrument	Non-Cr	<u>Applied: Elective</u>			<u>Applied</u>			<u>Applied: Performance</u>			Instructor
		1xxx Level	3xxx Level	Grad	1xxx Level	3xxx Level	Grad	1xxx Level	3xxx Level	Grad	
Piano	0101	1101	3101	5101	1201	3201	8201	1301	3301	8301	McNab
Harpaichord	0102	1102	3102	5102	1202	3202	8202	1302	3302	8302	Ar
Organ	0103	1103	3103	5103	1203	3203	8203	1303	3303	8303	Fleischer
Voice	0104	1104	3104	5104	1204	3204	8204	1304	3304	8304	Schuessler, Ware, Wittich
Violin	0105	1105	3105	5105	1205	3205	8205	1305	3305	8305	Adams, Gregorian
Viola	0106	1106	3106	5106	1206	3206	8206	1306	3306	8306	Ar
Cello	0107	1107	3107	5107	1207	3207	8207	1307	3307	8307	Jamieson
Double Bass	0108	1108	3108	5108	1208	3208	8208	1308	3308	8308	Clute
Flute	0109	1109	3109	5109	1209	3209	8209	1309	3309	8309	Eagle, Niosi, Zeitlin
Oboe	0111	1111	3111	5111	1211	3211	8211	1311	3311	8311	Angelucci, Holub
Clarinet	0112	1112	3112	5112	1212	3212	8212	1312	3312	8312	Haugen, Hedling, Williams
Saxophone	0113	1113	3113	5113	1213	3213	8213	1313	3313	8313	Haugen, Williams
Bassoon	0114	1114	3114	5114	1214	3214	8214	1314	3314	8314	Miller
French Horn	0115	1115	3115	5115	1215	3215	8215	1315	3315	8315	McAfee, McDonald, Rardin
Trumpet	0116	1116	3116	5116	1216	3216	8216	1316	3316	8316	Baldwin, Hasselmann, Schlueter, Volpe
Trombone	0117	1117	3117	5117	1217	3217	8217	1317	3317	8317	Ar
Baritone	0118	1118	3118	5118	1218	3218	8218	1318	3318	8318	Ricketts
Tuba	0119	1119	3119	5119	1219	3219	8219	1319	3319	8319	Tolbert, Walton
Percussion	0121	1121	3121	5121	1221	3221	8221	1321	3321	8321	Fine
Harp	0122	1122	3122	5122	1222	3222	8222	1322	3322	8322	Miller
Guitar	0123	1123	3123	5123	1223	3223	8223	1323	3323	8323	Pederson
Accordion	0124	1124	3124	5124	1224	3224	8224	1324	3324	8324	Malmberg
Sitar	0125	1125	3125	5125	1225	3225	8225	1325	3325	8325	Ar

Natural Science (NSci)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

1004. PHYSICAL WORLD: PHYSICS. (4 cr, Sequiv courses in physics; limited to 48 students; prereq 1 yr high school algebra; \$4 lab fee; II MTWThF and 4 lab hrs per wk ar; Ph 133)

Topics from astronomy and physics selected to illustrate the methods of science and to acquaint the student with the physical universe.

SECOND TERM

1005. PHYSICAL WORLD: CHEMISTRY. (4 cr, Sequiv courses in science depts; 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

Arabic (Arab)

FIRST TERM

5970. DIRECTED READINGS. (Cr ar; prereq §) Koury

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 and may not enroll in other courses during the Summer Session.

1101-1102-1103. BEGINNING ARABIC. (15 cr for both terms; I-III MTWThF; KolH S132) Koury

Fundamentals of Arabic, based on audiolingual method; aural comprehension, pronunciation, practical reading knowledge, and basic grammar.

SECOND TERM

5970. DIRECTED READINGS. (Cr ar; prereq §) Koury

Hebrew (Heb)

FIRST TERM

5970. DIRECTED READINGS. (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or §)

SECOND TERM

5970. DIRECTED READINGS. (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or §)

Middle Eastern Studies (MidE)

FIRST TERM

- 3501. ANCIENT ISRAEL.** (4 cr; II-III MWF; Jones 11) Reisman
History of Israel and development of its religion as seen against background of ancient Near East.
- 5970. DIRECTED READINGS.** (Cr ar; for advanced students wishing to work on special problems; prereq §)

SECOND TERM

- 3502. ANCIENT ISRAEL.** (4 cr; II-III MWF; Jones 11) Paradise
See 3501 First Term.
- 5970. DIRECTED READINGS.** (Cr ar; for advanced students wishing to work on special problems; prereq §)

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; Ph 143)
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; Ph 143)
See First Term.

Philosophy (Phil)

FIRST TERM

- 1001. LOGIC.** (5 cr; II MTWThF; ForH 155) Lewis
Emphasis upon application of formal techniques for evaluating arguments.
- 1002. INTRODUCTION TO PHILOSOPHY.** (5 cr; open to 3rd-4th yr; IV MTWThF; ForH 150) Wallace
Problems, principal methods and schools of philosophy; historical and contemporary views.
- 3001. GENERAL HISTORY OF WESTERN PHILOSOPHY.** (5 cr; II MTWThF; ForH 150) F Lewis
Greek philosophy, pre-Socratics, Socrates, Plato, Aristotle.
- 3302. MORAL PROBLEMS OF CONTEMPORARY SOCIETY.** (5 cr; III MTWThF; ForH 285) Sartorius
Fundamental moral dilemmas of today.
- 3970. DIRECTED STUDIES.** (1-5 cr; prereq §) Staff
- 5068. LATER PHILOSOPHY OF WITTGENSTEIN.** (5 cr; prereq 5231 or 3003 or §; IV MTWThF; ForH 285) Mason
Intensive study of Wittgenstein's Philosophical Investigations.
- 5780. SELECTED TOPICS IN PHILOSOPHY: THOREAU.** (5 cr; prereq 5 3xxx-5xxx-level cr in philosophy or §; III MTWThF; ForH 170) Dolan
An introduction to the writings and thought of Thoreau with special attention to his distinctive contributions to three topics: the value of wilderness, political obligation, and the meaning of life.

5970. DIRECTED STUDIES AND RESEARCH. (1-5 cr; prereq §) Staff

8970. DIRECTED STUDIES AND RESEARCH. (1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

SECOND TERM

1001. LOGIC. (5 cr; III MTWThF; ForH 155)
See First Term.

1002. INTRODUCTION TO PHILOSOPHY. (5 cr; II MTWThF; ForH 285) Hanson
See First Term.

3003. GENERAL HISTORY OF WESTERN PHILOSOPHY. (5 cr; IV MTWThF; ForH 285) Hochberg
Modern philosophy from Descartes through Hume.

3502. INTRODUCTION TO AESTHETICS. (5 cr; II MTWThF; ForH 170) Eaton
Development of aesthetic theories from Plato to Tolstoy.

3670. DIRECTED STUDIES. (1-5 cr; prereq §) Staff

5601. PHILOSOPHY OF SCIENCE. (5 cr; prereq 1001 or 3201 or §; III MTWThF; ForH 160) Maxwell
Meaning, methods, and implications of modern science. Basic concepts, presuppositions, and procedures.

5760. SELECTED TOPICS IN PHILOSOPHY: PHILOSOPHY AND POETRY. (5 cr; prereq 5 3xxx-
5xxx-level cr in philosophy or §; IV MTWThF; ForH 170) Gunderson
A comparison of the value of style and substance in philosophy and poetry; examination of some of the overlapping and contrasting interests philosophers and poets take in metaphor, imagery, and analogy; truth, consistency, and coherency.

5970. DIRECTED STUDIES AND RESEARCH. (1-5 cr; prereq §) Staff

8970. DIRECTED STUDIES AND RESEARCH. (1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

Political Science (Pol)

FIRST TERM

1001. AMERICAN GOVERNMENT AND POLITICS. (5 cr; II-III TWTh; AndH 350) Kernell
Principles, organization, processes, functions of government, and the interplay of political forces in the United States—national, state, and local. Attention throughout to current issues.

1026. AMERICAN FOREIGN POLICY. (4 cr; I MTWThF; BlegH 115) Wynia
Institutions and processes that determine American foreign policy.

1027. URBAN POLITICS. (4 cr; IV MTWThF; BlegH 115) Nimitz
Urban politics and issues facing American cities. Emphasis on political conflicts over economic and social problems.

1041. CONTEMPORARY POLITICAL IDEOLOGIES. (4 cr; IV MTWThF; BlegH 225) Fogelman
Major modern and contemporary ideologies such as liberalism, democracy, conservatism, socialism, communism, fascism, nationalism, imperialism, racism. Emphasis on adequacy of alternative ideologies for the analysis and solution of current political and social issues.

1051. INTRODUCTION TO POLITICAL ANALYSIS. (5 cr; III-IV TWTh; AndH 330) Kvavik
Topics such as formation of political communities, political participation, policy making, compliance, legitimacy, political development, types of political systems. Emphasis on empirical and normative problems. Applications to major contemporary systems.

5308. LEGISLATIVE PROCESS. (4 cr; prereq 1001 or §; II MTWThF; BlegH 135) Eyestone
The American Congress and state legislatures; internal organization, the committee system, party leadership, relationships with executives and administrative agencies; legislative policy making; interest group, party, and constituency influences on the legislative process.

5309. JUDICIAL PROCESS. (4 cr; prereq 1001 or §; III MTWThF; BlegH 225) Krislov
Structure of American judiciary; selection of judges; process of litigation; influences on judicial decisions; impact of and compliance with decisions; role of Supreme Court in American political system.

5454. CHINESE GOVERNMENT AND POLITICS. (4 cr; prereq 1051 or 12 cr in social science or §; III MTWThF; BlegH 135) Turner

Traditional Chinese society; the fragmentation of China and the rise of the Communist power; sources and nature of Communist Chinese ideology; institutional character of the Communist party system; sources of power; role of the party and functional groups; patterns of change.

- 5662. RECENT POLITICAL THOUGHT.** (4 cr; open to jrs, srs, only; prereq 1051 or 9 cr in social science or §; V MTWThF; BlegH 205) Ball
Main currents from Marx to present, including socialist, anarchist, liberal, and conservative thought; problems such as alienation and political obligation.
- 5884. INTERNATIONAL POLITICS I.** (4 cr; II MTWThF; BlegH 225) Job
The structure of the international system: balance of power, bipolar systems, other types of international systems; theories of stability, change, conflict, and cooperation.

SECOND TERM

- 1001. AMERICAN GOVERNMENT AND POLITICS.** (5 cr; II-III TWTh; AndH 330) Shaw
See First Term.
- 1025. WORLD POLITICS.** (4 cr; IV MTWThF; BlegH 330) Walcott
Introduction to contemporary international relations; forms of state interaction; problems of conflict and cooperation.
- 5303. THE AMERICAN DEMOCRACY.** (4 cr; prereq 1001 or 6 cr in social science or §; II MTWThF; BlegH 130)
An integrated overview of the American political system, its institutions and processes. Political decision making, influence, and elites in American society. Evaluation and critical examination of the practice and reality of democracy in the United States.
- 5315. STATE GOVERNMENT.** (4 cr; prereq 1001 or §; III MTWThF; BlegH 125) Gray
Political institutions and behavior in American states; interstate comparisons and comparisons between state and national political systems.
- 5441. WESTERN EUROPEAN GOVERNMENT AND POLITICS.** (5 cr; prereq 1051 or 12 cr in social science or §; IV-V TWTh; BlegH 404) Morris
Political institutions in their social setting; problems of power and responsibility; governmental stability; political decision making, government and economic order.
- 5738. POLITICAL CAMPAIGNS AND ELECTIONS.** (4 cr; prereq 1001 or §; IV MTWThF; BlegH 215) Backstrom
National, state, and local campaigns and elections; fieldwork in local political parties and election campaigns.

Psychology (Psy)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1001. GENERAL PSYCHOLOGY.** (5 cr; prereq soph or 3rd-qr fr with B avg; 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; \$4 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, EltH 150
Sec 2, VI-VIII MF, VI-VII W, EltH 160
- 3031. SENSATION AND PERCEPTION.** (4 cr; prereq 1001, 1004; II MTWThF; EltH N119)
The psychological, biological, and physical aspects of sensory experience in humans and animals. Major emphasis on vision and hearing.
- 3201. INTRODUCTION TO SOCIAL PSYCHOLOGY.** (4 cr; prereq 1001; IV 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.
- 3801. INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS.** (4 cr; prereq 1001 or equiv; II MTWThF; AndH 310)

Quantification as it pertains to research problems in psychology. Descriptive and inferential statistics, including hypothesis testing and some nonparametric statistics. Examples from various substantive areas of psychology.

- 3970. DIRECTED STUDIES.** (1-8 cr; prereq §; hrs ar) Lofquist
Independent study or small seminars; designed to permit students to pursue their interests by special reading and/or study.
- 3990H. HONORS COURSE: PROJECT IN PSYCHOLOGY.** (Cr ar; prereq sr, §; hrs ar) Lofquist
Individual library study or empirical investigation.
- 5014. HUMAN LEARNING A.** (4 cr; prereq 1005, except for students in Honors sequence and grads; III MTWThF; EItH N119) Fox
Major processes and principles in human learning; verbal and perceptual-motor learning, transfer and memory. Feedback, abilities and performance prediction, facilitation and interference, retention and long-term memory.
- 5054. PSYCHOLOGY OF LANGUAGE.** (4 cr; prereq 3011, except for students in Honors sequence and grads; IV MTWThF; EItH N119)
Theories and experimental evidence involved in past and present conceptions of psychology of language.
- 5125-5126. DIFFERENTIAL PSYCHOLOGY.** (4 cr per qtr; prereq 5862 or §, honors candidate or grad; I-II MTWThF; Arch 30) 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.
- 5751. PSYCHOLOGY OF ADVERTISING.** (4 cr, §Jour 5251; prereq 1001; IV MTWThF; SciCB 375)
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 8503 or §; hrs ar)
Counseling experience with students in an academic setting; emphasis on educational, vocational, and personal problems of college students.
- 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 students in clinical psychology program, ICI Psy 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)
- 8990*. RESEARCH PROBLEMS.** (Cr and hrs ar) Lofquist

SECOND TERM

- 1001. GENERAL PSYCHOLOGY.** (5 cr; prereq soph or 3rd-qtr fr with B avg; I-II MTWThF; NH 45)
See First Term.
- 1005. INTRODUCTORY LABORATORY PSYCHOLOGY.** (4 cr; each section limited to 24 students; prereq soph, 1004; \$4 lab fee)
See 1004 First Term.
Sec 1, II-IV MF, II-III W, EItH 50
Sec 2, VI-VIII MF, VI-VII W, EItH 60
- 3011. INTRODUCTION TO PSYCHOLOGY OF LEARNING.** (4 cr; prereq 1001, 1005 or Biol 1107 or §; III MTWThF; NH 45) Peterson
Basic methods in study of learning. Fundamental concepts and principles governing the learning process.
- 3061. INTRODUCTION TO PHYSIOLOGICAL PSYCHOLOGY.** (4 cr, §5061; prereq 1001, 1005 or Biol 1011 or §; VII MTWThF; EItH N119) Roberts
Neural mechanisms of motivation, emotion, sleep-wakefulness cycle, learning, and communication in animals and humans.

- 3101. INTRODUCTION TO PERSONALITY.** (4 cr, §5101; prereq 1001; III MTWThF; SciCB 325)
Tellegen
Concepts of personality, personality theory, empirical research in the field of personality, personality assessment.
- 3604. INTRODUCTION TO ABNORMAL PSYCHOLOGY.** (4 cr, §5604-5605; prereq 1001; II MTWThF; SciCB 325) Devine
Surveys the field of abnormal psychology. Etiologies of behavioral disorders; available treatment.
- 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.
- 5011. THEORIES OF LEARNING AND COGNITION.** (4 cr; prereq 3011, except for students in Honors sequence and grads; III MTWThF; Elth N119) Carlson
Major theories of learning and contemporary theories of information processing and cognition.
- 5071. ANIMAL PSYCHOLOGY.** (4 cr; prereq 1001, 1005, or equiv in another science; I MTWThF; Elth N119)
Historical, philosophical, and biological foundations; consciousness; motivation; learning; reasoning; judgment; abnormal behavior; social influences.
- 8519. PRACTICUM IN REHABILITATION COUNSELING.** (3 cr; prereq 8503 or §; hrs ar)
See First Term.
- 8520. FIELDWORK IN APPLIED PSYCHOLOGY.** (Cr ar; prereq §; hrs ar)
- 8540. INTERNSHIP IN COUNSELING PSYCHOLOGY.** (Cr ar; prereq §; hrs ar)
- 8614. PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT.** (2 cr; prereq students 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)
- 8990.* RESEARCH PROBLEMS.** (Cr and hrs ar) Lofquist

Public Affairs (PA)

FIRST TERM

- 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 which currently confront Minnesota's governmental units.
- 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.

SECOND TERM

- 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.

SPECIAL TERM: AUGUST 23-SEPTEMBER 24

Primarily for incoming graduate students but open to all. The quantitative methods course, a prerequisite to the school's core sequence, is concerned with sources of quantitative data, descriptive statistics, probability, and statistical inference; students engage in empirical work using statistical methods. The microeconomics course will be taught by a public affairs faculty member and will have a public policy emphasis.

PA 8205. QUANTITATIVE METHODS FOR POLICY ANALYSIS. (3 cr; II MTWTh; BlegH 415)

Econ 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD. (3 cr; prereq Econ 1001, 1002, 1 qtr calculus, grad or §; III MTWThF; BlegH 415) Kudrle

Religious Studies (ReIS)

FIRST TERM

1035. RELIGIONS OF THE TWENTIETH-CENTURY WORLD: CHRISTIANITY. (4 cr; II MTWThF; FolH 302) Kraabel

Thought and institutions of Christianity, with emphasis on the present. 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.

5970. DIRECTED STUDIES. (3-5 cr; prereq Δ) Kraabel, Tapp

Scandinavian

Scandinavian (Scan)

FIRST TERM

3602. THE TALES OF HANS CHRISTIAN ANDERSEN. (4 cr; I MTWThF; FolH 209) Mishler
Hans Christian Andersen's stories and tales (read in English).

5601. INGMAR BERGMAN. (4 cr; III MTTh, FolH 201; III-IV WF, MNH aud) Mishler
Viewing of six of Bergman's films, reading of film scripts, and discussion.

5614. THE DRAMA OF IBSEN AND STRINDBERG. (4 cr; prereq § for majors; I MTWThF; FolH 202)
Stockenström
Selected plays of Scandinavia's two major dramatists, in the context of modern theatre (readings in translation for nonmajors).

Swedish (Swed)

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 courses in the Summer Session.

1106-1107†. INTENSIVE BEGINNING SWEDISH. (15 cr for both terms, §1101-1102-1103; prereq a second language or §; I-IV MTWThF; KoltH S135)
Use of computer and other teaching aids to develop mastery of Swedish equal to that achieved in 1101-1102-1103.

Slavic and East European Languages

Russian (Russ)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

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 courses in the Summer Session.

- 1101-1102-1103†. BEGINNING INTENSIVE RUSSIAN.** (15 cr for both terms; I-III MTWThF; EItH N631) Donchenko, Polakiewicz
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 100 students; I-II MTWThF; AndH 210) Frumkin
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.
- 5101. INTRODUCTION TO SOCIAL POLICY: SOCIAL WELFARE PERSPECTIVES.** (3 cr, §3101; limited to 30 students; prereq § for undergrads; I-II MWF; ForH 160) Hoshino
Open to students who lack undergraduate education in the social welfare institutional structure. Basic concepts and perspectives necessary for understanding and analyzing social welfare programs.
- 8010. FIELD INSTRUCTION I.** (4 cr or cr ar by permission of instructor; prereq §; hrs ar) Peterson
- 8020. FIELD INSTRUCTION II.** (4 cr or cr ar by permission of instructor; prereq 8010; hrs ar) Peterson
- 8310. SEMINAR: SOCIAL WORK ADMINISTRATION.** (Cr ar; prereq 8301 or §; I-II MF) Staff
- 8407. SOCIAL CASEWORK: FAMILY THERAPY.** (3 cr; limited to 30 students; prereq 8401 or §; II-IV TTh; ForH 175) Peterson
Seminar in methods and techniques of helping families cope with interpersonal problems.

SECOND TERM

- 3984. INTRODUCTION TO COMMUNITY DEVELOPMENT.** (4 cr; limited to 35 students; prereq 1001 or §; III-IV MWF; BlegH 260) Frumkin
The trends, pace, and dynamics that dominate urban communities; strategies used to achieve neighborhood goals; factors which control and influence change in planning. Action on the community level.
- 5010. SEMINAR—SPECIAL TOPICS.** (3 cr; each section limited to 30 students; prereq 1001, 3005, jr, sr or grad major in social work)
Sec 1, Race, Class, and Sex: Implications for Social Work Practice, II-IV TTh, BlegH 105, Boyd
Selected theoretical formulations on the nature and form of racism, sexism, and classism in America as they affect personal, intragroup, and intergroup relationships between Blacks and Blacks and Blacks and Whites. Historical perspective employed to better understand the dynamics as they operate today. Institutional analysis and some social, economic, and political perspectives as the theoretical underpinnings of Black/White relationships. Cognitive and experiential approaches to learning.

Sec 2, Maslow and Social Work Practice, VI-VII MWF, BlegH 260, Newhouse

Possible import for social work practice of the humanist point of view with emphasis on Maslow's growth concepts and self-actualization. Comparable growth concepts of other writers, including Rogers and Horney.

- 5201. THEORIES OF HUMAN GROWTH AND CHANGE: IMPLICATIONS FOR SOCIAL WORK.** (3 cr, §3004; limited to 30 students; open to entering social work grad students who have not completed a CSWE-accredited undergrad social work concentration; prereq § for undergrads; II-IV MWF; BlegH 105) Newhouse
Concepts of human growth and change; various theories of human behavior and their implications for social work practice; frame of reference within which students may view individuals in their life's cycle.
- 5401. INTERVENTIVE METHODS IN SOCIAL WORK PRACTICE.** (3 cr, §3005; limited to 30 students; open to entering social work grad students who have not completed a CSWE-accredited undergrad social work concentration; prereq § for undergrads; VI-VII MWF; BlegH 340) Compton
General concepts, functional concepts, strategies, and actions of social work practice. The "problem-solving approach" as a framework for analyzing and dealing with situations of concern to social work.
- 8010. FIELD INSTRUCTION I.** (4 cr or cr ar by permission of instructor; prereq §; hrs ar) Yesner
- 8020. FIELD INSTRUCTION II.** (4 cr or cr ar by permission of instructor; prereq 8010; hrs ar) Yesner
- 8310. SEMINAR: SOCIAL WORK ADMINISTRATION.** (Cr ar; prereq 8301 or §; I-II MF) Staff
- 8406. SUPERVISION AND CONSULTATION IN SOCIAL WORK PRACTICE.** (3 cr; limited to 30 students; prereq 8200, 8401 or §; I-II MWF; ForH 175) Crompton
Principles and practices of supervision and consultation for staff development and fulfillment of agency purpose.
- 8450. SEMINAR IN THE PERSONAL SOCIAL SERVICES: Futurism and Social Work Planning and Practice.** (Cr ar; limited to 30 students; prereq 8401, 6 cr in personal social services, or §; V-VI MWF; BlegH 255) Crompton
Futuristic questions such as: How and why do we look at the future? What is happening? What might happen? And, from a social work perspective, what ought to happen?

Sociology (Soc)

FIRST TERM

- 1001. INTRODUCTION TO SOCIOLOGY.** (4 cr; III MTWThF; BlegH 235) McLaughlin
A survey of the main substantive fields of sociology for nonprospective sociology majors. Illustrative material drawn from current social problem areas.
- 1002. AMERICAN COMMUNITY.** (4 cr; IV MTWThF; BlegH 205) Aldrich
Sociological analysis of modern American society. Distribution of population, urban-rural differences, social factors in business systems, occupational groups, determination of social status, and minority group adjustment.
- 3101. ELEMENTS OF CRIMINOLOGY.** (4 cr; prereq 1001 or 3505, 3506 or §; II MTWThF; AndH 230) Friedmann
General survey of field of criminology.
- 3405. INEQUALITY: INTRODUCTION TO STRATIFICATION.** (4 cr; prereq 1001; IV MTWThF; BlegH 120) M Carter
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 life-styles.
- 3501. THE FAMILY SYSTEM.** (4 cr; prereq 1001 or 3505, 3506; I MTWThF; BlegH 255) McLaughlin
Evolution of family development of unity or disunity, roles of the several members of family, methods of investigation of family.
- 3506. PRINCIPLES OF SOCIAL PSYCHOLOGY.** (5 cr; prereq 1001 and 3801 or equiv; \$4 lab fee; one 3-hr lab [T or Th] to be assigned first day of class; lect II MWF; BlegH 255) Lauderdale
Ideas and findings related to social psychology; experience in developing empirically based knowledge in social science.
- 3801. SOCIOLOGICAL METHODS I: DESCRIPTIVE STATISTICS.** (5 cr; some beginning algebra recommended; \$4 lab fee; two 1-hr labs to be assigned first day of class; lect II MTWThF; BlegH 120) M Carter

Descriptive statistics as utilized in analysis of sociological data, measures of central tendency, deviation, correlation and regression graphs, simple treatment of three and four variables, probability.

- 5111. SOCIOLOGY OF DEVIANT BEHAVIOR.** (4 cr; prereq 3101 or §; III MTWThF; BlegH 155) 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; prereq 1001 or 3505, 3506 or §; III MTWThF; BlegH 255) 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.
- 5601. URBAN SOCIOLOGY.** (4 cr; prereq 1001 or 3505, 3506 or §; VI MTWThF; BlegH 135) Aldrich
Cities, urban ecology; urban institutions and urban way of life.
- 5711. ELEMENTS OF SOCIOLOGICAL ANALYSIS.** (4 cr; prereq 9 cr in sociology; IV MTWThF; BlegH 330) Reynolds
Premises upon which social theories are developed. Construction of social theory.
- 5953. SOCIOLOGY OF EDUCATION.** (3 cr, §Hed 5190; prereq 1001 or 3505, 3506 or §; III MTWThF; BlegH 404) Weidman
Advanced studies in social aspects of education including school as socialization process, social structure of education, role of school in social change. Emphasis on theory and empirical research.
- 5958. SOCIOLOGY OF HIGHER EDUCATION.** (3 cr, §Hed 5192; prereq 5953 or HEd 5190; IV MTWThF; BlegH 360) Weidman
Advanced studies in social aspects of higher education including socialization of students, comparative institutional organization, role structure. Emphasis on theory and empirical research.

SECOND TERM

- 1001. INTRODUCTION TO SOCIOLOGY.** (4 cr; II MTWThF; AndH 230) Grasmick
See First Term.
- 3101. ELEMENTS OF CRIMINOLOGY.** (4 cr; prereq 1001 or 3505, 3506 or §; I MTWThF; AndH 230) Hollinger
See First Term.
- 3405. INEQUALITY: INTRODUCTION TO STRATIFICATION.** (4 cr; prereq 1001; II MTWThF; BlegH 235) Nowak
See First Term.
- 3503. SEX, ROMANCE, AND RELATIONSHIPS.** (4 cr; prereq 1001; V MTWThF; BlegH 155) Howery
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; investigation of sexual deviance for light it sheds on sexual norms.
- 3505. PRINCIPLES OF SOCIAL ORGANIZATION.** (5 cr; prereq 1001 and 3801 or equiv; two 1-hr labs to be assigned first day of class; lect III MWF; BlegH 335) Grohoski
Basic concepts, substantive materials, and general issues in the area of social organization.
- 3802. SOCIOLOGICAL METHODS II: STATISTICAL INFERENCE.** (5 cr; prereq 3801 or equiv; \$4 lab fee; two 1-hr labs to be assigned first day of class; lect IV MTWThF; BlegH 255) T Anderson
Statistical inference probability, hypothesis tests, use of statistical reasoning in analysis of sociological data.
- 5301. SOCIAL MOVEMENTS.** (4 cr; IV MTWThF; BlegH 115) van Giffen
Factors underlying social change in modern mass society. Recent research on social movements, reform and revolution, culture contact, impact of rapid technological change. Individual and social structures under rapid social change.
- 5401. SOCIAL ORGANIZATION.** (4 cr; prereq 1001 or 3505, 3506 or §; III MTWThF; BlegH 255) Grasmick
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.
- 5601. URBAN SOCIOLOGY.** (4 cr; prereq 1001 or 3505, 3506 or §; II MTWThF; BlegH 135) T Anderson
See First Term.

South Asian Studies

Indic (Indc)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

5530. TOPICS ON INDIAN CIVILIZATION—June 14-25. (4 cr; limited to 20 students; prereq secondary school teacher and §; 9:00-12:00 MTWThF; OMWL SB10) Gross, Junghare, Malandra, staff

An introduction to Indian civilization designed for secondary school teachers. Survey of the traditional culture and current developments in the Indian subcontinent; development of a curriculum for teaching about India at the secondary school level.

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 25 students)

Emphasis on speaking and understanding Spanish; careful attention to pronunciation; gradual introduction of writing and reading skills; basic grammar; cultural aspects of language and civilizations of Spain and Spanish America.

Sec 1, I-II MTWThF, FoH 104

Sec 2, I-II MTWThF, FoH 105

Sec 3, I-II MTWThF, KoltH S137

1102. BEGINNING SPANISH: ORAL APPROACH. (5 cr; limited to 25 students; prereq 1101 or 1 yr high school Spanish; II-III MTWThF; KoltH S138)

See 1101.

1103. BEGINNING SPANISH: ORAL APPROACH. (5 cr; limited to 25 students; prereq 1102 or 2 yrs high school Spanish; II-III MTWThF; Ex 193)

See 1101.

1104. INTERMEDIATE SPANISH, ORAL APPROACH: INTERPRETATION OF MODERN PROBLEMS. (4 cr; limited to 25 students; prereq 1103 or 3 yrs high school Spanish; 9:40-11:05 MTWThF; VH 213)

Continued emphasis on speaking and comprehension; development of reading and writing skills based on materials from Spain and Spanish America dealing with current issues of worldwide concern. Grammar review; frequent compositions and oral presentations to build active and passive vocabulary.

3001. SPANISH PRONUNCIATION: STANDARD, COLLOQUIAL, DIALECTAL. (2 cr; limited to 20 students; prereq 1105 or §; II MWF; FoH 306) Mantini

The study and practice of correct contemporary standard Spanish pronunciation through a series of combined 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.

3601. SPANISH AMERICA: REVOLUTION AND THE NEW LITERARY CONSCIOUSNESS. (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; FoH 202) Vidal

Avant-garde movements in Latin American fiction and how they correspond to the revolutionary trends prevailing in Spanish-speaking countries; famous novels translated into English.

- 3930. TOPICS IN HISPANIC LANGUAGES: METHODS OF TRANSLATION.** (4 cr; limited to 25 students; prereq 3104 or Δ ; III MTWThF; FoH 205) Grimes
Problems and techniques in translating written language from English to Spanish and vice versa. Linguistic analysis and practice in a variety of styles including creative works of literature, commercial and technical material, and writings in the fields of law, medicine, journalism, and the social sciences. Oral skills and techniques for successive and simultaneous interpreting.
- 5562. SPANISH-AMERICAN DRAMA.** (4 cr; prereq three 3xxx-5xxx-level Spanish or Portuguese literature courses or Δ ; V MTWThF; FoH 205) Vidal
Development of drama in Spanish America from conquest to present. Origins of theatre from colonial period to the nineteenth century; analysis of various trends in twentieth century beginning with rise of national theatres. Includes Sanchez, Usigli, Gobson Parra, Nale Roxlo, Arrivi, Soleri, Swayne, Salazar Bondy, Gorostiza, Marques, Wolff, Diaz, Vodanovic, Triana.
- 5910. TOPICS IN SPANISH AND SPANISH-AMERICAN LITERATURE.** (4 cr; prereq 3104 or Δ ; VI MTWThF; FoH 207) Zahareas
Major issues in or approaches to Spanish or Spanish-American literature; important groups, movements, trends, issues, methods, genres.
- 5970. DIRECTED READINGS.** (1-5 cr; 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. For M.A., Ph.D. candidates.
- 8930. SEMINAR IN LINGUISTICS: OLD SPANISH AND MEDIEVAL TEXTS.** (4 cr; IV MTWThF; FoH 208) Mantini
Linguistic, literary, and cultural factors that characterize the language of literary and other medieval documents within their time frame and stage of development. Distinctive features of medieval Iberian languages; reading original Spanish, Catalan, Galaico-Portuguese texts. For linguistics and literature graduate students.
- 8970. DIRECTED READINGS IN ROMANCE LANGUAGES.** (Cr and hrs ar) 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. Mainly for Ph.D. candidates.

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 courses in the Summer Session.

- 1101-1102-1103. BEGINNING SPANISH.** (15 cr for both terms; each section limited to 20 students; registration by permission only)
See First Term.
Sec 5, I-II MTWThF, VH 206
Sec 6, I-II MTWThF, VH 209

SECOND TERM

- 1101. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 25 students; I-II MTWThF; FoH 203)
See First Term.
- 1102. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; each section limited to 25 students; prereq 1101 or 1 yr high school Spanish)
See 1101 First Term.
Sec 1, II-III MTWThF, FoH 108
Sec 2, II-III MTWThF, FoH 302
- 1103. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 25 students; prereq 1102 or 2 yrs high school Spanish; II-III MTWThF; FoH 105)
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; 10:40-12:05 MTWThF; VH 213) Baker
See 1104 First Term.

1502. CULTURE, CIVILIZATION OF LATIN AMERICA: INDIAN, EUROPEAN-COLONIAL, AFRICAN ROOTS. (4 cr [cr does not count toward Spanish or Portuguese major]); limited to 25 students; taught in English; IV MTWThF; LindH 215) Cuneo

The cultural manifestations and societal changes resulting from the meeting and blending of three races and civilizations in the New World. Major pre-Columbian societies, Spanish and Portuguese conquest of America, and colonial life through the 18th century.

3021. ADVANCED COMPOSITION, COMMUNICATION SKILLS: POLISHING SPEECH, WRITING SKILLS. (5 cr; limited to 20 students; prereq 3014 or §; II-III MTWThF; FolH 103) Jones

Designed to perfect students' oral and written expression in Spanish; selections from the works of Spanish and Spanish-American authors as models for weekly compositions and periodic brief oral presentations.

3610. TOPICS: SPANISH, SPANISH-AMERICAN LITERATURE IN TRANSLATION: CONTEMPORARY LATIN AMERICAN WRITERS. (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; III MTWThF; FolH 204) Floripe

5373. THE CONTEMPORARY SPANISH NOVEL SINCE THE CIVIL WAR. (4 cr; prereq one 3xxx-5xxx-level Spanish or Portuguese literature course and Δ; V MTWThF; FolH 204) Sullivan

Major currents in postwar fiction—"tremendismo," the various realisms, resurgence of interest in narrative modes and techniques, effects of censorship, political exile, foreign influences, literary commercialism. Cela, Delibes, Goytisolo, Martín-Santos, Sánchez-Ferlosio, Sender, Ayala, Benet, and others.

5553. CONTEMPORARY SPANISH-AMERICAN POETRY. (4 cr; prereq one 3xxx-5xxx-level Spanish or Portuguese literature course and Δ; VI MTWThF; FolH 205) Madrid

Development of Spanish-American poetry after Modernismo: Borges, Carrera Andrade, Gorostiza, Guillen, Lopez Velarde, Mistral, Neruda, Parra, Paz, Vallejo, et al. Overview of major trends but concentration on a few representative poets. Art of individual poems in their historical context. Social background of poets. Aesthetics and commitments.

5713. THE STRUCTURE OF MODERN SPANISH: SYNTAX. (4 cr; limited to 25 students; prereq 3021 or §3021 or §; IV MTWThF; FolH 305) Narvaez

Scientific approach to the structure of present-day Spanish: syntax, phonology, word formation, and dialectal differences. Different types of grammars analyzed in terms of basic Spanish structure. Dialect differences in Spanish syntax. Problems English speakers have in Spanish. Pertinent for those who plan to teach Spanish language.

5970. DIRECTED READINGS. (1-5 cr; 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 TERM

3603. MODERN, CONTEMPORARY BRAZILIAN PROSE FICTION: POLITICAL, SOCIAL CONTENT. (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]); limited to 25 students; V MTWThF; FolH 202) Hamilton

For students who do not speak Portuguese. The novel and the short story as a reflection of contemporary Brazilian society and as an innovative art form within the broad confines of world literary expression. Modern Brazilian fiction translated into English.

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 courses in the Summer Session.

- 1001-1002-1003. BEGINNING PORTUGUESE.** (15 cr for both terms; limited to 20 students; II-III MTWThF; VH 203) Sousa
Emphasis on speaking and understanding Portuguese; careful attention to pronunciation (Brazilian speech stressed); gradual introduction of 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 activities see the High School Forensics Workshop and 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. Opportunities for individual speaking.
Sec 1, I MTWThF, FoIH 307, Hart
Sec 2, II MTWThF, FoIH 307, Dotlich
- 1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS.** (4 cr; IV MTWThF; FoIH 308) Garvin
Identification and analysis of variables in intrapersonal, interpersonal, and group communication.
- 3201. INTRODUCTION TO BROADCASTING PRODUCTION.** (4 cr; limited to 18 students; \$4 lab fee; V MTWThF; RarigC 610) Rarick
Fundamentals of practice and theory. Projects and exercises in performance and scripting; studio equipment and procedures.
- 3203. RADIO PRODUCTION.** (4 cr; limited to 18 students; prereq 3201; \$4 lab fee; IV MTWThF; EdH Radio Studio) Goldstein
Equipment and staff organization; program design and presentation. Directed experience in organization, writing, production, direction, and performance of radio news, music, dramatic, and documentary programs.
- 3211. DETERMINANTS OF BROADCAST PROGRAMMING.** (4 cr; II MTWThF; FoIH 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; I MTWThF; FoIH 306) Jensen
Theoretical systems intended to explain or direct the creation of public discourse. From traditional rhetoric to contemporary perspectives. Using theory to explain the practice of public discourse.
- 3641. DISCUSSION AND CONFERENCE METHODS.** (4 cr; limited to 30 students; prereq 1101 or 1101H or §; III MTWThF; FoIH 306) Elliott
Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings.
- 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 [may be repeated once]; cr does not count toward speech-communication major; prereq §, Δ)
Directed study through teaching others. Students work with an instructor in planning and teaching an undergraduate course.
- 5232. INTERNATIONAL BROADCASTING.** (4 cr; prereq 12 cr political science or §; III MTWThF; FoIH 305) Browne
Broadcasting as an international medium of communication in the U.S., Great Britain, U.S.S.R., Japan, other countries. Theories of informing and persuading through direct broadcast and regional and international exchange of programs; international and regional regulatory agreements; current problems in spectrum control; social and legal implications of broadcasting via satellite.

- 5404. LANGUAGE, CULTURE, AND EDUCATION.** (4 cr, §SeEd 5404; limited to 20 students; prereq 1102, 3401 or §; II MTWThF; PeikH 225) Piche
Psychological and social-psychological perspectives for study of language-communication; dimensions of language variation (dialects, codes, registers); implications for program development and instructional practices.
- 5411. SMALL GROUP COMMUNICATION.** (4 cr; limited to 30 students; A-N only; prereq 3641 or §; IV MTWThF; FolH 306) Elliott
Communication and dynamics within the small, task-oriented group. Group cohesiveness, leadership, role structure, information processing, and decision making.
- 5414. AUTHORITY AND POWER IN TASK-ORIENTED COMMUNICATION—June 15-26.** (4 cr; limited to 40 students; S-N only; prereq 3641 or §; 3:00-5:00 June 15-18, 21-25, 9:00-5:30 June 19-20, 26; FolH 308) Shapiro
Authority and power in task-oriented groups. Tavistock-type small group, intergroup, and large group laboratory experiences. Verbal and nonverbal processes which operate in and among groups to facilitate or inhibit effective leadership and followership. See Special Programs section.
- 5422. INTERVIEWING AND COMMUNICATION.** (4 cr; limited to 30 students; prereq 1101, 6 cr in social science or §; III MTWThF, FolH 307) Rarick
Theory and practice of communication in the information interview. Role of interpersonal perception, empathy, and cognitive structure in dyadic communication. Experience in interviewing and communication analysis. Applications to research in interpersonal and mass communication.
- 5615. INTRODUCTION TO RHETORICAL CRITICISM.** (4 cr; prereq 1101 or 1101H...3601 recommended; II MTWThF; FolH 304) Garvin
Traditional and contemporary rhetorical theory and its application to contemporary public address.
- 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.
- 6110. SEMINAR: ADVANCED SPEECH PROBLEMS.** (3 cr; prereq undergrad major in speech-communication or equiv. §; V-VI M; FolH 307) Elliott
Evaluation of research methods in speech-communication.
- 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 each section; limited to 24 students)
See First Term.
Sec 1, I MTWThF, FolH 306, Hariman
Sec 2, II MTWThF, FolH 307, Soldow
- 1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS.** (4 cr; II MTWThF; FolH 306) Scott
See First Term.
- 3201. INTRODUCTION TO BROADCASTING PRODUCTION.** (4 cr; limited to 18 students; \$4 lab fee; V MTWThF; RarigC 610) Bart
See First Term.
- 3204. TELEVISION PRODUCTION.** (4 cr; limited to 18 students; prereq 3201; \$4 lab fee; VI MTWThF; RarigC 610) Bart
Problems of production. Equipment and staff organization; interrelationships with program design. Exercises in production.
- 3401. THEORIES OF INTERPERSONAL COMMUNICATION.** (4 cr; prereq 1102, Psy 1001, or §; III MTWThF; BlegH 250) Geizer
Theories of interpersonal communication and their usefulness for particular purposes.
- 3605. PUBLIC SPEAKING.** (4 cr; limited to 22 students; prereq 1101; IV MTWThF; FolH 306) Scott
Preparing and presenting public speeches; directed practice; function of public speaking in contemporary life.
- 3970. DIRECTED STUDY IN SPEECH-COMMUNICATION.** (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 [may be repeated once; cr does not count toward speech-communication major]; prereq §, Δ)
See First Term.
- 5405. NONVERBAL COMMUNICATION.** (4 cr; I MTWThF; BlegH 155) Geizer
Nonverbal (extralinguistic) elements and dimensions of interpersonal communication: gesture, facial expression, posture, clothing, and environment.
- 5411. SMALL GROUP COMMUNICATION.** (4 cr; limited to 25 students; A-N only; prereq 3641 or §; III MTWThF; FolH 306) Bormann
See First Term.
- 5431. THE PROCESS OF PERSUASION.** (4 cr; prereq 1102, Psy 1001; IV MTWThF; FolH 406) Howell
Theories of modern motivational communication. The process of social control through persuasive speech.
- 5618. HISTORY AND CRITICISM OF AMERICAN PUBLIC ADDRESS.** (4 cr; prereq 1101 or 1101H, Psy 1001; IV MTWThF; FolH 307) Bormann
Survey: history and criticism of political speaking in the United States from the time of the Revolution to the present.
- 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 306) Howell
Contemporary public address. Literature of persuasion; methods in study of persuasion.
- 8613. SEMINAR IN RHETORIC.** (3 cr; prereq 5611 or §; V-VI MW; FolH 406) Scott
History and critical study of rhetorical theory. Examination of research in rhetoric.
- 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 313)
Presentation and analysis of data. Probabilistic models for inference. Types of inference and decision procedures. Emphasis on concepts rather than computation.
- 5121. THEORY OF STATISTICS.** (4 cr, §5131-5132-5133; prereq Math 1231 or equiv; III TTh, IV MTWThF; VH 313)
Random variables and probability distribution, moments, central limit theorem, sampling, estimation.

SECOND TERM

- 3091. INTRODUCTION TO PROBABILITY AND STATISTICS.** (4 cr, §5121, §5131; prereq differential and integral calculus; II MTWThF, III WF; VH 313)
Elementary probability and probability distributions, sampling and elements of statistical inference. More mathematical treatment than 1051.
- 5122. THEORY OF STATISTICS.** (4 cr, §5131-5132-5133; prereq Math 1231 or equiv; III TTh, IV MTWThF; VH 313)
Confidence intervals, testing hypotheses, regression, ANOVA, sequential and nonparametric methods.~

Theatre Arts (Th)

Courses with limited enrollment must be reserved in 12 Johnston Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1101. INTRODUCTION TO THEATRE ARTS.** (4 cr; II-III TWTh; RarigC 190) Ballet
History and theory of plays and playwrights.

- 1321. BEGINNING ACTING: CREATIVE APPROACH.** (4 cr; limited to 20 students; prereq 1504 or ¶1504 and soph or 3rd-4th yr; IV-V MTWThF; RarigC 10)
Creation and presentation of original scenes and skits. Response to imaginative situations.
- 1326. BEGINNING ACTING: TECHNIQUE.** (4 cr; limited to 20 students; prereq 1321; I-II MTWThF; RarigC 10) Moulton
Fundamentals of body movement, rhythms, and acting technique. Individual and group performances.
- 1502. MAKEUP FOR THE ACTOR.** (2 cr; limited to 20 students; prereq 1504 or ¶1504; VI-VII MTWTh; RarigC 45)
Theory and practice in the art of stage makeup.
- 1504. ELEMENTS OF TECHNICAL THEATRE.** (4 cr; prereq 1101 or ¶1101; II-III MF; RarigC 190; lab ar) Brockman
The practice of the arts and crafts of the theatre: scenery construction and painting, stage operation, theatre lighting, costuming.
- 3311. VOICE PRODUCTION FOR THE THEATRE.** (2 cr; limited to 20 students; prereq 1321 or ¶1321; \$4 lab fee; III MTWThF; RarigC 20) Nash
Physical exercises to free the human voice from inhibitions and tensions. Work on prose, poetry, and drama. Vocal exercises with piano.
- 3312. VOICE PRODUCTION FOR THE THEATRE.** (2 cr; limited to 20 students; prereq 1321 or ¶1321; \$4 lab fee; IV MTWThF; RarigC 20) Nash
See 3311.
- 3412. HONORS COURSE: TUTORIAL SEMINAR IN THEATRE ARTS.** (0-3 cr [limited to 3 cr for cum laude and magna cum laude . . . 3412x up to 3 cr for summa cum laude]; prereq theatre arts honors candidate and Δ)
Independent reading and research in selected fields in preparing honors thesis or creative project.
- 3515. TECHNICAL THEATRE PRODUCTION II.** (4 cr; prereq 1504; IV-V MTWTh; RarigC 190; lab ar) Montgomery, Phillips
Theory and practice of design and execution of stage costuming and lighting.
- 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 Δ, consent of theatre practicum committee) Montgomery
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 per qtr [9 cr max]; prereq §; S-N only) Adey
Participation in the rehearsals and performances of a major University Theatre production.
- 5171. HISTORY OF THEATRE.** (4 cr; prereq sr or grad theatre major or §; II-III MWF; RarigC 185) Gadberry
Plays, arts, and crafts of the theatre from ancient and medieval times. Reports and projects.
- 5334. ACTING FOR THE MUSIC-THEATRE.** (4 cr; limited to 20 students; prereq Mus 5470 and §; \$4 lab fee; IV-V MTWThF; RarigC 185) Balk
Acting and staging problems in music-theatre.
- 5512. ADVANCED PROBLEMS IN COSTUMING.** (4 cr; prereq 3515, 3711 or §; II-III MTWTh; RarigC 275; lab ar) Phillips
Theory and design of costumes; special projects.
- 5711. STAGE DIRECTION.** (4 cr, §3708, §3711; limited to 20 students; prereq 1321, sr and grad students only; VI-VII MTWTh; RarigC 185) Adey
Theory of direction: concept and analysis. Exercises in blocking and production of short scenes.
- 5714. STAGING THE HIGH SCHOOL MUSICAL COMEDY.** (4 cr; prereq secondary education major or tchg exper or §) Plut
Class experience simultaneously with high school students staging the musical comedy, including solo and group composition of musical numbers. The organic relation of form and content. Compositional elements: rhythm, dynamics, space, body design and gesture. Coordination of the total musical comedy.
- 5716. STAGE MANAGEMENT FOR THE THEATRE.** (4 cr; prereq written permission only; hrs ar) Montgomery
Stage management as a specialized area of theatre. Theory and technique of rehearsal and performance, organization and management in educational, repertory, and regional theatre.

- 5718. THEATRE MANAGEMENT AND PROMOTION.** (4 cr; prereq 1504 or ¶1504 or §; VI-VII MTWTh; RarigC 75) Loppnow
Theory and practice in ticket office procedures, house management, publicity, and promotion; special problems in college, community, children's, and professional theatre.
- 5823. ORAL INTERPRETATION OF SHAKESPEARE.** (4 cr; limited to 25 students; prereq 3801 or grad; II-III MWF; RarigC 210) Thompson
Trends in the oral performance of Shakespeare's plays on the stage and the reader's platform. Recordings and criticism of Shakespearean theatre. Performance of selected scenes.
- 5970. DIRECTED READINGS.** (2-6 cr; prereq 9 cr in theatre, § and Δ) Staff
Directed reading and preparation of reports on selected subjects.
- 8101. INTRODUCTION TO RESEARCH.** (3 cr; required of all theatre arts majors; prereq theatre major or §; II-III TTh; RarigC 75) Gadberry
Graduate research in theatre arts; selection of topics and methods of investigation.
- 8311. VOICE PRODUCTION FOR THE THEATRE.** (3 cr; limited to 20 students; prereq grad and theatre major; \$4 lab fee; I MTWThF; RarigC 20) Nash
See 3311.
- 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/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.

SECOND TERM: JULY 19-AUGUST 6

- 3412. HONORS COURSE: TUTORIAL SEMINAR IN THEATRE ARTS.** (0-3 cr [limited to 3 cr for cum laude and magna cum laude... 3412x up to 3 cr for summa cum laude]; prereq theatre arts honors candidate and Δ)
See First Term.
- 3801. ORAL INTERPRETATION OF FICTION.** (4 cr; limited to 25 students; prereq 1101 or 1804 or Spch 1101 or §, jr; III-V MWF, III-IV TTh; RarigC 210) Fredricks
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 Δ, consent of theatre practicum committee) Josal
See First Term.
- 5110. THEATRE PERFORMANCE.** (1 cr per qtr [9 cr max]; prereq §; S-N only) Adey
See First Term.
- 5115. PLAYWRITING.** (4 cr; prereq 1321 or §; VI-VII MTWThF; RarigC 20) Nichols
Groundwork in the established techniques of the well-made play, followed by use of more experimental forms of one-act plays.
- 5172. HISTORY OF THEATRE.** (4 cr; prereq sr, or grad theatre major or §; I-II MTWThF; RarigC 210) Nolte
Plays, arts, and crafts of the theatre from Renaissance through mid-19th century. Reports and projects.
- 5188. AMERICAN THEATRE.** (4 cr; prereq sr or grad theatre major or §; VI-VII MTWThF; RarigC 210) Nolte
The theatre as an aspect of American culture from 1752 to present.
- 5514. ADVANCED PROBLEMS IN SCENE DESIGN.** (4 cr; prereq 3513, 3711 or §; V-VII TTh; RarigC 275; lab ar) Josal
Theory and design of stage scenery; special reports and projects.
- 5519. SOUND FOR THE THEATRE.** (2 cr; prereq written § only; II MTWThF; RarigC 275; lab ar) Brockman
Theory and technique of producing and amplifying sound for the theatre.
- 5711. STAGE DIRECTION.** (4 cr, \$3708, \$3711; limited to 20 students; prereq 1321, sr and grad students only; VI-VII MWF, V-VII TTh; RarigC 190) Adey
See First Term.
- 5803. ORAL INTERPRETATION OF DRAMA.** (4 cr; limited to 25 students; prereq 3801 or grad; III-IV TTh, III-V MWF; RarigC 90) Congdon
Study of selected plays. Solo and group readings.

- 5950. TOPICS IN THEATRE: Scene Painting.** (4 cr; prereq 1504 or §; III-V MWF, III-IV TTh; RarigC 130) Brockman
Beginning techniques in texturing and in realistic simulation of three-dimensional objects. Basic use of dry pigments, caseins, glazes, and dyes.
- 5970. DIRECTED READINGS.** (2-6 cr; prereq 9 cr in theatre, § and Δ) Staff
See First Term.
- 5540. SEMINAR: SCENE DESIGN.** (3 cr; prereq 3513, 5514, or §; V-VI MWF; RarigC 275) Josal
Research in specialized areas in scene design; projects and reports.
- 5980. DIRECTED INSTRUCTION.** (1-3 cr) Staff
See First Term.
- 5990. RESEARCH.** (Cr ar; prereq § and Δ) Staff
See First Term.

Urban Studies (Urbs)

FIRST TERM

- 3900. INTERNSHIP.** (1-6 cr per qtr [15 cr max]; prereq jr, sr, and Δ) Staff
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 [15 cr max]; prereq jr, sr, and Δ) Staff
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; limited enrollment; V MTWThF; ForH 120)
History of feminism, nationally and locally; women's issues; biological and/or learned behaviors.
- 3910. TOPICS IN WOMEN'S STUDIES.** (4 cr per qtr [12 cr max]; limited enrollment; III MTWThF; ForH 349) Van Horn, Stenberg
Elizabethan England: an androgynous age. Concentration on Elizabeth I, Prince of England, as representative of a fusion of sexual characteristics and/or roles.

SECOND TERM

- 1006. INTRODUCTION TO WOMEN'S STUDIES.** (4 cr; limited enrollment; V MTWThF; ForH 120)
See 1005 First Term.
- 3103. THE MODERN FEMINIST NOVEL.** (4 cr; limited enrollment; prereq fr English or equiv; III MTWThF; ForH 175) Wanhala
Selected twentieth-century novels by British and American women.
- 3301. WOMEN: A SENSE OF IDENTITY.** (4 cr, §3301; limited enrollment; prereq §; VI-VIII TTh; ForH 285)
Sex roles: social expectations, personal values, and personal behaviors. Applications of success analysis, strength identification, communication training, goal setting, and behavior rehearsal to affirm and develop the potential of women.
- 3910. TOPICS IN WOMEN'S STUDIES.** (4 cr per qtr [12 cr max]; limited enrollment; II MTWThF; ForH 180) Gohlke
The poetry of women. By reading and writing poetry, will investigate the relation of the art of poetry to women's lives.
- 5301. WOMEN: A SENSE OF IDENTITY.** (4 cr, §3301; limited enrollment; prereq §; VI-VIII TTh; ForH 285)
See 3301.

Military Science

The Army Reserve Officers' Training Corps (ROTC) summer program is designed to permit University students to enroll in ROTC on a trial basis and to qualify for enrollment in the Basic Course or the Advanced Course, as appropriate, during the regular academic year. No military obligation is incurred through participation.

Military Science (Mil)

Courses with limited enrollment must be reserved in 116A 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 , Leadership Laboratory††; I-II MTWThF; Armory 116) Fieldman

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 , Leadership Laboratory††; I-II MTWThF; Armory 116) Collins

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.

††Leadership Laboratory is taught concurrently to all cadets during the summer terms. The laboratory is designed so that students can demonstrate their progressive ability in individual and group drill. Progressive and extensive practice in voice and exercise of command, unit formations, bearing, posture, and physical fitness is emphasized. Assists in identification and development of individual traits and qualities of character.

Institute of Technology

SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

Architecture (Arch)

All courses must be reserved in 105 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; I MTWThF; Arch 25) Winterowd, Ohlhausen
The philosophy and principles of architecture as an art, development of architecture from ancient times to the present.
- 5055. AMERICAN ARCHITECTURE AND THE 19TH CENTURY.** (4 cr; reserved course; prereq 1021 or 5; III MTWThF; Arch 25) Winterowd
History of pre-Columbian and colonial architecture in America and Europe through the early 19th century.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 3083. ARCHITECTURAL DESIGN I.** (6 cr; limited enrollment; prereq 3082; register for both terms at beginning of first term; \$4 lab fee; VI-X MTWThF; Arch 210) Myers, Blair, LaVine
Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making.
- 3093. ARCHITECTURAL DESIGN II.** (6 cr; limited enrollment; prereq 3092; register for both terms at beginning of first term; \$4 lab fee; VI-X MTWThF; Arch 210) Myers, Blair, LaVine
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; \$4 lab fee; VI-X MTWThF; Arch 210) Myers, Blair, 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; \$4 lab fee; VI-X MTWThF; Arch 210) Myers, Blair, LaVine
See 5111.
- 5113. ARCHITECTURAL DESIGN III.** (6 cr; limited enrollment; prereq 5112; register for both terms at beginning of first term; \$4 lab fee; VI-X MTWThF; Arch 210) Myers, Blair, LaVine
See 5111.
- 5121. ARCHITECTURAL DESIGN IV.** (9 cr; limited enrollment; prereq 5113, CE 3062; register for both terms at beginning of first term; \$4 lab fee; VI-X MTWThF; Arch 210) Myers, Blair, LaVine
Building design and development in the urban context. Individual and collaborative effort; urban problems; reporting 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; \$4 lab fee; VI-X MTWThF; Arch 210) Myers, Blair, LaVine
See 5121.

SECOND TERM

- 5053. GOTHIC ARCHITECTURE.** (4 cr; reserved course; prereq 1021 or §; I MTWThF; Arch 25)
Winterowd
History of development of architecture and urban design in Western Europe from A.D. 1150 until 1400.
- 5056. MODERN ARCHITECTURE.** (4 cr; reserved course; prereq 1021 or §; III MTWThF; Arch 25)
Winterowd, Ohlhausen
History of architecture in America and Europe from the late 19th century until the present time.

SCHOOL OF CHEMISTRY

Chemistry (Chem)

Courses with limited enrollment must be reserved in 105 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 21.

FIRST TERM

- 1001. GENERAL PRINCIPLES OF CHEMISTRY.** (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; \$4 lab fee; lect 8:00-9:10 MTWThF, SciCB 325; rec V MWF; lab VI-VIII MWF, SmithH ar)
Introduction to principles of chemical change including structural concepts of nuclei, atoms, molecules; laws governing dynamic behavior of matter including 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†, §1014, §1031, §1032; limited enrollment, reserved in CofH 130 for Ag, For, HE... LindH 105 for IT... JohH 12 for other students; primarily for nonchemistry majors; prereq predicted mathematics GPA 1.90 on ACT, Math 0009 or college course in algebra... 4 yrs high school mathematics and high school chemistry recommended; \$4 lab fee; lect 8:00-9:10 MTWThF, SciCB 375; 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 equilibrium.
- 1006. PRINCIPLES OF SOLUTION CHEMISTRY.** (4 cr; limited enrollment, reserved in CofH 130 for Ag, For, HE... LindH 105 for IT... JohH 12 for other students; prereq 1005 or 1032; \$4 lab fee; lect II MTWThF, SciCB 325; 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 nonchemistry majors; prereq 1005; V-VI MWF; Owre 15)
(Lecture) Modern quantitative methods of analysis.
- 3101. QUANTITATIVE ANALYSIS.** (2 cr; limited enrollment; prereq 3100 or §3100; \$4 lab fee; I-III MTWThF; SmithH 310)
(Laboratory) Modern quantitative methods of analysis including elementary physicochemical procedures.
- 3301. ELEMENTARY ORGANIC CHEMISTRY.** (5 cr; limited enrollment; prereq 1005 or 1032 or equiv; \$4 lab fee; lect I MTWTh, II TThF, III F, SmithH 100; rec I F, SmithH 100; lab conf III TTh, SmithH 100; lab II-V MW [1st wk of term, lab will meet II-V WF], SmithH 349, KoltH 398)
Important classes of organic compounds, both aliphatic and aromatic, and heterocyclic compounds. Laboratory work includes preparation of typical substances.

- 3304. ELEMENTARY ORGANIC CHEMISTRY LABORATORY.** (4 cr, \$5365; limited enrollment; prereq 3303; \$4 lab fee; lab minimum 20 hrs per wk; lab open 10:00-5:00 MTWTh, II-V F, KoltH 355; lab conf II MTWTh, SmithH 315)
Reactions of typical functional groups and introduction to methods of organic qualitative analysis.
- 3499. SENIOR THESIS.** (Cr ar; must be reserved in LindH 105; prereq §, 4th yr; \$4 lab fee)
Written final senior thesis report.
- 5302. ADVANCED ORGANIC CHEMISTRY LABORATORY WORK.** (4 cr; must be reserved in LindH 105; prereq 3201 or 3303; \$4 lab fee; lab minimum 24 hrs per wk; lab open 10:00-5:00 MTWTh, II-V F, KoltH 365)
Selected laboratory synthetic problems, which may include original work. Considerable individual instruction.
- 5365. ORGANIC QUALITATIVE ANALYSIS.** (4 cr, \$3304; limited enrollment, reserved in LindH 105; prereq 3303; \$4 lab fee; lab minimum 20 hrs per wk; lab open 10:00-5:00 MTWTh, II-V F, KoltH 355; lab conf II MTWTh, SmithH 315)
Reactions of typical functional groups and introduction to methods of organic qualitative analysis.
- 5520. ELEMENTARY PHYSICAL CHEMISTRY.** (3 cr; limited enrollment, reserved in LindH 105; 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. GENERAL PRINCIPLES OF CHEMISTRY.** (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; \$4 lab fee; lect 8:00-9:10 MTWThF, SciCB 325; rec IV MWF; lab VI-VIII MWF, SmithH ar)
See 1001 First Term.
- 1005. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr, 1004-1005†, §1014, §1031, §1032; limited enrollment, reserved in ColH 130 for Ag, For, HE... LindH 105 for IT... JohH 12 for other students; primarily for nonchemistry majors; prereq predicted mathematics GPA 1.90 on ACT, Math 0009 or college course in algebra... 4 yrs high school mathematics and high school chemistry recommended; \$4 lab fee; lect 8:00-9:10 MTWThF, SciCB 375; 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.** (5 cr; limited enrollment; prereq 3301 or equiv; \$4 lab fee; lect I MTWTh, II TThF, III F, SmithH 100; rec I F, SmithH 100; lab conf III TTh, SmithH 100; lab II-V MW [1st wk of term, lab will meet II-V WF], SmithH 349, KoltH 398)
See 3301 First Term.
- 3499. SENIOR THESIS.** (Cr ar; must be reserved in LindH 105; prereq §, 4th yr; \$4 lab fee)
See First Term.
- 5126. MODERN ANALYTICAL CHEMISTRY.** (4 or 5 cr [chemistry majors must take for 5 cr]; limited enrollment, reserved in LindH 105; prereq 3034; \$4 lab fee; lect I-II TTh, KoltH S137; lab V-VIII MTWThF, KoltH 297, 299 [students registered for 5 cr will be in lab 18 hrs per wk])
Strategies and techniques for solving modern analytical problems and the use of modern instruments in analysis.
- 5521. ELEMENTARY PHYSICAL CHEMISTRY.** (3 cr; limited enrollment, reserved in LindH 105; 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.

- 8102. PHYSICOCHEMICAL METHODS OF ANALYSIS.** (4 cr; prereq 8101; \$4 lab fee; lab V-VIII MTWThF, Koith 297, 299)
(Laboratory) Qualitative application of electrochemical, optical, other physical techniques.
- 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 105 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; \$4 lab fee; IV MTWThF; Arch 50) Weingart
FORTRAN computer language with extensions; applications; programming techniques. Designed to bring students to advanced-level competence in FORTRAN programming. Integral nonscheduled laboratory.
- 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; \$4 lab fee; III MTWThF; Arch 55) Maly
Second course in required basic sequence for CSci majors. 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.
- 5101. STRUCTURE AND PROGRAMMING OF SOFTWARE SYSTEMS I.** (4 cr, \$3107; prereq 1101 or 3105 or 3101 or $\$$; informal lab; intended for non-CSci majors; \$4 lab fee; III-IV MW, IV F; Arch 60) Schneider
Organization and logical structure of computer systems. Representation of programs and data. Topics: number systems, primitive computer systems, programming in machine language. Extensions to more sophisticated systems, assembly language, sequencing, decision making, arithmetic, logical operations, character manipulation, iteration, subroutines, data description, introduction to assembler software.
- 5121. INTRODUCTION TO DATA STRUCTURES.** (4 cr; prereq 3106 or $\$$; \$4 lab fee; III-IV TTh, III F; Arch 60) Sahni
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.

SECOND 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; \$4 lab fee; IV MTWThF; Arch 50) Ibarra
See First Term.
- 3106. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES II.** (4 cr; prereq 3105 or $\$$; informal lab; \$4 lab fee; III MTWThF; MechE 212) 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.
- 5102. STRUCTURE AND PROGRAMMING OF SOFTWARE SYSTEMS II.** (4 cr; prereq 3107 or 5101 or $\$$; informal lab; \$4 lab fee; III-IV MW, IV F; LindH 217) Franta
Subroutine coding conventions; argument transfer; interrupts and traps; macros; I/O equipment and operations; buffers; conditional assembly and program segmentation. Students will write assembly language programs for an existing, modern computer.
- 5305. NUMERICAL SOLUTIONS OF INITIAL AND BOUNDARY VALUE PROBLEMS.** (4 cr; prereq 5302 or $\$$; \$4 lab fee; III-IV TTh, III F; LindH 217)
Linear two-point boundary value problems. The eigenvalue problem. Tau and Galerkin methods. Nonlinear two-point problems. Shooting method. Newton-Kantorovich method. Elements of numerical solutions in partial differential equations. Laplace, heat, and wave equations.

SCHOOL OF EARTH SCIENCES

Geology and Geophysics (Geo)

All courses must be reserved in 105 Lind Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

- 1001. PHYSICAL GEOLOGY.** (5 cr; limited to 52 students, reserved in LindH 105 for IT and JohH 12 for others; \$4 lab fee; lect II MTWThF; PillsH 110) Pfannkuch
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
- 1008. GEOLOGY AND MAN.** (4 cr, §1007; \$4 lab fee; lect IV MTWThF, PillsH 110; lab VI-VII TWTh, ForH 85) Shaw
Man in his physical environment; geological hazards (e.g., earthquakes); the nature and use of natural resources; geological aspects of pollution; recreation and land use; the effect of the composition of rocks and soils on nutrition and disease. An introduction to the broad nature of earth science. Lectures, laboratories, and field trips.
- 3099. PROBLEMS IN GEOLOGY AND GEOPHYSICS.** (1-6 cr; prereq § and Δ) Shaw, Pfannkuch
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 105 for IT and JohH 12 for others; only for students holding degrees in education; prereq 1 term college chemistry or physics; \$4 lab fee; lect II MTWThF, seminar V TTh; PillsH 110) Pfannkuch
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, and geoenvironmental engineering; prereq 3103 and §; \$4 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.

SECOND TERM

- 1002. HISTORICAL GEOLOGY.** (4 cr; limited to 40 students, reserved in LindH 105 for IT and JohH 12 for others; \$4 lab fee; lect II MTWThF; PillsH 110) Sloan
Evolution of earth from its origin to present; the succession of physical and biological events of the past 600 million years.
Lab 1, III-IV MWF, ForH 85
Lab 2, VI-VII MWF, ForH 85
- 3099. PROBLEMS IN GEOLOGY AND GEOPHYSICS.** (1-6 cr; prereq § and Δ) Sloan, Zoltai
See First Term.
- 3401. INTRODUCTORY MINERALOGY.** (5 cr; prereq 1001 or 1111 or §, 1 term college chemistry, Math 1441; \$4 lab fee; lect III MTWThF; Arch 40) Zoltai
Introduction to crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Minerals in natural rock systems.
- 5004. MINERALOGY.** (4 cr, §3401; not open to geology, geophysics, geological mineral, or metallurgical engineering majors; open to agriculture and forestry students and postgrad students in education; prereq 1001 or 1111 or §, 1 term college chemistry, Math 1441; \$4 lab fee; lect III MTWThF, PillsH 110; seminar V TTh, PillsH 125; lab VI-VII MTWTh, PillsH 100) Zoltai
See 3401.
- 5052. HISTORICAL GEOLOGY FOR TEACHERS.** (4 cr, §1002, §3112; limited to 8 students, reserved in LindH 105 for IT and JohH 12 for others; open only to students holding degrees in education; prereq 1001 or 1111 or §, \$4 lab fee; lect II MTWThF, seminar V TTh, PillsH 110; lab III-IV MWF, ForH 85) Sloan
Origin of the earth, physical evolution of its crust through geological time, and biological changes that occurred during its history.

COLLEGE OF ENGINEERING

Aerospace Engineering and Mechanics (AEM)

All courses must be reserved in 105 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1015. STATICS.** (4 cr; prereq Math 1231; I-II MWF, II TTh; Aero 225)
Vector algebra. Principles of statics. Application of the equations of equilibrium to the analysis of simple structures and machines. Statically determinate beams. Cables. Nature and influence of friction.
- 3036. DYNAMICS.** (4 cr; prereq Math 3221; III-IV MWF, III TTh; Aero 225)
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 5-17. (4 cr; limited enrollment; prereq approval of application for admission; 1:00-5:30 MTWThF; MechE 212) Kaldahl, Aerospace Engineering and Mechanics staff
Lectures, film reviews, construction and demonstration of classroom aids, involvement with the NASA spacemobile, flight experience, and field trips cover such topics as satellites and probes, model rocketry including a launch, man 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.

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 Math 3221; III-IV MWF, III TTh; Aero 225)
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.

Chemical Engineering and Materials Science

Chemical Engineering (ChEn)

Courses so designated must be reserved in 105 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 5901-5902-5903. SPECIAL PROBLEMS.** (Cr ar; reserved course)
- 8901-8902-8903. RESEARCH.** (Cr ar)

SECOND TERM

- 5901-5902-5903. SPECIAL PROBLEMS.** (Cr ar; reserved course)
- 8901-8902-8903. RESEARCH.** (Cr ar)

Metallurgy/Materials Science (MatS)

Courses so designated must be reserved in 105 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 3400. MECHANICAL PROPERTIES: MATERIALS.** (4 cr; reserved course; prereq 2nd-year IT student; I MTWThF, V Th; MinMet 116) Gerberich
Structure and properties of metals, alloys, and polymers; heat treatment; alloy selection and metal processing.
- 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)

Civil and Mineral Engineering (CE)

Courses so designated must be reserved in 105 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 5097. ADVANCED DESIGN, ANALYSIS, RESEARCH, OR TUTORIAL IN CIVIL ENGINEERING.** (Cr ar; reserved course; prereq §)
Planning, design, or analysis of complex civil engineering systems. Individual laboratory research problems, literature, studies, and reports supervised by staff. Studies may be conducted in any discipline within civil engineering including but not limited to hydraulics and hydrology, land development, materials, environmental engineering, soil and rock mechanics, structures, and transportation.
- 8097. CIVIL ENGINEERING RESEARCH.** (3-5 cr; prereq §)
Original work in concrete, structural steel, soils, hydraulics, municipal, sanitary, or transportation problems. Investigations, reports, tests, designs.
- 8497. ADVANCED HYDRAULIC LABORATORY.** (2 cr; prereq §)
Experimental and analytical studies of hydraulic phenomena relating to fluid measurement, pumps, spillways, stilling basins, wave absorption, flow transients, and other selected topics.

Electrical Engineering (EE)

Courses with limited enrollment must be reserved in 105 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1510. ELEMENTS OF ELECTRICAL ENGINEERING.** (5 cr; each section limited to 14 students; prereq Math 3221, Phys 1291 or ¶Phys 1291; \$4 lab fee; I-II MTWThF; MechE 202)
Physical principles underlying the modeling of circuit elements. Characterization of two- and three-terminal resistive elements. Kirchhoff's laws. Simple resistive circuits. Linearity in circuits. Characterization of storage elements. First-order circuits.
Lab 1, III-V TTh, ElectE 121
Lab 2, V-VII WF, ElectE 121
- 3000. CIRCUITS.** (4 cr; each section limited to 14 students; not for EE majors; prereq Phys 1291, Math 3221 or ¶Math 3221; \$4 lab fee; lect I-II MWF; Arch 10)
Linear passive circuits; natural and forced response. Steady-state ac analysis; resonance.
Lab 1, I-II TTh, ElectE 118
Lab 2, VI-VII WF, ElectE 118
Lab 3, I-II TTh, ElectE 121

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 3010. CIRCUITS, SIGNALS, AND SYSTEMS I.** (4 cr, \$1501; limited enrollment; prereq 1510; IV MWF, VI-VII M; Arch 45)
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 60)
Continuous, discrete-time systems. Feedback: stability, applications.
- 3050. ELECTRONICS.** (4 cr; limited enrollment; prereq 3010 or ¶3010; I MWF, VI-VII W; Arch 60)
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 10)
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; \$4 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; \$4 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.
- 3478. INDUSTRIAL ASSIGNMENT III.** (2 cr; limited enrollment; prereq 3477)
See 3476.
- 5050. NONLINEAR ELECTRONIC CIRCUITS.** (4 cr; limited enrollment; prereq 3051, 3012 or ¶3012; IV 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 ‡; III MWF, III-IV T; Arch 45)
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 45)
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; \$4 lab fee)
Lab 1, V-VIII alt T, ElectE 204
Lab 2, I-IV alt Th, ElectE 204

SECOND TERM

- 3001. ELECTRONICS.** (4 cr; each section limited to 14 students; not for EE majors; prereq 3000 or 3010; \$4 lab fee; lect I-II MWF; Arch 40)
Network theorems; two-ports, active device models; vacuum diodes, semiconductors, amplifiers, nonlinear devices; logic circuits.
Lab 1, I-II TTh, ElectE 118
Lab 2, VI-VII MW, ElectE 118
Lab 3, I-II TTh, ElectE 121

Mechanical Engineering

Industrial Engineering/Operations Research (IEOR)

Courses with limited enrollment must be reserved in 105 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 108) 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 COURSE

5040. INTRODUCTION TO OPERATIONS RESEARCH. (4 cr; limited to 30 students; prereq 5000, Math 1231; lect III MTWTh; MechE 221) 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 MTWTh; MechE 102) 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 105 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

3201. MECHANICAL ENGINEERING SYSTEMS ANALYSIS. (4 cr; limited to 30 students; prereq Math 3221; lect V MTWThF, rec VII-VIII TTh; MechE 202) 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]; lect III MTWThF, MechE 108; rec VII-VIII TTh, MechE 321) 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; lect III TWTh, IV MTWThF; MechE 302) 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; lect V MTWThF, rec VI MWF; 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 COURSE

- 3740. INDUSTRIAL ASSIGNMENT.** (2 cr per qtr [may be repeated for cr]; must be reserved in LindH 105; 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; lect III TWTh, IV MTWThF; MechE 321) Murphy
Application of laws of thermodynamics to chemically reacting systems and engineering systems. Vapor cycles, gas engine cycles, propulsion systems, refrigeration, and air-water vapor mixture.
- 5260. ENGINEERING MATERIALS AND PROCESSING.** (4 cr; limited to 26 students; prereq Phys 1291, Chem 1004, and 1st-year calculus; \$4 lab fee; lect VI MTWThF, MechE 102; lab 1, VII-IX TTh, lab 2, VII-IX MW, MechE 70) Holtby
Introduction to materials and processing including physical and metallurgical properties, consolidation, etc. Material processing including machining, welding, and deformation processes.
- 5342. HEAT TRANSFER.** (4 cr; limited to 30 students; prereq Math 3221, CE 3400 or equiv; lect I MWF, rec II MTWThF, 1 hr ar; MechE 321) 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.

INSTITUTE OF TECHNOLOGY (I of T)

Courses with limited enrollment must be reserved in 105 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 3501. MEASUREMENT AND THE METRIC SYSTEM.** (4 cr; limited to 40 students; 10:10-11:30 MTWTh; Meche 202) Wenberg
Concepts and history of measurement. Measurement tools and techniques. The SI metric system. Comparison of U.S. customary system and SI metric system. Metric transition in the U.S. and abroad. Student investigation of one aspect of conversion. See Special Programs section.

SECOND TERM

- 3501. MEASUREMENT AND THE METRIC SYSTEM—July 20-30.** (2 cr; limited to 40 students; III-IV MTWThF; Meche 202) Wenberg
Concepts and history of measurement. Measurement tools and techniques. The SI metric system. See Special Programs section.

SCHOOL OF MATHEMATICS

Mathematics (Math)

Courses with limited enrollment must be reserved in 105 Lind Hall or 12 Johnston Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

- 0009. PREPARATORY MATHEMATICS.** (0 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 301
Sec 2, III-IV MTWThF, VH 301

- 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; KolH S133)
 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 [open 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 algebra or 0009 ... §1111 allowed; II MTWThF; MechE 221)
 Analytic trigonometry emphasizing identities, equations, and properties of the functions; right and oblique triangles without logarithmic computation.
- 1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY.** (5 cr, §1131, §1141, §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, VH 1
 Sec 2, III-IV MTWThF, Z 102
- 1131. FINITE MATHEMATICS.** (5 cr, §1111, §1141, §1201; limited enrollment, reserved in JohH 12; prereq 0009 or high school higher algebra and math placement score; III-IV MTWThF; VH 209)
 (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 1131 or 1141 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, introduction to partial differentiation, applications.
 Sec 1, I-II MTWThF, VH 20
 Sec 2, III-IV MTWThF, VH 20
- 1201. PRE-CALCULUS.** (5 cr, §1111, §1131, §1141; 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 311
 Sec 2, III-IV MTWThF, VH 311
- 1211. ANALYSIS I.** (5 cr, §1111, §1141, §1411; 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 35
 Sec 2, III-IV MTWThF, Arch 35
- 1221. ANALYSIS II.** (5 cr; limited enrollment; prereq grade of C or better in 1211 or equiv)
 See 1211.
 Sec 1, I-II MTWThF, Arch 5
 Sec 2, III-IV MTWThF, SmithH 225
- 1231. ANALYSIS III.** (5 cr; limited enrollment; prereq grade of C or better in 1221 or equiv)
 See 1211.
 Sec 1, I-II MTWThF, VH 16
 Sec 2, III-IV MTWThF, Z 313
- 3211. ANALYSIS IV.** (5 cr, §3411, §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, VH 211
 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 105; prereq grade of C or better in 1231 or equiv; III-IV MTWThF; VH 16)
 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, §1260, §5601-5602; limited enrollment, reserved in LindH 105; prereq grade of C or better in 3211 or equiv; I MWF, II MTWThF; Kolth S133)
 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 3411; III TTh, IV MTWThF; Kolth S140)
 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, §5283, §5284; limited enrollment; prereq 3221 or 3142 or 3511; III TTh, IV MTWThF; VH 314)
 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 105; prereq 3211 and 3221 or equiv; II MTWThF, III MW; VH 364)
 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, etc.
- 5601. ADVANCED CALCULUS.** (4 cr; limited enrollment; prereq 3211 or 3411 or equiv; II MTWThF, III WF; Kolth S140)
 Differentiation of functions of several variables; vector algebra; curves in three dimensions; directional derivative and gradient; inverse transformation and implicit function theorems; change of variables in multiple integrals.
- 5701. INTRODUCTION TO COMBINATORICS.** (4 cr; limited enrollment; prereq 3211 or 3411 and 3rd-yr standing; II TTh, IV MTWThF; VH 207)
 Basic concepts in combinatorics. Enumeration including binomial counting, permutations, generating functions, inclusion-exclusion principle, recurrence relations. Emphasis on application. Matching theory and designs.

SECOND TERM

- 0009. PREPARATORY MATHEMATICS.** (0 cr; limited enrollment, reserved in JohH 12; I-II MTWThF; Arch 55)
 See First Term.
- 1006. FOUNDATIONS OF ARITHMETIC.** (3 cr; limited enrollment, reserved in JohH 12; prereq 1005; III MTWThF; Kolth S140)
 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 [open 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 algebra or 0009 ... ¶1111 allowed)
 See First Term.
 Sec 1, II MTWThF, Kolth S140
 Sec 2, IV MTWThF, Kolth S140
- 1111. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY.** (5 cr, §1131, §1141, §1201, §1411; 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 1131 or 1141 or 1201 or math placement score)
See First Term.
Sec 1, I-II MTWThF, VH 207
Sec 2, III-IV MTWThF, AndH 230
- 1201. PRE-CALCULUS.** (5 cr, §1111, §1131, §1141; limited enrollment; prereq 0009 or high school higher algebra and 1008 or high school trigonometry; III-IV MTWThF; VH 1)
See First Term.
- 1211. ANALYSIS I.** (5 cr, §1111, §1141, §1411; 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, §1142, §1421; limited enrollment; prereq grade of C or better in 1211 or equiv)
See 1211 First Term.
Sec 1, I-II MTWThF, Arch 35
Sec 2, III-IV MTWThF, Arch 35
- 1231. ANALYSIS III.** (5 cr; 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, Arch 55
- 3142. LINEAR ALGEBRA.** (4 cr, §3221, §3511; limited enrollment; prereq 2 qtrs calculus; III TTh, IV MTWThF; VH 207)
Vectors, system of linear equations, matrices, determinants, eigenvalues, applications. Emphasizes techniques but does include some proofs of theorems.
- 3211. ANALYSIS IV.** (5 cr, §1444, §3521; limited enrollment; prereq grade of C or better in 1231 or equiv; III-IV MTWThF; VH 16)
See First Term.
- 3221. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS.** (5 cr, §3142, §3511; limited enrollment, reserved in LindH 105; prereq grade of C or better in 1231 or equiv)
See First Term.
Sec 1, I-II MTWThF, VH 211
Sec 2, III-IV MTWThF, VH 211
- 3231. VECTOR ANALYSIS.** (4 cr, §5601-5602; limited enrollment, reserved in LindH 105; prereq grade of C or better in 3211 or equiv; III MTWThF, IV MWF; VH 206)
See First Term.
- 5243. LINEAR ALGEBRA WITH APPLICATIONS.** (4 cr, §5283, §5284; limited enrollment; prereq 5242; III TTh, IV MTWThF; KoltH S138)
See 5242 First Term.
- 5458. METHODS OF APPLIED MATHEMATICS.** (4 cr; limited enrollment, reserved in LindH 105; prereq 5457, or 3211 and 3221, or equiv; II MTWThF, III MW; KoltH S138)
See 5457 First Term.
- 5602. ADVANCED CALCULUS.** (4 cr; limited enrollment; prereq 5601; II MTWThF, III MW; VH 301)
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; III TTh, IV MTWThF; KoltH S137)
Elementary principles of probability, total and compound probability, expectation, repeated trials, and, as time permits, topics chosen from the following: 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

- 1008. SOLAR SYSTEM.** (3 cr, §1011; \$4 lab fee; II MTWThF and 1 clear evening per wk for observations with telescope; Ph 166) Kaufmanis
The properties and motions of planets and their satellites, comets, and meteors; description of the universe. Nonmathematical course.
- 1009. STARS AND GALAXIES.** (3 cr, §1011; ¶1008 permitted; \$4 lab fee; III MTWTh and 2 clear evenings per wk for observation; Ph 166) Kaufmanis
Constellations, properties and motions of stars, and the structure of the sidereal universe. Nonmathematical course.

Physics (Phys)

Courses with limited enrollment must be reserved in 105 Lind Hall by IT students and in 12 Johnston Hall by others (see instructions under "Reserved Courses").

FIRST TERM

NSci 1004. PHYSICAL WORLD: PHYSICS

See Natural Science under College of Liberal Arts.

- 1031. GENERAL PHYSICS.** (5 cr; limited to 96 students; primarily for students interested in topics useful in various technical areas; prereq high school algebra and plane geometry; \$4 lab fee; I MTWThF, II MWF and two 2-hr labs per wk ar; 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.
- 3501. MODERN PHYSICS.** (4 cr, §3511-3512-3513; prereq 1291 or 1106; II MTWThF, (II MWF; Ph 145)
Descriptive course in modern physics; quantum mechanics, hydrogen atom, multielectron atoms, molecular structure, thermal radiation, solid state physics, nuclear physics.

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)
Mechanics.
- 1275. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 64 students; prereq 1271 or ¶1271; \$4 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)
Heat and electricity.
- 1285. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 48 students; prereq 1281 or ¶1281; \$4 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 133)
Magnetism and optics.
- 1295. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 64 students; prereq 1291 or ¶1291; \$4 lab fee; 2 lab hrs per wk ar)
Laboratory exercises in magnetism and optics.

SECOND TERM

- 1032. GENERAL PHYSICS.** (5 cr; limited to 96 students; primarily for students interested in topics useful in various technical areas; prereq 1031; \$4 lab fee; I MTWThF, II MWF and two 2-hr labs per wk ar; Ph 170)
See 1031 First Term.

University College

University College offers four nontraditional degree programs and two non-degree programs designed to promote flexible learning experiences.

The oldest of the degree programs is the Inter-College Program. 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 his or her interests or particular objectives. The student may arrange a study program including 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 three degree programs are experimental in nature. Experimental College (1507 University Avenue S.E.) is based on the "community of learners" concept, allowing students maximum responsibility for designing their own educational and governmental structures.

University Without Walls (201 Westbrook) serves students who have met barriers in participation 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 an independent study program and the Students' College in Duluth.

University College makes available to students regularly enrolled in any undergraduate college in the University an opportunity for independent study when intercollegiate in nature. A student may earn from 3 to 15 degree credits registering for independent study projects under UC 3075. The student designs his or her own project and works with an appropriate faculty member who supervises and evaluates the project.

The Students' College on the Duluth Campus gives students the opportunity to create, implement, and manage human services programs on the UMD Campus and in the city of Duluth.

University College also sponsors a variety of pilot experimental programs and cross-college course work. Information on any of the above programs, or current pilot programs, may be obtained at 105 Walter Library.

University College (UC)

FIRST TERM

5501. **SCIENCE AND SOCIETY.** (3 cr; I MTWThF; WuH 230) Penn
Issues raised by the relation between the "scientific" and "humanistic" sectors.
5504. **RACE AND CULTURE: A CONCEPTUAL SURVEY.** (3 cr; III MTWThF; Ph 210) Penn
Major patterns in the development of the "race" issue.



College of Veterinary Medicine

(All classes scheduled by arrangement)

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.
- 5748. PROBLEMS IN VETERINARY MICROBIOLOGY AND PUBLIC HEALTH.** (Cr ar; prereq 5703 or equiv, §) Anderson, Lindorfer, Pomeroy, Diesch, Robinson, staff
- 5920. INDEPENDENT RESEARCH IN VETERINARY BIOLOGY.** (Cr ar; prereq §) Staff
Individual research under supervision of a faculty member.
- 8110. MORPHOLOGY OF ANIMAL CELLS AND INTERCELLULAR SUBSTANCES.** (3 cr; prereq 5106, §) Weber, staff
- 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
- 8521. SURGICAL PATHOLOGY.** (3 cr; prereq §) Barnes, staff
Preparation and interpretation of surgical and necropsy specimens.
- 8522. DIAGNOSTIC PATHOLOGY.** (5 cr; prereq §) Barnes, staff
Interpretation of history, necropsy findings, laboratory findings, and histopathology in the diagnosis of animal diseases.
- 8530. ONCOLOGY.** (4 cr; prereq §) Kurtz
- 8531. VETERINARY NECROPSIES.** (1-5 cr; prereq 5503 or equiv) Staff
Necropsy techniques, examination of tissue sections, and preparation of records.
- 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 §) Pomeroy, Anderson, Lindorfer, Loken, Diesch, Shope, Hilgren, Maheswaran
Special topics, techniques, collateral reading, and conferences.

8721. ADVANCED POULTRY DISEASES. (Cr ar; prereq 5704, §) Pomeroy, Higbee, Nelson, Barnes
Investigation of specific 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

5149.* TOPICS OF ORGANOLOGY. (1-5 cr [may be repeated for cr]; prereq 8110 or equiv, §) Staff
See First Term.

5748. PROBLEMS IN VETERINARY MICROBIOLOGY AND PUBLIC HEALTH. (Cr ar; prereq 5703 or equiv, §) Anderson, Lindorfer, Pomeroy, Diesch, Robinson, staff

5920. INDEPENDENT RESEARCH IN VETERINARY BIOLOGY. (Cr ar; prereq §) Staff
See First Term.

8111. HISTOLOGIC AND ULTRAHISTOLOGIC TECHNIQUES. (3 cr; prereq 5106, §) Staff

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

8521. SURGICAL PATHOLOGY. (3 cr; prereq §) Barnes, staff
See First Term.

8522. DIAGNOSTIC PATHOLOGY. (5 cr; prereq §) Barnes, staff
See First Term.

8531. VETERINARY NECROPSIES. (1-5 cr; prereq 5503 or equiv) 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, §) Griffiths

8720. ADVANCED VETERINARY MICROBIOLOGY. (Cr ar; prereq §) Pomeroy, Anderson, Lindorfer, Loken, Diesch, Shope, Hilgren, Maheswaran
See First Term.

8721. ADVANCED POULTRY DISEASES. (Cr ar; prereq 5704, §) Pomeroy, Higbee, Nelson, Barnes
See First Term.

Veterinary Clinical Sciences (VCS)

FIRST TERM

5276. POISONOUS PLANTS. (1 cr; prereq regis vet med, 4th yr or grad or §) Stowe
Important plants poisonous to animals; identification, toxicology, diagnosis, and treatment.

5562. INFERTILITY CLINICS. (Cr ar; prereq 5560, 5570 or §)
Investigation of hospital cases and field problems of infertility in domestic animals. Includes clinical examination, discussion of diagnosis, prognosis, and therapy. Assignment of special study of certain reproductive disorders.

5670. COMPARATIVE MEDICINE AND PUBLIC HEALTH. (2 cr; prereq §) Anderson, Diesch, Robinson
Man's relationship to the biologic environment, interrelationship of animal and human health, occurrence of animal diseases, ecology of zoonoses, food production and hygiene, laboratory animal medicine.

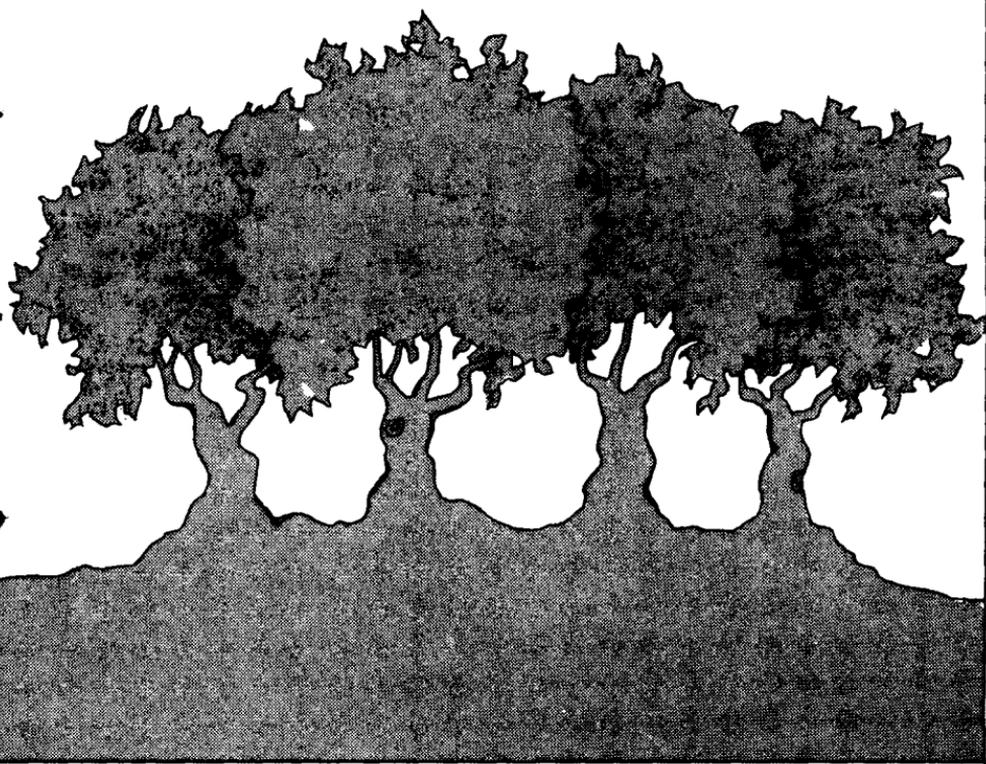
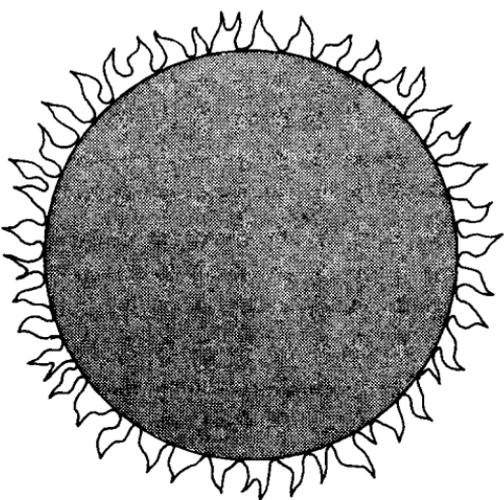
- 5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH.** (Cr ar; prereq 5650 or equiv or §) Diesch, Anderson, Robinson
Individual study arranged with faculty member.
- 5760. CLINICS.** (6 cr; prereq sr vet med major, 5751; I-IX MTWThF; VetH) Staff
Medical, obstetrical, radiological, surgical, and laboratory examination of diseases of animals.
- 8291.* ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES.** (Cr ar; prereq 5503, 5172) Sorensen, Mather, Johnson, Larson, Anderson, Farnsworth, Gelatt, Osborne
Detailed examination, discussion, treatment, and prevention of animal disease problems.
- 8391. ADVANCED SMALL ANIMAL SURGERY.** (Cr ar; prereq 5350 or equiv, §) Brasmer, Wallace, Wilson, Braden
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, §) Lord, Jessen
Lecture and laboratory. Radiological diagnostic procedures and interpretation as applied to veterinary medicine.
- 8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES.** (Cr ar; prereq 5570 or §)
Detailed discussion and laboratory practices of methods for determination of fertility status of female and male animals.
- 8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION.** (Cr ar; prereq 5570 or §)
Detailed discussion and laboratory study of specific reproductive disorders.

SECOND TERM

- 5276. POISONOUS PLANTS.** (1 cr; prereq regis vet med, 4th yr or grad or §) Stowe
See First Term.
- 5562. INFERTILITY CLINICS.** (Cr ar; prereq 5560, 5570 or §)
See First Term.
- 5670. COMPARATIVE MEDICINE AND PUBLIC HEALTH.** (2 cr; prereq §) Anderson, Diesch, Robinson
See First Term.
- 5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH.** (Cr ar; prereq 5650 or equiv or §) Diesch, Anderson, Robinson
See First Term.
- 5761. CLINICS.** (6 cr; prereq sr vet med major, 5751; I-IX MTWThF; VetH) Staff
See 5760 First Term.
- 8291.* ADVANCED DIAGNOSIS AND THERAPEUTICS OF ANIMAL DISEASES.** (Cr ar; prereq 5503, 5172) Sorensen, Mather, Johnson, Larson, Anderson, Farnsworth, Gelatt, Osborne
See First Term.
- 8391. ADVANCED SMALL ANIMAL SURGERY.** (Cr ar; prereq 5350 or equiv, §) Brasmer, Wallace, Wilson, Braden
See First Term.
- 8490. ADVANCED VETERINARY RADIOLOGY.** (Cr ar; prereq 5450 or equiv, §) Lord, Jessen
See First Term.
- 8590. ADVANCED DIAGNOSTIC METHODS IN REPRODUCTIVE DISEASES.** (Cr ar; prereq 5570 or §)
See First Term.
- 8594. SPECIAL PROBLEMS IN ANIMAL REPRODUCTION.** (Cr ar; prereq 5570 or §)
See First Term.



*Duluth
and
Morris*



University of Minnesota, Duluth

The Duluth Campus is an exciting location for Summer Session study. Situated on a 244-acre site overlooking Lake Superior, the campus enjoys pleasant summer temperatures, allowing the student to study and relax in comfort.

UMD, located near the center of Duluth, is but a short drive from parks, golf courses, swimming beaches, the famous Skyline Drive, Duluth's new Arena-Auditorium, the Lake Superior Marine Museum, the St. Louis County Heritage and Arts Center, Duluth International Harbor, and Spirit Mountain.

The many lakes in the deeply forested Arrowhead region and the North Shore and Circle Route drives are popular for overnight or weekend camping and fishing trips.

The UMD Summer Session social calendar is planned to fit the recreational needs of both the individual student and entire family. Bridge and golf lessons, family swimming, concerts, lectures, theatrical productions, group discussions, dances, harbor and historical tours, films, a steak cookout, sailing on Lake Superior, and a wilderness canoe trip are a few of the regularly sponsored activities.

More than 300 courses are scheduled for the Summer Session terms at the undergraduate and graduate levels. Students may earn credits for 72 majors to apply toward the degrees of associate in arts, associate in vocational teacher education, associate in science in dental hygiene, bachelor of arts, bachelor of science, bachelor of applied arts, bachelor of applied science, bachelor of accounting, bachelor of business administration, bachelor of music, bachelor of fine arts, or bachelor of social development, and in 17 areas of concentration for the master of arts, master of science, master of business administration, master of industrial safety, master of social work, and master of education degrees, and the specialist certificate in educational administration.

A separate Summer Session bulletin, including all courses offered on the Duluth Campus, is available. For a copy of this bulletin and for more detailed information, write: UMD Summer Session, 305 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

GRADUATE PROGRAM

The Graduate School on the Duluth Campus offers a master of arts degree with majors in art, education (elementary-secondary), education (emphasis art), education (emphasis music), educational administration, educational psychology (counseling), English, history, and communicative disorders. These studies provide advanced work for individuals now in teaching or for those interested in progressing toward a general degree in the discipline. Students may complete all course work at Duluth.

Master of science degree programs are offered in biology, botany, chemistry (analytical, inorganic, organic, physical, or biochemistry), geology, physics, and zoology. These programs are designed for secondary and college teachers and for those planning additional graduate study or careers in these fields. The *specialist* certificate in educational administration may be obtained with emphasis in either elementary, secondary, or general school administration. Also offered is a master of social work program with emphasis on social development.

The graduate program is under the jurisdiction of the dean of the Graduate School and is similar to parallel programs on the Twin Cities Campus. A complete description of graduate requirements and courses is available in the 1975-77 *University of Minnesota, Duluth, General Bulletin*, which may be obtained by writing to the UMD News Service, 301 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Students who have not already applied for admission to the Graduate School and who contemplate a program of graduate studies at Duluth may request information and application forms from the Graduate School Office, 403 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812. Information concerning selection of courses and other degree requirements can also be obtained from the Graduate School assistant dean.

Applications for admission must be submitted *complete in every detail*—two official transcripts from each college attended and the credentials examination fee and test results, if required—at least 4 weeks prior to the opening of the quarter or summer term in which the applicant expects to register. Students who wish to become candidates for the Master's degree or who wish to receive graduate credit for their course work must make application for admission to the Graduate School (see section on Graduate School).

Students previously admitted to the Graduate School who have not registered within the last 2 years in the Graduate School must apply for readmission. Students who have completed a degree program must apply for readmission to the Graduate School. Individuals enrolled in graduate programs at other universities may be granted transient graduate student standing, but an application for that status must be in the Graduate School office prior to the beginning of class. Forms may be obtained from the Graduate School office.

Students in graduate-level courses or workshops in Continuing Education and Extension must meet Graduate School or transient graduate student status requirements before Graduate School recognition will be given their participation.

Master's Degree in Art

A graduate major emphasizing studio work is offered leading to the master of arts degree in art. The program is designed primarily for individuals wishing to teach art, but others may be admitted when the program seems particularly adaptable to their educational goals. Both art history and art education are available as related fields. Inquiries concerning the specific program should be directed to: Department of Art, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Biology, Botany, Zoology

The Department of Biology offers graduate work in biology under either a Plan A or a Plan B program. Under Plan A, students take advanced course work in a specific area of biology and must complete an independent research project culminating in a thesis. The Plan B program is designed for students interested in a broader range of biological subjects and therefore entails considerably more course work than that required for Plan A. Although a thesis is not required for the Plan B program, one or more projects and/or papers must be completed. *Certain graduate courses and the opportunity to pursue graduate research are offered during the summer.* Further details may be obtained from: Director of Graduate Studies, Department of Biology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Chemistry

Programs in chemistry are offered under both Plan A and Plan B. For Plan A, thesis research is available in analytical, inorganic, organic, or physical chemistry or in biochemistry. For Plan B, 44 credits in approved courses and three papers in the major and/or related fields are required.

The programs are suited for students who wish to go on for further study elsewhere, for those who plan to make a career of teaching chemistry in liberal arts colleges, junior colleges, and state colleges, and for those who desire advanced training for a career in industry. Summer work at the Duluth Campus during both terms will involve the research phase of the M.S. degree.

Master's Degree in Communicative Disorders

A graduate major under Plan B is offered leading to the master of arts degree in communicative disorders. Summer Session offerings are designed to integrate academic, research, and clinical endeavors. Correspondence may be addressed to the Department of Communicative Disorders, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Education

The M.A. program in education, open to elementary and secondary teachers, permits a student to major in course work from the following areas: Education (Educ), Education (Art Education, ArEd), Education (Music Education, MuEd), Elementary Education (EIEd), and Secondary Education (SeEd).

The work in related fields may include areas such as Educational Administration (EdAd), Psychological Foundations (PsyF), Psychological Applications (PsyA), Special Education (SpEd), Physical Education (PE), Industrial Education (Ind), Health Education (Hlth), Home Economics Education (HEEd), as well as courses in other subjects which are ordinarily taught in the schools.

Inquiries should be addressed to: Director of Graduate Study in Education, Department of Elementary Education, or Director of Graduate Study, Department of Secondary Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Educational Administration

A master of arts degree with a major in educational administration is available to students interested in this area. A wide variety of courses is offered during the summer. Inquiries should be addressed to: Director of Graduate Study in Educational Administration, College of Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Specialist Program in Educational Administration

Advanced graduate programs leading to the specialist certificate in school administration have been developed for elementary and secondary school principals and superintendents. New courses, workshops, and seminars have been introduced, several of which are available this summer. An announcement describing these programs will be sent upon request to: Director of Graduate Study in Educational Administration, College of Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Educational Psychology

A Master's degree program in school guidance and counseling is available on the Duluth Campus. Courses in psychological foundations and psychological applications as well as other required related courses are offered during both summer terms.

Certain courses in this program may have limited enrollments or require special arrangements. Therefore, students interested should make every effort to consult with their adviser prior to and during registration. In addition, course descriptions and prerequisites should be studied carefully. Correspondence should be addressed to: Director of Graduate Study in Educational Psychology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in English

Two programs lead to a master of arts degree in English. One offers a broad study of literature, and a second emphasizes preparation for teaching, particularly in the 2-year college. The Master's program is suitable for secondary school English teachers and for students preparing for doctoral studies. Courses carrying graduate credit are offered during all academic quarters and during both summer terms. Courses not scheduled in the *UMD Summer Session*

Bulletin are often available through independent study. Requirements for the degree can be completed in 5 or 6 regular terms or in 3 or 4 summers. Inquiries concerning the details of the program should be directed to: Department of English, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Geology

The M.S. degree in geology is offered under Plan A and Plan B. These programs are designed for those wishing to prepare for professional employment, for further graduate study leading to the Ph.D. degree, or for teaching geology at the college or junior college level. Although no graduate-level courses for the Master's degree program, other than graduate research, are offered in this field during the 1976 Summer Session, students interested in beginning their course work in the fall of 1976 are reminded that the application deadline is August 15. Details concerning prerequisites for the M.S. degree in geology may be obtained from: Director of Graduate Study, Geology Department, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in History

The Master's degree in history is awarded upon fulfillment of either of two alternative programs—Plan A (with thesis) or Plan B (without thesis). The programs are designed for students who are preparing for doctoral study, for those who plan to make a career of teaching history in secondary schools and junior colleges, and for those who plan to enter public service.

Requirements may be completed (by the full-time student) in one academic year or in equivalent summer work. Inquiries should be addressed to: Director of Graduate Study, Department of History, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Master's Degree in Physics

The M.S. in physics is a Plan A program requiring a research thesis. Current departmental research interests include atmospheric physics, atomic and molecular physics, Lake Superior water research, solid-state physics, and theoretical particle physics. Summer work on the Duluth Campus involves the research phase of degree work.

SOCIAL DEVELOPMENT PROGRAM

The University of Minnesota, Duluth, School of Social Development, established in the spring of 1971, prepares students for careers in regional and national social development. Emphasis is placed on community organization/development; social policy formulation and analysis; social program adminis-

tration, coordination, and evaluation; and regional planning. A master of social work (M.S.W.) degree program commences in September and January of each year. (Students admitted with advanced standing begin the academic program in June.) Specific information may be obtained from: School of Social Development, University of Minnesota, Duluth, Duluth, Minnesota 55812.

MASTER OF EDUCATION DEGREE

This professional graduate degree program is designed specifically to meet the needs of classroom teachers. It is performance oriented; each student's program is tailored to his specific goals, and research and development on the job is emphasized. Programs can combine almost any mix of work in specific disciplines, learning, curriculum, educational technology, and similar areas. For more information, write to: Director, Master of Education Degree Program, University of Minnesota, Duluth, Duluth, Minnesota 55812.

MASTER OF INDUSTRIAL SAFETY DEGREE PROGRAM

The master of industrial safety degree program is designed to prepare qualified personnel for safety supervisory and management positions in business, government, and industry. Candidates must complete a program of 45 quarter credits at the graduate level and must maintain an overall graduate grade point average of 3.00 or better. The minimum residence requirement for the degree is 3 academic quarters or its equivalent in summer terms. In addition, an industrial internship or field research project is required. For more information write to: Office of Admissions, 104 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

MEDICAL SCHOOL SUMMER COURSES

The School of Medicine—Duluth, established in 1969, was designed as a 2-year basic sciences medical curriculum. The program is oriented toward broadly based training of general or family practice physicians.

A number of Medical School summer courses are open to nonmedical students.

SIXTH-YEAR CERTIFICATION PROGRAM IN EDUCATIONAL ADMINISTRATION

A "sixth year" program in educational administration leading to certification of elementary school principals, secondary school principals, and school superintendents has been developed. This program is not a Graduate School program and does not lead to a graduate degree, but does provide training for certification by the state of Minnesota. The program is administered through

the College of Education, University of Minnesota, Duluth. Inquiries should be addressed to: Director, Sixth-Year Certification Program in Educational Administration, College of Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

SPECIAL EDUCATION

Learning Disabilities (SLBP)—A program leading to endorsement as a certified SLBP teacher is conducted on the Duluth Campus. The program consists of course work and practicums conducted during the academic year only. Elective courses are available during the summer. Enrollment in certain courses will be limited. Students must obtain formal admission to the program prior to enrollment for course work. Due to anticipated heavy demands, prospective applicants should communicate their interest as early as possible. For information, write to: Special Education Programs, Department of Psychology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Mental Retardation (TMR)—Undergraduate students and experienced teachers may obtain certification as teachers for the trainable mentally retarded by successful completion of an approved program of studies. For information about admission to the program and program requirements, write to: Special Education Programs, Department of Psychology, University of Minnesota, Duluth, Duluth, Minnesota 55812.

SPEECH AND HEARING CLINIC

Opportunity is provided for observation at the annual clinic for children with speech and hearing disorders, scheduled June 16 to July 18. Supervised clinical experience is available for University credit if the student has the appropriate teaching experience and course background. Interested students may obtain details from the clinic director.

ACADEMIC OPPORTUNITIES FOR SCHOOL PERSONNEL

The College of Education at UMD offers an unusual array of short-term programs on current topics of interest to school personnel, in addition to more conventional courses and workshops. Students enrolling at UMD may work toward either an M.A. degree or the specialist certificate through the University Graduate School or an M.Ed. degree uniquely designed for practicing classroom teachers. For more information, write to: Dean, College of Education, University of Minnesota, Duluth, Duluth, Minnesota 55812.

SPECIAL COURSE IN FRENCH

Beginning French—A 10-week course will be offered to provide the student with basic proficiency in French, with emphasis on the spoken language. The

class will meet five times a week, 3 hours per day; 2 hours will be spent in the classroom and 1 hour in the language laboratory. The student earns 15 credits upon completion of the course. This is equivalent to the regular first-year sequence (Fr 1101-1102-1103). Credit for the first term will not be granted without completion of the second term. A student should not take any other summer courses concurrently.

COURSES FOR RECENT HIGH SCHOOL GRADUATES

Many courses are open to students who have graduated from high school but who have not taken any university work. These courses enable individuals to strengthen areas in which they are weak or to pursue their special interests. They also allow students to accelerate their program—and this possibility may be especially attractive to those intending to enter one of the professions or graduate study.

WORKSHOPS

Advanced Painting

Guest artist Aribert Munzner, faculty member of the Minneapolis College of Art and Design, will teach Art 5173 for 6 credits during second term, from 9 a.m. to 1 p.m. (plus outside assignments). Enrollment will be limited, and consent of the department must be obtained for registration. Interested students should write to: Art Department, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Teaching Composition

Practical aspects of the composing process, composition theory, problem solving in composition, research, and program design will be the focus of this workshop. Particular attention will be given to prewriting (data gathering, idea formation, the relationship between thought and language, descriptions appropriate to the generation of narrative, expository, or descriptive prose) and to rewriting (evolving means to better enable oneself and others to rethink and revise original work). The workshop (English 5592, 3 credits) will run from June 21 through July 1. The instructor is Eleanor M. Hoffman.

Shakespeare and Teaching Shakespeare

This workshop is designed for the teacher and the student with a special interest in Shakespeare. The group will study one or two plays intensively, and individuals will do research on particular problems of language, interpretation,

acting, and staging as a means of better understanding the plays. Attention will be given to the authoritative literature on such subjects as biography, interpretation, conditions of the Elizabethan theatre, and 20th century approaches to Shakespeare, including the teaching of Shakespeare. The workshop (English 5592, 3 credits) will run from July 18 through July 24. The instructor is Lewis D. Levang.

SUMMER THEATRE

This University Summer Theatre program provides a concentrated experience in all aspects of theatre. Rehearsal, production, and performance activities occupy students 7 days each week of the first summer term. Plays are offered in a regular schedule for the enjoyment of University students, staff, and the community. All production takes place in the new Marshall Performing Arts Center. Ten graduate or undergraduate credit hours in theatre courses are offered through program participation. Small scholarships are available to selected experienced actors and technicians expected to provide leadership for the company.

COACHING CERTIFICATE IN INTERSCHOLASTIC SPORTS

Courses designed to help individuals coaching interscholastic sports fulfill the legislated requirement for a valid coaching certificate will be offered during the first summer term at the University of Minnesota, Duluth, through the Physical Education Department.

CONTINUING EDUCATION AND EXTENSION PROGRAMS

A number of noncredit, short-term programs will be offered at the UMD Campus through the Duluth Continuing Education and Extension Center during the Summer Session. For information and brochure contact: Director of Continuing Education and Extension, 431 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.

Accommodations should be secured by participants through the Housing Office, University of Minnesota, Duluth.

University of Minnesota, Morris

The University of Minnesota, Morris, is located in west central Minnesota, near some of the state's finest resort and fishing areas. Morris, a community of 5,300, offers many recreational facilities including tennis courts, a swimming beach, a nine-hole golf course, and a lighted baseball park located in a 25-acre municipal recreation area.

The UMM campus occupies 45 acres on the eastern side of Morris. The cultural and recreational facilities of the community are available to students and the University also has a variety of recreational facilities and cultural activities geared toward summer students.

A separate Summer Session bulletin concerning the University of Minnesota, Morris, and its summer course listings, is available. For further information and a copy of this bulletin write to: UMM Summer Session, 226 Community Services Building, University of Minnesota, Morris, Morris, Minnesota 56267, phone (612) 589-2482.

LIBERAL ARTS CURRICULUM

As a 4-year liberal arts college of the University of Minnesota, UMM shares in the instruction, research, and service objectives of the entire University system and provides a program in the liberal disciplines fundamental to each of these objectives. Students may participate in one of three degree programs:

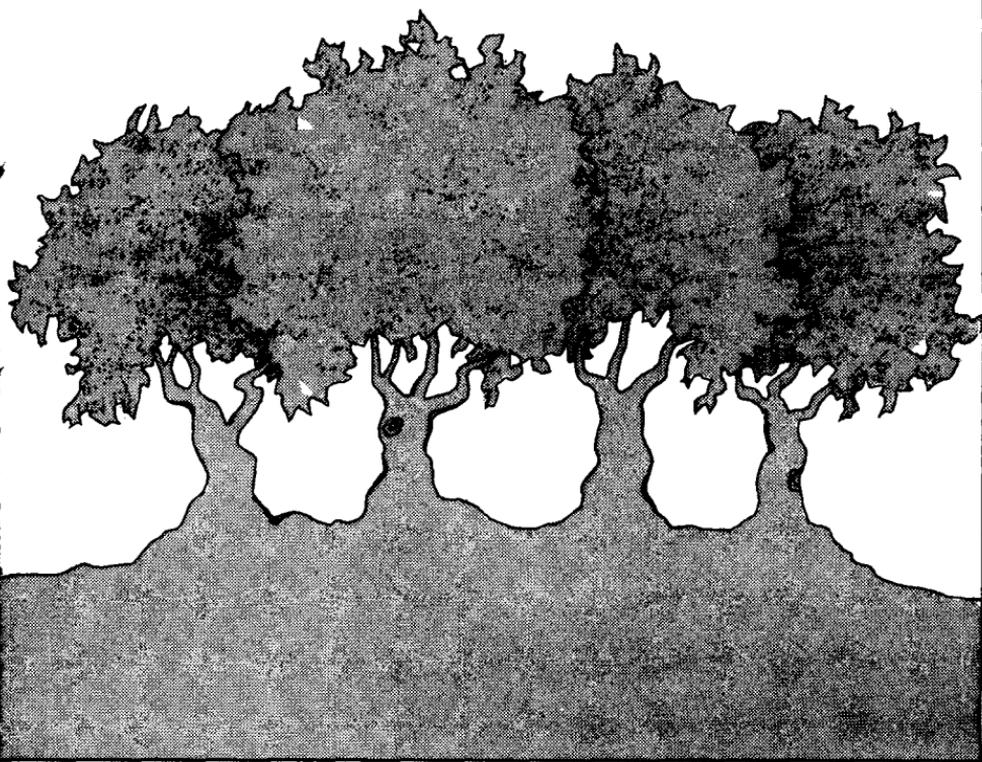
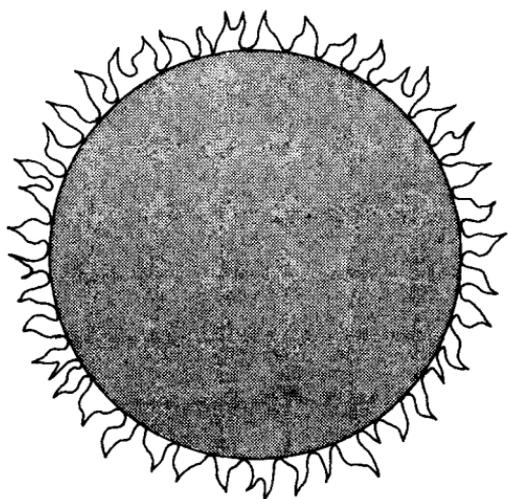
1. A 4-year curriculum in liberal education leading to the bachelor of arts degree.
2. A 4-year curriculum which combines liberal education with teacher preparation and leads to the bachelor of arts degree and certification as an elementary or secondary school teacher.
3. A 1-, 2-, 3-, or 4-year curriculum in liberal education meeting the pre-professional liberal arts requirements of the professional schools of the University of Minnesota or of other institutions.

Competency-Based Social Science Courses

A series of six competency-based social science courses for secondary school teachers who wish to pursue a major in social sciences or to develop their social science competencies in the areas covered in the courses comprises one of the first programs of its kind in the state. The courses will be offered this summer on a 3- or 5-credit basis, depending on student needs and objectives.



*Maps and
Building
Abbreviations*



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
Bu, Burton Hall

CD, Child Development Building
CenH, Centennial Hall
CH, Cooke Hall
ChEng, Chemical Engineering Building
ChRC, Children's Rehabilitation Center
CMU, Coffman Memorial Union
ComH, Comstock Hall

DiehH, Diehl Hall

ECDO, Education Career Development Office
(1425 University Ave SE)
EconRes, Economics Research Building
EdH, Eddy Hall
ElectE, Electrical Engineering Building
EIH, 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
HSUnitK-E, Health Sciences Unit K-E

Jach, Jackson Hall
JOAd, Jackson-Owre Addition
JohH, Johnston Hall
Jones, Jones Hall

KlaCt, Klaeber Court
KolthH, 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
MlrdH, 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
NorriH, 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

RampA, Parking Ramp (Washington Ave at
Union St)
RampB, Parking Ramp (South of Coffman
Union)

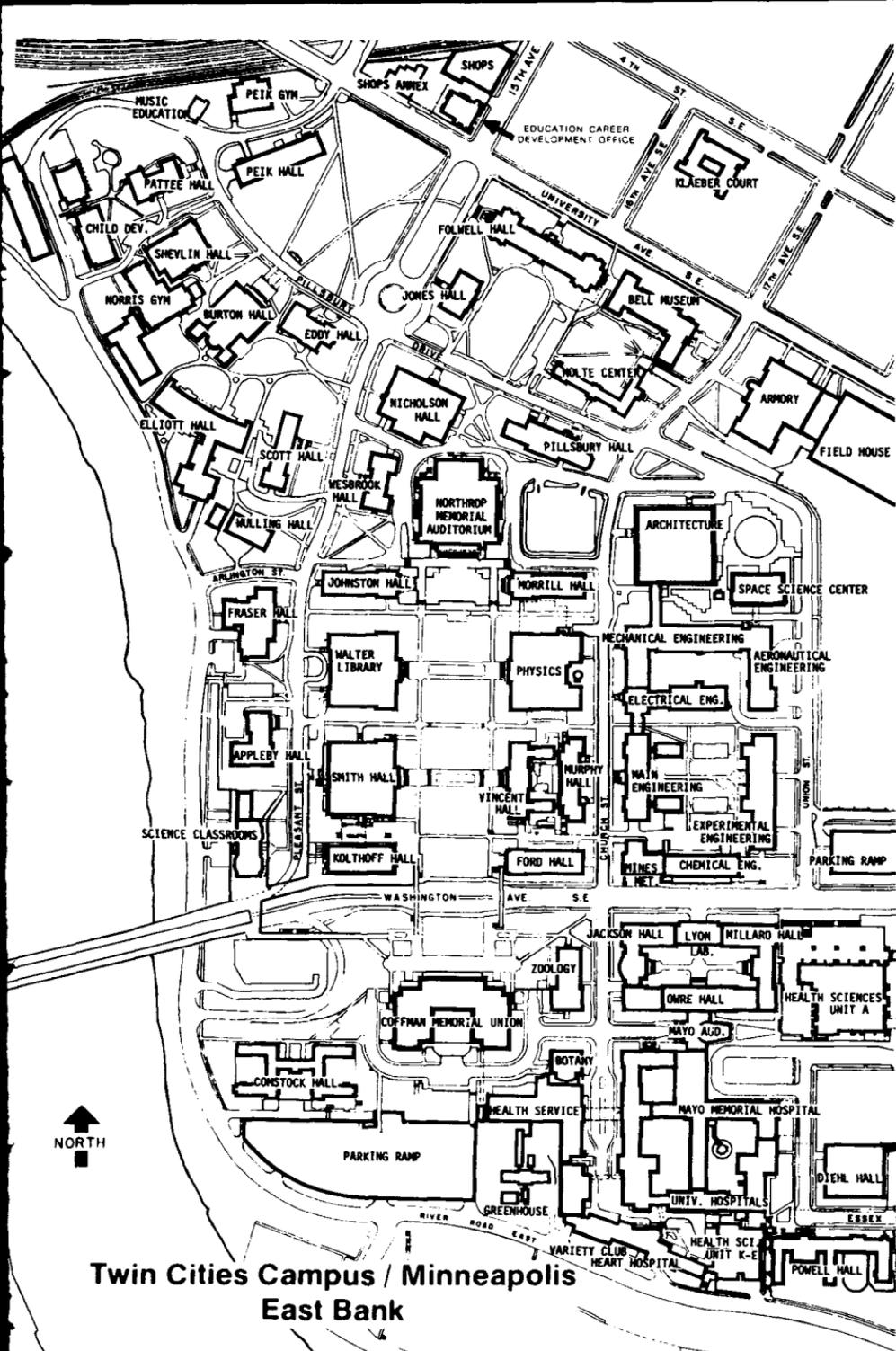
SaH, Sanford Hall
ScH, Scott Hall
SciCB, Science Classroom Building
ShAn, Shops Annex
ShH, Shevlin Hall
SmithH, Smith Hall
SpSci, Space Science Center
Stad, Stadium

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
WmsA, Williams Arena
WuH, Wulling Hall

Z, Zoology Building

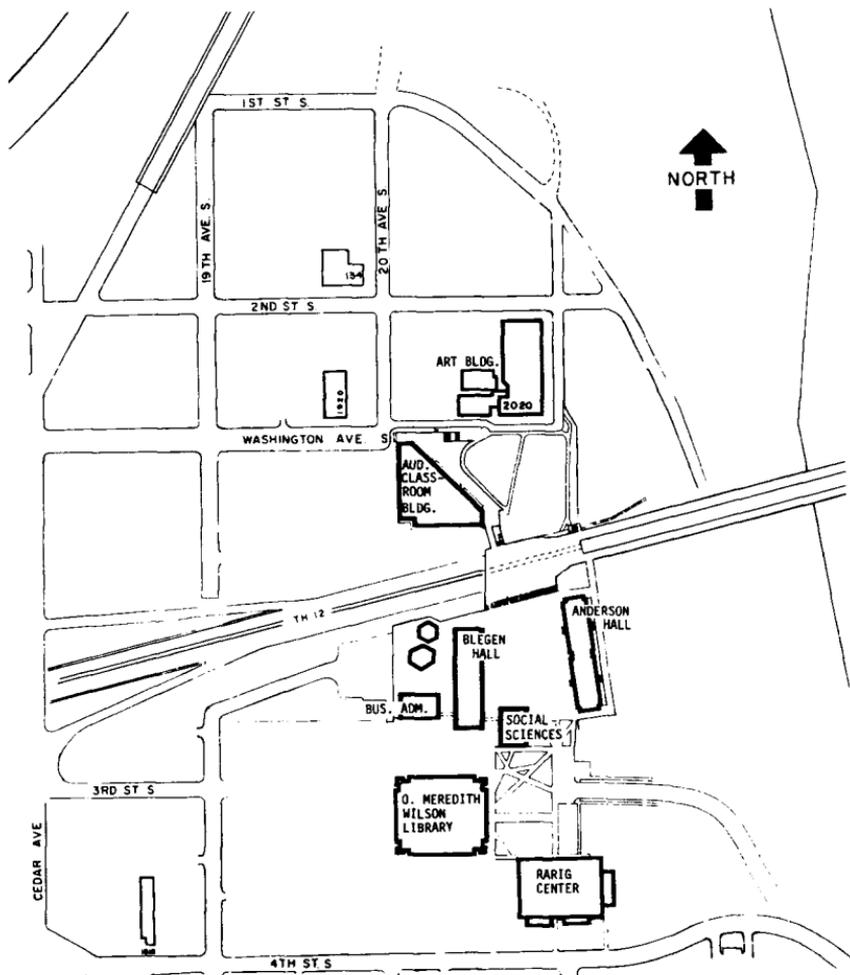


**Twin Cities Campus / Minneapolis
East Bank**

West Bank

AndH, Anderson Hall
ArtB, Art Building
AudCB, Auditorium Classroom Building
BA, Business Administration Building
BlegH, Blegen Hall

MdbH, Middlebrook Hall
OMWL, O Meredith Wilson Library
RarigC, Rarig Center
SBkSt, Smith Bookstore
SocSci, Social Sciences Building



**Twin Cities Campus / Minneapolis
West Bank**

ST. PAUL

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
CofH, 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
Horts, Horticultural Sciences Building (new)
HS, Health Service Building

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

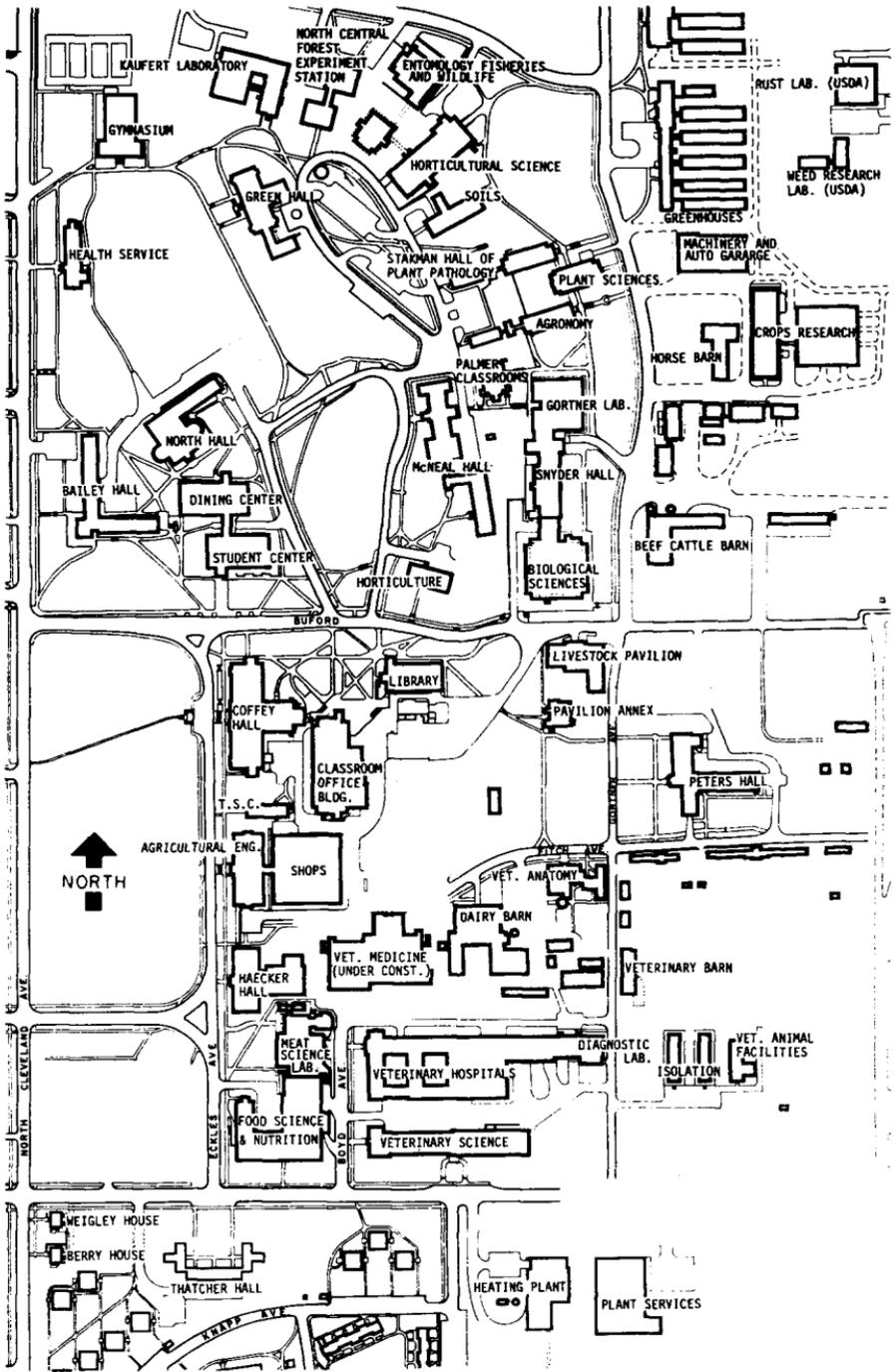
RustL, Rust Laboratory (USDA)

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

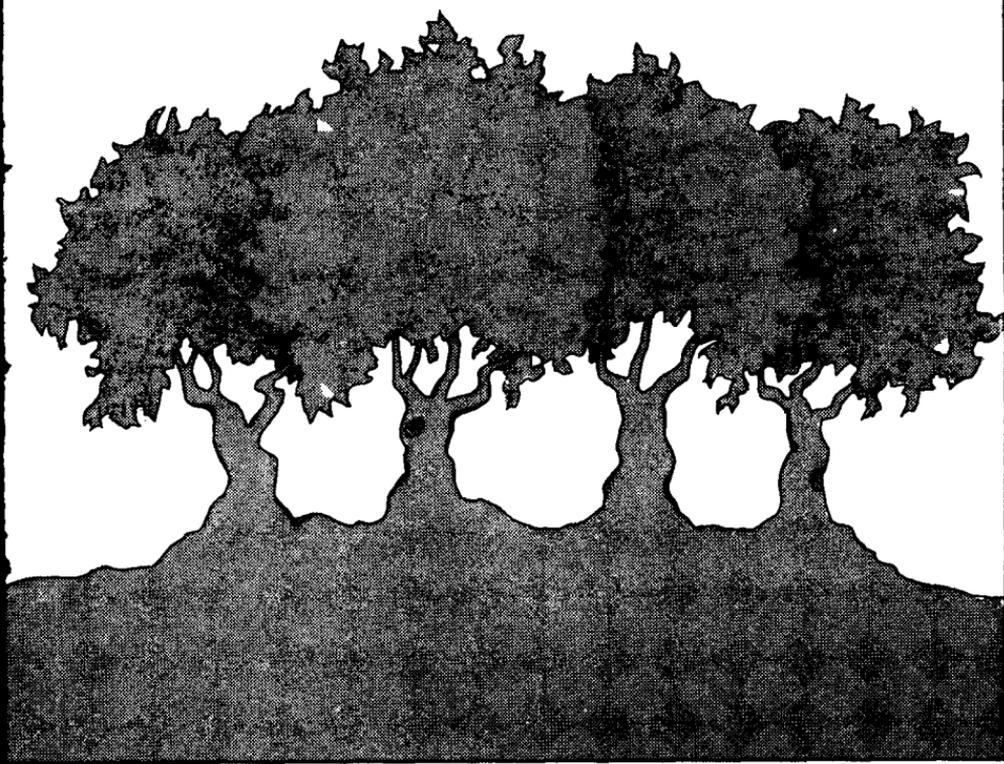
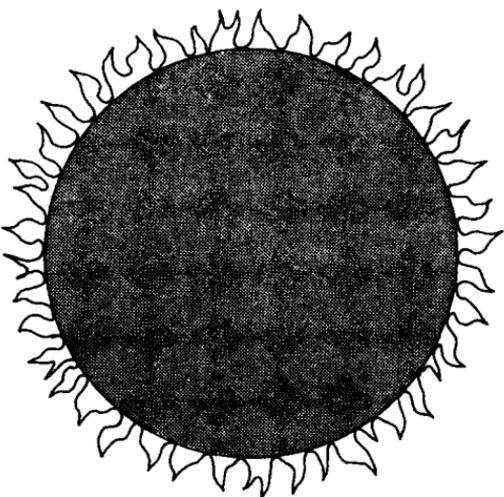
VB, Veterinary Barn
VetA, Veterinary Anatomy Building
VetDL, Veterinary Diagnostic Laboratories
VetH, Veterinary Hospitals
VetIB, Veterinary Isolation Building
VetS, Veterinary Science Building

WeiH, Weigley House
WRL, Weed Research Laboratory



Twin Cities Campus/St. Paul

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University of Minnesota Bulletin

JANUARY 15, 1976



Lake Itasca Biology Session

Summer 1976



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*Lake
Itasca
Biology
Session*

First Term June 13-July 17

Second Term July 18-August 21



General Information

Sponsored by the Summer Session at the Lake Itasca Forestry and Biological Station, the Biology Session is a joint enterprise of various departments of the College of Biological Sciences, the College of Agriculture, and the College of Forestry. By agreement, the University of Wisconsin and the University of North Dakota participate in the policy and planning of the Biology Session through membership on the advisory committee.

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

RESEARCH AND ACADEMIC OPPORTUNITIES

THE ITASCA HABITATS

Itasca Park—an area of national renown—embraces 50 square miles of forests with an excellent system of roads and trails. Within this area are many lakes of different types, providing unusual field opportunities for work in limnology, phycology, aquatic insects, and fungi as well as related fields. The forests of the park are unique. Here the northern coniferous and deciduous types of the central hardwood region meet. In addition, the many bog areas provide a wide variety of plant communities for study. Itasca's forests have been protected for over a half century, and many have never been cut—here, truly, is an unexcelled array of virgin timber stands and communities developing into climax types.

Forty miles to the west a spectacular 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 not only varied ecosystems but also a singular range of fauna and flora with southern, northern, and western origins. Opportunities to study 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 for 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 for 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, entomology, and zoology.

For teachers of biology in high schools and colleges, the session offers opportunity for course work, advanced study, and improvement through independent research. Training for conducting classes in the field is also provided.

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 campus.

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 adequate stereoscopic equipment.

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

The library has ample room for study and excellent series of journals as well as books basic to fieldwork. Other books and journals are available from the University Libraries.

ADMISSION AND REGISTRATION INFORMATION

ADMISSION

Courses are open to all qualified graduate and undergraduate students who have had the usual preliminary courses in biological subjects. General rules for admission of undergraduates to the Summer Session apply to the Biology Session. Students are advised to consult these regulations in the general *Summer Session Bulletin*.

The Board of Regents has committed itself and the University of Minnesota to the policy that there shall be no discrimination in the treatment of persons because of race, creed, color, sex, or national origin. This is a guiding policy in the admission of students in all colleges and in their academic pursuits. It is also to be a governing principle in University-owned and University-approved housing, in food services, student unions, extracurricular activities, and all other student and staff services. This policy must also be adhered to in the employment of students either by the University or by outsiders through the University and in the employment of faculty and civil service staff.

The University of Minnesota abides by the provisions of Title IX, federal legislation forbidding discrimination on the basis of sex, and abides by all other federal and state laws regarding equal opportunity.

Summer-Only Students—Students with previous college work who wish to attend the Summer Session only may do so without filing applications, provided they are in good standing and are not candidates 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. Applications 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 13, 1976, for first term; Thursday, June 17, 1976, for second term).

A student currently enrolled in an advanced degree program in a graduate school at an 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 on 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 Summer 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 Graduate School, 307 Johnston Hall, 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.

Josephine Herz Fellowship, to encourage an outstanding student in ornithological research. For information and applications write to Chairman, Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455.

Fishery and Wildlife Management Summer Scholarships are provided by the Minnehaha Chapter, Izaak Walton League, Question Club of Minneapolis, and the James R. Beer Memorial Scholarship of the Minnesota Student Chapter of the Wildlife Society. For information and applications write to Chairman, Field Biology Program, 349 Bell Museum of Natural History, 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 Session term I or II. Students wishing to be considered should write to Chairman, Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455.

RESERVATIONS

Since both the housing facilities and the size of each class are limited, early application for reservations is recommended. Please complete the Request for Reservation form found on page 23 of this bulletin and mail it to 349 Bell Museum of Natural History, 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, and a letter of evaluation from the student's adviser or supervisor.* The deposit will apply 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 and will be considered 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 13 for first term and July 18 for second term), since openings occur from time to time even in those classes that usually close early.

REGISTRATION

All students must tally for courses offered at the station. IBM class reservation cards will be held for students who have been notified of acceptance after submission of the Request for Reservation.

Whenever possible students should complete their registration at the Office of Admissions and Records on the Twin Cities Campus (either Minneapolis or St. Paul). IBM class reservation cards may be picked up at 130 Coffey Hall in St. Paul during regular Summer Session registration periods.

Registration by out-of-town students can be completed at the station on June 13 for first term or on July 18 for second term. The necessary IBM cards will be held with the reservation.

A total of 10 quarter credits per term is considered a normal academic load. This may be accomplished by (a) registration for two courses (students should check the condensed class schedule on page 23 to avoid scheduling two classes on the same day) or (b) registration for one course and a research problem which may be related to the course. Students registering for a full load have priority over those desiring a reduced load.

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, those students on the waiting list will be accommodated first.

Changes in registration must be approved by the chairman and are strongly discouraged after registration day (June 13, first term; July 18, second term). No changes in registration are permitted after the second meeting of each class. Dropping a course, for any reason, must be approved by the chairman following consultation between student and instructor.

CANCELLATION

Late cancellations are expensive and 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 to the chairman immediately by phone, followed by a statement in writing.

TUITION, FEES, AND OTHER COSTS

ACADEMIC FEES

The following fees, per term, are payable by each regular registrant on or before June 13 or July 18.*

	5 credits	10 credits
Tuition	\$67.50	\$135.00
Student Services Fee	14.75	14.75
Laboratory Fee	8.50	8.50
	\$90.75	\$158.25

*The tuition above is that which was charged in the 1975 session. Final determination of tuition for the 1976 session had not been made at the time this bulletin was printed.

A \$40 deposit is required of all persons making 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 deposit will be applied to the tuition fee.

Persons registering at the University of Minnesota for the first time will 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 will be allowed to 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.

LATE FEES

Tuition and fees are payable at the time of registration on or before June 13 for first term or July 18 for second term. Late fees will be charged as follows:

June 14-18 or July 19-23	\$6
June 21-25 or July 26-30	\$10
Thereafter	\$20

No registration will be accepted after June 13 or July 18 without the approval of the chairman of the Field Biology Program and payment of the late fee.

ROOM AND BOARD COSTS

There is a \$20 per term service charge for dormitory facilities. An initial payment of \$130 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.

ON-CAMPUS ARRANGEMENTS

TRANSPORTATION

Public transportation is available by bus to Park Rapids or Bemidji or by air to Bemidji. The depots are 24 and 42 miles from the station respectively. Students will be met if prior arrangements are made with the chairman. State Highway 92 and U.S. Highway 71 provide easy access by car through the towns of Bagley, Bemidji, or Park Rapids.

CABINS

There are ten cabins for men, each accommodating eight students, and seven cabins for women, each accommodating six students. Women's cabins are equipped with toilets and lavatories. 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 in use of the campground. Applications should be made well in advance of the session. The weekly charge is \$5.

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. It is possible to provide meals for guests at the Itasca Dining Club if meal tickets are purchased in advance.

MEALS

Meals are served to both on-campus and off-campus students in an attractive dining hall located on the lakeshore. The kitchen is operated by the chairman for the students who form a cooperative Itasca Dining Club. Meals are carefully planned, well-balanced, 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, 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. This will not include such things as physical examinations, treatment of chronic conditions, or payment for drugs.

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, and horseshoe equipment are available at the station. Evening social events may be planned by the students. Weekly evening lectures by staff 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 car, but no garages are 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, the State Park regulations govern. The State Park entry sticker (\$3) must be bought for private cars at the park entrance.



Administrative Staff

Academic Program

David F. Parmelee, Program Director
Robert O. Megard, Associate Director
David M. Bosanko, Resident Biologist
Vera Boyle, Bookstore Manager
Arlene Fosdick, Secretary, Field Biology Program
Janet L. Bosanko, Secretary, Summer Session
Rose Mary Schaefer, Librarian

Buildings and Grounds

David W. French, Superintendent
Craig A. Gannon, Administrative Assistant
Robert P. Boyle, Resident Manager

Summer Faculty

Robert E. Beer, Professor, University of Kansas, is an authority on systematics and ecology of phytophagous mites, and development and behavior of sawflies.

Ronald L. Crawford, Assistant Professor, University of Minnesota Freshwater Biological Institute, is studying biodegradation of natural products by microorganisms in soil, water, and sediment. He is particularly interested in the degradation of aromatic hydrocarbons and the plant polymer, lignin.

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.

D. L. Deonier, Associate Professor and Curator of Insects, Department of Zoology, Miami University, Oxford, Ohio, is studying the systematics and ecology of shore flies (Diptera: Ephydriidae) and is especially interested in competitive coexistence and evolution in aquatic leaf-mining shore flies.

Frank J. Etges, Professor of Zoology, University of Cincinnati, has conducted research in the field and laboratory on the physiology and behavior of both the snail host and free-living stages of neotropical schistosomes and other digenetic trematodes. His recent studies have involved field observations on the impact of African man-made lakes upon human health.

David G. Frey, Professor of Zoology, Indiana University, is a limnologist whose research interests are chiefly in paleolimnology and in the ecology, distribution, and evolution of the chydorid Cladocera.

Donald E. Gilbertson, Associate Professor, University of Minnesota, has conducted research on the metabolism and biochemical taxonomy of freshwater snails. He is also studying the factors leading to outbreaks of schistosome dermatitis.

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.

Douglas A. Lancaster, Director of the Laboratory of Ornithology, Cornell University, is interested in neotropical birds, especially in comparative studies relating to the behavior, ecology, and systematics of tinamous, egrets, and herons.

Robert O. Megard, Associate Professor and Associate Chairman of the Biology Session, University of Minnesota, is studying nutrients and the growth of algae in lakes. Previously he has done research on biostratigraphy and sedimentation in 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.

Lewis W. Oring, Associate Professor, University of North Dakota, is studying environmental influence on the evolution and expression of avian mating and spacing systems.

Gerald B. Ownbey, Professor, University of Minnesota, has made extensive studies of the vascular plants of the Upper Midwest and Rocky Mountain regions and specializes in the cytotaxonomy of several genera of higher plants.

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.

Harold E. Schlichting, Jr., currently President of the BioControl Company of Port Sanilac, Michigan, is also associated with the University of Oklahoma Biological Station where he teaches phycology. His research interests lie in the dispersal of microorganisms and biological monitoring of water quality.

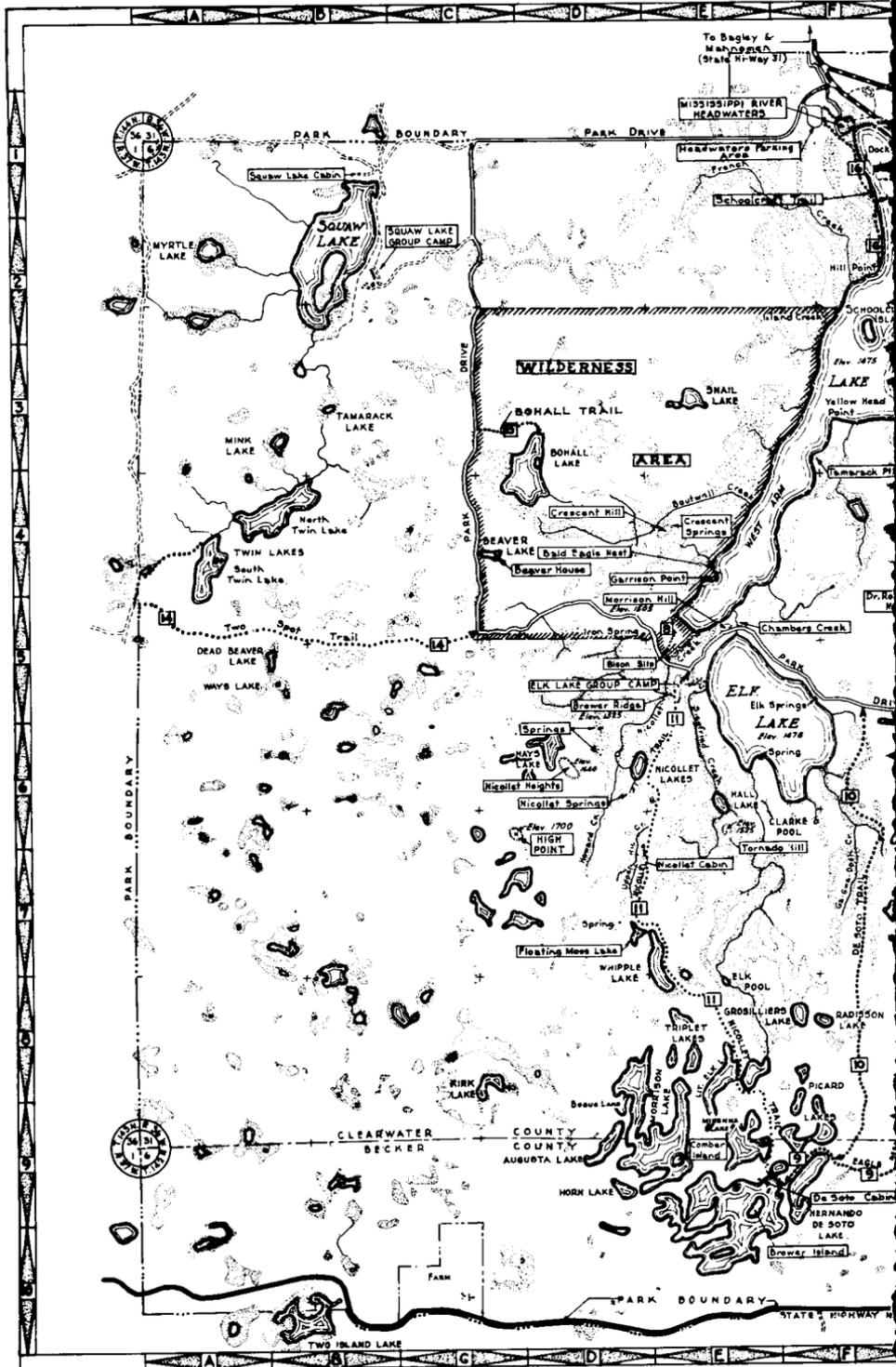
William D. Schmid, Professor, University of Minnesota, is currently studying winter ecology and local distribution patterns of organisms in different habitats.

Elvin 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.

Robert J. Taylor, Assistant Professor, University of Minnesota, studies the behavior of predators and the population dynamics of predator-prey systems. He also does research on the zoogeography of peninsulas.

John R. Tester, Professor and Acting Head, Department of Ecology and Behavioral Biology, University of Minnesota, has investigated prairie ecology and vertebrate distribution and abundance in the Itasca area and is actively working on studies of ecology and behavior of vertebrates using telemetry techniques.

Clifford M. Wetmore, Associate Professor, University of Minnesota, has done extensive collecting of lichens throughout North America and has published monographic and floristic papers in lichenology.



MAP LEGEND

- High Type
- All Weather
- Intermediate Type
- Maintained Gravel Road
- Road
- Not Maintained Dirt Road
- Foot Trails
- Trail Number 12
- All Weather Gravel Road

TRAILS

SELF GUIDING NATURE TRAILS

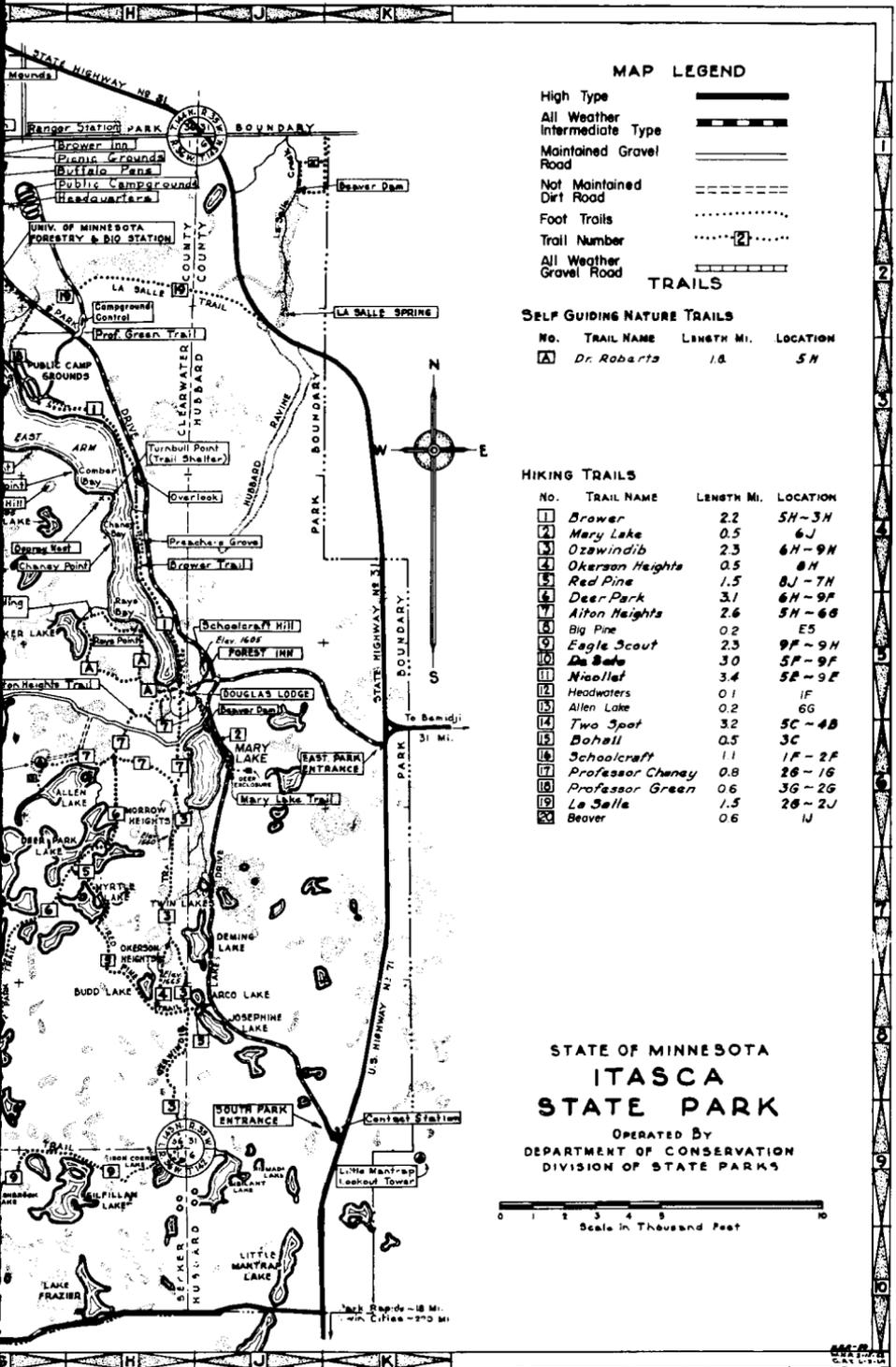
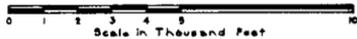
No.	TRAIL NAME	LENGTH MI.	LOCATION
A	Dr. Roberts	1.8	5H

HIKING TRAILS

No.	TRAIL NAME	LENGTH MI.	LOCATION
1	Brower	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	Boholl	0.5	3C
16	Schoolcraft	1.1	1F-2F
17	Professor Cheney	0.8	2E-1G
18	Professor Green	0.6	3G-2G
19	La Salle	1.5	2B-2J
20	Beaver	0.6	1J

STATE OF MINNESOTA ITASCA STATE PARK

OPERATED BY
DEPARTMENT OF CONSERVATION
DIVISION OF STATE PARKS



Jack Rapids - 18 Mi.
W. Cass - 25 Mi.

MAP
G.A. 1954

Courses of Instruction

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 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; OR ZOOLOGY.** (Cr ar; prereq #) Staff
Undergraduate and graduate students may develop a short-term research project in any departmental area listed above during one or both terms.

BOTANY (Bot)

- 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; WS; 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. Text: Gleason and Cronquist, *Manual of Vascular Plants of Northeastern United States*.
- 5805. AQUATIC FLOWERING PLANTS.** (5 cr; limited to 20 students; prereq course in taxonomy; WS; II term) Ownbey
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. Text: Fassett, *Manual of Aquatic Plants*.
- 5811. FRESHWATER ALGAE.** (5 cr; limited to 20 students; prereq 10 cr botany, biology, or zoology; TF; I term) Schlichting
The taxonomy and morphology of freshwater algae as related to ecology. Culturing techniques and identification of field collections, and utilization of this information in teaching and research emphasized. Text: Prescott, *The Algae: A Review*. Also keys by Prescott and Whitford and Schumacher.
- 5821. LICHENS.** (5 cr; limited to 20 students; prereq 10 cr botany or zoology; MTh; II term) Wetmore
Study of the lichens of northern Minnesota, including collection, identification, classification, chemistry, and biology. Crustose as well as macrolichens studied on field trips and in the laboratory. Text: Hale, *How To Know the Lichens*.
- 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; MTh; I term) Frey
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.

- 5813. TOPICS IN LIMNOLOGY.** (5 cr; limited to 12 students; prereq introductory course in limnology [EBB 5812 or 5601 or equiv]...prior completion of Bot 5811 recommended; TF; II term) Megard
Measurement and theoretical analysis of the relationships between photosynthesis and population dynamics of plankton. Lectures, laboratory, and fieldwork.
- 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.** (5 cr; limited to 15 students; prereq course in behavior or ecology; TF; I term) Oring
Field studies stressing evolution and function of behavior. Sound recording, motion picture photography, tape and film analysis, and marking techniques emphasized. Each student completes an individual research project and term paper on the social behavior of one species of bird, mammal, frog, or dragonfly. Projects require a great deal of time outside of class.
- 5817. VERTEBRATE ECOLOGY.** (5 cr; limited to 15 students; prereq course in ecology; MTh; I term) Tester
Field studies on populations and their relationships to local environments; habitat analysis and ecological research methods. Individual and team research projects, field trips, and lectures. Reports and complete data analysis required on two research projects.
- 5818. QUANTITATIVE ECOLOGY.** (5 cr; limited to 15 students; prereq 9 cr ecology, 1 qtr statistics or #; WS; II term) Taylor
Design of field studies of populations, communities, and ecosystems. Emphasis on formulation and testing of hypotheses in the field, design of field sampling, and analysis and interpretation of data; not on particular field methods of collecting data. Several short field problems will be designed by the class, drawing on the collective technical and taxonomic expertise of students and instructor. Lectures on conventional ways of treating and presenting quantitative data and on basic statistical and mathematical models that are most useful to field ecology.
- 5822. REGIONAL LIMNOLOGY.** (5 cr; limited to 20 students; prereq 15 cr biology, 10 cr chemistry; MTh; II term) Gorham
Basic aspects of limnology, involving comparative field and laboratory research on the diverse lakes and ponds of the Itasca region. Particular attention to the morphometric, physical, and chemical characteristics of aquatic ecosystems. Team or individual projects will form the basis for written research reports.

ENTOMOLOGY (Ent)

- 5020. FIELD ENTOMOLOGY.** (5 cr; limited to 15 students; prereq introductory biology; MTh; I term) Beer
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. Text: Borror and DeLong, *An Introduction to the Study of Insects*.
- 5130. AQUATIC ENTOMOLOGY.** (5 cr; limited to 15 students; prereq Ent 3175 or 5020 or equiv or #; MTh; II term) Deonier
Taxonomy and biology of aquatic insects in all stages with emphasis on relationship of structure and behavior to function; aquatic communities. Field trips, research projects, and lectures. No single text specified; students introduced to a wide array of reference works.

PLANT PATHOLOGY (PIP_a)

- 5102. INTRODUCTORY MYCOLOGY.** (5 cr; limited to 15 students; prereq 6 cr botany; MTh; II term) Stewart
Survey of the major groups of fungi, including slime molds, with emphasis on their life histories, habitats, and relationships with human affairs. Field collecting and identification stressed.

SOIL SCIENCE (Soil)

- 5642. MICROBIAL ECOLOGY.** (5 cr; limited to 12 students; prereq course in microbiology...experience with radioisotopes recommended; WS; II term) Crawford
Methods in aquatic and soil microbiology. Degradative capabilities of natural microbial populations. Lecture, laboratory, and fieldwork.

ZOOLOGY (Zool)

- 5814. NATURAL HISTORY OF INVERTEBRATES.** (5 cr; limited to 20 students; prereq Biol 1106 or equiv; WS; I term) Gilbertson
Advanced taxonomic and ecological survey of the local fauna and independent ecological studies of several taxonomic groups. Texts: Eddy and Hodson, *Taxonomic Keys of the Common Animals of Minnesota*; Pennak, *Freshwater Invertebrates of the United States*.
- 5819. NATURAL HISTORY OF VERTEBRATES.** (5 cr; limited to 20 students; prereq Biol 1106 or equiv; TF; II term) Schmid
Taxonomic survey of local vertebrates, exclusive of birds. Emphasis on collection, identification, and preservation of fish and mammal specimens. Individual field projects dealing with natural history of vertebrates in local habitats. Texts: Eddy and Underhill, *Northern Fishes*; Burt, *Mammals of the Great Lakes Region*.
- 5834. FIELD ORNITHOLOGY.** (5 cr; limited to 15 students; prereq Biol 1106 or equiv; TF; I term) Lancaster
Field and laboratory studies of birds in the Itasca Park region. Field trips to a variety of habitats to learn bird identification, study avian ecology and behavior, and observe and practice techniques for conducting field studies. Laboratory sessions investigate family distinctions and species identification. Individual field projects. Texts: Pettingill, *Ornithology in Laboratory and Field*, 1970; Robbins, et al, *Birds of North America*, 1966.
- 5843. ANIMAL PARASITES.** (5 cr; limited to 15 students; prereq Biol 1106 or equiv; MTh; I term) Etges
Parasites of local fauna with special reference to helminths. Text: Noble and Noble, *Parasitology: The Biology of Animal Parasites*.
- 5869. PHYSIOLOGICAL ECOLOGY.** (5 cr; limited to 15 students; prereq course in physiology or ecology; WS; I term) Schmid
Analysis of functional adaptations of organisms to various physical and biotic factors of the natural environment. Texts: Hochachka and Somero, *Strategies of Biochemical Adaptation*; Peusner, *Concepts in Bioenergetics*.

PROPOSED COURSE PROGRAMS

In order that students may plan more effectively to utilize the academic resources of the Biology Session, the following projected program of courses is presented. Courses will be offered as indicated, although shifts 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, 5813, 5814, 5815, 5817
Ent 5020, 5130
PIPa 5102
Zool 5814, 5819, 5834, 5843

Proposed Courses for 1977

Bot 5815. Bryophytes
Bot 8970. Special Topics: Biology of the Ferns
EBB 5820. Wetland Ecology
EBB 5821. Quaternary Ecology
Soil 5532. Soils and the Ecosystem
Zool 5146. Experimental Parasitology
Zool 5807. Protozoology

Proposed Courses for 1978

Bot 5821. Lichens
EBB 5818. Quantitative Ecology
EBB 5822. Regional Limnology
Soil 5642. Microbial Ecology
Zool 5843. Animal Parasites
Zool 5869. Physiological Ecology

SPRING TERM

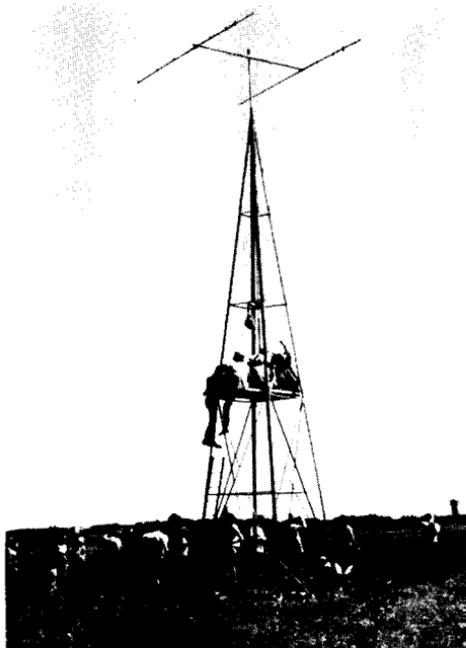
A number of courses are offered at the Forestry and Biological Station at times corresponding to the spring-quarter period on the Twin Cities Campus. Most of these courses commence on the Twin Cities Campus and move to Itasca on about May 1 for a 5-week period of intensive fieldwork during an exceptionally attractive time of year. Interested persons should contact the Chairman of the Field Biology Program, 349 Bell Museum of Natural History, University of Minnesota, Minneapolis, Minnesota 55455.

Proposed Courses for 1976 Spring Term

Bot 5205. Flora of Minnesota
EBB 5817. Vertebrate Ecology
FW 5105. Basic Wildlife Biology
Zool 5834. Field Ornithology

HERZ LECTURE

Mr. and Mrs. Malvin E. Herz of Minneapolis sponsor a lecture series in ornithology during the first summer term of the Lake Itasca Biology Session. The 1975 lecture, entitled "Galapagos Wild Eden," was presented by Dr. Roger Tory Peterson. Plans for the 1976 lecture will be announced at a later date.



Recent Research Publications

- BAKER, A. L., A. J. BROOK and A. R. KLEMER. Some photosynthetic characteristics of a naturally occurring population of *Oscillatoria agardhii*. *Gomont. Limnol. and Oceanogr.*, 14 (3):327-333. 1969.
- CVANCARA, VICTOR A. Studies on tissue arginase and ureogenesis in freshwater teleosts. *Comp. Biochem. Physiol.*, 30:489-496. 1969.
- KELLEHER, K. E. and J. R. TESTER. Homing and survival in the Manitoba toad, *Bufo hemiophrys*, in Minnesota. *Ecology*, 50(6):1040-1048. 1969.
- LANG, JEFFREY W. Hibernation and movements of *Storeria occipitomaculata* in northern Minnesota. *J. Herpetology*, 3(3-4):196-197. 1969.
- MEYER, R. L. and A. J. BROOK. Freshwater algae from Itasca State Park, Minnesota. II. Chrysophyceae and Xanthophyceae. *Nova Hedwigia*, 17:105-122. 1969.
- MEYER, R. L. and A. J. BROOK. Freshwater algae from Itasca State Park, Minnesota. III. Pyrrophyta and Euglenophyta. *Nova Hedwigia*, 18:367-382. 1969.
- MORLEY, T. Spring flora of Minnesota. University of Minnesota Press. 1969.
- PEARSON, L. C. Influence of temperature and humidity on distribution of lichens in a Minnesota bog. *Ecology*, 50(4):740-746. 1969.
- QUADE, HENRY W. Cladoceran faunas associated with aquatic macrophytes in some lakes in northwestern Minnesota. *Ecology*, 50(2):171-179. 1969.
- SCHMID, WILLIAM D. Physiological specializations of amphibians to habitats of varying aridity. *Physiological Systems in Semiarid Environments*, 135-142. 1969.
- WAGNER, DIANE T. A monocentric, holocarpic fungus in *Lemna minor* L. *Nova Hedwigia*, 18. 1969.
- WARNER, D. W. and D. A. BEIMBORN. First Caspian tern nesting in Minnesota. *Loon*, 41 (3):83-84. 1969.
- BROOK, A. J., A. L. BAKER and A. R. KLEMER. The use of turbidimetry in studies of the population dynamics of phytoplankton populations with special reference to *Oscillatoria agardhii* var *isothrix*. Contribution to Int. Limnol. Assoc. Symposium. September 1970.
- HODGES, C. S., JR., GLORIA M. WARNER and CLARK T. ROGERSON. A new species of *Penicillium*. *Mycologia*, LXII(6):1106-1111. 1970.
- KINGSBURY, PHYLLIS J. Calanoid copepods from the forest to prairie transition in the Itasca Park region of Minnesota. *Iowa Acad. Sci.*, 77:223-227. 1970.
- OGLE, THOMAS F. Changes in thermal conductivity of the integument in nonhibernating 13-lined ground squirrels (*Spermophilus tridecemlineatus*) in relation to ambient temperature. *Physiol. Zool.*, 43(2):98-108. 1970.
- ROSS, BRUCE A., J. R. BRAY and W. H. MARSHALL. Effects of long-term deer exclusion on a *Pinus resinosa* forest in north-central Minnesota. *Ecology*, 51(6):1088-1093. 1970.
- SANGER, J. E. and E. GORHAM. The diversity of pigments in lake sediments and its ecological significance. *Limnol. and Oceanogr.*, 15:59-69. 1970.
- TESTER, J. R., M. A. EWERT and D. B. SINIFF. Effects of ionizing radiation on natural and laboratory populations of Manitoba toads, *Bufo hemiophrys*. *Radiation Research*, 44(2):379-389. 1970.
- UTTER, J. M. and E. A. LEFEBVRE. Energy expenditure for free flight by the purple martin (*Progne subis*). *Comp. Biochem. Physiol.*, 35:713-719. 1970.
- 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 *Derepysis* (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.
- WIGGINS, GLENN B. A contribution to the biology of caddisflies (Trichoptera) in temporary pools. Royal Ontario Museum, Life Sciences Contribution #88. 1973.
- BOERNKE, W. E. Natural variations in hepatic and kidney arginase activities in Minnesota anuran amphibians. *Comp. Biochem. Physiol.*, 47B:201-207. 1974.
- MCINTYRE, JUDITH W. Territorial affinity of a common loon. *Bird Banding*. 1974.
- PARMELEE, DAVID F. The nest of the Northern Parula. *Living Bird*, 12:197-199. 1974.
- SCHLICHTING, H. E., JR. Ejection of microalgae into the air via bursting bubbles. *J. Allergy and Clinical Immunology*, 53(3):185-188. 1974.
- SCHLICHTING, H. E., JR. Survival of some freshwater algae under extreme environmental conditions. *Trans. Amer. Microsc. Soc.*, 93(4):610-613. 1974.
- WHITESIDE, M. C. Chydorid (Cladocera) ecology: seasonal patterns and abundance of populations in Elk Lake, Minnesota. *Ecology*, 55(3):538-550. 1974.
- BAKKO, EUGENE B. A field water balance study of gray squirrels (*Sciurus carolinensis*) and red squirrels (*Tamiasciurus hudsonicus*). *Comp. Biochem. Physiol.*, 51A:759-768. 1975.
- BLACK, CHARLES and LEWIS W. ORING. Dump nesting in the spotted sandpiper. *Wilson Bull.* (in press).
- BUELL, MURRAY F. and HELEN F. BUELL. Moat bogs in the Itasca Park area, Minnesota. *Bull. Torrey Bot. Club*, 102(1):6-9. 1975.
- GILBERTSON, D. E. and L. SCHMID. Free amino acids in the hemolymph of five species of pulmonate snails. *Comp. Biochem. Physiol.*, 51B:201-203. 1975.
- GILBERTSON, D. E. and R. WEDLUND. Studies on schistosome dermatitis ("swimmer's itch") in Minnesota. *J. Minn. Acad. Sci.* (in press).
- HALL, R. J., L. BERNER and E. F. COOK. Observations on the biology of *Tricorythodes atratus* McDunnough (Ephemeroptera: Tricorythidae). *Proc. Ent. Soc. Wash.* (in press).
- HEIDEMANN, MERLE KNUDSON and LEWIS W. ORING. Functional analysis of spotted sandpiper (*Actitis macularia*) song. *Behaviour* (in press).
- WIGGINS, GLENN B. Contributions to the systematics of the caddisfly family Limnephilidae (Trichoptera). *II Can. Ent.*, 107:325-336. 1975.

Graduate Student Theses

- BREDAHL, EDWARD A. A study of water balance in hibernating and nonhibernating *Citellus franklinii*. Ph.D. Thesis, University of North Dakota. 1969.
- EWERT, MICHAEL ALLYN. Seasonal movements of the toads *Bufo americanus* and *B. cognatus* in northwestern Minnesota. Ph.D. Thesis. 1969.
- HOFSTETER, RONALD H. Floristic and ecological studies of wetlands in Minnesota. Ph.D. Thesis. 1969.
- KURMIS, VILIS. Dynamics of advance reproduction in upland forest communities in Itasca State Park, Minnesota. Ph.D. Thesis. 1969.
- MOYLE, PETER B. Ecology of the fishes of an oligotrophic Minnesota lake, with special reference to the minnows (Cyprinidae): *Notropis volucellus*, *N. cornutus*, and *Pimephales notatus*. Ph.D. Thesis. 1969.
- WILLIAMS, PATRICK K. Ecology of *Bufo hemiophrys* and *B. americanus* tadpoles in northwestern Minnesota. M.S. Thesis. 1969.
- HEDEEN, STANLEY E. The ecology and life history of the mink frog, *Rana septentrionalis* Baird. Ph.D. Thesis. 1970.
- NELSON, DARBY 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 psammon 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.
- STASIAK RICHARD H. The morphology and life history of the finescale dace, *Pfrittle neogaea*, in Itasca State Park, Minnesota. Ph.D. Thesis. 1972.
- SWAIN, PATRICIA C. An analysis of morphological differences among oaks in selected Minnesota stands of the *Quercus borealis*-*Q. ellipsoidalis*. M.S. Thesis. 1972.
- BAKER, ALAN L. Microstratification of phytoplankton in selected Minnesota lakes. Ph.D. Thesis. 1973.
- BAKKE, 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.
- 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 (*Megascyle 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.



Condensed Course Schedule*

I TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
EBB 5812	Bot 5811	Bot 5801	EBB 5812	Bot 5811	Bot 5801
EBB 5817	EBB 5815	Zool 5814	EBB 5817	EBB 5815	Zool 5814
Ent 5020	Zool 5834	Zool 5869	Ent 5020	Zool 5834	Zool 5869
Zool 5843			Zool 5843		

II TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5821	EBB 5813	Bot 5805	Bot 5821	EBB 5813	Bot 5805
EBB 5822	EBB 5814	EBB 5818	EBB 5822	EBB 5814	EBB 5818
Ent 5130	Zool 5819	Soil 5642	Ent 5130	Zool 5819	Soil 5642
PIPa 5102			PIPa 5102		

*Schedule 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 1976: _____

University or College Now Attending: _____

If U of M, College in Which Last Enrolled _____ Year _____

Reserve a place in the following course(s) for me:

I Term: Dept. _____ No. _____ and Dept. _____ No. _____

II Term: Dept. _____ No. _____ and Dept. _____ No. _____

(see condensed course schedule to avoid conflicts)

I wish a reservation in a student cabin, a campground site, or a resort list (circle one). Enclosed find \$40 deposit (check or money order payable to 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).

IMPORTANT: Applications will not be reviewed until all items listed above are received. Please mail this form to:

Chairman, Field Biology Program
349 Bell Museum of Natural History
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