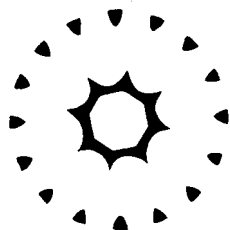


University of Minnesota Bulletin



**SUMMER
SESSION
1978**

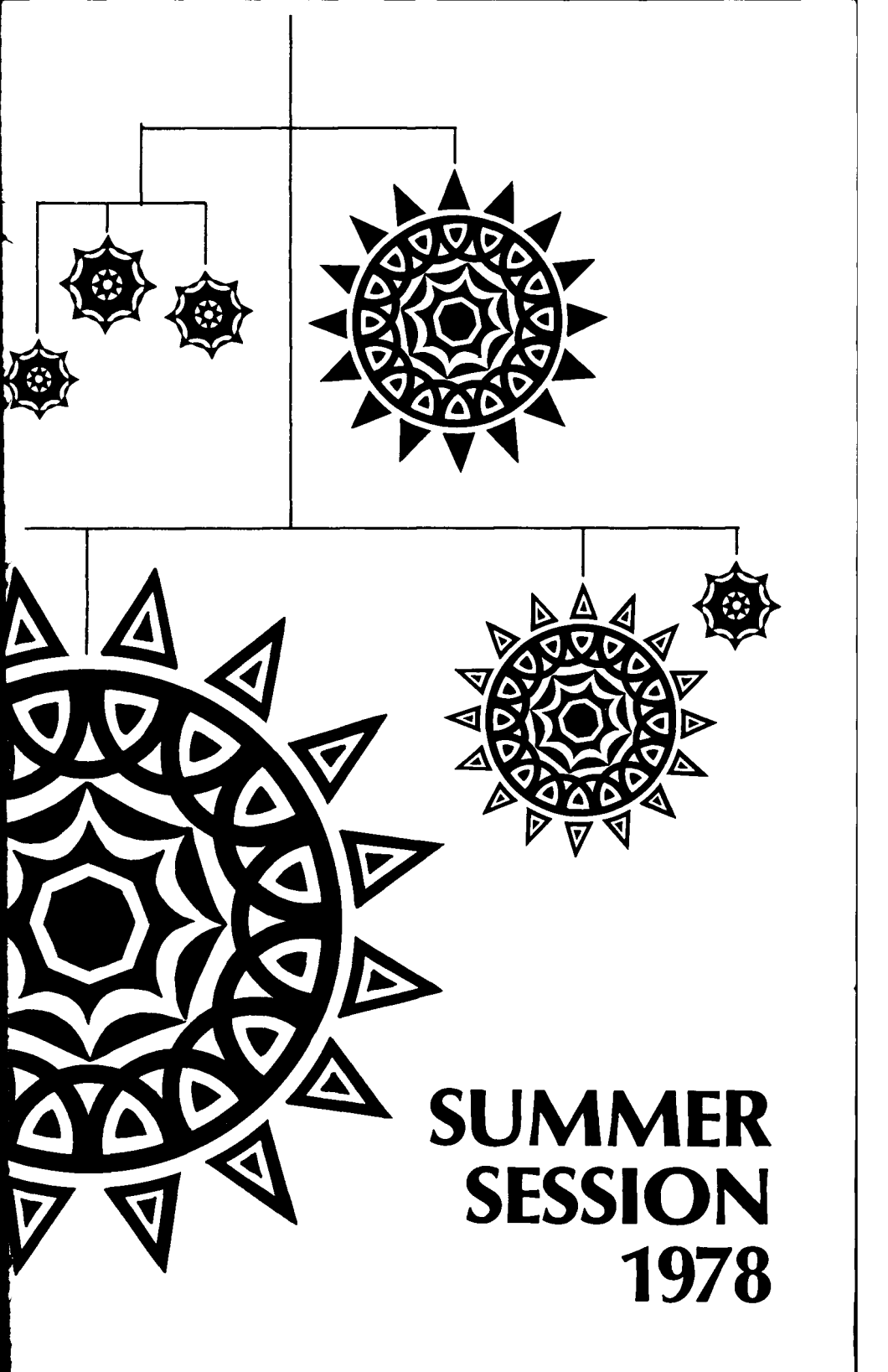


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**SUMMER
SESSION
1978**

Calendar

- May 15 Graduate School application deadline for first term admission.
- May 30-June 2 Registration period. Students may register for first term or second term or both terms at this time.
- June 5-9 Registration closed.
- June 6 Last day to pay graduation fees for first term.
- June 12 Last day to register for first term and to pay fees without incurring late fee. Late fees are assessed according to the following schedule:
- | | |
|------------|------|
| June 13-16 | \$ 6 |
| June 19-23 | \$10 |
| Thereafter | \$20 |
- June 13 FIRST TERM CLASSES BEGIN.
- June 14 Graduate School application deadline for second term admission.
- June 16 Thesis registration deadline for graduate students.
- July 4 Holiday.
- July 12-14 Registration period for second term.
- July 14 Last day of class for first term.
Last day to pay graduation fee for second term.
Final Oral Exam Report and all other forms due (graduate students only).
- July 17 Last day to register for second term and to pay fees without incurring late fee. Late fees are assessed according to the following schedule:
- | | |
|------------|------|
| July 18-21 | \$ 6 |
| July 24-28 | \$10 |
| Thereafter | \$20 |
- July 18 SECOND TERM CLASSES BEGIN.
- July 28 Two bound copies of master's or doctoral thesis due.
- August 18 Last day of class for second term.

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DO YOU HAVE QUESTIONS ABOUT SUMMER SESSION? YOUR ANSWER MAY BE HERE...

How do I register?

Register according to the step-by-step procedures described on pages 16-17.

When do I register?

May 30-June 2 and June 12 for either or both terms; July 12-14 and July 17 for second term. Students in residence spring quarter or some previous quarter should check with their college office for early registration dates.

Where do I register?

Register in one of the college offices listed on page 16. *All teachers are requested to register through the College of Education, regardless of the course(s) they wish to attend.*

Can I attend summer session even though I am not a regularly enrolled University of Minnesota student?

Yes, you can attend as a summer-only student. For a description of summer-only status, see page 11.

Is there an application form?

Not for summer-only students.

Can I register by mail?

No.

Can someone else register for me?

Yes. Your representative should have full information on the course(s) you want to take (and choice of alternate courses), plus your address, social security number, proof of health insurance, and other necessary personal information. When registering, your representative must present your ID card and a signed note from you granting him or her permission to register for you.

Can I reserve courses before registration starts?

No. Reserving a course is part of the registration procedures, which must be carried out in the order described on pages 16-17.

When do classes begin?

First term classes begin on Tuesday, June 13. Second term classes begin on Tuesday, July 18. A few classes have a Monday starting date. Check the course descriptions.

Must I pay the student services fee? Must I pay all of it?

Students registering for 3 or more credits per term must pay the student services fee. Students enrolled in workshops lasting less than a full 5-week term will pay the fee on a prorated basis. Students who have adequate health care coverage may apply for a partial exemption from the health service portion of the student services fee (see pages 20-21). Be sure to bring proof of coverage with you when you register.

How much does it cost to audit a course?

Auditors pay tuition at the same rate as students enrolled for credit.

How can I make arrangements to live in a residence hall?

See information on page 26.

I'm a high school student. Can I attend the summer session?

Yes. High school students may take University courses. See page 14 for special admission procedures.

I'm a senior citizen. Do I pay tuition?

Senior citizens are invited to audit classes tuition-free after tuition-paying students have been accommodated. Details are explained on page 16.

Can I transfer credits earned at the University to another school?

The college or university must approve courses for transfer.



-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 13, and second term classes on TUESDAY, JULY 18, EXCEPT where a Monday starting date is specified.

All students not regularly enrolled spring quarter 1978 must be prepared to show their United States Social Security numbers.

Equal Opportunity Statement

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

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

A Guide to the Summer Session Bulletin

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

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

Following each course title is a parenthetical statement specifying credits, class limits, prerequisites, class hours, days of the week the class meets, 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 insofar 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 that must be taken in sequence are prerequisites, only the last course of the sequence is listed.

When no abbreviated departmental prefix precedes the course 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 completed either course 1011 or 1017 in the same department and Psychology 1002).

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

Hours and Days—Class hours are identified by roman numerals and continue for 50 minutes after the beginning times shown below:

Minneapolis (East and West Banks) and St. Paul	I 8:00	II 9:05	III 10:10	IV 11:15	V 12:20	VI 1:25	VII 2:30	VIII 3:35
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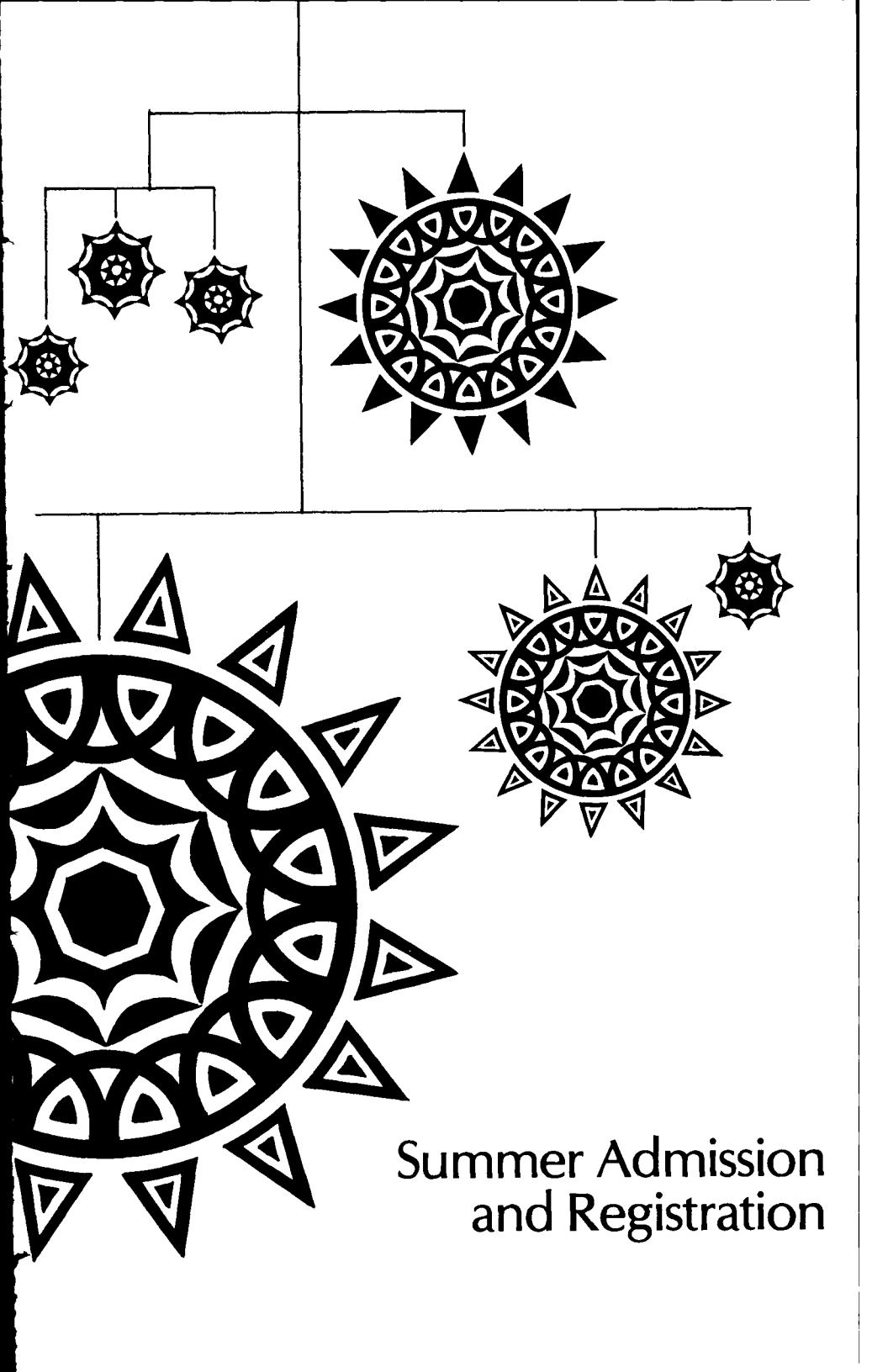
A class listed I-III TTh meets the first *through* third hours Tuesdays and Thursdays; the hyphen always indicates "through." A class listed I, III meets the first *and* third hours; the comma always indicates "and." Days of the week are abbreviated M, T, W, Th, F, S.

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

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

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

Changes made subsequent to 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 12 through July 14 and July 17 through August 18. 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 must be made by 3:30 p.m. on Monday, June 12. First term classes on the Twin Cities campus begin Tuesday, June 13, at 8:00 a.m.

Payment of fees for the second term without assessment of late fees must be made by 3:30 p.m. on Monday, July 17. Second term classes on the Twin Cities campus begin Tuesday, July 18.

Most individual courses are completed in a single term.

Admission

Summer session courses are open to high school graduates, students with previous college work, and high school students with special abilities and interests that can be satisfied by attending college before high school graduation. 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:

1. High school graduates.
2. Former University of Minnesota students (including Minnesota graduates) who are not now pursuing a degree from the University.
3. Students with college work at a school other than the University of Minnesota (Twin Cities campus) who do not plan to obtain a degree from the University or who have not been admitted as degree candidates for summer session 1978.
4. Others who have the approval of the Office of Admissions.

Attendance as a summer-only student does not guarantee admission to a regular degree program at the University of Minnesota.

ADMISSION TO DEGREE PROGRAMS FOR THE SUMMER SESSION

Any student who expects to receive a degree from the University of Minnesota must file an application, any necessary credentials, and a \$10 credentials examination fee (\$15 for the Graduate School) in order to gain regular admission to a college of the University. Summer-only registration does not qualify 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 and specific college bulletins and brochures may be obtained by writing to the Office of Admissions and Records, 110 Williamson Hall, 231 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455. Zip codes MUST accompany requests for bulletins and brochures.

Entering Freshmen

Summer session offers high school graduates an opportunity to begin college work without the usual summer delay. The colleges that admit freshmen to their

programs will accept high school graduates for admission in either term of the summer session.

The General College, College of Business Administration, Institute of Technology, and College of Liberal Arts do not admit new students to begin degree programs in the summer. Individuals who plan to enter a degree program in one of these units should apply for fall quarter admission. However, they may take summer courses under summer-only status and apply them for degree credit upon admission to the unit and registration in a regular quarter of the academic year. These students attend the orientation-registration program with other students entering the unit fall quarter.

To be assured full consideration in time for admission to a degree program (for all colleges except GC, CBA, IT, and 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 that begin course sequences during a specified term, the General College, the College of Business Administration, the Institute of Technology, and the College of Liberal Arts. Individuals who plan to enter a degree program in one of these units apply for fall quarter admission and register under summer-only status. Courses completed satisfactorily during the summer will be accepted for degree credit when the student is admitted to the unit and has registered for one of the regular quarters of the school year.

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

GRADUATE STUDENTS

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

Any student with a bachelor's degree or its 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. Normal procedures for admission to the Graduate School must 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—by May 15, 1978 for first term admission and June 14, 1978 for second term admission. Application forms and Graduate School bulletins may be obtained from the Graduate School, 307 Johnston Hall, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Students with a 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 register as special summer-only students. If they subsequently decide to apply for admission to the Graduate School, they may transfer *only their first two consecutive term's work as an adult special or summer-only student* to their graduate program. Only graduate-level courses taught by members of the graduate faculty may be transferred.

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

Candidacy for a Degree

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

Following registration for at least 1 term, the student who expects to obtain a master's degree must present the program and thesis title (for Plan A) or program (for Plan B) for the adviser's recommendation and for transmission to the Graduate School for action by the appropriate unit committee. Approval by the Graduate School confirms the student's admission to candidacy for the degree.

Requirements for Advanced Degrees

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

Deadlines for Summer Session Graduation

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

Thesis registration—June 16, 1978

Final Oral Examination Report and all other forms due—July 14, 1978

Two bound copies of the master's (Plan A) or doctoral thesis—July 28, 1978

Degree date (no ceremony)—August 18, 1978

HIGH SCHOOL STUDENTS

Outstanding high school students who have special interests that can be satisfied by attending college before high school graduation may apply for summer session admission to take work between their junior and senior years in high school. Registration is usually restricted to courses at the 1xxx level. Credits earned will be counted toward graduation if the student later enrolls in the University.

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



Registration, Fees

So that students may receive maximum benefit from the short summer session terms late entrants will not disrupt courses in progress, students are expected to complete their registration during the specified registration periods. All students not regularly enrolled during spring quarter 1978 must be prepared to show their United States Social Security number.

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

Registration will not be open between June 5 and June 9.

STUDENTS CURRENTLY OR PREVIOUSLY IN RESIDENCE AND DEGREE CANDIDATES

- Students in residence spring quarter should register on the dates announced in the *Minnesota Daily* and in their college office. They should register through the college in which they were last enrolled. A registration permit is required.
- Students in residence some previous quarter(s) (exclusive of summer-only or extension-only registration) also may register on the announced dates through the college in which they were last enrolled. A registration permit from that college is required, and it may be obtained in 106 Morrill Hall (130 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 under summer-only status are listed on page 11. They will register according to the following schedule:

First Term

- Dates: May 30 through June 2 and on June 12 (registration is closed June 5 through June 9).
Time: 8 a.m. to 4:15 p.m.
Place: Register in the college in which most courses are taken. Teachers registering for any course and other persons taking professional education courses should register through the College of Education.

Second Term

- Dates: May 30 through June 2 and on June 12; July 12 through July 14 and on July 17 (registration is closed June 5 through June 9, and June 13 through July 11).
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 14 for first term courses and on July 19 for second term courses. Persons who wish to register should come to 106 Morrill Hall and should bring identification to verify age and Minnesota residency.

COLLEGE REGISTRATION OFFICES

Agriculture, 130 Coffey Hall (St. Paul)

Biological Sciences, 223 Snyder Hall (St. Paul)

Business Administration, 225 Business Administration Building (West Bank)

Dental Hygiene, Health Sciences Unit A 5-164

Dentistry, Health Sciences Unit A 15-106

Education, ECDO, 1425 University Ave. S.E. (Burton Hall on June 12)

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 1978 may obtain registration materials in the office of their major department. All students planning to register in the Graduate School should see page XX for information.)

Home Economics, 130 Coffey Hall (St. Paul)

Institute of Technology, 5 Lind Hall

Liberal Arts

Regular students: college offices

Summer-only students: 18 Johnston Hall

Medical Technology, 5307 Powell Hall

Medicine, 13g Owre Hall

Military Science, 108 Armory Building

Mortuary Science, 114 Vincent Hall

Nursing, 3320 Powell Hall

Pharmacy, 100 Appleby Hall

Physical and Occupational Therapy, 271 Children's Rehabilitation Center

Public Health, 1360 Mayo Memorial Building

University College, 105 Walter Library

Veterinary Medicine, 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 summer-only or

extension-only registration): in 106 Morrill Hall (130 Coffey Hall for St. Paul-based colleges), at the window of the college you last attended.

Summer-only students: registration permit not required.

2. Obtain registration material at college registration office.
3. Obtain approval of study program at college office.
4. Obtain class reservation cards for reserved courses (see list of reserved courses, below, and Course Descriptions section). *This cannot be done until you have completed the three steps listed above.*
5. Turn in registration forms and class reservation cards and obtain fee statements in Morrill Hall. (On June 12 College of Education graduate and undergraduate students may obtain fee statements in Burton Hall.)

Exceptions: Students in the Colleges of Agriculture, Forestry, Home Economics, Biological Sciences, and Veterinary Medicine as well as Graduate School students whose majors are based in St. Paul turn in their registration forms and class reservation cards and obtain their fee statements at 130 Coffey Hall.

6. Pay fees at the Bursar's Office in Williamson Hall; the West Bank Bursar's Office; the Cashier's Office in Coffey Hall; or by mail. The hours are 8:15 a.m. to 3:30 p.m. If mailed, fees must be paid or postmarked no later than Monday, June 12, for first term, or Monday, July 17, 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 may not change their registration after the last day of classes of either term.

RESERVED COURSES

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

Ten-week courses are listed under first term.

ITASCA BIOLOGY SESSION—FIRST TERM

Botany 5801, 5811, 8970—CofH 130
Ecology and Behavioral Biology 5812, 5815—CofH 130
Entomology 5020—CofH 130
Soil Science 5532—CofH 130
Zoology 5146, 5814, 5834—CofH 130

ITASCA BIOLOGY SESSION—SECOND TERM

Botany 5805, 5815—CofH 130
Ecology and Behavioral Biology 5812, 5814, 5817, 5820—CofH 130
Entomology 5130—CofH 130
Plant Pathology 5102—CofH 130
Zoology 5807, 5819—CofH 130

SUMMER SESSION—FIRST TERM

Accounting—All courses reserved in 225 BA except where noted
1050, 1051—12 JohH

Aerospace Engineering and Mechanics—all courses reserved in 5 LindH

American Studies 1101, 8201—12 JohH

Architecture—all courses reserved in 5 LindH

Art Education 3001, 5001—1425 University Avenue S.E.

Art History—all courses reserved in 12 JohH

Biology 1011—12 JohH or 130 CofH
3011, 3012—223 SnH

Business Education 5112, 5114, 5116—1425 University Avenue S.E.

Business, Government and Society 3001—225 BA

Business Law 3058, 8158—225 BA

Chemical Engineering 5901-5902-5903—5 LindH

Chemistry 1004, 1006—130 CofH for Ag, For, HE; 5 LindH for IT; JohH 12 for others
3100, 3101, 3301, 3305—5 LindH for IT; 12 JohH for others
3499, 5520—5 LindH

Civil and Mineral Engineering 5097—5 LindH

Communication Disorders 3100, 5900—12 JohH

Composition 1001, 1002, 1027—12 JohH

Computer Science—all courses reserved in 5 LindH

Counseling and Student Personnel Psychology 5101, 5110, 5130, 5300, 5310, 5620—1425 University Avenue S.E.

Design 1521, 1523, 3527, 5586—130 CofH

Distributive Education 5402—1425 University Avenue S.E.

Ecology and Behavioral Biology 5041—223 SnH

Economics—all courses except 3970, 5151, 5152, 5970, 8990 reserved in 12 JohH

Education: Adult, Higher and Teacher—5103, 5199—1425 University Avenue S.E.

Educational Administration—all courses under 8270 reserved in 1425 University Avenue S.E.

Electrical Engineering—all courses reserved in 5 LindH

Elementary Education—all courses under 8916, except 3604, 5602, reserved in 1425 University Avenue S.E.

English 1012, 1015, 1017, 1018, 3851—12 JohH

Family Social Science 1001, 1025, 5001—130 CofH or 12 JohH

Finance 3000, 3300, 3500, 8800—225 BA

Food Science and Nutrition 1602, 3472, 5200, 5790—130 CofH

Forest Resources 5406—130 CofH

French—all courses except 3970, 8970 reserved in 12 JohH

General College—all courses reserved in 20 NH

Geology and Geophysics—all courses reserved in 5 LindH

German—all courses reserved in 12 JohH

History and Philosophy of Education 3090—1425 University Avenue S.E.

Humanities—all courses reserved in 12 JohH

Industrial Education—all courses above 3900-3901-3902, except 5310, 8900-8901-8902, reserved in 125 PeikH

Institute of Technology 3501—5 LindH

Italian 1101-1102-1103—12 JohH

Journalism and Mass Communication 1101—12 JohH

Library 5101, 5221, 8402, 8411—12 JohH

Management 3001, 3002, 8006—225 BA

Management Information Systems 3098, 3099, 5101—225 BA

Marketing 3000, 3077, 3098, 8000, 8078—225 BA

Mathematics 0009, 1005, 1008, 1111, 1131, 1142, 5209—12 JohH
3221, 3231, 5457—5 LindH

All other courses reserved in 12 JohH or 5 LindH

Mathematics Education—all courses except 5980, 8980 reserved in 1425 University Avenue S.E.

Mechanical Engineering—all courses reserved in 5 LindH

Metallurgy/Materials Science—3400, 5481-5482-5483—5 LindH

Military Science 1014—108 Armory

Music 3791—12 JohH

Physical Education—all courses under 5101, and 5620, 5740, reserved in 12 JohH

Physics 1031, 1275, 1285, 1295—5 LindH for IT students; 12 JohH for others

Portuguese 1001-1002-1003—12 JohH

Psychological Foundations 3380, 5110, 5120, 5121, 5305—1425 University Avenue S.E.

Psychology 1004—12 JohH

Public Health 3001, 3004—12 JohH
3033, 5040—1360 Mayo

Quantitative Analysis 1050—225 BA

Recreation, Park, and Leisure Studies 3700, 5900—1425 University Avenue S.E.
 Rhetoric 1147—12 JohH
 1222, 3551, 3562—130 CofH
 School Health Education 5402—1425 University Avenue S.E.
 Secondary Education 5153, 5176, 5344, 5394, 5404—1425 University Avenue S.E.
 Social Work 1001, 3984, 5010, 8350—12 JohH
 Spanish 1101, 1102, 1103, 1104, 3001—reserved in 12 JohH
 Special Education 5100, 5124, 5150, 5302, 5601, 5610, 5611—1425 University Avenue S.E.
 Speech-Communication 1101, 3201, 3641, 5404, 5414—12 JohH
 Studio Arts—all courses under 5320, and 5520, 5810, reserved in 12 JohH
 Textiles and Clothing—all courses reserved in 130 CofH
 Theatre Arts 1101, 1321, 1405H, 3326—12 JohH
 Transportation 3054—225 BA
 Vocational Education 5100, 5300—125 PeikH
 Women's Studies 3001—12 JohH

SUMMER SESSION—SECOND TERM

Accounting—1050, 1051—12 JohH; all other courses reserved in 225 BA
 Aerospace Engineering and Mechanics—all courses reserved in 5 LindH
 American Studies 1103—12 JohH
 Architecture—all courses reserved in 5 LindH
 Art Education 3009, 3010, 5001—1425 University Avenue S.E.
 Art History—all courses reserved in 12 JohH
 Biology 1011, 1103, 1106—12 JohH or 130 CofH
 3041—223 SnH
 Business Education 5112, 5116—1425 University Avenue S.E.
 Chemical Engineering 5901-5902-5903—5 LindH
 Chemistry 1005—130 CofH for Ag, For, HE; 5 LindH for IT; 12 JohH for others
 3302, 3306—5 LindH for IT; 12 JohH for others
 3499, 5126, 5133, 5521—5 LindH
 Communication Disorders 3100—12 JohH
 Composition 1001, 1002—12 JohH
 Computer Science—all courses reserved in 5 LindH
 Counseling and Student Personnel Psychology 5110, 5130, 5332, 5620—1425 University Avenue S.E.
 Distributive Education 5105, 5106—1425 University Avenue S.E.
 Economics—all courses except 3970, 5151, 5152, 5970, 8990—12 JohH
 Educational Administration—all courses except 5128, 5130, 5139—1425 University Avenue S.E.
 Electrical Engineering 3001—5 LindH
 Elementary Education—all courses under 5602, except 3604—1425 University Avenue S.E.
 English 1014, 1016—12 JohH
 Family Social Science 5200, 5240—130 CofH or 12 JohH
 Finance 3000, 3300—225 BA
 Food Science and Nutrition 5404—130 CofH
 French—all courses except 3970, 8970—12 JohH
 General College—all courses reserved in 20 NH
 Geology and Geophysics—all courses reserved in 5 LindH
 German—all courses reserved in 12 JohH
 History and Philosophy of Education 3090—1425 University Avenue S.E.
 Humanities—all courses reserved in 12 JohH
 Industrial Education 5100, 5101, 5102, 5103, 5400, 5600—125 PeikH
 Journalism and Mass Communication 1101, 3121, 3241—12 JohH
 Library 5401, 8223, 8224—12 JohH
 Management 3001—225 BA
 Management Information Systems 5100—225 BA
 Marketing 3000, 3065, 3098—225 BA
 Mathematics 0009, 1006, 1008, 1111, 1142—12 JohH
 3221, 3231, 5458—5 LindH
 All other courses reserved in 12 JohH or 5 LindH
 Mathematics Education—all courses except 5680, 5980, 8980 reserved in 1425 University Avenue S.E.
 Mechanical Engineering—all courses except 3740 reserved in 5 LindH
 Metallurgy/Materials Science 5481-5482-5483—5 LindH
 Military Science 1024—108 Armory
 Music Education 3011—1425 University Avenue S.E.
 Physical Education—all courses under 5134, and 5700—12 JohH
 Physics 1032—5 LindH for IT students; 12 JohH for others

Psychological Foundations 3380, 5305—1425 University Avenue S.E.
 Psychology 1005—12 JohH
 Public Health 5032, 5300—1360 Mayo
 Quantitative Analysis 1050, 3055—225 BA
 Rhetoric 1147—12 JohH
 1222, 3551, 5400—130 CofH
 School Health Education 5110—1425 University Avenue S.E.
 Secondary Education 5153, 5195, 5321, 5326, 5371, 5394—1425 University Avenue S.E.
 Social Work 8406, 8407—JohH 12
 Spanish—all courses under 5015 reserved in 12 JohH
 Special Education 5302, 5601—1425 University Avenue S.E.
 Speech-Communication 1101, 3201, 3204, 5110—JohH 12
 Studio Arts—all courses under 8110 reserved in JohH 12
 Textiles and Clothing 3604/5600, 5628—CofH 130
 Transportation 3604, 8264—BA 225
 Vocational Education 5100, 5101, 5300—PeikH 125
 Women's Studies—all courses reserved in JohH 12
 Zoology 5052—KoltH P190

TUITION AND INCIDENTAL FEES¹

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

TUITION FEE

Per term; per credit\$17.00

STUDENT SERVICES FEE

Per term; not included in tuition fee\$26.40

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 \$10.25—see below.) The student services fee does *not* include hospitalization benefits. Students who do not have private hospitalization must apply for this coverage at the time of registration, and an additional fee will be charged.

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

Summer tuition in 1978 for the College of Veterinary Medicine will be calculated at 78 percent of academic year tuition.

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 \$10.25 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.

¹Fees are subject to change.

Proof of coverage must be presented to the cashier in room W220 of the Health Service prior to registration. The Health Service cashier will complete a Partial Fee Exemption form indicating the amount of the exemption. This form, along with the student's registration form, must be presented at the college window when registering. Students who fail to apply for the exemption prior to registration may apply for a refund during the first week of classes each term.

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

COURSE FEES

(All fees are per term unless otherwise indicated)

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

HEALTH SERVICE (field trips and foreign study)

Required of students on University field trips such as those in anthropology, civil engineering, geology, mines, etc.—\$13.75 per summer term

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

ITASCA BIOLOGICAL STATION

Laboratory Fee—\$8.50

Research Table Fee—\$5 per week¹

MATHEMATICS

Math 0009—\$85² plus student services fee

MODERN LANGUAGES

German—\$295² for program in Munich, Germany

MUSIC³

Courses in applied music carry 2 credits (minimum of 5 hours of private lessons) per summer term. Fees for non-music majors are based on individual lessons: \$85 (0-2 credits). Music and music education majors at the 12xx or 13xx level in their major instrument pay \$55 per 2 credits. Music and music education majors at the 32xx or 33xx level in their major instrument (prerequisite 12 credits of 12xx or 13xx and qualifying exam) take applied courses without fee. M.F.A. and D.M.A. students at the 83xx level also take applied courses without fee.

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

²Includes tuition.

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

PHYSICAL EDUCATION

PE 1205—\$20 per term

PUBLIC HEALTH

PubH 5755 (Administrative Residency)—\$150

SOIL SCIENCE

Soil 5565—\$25

SPECIAL FEES

MUSIC PRACTICE ROOM

5 hours per week for 5 weeks—\$1.75 per term

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

PHYSICAL EDUCATION¹

Cooke Hall

Locker and Towel Fee—\$6

Gym Clothing Rental Fee—\$8

Norris Hall

Locker and Towel Fee—\$6

St. Paul Gymnasium

Locker and Towel Fee—\$6

SPEECH AND HEARING CLINIC—Nonstudents

Speech Therapy (days)—\$2 per session

Speech Therapy (evenings)—\$2.50 per session

Consultation (outpatient)—\$5

Evaluation (outpatient)—\$20

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, School of Dentistry, Law School, Medical School, and College of Veterinary Medicine [\$5 if previously registered in a degree-granting program of the University])

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

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

Large Diploma—\$7.50

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 the following conditions:

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

2. Recommendation by the faculty.

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

3. Satisfaction of the 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 by individual colleges. In addition, special residence requirements must be met in several of the schools and colleges. Extension courses (not correspondence courses) may apply toward the residence requirement.

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

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

6. Payment of Graduation Fee—each degree, \$10.

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

Duluth	\$10
College of Education (except nursing education, music therapy, recreation and park administration majors)	15
Morris (optional)	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 cards are \$20; pharmacy cards are \$10; biochemistry (College of Biological Sciences and Medical School) and art cards are \$5.

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

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

REFUND OF FEES

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

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

AUDITORS

Fees for auditors are the same as for students registered for credit. Permission to attend a class as an auditor may be granted by the dean of the college or school offering the course with the consent of the department concerned. The procedure for

registration as an auditor is the same as for registration for credit, except that "auditor" should be indicated on the registration sheet in the credits column.

AMOUNT OF WORK

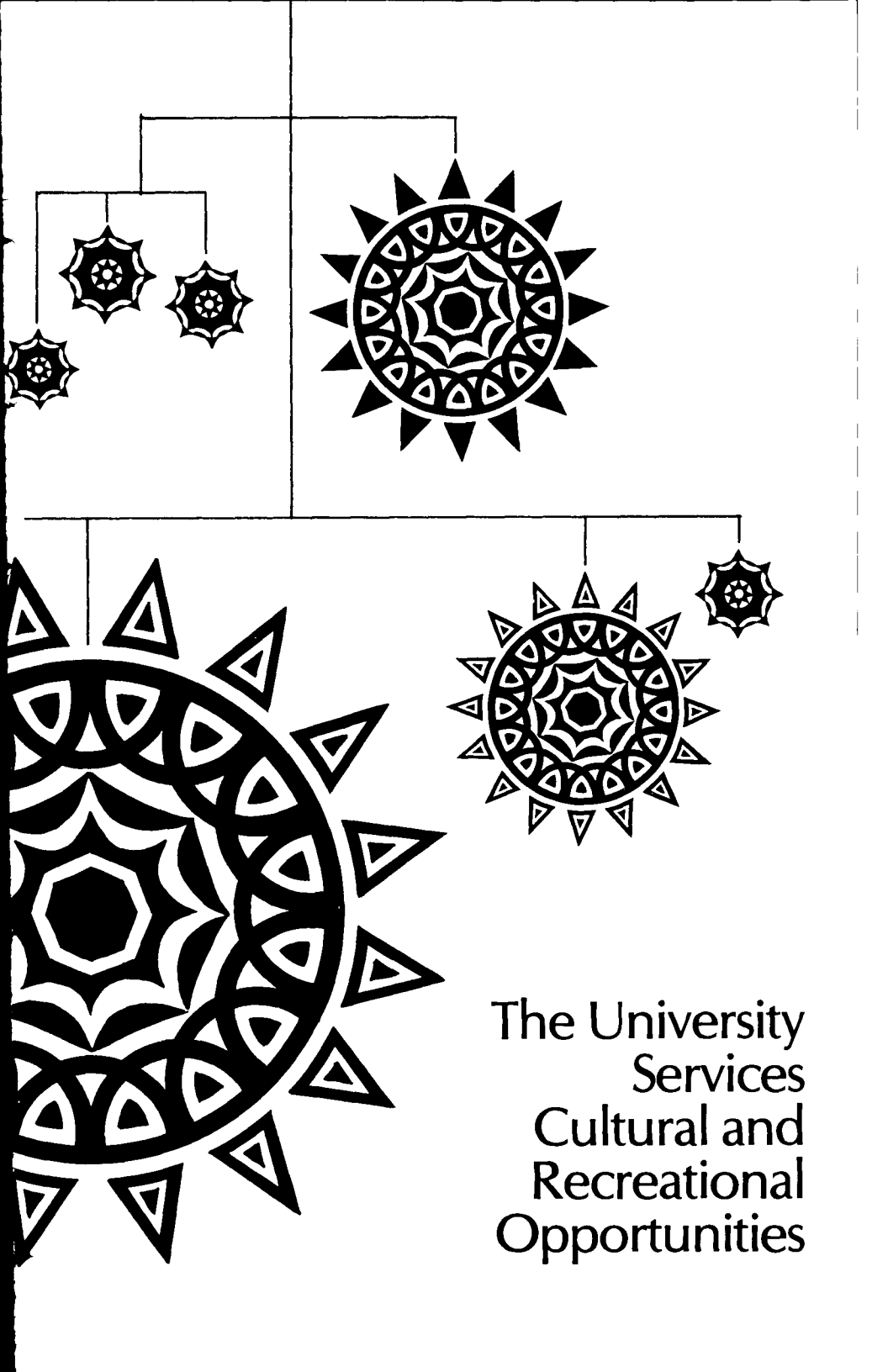
A maximum of 10 credits is considered a full program for either term. Registration for more than 10 credits requires special permission from the Committee on Student Scholastic Standing or from the dean of the school or college in which the student is registered.

FINAL EXAMINATIONS

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

GRADING

Academic achievement of Twin Cities campus students is evaluated according to two grading systems: A-B-C-D-N and S-N; the N grade indicates no credit. Students should check with their college office to find out which courses may be taken S-N and should indicate on their registration blank which type of evaluation is desired for each course. A good explanation of the system appears in the current *College of Liberal Arts Bulletin*. Graduate students should consult the *Graduate School Bulletin* section on grading.



The University
Services
Cultural and
Recreational
Opportunities

Services

HOUSING

Minneapolis Residence Halls

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

Territorial is a coeducational non-air-conditioned residence on the East Bank that offers primarily large double rooms and a limited number of double rooms for single occupancy, with a 7-day (19-meal) food service program under the direction of a professional food manager. Meals are served at Centennial Hall, which is connected to Territorial Hall by tunnel.

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

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

St. Paul Residence Hall

Bailey Hall 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, 210 Delaware Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. The Housing Office telephone number is (612) 373-7542.

Off-Campus Housing—Private Residence

Rooms in private homes, cooperatives, 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, 210 Delaware Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, for Minneapolis; or 190 Coffey Hall, 1420 Eckles Avenue, University of Minnesota, St. Paul, Minnesota 55108, for St. Paul. The telephone number of the Minneapolis Housing Office is (612) 373-7542, and that of the St. Paul office is (612) 373-0822.

UNIVERSITY CHILD CARE CENTER

The University Child Care Center, designed as a model facility with several unique features, provides care for infants and toddlers as well as preschool children. The center is open Monday through Friday throughout the year from 7:30 a.m. to 5:30 p.m. Children are divided by age and individual needs into three groups: an infant group (3-15 months), a toddler group (16-30 months), and a preschool group (30 to 60 months). Fees for care are on a sliding scale based on ability to pay. For further information visit the University Child Care Center, 1818 4th Street South, Minneapolis, Minnesota 55455; or call 373-5265.

CAMPUS BUS SERVICE

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

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

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

Intercampus Bus—Lines 13-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—University of Minnesota."

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

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

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

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

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

Route Key:

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

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

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

Free bus service also is available Monday through Friday between the East and West Banks at 10-minute intervals between 7:05 a.m. and 1:25 p.m., and at 15- and 30-minute intervals between 1:25 and 5:25 p.m. Lines 13-A, 13-G, and 24 travel between Blegen Hall and Jones Hall. Buses labeled "Line 13-U—University of Minnesota" travel between Blegen Hall and Lyon Laboratory/Chemical Engineering.

Como Avenue Park-and-Ride Complex

Free parking is available for over 700 cars at the Como Avenue park-and-ride complex, located near the intersection of Como and 29th Avenues S.E. (just a few blocks west of Highway 280). Follow the "U of M Parking" signs in the area. A 20¢ fare (40¢ round trip) is charged to ride the shuttle buses to or from the St. Paul or Minneapolis campus. Bus service to and from either campus is frequent: every 10 minutes between 7:10 a.m. and 1:30 p.m. and every 30 minutes between 1:30 and 5:30 p.m. The bus trip to either campus takes approximately 5 minutes. For those not wishing to worry about having the correct change, bus fare cards offering 20 rides for \$4 can be purchased at any University bursar or cashier office.

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: B-78 Coffman Union (376-3003)

For West Bank lockers: 110 Anderson Hall (373-0069)

For St. Paul campus lockers: 130 Classroom-Office Building (373-1021)

Rental rate (including padlock) is \$1 per summer term for full-size lockers and 60¢ per summer term 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

- Wiley Hall
- 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 4:10 p.m. in Minneapolis and 9:00 a.m. to 4:15 p.m. in St. Paul.

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

STUDENT COUNSELING BUREAU

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

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

STUDENT EMPLOYMENT SERVICE

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

BOYNTON HEALTH SERVICE

The Boynton Health Service provides outpatient services during the summer session on a basis similar to that of the academic year. The same staff of physicians, dentists, and nurses is 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 dental work, 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 or public assistance may apply for exemption from the University-sponsored hospital insurance fee. Students who qualify and wish to apply for this

exemption must be prepared at the time of registration to supply the name of the insurance company through which they have coverage or to give their Medicaid or public assistance number.

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

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

LIBRARY FACILITIES AND SERVICES

The University Libraries, with over 3,300,000 volumes, is one of the fifteen largest research libraries in the United States. It provides the basic resources for the teaching and research needs of the students and faculty of the University. The library handbook, *University of Minnesota Libraries, Twin Cities Campus: A Guide*, directs users to the correct location of specific materials and services.

O. Meredith Wilson Library

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

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

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

Walter Library

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

Subject Libraries

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

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

St. Paul Campus Libraries

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

General Library Information

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

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

THE MINNESOTA UNION

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

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

Coffman Memorial Union

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

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

CMU houses a campus Information Center as well as many student organizations. It provides facilities and services for over 40 student organizations involved with student governance and social, cultural, political, religious, recreational, and special interest areas.

CMU has lounges, study carrels, dining facilities, a recreation/games complex, an art/craft studio, and a music listening center that provide members of the University with places to meet, study, eat, learn, and relax. Meeting and dining rooms, lecture halls, and theatre facilities are available by reservation for group rental. In addition, Coffman Union also houses, art galleries, student stores, a post office, newstands, the campus Lost and Found Office, the Locker Rental Service, the International Study and Travel Center, and barber and beauty shops.

Summer hours for CMU are 7 a.m. to 10 p.m. Monday through Friday.

Consult the Coffman Union Program Council *Calendar*, the *Minnesota Daily*, or *Socially Speaking* for specific program events, times, and dates. For further information about programs, services, and facilities at Coffman Union, call 373-2403 during building hours.

West Bank Union

The West Bank Union (WBU) plans programs that offer learning experiences; interaction with students, faculty, and staff; and entertainment. Activities are organized by those interested, with assistance from an elected student board and staff advisers. Ideas and assistance in planning and presenting programs are welcomed—stop in at 110 Anderson Hall if interested.

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

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

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

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

St. Paul Student Center

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

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

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

During 1978, construction of a substantial addition to the building will be under way. Every effort will be made to continue regular services despite the inevitable disruption that accompanies remodeling. The understanding and cooperation of the University community will be appreciated and eventually rewarded with expanded and improved facilities.

Cultural and Recreational Opportunities

RECREATION

The University of Minnesota, aware of the need for relaxation during the intensive, accelerated summer academic program, plans a variety of recreational and cultural activities on campus at little or no cost to the student. Campus activities are listed—along with summer schedules for Twin Cities theatres, museums, and other groups—in *Socially Speaking*, a special publication for summer session students.

The location of the University makes accessible the resources of the many cultural and recreational facilities of a large metropolitan area. Lakes and lagoons. . . swimming beaches. . . picnic grounds in parks and along roadsides. . . evening concerts on lakeshores and in parks. . . art centers, museums, libraries. . . excellent stores for shopping and browsing. . . a wide choice of places for dining. . . as well as the many professional entertainment activities provided by a large city—all are within easy access by public or private transportation. Trips to the 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 during scheduled hours. The Bierman Field Athletic Building gymnasium is also available for student use.

Baseball and softball diamonds at Bierman Field, Como Field, West Bank Field.

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

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

CONCERTS AND LECTURES

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

UNIVERSITY THEATRE

The University Theatre, known throughout the country for its consistently excellent productions, will offer performances at the Minnesota Centennial Showboat, Peppermint Tent, and Rarig Center this summer.

The Showboat, a real stern-wheeler, is docked on the Mississippi River below Coffman Union. This summer the Showboat will present a dramatic version of the Dracula story, based on the original Bram Stoker novel. Performances are scheduled throughout the summer from the second week of June through the third week of August.

Peppermint Tent productions, presented in Rarig Center, are designed for children. This summer two plays will be offered. Performances begin the third week of June and continue in repertory for 5 weeks.

Rarig Center performances offer additional theatrical entertainment. Watch for event announcements in the *Minnesota Daily* and on campus.

Ticket and performance information about Showboat, Peppermint Tent, and Rarig Center productions is available by calling the University Theatre ticket office at 373-2337.

BELL MUSEUM OF NATURAL HISTORY

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

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

The museum offers free admission and is open from 9 a.m. to 5 p.m. Monday through Saturday and from 1 to 5 p.m. on Sunday. 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 that also sells records of bird and animal calls, prints, and stationery. Call 373-2423 for tour appointments or further information.

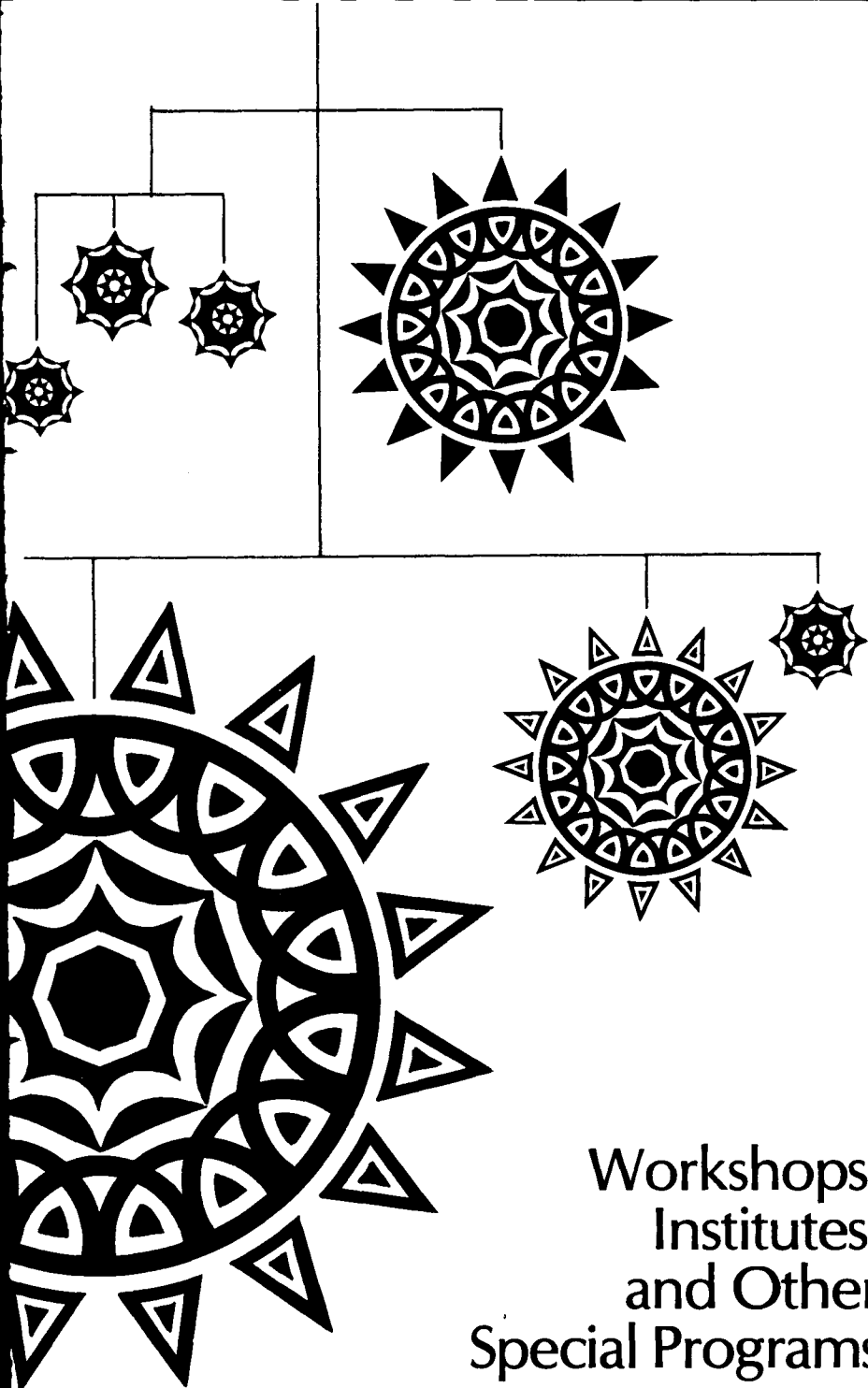
UNIVERSITY GALLERY

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

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

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



Workshops,
Institutes,
and Other
Special Programs

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, student teacher training, and research during the summer terms.

Nursery School—The Nursery School will be in session from 8:45 a.m. to 12 noon Monday through Friday, beginning June 14 and closing July 14. Applications for the enrollment of children will be accepted at the office of the Nursery School, 184 Child Development Building, 51 East River Road, University of Minnesota, Minneapolis, Minnesota 55455; telephone 373-9853. Tuition is \$70 for the term. Parents are responsible for transporting their children to and from the school.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Elementary Education

Elementary Mathematics and Science—Two workshops are scheduled during the 2-week period July 18-28, making it possible for elementary school teachers and teachers of middle and junior high school mathematics and science to register for both workshops. Credits earned are applicable to M.A. and M.Ed. degree programs with the approval of the adviser.

Section 1 of SeEd 5394, Workshop: Science Education, uses toys in science classrooms to introduce, illustrate, derive, and explain basic scientific principles. Examples for laboratory experience and lessons emphasize methods and materials of instruction and the scientific principles involved.

Section 1 of MthE 5102, Workshop: Mathematics Education, explores the use of hand-held calculators to teach elementary school mathematics. The course will emphasize the role of the calculator as an integral part of the elementary school mathematics program in teaching skills, concepts, and problem solving.

Secondary Education

Secondary Language Arts—SeEd 5350, Current Developments in English and Speech Education (July 18-August 11), will acquaint secondary teachers in all subject matter areas with current theory and methods of writing instruction. Discussion will emphasize stages of the composing process and how it varies due to purpose, audience, and type of discourse (expository, persuasive, expressive, narrative), with implications for devising writing assignments. Samples of students' writing will illustrate the development of writing ability, including free-writing and talk-write activities designed to help students discover ideas and topics.

SeEd 5326, Teaching Film (July 18-August 11), is designed for English, social studies, and art teachers who use film in instruction or teach aspects of film or television. Topics include methods and techniques for planning film/media units with

an introduction to Super 8 filmmaking; viewing interests and student response to film/television; aesthetics, genres, and history; media and culture; and characteristics of documentary and animated films. Participants will view 20 to 30 short films.

Higher Education

Courses in higher education are offered by several departments. In the first term, an introductory course, Adult Learning and Educational Practice (PsyF 5183), will focus on psychological methods and principles in human learning. Seminar: The College Student (CSPP 5540), June 15-30, will focus on the psychological development of college students. After examination of the research base for three theories of development, the course will consider the practical uses of such theories in dealing with student affairs and the curriculum.

Also during the first term, Higher Education in the United States (Educ 8250) will include a three-session colloquium on political issues in higher education conducted by Dr. G. Theodore Mitau, former chancellor of the state college system and distinguished service professor of political science. The colloquium will be open to interested students and staff on campus.

Second term offerings relevant to higher education include Educ 8252, Effective College Teaching; EdAd 8253, Administration in Higher Education; and EdAd 5274, Two-Year Postsecondary Institutions (July 19-31).

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

Educational Administration Two-Year and Doctoral Programs

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

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

Special Workshops

Applicants for admission to degree programs in educational administration are encouraged to participate in an administrator development seminar combining registration in EdAd 5130 and 5139. Assessment and counseling, skill development, and contemporary issues in the field are topics of this special summer seminar (see Course Descriptions section for registration requirements). Registration in both courses (6 credits) is mandatory.

In the second term, EdAd 5128 is designed as a superintendency-managing change workshop for experienced administrators (superintendents, central office administrators, and building principals) who wish to focus their careers on the superintendency. The most contemporary management materials, simulations, and techniques will be used. Experts in educational management and related fields will participate. Workshop: Educational Administration, 6 credits, will be offered July 31-August 11.

Preapplication for both of these offerings is required. Inquiries should be addressed to the Department of Educational Administration, 225 Health Service, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108.

Two-Year Postsecondary Institutions—EdAd 5274, scheduled July 18-31, will focus on the present status, development, function, organization, curriculum, and trends in postsecondary but nonbaccalaureate institutions. This introductory course is appropriate for personnel employed in area vocational-technical institutes, technical colleges, and community colleges.

Supervision and Administration of Special Education—Public Law 94-142 (Education for All Handicapped Children Act) and Section 504 of the Rehabilitation Act of 1973 (Regulations for Handicapped Civil Rights) will be examined in a combined offering of EdAd 5103 and SpEd 5160, June 26-July 11. Emphasis will be on contemporary state and federal statutory and legal requirements.

School Management Information Systems—EdAd 8214, scheduled July 18-31, will be offered in cooperation with the Minnesota Education Computing Consortium (MECC). The workshop will examine basic techniques required to generate, maintain, and access computer-based systems.

Public School Personnel Programs—EdAd 8227, scheduled June 26-July 1, will provide basic personnel administration background for educational personnel: grievance processing, negotiations and collective bargaining, and salary and fringe benefit scheduling.

Practicum in School Community Relations—EdAd 5231, offered June 13-23, is designed to help educators develop and use the tools necessary to deal with internal and external communications: news media, community organizations, parents, and building-level public relations.

Legal Implications of Acts by School Boards, Administrators, and Teachers—EdAd 8224, June 13-23, will cover six units of study dealing with the constitutional, statutory, and common law bases of education as they pertain to constitutional rights of students and school district employees.

British Postsecondary Study/Practicum Tour—This practicum will offer a 2-week (June 20-July 1) intensive study tour of the evolution, organization, governance, and program offerings of 2-year nonbaccalaureate institutions in Britain and the United States. Participants register for 3 credits of EdAd 5120, Practicum: Postsecondary Administration. Preapplication and deposit are required. Inquiries should be addressed to the Department of Educational Administration, 225 Health Service, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108.

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION

Physical Education

Workshop: Dance in Education—Students who take PE 5700, July 17 through August 4, register for 6 credits in an intensive workshop on modern dance as a creative activity and as a performing art. The workshop will be taught by the Kathryn

Posin Dance Company of New York, and will also feature an effort-shape instructor. Emphasis will be on modern dance technique, ballet, dance improvisation and composition, dance repertory theatre, music for dance, Labanotation, effort-shape, and dance for children. Because enrollment is limited to 150 students, and preapplication is required, those interested are encouraged to make early inquiry to Professor Nadine Jette, 159 Norris Hall, 172 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Coaching Individual, Dual, or Team Sports: Volleyball—PE 5740, a 6-day (June 19-24) concentrated offering on coaching volleyball, is open to men and women. Instructors for the workshop will be Linda Wells, head coach for the University of Minnesota women's volleyball team, U.S.V.B.A. national tournament player in 1974 and player-coach for the 1975 U.S.V.B.A. national tournament; Glenn Renick, coach of the University of Minnesota volleyball team and current U.S.V.B.A. player; and Monika Lacis and Patricia Hagemeyer, members of the University of Minnesota women's intercollegiate volleyball team and U.S.V.B.A. players. Both practical and theoretical instruction in the techniques of coaching volleyball will be offered. A written assignment and a final examination will be required.

Workshop: Physical Education for the Elementary School Child—Mainstreaming—This 3-credit course, PE 5710, offered during first term, June 19-July 7, is designed to provide practical experience, information, and materials for planning, implementing, and evaluating individualized physical education programs for handicapped children. Students will plan a physical education program to meet the needs of mainstreamed children and youth within the constraints of their educational setting.

Athletics in Contemporary Society: Implications of Title IX and Regulation 504—PE 5750, offered during first term, June 19-July 7, will focus on the handicapped person: issues of program development, financing, funding, facilities, public relations, and the news media. Instructors will be Eloise Jaeger and Vivian Barfield. Guest lecturers will include William Gardner, dean of the College of Education and former chairperson of the St. Louis Park Board of Education; Paul Giel, director of the Department of Intercollegiate Athletics for Men; Orville Bies and Dorothy McIntyre, State High School League; Jon Roe, Minneapolis Tribune; Ray Christianson, WCCO Radio; Betty Johnson, Department of Intercollegiate Athletics for Women, and Holger Christiansen, coordinator of facilities and finance at the University of Minnesota. The class will include lectures and presentations as well as large and small group discussions.

Recreation and Park Administration

Workshop: Contemporary Issues in Leisure Services—Rec 5900, June 12-16, will feature leadership in and an interdisciplinary approach to programming outdoor education concepts, ideas, and experiences. The workshop will stress techniques that are appropriate for use in the outdoor laboratory environment. It is open to in-service teachers, recreation leaders, college juniors and seniors, and graduate students. The class will have an organizational meeting June 12; on-site meetings devoted to outdoor field experience and trips will begin June 13. Participants will live in semidormitory accommodations at Camp St. Croix, Hudson, Wisconsin, 30 miles from Minneapolis. In addition to tuition, there will be a charge of \$50 for room, food,

and mimeographed materials. An information sheet is available from Karla Henderson, 204 Cooke Hall, 1900 University Avenue S.E., University of Minnesota, Minneapolis, Minnesota 55455.

School Health Education

Death Education in Contemporary Society—The School of Public Health, Department of Mortuary Science, and Division of School Health Education of the School of Physical Education will jointly offer Hlth 5402, Mort 5040, and PubH 5040, designed to prepare education seniors, teachers, school nurses, and mortuary science majors to cope with the problem of death education in their specific areas. The course will meet June 13 through 30.

Topics: Educational Aspects of Drug Use and Abuse—Hlth 5400 provides teachers and school nurses with background information on alcohol and chemical abuse in the school setting. This second term offering is scheduled July 24 through August 4.

DEPARTMENT OF PSYCHOEDUCATIONAL STUDIES

Counseling and Student Personnel Psychology

Leadership training for personnel involved in programs related to career education, career development, organizational change, and sex-role stereotyping is offered in a Born Free workshop for personnel working in school, vocational-technical institute, and college settings. Registration is limited to 114 educational leaders, with preference given to teams of two educators nominated from each state and territory. Participants register for 3 credits in CSPP 5300, Workshop: Career Development, scheduled for the week of June 13-17. Additional credit (for a maximum of 2 credits) is available through independent study in CSPP 5900. Information about the institute and applications for participation are available from Professor L. Sunny Hansen, 139 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-0202.

During the second term (July 31-August 11), a second offering of CSPP 5300, Workshop: Career Development, will examine human development approaches in management of instructional and counseling environments. This section will focus on the interrelationship of intellectual and personality variables in the development of intrinsic motivation, ability to adapt to change, and interpersonal effectiveness with attention to goals, criteria, curricular intervention and materials, and assessment procedures. For information contact Professor Wesley Tennyson, 137 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Special Education

Teaching Exceptional Children (SLBP Resource or Clinical Teacher Sequence)—In the first term, the 6 credits earned in a combined offering of SpEd 5610 and 5611 may be applied to SLBP:LD teacher licensure or to a graduate degree by those students admitted to the Graduate School. Institute participants will work with learning-disabled children, concentrating on the remediation of academic problems

and the quality of interaction between teacher and learner. Enrollment is limited to those who have completed SpEd 5110 and 5111 during the academic year 1977-78. Advance application is required. Requests should be directed to Professor Virginia Bruininks, 109A Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Teaching Children With Emotional Disturbances—The 6 credits earned in a workshop combining sections 1 of SpEd 5302 and 5601, scheduled during a 6-week period from June 12 through July 21, may be applied to SLBP:ED licensure or to a graduate degree with consent of the adviser. Priority will be given to those seeking licensure, but teachers, administrators, and other professionals in the field are encouraged to apply for admission. Advance application is required. Requests should be directed to Professor Frank H. Wood, 106 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Autistic and Multihandicapped Children—In the first term, section 2 of SpEd 5302 will focus on educational interventions for autistic-type and multihandicapped children. Concentrated in a 2-day workshop, June 27 and 28, the format will use music and movement as integral components of an intervention program, as well as film and videotapes to illustrate characteristics of the children and specific intervention strategies. For information write to Lyle Chastain, 202 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Mainstreaming—During the second term, section 2 of SpEd 5302 (July 26-27) is designed for those working in training programs serving handicapped children as part of the mainstreaming movement. Topics include practical and theoretical approaches to problems of change as well as substantive aspects of education for handicapped children in "least restrictive alternative" learning environments. Advance application is required. Requests should be directed to Professor Maynard Reynolds, 249A Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Vision- and Hearing-Impaired Students—Also during second term, a 1-credit workshop, section 3 of SpEd 5302, will be offered August 1-4. The workshop is open to special or regular education personnel serving students with visual handicaps in regular classrooms. It will focus on special procedures and curriculum adaptations for such students. Advance application is required. Requests should be directed to Professor Dewey G. Force, Jr., 101 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Two 6-credit workshops will be offered June 13 through July 21. Credit earned may be applied to state licensure in the area or to a graduate degree with the consent of the adviser. Priority for enrollment will be given to students in special education seeking licensure, but teachers, administrators, and other professionals are encouraged to apply. Section 2 of SpEd 5601 will offer intensive practicum experiences with visually impaired students. Section 3 of SpEd 5601 will offer the same practicum and training experiences for work with hearing-impaired students. Advance application is required for both sections. Requests should be directed to Professor Dewey G. Force, Jr., 101 Pattee Hall, 150 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Vocational Education

Philosophy and Practice of Vocational Education—VoEd 5300 will be offered three times this summer—June 19-23, July 3-14, and July 18-28. The course is required for vocational licensure in Minnesota.

Special Topics in Instruction—VoEd 5100 (July 3-14) will focus on working with special-needs students. The course is designed to help vocational educators facing the challenge of providing appropriate instruction to disadvantaged and handicapped students. A second offering of the course (July 31-August 4) will focus on legal aspects of managing vocational education. It is designed to aid managers of vocational education in understanding laws that affect their job responsibilities.

Special Topics in Administration—A 3-day workshop (August 7-9), VoEd 5102, is designed to help lay persons and educators understand new federal vocational requirements that mandate that all local vocational programs utilize advisory committees.

Special Topics in Curriculum—VoEd 5101 (August 7-18) will help prepare teachers to utilize curriculum materials, accounting procedures, and business analysis concepts necessary to conduct classes in small-business management.

Business Education

Word Processing—Two sections of BsEd 5112, Program Developments in Business Education, are scheduled June 13-30 to provide an opportunity for teachers to develop understanding and skill in word processing. Section 1, Word Processing Concepts and Hardware, will introduce the concept and its applications in business firms of varied sizes. Section 2, Teaching Word Processing, will focus on materials, methods, and research with particular emphasis on developing communication skills appropriate for administrative and correspondence center staff. Business and office education teachers may meet state word processing licensure requirements by completing both sections.

Office Occupational Experience—Teachers who need to fulfill occupational experience requirements for vocational licensure 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 Professor Judith Lambrecht, 270 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Program Developments in Business Education—During the second term, July 18-August 4, BsEd 5112 will focus on sexism in business to provide information for teachers and teacher-coordinators on the background, current status, and effectiveness of remedial measures appropriate for business and distributive education programs.

Distributive Education

Planning Models for Distributive Education—Enrollment of at least one secondary and one postsecondary staff member from each school district is encouraged in DE 5402, scheduled June 19 through July 7. The workshop will help distributive education personnel design a coordinated, integrated program.

Materials Laboratory: Distributive Education—In DE 5310 (June 12-16), Dr. Don Kohns of Virginia Polytechnic Institute and State University will review sample curriculum guides and projects to identify and develop needed competencies in 19 U.S.O.E. specialized marketing occupation categories. Correlation of current learning activities, strategies, and projects to reflect entry, midmanagement, and management skills will be included.

Industrial Education

Occupational Experience—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. One credit is earned for each 100 hours of work. Individuals are responsible for securing their own employment and must have their work station approved by the program coordinator prior to registration. Information about the program is available from Stephen Miletich, 125 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455; telephone (612) 373-7791.

Instructional Materials Laboratory for Nonmajors—Ind 5400, offered July 3-14 in the first term and July 17-28 in the second term, is designed to help elementary teachers, recreation and park personnel, and occupational therapists to use projects in the areas of woods, metals, plastics, and printing in their programs. Basic instruction in planning and construction as well as use of hand and power tools is included.

Instructional Materials Laboratory—Ind 5600, offered June 26-30 in the first term and July 17-28 in the second term, will focus on current problems of licensure, funding, supervision, and curriculum development for secondary and postsecondary programs. It is designed for industrial arts and vocational-industrial teachers.

College of Forestry

Forestry Workshop for Teachers—The College of Forestry sponsors a 5-credit summer 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 12-23.

Forest ecosystems and forest management are studied by teachers in lecture and laboratory sessions. In field exercises, techniques and materials are developed for teaching principles of forestry in indoor and outdoor classrooms. Tours to forest and wildlife research and management 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 the forest ecosystem and ability to communicate this understanding to others, (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 techniques and develop materials usable in teaching about 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 1978 student groups will study in Israel, Mexico, Taiwan, and Yugoslavia.

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

Students must apply for SPAN appointments by the fall quarter preceding the summer abroad. Information about 1979 applications may be obtained from Professor Theofanis Stavrou, History Department, 652 Social Sciences Building, 267 19th Avenue South, or the SPAN Office, 103 Nolte Center, 315 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Summer Term in Germany

College students or high school graduates who have completed a basic course in German are invited to take part in a summer program using the facilities of Ludwig-Maximilians-Universität in Munich, Germany, during first term. CLA credit courses to be offered (in German) include conversation and composition, contemporary Germany, and modern German literature. Permission of the German department is required. Consult the Summer Session office or Professor Wolfgang F. Taraba, Department of German, 218 Folwell Hall, 9 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, for further information.

Archaeological Method: Sicily

A field school in archaeological method will be conducted by the Center for the Archaeological and Anthropological Research of the Belice Valley (Sicily) at the site of Castelazzo, during the month of July. Four credits may be earned through Clas 5120 upon successful completion of the course. For further information write Roseanne Gulino, Department of Classics, 310 Folwell Hall, 9 Pleasant Street S.E., Minneapolis, Minnesota 55455; telephone 373-3912.

FIELDWORK OPPORTUNITIES

Field Experience Learning

Students who have arranged a volunteer or salaried summer project in an appropriate setting may often register under a directed studies course number to receive credit for their work. Those with Urban Corps or Governor's Internship experience, as well as those who have planned a project or would like to do so, may consult an adviser in the appropriate department or in the Office for Special Learning Opportunities (201A Westbrook Hall, 373-7550) about receiving credit for such a project.

Registration for these projects, when approved, is under departmental course numbers 3970 or 5970, or appropriate interdepartmental directed studies number 3970 (see page 180).

Geography Field Session

A field research seminar, Geog 5701, and 8700, scheduled during the second term, will study the upper Mississippi River valley from the Twin Cities to Cape Girardeau in Missouri. The course will focus on the historical geography of the river and its settlement, economies, and environmental change to the present.

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

INTENSIVE LANGUAGE STUDY

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

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

Classics: Latin

Intensive beginning Latin is offered for students with or without previous language study. Students who have studied another language or who have high ability and motivation may register for Lat 3001 (10 cr) in the first term and Lat 3104 (5 cr) in the second term; those who have not previously studied a foreign language who wish to acquire experience and ability in Latin may register for Lat 1101 and 1102 (5 cr each) in the first term and Lat 3104 in the second term. It is highly recommended that students also register for Clas 5111 (5 cr, second term), a comparative study of English derivatives, in order to reinforce their knowledge of Latin and to study relationships with Greek (no previous knowledge required) and English.

Ulpan Hebrew Language Course

The "Ulpan" is a unique approach to teaching Hebrew. Developed in Israel at a time when a large adult immigrant population needed to acquire a working knowl-

edge of Hebrew rapidly, the Ulpan was designed to create teaching techniques and instructional materials. The practical goal was to enable adults of widely differing educational experiences and abilities, as well as diverse linguistic backgrounds, to quickly make a linguistic and cultural adjustment to a new environment.

The Ulpan Hebrew language course offered this summer will extend over the two terms, June 12 through August 18. It will provide intensive immersion in the language as well as learning experiences in Israeli culture. The program is designed for individuals who have not previously studied Hebrew. Students will spend 15 hours per week in class during the 10 weeks. In addition to more formal class sessions, special learning activities that involve active, natural and spontaneous use of Hebrew will include games and sports activities, Israeli folk dancing and singing, meeting with delegates of Israeli students from Rishon le'Tzion, and sessions with Israeli artists, musicians, and other professionals.

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

OTHER SPECIAL OPPORTUNITIES

Institute for Teachers of English, Modern Languages, and Latin

A special program will be offered during the second term under the auspices of the American Classical League with support from the National Endowment for the Humanities. It will present an intensive introduction to principles of word derivation, word analysis, and etymology, and will include a workshop in which participants will develop materials appropriate to their individual teaching situations. (See Clas 5111 and 5969).

Teachers of English, modern languages, and Latin in secondary or middle schools, public or private, are eligible. Selected participants will receive tuition grants and stipends for travel and living expenses. The workshop carries 10 graduate-level credits. For further information and application instructions, write to Professor Gerald M. Erickson, Summer Etymology Institute, Department of Classics, 309A Folwell Hall, 9 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Creative Writers' Workshops

These workshops offer students an opportunity to spend 3 weeks (June 12-30) working intensively with a small group of students under the direction of writers and writing specialists from the Department of English. Guest lecturers, poetry and fiction readings, and group theatre parties are planned as part of the workshops. Students must meet the specified prerequisites and, in some cases, submit writing samples. Each workshop is offered for 6 credits. Students interested in poetry writing should register for Comp 3104/5104; those interested in fiction writing should register for Comp 3101/5101; and those interested in imaginative writing should register for Comp 3030. For further information, call Julie Carson of the composition program, 373-2595.

Journalism and Mass Communication

The annual 3-week Publications Workshop, June 13-30, 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 17 through August 11. Details may be obtained from the MHSPA, 110 Murphy Hall, 206 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. These workshops do not offer college credit.

Linguistics

An intensive English language and orientation program will be offered July 21 through September 8. The program will focus on English language instruction and orientation to U.S. life and education. It will include 25 hours per week of classroom instruction in listening, grammar, reading, writing, and speech pronunciation; language laboratory practice; and field trips, out-of-state visits, and an American in-home experience.

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

Media Generalist Certification Program

The media generalist certification program is offered cooperatively by the College of Education and the Library School. Certified school teachers 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, 250 Burton Hall, 178 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Minnesota History Workshop

Designed for elementary and secondary school teachers, the Minnesota History Workshop (July 17-28) offers study of Minnesota historical materials and methods of using local history in the classroom. The workshop is held at the Minnesota Historical Society in St. Paul, to introduce teachers to the society's collections. Those who have not enrolled in previous workshops, register for 5 credits in Hist 5381; first time "repeaters" may also take the workshop for 5 credits but should register for Hist 5970, section 2. Further information is available from the Summer Session office.

Philosophy of Modern Literature

Philosophical ideas expressed in major works of modern literature will be examined in a course to be offered during the first term, Phil 5911. It is said that some

novels "teach the reader how to live," and the emphasis of this course will be on the lessons of literature and the linguistic means by which they are conveyed.

Small Group Communication Workshops

Direct experience as a teaching-learning device in leadership situations will be provided in Spch 5414. Experiences will deal with the nature of authority, power, and interpersonal and intergroup problems. The workshop will meet in small groups June 13-25 (see the course listing for a schedule).

FOR HIGH SCHOOL STUDENTS

High School Debate Workshop

During the first term, the Department of Speech-Communication will offer a debate workshop for high school students interested in competitive speech activities. The workshop—2 weeks of intensive study and practice—will meet from 9 a.m. to 8 p.m., June 12-23. Apply to Barry Brummett, 404 Folwell Hall, 9 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

High School Musicians Honors Program

The Department of Music will invite 160 specially qualified high school musicians to spend 2 weeks on the St. Paul campus to participate in its annual music honors program. The program, June 18 through July 2, will include intensive band, orchestra, chorus, and harp ensemble rehearsals and concert performances; music theory and music styles analysis; vocal repertoire classes; instrument master classes; solo recitals; and social and recreational activities.

Auditions for admission to the program are open to high school students in the Midwest. Information and application forms should be requested from Professor Richard E. Sieber, 320 Wesbrook Hall, 77 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Department of Military Science

UNIVERSITY ARMY ROTC SUMMER PROGRAM

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

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

School of Public Health

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 18-July 8. This program, which carries graduate credit, is designed for, but not limited to, teachers of preventive medicine in medical schools. *Registration is limited and cannot be made through regular Summer Session channels.* Inquiries should be addressed to the Program in Epidemiology, School of Public Health, 1-117 Health Sciences Unit A, 515 Delaware Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

INTERDISCIPLINARY TEAM BUILDING: INSTRUCTIONAL LABORATORY AND TEAM FIELD PROJECT

A 10-credit course, PubH 5004, will be offered for students and community workers in the health sciences (social workers, nurses, therapists, health educators, pharmacists, administrators, planners, environmentalists, physicians, and dentists) who are interested in applying the interdisciplinary team approach to community health problems. Prerequisite is satisfactory completion in spring quarter 1978 of PubH 5008, Special Workshop in Team Building, which will focus on the development of team skills such as resource sharing and utilization, verbal and nonverbal communications, giving and receiving feedback, leadership roles and styles, negotiations, decision making and problem solving, conflict utilization, and process intervention. Interdisciplinary student teams will form and select their own summer projects during the spring workshop.

The 10-week summer program will begin with an intensive 1-day laboratory session focusing on the application of team skills to the selected summer field projects. The summer program will include two day-long laboratory sessions at the midway point of the course and will conclude with an intensive 3- to 4-day residential debriefing-reporting session involving students, faculty members, and agency personnel. For further information about the course and the prerequisite spring quarter workshop, contact Robert W. Schwanke, associate professor and director of interdisciplinary studies in the School of Public Health.

Institute of Technology

AEROSPACE ENGINEERING WORKSHOP FOR ELEMENTARY AND SECONDARY SCHOOL TEACHERS

This workshop for elementary and secondary school teachers, AEM 5001, will be held in Minneapolis from July 3 to 14. Offered under the cooperation of the National Aeronautics and Space Administration (Lewis Center), Civil Air Patrol Liaison Per-

sonnel (U.S. Air Force), Minnesota Department of Aeronautics, and Department of Aerospace Engineering and Mechanics of the University of Minnesota, the workshop is designed to provide teachers with a background in recent discoveries in the space sciences that can be used as the basis for new or existing classroom programs. Enrollment will be limited to 30 participants. Further information may be obtained from the Aerospace Workshop Coordinator, 107 Aeronautical Engineering, 110 Union Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

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

GEOLOGY FIELD STUDY

Fieldwork in geologic mapping (Geo 5110, section 2), will be conducted in the Sawatch Mountains near Gunnison, Colorado, from the beginning of the second summer term until the end of August. The course is restricted to geology and geophysics majors who have satisfactorily completed the core sequence of Geo 1111 (or 1001), 3101, 3102, 3103, 3112, and 3401. Also, Geo 5100, offered in the spring quarter, is strongly recommended as preparation.

Geophysics majors have the option of attending the Colorado School of Mines. Geology majors have the option of attending the Wasatch-Uinta Field Camp in Park City, Utah, (Geo 5110, section 1), for 6 weeks beginning June 15; however, only a few students can be accommodated.

Committee on Institutional Cooperation

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

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

Summer Arts Study Center

**ONE- AND TWO-WEEK WORKSHOPS OFFERED AT
QUADNA MOUNTAIN LODGE, HILL CITY, MINNESOTA**

June 12-August 4

The Summer Arts Study Center provides an attractive environment for intensive study and creative activity in the arts and humanities. The 2-month session is sponsored by the University of Minnesota in cooperation with the Grand Rapids Performing Arts Council. Some workshops are planned for people with a general background

in the arts and some are designed for those seeking advanced work with an expert. Courses are designed to stimulate students to discover and learn about the arts creatively through participation in them. Graduate and undergraduate credit is available.

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

ARTS COURSES

ART AESTHETICS (ArtS 5420, section 85) July 31-August 4

A visual artist's view of the excitement of art. Art from cave dweller times to 20th century—across time, geographical setting, artificial barriers. The course is an ongoing, deep inquiry. Students registered in the Sculpture workshop may concurrently register in this course. Instructor: Raymond Hender.

\$70 3 credits

DRAWING (ArtS 5420, section 83) July 10-14

Designed to increase perception, explore visual elements and meaningful organization, and develop a personal means of expression. Various subjects examined: landscape, still life, model. Individual instruction, critiques. Instructor: Judith Roode.

\$70, plus a course fee of \$5 3 credits

GUM PRINTING (Photography) (ArtS 5420, section 80) July 3-7

Work in gum bichromate printing, a revived turn-of-the-century pigment process using watercolor paints as part of the emulsion. Students will learn how to make gum emulsions, use kodalith, and expose and develop gum prints. Lectures, critiques. Instructor: David Husom.

\$70, plus a course fee of \$14 3 credits

PAINTING (ArtS 5420, section 82) July 10-14

Meaningful organization of visual elements with emphasis on fundamentals of pictorial structure and development of personal expression. Students may work with oil, acrylic, or watercolor media; in still life, landscape, or abstract modes. Individual instruction, critiques. Instructor: William Roode.

\$70 3 credits

PHOTOGRAPHY, BEGINNING (ArtS 1420, section 70) June 12-16

Introduction to methods, materials, and equipment. Use of camera, demonstrations, and darkroom work. Instructor: David Husom.

\$70, plus a course fee of \$14 3 credits (undergraduate)

PHOTOGRAPHY (ArtS 5420, section 74) June 19-23 (ArtS 5420, section 75) June 26-30

For students familiar with the photographic process. Field trips, lectures, slide presentations, and discussions focusing on choices available to the photographer. Critiques, individual work, open lab. Instructors: Section 74, Sandi Fellman; section 75, Frank Gohlke.

\$70, plus a course fee of \$14 3 credits

POTTERY (ArtS 5420, section 76) June 12-23

Raku, bonfire, salt, and stoneware firing; kiln building and home studio setup; propane, oil, and alternative fuels. A learn by doing, limited budget approach. Limited to 30 students, beginners to advanced. Instructor: Douglas Johnson.

\$90, plus a course fee of \$25 4 credits

SCULPTURE (ArtS 5420, section 86) July 24-August 4

Exploration of three-dimensional form concepts through ferroconcrete techniques. Armature building and work in concrete projects suitable for permanent outdoor display. Woodworking techniques, metal mesh techniques, critiques, lectures, and a survey of contemporary sculpture ideas. Students may concurrently register in Art Aesthetics. Instructor: Guy Baldwin.

\$90, plus a course fee of \$25 4 credits

SPACE/LIGHT/COLOR (ArtS 5420, section 81) July 3-7

Exploration of the abstract qualities in nature and the independent elements of space, light, and color. The transitory nature of color sensation and how color can create space. Landscape views (lakeside and hillside) will be utilized to develop maximum impact in communicating visual color as opposed to verbal color. Work in the medium of the student's choice. Instructor: Herman Rowan.

\$70 3 credits

WATERCOLOR (ArtS 5420, section 84)**July 24-28**

Development of aesthetic sensibilities through study of figure, still life, landscape, and abstract design. Students will work in the watercolor media: transparent watercolor, gouache, casein, and tempera. Instructor: Malcolm Myers.

\$70

3 credits

CRAFTS/DESIGN COURSES**COLOR (Dsgn 5521, section 70)****June 26-30**

The use of color and our perception of it. Color relationships, color mixing, dyes, pigments, spatial organization, color relativity, color psychology. Work in gouache, printer's inks, and silk-screened paper. Instructor: Lynn Klein.

\$70, plus a course fee of \$20

3 credits

FABRIC DESIGN, PRINTING, AND DYEING BY HAND (Dsgn 5531, section 80)**July 31-August 4**

Students concentrate in any of the following: block printing, flock block, or resists (tie-dye, pressure batik, stencil, discharge, vegetable, block). Instructor: Richard Abell.

\$70, plus a course fee of \$25

3 credits

FIBER DESIGN/SCULPTURE: NON LOOM (Dsgn 5532, section 80)**July 17-21**

Exploration of fiber forms using off-loom techniques and natural materials. Emphasis on developing a better understanding of fiber construction and finding creative solutions for fiber structures. Instructor: Walter Nottingham.

\$70, plus a course fee of \$5

3 credits

FIBER DESIGN, QUILTING (Dsgn 5588, section 71)**June 19-23**

Traditional quilt-making techniques with contemporary applications. Emphasis on original design and color experimentation. Both hand and machine construction techniques explored. Instructor: Charlene Burningham.

\$70

3 credits

PROBLEMS: JEWELRY MAKING (Pewter Casting) (Dsgn 5587, section 80)**July 17-21**

Basic techniques in the casting of pewter: model design, sprue preparation, investing, wax elimination, casting, and finishing. Students are encouraged to continue studies in the holloware workshop. Instructor: James Roy.

\$70, plus a course fee of \$20

3 credits

PROBLEMS: JEWELRY MAKING (Pewter Holloware) (Dsgn 5587, section 81)**July 24-28**

Basic techniques in raising, forging, and fabricating pewter holloware. Techniques of forming, soldering, fusing, and finishing. Students are encouraged to enroll in the pewter casting workshop. Instructor: James Roy.

\$70, plus a course fee of \$20

3 credits

STAINED GLASS (Dsgn 5585, section 70)**June 12-16**

Stained glass materials and techniques. Students will design and construct stained glass panels. Lectures and slides on history of the craft from medieval times to present. Instructor: Andrea Blum.

\$70, plus a course fee of \$25

3 credits

STENCIL COLLAGE (Dsgn 5585, section 80)**June 19-23**

Use of this graphic design method to achieve quick results, flexibility in modification and production of work. Quality as determined by the process of visual education; changing combinations of colors and shapes. Instructor: Eugene Larkin.

\$70, plus a course fee of \$25

3 credits

MUSIC/THEATRE COURSES**ASIAN PERFORMANCE TRADITIONS (New Horizons in Performance) (Th 5950, section 71)****June 26-30**

Exploration, through lectures, discussions, and practical exercises, of comparative Asian/Western performance techniques. Kalarippayatt martial art techniques including preliminary body training, full body massage, and work with the 12 span staff; maximum development of flexibility, balance, and body control. Excellent for actors/dancers. Instructor: Phillip Zarilli.

\$70

2 credits

CLASSICAL GUITAR (Mus 5950, section 81)**July 24-28**

Advanced students concentrate on performance in a master class setting, beginners on gaining working knowledge of rudimentary techniques. Joint sessions include discussion of scores, books, methods, recordings, and some ensemble work. Admission to advanced session by contacting Mr. Van at 930 Delaware Avenue, St. Paul, Minnesota 55118. Instructors: Jeffrey Van and James McGuire.

\$70

3 credits

MUSICAL THEATRE (Mus 5950, section 80; or Th 5950, section 81)**July 17-21**

Stage movement, acting styles, dance steps, choreography, coaching techniques. Scenes from musical theatre will be blocked and rehearsed. Lecture/demonstration/practice sessions. Instructors: Robert Moulton and Vern Sutton.

\$70, plus a course fee of \$10

2 credits (either course)

TOPICS IN THEATRE: MIME (Th 5950, section 80)**July 3-7**

Basic mimetic vocabulary and techniques for communicating imaginary situations, objects, and emotions; neutral and dramatic movement; centering and meditation techniques useful in developing stage presence. Class, demonstration, and group work. Instructor: David Feldshuh.

\$70

2 credits

MUSIC FOR EARLY CHILDHOOD (MuEd 5750, section 71)**June 26-30**

A related arts approach to the artistic education of young people developed through a unique program for preschoolers called the "Musical Trolley." Aesthetic perception and awareness; skills in movement, singing, composing; creating artistic materials and concepts through manipulating media. Instructor: Joanna Cortright.

\$70

2 credits

LITERATURE AND RELATED COURSES**IMAGE OF EUROPE IN AMERICAN LITERATURE
(Rhet 5380, section 70)****June 12-16**

The changing attitude of Americans toward Europe as seen through works of Irving, Hawthorne, Twain, James, Eliot, Mary McCarthy. Also, study of art, music, and theatre through slides, films, and recordings. Instructor: Edward Savage.

\$70

3 credits

POETRY AND POETRY WRITING (Engl 5910, section 80)**July 31-August 4**

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

\$70

3 credits

FICTION WRITER'S WORKSHOP (Comp 5101, section 80)**July 31-August 4**

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

\$70

3 credits

INTRODUCTION TO FOLKLORE (AmSt 5920, section 80)**July 17-21**

Identification, observation, collection, and appreciation of folklore drawn from our own cultures, art, architecture, belief, custom, and speech. Folktale and folk song as an alternate culture, an alternate technology, and history. Instructor: Roger Lee Welsch.

\$70

2 credits

COURSE APPLICATION FORM

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

Please enroll me in the following class(es)

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

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

(additional information as requested in course descriptions)

Name _____

Address _____

City _____ State _____ Zip _____

Position _____ Firm or Institution _____

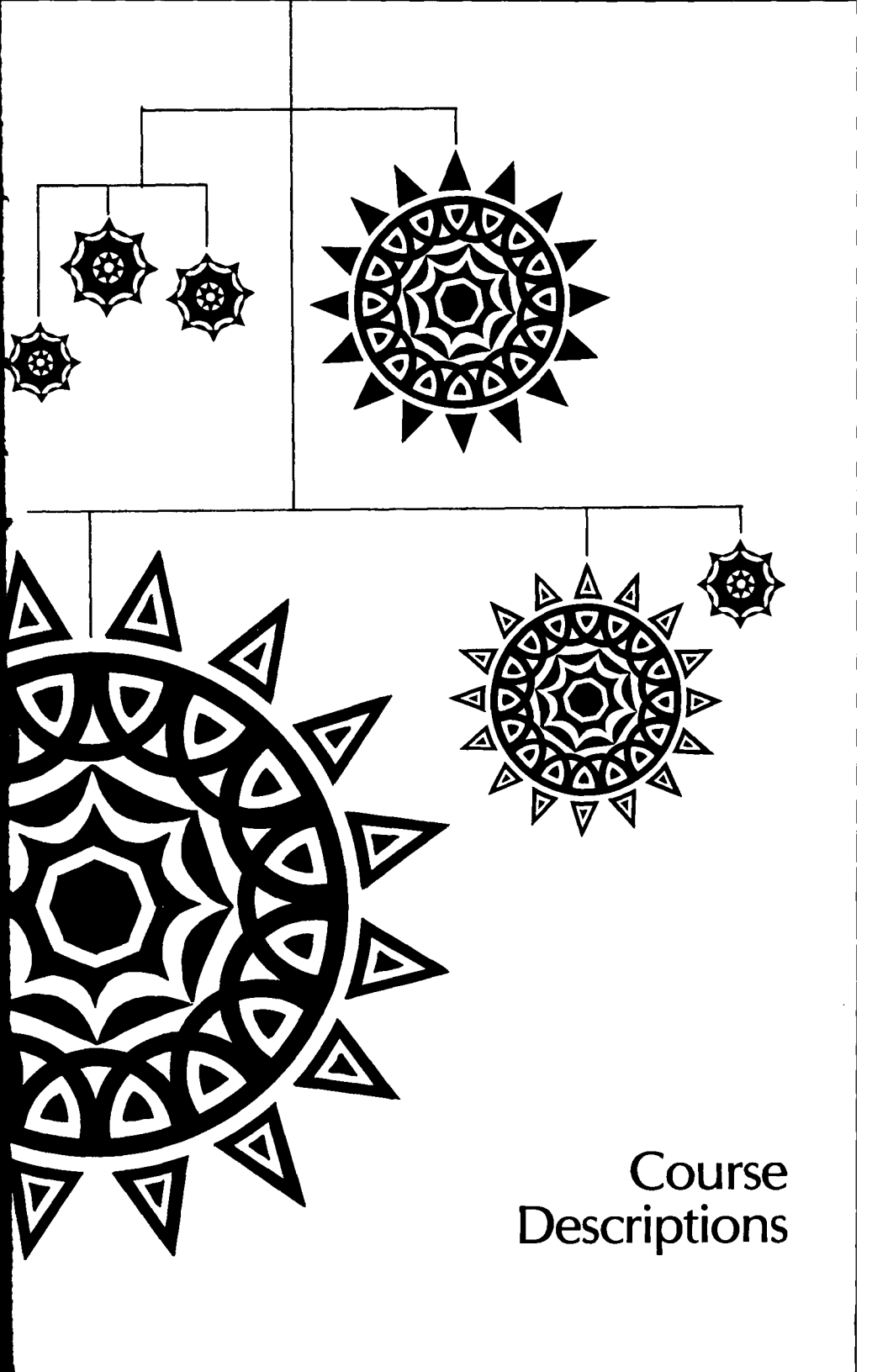
Tuition and Fees Enclosed \$ _____

(Full tuition and fees must be included to hold a place)

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

Make reservations for room and board directly with:

**Quadna Mountain Lodge
Hill City, Minnesota 55748**



Course
Descriptions

College of Agriculture

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

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

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

Agricultural and Applied Economics (AgEc)

FIRST TERM

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

Independent study, supervised reading, or research on agricultural economics problems not covered in regularly offered courses.

5140. AGRICULTURAL PRODUCTION—June 12-June 23. (3 cr; not open to AgEc majors; prereq 1020-1030; 8:00-11:00 MTWThF; ClaOff B36) Fuller

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.

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.

5130. LAND RESOURCE USE—July 24-August 4. (3 cr; not open to AgEc majors; prereq 1020-1030, 8:00-11:00 MTWThF; ClaOff B36) Waelti

Land as a factor in production; rural and urban utilization; rents and land values; land classification; taxation; exchange; public land management.

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

See 8200 First Term.

Agricultural Engineering

Agricultural Engineering Technology (AgEn)

FIRST TERM

- 1020. AGRICULTURAL SHOP—METALWORK.** (4 cr; prereq Chem 1004 or #; \$2 lab fee; 2 lect and 6 lab hrs per wk; I-III MTWTh, I-IV F; AgEng 20 and 35) Riesenbergl
Arc and oxyacetylene welding, soldering, use and conditioning of metalworking tools, and the identification and characteristics of metals used in farm machinery.
- 5005. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr [not for grad cr]; prereq 12 cr in agricultural engineering technology and #) Flikke
Up to 12 weeks of planned experience in a selected position in an industry or public agency; evaluative reports and consultations with faculty advisers and employers.
- 5020. PROGRAM PLANNING AND INSTRUCTIONAL METHODS IN AGRICULTURAL MECHANICS—June 12-30.** (4 cr; prereq 10 cr in agricultural engineering technology, AgEd 3031 or 1/2 AgEd 3031; \$2 lab fee; VI-IX MTWThF; AgEng 218) Bear
Planning and designing high school vocational agriculture facilities, organizing equipment, tools, supplies, and storage as demanded by the instructional program. Administering the agricultural mechanics program. Developing techniques and programs for student supervised study programs.
- 5031. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—AGRICULTURAL MACHINERY AND MECHANIZATION.** (1-3 cr; prereq 5020 or #; special problems ar; rm ar) Bear
Principles and practices in the implementation of instructional programs in agricultural mechanics. Selection, application, operation, service, and maintenance of equipment for the instructional program.

SECOND TERM

- 5005. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr [not for grad cr]; prereq 12 cr in agricultural engineering technology and #) Flikke
See First Term.
- 5032. PROBLEMS AND FIELD STUDIES IN ADVANCED AGRICULTURE—ELECTRIC POWER AND PROCESSING.** (1-3 cr; prereq 5020 or #; special problems ar) Bear
See 5031 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.
- 5555. INTEGRATING PAPER FOR MASTER OF AGRICULTURE STUDENTS.** (1 cr) Hanson
Preparation of a paper of the quality of a professional trade journal article integrating the student's studies with application to an agricultural problem or the student's major area of concentration. The paper will be reviewed and graded by the student's advisory committee.

SECOND TERM

- 1000. ACADEMIC ENRICHMENT AND HONORS PROGRAM: SPECIAL PROJECTS.** (1-15 cr; S-N only; prereq application and acceptance for Special Opportunity Grant, agriculture major only) Wharton
See First Term.
- 5555. INTEGRATING PAPER FOR MASTER OF AGRICULTURE STUDENTS.** (1 cr) Hanson
See First Term.

Agronomy and Plant Genetics (Agro)

Agronomy

FIRST TERM

- 1020. SPECIAL PROBLEMS.** (1-3 cr; prereq #) Smith, Cardwell
In-depth research or studies in agronomy. Intended for students who wish to pursue aspects of agronomy in greater depth than that offered in formal courses or who wish to investigate areas not presently offered in courses. Tutorial instruction under staff guidance.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr [not for grad cr]; prereq #) Smith, Cardwell
Supervised practical experience in agronomic industries and farm enterprise systems; studies of various aspects of the industry and related fields.
- 5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS.** (1-5 cr; prereq #) Smith, Cardwell
In-depth research or studies in agronomy. Intended for advanced students who wish to pursue aspects of agronomy in greater depth than that offered in formal courses or who wish to investigate areas not presently offered in courses. Independent study and research under staff guidance.
- 8010.* RESEARCH IN AGRONOMY.** (Cr ar; prereq #) Staff
Problems in physiology and production of crop plants.

SECOND TERM

- 1020. SPECIAL PROBLEMS.** (1-3 cr; prereq #) Smith, Cardwell
See First Term.
- 5000. PROFESSIONAL EXPERIENCE PROGRAM.** (1-6 cr [not for grad cr]; prereq #) Smith, Cardwell
See First Term.
- 5001. PROBLEMS IN AGRONOMY FOR ADVANCED STUDENTS.** (1-5 cr; prereq #) Smith, Cardwell
See First Term.
- 8010.* RESEARCH IN AGRONOMY.** (Cr ar; prereq #) Staff
See First Term.

Plant Breeding

FIRST TERM

- 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

- 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

- 5613. BEEF CATTLE PRODUCTION—June 12-23.** (3 cr, §5603; prereq 1401...3220 and 3403 recommended; 9:00-11:45 MTWThF; AnSci/VM 135)
Status and characteristics of the beef cattle industry; application of the principles of animal breeding, nutrition, physiology, and economics to management of beef cattle breeding herds. Ration formulation, management and marketing of feedlot cattle.
- 5710. SPECIAL PROBLEMS.** (Cr ar; open to students who have completed pertinent prereqs with #; PetH 108) Staff
Research in an area of animal science under the supervision of a staff member. A written report on the research is required.

- 8810.* RESEARCH IN ANIMAL SCIENCE.** (Cr and hrs ar; prereq #: PetH 108) Staff
Research including experimental studies in the disciplines associated with animal production and research, with emphasis on interdisciplinary studies embracing environmental and managerial considerations.
- 8820.* RESEARCH IN ANIMAL GENETICS.** (Cr and hrs ar; prereq #: PetH 108) Staff
Research in quantitative genetics, cytogenetics, and other areas related to animal breeding.
- 8830.* RESEARCH IN ANIMAL PHYSIOLOGY.** (Cr and hrs ar; prereq #: PetH 108) Staff
Individual research under faculty direction. Topics to be determined by consultation; may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.
- 8840.* RESEARCH IN ANIMAL NUTRITION.** (Cr and hrs ar; prereq #: PetH 108) Staff
Research in selected areas of animal nutrition. Topics and species studied determined by consultation with adviser.
- 8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY.** (Cr and hrs ar; prereq #: PetH 108) Staff
Individual, original research, under staff direction, on selected problems involving the chemical, biochemical, and physiological aspects of muscle and meat technology. The topic may be a specialized aspect of a thesis problem or an individual problem of mutual interest to graduate student and adviser.

SECOND TERM

- 5221. ANIMAL BREEDING FOR VOCATIONAL AGRICULTURE TEACHERS—July 17-28.** (3 cr; 9:00-11:45 MTWThF; PetH 110)
Application of qualitative genetic principles to animal breeding. Introduction to quantitative genetics. Concepts of livestock improvement through breeding and selection systems.
- 5710. SPECIAL PROBLEMS.** (Cr ar; open to students who have completed pertinent prereqs with #; PetH 108) Staff
See First Term.
- 8810.* RESEARCH IN ANIMAL SCIENCE.** (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.
- 8820.* RESEARCH IN ANIMAL GENETICS.** (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.
- 8830.* RESEARCH IN ANIMAL PHYSIOLOGY.** (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.
- 8840.* RESEARCH IN ANIMAL NUTRITION.** (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.
- 8850.* RESEARCH IN MUSCLE CHEMISTRY AND PHYSIOLOGY.** (Cr and hrs ar; prereq #: PetH 108) Staff
See First Term.

Entomology, Fisheries, and Wildlife¹

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

Entomology (Ent)

FIRST TERM

- 3100. ENTOMOLOGICAL TECHNIQUES.** (Cr ar; prereq 3175 or equiv, #) Staff
Practical laboratory instruction in dealing with entomological materials.
- 5901. ADVANCED WORK IN ENTOMOLOGY.** (Cr ar; prereq #) Staff
Library and laboratory research in various lines of entomology.
- 8500.* RESEARCH IN ENTOMOLOGY.** (Cr ar; prereq #) Staff

¹For additional courses, see Biology Session.

SECOND TERM

- 3100. ENTOMOLOGICAL TECHNIQUES.** (Cr ar; prereq 3175 or equiv, #) Staff
See First Term.
- 5901. ADVANCED WORK IN ENTOMOLOGY.** (Cr ar; prereq #) Staff
See First Term.
- 8500.* RESEARCH IN ENTOMOLOGY.** (Cr ar; prereq #) Staff

Fisheries and Wildlife (FW)

FIRST TERM

- 5393. ADVANCED WORK IN FISHERY BIOLOGY.** (Cr ar; prereq #) Staff
Library and laboratory research in various areas of fishery biology.
- 5398. ADVANCED WORK IN WILDLIFE BIOLOGY.** (Cr ar; prereq #) Staff
Library and laboratory research in various areas of wildlife biology.
- 8364.* RESEARCH IN FISHERY BIOLOGY.** (Cr ar; prereq #) Staff
- 8377.* RESEARCH IN WILDLIFE BIOLOGY.** (Cr ar; prereq #) Staff

SECOND TERM

- 5393. ADVANCED WORK IN FISHERY BIOLOGY.** (Cr ar; prereq #) Staff
See First Term.
- 5398. ADVANCED WORK IN WILDLIFE BIOLOGY.** (Cr ar; prereq #) Staff
See First Term.
- 8364.* RESEARCH IN FISHERY BIOLOGY.** (Cr ar; prereq #) Staff
- 8377.* RESEARCH IN WILDLIFE BIOLOGY.** (Cr ar; prereq #) Staff

Food Science and Nutrition (FScN)

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

FIRST TERM

- **1602. PRINCIPLES OF NUTRITION.** (4 cr; limited to 25 students; prereq one course in biology and one course in chemistry or equiv in natural science sequence; I-II MWF, II TTh; FScN 15) York, Hamm
Survey of fundamental principles of nutrition including requirements for various nutrients and results of excess or deficient intake of these nutrients.
- **3472. PRINCIPLES OF FOOD PURCHASING.** (4 cr; limited to 25 students; prereq 5 cr in food science and nutrition, III-IV M, IV TWThF, 2 hrs ar; McNH 146) Trammell
Principles of purchasing basic groups of foods. Relative cost of key nutrients from alternates within the food group. Food prices and indices of change. Laws and regulations pertinent to the labeling of food. Food standards and grades. Functional role of food additives.
- 3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE.** (5 cr; prereq 3750, sr in hospitality and food service management or #: hrs ar) Staff
Planned management experience in a selected food service or hospitality business, including understanding of the operation, planning, purchasing, personnel management, financial management, supervision, and related functions.
- 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION.** (1-5 cr [may be repeated for cr]; prereq Δ; \$2 lab fee; hrs ar) Staff
Individual laboratory or library research in some area related to food chemistry, food processing, nutrition, food service, or hospitality management.
- 5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY.** (1-5 cr; prereq sr, Δ; \$2 lab fee; hrs ar) Tatini
Laboratory or library research on problems related to the microbiology of dairy and food products.

- **5790. QUANTITY FOOD PREPARATION PRACTICES—June 12-23.** (3 cr; limited to 16 students; prereq baccalaureate degree and current or impending affiliation with occupational food program in a secondary school; \$2 lab fee; 8:00-12:00 MTWThF; DinC 152) Billings
Storage, preparation, service, and pricing of selected menu items. Students investigate and seek solutions to problems related to quantity food service. Opportunity to integrate lectures, laboratory experiences, and independent study with instructional programs in occupational foods.
- 8401. INDEPENDENT STUDY: FOOD SCIENCE.** (1-5 cr; prereq Δ; hrs ar) Morris, staff
Independent study and written reports.
- 8621. INDEPENDENT STUDY: NUTRITION.** (1-9 cr; prereq Δ; hrs ar) Hegarty, staff
Independent study and written reports.

SECOND TERM

- 1102. TECHNOLOGY OF FOOD PROCESSING.** (4 cr; prereq high school chemistry and biology; I-II MWF, II TTh; ABLMS 125) Shapero
Introduction to the technology of processing and distributing foods with reference to the prevention of biological, physical, and chemical deterioration. Changes in food composition, microbiological safety, food laws and regulations, technologies of the major food processes such as canning, freezing, drying, and cereal and oilseed processing.
- 3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE.** (5 cr; prereq 3750, sr in hospitality and food service management or #; hrs ar) Staff
See First Term.
- 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION.** (1-5 cr [may be repeated for cr]; prereq Δ; \$2 lab fee; hrs ar) Staff
See First Term.
- 5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY.** (1-5 cr; prereq sr, Δ; \$2 lab fee; hrs ar) Tatini
See First Term.
- **5404. CURRENT ISSUES IN FOOD AND NUTRITION—July 17-28.** (3 cr; limited to 25 students; prereq 15 cr in food science and nutrition or #; \$2 lab fee; 9:00-11:30 MTWThF; FScN 15) Levine
Evaluation of popular and scientific literature as it deals with nutrition, food additives, food safety, food fads, health foods, environmental contamination, the consumer movement, naturally occurring food toxicants, processed foods, synthetic foods, organically grown foods.
- 8401. INDEPENDENT STUDY: FOOD SCIENCE.** (1-5 cr; prereq Δ; hrs ar) Morris, staff
See First Term.
- 8621. INDEPENDENT STUDY: NUTRITION.** (1-9 cr; prereq Δ; hrs ar) Hegarty, staff
See First Term.

Plant Pathology (PIPa)¹

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

FIRST AND SECOND TERMS: TEN-WEEK COURSES

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

- 5013. DISEASES OF ECONOMIC PLANTS.** (2 cr; prereq 1001 or equiv...5100 recommended; II T; StakH 103) Pflieger
Diseases of ornamental plants, trees, and field fruit and vegetable crops. Laboratory and fieldwork continues throughout the summer.
- 5650. CLINICAL PLANT PATHOLOGY.** (6 cr; prereq 1001, 8 cr plant pathology; StakH 105) Groth
Laboratory and field experience in Plant Disease Clinic in diagnosis, treatment, and control of plant diseases of field crops, vegetable crops, turf, ornamentals, and trees.
- 8090.* RESEARCH IN PLANT PATHOLOGY.** (Cr ar) Staff
Special assignment in laboratory and field problems in pathological research.
- 8110.* PROBLEMS IN MYCOLOGY.** (Cr ar; prereq 5106, 5107) Stewart, Anderson
Individual research in taxonomy, ecology, and genetics of special groups of fungi.
- 8301.* RESEARCH IN PLANT VIROLOGY.** (Cr ar; prereq 5400 or #) Banttari
Identification, transmission, purification, serological or histological studies involving viruses, their host plants, and vectors.

¹For additional course, see Biology Session.

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.

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)
For students, teachers, and business or professional people of average reading ability who wish to improve speed, comprehension, and vocabulary. Techniques valuable in scholastic or professional achievement. Maximum use of recently developed visual aids. Of special value to teachers interested in laboratory-type experience in adult reading techniques. Not a remedial course.
Sec 1, II MTWThF, ForH 115, Bennett
Sec 2, III MTWThF, ForH 115, Horberg
- **1222. PUBLIC SPEAKING.** (4 cr; limited to 18 students; prereq soph, completion of fr communication requirements; II MTWThF; HckrH 222) Connolly
A practical course in the fundamentals of speechmaking. Emphasis upon organizing and delivering the speech.
- **3551. PROFESSIONAL WRITING.** (4 cr; each section limited to 23 students; prereq jr, completion of freshman communication requirement)
Projects and reports in professional communication: the résumé, application letter, interview; study of professional journals; the review of literature; specialized bibliographic tools: the feature article.
Sec 1, II MTWThF, HckrH 111, Walzer
Sec 2, III MTWThF, HckrH 111, Veeder.
- 3562. SCIENTIFIC AND TECHNICAL WRITING.** (4 cr; limited to 23 students; prereq jr, completion of fr communication requirements; IV MTWThF; HckrH 111) Ferguson
Methods of exposition in scientific and technical writing; types of reports; audience analysis; practice in report writing.

SECOND TERM

- **1147. EFFICIENT READING.** (3 cr; limited to 32 students, reserved in JohH 12; II MTWThF; ForH 115) Bennett
See First Term.
- **1222. PUBLIC SPEAKING.** (4 cr; limited to 18 students; prereq soph, completion of fr communication requirements; II MTWThF; HckrH 222) McBride
See First Term.
- **3551. PROFESSIONAL WRITING.** (4 cr; each section limited to 23 students; prereq jr, completion of fr communication requirements)
See First Term.
Sec 1, II MTWThF, HckrH 111, Muller
Sec 2, III MTWThF, HckrH 111, Wright
- **5400. DISSEMINATION AND UTILIZATION OF INFORMATION.** (4 cr; limited to 15 students; prereq jr, sr, or grad standing; 9.05-11.00 TTh; HckrH 224) Schuelke
Methods and processes using specialized information. Students investigate cases and develop materials for application in their professional field. Emphasis on channels for dissemination and utilization.

Soil Science (Soil)¹

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

FIRST TERM

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

¹For additional course, see Biology Session.

- **5565. FIELD COURSE—SOIL SURVEY.** (10 cr; limited to 20 students; prereq 5512 and #; \$25 course fee; I-X MTWThF; 215 So) Arneman, Rust

Principles of soil survey including description of soils in acceptable terms, mapping soils on airphoto base, interpretative groupings of soils, descriptive legend development, classification of soils according to soil taxonomy.

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

Individual laboratory or fieldwork on special problems in a phase of soils other than the student's major thesis. Arrangements must be made in advance.

SECOND TERM

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



College of Biological Sciences

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

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

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

Biochemistry (BioC)

FIRST TERM

- 3990. UNDERGRADUATE RESEARCH.** (1-3 cr; prereq sr biochemistry major, B avg or #, and Δ) Staff Research problems for the B.S. thesis (optional).
- 5001. BIOCHEMISTRY.** (3 cr, §Biol 3021; for grad students; prereq Biol 1011, 10 cr organic chemistry or #; 8:45-10:05 MTWThF; PalmC 10) 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

SECOND TERM

- 3990. UNDERGRADUATE RESEARCH.** (1-3 cr; prereq sr biochemistry major, B avg or #, and Δ) Staff
See First Term.
- 8990. GRADUATE RESEARCH.** (2-5 cr; prereq #) Graduate faculty

Biology (Biol)¹

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

FIRST TERM

- **1011. GENERAL BIOLOGY.** (5 cr; limited enrollment, reserved in JohH 12 or CofH 130; \$2 lab fee; lect 10:10-11:20 MTWThF, Owre 15; lab 11:50-1:40 MTWTh, KoltH S160 and ar) Kerr
An introduction to the principles of biology. The cell, metabolism, heredity, reproduction, ecology, and evolution. Closed-circuit TV and multi media presentation of lectures.

¹For additional courses, see Biology Session.

- **3012. PLANT BIOLOGY.** (5 cr; limited to 36 students; prereq 1011, Chem 1005; \$2 lab fee; lect 12:15-1:15 MTWThF; BioSci 6) Koukkari
Plant diversity and evolution; structure and function of the plant cell and of the whole organism; growth and development of plants.
Lab 1, VI-VIII MWF, BioSci 151
Lab 2, VI-VIII MWF, BioSci 163
- **3021. BIOCHEMISTRY.** (4 cr, §BioC 5001; prereq 1011, 10 cr organic chemistry; 8:45-10:05 MTWThF; PalmC 10) Biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents, and cellular regulatory mechanisms.
- **3034. CELL BIOLOGY.** (3 cr, §3032; prereq 3021; III MTWThF; BioSci 6)
Structures and functions of membranes, organelles, and other macromolecular aggregates found in plant, animal, and bacterial cells. Cell form and movement, intercellular communication, transport, and secretion.

SECOND TERM

- **1011. GENERAL BIOLOGY.** (5 cr; limited enrollment, reserved in JohH 12 or CofH 130; \$2 lab fee; lect 10:10-11:20 MTWThF, Owre 15; lab 11:50-1:40 MTWTh, KolH S160 and ar) Kerr
See First Term.
- **1103. GENERAL BOTANY.** (5 cr, §3012; limited to 40 students, reserved in JohH 12 or CofH 130; prereq 1011; \$2 lab fee; lect 12:15-1:15 MTWThF; BioSci 12) Hall
Levels of organization of plants, plant functions, plant growth and development, plant reproduction.
Lab 1, III-IV MTWTh, BioSci 182
Lab 2, VI-VII MTWTh, BioSci 182
- **1106. GENERAL ZOOLOGY.** (5 cr; limited to 72 students, reserved in JohH 12 or CofH 130; prereq 1011; \$2 lab fee; lect 12:15-1:15 MTWThF; Bo 6) Underhill
Survey of animal phyla; structure, function, behavior, adaptation, and evolutionary relationships.
Lab 1, VI-VIII MW, KolH P168
Lab 2, VI-VIII TTh, KolH P168
- **3011. ANIMAL BIOLOGY.** (5 cr; limited to 48 students; prereq 1011, Chem 1005; \$2 lab fee; lect 12:15-1:15 MTWThF; BioSci 18)
Comparison of ways different phyla have solved similar physiological problems. Laboratory includes survey of major animal groups and physiological experiments.
Lab 1, I-IV TTh, BioSci 245
Lab 2, VI-IX TTh, BioSci 245
- **3041. ECOLOGY.** (4 cr, §5041; limited to 30 students; prereq biology major, Math 1231 or #, Δ; lect 9:15-10:15 MTWThF; Z 102) Megard
Interactions of plant and animal populations and their environments. Organization, functioning, and development of ecological systems; population growth and regulation. Human impact on the biosphere in modern times.
Rec 1, 10:15-12:15 T, Z 10
Rec 2, 10:15-12:15 Th, Z 10
- **3051. BIOLOGY AND THE FUTURE OF MAN.** (4 cr; S-N only; limited to 100 students; III MTWThF; AndH 330) Lammers
Nontechnical discussion of biological factors affecting the quality of life—pollution, chemical and biological warfare, population growth, food supply, resource sufficiency, value of wilderness, genetics and eugenics, public health, aging, behavior control, and biological aspects of ethics, morals, and societal organizations.
- 5041. **ECOLOGY.** (3 cr, §3041; for grad students only; prereq Math 1231 or #, Δ)
See 3041.

Botany (Bot)¹

FIRST TERM

- 1009. **MINNESOTA PLANT LIFE.** (4 cr; suitable for nonmajors; \$2 lab fee; lect I MTW; dem II-III MTW; Bo 301; field trips I-IV Th) Bergad
Identification of the more common and conspicuous Minnesota plants; their basic distinctions, life cycles, habitat requirements, distribution, and ecological relations.

¹For additional courses, see Biology Session.

- 3131. SURVEY OF PLANT PHYSIOLOGY.** (4 cr, §5131, §PIPh 3131, §PIPh 5131; prereq Biol 1103 or 3012, BioC 1302 or Biol 3021 or BioC 5001; 12:20-1:25 MTWThF; BioSci 18) Soulen
Physiological principles underlying processes that occur in living plants with emphasis on higher plants. Growth and development, mineral nutrition, water relations, metabolism including respiration and photosynthesis.
- 3990. RESEARCH PROBLEMS.** (1-5 cr; prereq #) Staff
Individual research for undergraduates.
- 5131. SURVEY OF PLANT PHYSIOLOGY.** (4 cr, §3131, §PIPh 3131, §PIPh 5131; prereq Biol 1103 or 3012, BioC 1302 or Biol 3021 or BioC 5001; 12:20-1:25 MTWThF, 1:40-3:00 W; BioSci 18) Soulen
See 3131. Includes a weekly discussion section.
- 5132. PLANT PHYSIOLOGY LABORATORY.** (2 cr; prereq 3131 or 5131 or §13131 or §5131; \$2 lab fee; 1:40-4:30 TTh; BioSci 198) Soulen
Laboratory course to accompany 3131 or 5131.
- 8990. RESEARCH PROBLEMS.** (Cr ar; prereq #) Staff

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)¹

FIRST TERM

- 5970. DIRECTED STUDIES.** (Cr ar; prereq Δ) Staff
- 8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY.** (Cr ar; prereq #) Staff

SECOND TERM

- 3001. INTRODUCTION TO ECOLOGY.** (4 cr; open to jrs and above but not biology majors; 8:50-9:50 MWF; Bo 6)
Taylor
Basic concepts in ecology dealing with organization, development, and functioning of ecosystems; population growth and regulation. Human impact on such systems.
Rec 1, 7:50-8:50 TTh, Z 10
Rec 2, 7:50-8:50 TTh, Z 107
Rec 3, 8:50-9:50 TTh, Z 10
Rec 4, 8:50-9:50 TTh, Z 107
- 5970. DIRECTED STUDIES.** (Cr ar; prereq Δ) Staff
- 8391. ADVANCED WORK IN ECOLOGY AND BEHAVIORAL BIOLOGY.** (Cr ar; prereq #) Staff

Genetics and Cell Biology (GCB)

FIRST TERM

- 3022. GENETICS.** (4 cr, §Biol 3032, §Biol 3033; designed primarily for students other than CBS majors and CLA biology majors; prereq Biol 1011; 10:10-11:25 MTWThF plus 1 hr ar; PalmC 10)
Mechanisms of heredity; their implications for biological populations, and applications to practical problems.
- 3970. INDEPENDENT STUDY.** (Cr ar; prereq #, Δ) Staff
Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature.
- 3990. LABORATORY RESEARCH.** (Cr ar; prereq #, Δ) Staff
Individual projects on selected topics and problems.
- 5022. GENETICS.** (3 cr, §3022, §Biol 3032, §3033; for grad students except those in genetics; 10:10-11:25 MTWThF plus 1 hr ar; PalmC 10)
See 3022.

¹For additional courses, see Biology Session.

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

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

SECOND TERM

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

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

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

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



Biology Session

Held at the Lake Itasca Forestry and Biological Station

During two 5-week terms of the summer session (June 11-July 15 and July 16-August 19), an 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 are conducted cooperatively by various departments in the College of Agriculture and the College of Biological Sciences. The following opportunities will be offered:

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

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

ADMISSION AND REGISTRATION

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

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

Reservations for housing and course work should be made as early as possible. A special Request for Reservation form for this purpose is included in the *Lake Itasca Biology Session Bulletin*. This form should be mailed to: Chairman of Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. Assignments to classes will be verified by April 10. Late applications will be accepted for classes that are not closed, up to the time of registration. The necessary class reservation cards will be held with the reservation request and are to be turned in by the student when he or she registers at the station on June 11 or July 16.

FEES AND EXPENSES

The following fees are payable by each registrant on or before June 11 or July 16 and must be paid before registration is completed:

Tuition Fee ¹	per credit
Student Services Fee ¹	\$15.00 per term
Laboratory Fee	\$ 8.50 per term

¹Subject to change.

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

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

On the basis of the experience of other groups of students, it is estimated that board—which is determined on an actual cost basis—will be approximately \$140 for the 5-week period. A charge of \$25 per term is made for room in the cabins of the station and is to be paid to the chairman during the first week of each term.

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

The estimated cost of \$338 for each 5-week term does not include books, various class supplies, traveling expenses including class field trips, clothing, laundry, and incidental personal expenses.

Tuition and fees are payable on or before June 11 and July 16. After these dates, a late fee will be charged according to the following schedule:

June 12-16 or July 17-21	\$ 6
June 19-23 or July 24-28	10
Thereafter	20

No registration will be accepted after June 11 or July 16 without the approval of the chairman. Fee statements *dated* June 11 may be paid on June 12, without penalty. However, fee statements *dated* June 12 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. (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. (Cr ar; prereq #) Staff

Botany (Bot)

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

FIRST TERM

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

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

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

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

SECOND TERM

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

- **5805. AQUATIC FLOWERING PLANTS.** (5 cr; limited to 20 students; prereq course in taxonomy; MTh) Beal
- **5821. LICHENS.** (5 cr; limited to 20 students; prereq 10 cr in botany or zoology or #: WS) 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; WS) Covich
- **5815. FIELD ETHOLOGY.** (5 cr; limited to 15 students; prereq course in behavior or ecology; TF) Green
- **5831. NATURAL HISTORY OF INVERTEBRATES.** (5 cr; limited to 20 students; prereq Biol 1106; WS) Shaffer
- **5834. FIELD ORNITHOLOGY.** (5 cr; limited to 15 students; prereq Biol 1106 or equiv; TF) James
- **8800. EXPERIMENTAL AND THEORETICAL ECOLOGY.** (10 cr one term, 20 cr both terms; limited to 24 students each term; prereq admission to a grad program and #) Heinrich, Morrow, Tilman

SECOND TERM

- **5812. AQUATIC ECOLOGY.** (5 cr; limited to 20 students; prereq 15 cr in biology and 5 cr in chemistry; WS) Kilham
- **5814. COMMUNITY STRUCTURE AND FUNCTIONING.** (5 cr; limited to 20 students; prereq course in ecology; TF) Cushing
- **5817. VERTEBRATE ECOLOGY.** (5 cr; limited to 15 students; prereq course in ecology; TF) Ford
- **8800. EXPERIMENTAL AND THEORETICAL ECOLOGY.** (10 cr one term, 20 cr both terms; limited to 24 students each term; prereq admission to a grad program and #) Hubbell, Johnson, Willson

Entomology (Ent)

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

FIRST TERM

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

SECOND TERM

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

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; TF) Stewart

College of Business Administration

ADMISSION AND REGISTRATION

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

Students registering for College of Business Administration courses follow procedures described in the Registration section of this bulletin.

Accounting (Acct)

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

FIRST TERM

- **1050. PRINCIPLES OF ACCOUNTING I.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 3rd-qr fr; A-N only)
Introduction to basic financial accounting concepts and their application to the recording and reporting of business events.
 - Sec 1, I-II MTWTh, BlegH 330
 - Sec 2, I-II MTWTh, BlegH 335
 - Sec 3, III-IV MTWTh, BlegH 330
 - Sec 4, III-IV MTWTh, BlegH 335
 - Sec 5, V-VI MTWTh, BlegH 335
 - Sec 6, I-II MTWTh, BlegH 335
- **1051. PRINCIPLES OF ACCOUNTING II.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 1050; A-N only)
Accounting analysis and reports for management and investor decision making. Emphasis on planning and control reporting.
 - Sec 1, I-II MTWTh
 - Sec 2, III-IV MTWTh
- **5310. CURRENT TOPICS IN FINANCIAL ACCOUNTING.** (4 cr [may be repeated for cr]; limited to 35 students; prereq 3102 and #; III-IV MTWTh; BlegH 125)
Current topic(s) in financial accounting. Topics vary from quarter to quarter.

FIRST AND SECOND TERMS: NINE-WEEK COURSES—

JUNE 12-AUGUST 11

- **3101. ACCOUNTING THEORY AND PRACTICE I.** (4 cr; limited to 35 students; prereq 1051; 9:05-10:25 MWF; BlegH 110)
The search for principles and postulates for income determination and for valuation. Includes measurement problems and funds concepts.
- **3102. ACCOUNTING THEORY AND PRACTICE II.** (4 cr; limited to 35 students; prereq 3101; 7:30-8:50 MWF; BlegH 145)
Concepts and problems in accounting for specific assets and equities.
- **3201. COST ACCOUNTING.** (4 cr; limited to 35 students; prereq 1051, MIS 3099, QA 3055; lab fee required; 10:40-12:00 MWF, BlegH 145)
Process and standard costs, behavior of costs under varying conditions, cost allocations, variance analysis, capital budgeting.
- **5125. AUDITING PRINCIPLES AND PROCEDURES.** (4 cr; limited to 40 students; prereq 3102 and 3201; 9:05-10:25 MWF; BlegH 145).
The auditor's role and function. Includes audit standards, ethics, procedures, legal responsibilities.
- **5135. INCOME TAX ACCOUNTING.** (4 cr; each section limited to 35 students; prereq 1051)
Individual, partnership, and corporate taxation; emphasizing income tax planning.
Sec 1, 9:05-10:25 MWF, BlegH 230
Sec 2, 10:40-12:00 MWF, BlegH 230
- **5310. CURRENT TOPICS IN FINANCIAL ACCOUNTING.** (4 cr [may be repeated for cr]; limited to 35 students; prereq 3102 and #; 9:05-10:25 MWF, BlegH 125)
Current topic(s) in financial accounting. Topics vary from quarter to quarter.

SECOND TERM

- **1050. PRINCIPLES OF ACCOUNTING I.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 3rd-qr fr; A-N only)
See First Term.
Sec 1, I-II MTWTh, BlegH 415
Sec 2, III-IV MTWTh
Sec 3, III-IV MTWTh
- **1051. PRINCIPLES OF ACCOUNTING II.** (4 cr; each section limited to 35 students, reserved in JohH 12; prereq 1050; A-N only)
See First Term.
Sec 1, I-II MTWTh, BlegH 125
Sec 2, I-II MTWTh, BlegH 330
Sec 3, III-IV MTWTh, BlegH 330
- **5300. CURRENT TOPICS IN MANAGERIAL ACCOUNTING.** (4 cr [may be repeated for cr]; limited to 35 students; prereq 3201 and #; III-IV MTWTh, BlegH 335)
Selected topic(s) in managerial accounting. Topics vary from quarter to quarter.

Business, Government, Society (BGS)

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

FIRST TERM

- **3001. MANAGERIAL ECONOMICS.** (4 cr, §Econ 3101, 3105; limited to 50 students; prereq Econ 1002 or equiv; III-IV MTWThF; BlegH 135) Hastings
Intermediate microeconomics from the perspective of the business enterprise and of the manager. Firm and industry demand, firm revenues and costs, supply, pricing practices, market structure, and other relevant economic concepts are applied to the individual business.
- **3002. BUSINESS AND SOCIETY.** (4 cr; prereq jr or sr; each section limited to 50 students) Holloway
Basic economic and social goals and various attempts to meet them, with emphasis on American society. Business as an institution; its relationships to other institutions and to society. Ethical and practical

conflicts in the role of the firm and the manager are examined in the context of the public policy process. Current social issues and their impact on business.

Sec 1, 7:45-9:00 MTWThF, BlegH 120
Sec 2, 10:10-11:30 MTWThF, BlegH 120

- **8009. GOVERNMENT AND BUSINESS ENTERPRISE II.** (4 cr; limited to 50 students; prereq 8008 or #: 5:30-8:15 pm TTh; BlegH 435) Erickson
American industrial structure, conduct, and performance. Problems of business and labor concentration and their implications. The antitrust laws and their applications to the individual business enterprise. Alternatives to antitrust. The antitrust laws as a form of business-government interaction and the implications of this experience for other areas of interaction. Meets with 8009E.

Business Law (BLaw)

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

FIRST TERM

- **3058. INTRODUCTION TO LAW, AND THE LAW OF CONTRACTS AND AGENCY.** (4 cr, §8158; each section limited to 50 students; prereq Econ 1002 or equiv) Wright
The origin of law, its place in and effect upon society; the history and development of law; the systems of courts and legal procedure. The law of contracts as the basic law affecting business transactions. Laws affecting the relationship between principal and agent, master and servant, and employer and employee.
Sec 1, I MTWThF, BlegH 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 50 students; prereq Acct 1051; 11:15-12:30 MTWTh; BlegH 120) 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), survey of the nation's financial markets.
- **3100. FINANCIAL MANAGEMENT.** (4 cr, §8100; limited to 37 students; prereq 3000; 11:15-12:30 MTWTh; BlegH 340) Gahlon
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 stressed.
- **3300. INVESTMENT MANAGEMENT.** (4 cr, §8300; limited to 40 students; prereq 3000; 12:45-2:00 MTWTh; BlegH 205) Jessup
Introduces decision procedures for a variety of financial markets. The banking systems and other financial intermediaries, risk-return relationships of portfolio management in the context of the nation's changing financial markets.
- **3500. REAL ESTATE INVESTMENT ANALYSIS.** (4 cr; limited to 40 students; prereq Econ 1002 or equiv; 8:00-10:45 TTh; BlegH 110) 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.

- **8300. INVESTMENT MANAGEMENT.** (4 cr, \$3300, limited to 37 students; prereq 8000; 9:30-12:00 TTh; BlegH 425) Alexander
See BFin 3300.

SECOND TERM

- **3000. FINANCE FUNDAMENTALS.** (4 cr, \$8000; limited to 60 students; prereq Acct 1051; 8:00-9:15 MTWTh; BlegH 215) Schreiner
See First Term.
- **3300. INVESTMENT MANAGEMENT.** (4 cr, \$8300; limited to 40 students; prereq 3000; 12:45-2:00 MTWTh; BlegH 205) Jessup
See First Term.
- **8100. FINANCIAL MANAGEMENT.** (4 cr, \$3100; limited to 37 students; prereq 3000; 9:30-12:00 TTh; BlegH 340) Stover
See BFin 3100, 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; II-III MTWTh; BlegH 205)
Labor markets, employee management, federal-state employment policy, and the resolution of industrial conflict. Process followed in valuing, employing, developing, motivating, and maintaining human resources in an industrial society.
- 3007. COLLECTIVE BARGAINING NEGOTIATIONS AND MODERN LABOR RELATIONS.** (4 cr; VI-VII MTWTh; BlegH 225)
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.
- 8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES.** (5 cr, \$3002; prereq Econ 1001, 1002, Psy 1001; I-II MTWTh; BlegH 245)
See 3002.
- 8005. EMPLOYEE COMPENSATION AND REWARD.** (4 cr; prereq 8002 or #; III-IV MTWTh; BlegH 245)
Systems of employee compensation and reward within economic organizations. Concepts, models, and theories relating to processes of compensation designed to influence employee behavior and performance within constraints; wage structuring, pricing, individual appraisal and reward, employee motivation, and compensation controls.
- 8007. COLLECTIVE BARGAINING NEGOTIATIONS: PROCESSES IN THE PUBLIC AND PRIVATE SECTORS.** (4 cr; prereq 8002 or #; V-VI 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 that characterize employee-employer bargaining relationships.

SECOND TERM

- 3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES.** (4 cr, \$8002; prereq Econ 1001, 1002, Psy 1001; II-III MTWTh; AndH 270)
See First Term.
- 3010. HUMAN RELATIONS AND APPLIED ORGANIZATION THEORY.** (4 cr; VI-VII MTWTh; BlegH 260)
The problems of human relations arising in modern organizations and approaches to their solution. Philosophies and theories of human relations and their translation into policy. Discussion, cases, role playing, and skill building sessions.
- 8002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES.** (5 cr, \$3002; prereq Econ 1001, 1002, Psy 1001; II-III MTWTh; BlegH 245)
See 3002 First Term.
- 8006. LABOR MARKETS: PROCESSES AND DYNAMICS.** (4 cr; prereq 8002 or #; V-VI MTWTh; BlegH 245)
Basic concepts, applications, and data sources to examine the usefulness of market analysis for human resources development, allocation, and utilization. Labor force dynamics and measurement, mobility, productivity, technological change, changes in the cost of living, wage structures, and public policy programs.

- 8014. ORGANIZATION DESIGN AND ADMINISTRATION.** (4 cr; prereq 8002 or #: I-II MTWTh; BlegH 245)
Principles of the design and arrangement of tasks, positions, and functions within the organization. Organization design in relation to the surrounding environment and as an influence on the achievement of organizational goals and individual objectives. Design implications for effective internal organizational operations.

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)
Concepts, theory, research, and operational problems. The principal functional areas of management. Factors and relationships necessary to achieve organizational objectives: establishment of goals, policies, procedures; the planning process; control systems; organizational structure and behavior; leadership.
Sec 1, I-II MTWThF, BlegH 235, Michlitsch
Sec 2, III-IV MTWThF, BlegH 435, Hawley
- **3002. PSYCHOLOGY IN MANAGEMENT.** (4 cr, §8006; limited to 30 students; I-II MTWThF; BlegH 105) Solem
Development and application of behavior principles, methods, and skills that underlie managerial competence in preventing and solving problems within and between individuals and groups and aid in effective utilization of human resources. Various laboratory procedures highlight concepts, methods, and skills and furnish practice in applying them to management problems.
- **3004. BUSINESS POLICY: STRATEGY FORMULATION AND IMPLEMENTATION.** (5 cr; limited to 35 students; prereq sr and completion of business core or final core course; I-II MTWThF; BlegH 340) Seidel
Identifying and analyzing problems, establishing corporate or divisional goals, and designing realistic programs of action. Usually the viewpoint of the general line manager (department, division, or executive level) is taken. Case analysis and discussion, small group work, and occasional presentations made to the class.
- **8006. PSYCHOLOGY IN MANAGEMENT.** (4 cr, §3002; limited to 30 students; III-IV MTWThF; BlegH 105) Solem
See 3002.

SECOND TERM

- **3001. FUNDAMENTALS OF MANAGEMENT.** (4 cr, §8001; limited to 50 students; III-IV MTWThF; BlegH 240)
Erickson
See First Term.

Management Information Systems (MIS)

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

FIRST TERM

- **3098. ELEMENTARY COBOL.** (1 cr; S-N only; limited to 50 students; \$2 lab fee; V MW; BlegH 110)
An introduction to programming in the COBOL language. Using a programmed text in this self-paced course, the student will complete a set of simple COBOL programs. Consultants assist and administer quizzes in a laboratory environment.
- **3099. ELEMENTARY FORTRAN.** (1 cr; S-N only; limited to 50 students; \$2 lab fee; V MW; BlegH 125)
An introduction to programming in the FORTRAN language. Using a programmed text in this self-paced course, the student will complete a set of simple FORTRAN programs. Consultants assist and administer quizzes in a laboratory environment.
- **5101. INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS.** (4 cr; limited to 45 students; I-II MTWTh, BlegH 250)
An overview of management information systems. Conceptual foundation including: concepts of information, humans as information processors, systems concepts and information systems, management and organizational concepts, decision-making concepts and the value of information for decision making. The structure, development, organization, management, and evaluation of a management information system. Emphasis on the user/system interface.

SECOND TERM

- **5100. INTRODUCTION TO COMPUTERS AND COMPUTER DATA PROCESSING.** (4 cr, §8208; limited to 55 students; prereq 3098 or 3099 or §3098 or §3099; I-II MTWTh, BlegH 240)
Elements of computer hardware and their functions. Computer software. Tools and methods for development of computer applications. Preparing computer programs. Acquisition, organization, and management of computer resources. The computer industry. Future developments.

Marketing (Mktg)

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

FIRST TERM

- **3000. PRINCIPLES OF MARKETING.** (4 cr, §8000; section 1 limited to 50 students, section 2 limited to 35 students; prereq Econ 1002 or equiv)
Basic policy and strategy issues in marketing and the environmental factors that affect these issues. Legal, behavioral, ethical, competitive, economic, and technological factors as they affect product, pricing, promotion, and marketing channel decisions.
Sec 1, 7:45-9:00 MTWThF, BlegH 120
Sec 2, 9:15-10:30 MTWThF, BlegH 255
- **3077. ADVERTISING AND SALES PROMOTION.** (4 cr, §8077; limited to 40 students; prereq 3000; 8:45-10:00 MTWThF; BlegH 220) Berkowitz
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.
- **3098. INTRODUCTION TO CONSUMER BEHAVIOR.** (4 cr, §8098; limited to 55 students; prereq 3000; 10:15-11:30 MTWThF; BlegH 220) Ross
Application of the behavioral sciences to understanding human behavior in the marketplace. Topics include perception, learning, attitude theory and measurement, persuasion, motivation, personality, social and cultural influences, family decision making, the social influence process, consumer decision-making strategies, managerial implications of consumer research and "consumerism."
- **8000. PRINCIPLES OF MARKETING.** (4 cr, §3000; limited to 15 students; prereq Econ 1002 or equiv; 9:15-10:30 MTWThF; BlegH 255)
See 3000.
- **8078. MARKETING COMMUNICATIONS.** (4 cr, §3077, §8077; limited to 20 students; prereq 3000 or 8000; 10:15-11:30 MTWThF; BlegH 330) Berkowitz
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; does not include 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 130)
See First Term.
- **3065. RETAIL MANAGEMENT.** (4 cr, §8065; limited to 45 students; prereq 3000; 9:15-10:30 MTWThF; BlegH 135) 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.
- **3098. INTRODUCTION TO CONSUMER BEHAVIOR.** (4 cr, §8098; limited to 45 students; prereq 3000; 10:45-12:00 MTWThF; BlegH 135)
See First Term.
- **8098. INTRODUCTION TO CONSUMER BEHAVIOR.** (4 cr, §3098; limited to 20 students; prereq 3000 or 8000; 9:15-10:30 MTWThF; BlegH 335) Walton
See 3098 First Term.

Operations Analysis and Management (OAM)

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

SECOND TERM

- **3000. INTRODUCTION TO OPERATIONS MANAGEMENT.** (4 cr; limited to 45 students; meets with 8000 [limited to 10 students]; III-IV MTWTh; BlegH 425)
Concepts and principles in the management of operating functions. Examples from service industries, nonprofit organizations, and manufacturing. Relationships to other business functions and the environment stressed. Taught from a managerial point of view. Topics include an overview of operations, planning operating processes, productivity measurement, standards, allocation of resources, forecasting, concepts of quality, inventory management, principles of scheduling, and operational control information systems.
- **8000. INTRODUCTION TO OPERATIONS MANAGEMENT.** (4 cr; limited to 10 students; meets with 3000 [limited to 45 students]; III-IV MTWTh; BlegH 425)
See OAM 3000.

Quantitative Analysis (QA)

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

FIRST TERM

- **1050. ELEMENTARY MANAGERIAL STATISTICS.** (4 cr; limited to 45 students, reserved in JohH 12; prereq Math 1111 or equiv or Math 1131; \$2 lab fee; III-IV 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.
- **3055. INTRODUCTION TO MANAGEMENT SCIENCES.** (4 cr; each section limited to 40 students; prereq 1050, Math 1142 or equiv; \$2 lab fee)
Analytical approaches and quantitative reasoning in management problems; problem formulation, analytical methods for solution, and use of computer models. Management science concepts, decision theory, simulation, linear programming, implementation.
Sec 1, I-II MTWTh, BlegH 225
Sec 2, III-IV MTWTh, BlegH 225

SECOND TERM

- **1050. ELEMENTARY MANAGERIAL STATISTICS.** (4 cr; limited to 45 students, reserved in JohH 12; prereq Math 1111 or equiv or Math 1131; \$2 lab fee; III-IV MTWTh; BlegH 225)
See First Term.
- **3055. INTRODUCTION TO MANAGEMENT SCIENCES.** (4 cr; limited to 40 students; prereq 1050, Math 1142 or equiv; \$2 lab fee; I-II MTWTh; BlegH 225)
See First Term.

Risk Management and Insurance (Ins)

FIRST TERM

- **3100. RISK MANAGEMENT AND INSURANCE.** (4 cr, \$8100; 8:00-9:15 MTWTh; BlegH 425) 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; 9:30-10:45 MTWTh; BlegH 210) 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; 8:00-9:15 MTWTh; BlegH 425) Whitman
See 3100.

8200. LIFE AND HEALTH INSURANCE. (4 cr, §3200; prereq 8100 or equiv; 9:30-10:45 MTWTh; BlegH 210) Whitman
See 3200.

SECOND TERM

3100. RISK MANAGEMENT AND INSURANCE. (4 cr, §8100; 8:00-9:15 MTWTh; AndH 350) Whitman
See First Term.

8100. RISK MANAGEMENT AND INSURANCE. (4 cr, §3100; 8:00-9:15 MTWTh; AndH 350) Whitman
See 3100 First Term.

Transportation (Tran)

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

FIRST TERM

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

Organizational and economic aspects of the transportation system of the United States including rail, highway, air, pipeline, and water transportation. Administration of transportation by users, carriers, and government.

Sec 1, I MTWThF, BlegH 425

Sec 2, II MTWThF, BlegH 425

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 bachelor's 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 necessary to support their request for advanced standing. Students interested in specific degree programs are encouraged to contact the Education Career Development Office (ECDO), 1425 University Avenue S.E., to learn when students are accepted and the deadline for application for those programs. The *College of Education Bulletin* provides current information about programs and requirements.

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

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

Although normally classes are *not* scheduled on the final registration days (June 12 and July 17), some College of Education short-term workshops *will* meet on those dates.

COUNSELING SERVICES

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

STUDENT PROGRESS COMMITTEE

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

GRADUATE CREDIT FOR WORKSHOPS

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

STUDENT TEACHING

Student teaching during the summer is open *only* to 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 21 in the Education Career Development Office. Because of limited facilities, it is *not* possible to offer student teaching to students completing programs at other institutions.

INSTITUTE OF CHILD DEVELOPMENT

Child Psychology (CPsy)

FIRST TERM

- 1301. INTRODUCTORY CHILD PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology; III MTWThF; WuH 230)
Harris
Introduction to science of child behavior; review of theories and research.
- 3302. INFANCY.** (4 cr; prereq 1301; III MTWThF; FolH 102) Metzger
Perceptual, motor, emotional, social, and cognitive development during the first 2 years of life; the developing infant in his or her social and physical environment.
- 3303. ADOLESCENT PSYCHOLOGY.** (4 cr, §5303; prereq 5 cr introductory psychology; II MTWThF; Arch 5)
Morrison
Physical, cognitive, and social development during adolescence. Meets with 5303.
- 3311. BEHAVIORAL AND EMOTIONAL PROBLEMS.** (4 cr, §5311; prereq 1301 or equiv; IV MTWThF; WuH 230)
Lord
Description, etiology, development of behavioral and emotional problems of children; treatment where germane. Excluded are problems deriving primarily from sensory or physical handicap, mental retardation, or neurological impairment. Meets with 5311.
- 3313. PSYCHOLOGY OF ATYPICAL CHILDREN.** (4 cr, §5313; prereq 1301 or equiv; I MTWThF; CD 216) Brown
Problems of research, assessment, and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, language, intellectual, and physical deviation. Meets with 5313.
- 5303. ADOLESCENT PSYCHOLOGY.** (4 cr, §3303; prereq 5 cr introductory psychology; II MTWThF; Arch 5)
Morrison
Physical, cognitive, and social development during adolescence. Meets with 3303.
- 5311. BEHAVIORAL AND EMOTIONAL PROBLEMS.** (4 cr, §3311; prereq 1301 or equiv; IV MTWThF; WuH 230)
Lord
Description, etiology, development of behavioral and emotional problems of children; treatment where germane. Excluded are problems deriving primarily from sensory or physical handicap, mental retardation, or neurological impairment. Meets with 3311.
- 5313. PSYCHOLOGY OF ATYPICAL CHILDREN.** (4 cr, §3313; prereq 1301 or equiv; I MTWThF; CD 216) Brown
Problems of research, assessment, and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, language, intellectual, and physical deviation. Meets with 3313.
- 5315. INTRODUCTION TO MENTAL RETARDATION.** (4 cr, §SpEd 5120; prereq 1301 or equiv; II MTWThF; Pt 215)
Thorsheim
Psychological and educational problems related to the mentally retarded. Meets with SpEd 5120.
- 5319. CLINICAL PROCEDURES WITH CHILDREN AND YOUTH.** (4 cr; prereq 12 cr in child psychology, psychology, educational psychology, or sociology; I MTWThF; Pt 215) Gross
Survey of assessment and intervention procedures of child clinical psychology in clinical and community settings. Primarily for students not majoring in clinical psychology.
- 5335. PEER RELATIONS.** (4 cr; prereq 3331 or 5331; IV MTWThF; NH 107) Henderson
Peer influences, social interactions and social relations; developmental changes.
- 5343. COGNITIVE DEVELOPMENT.** (4 cr; prereq 1301; IV MTWThF; CD 216) Morrison
Development of cognitive processes; discussion of relevant theory, research literature, and methodology.
- 5345. LANGUAGE DEVELOPMENT.** (4 cr; prereq 1301; III MTWThF; CD 216) Maratsos
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 #) Harris, Masters
Independent reading.
- 8990. RESEARCH PROBLEMS.** (Cr ar; prereq #) Harris, Masters
Individual empirical investigation.

SECOND TERM

- 1301. INTRODUCTORY CHILD PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology; III MTWThF; WuH 230)
Peskey
See First Term.
- 3303. ADOLESCENT PSYCHOLOGY.** (4 cr, §5303; prereq 5 cr introductory psychology; II MTWThF; FolH 202) Tomlinson
See First Term.
- 3304. INTRODUCTION TO MATURITY AND AGING.** (4 cr; prereq 1301 or equiv; III MTWThF; CD 216) Keating
Empirical and theoretical issues in developmental psychology of maturity and aging; survey of perceptual-motor, cognitive, and social-psychological changes from young adulthood to old age.
- 3311. BEHAVIORAL AND EMOTIONAL PROBLEMS.** (4 cr, §5311; prereq 1301 or equiv; I MTWThF; Arch 30)
Reed
See First Term.
- 3331. PROCESSES OF SOCIALIZATION OF CHILDREN.** (4 cr, §5331; prereq 1301 or equiv; IV MTWThF; FolH 202) Grueneich
Processes of social learning: identification, social influence, imitation, reward and punishment, internalization, object choice. Meets with CPsy 5331.
- 5303. ADOLESCENT PSYCHOLOGY.** (4 cr, §3303; prereq 5 cr introductory psychology; II MTWThF; FolH 202) Tomlinson
See First Term.
- 5311. BEHAVIORAL AND EMOTIONAL PROBLEMS.** (4 cr, §3311; prereq 1301 or equiv; I MTWThF; Arch 30)
Reed
See First Term.
- 5315. INTRODUCTION TO MENTAL RETARDATION.** (4 cr, §SpEd 5120; prereq 1301 or equiv; II MTWThF; Pt 111)
Warfield
See First Term. Meets with SpEd 5120.
- 5331. PROCESSES OF SOCIALIZATION OF CHILDREN.** (4 cr, §3331; prereq 1301 or equiv; IV MTWThF; FolH 202) Grueneich
Processes of social learning: identification, social influence, imitation, reward and punishment, internalization, object choice. Meets with 3331.
- 5339. PARENT-CHILD RELATIONS.** (4 cr; prereq 3331 or 5331; IV MTWThF; CD 218) Clark
Discussion of parent-child relationships and evaluation of relevant research (e.g., cross-cultural child rearing perspectives, alternative parenting roles, economics of parent-child relations, rights of parents and children).
- 5970. DIRECTED STUDY IN CHILD PSYCHOLOGY.** (Cr ar; prereq #) Masters
See First Term.
- 5990. DIRECTED RESEARCH IN CHILD PSYCHOLOGY.** (Cr ar; prereq #) Masters
See First Term.
- 8970. INDEPENDENT STUDY.** (Cr ar; prereq #) Masters
See First Term.
- 8990. RESEARCH PROBLEMS.** (Cr ar; prereq #) Masters
See First Term.

DEPARTMENT OF CURRICULUM AND INSTRUCTION

Art Education (ArEd)

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

FIRST TERM

- **3001. SURVEY OF ART ACTIVITIES.** (4 cr; not open to art education majors; limited to 30 students; I-II MTWThF; WuH 240) Slettehaugh
Introduction to pictorial expression, design, and the function of art in the school environment.
- **3020. CONTEMPORARY CRAFTS.** (3 cr; limited to 25 students; \$2 lab fee; III-IV MTWThF; WuH 120)
Materials, equipment, design criteria, and techniques for textiles, wood, metal, and ceramics.
- **5001. ART MEDIA TECHNIQUES.** (1-12 cr [max 12 cr]; sec 1 limited to 30 students, sec 2 limited to 50 students)
Lectures, demonstrations, discussions, and critique sessions exploring and learning various creative techniques and processes; handling specific media with each offering focusing on a single topic.
Sec 1, Printmaking, June 13-23, 3 cr, III-V MTWThF and 3 lab hrs ar, WuH 240, Slettehaugh
Bookbinding and children's book design.
Sec 2, Artistic Development of Children, June 26-July 11, 3 cr, III-V MTWThF, WuH 240, Day
- 5389. APPLICATION OF AESTHETIC THEORY IN EDUCATION.** (3 cr; II MTWThF; WuH 110) Day
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 #) Day, Slettehaugh
Independent project under direction; gathering data, developing proposals, experimenting with evaluating innovative practices.
- 5900. PROFESSIONAL PROBLEMS.** (3 cr; prereq MEd student; hrs ar) Day, Slettehaugh
Independent study for M.Ed. candidates integrating learning from art education, art, and education.
- 8900.* PROBLEMS: ART EDUCATION.** (Cr ar; prereq #; hrs ar) Day, Slettehaugh
Independent projects under staff guidance; may include advanced studio practice or technical problems requiring experimental or library research.

SECOND TERM

- **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; \$2 lab fee; III-IV MTWThF; WuH 340) Smits
Equipment design, setting up and operation of table and floor looms.
- 3200. FIELD EXPERIENCES IN ART EDUCATION.** (3-9 cr; S-N grading) Olson
Art education experiences in the school and community.
- **5001. ART MEDIA TECHNIQUES: Toys and Games in Education—July 18-28.** (1-12 cr [max 12 cr]; limited to 30 students; III-V MTWThF and 3 lab hrs ar; WuH 240) Olson
See First Term. This offering for 3 credits.
- **5302. CURRICULUM BUILDING IN ART EDUCATION: INNOVATIONS—August 7-11.** (4 cr; limited to 70 students; August 7 and 8, 9:00-12:00 and 12:30-4:30; MurH auditorium; August 9, 10 and 11, 9:00-12:00 and 12:30-4:30; off-campus excursions to be ar 1st day of class and 4 lab hrs ar) Day
Selection, evaluation, and organization of material for teaching units and projects.
- 5316. INTERCULTURAL EDUCATION THROUGH ART.** (3 cr; II MTWThF; WuH 110) Olson
Approaches to international understanding through recognition of aesthetic contributions of diverse peoples to American life.
- 5605. PRACTICUM.** (3-9 cr; prereq #; hrs ar) Olson
See First Term.
- 5900. PROFESSIONAL PROBLEMS.** (3 cr; prereq MEd student; hrs ar) Olson
See First Term.

Curriculum and Instructional Systems (CISy)

FIRST TERM

- 5000. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL SYSTEMS.** (1 cr, \$SeEd 5102 or 5000; \$2 lab fee; I TTh; EdH Annex 64) Carrier
Introduction to use of technology in instruction; self-instructional, computer-managed module.

- 5001. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL MEDIA.** (1 cr, §SeEd 5102 or 5001; \$2 lab fee; II TTh; EdH Annex 62) Carrier
Introduction to use of media technology in instruction; self-instructional, computer-managed module.
- 5002. EDUCATIONAL TECHNOLOGY: INSTRUCTIONAL EQUIPMENT RESOURCES.** (1 cr, §SeEd 5002 or 5102; \$2 lab fee; III TTh; EdH Annex 54) Carrier
Introduction to use of technology in instruction; self-instructional, computer-managed module.
- 5003. EDUCATIONAL TECHNOLOGY: COMPUTERS IN THE CLASSROOM.** (1 cr, §SeEd 5003 or 5102; \$2 lab fee; IV TTh; EdH Annex 54) Carrier
Introduction to the use of computer technology in instruction; self-instructional, computer-managed module.
- 5201. SYSTEMS APPROACH TO DESIGN OF INSTRUCTION.** (3 cr, §SeEd 5201; prereq 5000 or SeEd 5000 or #; \$2 lab fee; II-III MWF; EdH Annex 64) R Tennyson
Instructional materials design in accordance with systems principles including design of a specific unit of courseware.
- 5205. APPLICATIONS OF COMPUTERS IN EDUCATION.** (3 cr, §SeEd 5205; prereq 5003 or SeEd 5003; \$2 lab fee; IV MWF; EdH Annex 64) R Tennyson
Computer uses in education and training; instructional applications: simulation, tutorial, counseling, testing, instructional management, modeling and information retrieval (including data base inquiry). Computer-managed course includes criteria for selection, evaluation, and examination of on-line examples.
- 5209. APPLICATIONS OF AUDIO AND VISUALS IN EDUCATION.** (2 cr, §SeEd 5105 or 5209; prereq 5001 or SeEd 5001; \$2 lab fee; VI TTh; EdH Annex 64) Carrier
Characteristics, advantages, limitations, and practical classroom use of audiovisual materials of non-projected and projected types; practice in operation of audiovisual equipment.
- 5509. DIRECTED INDIVIDUAL STUDY.** (1-6 cr [max 6 cr]; prereq Δ) R Tennyson, Carrier
Review of literature in research and theory of instructional systems.
- **5600. INTRODUCTION TO CURRICULUM DEVELOPMENT.** (3 cr, §SeEd 5113; limited to 30 students; prereq SeEd 3155 or equiv; II MTWThF; FoIH 202) Barber
Environment of the secondary school related to educational philosophy, goals, objectives; systematic planning for assessing educational needs; current alternative designs for curriculum and instruction.
- **5610. TRENDS AND ISSUES IN SECONDARY CURRICULUM—June 13-30.** (3 cr, §SeEd 5129; limited to 40 students; prereq 5600 or SeEd 5113; 1:00-3:00 MTWThF; NH 122) Hughes
Comprehensive perspective on the secondary school curriculum; analysis and interpretation of the current situation that confronts subject fields.
- 5800. SUPERVISION OF SECONDARY INSTRUCTION.** (3 cr, §SeEd 5172; prereq 5600 or SeEd 5113; IV MTWThF; PeikH 225) E Anderson
Achievement of appropriate teaching expectations, focusing on problems of personnel responsible for their improvement.
- 8501. PROBLEMS: INSTRUCTIONAL SYSTEMS.** (Cr ar; prereq Δ) R Tennyson, Carrier
Individual empirical investigation.
- 8800.* PROBLEMS: SECONDARY SCHOOL SUPERVISION.** (Cr ar; prereq Δ) Anderson
Individual problems course on improvement of instruction.

SECOND TERM

- 5004. EDUCATIONAL TECHNOLOGY: CLASSROOM VIDEO.** (1 cr, §SeEd 5102 or 5004; \$2 lab fee; lect II Th; lab III Th; EdH Annex 64) Davis
Introduction to the use of video technology in instruction; self-instructional, computer-managed module.
- 5203. RESOURCE MANAGEMENT IN INSTRUCTIONAL PROGRAMS.** (3 cr, §SeEd 5203; prereq 5000 or SeEd 5000 or #; \$2 lab fee; II-III MWF; EdH Annex 64) Davis
Processes an instructor or media generalist employs in integrating resources into a planned program; introduction to facilitates planning, discussion of environmental health and safety.
- 5207. APPLICATIONS OF TELEVISION IN EDUCATION.** (2 cr, §SeEd 5207; prereq 5004 or SeEd 5004; \$2 lab fee; IV TTh; EdH Annex 64) Davis
Current uses of video systems in education.
- 5509. DIRECTED INDIVIDUAL STUDY.** (1-6 cr [max 6]; prereq Δ) Davis
See First Term.
- **5700. MODELS AND PROCEDURES FOR CURRICULUM PLANNING—July 18-August 4.** (3 cr, §SeEd 5170; limited to 30 students; prereq 5600 or SeEd 5113 or Elem 5100; III-IV MTWThF; CD 105) Kimpston
Review and employment of model for planning and designing a systematic plan for curriculum change.

8501.* PROBLEMS: INSTRUCTIONAL SYSTEMS. (Cr ar; prereq Δ) Davis

See First Term.

8700. FIELD PRACTICUM: SUPERVISION AND CURRICULUM DEVELOPMENT. (1-3 cr; prereq SeEd 5113 and 5170, or CIsy 5600 and 5700 or Elem 5101 or Δ) Kimpston
Experience through internships and field service.

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

8800.* PROBLEMS: SECONDARY SCHOOL SUPERVISION. (Cr ar; prereq Δ) Kimpston

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

● **5103.¹ ADULT EDUCATION WORKSHOP: Teaching Strategies for Adults.** (1-12 cr [max 12 cr]; limited to 30 students; prereq practicing adult educator and #; I MTWThF; Bu 125) Howey

This 3-credit workshop will focus on methods for guiding and evaluating adults' learning. Participants will examine teaching strategies relative to the characteristics of adult learners in different environments and at different phases of adulthood.

● **5199.¹ WORKSHOP: TEACHER EDUCATION: In-Service Education in the Schools—June 19–July 7.** (1-12 cr [max 12 cr]; limited to 30 students; prereq tchg exper and #; V-IX MTWThF; Bu 123) Bruning

This 6-credit offering will review the Minnesota rules on continuing education and procedures for implementing inservice teacher education in Minnesota public schools.

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

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

8250. HIGHER EDUCATION IN THE UNITED STATES. (3 cr; prereq yr of grad study in any field or 18 cr in education; III-IV MWF; NH 209A) Corcoran

Development, present status, and outlook for American collegas; 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, Howey, Willie

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

Individual research in area of adult education.

SECOND TERM

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

● **5401. ADULT LEARNING AND DEVELOPMENT THROUGH THE LIFE SPAN.** (3 cr; limited to 30 students; 1:30-4:30 TTh; Bu 125) 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 #) Williams, Keller, Kellogg

8252. EFFECTIVE COLLEGE TEACHING. (3 cr; prereq 8250 and yr of grad study in any field or 18 cr in education; 10:30-1:00 TTh; FoiH 103) Williams

Teaching-learning relationship; study and appraisal of methods employed to encourage, guide, and evaluate students' learning.

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

See First Term.

Elementary Education (Elem)

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

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

FIRST TERM

3604.² STUDENT TEACHING IN THE NURSERY SCHOOL. (3-6 cr; S-N only; prereq approval of major adviser and director of student tchg; hrs ar) Stoner, Kelly

- **5100. ELEMENTARY SCHOOL CURRICULUM.** (3 cr; limited to 35 students; prereq 3101; III MTWThF; CD 218) Howey
- **5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES.** (3 cr; limited to 40 students; I MTWThF; CD 218)
- **5108. SUPERVISION AND IMPROVEMENT OF INSTRUCTION.** (3 cr; limited to 25 students; prereq 9 cr in education; IV MTWThF; PeiK 315) Lambert
Functions and duties of a supervisor; techniques; analysis of classroom activities.
- **5300. LITERATURE FOR THE ELEMENTARY SCHOOL.** (3 cr; limited to 55 students; I MTWThF; Bu 120) Odland
- **5305. SURVEY OF SPECIAL COLLECTIONS IN CHILDREN'S LITERATURE.** (3 cr; limited to 20 students; prereq 5300 or #: I MTWThF; Bu 120) Odland
Content and accessibility of collections that relate to the creation of books; emphasis on possibilities and methods for interpreting the content of the collections to children.
- **5316. TEACHING AND SUPERVISION OF ENGLISH IN THE ELEMENTARY SCHOOL—June 28-July 14.** (3 cr; limited to 35 students; prereq 3316 or elem tchg exper; III-IV MTWThF; Bu 120) Youngers
Improvement of instruction, study of trends in English Education.
- **5318. CREATIVE WRITING FOR AND BY CHILDREN—June 13-27.** (3-6 cr [max 6 cr]; limited to 35 students; prereq 3300 or 3336 or elem tchg exper and #: III-IV MTWThF; Bu 120)
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.
- **5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL.** (3 cr; limited to 45 students; prereq 9 cr in education; IV MTWThF; PE 214) D Pearson
For graduate students and summer students who hold a bachelor's degree.
- **5334. READING DIFFICULTIES.** (3 cr; each section limited to 50 students; prereq 5331 or SeEd 5344; II MTWThF; Arch 15) Schreiner
- **5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES.** (3 cr; students are required to register concurrently in Elem 5336; limited to 35 students; prereq 5334; III-IV MTWThF; off campus) Manning
Relationship to psychological factors and clinical remedial correction. Students will be informed of where class will meet upon registration.
- **5336. CLINICAL PRACTICE IN REMEDIAL TEACHING.** (3 cr; students are required to register concurrently in Elem 5335; limited to 35 students; prereq 5334 or 5107 and #: III-IV MTWThF; off campus) Manning
Remedial tutoring of individual children who have difficulty in school learning. Students will be informed of where class will meet upon registration.
- **5337. BEGINNING READING INSTRUCTION.** (3 cr; limited to 35 students; prereq 3331 and #: III MTWThF; PeiK 315)
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.
- **5346. TEACHING SCIENCE IN THE ELEMENTARY SCHOOL.** (3 cr; limited to 35 students; prereq elem tchg exper or #: IV-V MWF; PeiK 385) Humphreys
- **5350. ELEMENTARY SCHOOL SCIENCE: MATERIALS AND RESOURCES.** (3 cr; limited to 35 students; prereq 5349; IV-VI TTh; PeiK 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; I MTWThF; Pt 214) Ellis
For graduate students and summer students who hold a bachelor's degree in elementary education.
- **5363.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES.** (3 cr [max 9 cr]; limited to 35 students; prereq elem tchg exper and #: II MTWThF; Pt 214) Ellis
This offering for 3 credits will provide an analysis of new instructional materials, recent curriculum developments in the field; and training in innovative instructional procedures using inquiry strategies in elementary school social studies.

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

²Student teaching is open only to students in regular degree programs of the College of Education. Application must be made prior to April 21. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

- **5376. CURRENT TRENDS IN EARLY CHILDHOOD EDUCATION.** (3 cr; limited to 40 students; prereq tchg exper in kindergarten or primary school or #; II MTWThF; WuH 230) Hansen
Continuing needs of children in our changing culture; current practices and recent research; not intended for kindergarten certification requirements.
- **5377. EARLY CHILDHOOD EDUCATION: MATERIALS AND RESOURCES.** (3 cr; limited to 35 students; prereq 3377 or 5376 and tchg exper; IV MTWThF; Bu 125) Hansen
Experience in the selection and use of commercial and teacher-made education materials common to early childhood education programs.
- 5602. PRACTICUM: IMPROVEMENT OF TEACHING.** (3 cr; prereq MEd student in elem education, #; S-N only; hrs ar) Dykstra, Hansen, Jackson, Lambert, Manning, Odland, Stochl, Ellis, Howey, Humphreys, D Pearson, Youngers
- **8300. RESEARCH IN SPECIAL COLLECTIONS OF CHILDREN'S LITERATURE.** (1-3 cr [max 6 cr]; limited to 15 students; V MTWThF; Bu 120) Odland
This offering for 3 credits will provide comparative study of national and international special collections of original manuscripts, artwork, first editions, and other bases for collection of children's books; research in Kerlan or other accessible collections.
- 8333. SEMINAR: READING INSTRUCTION.** (0-3 cr; prereq #; VI-VII MWF; Bu 120) D Pearson
This offering for 3 credits provides graduate students with opportunity to present their research designs and to criticize those of their peers. Faculty members will present designs for studies in progress; study of problems at all levels.
- 8916.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar; prereq #) Dykstra, Youngers
- 8931.* PROBLEMS: TEACHING READING.** (Cr and hrs ar; prereq 5331 or SeEd 5344 and #) Manning, Odland, Graves, D Pearson
- 8961.* PROBLEMS: TEACHING SOCIAL STUDIES.** (Cr and hrs ar; prereq 5361 or SeEd 5155 or 8104 and #) Ellis
- 8976. PROBLEMS: TEACHING KINDERGARTEN.** (3 cr; prereq #; hrs ar) Hansen
- 8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION.** (Cr and hrs ar; prereq #) Dykstra, Hansen, Jackson, Lambert, Manning, Odland, Stochl, Ellis, Howey, Humphreys, D Pearson, Youngers

SECOND TERM

- 3604.¹ STUDENT TEACHING IN THE NURSERY SCHOOL.** (3-6 cr; S-N only; prereq approval of major adviser and director of student tchg; hrs ar) Sternberg
- **5100. ELEMENTARY SCHOOL CURRICULUM—July 18-August 4.** (3 cr; limited to 35 students; prereq 3101; III-IV MTWThF; Bu 123) Cogan
- **5107. DIAGNOSIS AND TREATMENT OF LEARNING DIFFICULTIES—July 18-August 4.** (3 cr; limited to 40 students; III-IV MTWThF; Pt 111)
- **5109. SUPERVISORY STRATEGIES IN PLANNING, OBSERVING, CONFERENCING—July 18-August 4.** (3 cr; limited to 30 students; prereq #; II-III MTWThF; PE 102) McNergney
Overview of responsibilities of the supervising teacher; material development and practice in basic supervisory skills and functions.
- **5317. MATERIALS LABORATORY FOR TEACHING ENGLISH IN ELEMENTARY SCHOOLS—July 18-August 4.** (3 cr; limited to 35 students; prereq 3316 or elem tchg exper; I-II MTWThF; Bu 123) Youngers
Examination and evaluation of textbooks, programmed materials, and audiovisual resources for elementary school language arts instruction.
- **5331. TEACHING AND SUPERVISION OF READING IN THE ELEMENTARY SCHOOL—July 18-August 4.** (3 cr; limited to 45 students; prereq 9 cr in education; I-II MTWThF; FolH 107)
See First Term.
- **5334. READING DIFFICULTIES—July 18-August 4.** (3 cr; limited to 50 students; prereq 5331 or SeEd 5344; I-II MTWTh; Bu 123) D Pearson
- **5335. CLINICAL DIAGNOSIS OF READING DIFFICULTIES—July 18-August 4.** (3 cr; limited to 30 students; prereq 5334; I-II MTWThF; Pt 102)
See First Term.
- **5338. TEACHING READING IN THE INTERMEDIATE GRADES—July 18-August 4.** (3 cr; limited to 35 students; prereq 3331 and #; III-IV MTWThF; Bu 120) D Pearson

¹Student teaching is open only to students in regular degree programs of the College of Education. Application must be made prior to April 21. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

- **5347.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SCIENCE—July 17-28.**
(3-6 cr; limited to 30 students; prereq elem tchg exper; 9:00-2:00 MTWThF; Minnesota Zoological Garden, 12101 Johnny Cake Ridge Rd., Apple Valley) Humphreys
This 3-credit offering focuses on planning, development, and evaluation of zoo-related curriculum materials for elementary schools. Specific adaptations and behaviors considered in the context of general ecological schemes. Participants will initiate and revise curriculum packages.
- **5348.¹ WORKSHOP: OUTDOOR SCIENCE EDUCATION—August 7-11.** (3 cr; limited to 30 students; prereq elem tchg exper; all day MTWThF; Itasca State Park) R Johnson
Classroom and fieldwork activities dealing with models, materials, and methods in the outdoor setting. The course will be held in Itasca State Park. Participants are required to provide sleeping bags and other necessary items. Students will be responsible for the costs of food, transportation, and campsite rental. The course will cover many aspects of outdoor sciencing including forestry activities, nature trail development, marsh studies, and stargazing. For further information, contact Roger Johnson, 370 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.
- **5363.¹ WORKSHOP: CURRICULUM IMPLEMENTATION IN ELEMENTARY SCHOOL SOCIAL STUDIES—July 18-August 4.** (Cr ar [max 9 cr]; limited to 35 students; prereq elem tchg exper and #; I-II 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, Hansen, Stochl, Cogan, Humphreys, R Johnson, D Pearson, Post, McNergney, Youngers
- 8916.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar; prereq #) Dykstra, Youngers
- 8931.* PROBLEMS: TEACHING READING.** (Cr and hrs ar; prereq 5331 or SeEd 5344 and #) D Pearson
- 8961.* PROBLEMS: TEACHING SOCIAL STUDIES.** (Cr and hrs ar; prereq 5361 or SeEd 5155 or 8104 and #) Cogan
- 8976. PROBLEMS: TEACHING KINDERGARTEN.** (3 cr; prereq #; hrs ar) Hansen
- 8991.* PROBLEMS: IMPROVEMENT OF INSTRUCTION.** (Cr and hrs ar; prereq #) Dykstra, Hansen, Stochl, Cogan, Humphreys, R Johnson, D Pearson, Post, McNergney, Youngers

Mathematics Education (MthE)

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

FIRST TERM

- **5101.¹ WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS.** (1-12 cr [max 12 cr]; limited to 30 students; not open to majors in mathematics education; prereq #; I-II MWF; PeikH 375) Stochl
Modern trends, methods, and materials used to convey mathematical ideas. This offering for 3 credits.
- **5301. INSTRUCTIONAL LEADERSHIP IN ELEMENTARY SCHOOL MATHEMATICS.** (3 cr; limited to 30 students; not open to mathematics education majors; prereq #; III MTWThF; PeikH 375) Jackson
Current trends in methods, materials, content and evaluation; program development and research; intended for supervisors and principals.
- **5322. MATERIALS LABORATORY FOR SECONDARY SCHOOL MATHEMATICS INSTRUCTION.** (3 cr; limited to 30 students; prereq 5312 or #: V-VII MW; PeikH 315) 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 30 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 35 students; prereq 5311 or Elem 3391 or #: IV-VI MWTh; PeikH 375) Jackson
Units of instruction emphasizing mathematical concepts essential for vocational competence; experimental materials and methods designed to improve performance of low achievers.
- 5680. PRACTICUM IN MATHEMATICS EDUCATION.** (3-9 cr [max 9 cr]; prereq #) Jackson, Stochl, House
Supervised experience in teaching or related work in school.

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

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

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

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

SECOND TERM

● **5101.¹ WORKSHOP: ELEMENTARY SCHOOL MATHEMATICS—July 18-August 4.** (1-12 cr [max 12 cr]; limited to 30 students; not open to majors in mathematics education; prereq #; III-IV MTWThF; PeikH 375) Stochl

See First Term. This offering for 3 credits.

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

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

Sec 1, Using Hand-Held Calculators to Teach Elementary School Mathematics, July 18-28, 3 cr, V-VII MTWThF, PeikH 315

The role of the hand-held minicalculator in school mathematics; instructional activities that involve the calculator as an integral component. Designed to make teaching more effective and relevant to children.

Sec 2, Mathematics for Exceptional Youth in the Secondary School, July 18-August 4, 3 cr, III-IV MTWThF, PeikH 315

Mathematically talented youth and problems of slow learners at the secondary level.

● **5355. MATHEMATICS FOR SLOW LEARNING CHILDREN—July 18-August 4.** (3 cr; limited to 35 students; prereq 5311 or Elem 3391 or #; I-II MTWThF; PeikH 375) Post

See First Term.

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

See First Term.

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

See First Term.

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

Music Education (MuEd)

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

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

FIRST TERM

● **3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL.** (4 cr; limited to 20 students; prereq Mus 1001 or exemption; II MTWThF, Sch 4) Caswell

For nonmusic majors; methods and materials in teaching singing, rhythm, music reading, creativity, classroom instruments, fundamentals, appreciation in K-6.

3504. BRASS TECHNIQUES—June 13-30. (4 cr, \$1525; prereq MuEd major or #; V-VII MTWThF; NMA 4) Turrentine

Theory and technical development of instruments, elementary instruction in performing, routine class instruction.

3701. BEGINNING CONDUCTING. (3 cr; prereq Mus 1506, 1516; IV MTWThF; NMA 4, 5) Schultz
Fundamentals, rehearsal techniques; score reading and arranging; literature and materials for instrumental performance in elementary and secondary schools.

5214. PSYCHOLOGICAL FOUNDATIONS—June 13-23. (3 cr; prereq #; V-VII MTWThF; Sch 3) Caswell
Analysis and interpretation of psychologies of music and education as applied to the teaching of music.

5525. ADVANCED BRASS TECHNIQUES—July 3-14. (3 cr; prereq 1525 or #; V-VII MTWThF; NMA 4) Turrentine
Practical performance with lectures and discussion of research in performance techniques.

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

- 5534. ADVANCED PERCUSSION TECHNIQUES—July 3-14.** (3 cr; I-III MTWThF; ScH 108) 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.
- **5750.¹ WORKSHOP: MUSIC EDUCATION: JAZZ TECHNIQUES—June 13-23.** (1-12 cr [max 12]; limited to 50 students 9:00-3:00 MTWThF; WuH 30) Buckner
This 3-credit offering emphasizes theory and techniques of improvisation, arranging, and jazz ensemble playing, as well as the history of jazz styles.
- 5970. INDEPENDENT STUDY.** (1-4 cr; prereq consent of adviser and of dept; hrs ar; ScH 104) Caswell, Turrentine, Schultz, Buckner
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, Schultz, Buckner
Individual projects.

SECOND TERM

- **3011. TEACHING MUSIC IN THE ELEMENTARY SCHOOL.** (4 cr; limited to 20 students; prereq Mus 1001 or exemption; III 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.
- 5308. TEACHING MUSIC READING—July 18-August 4.** (3 cr; prereq 3011, 3302 or #; V-VI MTWThF; ScH 3) Borg
Objectives, materials, research, teaching procedures and evaluation; class and individual projects; emphasis on general music class approach.
- 5801. INFLUENCE OF MUSIC ON BEHAVIOR—July 24-August 4.** (3 cr; 9:00-12:00 MTWThF; MusEd 101) Jellison
Methods and principles of the behavioral and biological sciences as they relate to the art of music.
- 5804. MUSIC IN THERAPY—July 24-August 4.** (3 cr; prereq 5801; 1:00-4:00 MTWThF; MusEd 101) Jellison
Application of methods and principles of music therapy through observation, research, and case studies.
- 5970. INDEPENDENT STUDY.** (1-4 cr; prereq consent of adviser and of dept; hrs ar; ScH 104) Borg, Jellison
See First Term.
- 8990.* RESEARCH PROBLEMS.** (4-12 cr; prereq knowledge of elem statistics; hrs ar; ScH 104) Borg, Jellison
See First Term.

Secondary Education (SeEd)

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

FIRST TERM

- 3600.² STUDENT TEACHING.** (Cr ar; prereq Δ) E Anderson
Supervised teaching for students wishing to elect credits in student teaching in addition to regular requirements.
- 5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION.** (1-12 cr [max 12 cr]) Mackey
Opportunity to work individually or in teams on curricular, instructional, or evaluation problems within the school.
- **5152. TECHNIQUES OF INSTRUCTION IN SOCIAL STUDIES.** (3 cr; 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—June 19-30.** (1-3 cr [max 12 cr]; limited to 40 students; I-III MTWThF; PeikH 165) Mackey
This offering for 3 credits.
- 5156. PRACTICUM IN SOCIAL STUDIES INSTRUCTIONAL TECHNIQUES.** (1 cr; prereq 5150, 5152) Mackey
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.

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

²Student teaching is open only to students in regular degree programs of the College of Education. Application must be made prior to April 21. Forms and instructions are available in the Education Career Development Office, 1425 University Avenue S.E.

- **5176. CLASSROOM RESEARCH IN ENGLISH EDUCATION AND READING.** (3 cr; limited to 30 students; prereq MEd student in English education or #; IV MTWThF; PeikH 225) Graves
Review and analysis of current studies; design and analyses for school-based research.
- 5185. SCHOOL- AND PROFESSIONAL-BASED EXPERIENCES IN SECOND LANGUAGES AND CULTURES.** (1-12 cr [max 12 cr]; prereq MEd students only) Jorstad
Opportunity for teachers to work together on curricular, instructional, or evaluation problems; internship experiences; participation in professional activities.
- **5191.¹ WORKSHOP: TEACHING OF SECOND LANGUAGES AND CULTURES: Methods of Teaching Second Language—June 19-July 7.** (1-10 cr [max 10 cr]; limited to 30 students; 8:30-12:30 and 1:00-4:00 MTWThF; PeikH 215) Jorstad
Related specifically to the needs of the in-service teacher. Participants in this 6-credit offering will use demonstrations, videotapes, and readings as models, and will prepare lessons and units and teach them in daily microteaching sessions.
- **5344. TEACHING READING IN CONTENT AREAS.** (3 cr; limited to 40 students; prereq 9 cr in education; II MTWThF; Pt 111) Graves
Procedures, objectives, and materials.
- 5351. DIRECTED STUDY.** (Cr ar [max 6 cr]; S-N optional; prereq #) Gennaro, Graves, Jorstad, Mackey
Individual or group work on curricular, instructional, or evaluation problems.
- **5394.¹ 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, Teaching Animal and Human Behavior, June 13-23,** 3 cr, I-II MTWThF and 6 lab hrs ar, PeikH 385
Curricular materials and instructional techniques for middle school, junior high, and senior high teachers that draw from ethology and psychology. Students will use animals and each other as experimental subjects.
 - Sec 2, Energy Education in the Classroom, July 3-14,** 3 cr, 9:00-2:00 MTWThF; Minnesota Zoo Garden, Apple Valley
Study and development of curricular materials for school energy education programs and for class sessions before and after visiting the zoo's energy exhibit. Speakers and films as resources.
- 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 40 students; III MTWThF; Pt 111) 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. Meets with Spch 5404.
- 5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS.** (1-12 cr [max 12 cr]; prereq MEd student in English education) Graves
Individual or group work on curricular, instructional, or evaluation problems and projects applicable to school situations.
- 8104. CURRICULUM DEVELOPMENT IN THE SOCIAL STUDIES.** (3 cr; prereq 5150, 5152; hrs ar) Mackey
Analysis of curriculum building process in social studies.
- 8801.* PROBLEMS: TEACHING SOCIAL STUDIES.** (3-9 cr; prereq 5150, 5152, 5156, 8104 or #; hrs ar) Gardner
Individual research.
- 8871.* PROBLEMS: CURRICULUM CONSTRUCTION.** (Cr and hrs ar; prereq #) Gennaro
- 8894.* PROBLEMS; SECOND LANGUAGES AND CULTURES EDUCATION.** (Cr ar [max 8 cr]; prereq #) Jorstad
Individual research.
- 8895. READINGS IN ENGLISH EDUCATION.** (1-3 cr) Piché, Graves
Readings in secondary school English curriculum and instruction.
- 8896.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar) Piché, Graves
- 8898.* READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION.** (1-3 cr) Jorstad
Readings in development, research, curriculum, instruction, evaluation, culture, teacher education, as needed by the student.

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

SECOND TERM

- 5122. STRATEGIES FOR TEACHING CULTURE IN THE SECOND LANGUAGE CLASSROOM.** (4 cr; prereq language major or minor; III-IV TWTh; PeikH 215) Lange
Analysis of other cultures; generation of learning materials for developing understanding of other cultures; sections conducted in French, Spanish, German, Hebrew.
- **5150. ADVANCED METHODS OF TEACHING THE SOCIAL STUDIES—July 18-28.** (3 cr; limited to 40 students; I-III MTWThF; PeikH 165) Glenn
Advanced methods for social studies teachers; prerequisite to other graduate-level courses in social studies education.
- 5151. SCHOOL-BASED PROJECTS IN SOCIAL STUDIES EDUCATION.** (1-12 cr [max 12 cr]) Glenn
See First Term.
- **5153. NEW PERSPECTIVES IN THE SOCIAL STUDIES: Simulations and Games in Social Studies — July 31-August 11.** (1-3 cr [max 12 cr]; limited to 40 students; I-III MTWThF; PeikH 165) Glenn
See First Term. This offering for 3 credits.
- 5156. PRACTICUM IN SOCIAL STUDIES INSTRUCTIONAL TECHNIQUES.** (1 cr; prereq 5150, 5152) Glenn
See First Term.
- 5184. EXAMINATION AND ASSESSMENT OF MATERIALS IN SECOND LANGUAGES AND CULTURES.** (2 cr; prereq 3334 or 5385; III-IV MF; PeikH 215) Lange
Evaluation of the tools of access in language acquisition; dictionaries, grammars, readers, tapes, language learning systems, supplementary and cultural materials.
- **5321. TEACHING LITERATURE IN SECONDARY SCHOOLS.** (3 cr; limited to 30 students; prereq 3155 or jr-sr high school tchg exper; II MTWThF; PeikH 225) Brunetti
Current theory and methods of instruction; research and response to literature and reading; adolescent literature; growth assessment; curriculum design and evaluation.
- **5326. TEACHING FILM—July 18-August 11.** (3 cr; limited to 30 students; \$2 lab fee; 1:30-3:00 MTWThF; EdH Annex 64) Beach
Current theory and methods of teaching film appreciation; use of the short film and filmmaking in the classroom.
- 5350. CURRENT DEVELOPMENTS IN ENGLISH AND SPEECH EDUCATION: Teaching Writing—July 18-August 11.** (1-6 cr [max 12]; III-V MTWThF; FolH 105) Beach, Brunetti
A 6-credit offering on current theory and methods of writing instruction in all subject areas; the composing process and development of writing ability; devising writing assignments; criteria and techniques for teacher, peer, and self evaluation; stimuli for writing; use of sentence-combining exercises; talk-write activities; writing fiction, poetry, and autobiography; sentence structure; uses of free-writing; incentives for revising; establishing a writing lab; assessing growth in writing.
- 5351. DIRECTED STUDY.** (Cr ar [max 6 cr]; S-N optional; prereq #) Boeck, Lange, Brunetti, Beach
See First Term.
- **5371.¹ CURRICULUM WORKSHOP: Curriculum Writing—July 18-August 4.** (1-3 cr; limited to 30 students; prereq 5113 or Elem 5100 or #; 1:00-3:00 MTWThF; NH 122) Kimpston
A 3-credit workshop on curriculum and instruction structured to meet the diverse needs of individual teachers, department heads, curriculum specialists, or groups of teachers from a particular school district. Participants will develop skills and utilize knowledge to produce curricula in their subject field. Resource materials developed by elementary and secondary schools throughout the United States as well as SELOs developed under the direction of the Minnesota State Department of Education will be available for use.
- **5394.¹ WORKSHOP: SCIENCE EDUCATION.** (1-12 cr [max 12 cr]; each section limited to 35 students)
See First Term.
- Sec 1, Teaching Science Through Toys, July 18-28,** 3 cr, I-III MTWThF and 6 lab hrs ar, PeikH 385, Boeck.
Science principles illustrated, demonstrated, and applied in the explanation of the operation of toys.
- Sec 2, Curriculum Development: Zoo Materials, July 17-28,** 3 cr, 9:00-2:00 MTWThF, Minnesota Zoological Garden, Apple Valley, Gennaro
Development of curricular instructional packages and materials to be used with junior and senior high students before and after visits to the Minnesota Zoological Garden; opportunity to work with naturalists at the new zoo.
- Sec 3, Household Chemistry, August 1-11,** 3 cr, I-III MTWThF and 6 lab hrs ar, PeikH 385, Boeck.
Application of chemistry and home materials and processes.

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

- 5395. SCHOOL-BASED PROJECTS IN SCIENCE EDUCATION.** (1-12 cr [max 12 cr]; prereq MEd student in science education) Boeck, Gennaro
See First Term.
- 5659. SCHOOL-RELATED PROJECTS IN LANGUAGE ARTS.** (1-12 cr [max 12 cr]; prereq MEd student in English education) Brunetti, Beach
See First Term.
- 8104. CURRICULUM DEVELOPMENT IN THE SOCIAL STUDIES.** (3 cr; prereq 5150, 5152; hrs ar) Glenn
- 8871.* PROBLEMS: CURRICULUM CONSTRUCTION.** (Cr and hrs ar; prereq #) Boeck, Gennaro, Kimpston
- 8894.* PROBLEMS: SECOND LANGUAGES AND CULTURES EDUCATION.** (Cr ar [max 8 cr]; prereq #) Lange
See First Term.
- 8895. READINGS IN ENGLISH EDUCATION.** (1-3 cr) Brunetti, Beach
See First Term.
- 8896.* PROBLEMS: TEACHING ENGLISH.** (Cr and hrs ar) Brunetti, Beach
- 8898.* READINGS IN SECOND LANGUAGES AND CULTURES EDUCATION.** (1-3 cr) Lange
See First Term.

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

Educational Administration (EdAd)

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

FIRST TERM

- 5103. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION—June 26-July 11.** (3 cr, §SpEd 5160; prereq #; VI-VIII MTWThF; ClaOff B30)
Procedures for establishing and improving educational programs for exceptional children. Meets with SpEd 5160.
- **5120. PRACTICUM: POSTSECONDARY ADMINISTRATION—June 20-July 1.** (3-6 cr [max 6]; limited to 36 students) Glick, Morgan, Sargeant
Intensive group and individual examination of current and pertinent administrative problems in postsecondary but nonbaccalaureate institutions in a 2-week study tour in England, Wales, and Scotland. Designed for persons employed in or with an interest in the evolution, organization, governance, and program offerings of 2-year institutions. Preapplication and deposit required. This offering for 3 credits. See Special Programs section.
- **5130. ADMINISTRATOR DEVELOPMENT SEMINAR.** (3-9 cr [max 9 cr]; limited to 25 students; III-VII MTWThF; BioSci 64) Ammentorp
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 participants will register concurrently for 3 credits in EdAd 5130 and 3 credits in EdAd 5139. See Special Programs section.
- **5139. LABORATORY IN DECISION MAKING.** (1-4 cr per term; each section limited to 25 students; III-VII MTWThF; BioSci 64) Jackson
Contribution of recent research and theory to effective administration; analysis of administrative behavior in realistic settings and relations of administration to human behavior. This offering for 3 credits. See Special Programs section.
- 5231. PRACTICUM IN SCHOOL-COMMUNITY RELATIONS—June 13-23.** (1-4 cr; S-N optional; 2:00-5:00 MTWThF; CoH 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; II MTWThF; BioSci 64) Mazzoni
Formal and informal institutional governance structures; processes of political influence at local, state, and national levels; social science concepts, techniques of analysis, and research findings applied to participants, processes, structures, issues and outcomes involved in governing the public schools.
- 8215. THE ELEMENTARY SCHOOL PRINCIPALSHIP.** (3 cr; prereq 8201 and 8202 or #; I MTWThF; ClaOff B26) Lambert
Problems in elementary school administration and the principal's role of leadership.
- 8218. SEMINAR: THE SOCIAL ORGANIZATION OF SCHOOLS.** (3 cr; prereq educational administration major or #; IV-V MWF; CofH 299) Popper
Structural components of school organization examined within the framework of social system theory; classifications of system properties and observation in operational contexts by means of empirical models.
- 8220. QUANTITATIVE FOUNDATIONS FOR MANAGEMENT METHODS.** (3 cr; III MTWThF; ClaOff B26) Hendrix
Quantitative techniques for research and analysis of policy, program, and management problems and decision situations in administration of educational organizations; includes computer usage.
- 8224. LEGAL IMPLICATIONS OF ACTS BY SCHOOL BOARDS, ADMINISTRATORS, AND TEACHERS—June 13-23.** (3 cr; VI-III MTWThF; ClaOff B42) Hooker
Constitutional, statutory, and common law bases of school administration; principles growing out of fundamental legal procedures. See Special Programs section
- 8227. PUBLIC SCHOOL PERSONNEL PROGRAMS—June 26-July 11.** (3 cr; VI-VIII MTWThF; ClaOff B42) Alkire
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; prereq 8218, 8235, educational administration major or #; IV MTWThF; ClaOff B36) Hendrix
Research design involving thesis or field project; includes interrelatedness of formulation of conceptual framework and the analytical process; clinical and research problems.
- 8264. THE SECONDARY SCHOOL PRINCIPALSHIP.** (3 cr; I MTWThF; ClaOff B35) Nickerson
The role of the principal: qualifications, duties, and problems including current issues and factors in staff and student relationships.
- 8265. ADMINISTERING THE HIGH SCHOOL PROGRAM.** (3 cr; 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
- 8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION.** (1-3 cr per term; hrs ar) Ammentorp, Hendrix, Hooker, Lambert, Nickerson, Popper, Alkire, Mazzoni
For superintendents and principals qualified to make intensive studies of a school system.
- 8273.* FIELD STUDY.** (0-10 cr; prereq #: hrs ar) Ammentorp, Hendrix, Hooker, Lambert, Nickerson, Popper, Alkire, Mazzoni
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

- 5101. PUBLIC SCHOOL ADMINISTRATION.** (3 cr; not open to majors in educational administration; prereq 9 cr in education; I MTWThF; ClaOff B42) Morgan
Organization, administration, and general support of public schools in state and local school districts.
- **5128.¹ WORKSHOP: EDUCATIONAL ADMINISTRATION—July 31-August 11.** (1-6 cr; S-N optional; prereq practicing educational administrator or #; limited to 30 students; II-VII MTWThF; BioSci 70) Hooker
Laboratory approach provides opportunities for experienced administrators to concentrate their study on common administrative and supervisory problems. This workshop, Managing Educational Change, is designed for superintendents and other central office administrators who wish to focus their careers on the school superintendency. A broad range of topics, generally related to the management of schools in a declining market, will be covered. Experts in educational administration and related fields will participate. Preapplication is required; inquiries should be addressed to the Department of Educational Administration, 225 Health Services Building, 1518 North Cleveland Avenue, University of Minnesota, St. Paul, Minnesota 55108. This offering is for 6 credits.

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

- **5130. ADMINISTRATOR DEVELOPMENT SEMINAR.** (3-9 cr [max 9 cr]; limited to 25 students; III-VII MTWThF; BioSci 64) Alkire
See First Term. This offering for 3 credits. Students register concurrently for 5139. Preapplication is required.
- **5139. LABORATORY IN DECISION MAKING.** (1-4 cr per qtr; limited to 25 students; III-VII MTWThF; BioSci 64) Alkire
See First Term. This offering for 3 credits. Students register concurrently for 5130.
- 5274. TWO-YEAR POSTSECONDARY INSTITUTIONS—July 18-31.** (3 cr; II-IV MTWThF; ClaOff B42) Morgan
Present status, development, functions, organization, curriculum, and trends of postsecondary but non-baccalaureate institutions.
- 8201. FORMAL ORGANIZATIONS IN EDUCATION.** (3 cr; II MWF; ClaOff B25) Popper
Focus on schools; organizations as social systems; individual behavior in organization roles; technical or production processes and management control systems.
- 8210. ECONOMICS OF EDUCATION.** (3 cr; I MTWThF; ClaOff B30) Mueller
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.
- 8214. SCHOOL MANAGEMENT INFORMATION SYSTEMS—July 18-31.** (3 cr, §8222; prereq 8220, 8212; VI-VIII MTWThF; ClaOff B26) Morris
Basic techniques required to generate, maintain, and make accessible the computer-based management information system in education.
- 8221. QUANTITATIVE MODELS FOR PROGRAM ANALYSIS AND RESEARCH — July 18-August 4.** (3 cr; prereq 8220; III-IV MTWThF; ClaOff B36) Morris
Quantitative techniques for program analysis, research and decision making in the administration of educational organizations; emphasis on general linear models and computer usage.
- 8253. ADMINISTRATION IN HIGHER EDUCATION.** (3 cr; prereq Educ 8250; II MTWThF; ClaOff B26) Keller
Control, faculty and employee personnel administration, budget making and administration, financial accounting and reporting, protection of college funds, public relations.
- 8270.* PROBLEMS: ELEMENTARY SCHOOL ADMINISTRATION.** (Cr and hrs ar; prereq #) Alkire
- 8271.* PROBLEMS: SECONDARY SCHOOL ADMINISTRATION.** (Cr and hrs ar; prereq #) Popper
- 8272.* PROBLEMS: EDUCATIONAL ADMINISTRATION.** (1-3 cr per term; hrs ar) Hendrix, Hooker, Keller, Mueller, Popper, Alkire, Morgan, Morris
- 8273.* FIELD STUDY.** (0-10 cr; prereq #; hrs ar) Hendrix, Hooker, Keller, Mueller, Popper, Alkire, Morgan, Morris

SCHOOL OF PHYSICAL EDUCATION, RECREATION, AND SCHOOL HEALTH EDUCATION

Physical Education (PE)

Students interested in meeting a college requirement for physical education or in taking activity courses for elective credit may register for PE 1007, 1014, 1024, 1038, 1050, 1073, 1074, 1107, 1138, 1410.

Professional Physical Education — Courses are offered at the undergraduate and graduate levels in physical education. Many of these courses apply toward 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. The following courses that apply toward the requirements in the various programs are offered this summer:

1. An Advanced Degree in Physical Education—PE 5110, 5120, 5134, 5136, 5150, 5152, 5620, 5700, 5710, 5740, 5750, 5980, 5981, 5983, 8980, 8981
2. Undergraduate Major in Physical Education—PE 1656, 3110, 3111, 3113, 3115, 3143

3. State of Minnesota Coaching Credential—PE 1656, 3110, 3111, 3113, 3115, 3143

Elementary School Majors —PE 3327 is offered to accommodate elementary education majors and classroom teachers.

All activity courses listed below are high intensity (participation requiring a high level of energy expenditure) except those otherwise indicated. It is therefore recommended that students who have questions about their ability to participate safely in the physical activities involved in a course seek advice from a physician.

PHYSICAL ACTIVITY PROGRAM COURSES (PE)

(Open to all students)

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

FIRST TERM

- **1007. SWIMMING.** (1 cr; limited to 22 students; \$2 lab fee; I MTWTh; NorrisH 58) Paulson
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; \$2 lab fee; II MTWTh; FieldHse) Conrad
Improvement of physical fitness and general appearance through the use of running, circuit training, and progressive exercises of various types.
- **1024. MODERN DANCE.** (1 cr; limited to 30 students; II MTWTh; NorrisH 151) Jette
Introduction to the fundamental techniques of modern dance.
- **1038. TENNIS.** (1 cr; sections 1 and 4 limited to 24 students, sections 2 and 3 limited to 18 students; \$2 lab fee)
Includes fundamental strokes such as service, forehand and backhand, drives and volley; court positions and strategy for singles and doubles; rules, terminology, and etiquette.
Sec 1, I MTWTh, BFAB 101, Tennis Courts, Rogosheske
Sec 2, II MTWTh, St. Paul Gym, Tennis Courts, Kundla
Sec 3, III MTWTh, St. Paul Gym, Tennis Courts, Kundla
Sec 4, IV MTWTh, BFAB 101, Tennis Courts, Rogosheske
- **1050. GOLF.** (1 cr; moderate intensity; each section limited to 24 students; \$2 lab fee) Rasmussen
Emphasizes fundamentals of grip, stance, and swing in addition to etiquette and rules.
Sec 1, III MTWTh, NorrisH 60, Golf Course
Sec 2, IV MTWTh, NorrisH 60, Golf Course
- **1074. VOLLEYBALL.** (1 cr; limited to 48 students; \$2 lab fee; II MTWTh; CookeH 325) Chien
Emphasizes the fundamentals of volleyball including serving, setting, spiking, and defensive and offensive theory.
- **1107. SWIMMING** (1 cr; limited to 24 students; prereq 1007 or equiv; \$2 lab fee; II MTWTh; NorrisH 58) Paulson
- **1138. TENNIS.** (1 cr; limited to 24 students; prereq 1038 or equiv; \$2 lab fee; III MTWTh; BFAB 101, Tennis Courts) Rini

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 40 students; I MTWThF; CookeH 215) Serfass
Emphasizes bones, nerves, and muscles and their significance in physical education.

- **3111. MECHANICS OF MOVEMENT.** (3 cr; limited to 35 students; prereq Anat 1027, Phys 1061; II MTWThF; CookeH 215) Stoner
Structure of the body, principles and mechanics of bodily movements.
- **3181. DANCE THERAPY.** (2 cr; limited to 25 students; III MTWThF; NorrisH 3 and 151) Jette
For students and teachers interested in dance therapy as a means of communication and interaction for the emotionally disturbed or handicapped person.
- 5120. ADVANCED BIOMECHANICS/KINESIOLOGY.** (4 cr; prereq undergrad kinesiology or #; IV MTWThF; CookeH 214) Stoner
Principles of mechanics applied to human movement, analysis of motor skills, application to individual projects.
- 5152. CURRICULUM DEVELOPMENT.** (3 cr; prereq 5151 or equiv; I MTWThF; CookeH 214) Young
Trends, issues, and problems at selected levels of interest: elementary, secondary, junior college. For experienced teachers.
- **5620. PRACTICUM: PREVENTION AND CARE OF ATHLETIC INJURIES—June 26-July 7.** (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.
- 5710.¹ WORKSHOP: PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL CHILD: Mainstreaming—June 19-July 7.** (1-12 cr [max 12 cr]; S-N at option of dept; II-III MTWThF; CookeH 214 and NorrisH 153, 153a) Cato
Current trends, instructional techniques, and resource materials. This offering for 3 credits will focus on mainstreaming. See Special Programs section.
- **5740.¹ WORKSHOP: COACHING OF INDIVIDUAL, DUAL, OR TEAM SPORTS: Coaching Volleyball—June 19-24.** (1-12 cr [max 12 cr]; limited to 50 students; 12:00-5:00 MTWThF, 8:00-1:00 S; BFAB 101, 125) Wells
Instruction at the advanced level including analyses of skills, game strategies; techniques of coaching and methods of training and conditioning. This offering for 3 credits. See Special Programs section.
- 5750. ATHLETICS IN CONTEMPORARY SOCIETY: IMPLICATIONS OF TITLE IX AND REGULATION 504—June 19-July 7.** (3-9 cr; prereq sr grad student; IV-V MTWThF; BFAB 125) Barfield, Jaeger
Contemporary issues; organizational and management problems of interscholastic and intercollegiate athletics. This offering for 3 credits. See Special Programs section.
- 5980. RESEARCH METHODOLOGY.** (3 cr, \$Hth 5980; prereq #; III MTWThF; CookeH 215) Stull
Methods and design for research in health, physical education, and recreation.
- 5981. PROBLEMS.** (Cr and hrs ar; prereq MEd candidate, #) Cato, Jaeger, Jette, Serfass, Stoner, Stull, Young
Focus on teaching of physical education.
- 5983. READINGS: PHYSICAL EDUCATION.** (1-3 cr; prereq sr honor or grad student, #) Jaeger, Serfass, Stoner, Stull, Young
Independent study under tutorial guidance.
- 8981.* RESEARCH PROBLEMS.** (Cr and hrs ar; prereq 8980 or #; S-N only) Jaeger, Serfass, Stoner, Stull, Young
Individual problems.

PHYSICAL ACTIVITY PROGRAM COURSES (PE)

(Open to all students)

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

SECOND TERM

- **1007. SWIMMING.** (1 cr; limited to 22 students; \$2 lab fee; III MTWTh; CookeH 10) Goertzen
See First Term.
- **1014. CONDITIONING.** (1 cr; limited to 40 students; \$2 lab fee; I MTWTh; Fieldhouse) Goertzen
See First Term.
- **1038. TENNIS.** (1 cr; each section limited to 24 students; \$2 lab fee)
See First Term.
 - Sec 1, I MTWTh, BFAB 101, Tennis Courts, Tracy
 - Sec 2, II MTWTh, BFAB 101, Tennis Courts, Tracy
 - Sec 3, III MTWTh, BFAB 101, Tennis Courts, Seeling
 - Sec 4, IV MTWTh, BFAB 101, Tennis Courts, Seeling

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

- **1050. GOLF.** (1 cr; moderate intensity; each section limited to 24 students; \$2 lab fee) Duos-Asche
See First Term.
Sec 1, III MTWTh, NorrisH 60, Golf Course
Sec 2, IV MTWTh, NorrisH 60, Golf Course
- **1073. SOFTBALL** (1 cr; limited to 40 students; \$2 lab fee; III MTWTh; FieldHse and BFAB Field) Renick
Fundamental skills and tactics of softball; throwing, catching, batting, running, basic conditioning, and game play.
- **1074. VOLLEYBALL** (1 cr; limited to 48 students; \$2 lab fee; II MTWTh; CookeH 325) Renick
See First Term.
- **1410. WATER SAFETY INSTRUCTOR.** (2 cr; limited to 22 students; prereq current American Red Cross
Advanced Lifesaving Certificate; \$2 lab fee; III-IV MTWThF; CookeH 15) Krotee
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").

SECOND TERM

- **1656. OFFICIATING SOFTBALL.** (1 cr; limited to 25 students; prereq 1073 or 1552 or #; III MTWTh; BFAB 125,
Field) Shick
Teaching officiating techniques; opportunity to practice skills for the national official's examination.
- **3113. MOTOR LEARNING AND MOTOR DEVELOPMENT.** (4 cr; limited to 40 students; II MTWThF; CookeH
215) R Johnson
Motor growth and development of children, adolescents, and adults with emphasis on sociopsychological factors.
- **3115. PHYSIOLOGICAL APPLICATION TO SPORTS.** (3 cr, §PubH 3385, 3386; limited to 40 students; IV
MTWThF; CookeH 215) Alexander
Muscular contraction for strength development programs; contributions of training programs to endurance, speed, and skill acquisition; influence of training on the cardiovascular system; fatigue and recovery; early season training, pregame meals and ergogenic aids in athletics. Required for the Minnesota Coaching Certificate.
- **3143. ORGANIZATION AND MANAGEMENT OF SPORT.** (3 cr; limited to 40 students; prereq 2 cr coaching
course; I MTWThF; CookeH 215) French
Principles, policies, and procedures involved in the coaching of interscholastic sports.
- **3327. TEACHING PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL.** (3 cr, §1560, §3325, §H1th 3325;
limited to 35 students; prereq elem education major; I MTWThF; NorrisH 153, 153a) Lampe
An overview of the elementary school physical education program; primarily a laboratory course, with participation in representative physical education activities for children; opportunities for observation of children, microteaching, skill analysis, and group discussion.
- 5110. SUPERVISION OF SCHOOL HEALTH AND PHYSICAL EDUCATION—July 18-August 8.** (3 cr, §H1th 5110;
prereq #; III-IV MTWThF; CookeH 214) French
Functions; adaptations of accepted procedures for observation, guidance, and training of teachers.
- 5134. PERCEPTUAL-MOTOR DEVELOPMENT IN CHILDHOOD—July 18-August 8.** (3 cr; prereq 3113 or #; IV-V
MTWThF; CookeH 226) Plack
The motoric dimension of perception; emphasis on developmental tenets of perception, diagnosis and remediation of perceptual-motor deficiencies, and related research.
- 5136. PSYCHOLOGY OF COACHING—July 18-August 8.** (3 cr; prereq 3113 or #; VI-VII MTWThF; BFAB 125)
LaPointe
Psychological aspects of coaching at the elementary, secondary, and college levels.
- 5150. TEACHING ELEMENTARY SCHOOL PHYSICAL EDUCATION—July 18-August 8.** (3 cr; prereq tchg
license or #; I-II MTWThF; CookeH 214) Plack
Principles, techniques, and procedures in developing basic motor skills, physical fitness, and sports skills.
- **5700.¹ WORKSHOP: DANCE IN EDUCATION—July 17-August 4.** (1-12 cr [max 12 cr]; limited to 150 students;
9:00-5:00 MTWThF; NorrisH 68, 151, 153, 153a) Jette
History, principles, instructional techniques, and materials for teaching dance in schools and recreational agencies. Topic and credit will vary with each offering. This offering for 6 credits. See Special Programs section for details.
- 5981. PROBLEMS.** (Cr and hrs ar; prereq MEd candidate, #) Alexander, French, R Johnson, LaPoint, Plack,
Shick
See First Term.

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

- 5963. READINGS: PHYSICAL EDUCATION.** (1-3 cr; prereq sr honor or grad student, #) Alexander, French, Plack, Shick
See First Term.
- 8960.* RESEARCH PROBLEMS—July 16-August 8.** (1 cr; prereq 5980, PsyF 5110 or #; S-N only; V MTWThF; CookeH 214) Shick
Designing and reporting on individual problems. Required of all M.A. and Ph.D. candidates.
- 8961.* RESEARCH PROBLEMS.** (Cr and hrs ar; prereq 8980 or #; S-N only) Alexander, LaPoint, Plack, Shick
See First Term.

Recreation and Park Administration (Rec)

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

FIRST TERM

- **3700. SENIOR INTERNSHIP.** (1-15 cr; limited to 15 students; prereq sr, recreation major or minor, Δ; S-N only; hrs ar) Chapman, McAvoy
Supervised experiences in selected agencies.
- 5200. RECREATION IN COMMUNITY EDUCATION — June 19-July 14.** (3 cr; prereq 1520 or 5100 or Δ; III-IV MWF; CookeH 206) Chapman
Recreation and leisure services in the community education process.
- 5240. RECREATION FOR THE AGING—June 19-July 14.** (3 cr; prereq 3540 or 5100 or Δ; II-IV TTh; CookeH 206) McAvoy
Leisure problems of the aging citizen; modification of program activities; community resources; trends and developments in recreation planning.
- 5630. PRACTICUM: THERAPEUTIC RECREATION.** (3-9 cr; prereq 12 cr in recreation; hrs ar) Chapman
Supervised experiences in program operation; administrative and supervisory duties.
- 5640. PRACTICUM: PUBLIC RECREATION AND PARKS.** (3-9 cr; prereq 12 cr in recreation; hrs ar) McAvoy
Supervised experiences in program operation; administrative and supervisory duties.
- **5900.1 WORKSHOP: CONTEMPORARY ISSUES IN LEISURE SERVICES—June 12-16.** (1-12 cr [max 12 cr]; limited to 30 students; prereq Δ; 2:00-4:00 M, CookeH 214; all day TWThF, Camp St Croix) Henderson
This 3-credit offering will focus on programming in outdoor education. 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 MEd or grad student or Δ; hrs ar) Chapman
Independent study under tutorial guidance.
- 8961.* RESEARCH PROBLEMS.** (Cr and hrs ar; prereq 8980 or #; S-N only) Chapman
Individual problems.

SECOND TERM

- 3700. SENIOR INTERNSHIP.** (1-15 cr; prereq sr, recreation major or minor, Δ; S-N only; hrs ar) Schultz
See First Term.
- 3900. DIRECTED STUDY.** (3 cr per qtr [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; prereq 12 cr in recreation; hrs ar) Schultz
See First Term.
- 5640. PRACTICUM: PUBLIC RECREATION AND PARKS.** (3-9 cr; 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 MEd or grad student or Δ; hrs ar) Schultz
See First Term.

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

School Health Education (Hlth)

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

Teaching Requirements for School Health Education—Those interested in teaching school health education in the state of Minnesota may qualify through one of the following professional programs:

1. Courses offered this summer that apply to the undergraduate major in school and community health education are Hlth 3100, 3320, 5120, and 5140.
2. Courses offered this summer that apply to advanced and graduate degrees in school health education are Hlth 5110, 5120, 5140, 5400, 5402, 5685, 5980, 5981, 5983, and 8980.

FIRST TERM

- 3100. CURRICULUM IN SCHOOL HEALTH EDUCATION.** (3 cr; prereq PubH 3004, school health education major or minor; II MTWThF; NorrisH 3) Wolf
The content included in units for the secondary school.
- 3320. METHODS AND MATERIALS IN SCHOOL HEALTH EDUCATION.** (3 cr; prereq 3100; IV MTWThF; NorrisH 201) Lemke
Methods, materials, problems, and evaluation in preparation for health teaching; allocation and gradation of subject matter.
- 5140. ADMINISTRATION OF THE SCHOOL HEALTH PROGRAM.** (3 cr; IV 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.
- 5150. FAMILY LIFE AND SEX EDUCATION IN THE SECONDARY SCHOOLS.** (3 cr; prereq FSoS 5001 or #; III MTWThF; NorrisH 4) Needle
Concepts, appropriate materials, and methods for teaching in the junior and senior high schools.
- **5402. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 13-30.** (3 cr, §PubH 5040; limited to 80 students; prereq education sr, licensed teacher, mortuary science major, school or public health nurse or #; 1:30-4:00 MTWThF; HSUnitA 2-520) Fredlund, Needle, 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.
- 5685. SCHOOL-BASED PROJECTS IN SCHOOL HEALTH EDUCATION.** (1-12 cr [max 12 cr]; prereq #; hrs ar) Cobb
Individual or group projects, applicable to local school situations, such as curricular, instructional, or evaluative problems.
- 5980. INTRODUCTION TO RESEARCH.** (3 cr, §PE 5980; prereq #; III MTWThF; CookeH 215) Stull
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 or grad student, #) Cobb
Independent study under tutorial guidance.

SECOND TERM

- **5110. SUPERVISION OF SCHOOL HEALTH AND PHYSICAL EDUCATION—July 18-August 8.** (3 cr, §PE 5110; prereq #; limited to 35 students; III-IV MTWThF; CookeH 214) French
Functions; adaptations of accepted procedures for observation, guidance, and training of teachers.
- 5120. ROLE OF THE SCHOOL HEALTH EDUCATOR IN HEALTH APPRAISAL.** (3 cr; III MTWThF; NorrisH 3) Hlidek
Role of school medical and dental advisers, nurses, teachers, and other school personnel in protection and maintenance phases.

5400. TOPICS: EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE—July 24-August 4. (3 cr, §PubH 5032; prereq education sr, licensed teacher, or school nurse; 9:00-12:00 MTWThF; HSUnitA 2-520) Hochhauser, 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.

5983. READINGS; HEALTH EDUCATION. (1-3 cr; prereq sr honor cr grad student or #: hrs ar) Hochhauser
Independent study under tutorial guidance.

8980.* RESEARCH PROBLEMS—July 18-August 8. (1 cr; prereq PE 5980, PsyF 5110 or #: S-N only; V MTWThF; CookeH 214) Shick

Designing, reporting on individual problems. Required of all M.A. and Ph.D. candidates.

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; IV-V MW, 1 hr ar; Bu 125) W Tennyson

Vocational theory and career development research; occupational analysis and industrial structure; methods of classifying the world of work; analysis of labor force and employment trends; basic concepts and principles for effective work in educational and vocational planning and development.

● **5110. COUNSELING PROCEDURES.** (3 cr; limited to 35 students; 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; WuH 230) W Tennyson

Philosophy, principles, and practices in development and operation of pupil personnel services; role of counselor, teacher, principal, and specialized personnel; guidance techniques and case studies.

● **5300.¹ WORKSHOP: CAREER DEVELOPMENT—June 12-16.** (1-6 cr per qtr [max 12]; limited to 114 students; prereq #: 9:00-4:00 MTWThF; rm ar) L Hansen, Shaffer

For all 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 TTh, 1 hr ar; Bu 125) L 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 MWF; Bu 123) A Anderson

Basic principles of group dynamics related to the group counseling process; emphasis on developing concepts, attitudes, and skills; includes theory and laboratory experiences.

5540. SEMINAR: THE COLLEGE STUDENT — June 15-30. (3 cr; prereq 6 cr in psychology or educational psychology or #: I-II MTWThF, 1 hr ar; NH 107) Parker

Psychology and sociology of college students; research concerning diversity of college student populations, vocational development of students, student society, culture, mental health, underachievement, dropouts, values, and attitudes; relevant research methods.

● **5620. PRACTICUM IN GROUP COUNSELING.** (1-6 cr [max 6 cr]; limited to 6 students; prereq counseling licensure 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 a minimum of 3 credits each term.

5900. INDEPENDENT STUDY: GUIDANCE AND COUNSELING. (Cr and hrs ar; prereq #) L Hansen, Snoke, W Tennyson, A Anderson, Shaffer

Independent study in areas of special interest to students.

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

- 8701. INTERNSHIP: COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY.** (0-6 cr per qtr [max 9 cr for MA and specialist students, max 18 cr for PhD students]) Snoko
Supervised employment at departmentally approved internship sites.
- 8900. RESEARCH METHODS IN COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY.** (1-3 cr [max 9 cr]; prereq MA student and #: hrs ar) L Hansen, Snoko, W Tennyson, A Anderson, Shaffer
Research methodology and techniques; critical examination of literature; participation in formulating and executing a research proposal.

SECOND TERM

- **5110. COUNSELING PROCEDURES.** (3 cr; limited to 35 students, IV-V TTh, 1 hr ar; Bu 125) Shaffer
See First Term.
- 5130. INTRODUCTION TO GUIDANCE — July 17-28.** (3 cr; I-III MTWThF; Bu 125) W Tennyson
See First Term.
- 5300.¹ WORKSHOP: COUNSELING PSYCHOLOGY—July 31-August 11.** (1-6 cr per qtr [max 12]; I-III MTWThF; Bu 125) W Tennyson
See First Term and Special Programs section. Designed for human services professionals, this 3-credit workshop will focus on developmental approaches that facilitate process education.
- **5620. PRACTICUM IN GROUP COUNSELING.** (1-6 cr [max 6 cr]; limited to 6 students; prereq counseling licensure and #: VI-VII TTh; Bu 139C) Shaffer
See First Term. Students must register both terms for a minimum of 3 credits each term.
- 5900. INDEPENDENT STUDY: GUIDANCE AND COUNSELING.** (Cr and hrs ar; prereq #) W Tennyson, Shaffer
See First Term.
- 8900.* RESEARCH METHODS IN COUNSELING AND STUDENT PERSONNEL PSYCHOLOGY.** (1-3 cr per qtr [max 9 cr]; prereq MA student and #: hrs ar) W Tennyson, Shaffer
See First Term.

School Psychology (SchP)

FIRST TERM

- 5550. SEMINAR: PSYCHOLOGICAL EDUCATION.** (3 cr [max 9 cr]; prereq #: hrs ar) Erickson
Review of curriculum programs in psychological/affective education including achievement training, sensitivity groups, psychological and moral education. Not intended to meet licensure requirements in school psychology.
- 5650. PRACTICUM: PSYCHOLOGICAL EDUCATION.** (1-3 cr [max 9 cr]; prereq #: hrs ar) Erickson
Practice in designing and implementing programs in psychological/affective education. Not intended to meet licensure requirements in school psychology.
- 5910. DIRECTED READINGS: PSYCHOLOGICAL EDUCATION.** (1-6 cr [max 6 cr]; prereq #: S-N optional; hrs ar) Erickson
Theoretical and research literature in deliberate psychological education and other classroom intervention; designed to facilitate psychological growth and effectiveness. Not intended to meet licensure requirements in school psychology.

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; II MTWThF; Pt 102)
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; Pt 215) Force
Introduction to field of special education for classroom teachers and other school personnel.
- 5107. MAINSTREAMING: ISSUES IN INDIVIDUALIZING INSTRUCTION.** (3-5 cr; IV MTWThF; Pt 111) Mirkin
Mandate for, implications of, and problems in the implementation of systems models and practical classroom practices that facilitate the education of the handicapped within regular classroom settings. This offering for 4 credits.

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

- 5112. EDUCATION OF LEARNING-DISABLED CHILDREN.** (3 cr; V MTWThF; Pt 215)
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 55:15; prereq 5101 or #; II MTWThF; Pt 215)
 Thorsheim
 Issues that relate to educational practices; community planning; educational philosophy, administration and organization, and programming. Meets with CPsy 5315.
- 5123. METHODS AND MATERIALS FOR SEVERELY RETARDED PRESCHOOL AND SCHOOL-AGE PUPILS.** (4 cr; prereq 5101 or equiv; V-VI TTh; Pt 111) Rynders
 Issues and problems in curriculum development; pupil assessment and evaluation techniques; materials and teaching strategies.
- 5124. BIOMEDICAL ASPECTS OF DEVELOPMENTAL DISABILITIES.** (Cr ar [max 4 cr]; prereq #; III-IV TTh; Pt 102) Rynders
 Selected information in genetics, anatomy and physiology, the central nervous system, biochemistry of the body, and prenatal development; causative factors and clinical features, particularly mental retardation and its clinical manifestations. This offering for 2 credits.
- 5145. TEACHING SPEECH TO THE HEARING IMPAIRED I.** (3 cr; prereq #; V-VII TTh; Pt 214) Ar
 Survey of speech methodologies employed in teaching auditorily impaired children; emphasis on techniques of teaching specific sounds, articulation, voice and sentence rhythm stressing intelligibility of speech. *Demonstration and practice with individual and groups of auditorily impaired children.*
- 5150. EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN.** (3 cr; prereq grad or #; VII MTWThF; Pt 111) Wood
 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; III MTWThF; Pt 214) Stuecher
 Introduction to psychopathology of children with psychotic characteristics; emphasis on psychoeducational intervention programs and teaching strategies.
- 5160. SUPERVISION AND ADMINISTRATION OF SPECIAL EDUCATION—June 26–July 11.** (3 cr, §EAd 5103; prereq #: VI-VIII MTWThF; ClaOff B30) Ar
 Procedures for establishing and improving educational programs for exceptional children. Meets with EAd 5103. See Special Programs section.
- 5173. METHODS OF TEACHING VISUALLY HANDICAPPED CHILDREN.** (3 cr; prereq 5170 or #; VII MTWThF; CD 105)
 Principles of preparation, selection, and effective use of instructional materials; adaptation of school environment; utilization of family, school, and community resources.
- 5180. EDUCATION OF THE DISADVANTAGED.** (3 cr; prereq 12 cr in psychology, educational psychology, or sociology; VI MTWThF; Pt 215) Stuecher
 Educational needs of children handicapped by behavior related to deficiencies of physical or cultural environment; adaptations of educational programs.
- 5190. OUTSTANDING ABILITIES AND THE EDUCATIONAL PROCESS.** (3 cr; IV MTWThF; CD 218) Rubin
 The origin and development of terms such as *giftedness*, *creativity*, *genius*, *talent*, and *intelligence*; implications for educational practice; current issues and trends.
- **5302.¹ WORKSHOP: SPECIAL EDUCATION.** (Cr ar; section 2 limited to 75 students; prereq #)
 Laboratory approach provides opportunities for school personnel to study specific problems related to special education. See also section 1 listed under Six-Week Courses. See Special Programs section.
 Sec 2, June 27-28, 1 cr, II-IX, ClaOff B25, Chastain
 Educational intervention for autistic-type and handicapped children.
- 5303. BEHAVIORAL PROCEDURES WITH MILDLY AND MODERATELY HANDICAPPED STUDENTS.** (4 cr, §S301; PsyF 5149 or Psy 5017 recommended; VII MTWThF; Pt 102) Mirkin
 Behavioral approaches to improving the academic and personal-social behavior of mildly and moderately handicapped students in mainstream and resource programs.
- **5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 4 limited to 15 students; S-N optional; prereq #)
 Supervised experience in teaching or related work in schools or other agencies serving exceptional children. See also sections 1, 2, 3 listed under Six-Week Courses.
 Sec 4, cr and hrs ar, R Bruininks, Force
- **5610. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY I.** (3 cr; limited to 75 students; prereq 5110 and #; S-N optional; I-VI MTWThF, off campus; June 13 only 4:00-8:00 pm, Bu 120) V Bruininks
 Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5110. Prior application required; limited to Institute participants only. See Special Programs section.

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

- **5611. PRACTICUM: DIAGNOSIS AND REMEDIATION OF LEARNING DISABILITY II.** (3 cr; limited to 75 students; prereq 5610, 5511, and #; S-N optional; I-VI MTWThF, off campus; June 13 only 4:00-8:00 pm, Bu 120) V Bruininks
Clinical practice in prescriptive teaching using a selected range of techniques presented in SpEd 5111. Prior application required; limited to Institute participants only. See Special Programs section.
- 5900. INDEPENDENT STUDY: SPECIAL EDUCATION.** (Cr ar [max 12 cr]; prereq #; hrs ar) R Bruininks, Force, Rynders
- 8601. ADVANCED PRACTICUM.** (Cr ar; prereq #; hrs ar) R Bruininks, Force, Rynders
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) R Bruininks, Force, Rynders

FIRST AND SECOND TERMS: SIX-WEEK COURSES

- **5302.¹ WORKSHOP: SPECIAL EDUCATION.** (Cr ar; section 1 limited to 25 Institute participants only; prereq #) Laboratory approach provides opportunities for school personnel to study specific problems related to special education. Prior application required. See Special Programs section.
Sec 1, Teaching Children With Emotional Disturbances, June 12-July 21, 3 cr, I-VIII MTWThF, off campus, Wood, Feinberg
- **5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 1 limited to 25 Institute participants only, sections 2 and 3 limited to 15 students; S-N optional; prereq #)
Supervised experience in teaching or related work in schools or other agencies serving exceptional children. Prior application required for all sections. See Special Programs section.
Sec 1, Teaching Children With Emotional Disturbances, June 12-July 21, 3 cr, I-VIII MTWThF, off campus, Wood, Feinberg
Sec 2, Teaching Visually Impaired Students, June 12-July 21, 6 cr, hrs and off-campus location ar
Sec 3, Teaching Hearing Impaired Students, June 12-July 21, 6 cr, hrs and off-campus location ar

SECOND TERM

- 5100. CHILDHOOD LANGUAGE DEVELOPMENT: CLASSROOM IMPLICATIONS.** (3 cr; I MTWThF; Pt 102)
See First Term.
- 5101. EDUCATION OF EXCEPTIONAL CHILDREN.** (4 cr; III MTWThF; Pt 215) Force
See First Term.
- 5104. SOCIAL AND VOCATIONAL DEVELOPMENT OF HANDICAPPED STUDENTS.** (Cr ar [max 4 cr]; prereq #; IV MTWThF; Pt 215) Warfield
Organization and design of training programs to promote independent living, vocational and community adjustment of handicapped persons; curriculum materials and methods at adolescent and adult levels. This offering for 4 credits.
- 5120. INTRODUCTION TO MENTAL RETARDATION.** (4 cr, §CPsy 5315; prereq 5101 or #; II MTWThF; Pt 215) Warfield
See First Term. Meets with CPsy 5315.
- 5125. EDUCATION OF SEVERELY HANDICAPPED INFANTS AND PRESCHOOL CHILDREN.** (4 cr; prereq 5101 or 5120 or #; V-VII TTh; Pt 215) Rynders
Issues and implications and practical application in designing teaching strategies and curricula for maximizing educational development in such children.
- 5146. TEACHING SPEECH TO THE HEARING IMPAIRED II.** (3 cr; prereq #; V-VII TTh; Pt 102)
See 5145 First Term.
- 5150. EDUCATION OF EMOTIONALLY DISTURBED AND SOCIALLY MALADJUSTED CHILDREN.** (3 cr; prereq grad student or #; V MTWThF; Pt 214) Hayden
See First Term.
- **5302.¹ WORKSHOP: SPECIAL EDUCATION.** (Cr ar; sec 2 limited to 75 students; section 3 limited to 20 students; prereq #)
Prior application required. See First Term and Special Programs Section. See also section 1 listed under Six-Week Courses.
Sec 2, Serving Handicapped Children in Regular Classrooms, July 26 and 27, 1 cr; II-IX, AgEng 102, Reynolds
Sec 3, Helping Visually Impaired Students in Regular Classrooms, August 1-4, 1 cr; hrs and off-campus location ar

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

- **5601. PRACTICUM: SPECIAL EDUCATION.** (Cr ar; section 4 limited to 15 students; S-N optional; prereq #)
See First Term. See also sections 1, 2, 3 listed under Six-Week Courses.
Sec 4, cr and hrs ar, R Bruininks, Force, Rynders
- 5900. INDEPENDENT STUDY: SPECIAL EDUCATION.** (Cr ar [max 12 cr]; prereq #: hrs ar) R Bruininks, Force, Rynders, Warfield
- 8601. ADVANCED PRACTICUM.** (Cr ar; prereq #: hrs ar) R Bruininks, Force, Rynders, Warfield
See First Term.
- 8900.* PROBLEMS.** (Cr ar; prereq #: hrs ar) R Bruininks, Force, Rynders, Warfield

DEPARTMENT OF SOCIAL, PSYCHOLOGICAL, AND PHILOSOPHICAL FOUNDATIONS OF EDUCATION

Psychological Foundations (PsyF)

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

FIRST TERM

- **3380. INTRODUCTION TO HUMAN RELATIONS—June 19-July 14.** (3 cr; each section limited to 20 students; prereq education jr, sr; S-N only; lect 8:00-9:00 MTW, Owre 15) Oden
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, 8:00-10:00 Th, Ford 160
Sec 2, 9:00-10:00 MTW, 8:00-10:00 Th, Ford 170
Sec 3, 9:00-10:00 MTW, 8:00-10:00 Th, Z102
- **5110. INTRODUCTORY STATISTICAL METHODS.** (3 cr; each section limited to 40 students)
(Not equivalent to 8110) Basic statistical techniques; comprehension of literature using elementary concepts and methods.
Sec 1, I MTWThF, Bu 123, Merwin
Sec 2, II MTWThF, Elth N647, D Anderson
- **5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM.** (4 cr; limited to 35 students; II MTWThF; Bu 123)
Terwilliger
Principles and methods for construction, evaluation, and improvement of classroom measures; techniques for describing results statistically; use of measurement in evaluating instruction and student performance; assignment of grades.
- **5121. BASIC PRINCIPLES OF MEASUREMENT.** (3 cr; 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.
- 5125. PRINCIPLES AND METHODS OF EVALUATION.** (3 cr; II MTWThF; Bu 125) Merwin
Nature of inquiry in education (evaluation vs. elucidation); internal and external validity of designs; analytical operations on data; overview of models.
- 5162. PERSONALITY AND SOCIAL DEVELOPMENT.** (3 cr; prereq 5 cr introductory psychology; III MTWThF; CD 105) Lawrence
Major concepts and research findings in adjustment and development with emphasis on educational implications.
- 5176. PSYCHOLOGY OF DRUG ABUSE.** (3 cr; II MTWThF; CD 216) Noram-Habeisen
Psychological and sociological problems of drug abuse, with special reference to schools, teachers, and students.
- 5182. PSYCHOLOGY OF STUDENT LEARNING.** (3 cr; II MTWThF; NH 209A)
Survey of psychological methods and principles; models of the learner; topics in development, creativity, intelligence, and motivation; implications for teaching and curriculum design in preschool, elementary, and secondary education; professional training with children and adolescents as clients.

- 5183. ADULT LEARNING AND EDUCATIONAL PRACTICE.** (4 cr; III-IV TTh; Arch 40) P Johnson
Survey of psychological methods and principles in human learning; models of the adult learner; topics in motivation, creativity, achievement, intelligence; implications for teaching and curriculum design in higher education, continuing education, and professional training.
- **5305.¹ WORKSHOP IN HUMAN RELATIONS—JUNE 19-JULY 14.** (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; each section limited to 20 students; S-N only; lect 8:00-10:00 MTWTh; Owre 15) 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, 10:00-12:00 MTWTh, Kolth S133
Sec 2, 10:00-12:00 MTWTh, Kolth S134
- 5900. DIRECTED STUDY.** (Cr ar; prereq #; hrs ar) MacEachern
- 8110. STATISTICAL METHODS.** (3 cr; prereq 5110 or Psy 3801 or equiv; I MTWThF; Arch 50) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.
- 8900.* RESEARCH PROBLEMS.** (Cr ar; prereq #; hrs ar) Merwin, Terwilliger, D Anderson, MacEachern
- 8910.* PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY.** (Cr and hrs ar) Merwin, D Anderson, MacEachern
Recent developments in statistical science; applications to educational and psychological problems.
- 8920.* PROBLEMS: MEASUREMENT.** (1-3 cr [max 9 cr]; hrs ar) Terwilliger, Merwin
Intensive study and individual research.
- 8921.* PROBLEMS: EVALUATION.** (Cr ar; prereq 5621 or 8525; hrs ar) Merwin, Corcoran
Designing, implementing, and analyzing strategies; students work on their own problems, on evaluation problems in schools of the area, or on problems associated with national curriculum projects.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

- 8112. STATISTICAL METHODS (PARTS I AND II).** (3 cr total for both parts; prereq 8111; II MWF; Arch 50) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.

SECOND TERM

- **3380. INTRODUCTION TO HUMAN RELATIONS—July 17-August 11.** (3 cr; each section limited to 20 students; prereq education jr, or sr; S-N only; lect 8:00-9:00 MTW; Owre 15) Oden
See First Term.
Sec 1, 9:00-10:00 MTW, ForH 160
Sec 2, 9:00-10:00 MTW, ForH 170
- 5110. INTRODUCTORY STATISTICAL METHODS.** (3 cr; IV MTWThF; EItH N647) D Anderson
See First Term.
- 5120. EDUCATIONAL MEASUREMENT IN THE CLASSROOM.** (4 cr; V MTWThF, EItH N647) Doyle
See First Term.
- 5153. INTRODUCTION TO THE PSYCHOLOGY OF INSTRUCTION.** (3 cr; III MTWThF; PeikH 225)
Survey of psychological factors in design of instruction; performance criteria, strategy, and sequence in the context of research; development and implementation in instructional techniques, technologies, and delivery systems; psychological processes relevant to measures of effectiveness in the teaching-learning environment.
- **5305.¹ WORKSHOP IN HUMAN RELATIONS—July 17-August 11.** (1-6 cr [max 6 cr], §CSPP 5305, §Educ 5305; each section limited to 20 students; S-N only; lect 8:00-10:00 MTWTh; Owre 15) Oden
See First Term. This offering for 6 credits.
Sec 1, 10:00-12:00 MTWTh, Kolth S133
Sec 2, 10:00-12:00 MTWTh, Kolth S134
- 5621. PRACTICUM: INSTRUMENTS AND PROCEDURES FOR EVALUATION.** (3 cr; prereq 5121, 5125 or equiv; III MTWThF; EItH N 647) Doyle
Developing curriculum evaluation instruments and procedures; introduction to methods and theories; focus on identifying evaluation problems; developing and implementing techniques for their solution.

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

- 5900. DIRECTED STUDY.** (Cr ar; prereq #: hrs ar) MacEachern
- 8111. STATISTICAL METHODS.** (3 cr; prereq 8110; I MTWThF; Arch 50) MacEachern
Foundations of statistical theory; practice in applying theories to solution of educational and psychological problems.
- 8120.* METHODS IN EDUCATIONAL RESEARCH.** (3 cr; II MTWThF; CD 216) 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) D Anderson, MacEachern, Doyle
- 8910.* PROBLEMS: STATISTICS FOR STUDENTS IN EDUCATION AND PSYCHOLOGY.** (Cr and hrs ar) D Anderson, MacEachern
See First Term.
- 8920.* PROBLEMS: MEASUREMENT.** (1-3 cr [max 9 cr]; hrs ar) D Anderson
See First Term.
- 8921.* PROBLEMS: EVALUATION.** (Cr ar; prereq 5621 or 8525; hrs ar) Doyle
See First Term.

Social and Philosophical Foundations of Education

History and Philosophy of Education (HEd)

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

FIRST TERM

- **3090. THE SCHOOL AND SOCIETY.** (3 cr; limited to 70 students; prereq sr; I MTWThF; ForH 120) Harkins
Readings in social science and philosophy give the student opportunity to integrate points of view concerning the role of the school in present-day society.
- 3099. DIRECTED STUDY.** (1-6 cr; prereq #: hrs ar) Harkins
- 5209. EDUCATION IN FUTURE SOCIAL SYSTEMS.** (3 cr, §5212; 9:05-11:35 TTh; FolH 99) Harkins
Interdisciplinary inquiry into problems of social specialization and generalization; projections and analysis of long-range (30 years or more) social and technological trends related to education.
- 8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION.** (Cr ar; prereq #: hrs ar) Corcoran, Harkins
For graduate students interested in research and original work in these areas.

SECOND TERM

- **3090. THE SCHOOL AND SOCIETY.** (3 cr; limited to 70 students; prereq sr; I MTWThF; ForH 115) Harkins
See First Term.
- 3099. DIRECTED STUDY.** (1-6 cr; prereq #: hrs ar) Harkins
- 5211. SOCIAL DESIGN AND EDUCATIONAL FUTURES.** (3 cr; 9:05-11:35 TTh; FolH 99) Harkins
Medium-range interdisciplinary approach to community design and analysis emphasizing formal education systems in a community context; focus upon new neighborhoods, towns, experimental cities, and subcultural enclaves in rural and urban settings emphasizing time period from several years to 3 decades hence.
- 8241.* PROBLEMS: HISTORY AND PHILOSOPHY OF EDUCATION.** (Cr ar; prereq #: hrs ar) Harkins
See First Term.

DEPARTMENT OF VOCATIONAL AND TECHNICAL EDUCATION

Agricultural Education (AgEd)

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], §HeEd 3605 or 5027, S-N optional; prereq #: hrs and rm ar) Norenberg
Observation of the activities of county extension staff; familiarization with staff, program planning and development, county committee, youth activities and office activities, with opportunity to participate in the functions of an extension educator.
- 5034. PROCEDURES IN TEACHING AGRICULTURE—June 12-23.** (3 cr; prereq #: VI-VIII MTWThF; ClaOff 143) Peterson
New developments in methodology; assessment of innovations and procedures; consideration of various levels of instruction.
- 5052. FARM BUSINESS MANAGEMENT EDUCATION—July 10-14.** (3 cr; prereq 5049 or #: I-IV and VI-VIII MTWThF; ClaOff 143) Persons
Administration, organization, and operation of farm business management education programs for adults; development and utilization of curriculum materials based on farm business record data.
- 5072. PRACTICUM: AGRICULTURAL BUSINESS AND INDUSTRY—June 26-30.** (1-3 cr [max 9 cr]; prereq 5071 or #: I-IV and VI-VIII MTWThF; ClaOff 143) Leske
Observation, study, and experience in agricultural business and industry; application to educational programs in agriculture.
- 5084. CURRICULA FOR CAREER EXPLORATION IN AGRICULTURE OCCUPATIONS—June 12-23.** (3 cr; VI-VIII MTWThF; ClaOff 130) Marvin
Analysis and evaluation of material; criteria for selection of material; content, organization, resource activities, and teaching techniques.
- 5090. INDEPENDENT STUDY.** (1-3 cr; prereq sr; hrs ar) Marvin, Norenberg, Persons, Swanson, Leske, 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, Norenberg, Persons, Swanson, Leske, R Peterson
Preparation of a paper dealing with studies in agricultural education applied to professional responsibilities.
- 8001. RESEARCH IN AGRICULTURAL EDUCATION.** (Cr ar; prereq 15 cr in education) Marvin, Norenberg, Persons, Swanson, Leske, Peterson
Selecting problems, preparing bibliographies, analyzing and interpreting data, and preparing manuscripts.
- 8091. FIELD PROBLEMS.** (3 cr; hrs ar) Marvin, Norenberg, Persons, Swanson, Leske, R Peterson
Making investigations, gathering data, and formulating plans regarding agricultural education.

SECOND TERM

- 5027. PRACTICUM: EXTENSION EXPERIENCES.** (2-6 cr [max 6 cr], §HeEd 3605 or 5027; S-N optional; prereq #: hrs and rm ar) Norenberg
See First Term.
- 5051. ENTERPRISE ANALYSIS—July 31-August 4.** (3 cr; prereq #: I-IV and 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.
- 5090. INDEPENDENT STUDY.** (1-3 cr; prereq sr; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, R Peterson
See First Term.
- 5095. INDEPENDENT STUDY.** (3 cr; prereq MEd student in agricultural education; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, R Peterson
See First Term.
- 5128. METHODS OF TEACHING—July 24-August 4.** (3 cr; prereq non-agricultural education major and/or #: I-IV MTWThF; ClaOff 130) 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—July 24-August 4.** (3 cr; prereq 5128 or ¶5128, non-agricultural education major and/or #: VI-VIII MTWThF; ClaOff 130) Leske
- 8001. RESEARCH IN AGRICULTURAL EDUCATION.** (Cr ar; prereq 15 cr in education) Bear, Marvin, Norenberg, Persons, Swanson, Leske, R Peterson
See First Term.
- 8091. FIELD PROBLEMS.** (3 cr; hrs ar) Bear, Marvin, Norenberg, Persons, Swanson, Leske, 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

1501.¹ BEGINNING TYPEWRITING. (2 cr; S-N optional for nonmajors; \$2 lab fee; V-VI MTWThF; PeikH 265)

Froiland

Emphasis on correct typewriting techniques; letter styles; manuscripts; simple tabulations; proofreading.

1502.¹ INTERMEDIATE TYPEWRITING. (2 cr; prereq 1501 or proficiency exam; \$2 lab fee; V-VI MTWThF; PeikH 265) Froiland

Speed and accuracy building; carbons; tabulations; simple manuscripts; rough drafts; additional letter styles; interoffice memoranda; office forms; outlines and enumerations.

1503.¹ ADVANCED TYPEWRITING. (2 cr; prereq 1502 or proficiency exam; \$2 lab fee; V-VI MTWThF; PeikH 265)

Froiland

Proficiency in typing; complex manuscripts; footnotes; bibliographies; additional letter styles; complex tabulations.

5104. OFFICE COORDINATION TECHNIQUES—July 3-14. (3 cr, §DE 5105; \$2 lab fee; II-IV 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.** (1-12 cr [max 12 cr]; each section limited to 30 students)

Developments emerging from research and local, state, and national programs and projects.

Sec 1, Word Processing Concepts and Hardware—June 13-30, 3 cr, I-II MTWThF, PeikH 255, Lambrecht

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. See Special Programs section.

Sec 2, Teaching Word Processing—June 13-30, 3 cr, III-IV MTWThF, PeikH 255, Lambrecht
Research and materials for developing composition, verbal communication, dictation, grammatical, vocabulary, listening, and transcription skills; methods of teaching word processing and business communications. See Special Programs section.

● **5114. OFFICE OCCUPATIONAL EXPERIENCE.** (1-18 cr; limited to 20 students; prereq #; S-N optional; 5:30-7:00 pm T and hr ar; PeikH 255) Flood

Observation and practice in business offices; weekly seminars on application to teaching and guidance of high school and post-high school students. Each 1-credit offering requires 85 hours of work; may not apply for credit toward an advanced degree.

● **5116. SCHOOL-BASED PROJECTS IN BUSINESS EDUCATION.** (1-12 cr [max 12 cr]; limited to 20 students; prereq #; hrs ar) McLean, 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) Lambrecht
Opportunity for individual learning experiences not covered by regular courses.

8900.* PROBLEMS: BUSINESS EDUCATION. (Cr and hrs ar; prereq #; S-N only) Lambrecht, McLean
Investigations in field of student's interest.

SECOND TERM

● **5112. PROGRAM DEVELOPMENTS IN BUSINESS EDUCATION: Sexism in Business—July 18-August 4.** (1-12 cr [max 12 cr]; limited to 30 students; III-IV MTWThF; PeikH 255) McLean

Developments emerging from research and local, state, and national programs and projects. This offering for 3 credits will focus on the cultural background of sexism in business, the current status of males and females in business, the role of education in developing attitudes about sex roles, remedial measures available in business and distributive education, and the effectiveness of such measures.

● **5116. SCHOOL-BASED PROJECTS IN BUSINESS EDUCATION.** (1-12 cr [max 12 cr]; limited to 20 students; prereq #; hrs ar) Hopkins

See First Term.

5117. TRENDS AND ISSUES IN BUSINESS EDUCATION—July 18-August 4. (3 cr [max 6 cr]; prereq postbaccalaureate student or #; I-II MTWThF; PeikH 255) Hopkins

Current status and practices; alternative program options in business education.

5390. DIRECTED STUDIES IN BUSINESS EDUCATION. (1-6 cr [max 6 cr]; prereq #; hrs ar) Hopkins
See First Term.

¹These courses meet concurrently. A total of 28 students will be accepted in the three courses, BsEd 1501, 1502, 1503.

8900.* PROBLEMS: BUSINESS EDUCATION. (Cr and hrs ar; prereq #; S-N only) Hopkins
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

5310. MATERIALS LABORATORY: DISTRIBUTIVE EDUCATION—June 12-16. (3 cr; \$2 lab fee; prereq 3303, 5300 or #; II-IV, VI-VIII MTWThF; PeikH 245) Kohns
Development of related vocational materials for distributive occupations, cooperative vocational education classes. See Special Programs section.

● **5402. PLANNING MODELS FOR DISTRIBUTIVE EDUCATION—June 19-July 7.** (6 cr; limited to 40 students; prereq #; II-IV, VI-VIII MTWThF; PeikH 245) Klaurens
Guidelines for developing, coordinating, and evaluating a total distributive educational program for secondary, postsecondary, and adult education students. Preapplication is required. See Special Programs section.

5600. SCHOOL-BASED PROJECTS IN DISTRIBUTIVE EDUCATION. (1-12 cr [max 12 cr]; prereq Δ; cr and hrs ar) Klaurens
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) Klaurens
Individually arranged learning experiences in instruction, curricula, organization, operation, and evaluation.

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

SECOND TERM

● **5105. COORDINATION TECHNIQUES—July 24-August 4.** (2 cr; limited to 30 students; II-III MTWThF; PeikH 245) 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 HEd 5106 for licensure purposes. See Special Programs section.

● **5106. COORDINATION TECHNIQUES IN COOPERATIVE DISTRIBUTIVE EDUCATION—July 24-August 4.** (2 cr; limited to 30 students; prereq 5105 or 5105; IV-V MTWThF; PeikH 245) Ashmun
Applications in secondary and postsecondary cooperative and project plan programs; licensure course for distributive education teacher coordinators. This course should be taken concurrently with DE 5105 for licensure purposes.

5600. SCHOOL-BASED PROJECTS IN DISTRIBUTIVE EDUCATION. (1-12 cr [max 12 cr]; prereq Δ; hrs ar) Ashmun
See First Term.

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

8600. INTERNSHIP: DISTRIBUTIVE EDUCATION. (3-9 cr; hrs ar) Ashmun

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

Home Economics Education (HEEd)

FIRST TERM

● **5300. HOME ECONOMICS CURRICULUM—June 19-30.** (3 cr; limited to 25 students; prereq 3530 and #; I-IV and ar MTWThF; BioSci 58) McFadden)

Examination of research and literature; development of units of study and programs at elementary and secondary levels; production and evaluation of materials. Tuition will be waived for the 25 preselected students, who must meet specified criteria. Deadline for course application is April 15. Address inquiries to Joan McFadden, 279 North Hall, 2005 Buford Avenue, University of Minnesota, St. Paul, Minnesota, 55108.

- 5325. TRENDS IN HOME ECONOMICS EDUCATION—July 5-14.** (3 cr; prereq 5300 or 5305; VI-VIII MTWThF; ClaOff B36) Erickson
Current status; purposes, programs, content emphasis, research, problems and issues in the field. This offering will emphasize supervision in home economics.
- 5331. HOME ECONOMICS OCCUPATIONAL EDUCATION—June 13-23.** (3 cr per qtr [max 12 cr]; prereq sr or tchg exper or #; VI-VIII MTWThF; ClaOff B36) Erickson
Exploration of career opportunities; identification of needed competencies; development of instruction units; objectives, teaching-learning experiences, appraisal procedures; preparation of teaching materials.
- 5405.¹ WORKSHOP: CHILD DEVELOPMENT AND FAMILY RELATIONS—June 13-23.** (1 to 4 cr; prereq grad student or in-service teacher; VI-VIII MTWThF; ClaOff B30) Rossmann
Recent emphasis on growth and guidance of individuals; materials and techniques for high school and adult levels to attain better understanding. This offering for 3 credits will emphasize curriculum materials and methods for teaching family life.
- 5900. READINGS IN HOME ECONOMICS EDUCATION.** (1-3 cr; hrs ar) McFadden
Independent study under tutorial guidance. This offering for 3 credits.
- 5910. INTEGRATING PAPER.** (3 cr; prereq MEd student; hrs ar) McFadden, Rossmann
Independent paper integrating learnings from a course or courses in education with learnings in home economics education.
- 8900.* PROBLEMS: HOME ECONOMICS EDUCATION.** (1-9 cr; prereq 3300, #; hrs ar) McFadden, Rossmann
Independent study of current educational problems.

SECOND TERM

- 5410. WORKSHOPS: FOODS AND NUTRITION—July 18-28.** (3 or 4 cr [max 12 cr]; prereq Δ; VI-VIII MTWThF; ClaOff B36) Thomas
Problems in teaching at high school and adult levels; use of new materials and techniques; group and individual projects for experienced teachers. This offering for 3 credits will emphasize curriculum materials and methods for teaching nutrition.
- 5415.¹ WORKSHOP: MATERIALS FOR INSTRUCTION—July 31-August 11.** (1-4 cr; prereq grad student or teacher in service; VI-VIII MTWThF; ClaOff B42) Brown
Problems in selection and use of new materials for instruction in home economics. This offering for 3 credits will emphasize curriculum materials and methods for teaching consumer decision making.
- 5910. INTEGRATING PAPER.** (3 cr; prereq MEd student; hrs ar) Thomas
- 8900.* PROBLEMS: HOME ECONOMICS EDUCATION.** (1-9 cr; prereq 8300, #; hrs ar) Thomas
See First Term.

Industrial Education (Ind)

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

FIRST TERM

- 3110. CONSTRUCTION: INTERMEDIATE.** (3 or 6 or 9 cr; prereq 1612, #; hrs ar) Loeb
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) Loeb
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) Loeb
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) Loeb
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) Loeb
Individualized advanced skill development in areas of color separation, web press operation, drafting design, color renditions, air brush.

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

- 3122. GRAPHIC COMMUNICATIONS: SPECIALIZATION.** (3 or 6 or 9 cr; prereq 3121, #; hrs ar) Loeb
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) Loeb
Individualized technical skill development in areas of welding, lathe operation, milling machine operation, sheet metal construction.
- 3131. MANUFACTURING: ADVANCED.** (3 or 6 or 9 cr; prereq 3130, #; hrs ar) Loeb
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) Loeb
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) Loeb
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) Loeb
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) Loeb
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) Loeb
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) Loeb
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) Loeb
Students contract with AVTI instructor and industrial education coordinator for specialized work in areas of engine modification, chassis and airframe design, experimental vehicle testing.
- 3900, 3901, 3902. INDEPENDENT STUDY.** (3 cr per qtr; prereq jr or #; hrs ar) Irvin, Kavanaugh, Wentling
Self-directed study, preceded by classroom instruction in basic research procedures.
- **5100. COMMUNICATIONS OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Kavanaugh
Structured/supervised employment in the communications industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.
 - **5101. PRODUCTION/MANUFACTURING OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Kavanaugh
Structured/supervised employment in the production/manufacturing industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.
 - **5102. POWER/ENERGY OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Kavanaugh
Structured/supervised employment in the power/energy industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.
 - **5103. CONSTRUCTION OCCUPATIONAL EXPERIENCE.** (1-5 cr per qtr [max 15 cr]; limited to 15 students; prereq #; hrs ar) Kavanaugh
Structured/supervised employment in the construction industry. Credits allowed will be derived from the ratio of 100 clock hours of supervised work experience to each credit given the student. Total credits earned in 5100, 5101, 5102, and 5103 may not exceed 15.
- 5310. COORDINATION—June 12-16.** (3 cr; II-IV, VI-VIII MTWThF; ClaOff B25) Kavanaugh
Duties and responsibilities of coordinators in trade schools, part-time programs, and comprehensive high schools.
- **5400. INSTRUCTIONAL MATERIALS LABORATORY FOR NONMAJORS—July 3-14.** (3 cr; limited to 20 students; prereq tchg exper or #; VI-VIII MTWThF; PaikH 60) Irvin
For students needing manipulative skills and craftwork activities in their teaching; individual and group projects.

- **5600. INSTRUCTIONAL MATERIALS LABORATORY—June 26-30.** (3-6-9 cr; limited to 30 students; prereq major, tchg exper or #; II-IV, VI-VIII MTWThF; PeikH 41A) Wentling
Laboratory and shop experiences with new materials, processes, and equipment; development of complementary instructional materials. This offering for 3 credits.
- **8310. RESEARCH.** (3 cr; limited to 20 students; prereq #; I MTWThF; PeikH 41) Smith
Analysis of existing research; selection of problems; organization and presentation of projects.
- 8900, 8901, 8902.* RESEARCH PROBLEMS.** (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar) Irvin, Kavanaugh, Moss, Pucel, Smith, Wentling
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.
- 3900, 3901, 3902. INDEPENDENT STUDY.** (3 cr per qtr; prereq jr or #; hrs ar) Irvin, Miletich, Wentling
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.

- **5400. INSTRUCTIONAL MATERIALS LABORATORY FOR NONMAJORS—July 17-28.** (3 cr; limited to 20 students; prereq tchg exper or #; VI-VIII MTWThF; Peikh 60) Irvin
See First Term.
- **5600. INSTRUCTIONAL MATERIALS LABORATORY—July 17-28.** (3-6-9 cr; limited to 30 students; prereq major, tchg exper or #; II-IV MTWThF; Peikh 41A) Wentling
See First Term.
- 8900, 8901, 8902.* RESEARCH PROBLEMS.** (3-6-9 cr per qtr; prereq approval of candidacy; hrs ar) Irvin, Miletich, 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

- **5100. SPECIAL TOPICS IN INSTRUCTION: Working With Special Needs Students—July 3-14.** (1-6 cr [max 9 cr]; limited to 30 students; prereq #; II-IV MTWThF; ClaOff B42) Wentling
Topics will vary with each offering but will deal with planning, providing, and/or evaluating instruction. This offering for 3 credits will deal with identification and monitoring of special needs students with emphasis on strategies for mainstreaming in vocational programs.
- **5102. SPECIAL TOPICS IN ADMINISTRATION: Leadership Development Program—June 12-23.** (1-6 cr [max 9 cr]; limited to 15 students; prereq #; II-IV, VI-VIII, MTWThF; rm ar) Miletich, Moss
Topics will vary with each offering but will deal with leadership in and management of vocational education programs. This workshop for 6 credits is designed to develop the leadership potential of 15 preselected practicing vocational administrators. Tuition will be waived. Nominations for participants will come from superintendents of schools. Address inquiries to Stephen Miletich, 125 Peik Hall, 159 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455, before April 15.
- **5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION.** (3 cr; each section limited to 70 students)
Interpretation of the purposes of vocational education in varying socioeconomic contexts; analysis of vocational fields in regard to recipients, practices, legislation, and funding.
Sec 1, June 19-23, II-IV, VI-VIII MTWThF, ClaOff B25, Swanson
Sec 2, July 3-14, VI-VII, VI-VIII MTWThF, ClaOff B25, Rossmann

SECOND TERM

- **5100. SPECIAL TOPICS IN INSTRUCTION: Legal Aspects of Managing Vocational Education—July 31-August 4.** (1-6 cr [max 9 cr]; limited to 25 students; prereq #; II-IV, VI-VIII MTWThF; ClaOff 30B) Pucel
See First Term. This 3-credit workshop will aid managers of vocational education to understand laws that affect their job responsibilities.
- **5101. SPECIAL TOPICS IN CURRICULUM: Small Business Management Education—August 7-18.** (1-6 cr [max 9 cr]; limited to 20 students; I-IV MTWThF; ClaOff 143) Persons
Topics will vary with each offering but will deal with development and evaluation of curricula and/or curriculum materials. This offering for 3 credits features organization, implementation, and operation of a small business management education program for adults. Preapplication is required. Address inquiries to Edgar Persons, 130 Classroom-Office Building, 1944 Buford Avenue, University of Minnesota, St. Paul, Minnesota 55108.
- 5102. SPECIAL TOPICS IN ADMINISTRATION: Utilizing Advisory Committees—August 7-9.** (1-6 cr [max 9 cr]; prereq #; II-IV, VI-VIII MTW; ClaOff B36) Ashmun, Marvin
Topics will vary with each offering but will deal with leadership in and management of vocational education programs. This workshop for 2 credits is designed to assist vocational instructors, administrators, board members, and other interested persons in meeting requirements of the new vocational education legislation regarding the effective utilization of advisory committees.
- 5274. TWO-YEAR POSTSECONDARY INSTITUTIONS—July 18-31.** (3 cr, §EdAd 5274; II-IV MTWThF; ClaOff B42) Morgan
Present status, development, functions, organization, curriculum, and trends in postsecondary but non-baccalaureate institutions. Meets with EdAd 5274.
- **5300. PHILOSOPHY AND PRACTICE OF VOCATIONAL EDUCATION—July 18-28.** (3 cr; limited to 70 students; VI-VIII MTWThF; ClaOff 25B) Hopkins
See First Term.

College of Forestry

Undergraduate forestry field studies are offered for beginning juniors, both resident and transfer students, at the Lake Itasca Forestry and Biological Station, Itasca State Park, during the 4 weeks immediately preceding the opening of the fall quarter. This fieldwork is required of all students majoring in forest resources and forest science. Required courses offered at Itasca are FR 3100, Important Forest Plants (2 credits); FR 3101, Forest Ecology (3 credits); and FR 3201, Field Forest Measurements (1 credit). The intensive field training provides all students entering professional forestry courses in the junior year with an introduction to forestry in an excellent field setting. It is timed to interfere as little as possible with summer employment.

About one-half of the nonforestry courses required for graduation in all College of Forestry curricula are available during the summer session on the Twin Cities campus through the various colleges. Students with deficiencies or those desiring to graduate early can effectively utilize the summer session to complete required courses in the biological and physical sciences, mathematics, social sciences, communications and other areas.

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

OFFERED AT LAKE ITASCA FORESTRY AND BIOLOGICAL STATION¹

(SPECIAL TERM FOR FORESTRY STUDENTS—AUGUST 30-SEPTEMBER 22)

The field training session, required of all forest resources and forest science majors, must be completed between the sophomore and junior years. Required freshman and sophomore courses (see pages 8-9 in the *College of Forestry Bulletin*) must be completed with a maximum of 5 credits of D grades, a minimum grade point average of 2.00, and a minimum of 80-90 credits before the student can attend the Itasca Forestry Session. Transfer students must have been accepted for admission into the College of Forestry. Registration for Itasca is administered at the same time as fall quarter registration, in early August. The Itasca session occupies the student's full time for 5½ days per week. It consists largely of field or laboratory work. All students must register for the following courses.

Forest Resources (FR)

3100. IMPORTANT FOREST PLANTS. (2 cr; prereq Biol 1103) Brown, Scholten
Identification of forest plants as related to forest types.

¹For additional courses, see Biology Session.

- 3101. FOREST ECOLOGY.** (3 cr; prereq college physics) Kurmis, 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) Staff
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, Gertjensan, Haygreen, Hossfeld, Neuman
- 8301.* RESEARCH PROBLEMS IN FOREST UTILIZATION.** (Cr ar) Bowyer, Erickson, Gertjensan, Haygreen, Hossfeld, Neuman

SECOND TERM

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

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) Ek, Meyer, Rose
- 8203.* RESEARCH PROBLEMS IN FOREST RECREATION.** (Cr ar) Hansen, Merriam, Knopp
- 8204.* RESEARCH PROBLEMS IN FOREST POLICY.** (Cr ar) Irving, Merriam, Skok, Ellefson, Gregersen, Hallgren
- 8205.* RESEARCH PROBLEMS IN REMOTE SENSING.** (Cr ar) Meyer

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 12-23.** (5 cr; limited to 40 students; prereq teacher or #)

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.*

- 8212. ADVANCED FIELD SILVICULTURE.** (3 cr; prereq 5101, #) White
Selected current silvicultural problems and research. Plant-soil relationships with particular reference to forest soils. Methods of forest soil investigations in the field and the laboratory.

General College

The General College is open to any resident of Minnesota who is a high school graduate and for whom its courses and student personnel services are appropriate. Non-high school graduates who perform satisfactorily on scholastic aptitude tests also may apply for admission.

A student enrolled in the General College pursues a course of study individually planned in consultation with an adviser. The student may use this program to explore educational and personal interests, to test his or her ability to succeed in college-level academic work, or (if previous grades are acceptable) to prepare for advanced study at the University of Minnesota or at another institution. The student may combine general and liberal arts courses with instruction in such career education sequences as dental assisting, marketing, legal paraprofessions, and human services generalist programs. Credits earned in these occupational options, and in some cases through work experience, can be applied toward the requirements for the associate in arts (A.A.), bachelor of general studies (B.G.S.), and bachelor of applied studies (B.A.S.) degrees offered through the General College. Information about these degrees can be found on pages 16-24 of the current *General College Bulletin*.

General or liberal studies courses in the General College resemble those offered in a traditional curriculum in that they can be classified into the social sciences, the natural sciences, and the humanities. However, the curriculum departs from tradition in some respects. Instruction focuses not only upon factual content but also on relations in and among fields of knowledge, on practical applications, and on critical and creative thinking. The courses tend to be broad in scope rather than specialized and may be used to develop an overview of a field. Students deciding upon a major should register for the basic courses offered by the department in which they plan to complete advanced study.

Students enrolling in the college for the first time as entering freshmen are required to register for General College courses only. After they have satisfactorily completed 1 quarter in the college, they may consult an adviser about the possibility of registering for a "combination program," in which some of their course work is taken in other colleges of the University. The combination program is especially valuable during the summer session, when only a limited number of General College courses are available.

General College students may transfer to other colleges of the University without undue loss of time or academic credits if their grades meet the level of academic achievement required by the college they wish to enter.

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

- **1131. BIOLOGICAL SCIENCE: PRINCIPLES.** (5 cr; limited to 75 students; \$2 lab fee, 4 lab hrs per wk; I-II MTWThF; SciCB 125) Dearden
The variety and relationships of living organisms, illustrating general principles of biology as they apply to humans, animals, and plants. These principles are drawn from fields such as study of cells, relationships of organisms in nature, heredity, chemical and physical properties of living organisms in nature, evolution, and reproduction. Work in multimedia laboratory on biological information and biological problems through the aid of tapes, pictures, graphs, movies, and experiments.
- **1166. PHYSICAL SCIENCE: PRINCIPLES OF CHEMISTRY.** (5 cr; limited to 75 students; III-IV MTWThF; SciCB 125) Schwabacher
Fundamental principles and laws stressing development and application of theories and their roots in experience. Topics and demonstrations include classification of matter, reactions, elements, atomic and molecular structure, chemical bonding theory, and other subjects. Students gain general understanding of both content and process of the science of chemistry.
- **1221. MINNESOTA: HISTORY.** (5 cr; limited to 50 students; I-II MTWThF; NH 213) Moen
Introduction to people and institutions of the state. Topics include geography, exploration, frontier settlement, statehood, economic development, politics, and social and intellectual history.
- **1235. UNITED STATES: LAW IN SOCIETY.** (5 cr; limited to 40 students; I-II MTWThF; NH 216) Hower
The role of law in our changing society; legal aspects of current topics. Students select topics for study from the following: courts and court systems, corrections, police-community relations, environmental problems, drug problems, welfare and domestic problems, wills and probate, insurance, and consumer rights.
- **1252. THE WORLD: POLITICS.** (5 cr; limited to 75 students; III-IV MTWThF; NH 213) Jones
Some basic problems of world community: war, conflict of ideologies, developing nations, international trade, and international law and organizations. Since authorities on world community often differ in methods of analysis, students learn about several important analytical systems, apply them to problems, and thus develop an individual approach.
- **1285. SOCIAL SCIENCE: CULTURAL ANTHROPOLOGY.** (5 cr; limited to 50 students; I-II MTWThF; NH 207) 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.
- **1363. LITERATURE FOR CHILDREN.** (4 cr; limited to 40 students; III-IV TWThF; NH 111) Collins
Survey of children's literature. For parents, prospective parents, or child-care workers who wish to become acquainted with children's literature and to guide children in selecting and reading books, or for other students who may not have had an opportunity to read books—including classics—when they were children.
- **1421. WRITING LABORATORY: PERSONAL WRITING.** (4 cr; each section limited to 25 students)
Students read and write descriptive narratives, characterizations, and autobiographical sketches. Personal help with writing problems in laboratory. Emphasis is on clear and effective written expression.
Sec 1, I-II TWThF, NH 209, Hofer
Sec 2, III-IV TWThF, NH 209, Rathburn
- **1431. FUNDAMENTAL COLLEGE MATHEMATICS I.** (2 cr; limited to 40 students; prereq ¶1432; 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 appropriate, from number theory, algebra, and geometry. (Meets with 1432.)
- **1432. FUNDAMENTAL COLLEGE MATHEMATICS II.** (1 cr; limited to 40 students; prereq ¶1431; I MTWThF; FoIH 109, 110) Denny
See 1431.
- **1433. FUNDAMENTAL COLLEGE MATHEMATICS III:** (1-9 cr; limited to 40 students; prereq #; I MTWThF; FoIH 109, 110) Denny
See 1431.
- **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 each other and ways we alienate ourselves from each other. Course asks students to begin or deepen their search for identity and to aid others in their search. Students apprehensive about the "personal" dimension should not take this course.

Health Sciences

SCHOOL OF DENTISTRY

Dental Hygiene (DH)

FIRST TERM

- 1154. BIOMATERIALS IV.** (3 cr; lect I-II TTh; HSUnitA 5-125) Kyle
Continuation of DH 1153 with emphasis on analysis of patient education and role of the dental hygienist with regard to restorative and preventive procedures. Clinical application of procedures incorporated with the prophylaxis (or with plaque control) in laboratory.
Lab 1, VI-VIII TTh, HSUnitA 5-130
Lab 2, VI-VIII WF, HSUnitA 5-130
- 1250. OFFICE MANAGEMENT.** (3 cr; I-II WF) Nelson
Dental jurisprudence, work simplification, case presentation, appointment control, records management, preventive practice development, recall systems, payment plans, fees and collections, inventory control and product selection.
- 3053. DENTAL PROPHYLAXIS V.** (3 cr; III-IV Th; HSUnitA 5-125; clinic ar) Haider
Continuation of DH 3052.
- 3055. DENTAL PROPHYLAXIS VII.** (3 cr; clinic ar) Haider
Continuation of DH 3054.
Sec 1, III-IV W, HSUnitA 5-125
Sec 2, VII-VIII Th, HSUnitA 5-181
- 3276. CLINICAL ROENTGENOLOGY.** (2 cr; clinic ar) Kuba
Students observe and participate in demonstrations of various roentgenographic procedures (intraoral and extraoral, including panoramic roentgenography) in order to develop the ability to produce acceptable complete periapical-bitewing roentgenographic surveys on mounted skulls and patients, process exposed films, qualitatively evaluate their results, and mount and interpret their roentgenograms; discussion of topics relevant to oral radiology.

SECOND TERM

- 3399. INDEPENDENT STUDY.** (Cr ar; elective)
Opportunity to study an area not covered by regular course offerings. May include off-campus experiences.

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

The following courses are available for graduate students. Hours are to be arranged.

Endodontics (Endo)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

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

- 5313. ENDODONTIC EMERGENCY PROBLEMS.** (Cr ar) Jensen
Each student is responsible for all emergencies in the Endodontic Clinic during an assigned 1-week period (8 hours a day).
- 5323. TREATMENT PLANNING.** (Cr ar) Jensen
Students are assigned to the Admissions, Treatment Planning area as part of a total treatment planning team with members drawn from other clinical divisions. Students share in the decisions of the overall treatment planning of clinical cases as they are processed in the School of Dentistry and observe how the other disciplines function in this capacity.
- 5333. REVIEW OF CASES.** (Cr ar) Jensen
Students present cases from the previous quarter for review by endodontic faculty and graduate students.
- 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.** (Cr ar) Jensen
Review of current literature, research, and clinical areas. Sessions assigned to student.
- 8323. ADVANCED ENDODONTIC LECTURES.** (Cr ar) Jensen
Pulpal and periapical pathology, diagnosis, and treatment planning.

Oral Biology (OBio)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 8001. RESEARCH IN ORAL BIOLOGY.** (Cr ar)
- 8002. TUTORIAL IN ORAL BIOLOGY.** (Cr ar [may be repeated for cr]; 2 hrs per wk=1 cr)
- 8024. TOPICS IN ORAL BIOLOGY.** (1-3 cr [may be repeated for cr]; prereq #)

Oral Pathology (OPat)

FIRST TERM

- 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, tooth-brushing 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.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 8004. HISTOPATHOLOGY.** (2 cr) Vickers
Weekly presentation of various pathological cases in which methods of diagnosis are stressed. Clinical or radiographic aspects utilized. Covers the spectrum of oral and paraoral pathology.
- 8006. CURRENT LITERATURE REVIEW AND TOPICS.** (2 cr) Gorlin
Monthly journals are analyzed and interesting papers and articles are summarized and presented. Special topics in oral pathology and related fields are also presented by staff.

Oral Radiology (ORad)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 8100. ORAL RADIOLOGY SEMINAR.** (1 cr; prereq #) Kuba
- 8900. ORAL RADIOLOGY RESEARCH.** (Cr ar; prereq #) Kuba

- **1733. CONTEMPORARY SEX ROLES.** (5 cr; limited to 50 students; III-IV MTWThF; NH 207) Thoen
Informal working seminar in which members examine roles of men and women. Social roles and related concepts of expectations, informal and formal roles, role modification, and role reversal. Goal of course is to overcome sexual stereotyping. Focus is on analyzing the openness and rigidity of sex roles in childhood socialization; education; mate selection; marital, parental, and homemaking roles; occupations; and social trends.
- **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 216) Stockdale
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.
- **1234. UNITED STATES: GROWING OLD TOGETHER—SOCIAL HISTORY OF AGING.** (4 cr; limited to 75 students; I-II MTWThF; NH 213) Detzner
Aging process and the aged as viewed by an increasingly youth-centered American society, with loss of roles, status, and place by elders and fear of growing older by others. History of older people's cultural values and interactions with government, business, and higher education. Students encouraged to examine their own aging process.
- 1237. UNITED STATES: JUVENILE DELINQUENCY.** (4 cr; III-IV MTWThF; NH 216) F Harris
Juvenile delinquency in our society; its nature and extent, causes, and efforts to cope with it. Emphasis on the family, schools, and courts as factors in both cause and control of delinquency.
- **1262. FIELDS OF APPLIED PSYCHOLOGY.** (5 cr; limited to 40 students; III-IV MTWThF; NH 213) Borow
Use of psychological principles in study of human affairs. Contributions of psychological research in fields such as environmental psychology; mental retardation; personnel selection and training in industry; measurement and improvement of worker efficiency and morale; law, crime, and aggression; consumer research and advertising; and attitude and opinion formation and measurement.
- **1311. ART: GENERAL ARTS.** (4 cr; limited to 40 students; II MTWThF; NH 111) Byrne
Basic similarities in terms of human needs that underlie all art forms. Concentrates upon painting, sculpture, music, architecture, and literature.
- **1357. PHILOSOPHY: WORLD RELIGIOUS BELIEFS.** (5 cr; limited to 40 students; I-II MTWThF; NH 216) Zanoni
Beliefs, rituals, and attitudes of the world's major religions in their historical, social, and cultural settings.
- **1401. COMMUNICATION SKILLS: VOCABULARY DEVELOPMENT.** (3 cr; limited to 30 students; III MTWThF; NH 209) A Kurak
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; limited to 25 students; I-II TWThF; NH 209) Arrington
How people communicate in society, and how they perceive and think, write, and talk about events. Assumptions, inferences, and distortions involved in thinking; habits and processes of observation; factual and slanted reporting; persuasive devices; and cultural and cross-cultural communication. Primarily a writing course but also involves reading and discussion.
- **1445. MATHEMATICS: INTERMEDIATE ALGEBRA.** (5 cr; limited to 40 students; prereq 1 yr high school algebra; III-IV MTWThF; FoH 104) Barnes
Concepts and manipulative skills necessary for college algebra. The real number system, special products and factoring, exponents and radicals, linear equations in one and two variables, quadratic equations in one variable, progressions, inequalities, variation, and logarithms. Prospective students may have to give evidence of adequate preparation.
- **1471. CREATIVITY: CREATIVE PROBLEM SOLVING—INNOVATION TECHNIQUES.** (4 cr; limited to 30 students; III-IV TWThF; NH 122) Amram
To heighten awareness of difficulties and challenges in academic and personal life, students solve problems in an open and trusting environment and become aware of their creative potential. Working individually or in groups, students use innovative techniques to help them perceive and approach problems flexibly and imaginatively. Readings and class exercises.

- **1511. INTRODUCTION TO MODERN BUSINESS.** (5 cr; limited to 50 students; III-IV MTWThF; NH 207) Headley
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 50 students; I-II MTWThF; NH 207) Kahn
Common legal problems: formation and discharge of contracts, torts (personal injury and property damage suits), criminal law, bailments, nature and classification of real and personal property, and joint ownership and tenancy.



Oral Surgery (OSur)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 5257. AMBULATORY GENERAL ANESTHESIA.** (1 cr) Gatto and staff
A clinical rotation involving experience in outpatient management utilizing intravenous sedation and general anesthesia.
- 8250. ADVANCED ORAL SURGERY.** (Cr ar) Waite
Assigned clinics in University, Veterans Administration, Hennepin County Medical Center, 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.** (Cr ar) Lehnert
Oral surgical subjects on a seminar basis.
- 8252. RESEARCH IN ORAL SURGERY.** (Cr ar) Leonard
Research in fields related to oral surgery.
- 8253. PROBLEMS IN ORAL SURGERY.** (Cr ar) Waite
Current literature review: experience in surgical techniques.
- 8254. TOPICS.** (Cr ar) Gatto, Bevis
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.
- 8258. ANESTHESIA II SEMINAR.** (Cr ar) Gatto and staff
Outpatient general anesthesia topics and related subjects.

Orthodontics (Otho)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Required Courses for Graduate Students

- 5004. CLINICAL ORTHODONTICS.** (Cr ar; prereq #)
Students are assigned patients for the complete management of orthodontic and orthodontically related occlusal problems under direct staff supervision. Credits from this course may not be used for degree programs.
- 8203. GROWTH AND DEVELOPMENT.** (Cr ar; prereq #)
Head growth, development, osteology and myology. Includes both normal and abnormal morphology and function; cephalometric methods.
- 8207. DIAGNOSIS AND TREATMENT PLANNING.** (Cr ar; prereq #)
Etiology, treatment, and prognosis of clinical orthodontic patients.
- 8211. ORTHODONTIC SEMINAR.** (Cr ar; prereq #)
Review of current literature and discussion of current research and its implications.
- 8215. RESEARCH IN ORTHODONTICS.** (Cr ar; prereq #)
- 8219. TOPICS IN ORTHODONTICS.** (Cr ar; prereq #)
Studies in special topics for advanced students.

Pediatric Dentistry (Pedo)

FIRST TERM

- 5414. ADVANCED CLINICAL PEDODONTICS.** (Cr ar; prereq #) Shaw, others
Assignment of patients for treatment of difficult or unusual pedodontic problems under direct faculty supervision.
- 5415. DENTAL TEACHING.** (Cr ar) Till, others
Practice teaching in appropriate dental clinics. Preparation of seminars and lectures. Use of various educational methods including slide-tape sequences and programmed instruction.

- 8001. RESEARCH IN PEDIATRIC DENTISTRY.** (Cr ar; prereq #) Messer, others
- 8290. HOSPITAL PEDODONTICS I.** (Cr ar; prereq #) Walker, others
Diagnosis and treatment of difficult and unusual problems in children with various handicapping conditions in the Children's Physical Medicine and Rehabilitation Center under direct faculty supervision. Includes pre-op and post-op discussion of faculty-supervised general anesthetic cases and seminar discussion of operating room techniques and procedures, pharmaceutical adjuncts for dental procedures.
- 8291. HOSPITAL PEDODONTICS II.** (Cr ar; prereq #) Till, others
Diagnosis and treatment of pedodontic problems under direct faculty supervision at Hennepin County Medical Center. Includes participation on a rotation basis in seminars in pediatrics and anesthesia conducted by staff. Pre-op and post-op seminar discussion and evaluation of treatment plans.
- 8292. PEDODONTIC LITERATURE.** (Cr ar; prereq #) Shaw, others
In-depth literature review and seminar discussion of specific pedodontic topics.
- 8294. PEDODONTIC DIAGNOSIS AND TREATMENT PLANNING.** (Cr ar; prereq #) Shaw, others
Systematic approach to diagnosis and treatment planning for various pedodontic problems.

SECOND TERM

- 5414. ADVANCED CLINICAL PEDODONTICS.** (Cr ar; prereq #) Shaw, others
See First Term.
- 5415. DENTAL TEACHING.** (Cr ar) Till, others
See First Term.
- 8001. RESEARCH IN PEDIATRIC DENTISTRY.** (Cr ar; prereq #) Messer, others
- 8290. HOSPITAL PEDODONTICS I.** (Cr ar; prereq #) Walker, others
See First Term.
- 8291. HOSPITAL PEDODONTICS II.** (Cr ar; prereq #) Till, others
See First Term.
- 8293. ADVANCED PEDODONTIC TECHNIQUES.** (Cr; prereq #) Shaw, others
Description and exercises in advanced pedodontic skills and techniques.
- 8295. INDEPENDENT PEDODONTIC STUDY.** (Cr ar; prereq #) Till, others
Review of pertinent literature and preparation of a position paper on an assigned topic.

Periodontology (Pero)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 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 laboratory work under way in periodontal research.
- 8200. LECTURES IN PERIODONTOLOGY.** (Cr ar) Pihlstrom
Tissues involved in periodontal disease. Etiology and treatment of periodontal disease.
- 8300. SEMINAR: PERIODONTOLOGY.** (Cr ar) Pihlstrom
Basic structural components of the periodontium as well as fundamental periodontal treatment procedures. The epithelial attachment, periodontal ligament, cementum, alveolar bone, and periodontal pathology. Oral hygiene and scaling and root planing. Literature reviews are required of each student. Second-year students present case reports.

Prosthodontics (Pros)

FIRST TERM

- 8030. INTRODUCTION TO COMPREHENSIVE MAXILLOFACIAL CARE.** (Cr ar; prereq #) Moller
Milestones in development of maxillofacial prosthetics and interdisciplinary relationships in treatment of the maxillofacial patient.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 8001. RESEARCH IN PROSTHODONTICS.** (Cr ar [may be repeated for cr]) Goodkind
Arranged with individual students upon application, after completion of a critical review of current and historical literature pertaining to the problem.
- 8006. ADVANCED CLINICAL PROSTHODONTICS II.** (Cr ar [may be repeated for cr]; prereq #) Goodkind, Meyer
Experience in prosthodontic treatment of patients having systemic complications.

MEDICAL SCHOOL

Complete listings of courses offered by departments of the Medical School for undergraduate (prebaccalaureate) students, allied health students, medical students (pre-M.D.), and graduate students (postbaccalaureate in basic health science fields or post-M.D. in clinical fields) can be found in the *Medical School Bulletin*, *Graduate Programs in the Health Sciences Bulletin*, *Graduate School Bulletin*, or 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 in the medical student curriculum (pre-M.D.) or in residency training programs in clinical fields (post-M.D.) is restricted to students previously admitted to and enrolled in those specific programs.

Anatomy (Anat)

FIRST TERM

- 3970. SPECIAL PROBLEMS.** (2 cr; prereq #) Staff
Guided individual reading or study.
- 8156. ADVANCED ANATOMY.** (2-6 cr; prereq #) Staff
Individual problems in gross anatomy, embryology, histology, or neuroanatomy.
- 8204. RESEARCH IN ANATOMY.** (2-10 cr; prereq #) Staff
Gross anatomy, cytochemistry, histology, endocrinology, embryology, hematology, or neuroanatomy. Special facilities offered to graduate students in clinical departments for work on problems in applied anatomy.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

- 8141. NEUROANATOMICAL METHODS.** (2 cr; prereq #: special course fee \$30) Elde
An introduction to contemporary morphological techniques applicable to investigation of the nervous system. The theoretical basis of these techniques as well as practical aspects related to their use. Laboratory experience with selected techniques.

SPECIAL TERMS: THREE- OR SIX-WEEK COURSES

- 5500. GENERAL GROSS ANATOMY.** (3-4½ cr; prereq Phase D) Robertson
- 5501. THE EXTREMITIES.** (3-4½ cr; prereq Phase D) Robertson
- 5502. HEAD AND NECK.** (3-4½ cr; prereq Phase D) Robertson
- 5508. THE THORAX.** (3-4½ cr; prereq Phase D) Robertson
- 5509. THE ABDOMEN.** (3-4½ cr; prereq Phase D) Robertson
- 5510. PERINEUM, GENITAL-URINARY SYSTEM AND PELVIS.** (3-4½ cr; prereq Phase D) Robertson

SECOND TERM

3970. **SPECIAL PROBLEMS.** (2 cr; prereq #) Staff
See First Term.
8156. **ADVANCED ANATOMY.** (2-6 cr; prereq #) Staff
See First Term.
8204. **RESEARCH IN ANATOMY.** (2-10 cr; prereq #) Staff
See First Term.

Anesthesiology (Anes)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Elective Courses

5181. **EXTERNSHIP IN CLINICAL PRACTICE OF ANESTHESIOLOGY.** (9 cr; University Hospitals) 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 ventilatory management, resuscitation, evaluation of the unconscious patient, choice of agents and techniques, practice administration of general and regional anesthesia, pre- and post-anesthetic management.

Required Courses for Graduate Students

8265. **GENERAL ANESTHESIA.** (12 cr) 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 5101 or 5742) 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 5101 or 5742) 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)

SPECIAL TERM: JULY 1-SEPTEMBER 30

Required Courses

8201. **CLINICAL FAMILY MEDICINE.** (9 cr; hrs ar) Ciriacy, staff
8208. **FAMILY MEDICINE CONFERENCE.** (1 cr; hrs ar) Ciriacy, staff
8210. **FAMILY MEDICINE GRAND ROUNDS.** (1 cr per yr; hrs ar) McConnell
8212. **CLINICAL PSYCHIATRY ROUNDS.** (1 cr; hrs ar) Kelly, staff

Elective Courses

5955. **DIRECTED STUDY.** (Cr ar; prereq #; hrs ar) Maddock, staff
8207. **SEMINAR: COMMON DISEASES SEEN IN FAMILY PRACTICE.** (1 cr; hrs ar) Ciriacy, staff
8209. **FAMILY MEDICINE X-RAY CONFERENCE.** (1 cr; hrs ar) Ciriacy, staff
8253. **RESEARCH PROBLEMS.** (Cr ar; prereq #; hrs ar) O'Leary, staff

Interdepartmental Medicine (InMd)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

5103. **INTRODUCTION TO CLINICAL MEDICINE.** (2 cr; prereq 5100, 5101, 5102) Petzel, staff
5227. **SKIN.** (2 cr; prereq regis med) Manick, staff
5228. **EAR, NOSE, THROAT.** (2 cr; prereq regis med) Adams, staff
5229. **EYE.** (2 cr; prereq regis med) Letson, staff
5233. **HUMAN SEXUALITY.** (3 cr; prereq regis med) Houge, staff

Laboratory Medicine and Pathology (LaMP)

Courses for Medical and Undergraduate Students

(Phase A pathology [5101], which began in March, will continue through August 2.)

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 Medical Center).** (Cr ar; prereq Phase B) Staff
- 5115. **SURGICAL PATHOLOGY (Veterans Hospital).** (Cr ar; prereq Phase B) Anderson
- 5118. **ENDOCRINE PATHOLOGY (St. Paul-Ramsey Hospital).** (Cr ar; prereq Phase B) Haus, Lakatua
- 5123. **PULMONARY PATHOLOGY (St. Paul-Ramsey Hospital).** (Cr ar) Woolfrey
- 5125. **CHRONOBIOLOGY.** (Cr ar; prereq Phase B, #) Halberg
- 5141. **PROBLEMS: EXPERIMENTAL PATHOLOGY.** (Cr ar; prereq Phase B, #) Halberg
- 5151. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (Hennepin County Medical Center).** (Cr ar) Staff
- 5152. **ANATOMIC PATHOLOGY (Veterans Hospital).** (Cr ar; prereq Phase B) Staff
- 5153. **ANATOMIC PATHOLOGY: HOSPITAL SETTING (St. Paul-Ramsey Hospital).** (Cr ar; prereq Phase B) Staff
- 5155. **ANATOMIC PATHOLOGY: HOSPITAL SETTING.** (Cr ar; prereq Phase B, Δ, hospital to be arranged)
- 5158. **CARDIAC PATHOLOGY (Miller Hospital).** (Cr ar; prereq Phase B, #) Edwards
- 5181. **LABORATORY AND CLINICAL HEMATOLOGY.** (Cr ar; prereq #) Brunning
- 5182. **LABORATORY STUDIES OF GENETIC DISORDERS.** (Cr ar; prereq #) J Yunis
- 5183. **CLINICAL AND LABORATORY IMMUNOLOGY.** (Cr ar; prereq #)
- 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 Medical Center).** (Cr ar; prereq #) Strom
- 5187. **CLINICAL PATHOLOGY EXTERNSHIP (Mt. Sinai Hospital).** (Cr ar; prereq #) Ward
- 5191. **GENERAL CLINICAL MICROBIOLOGY.** (Cr ar; prereq #) Balfour
- 5193. **CLINICAL PATHOLOGY EXTERNSHIP (Hibbing Hospital).** (Cr ar; prereq #) Nollet
- 5203. **CLINICAL BLOOD BANK IMMUNOLOGY (Minneapolis War Memorial Blood Bank).** (Cr ar; prereq #) Polesky

Laboratory Medicine and Pathology (LMed)

FIRST TERM

- 5139. **ADVANCED MICROBIOLOGY.** (Cr ar; prereq #) Balfour, Blazevic, Ederer
- 5169. **RESEARCH: HUMAN GENETICS.** (Cr ar; prereq #) J Yunis
- 5170. **ADVANCED PROBLEMS: MEDICAL GENETICS.** (Cr ar; prereq #) J Yunis, others
- 5180. **ADVANCED CHEMISTRY.** (Cr ar; prereq #) Benson, staff
- 5272. **IMMUNOLOGY SEMINAR.** (1 cr; prereq #) Azar
- 5273. **ADVANCED IMMUNOLOGY.** (Cr ar; prereq #) Azar
- 5768. **ADVANCED HEMATOLOGY.** (Cr ar; prereq #) Brunning
- 8235. **ADVANCED CLINICAL LABORATORY MEDICINE.** (Cr ar; prereq #) Benson, Azar
- 8236. **RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (Cr ar; prereq #) Benson, Azar

SECOND TERM

- 5139. **ADVANCED MICROBIOLOGY.** (Cr ar; prereq #) J Yunis
- 5169. **RESEARCH: HUMAN GENETICS.** (Cr ar; prereq #) J Yunis

5170. **ADVANCED PROBLEMS: MEDICAL GENETICS.** (Cr ar; prereq #) J Yunis, others
5180. **ADVANCED CHEMISTRY.** (Cr ar; prereq #) Benson, staff
5272. **IMMUNOLOGY SEMINAR.** (1 cr; prereq #) Azar
5273. **ADVANCED IMMUNOLOGY.** (Cr ar; prereq #) Azar
5768. **ADVANCED HEMATOLOGY.** (Cr ar; prereq #) Brunning
8235. **ADVANCED CLINICAL LABORATORY MEDICINE.** (Cr ar; prereq #) Benson, Azar
8236. **RESEARCH ON CLINICAL LABORATORY PROBLEMS.** (Cr ar; prereq #) Benson, Azar

Medical Technology (MedT)

FIRST TERM

5082. **APPLIED CLINICAL CHEMISTRY.** (4 cr; prereq 5063, 5108, #)
Application of basic methods and techniques in chemistry in the clinical laboratory.
5085. **APPLIED CLINICAL HEMATOLOGY.** (4 cr; prereq 5065, 5067, #)
Application of basic methods and techniques in hematology in the clinical laboratory, morphology of blood cells, application of techniques in hemostasis.
5086. **APPLIED CLINICAL IMMUNOHEMATOLOGY.** (4 cr; prereq 5066, #)
Application of basic methods and techniques in serology and immunology in the clinical laboratory. Blood grouping and cross-matching for transfusions.
5088. **APPLIED DIAGNOSTIC MICROBIOLOGY.** (4 cr; prereq 5102, #)
Identification of bacteria by microscopic techniques. Correlation with clinical cases. Identification of parasites and fungi.
5090. **SPECIAL LABORATORY METHODS.** (2 cr; prereq #)
Special assignment on an individual basis in a special area of experience within the clinical laboratory; field experience.

SECOND TERM

5082. **APPLIED CLINICAL CHEMISTRY.** (4 cr; prereq 5063, 5108, #)
See First Term.
5085. **APPLIED CLINICAL HEMATOLOGY.** (4 cr; prereq 5065, 5067, #)
See First Term.
5086. **APPLIED CLINICAL IMMUNOHEMATOLOGY.** (4 cr; prereq 5066, #)
See First Term.
5088. **APPLIED DIAGNOSTIC MICROBIOLOGY.** (4 cr; prereq 5102, #)
See First Term.
5090. **SPECIAL LABORATORY METHODS.** (2 cr; prereq #)
See First Term.

Medicine (Med)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5501. **MEDICAL ONCOLOGY INTERNSHIP IN MEDICINE.** (Cr and hrs ar) Kennedy
5502. **MEDICINE EXTERNSHIP I.** (Cr and hrs ar) Murray
5503. **MEDICINE EXTERNSHIP II.** (Cr and hrs ar) Murray
5505. **INFECTIOUS DISEASE RESEARCH.** (Cr and hrs ar) Sabath
5509. **RESEARCH IN RHEUMATOLOGY.** (Cr and hrs ar) Hathaway
5511. **RESEARCH IN GASTROENTEROLOGY.** (Cr and hrs ar) Levitt

5512. **RESEARCH IN HEMATOLOGY.** (Cr and hrs ar) Jacob
5520. **INFECTIOUS DISEASES, ALLERGY AND CLINICAL IMMUNOLOGY.** (Cr and hrs ar) Sabath, Staff
5521. **INFECTIOUS DISEASES, CLINICAL ASPECTS.** (Cr and hrs ar) Sabath
5522. **GASTROENTEROLOGY.** (Cr and hrs ar) Martin
5523. **MEDICAL ENDOCRINOLOGY AND METABOLISM.** (Cr and hrs ar) Barbosa
5525. **CARDIOVASCULAR MEDICINE.** (Cr and hrs ar) Bache
5527. **CONTEMPORARY PROBLEMS IN INVESTIGATIVE CARDIOLOGY.** (Cr and hrs ar) Bache
5528. **CLINICAL HEMATOLOGY.** (Cr and hrs ar) Howe
5531. **CLINICAL RHEUMATOLOGY.** (Cr and hrs ar) Hathaway
5532. **PULMONARY DISEASE.** (Cr and hrs ar) Drage
5533. **CLINICAL ALLERGY.** (Cr and hrs ar) Blumenthal
5548. **CLINICAL GENETICS.** (Cr and hrs ar) King
5554. **FLUID, ELECTROLYTE, ACID-BASE METABOLISM.** (Cr and hrs ar) Masler, staff
5556. **MEDICAL NEPHROLOGY.** (Cr and hrs ar) Kjellstrand
5557. **RESEARCH IN NEPHROLOGY.** (Cr and hrs ar) Kjellstrand
5562. **NEPHROLOGY.** (Cr and hrs ar) Rao
5572. **AMBULATORY INTERNAL MEDICINE.** (Cr and hrs ar) Spilane
5583. **DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER.** (Cr and hrs ar) Ramsay
5590. **PRECEPTORSHIPS IN INTERNAL MEDICINE.** (Cr and hrs ar) Murray
5592. **RURAL PHYSICIANS ASSOCIATE PROGRAM IN MEDICINE.** (Cr and hrs ar) Drage
5594. **PSYCHIATRY IN MEDICINE: CONSULTATION-LIAISON.** (Cr and hrs ar) Popkin
5595. **PSYCHOLOGICAL ASPECTS OF MEDICAL PRACTICE.** (Cr and hrs ar) Wilder

Elective Courses for Graduate Students

8201. **CLINICAL MEDICINE.** (Cr and hrs ar) Ebert, staff
8202. **CLINICAL CONFERENCE.** (Cr and hrs ar) Ebert, staff
8203. **CLINICAL RADIOLOGY CONFERENCE.** (Cr and hrs ar) Ebert, staff
8204. **PATHOLOGICAL CONFERENCE.** (Cr and hrs ar) Ebert, staff
8205. **ELECTROCARDIOGRAPHIC CONFERENCE.** (Cr and hrs ar) Tuna
8206. **NEPHROLOGY SEMINAR.** (Cr and hrs ar) Kjellstrand, staff
8208. **TUMOR CLINICAL CONFERENCE.** (Cr and hrs ar) Kennedy, staff
8210. **INFECTIOUS DISEASE SEMINAR.** (Cr and hrs ar) Sabath, staff
8211. **DISEASES OF THE CARDIOVASCULAR SYSTEM.** (Cr and hrs ar) Cohn, staff
8212. **DISEASES OF THE CHEST.** (Cr and hrs ar) Drage, staff
8213. **DISEASES OF THE KIDNEY.** (Cr and hrs ar) Kjellstrand, staff
8214. **DISEASES OF DIABETES, ENDOCRINOLOGY, AND METABOLISM.** (Cr and hrs ar) Oppenheimer, staff
8215. **DISEASES OF HEMATOLOGY.** (Cr and hrs ar) Jacob, staff
8216. **DISEASES OF GASTROENTEROLOGY.** (Cr and hrs ar) Wilson, staff
8217. **DISEASES OF ONCOLOGY.** (Cr and hrs ar) Kennedy, staff
8220. **RESEARCH IN MEDICINE.** (Cr and hrs ar) Ebert, staff
8221. **TOPICS IN MEDICINE.** (Cr and hrs ar) Ebert, staff
8223. **TOPICS IN RELATED BASIC SCIENCE.** (Cr and hrs ar) Ebert, staff

Microbiology (MicB)

FIRST TERM

5970. **SPECIAL PROBLEMS.** (Cr ar; prereq #) Rogers, staff

8990. **RESEARCH IN MICROBIOLOGY.** (Cr and hrs ar) Faras, staff
Graduate students with the requisite preliminary training may elect research project outside their thesis work.

SECOND TERM

5970. **SPECIAL PROBLEMS.** (Cr ar; prereq #) Rogers, staff

8990. **RESEARCH IN MICROBIOLOGY.** (Cr and hrs ar) Faras, staff
See First Term.

SPECIAL TERM: MAY 30-AUGUST 5

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, May 30-August 5

Lab A III-IV M, VII-VIII W

Lab B VII-VIII M, III-IV W

Neurology (Neur)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

5120. **SELECTED PROBLEMS IN NEUROLOGY.** (Cr ar; prereq regis med) Staff

5510. **EXTERNSHIPS IN CLINICAL NEUROLOGY.** (Cr ar; prereq regis med) Klassen, staff

5541. **PEDIATRIC NEUROLOGY—NEUROCHEMISTRY.** (Cr ar; prereq regis med) Swaiman

5544. **CLINICAL ELECTROENCEPHALOGRAPHY.** (Cr ar; prereq regis med) Torres, Zeese

5545. **ELECTROMYOGRAPHY.** (Cr ar; prereq regis med) Kennedy

5570. **IMMUNOLOGY.** (Cr ar; prereq regis med) Ansari

8200. **CLINICAL NEUROLOGY.** (Cr ar) Resch, staff

8201. **CLINICAL PEDIATRIC NEUROLOGY.** (Cr ar) Swaiman, staff

8202. **RESEARCH.** (Cr ar) Resch, staff

8203. **APPLIED ELECTROENCEPHALOGRAPHY.** (Cr ar) Torres

8204. **APPLIED ELECTROMYOGRAPHY.** (Cr ar) Kennedy

8205. **APPLIED NEUROPATHOLOGY.** (Cr ar) Sung, Mastri

8236. **RESEARCH: NEUROPATHOLOGY.** (Cr ar) Sung, Mastri

8705. **NEUROLOGICAL-NEUROSURGICAL CONFERENCE.** (1 cr, §Rad 5163, §Surg 8318) Staff

Neurosurgery (NSur)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

5500. **NEUROSURGERY EXTERNSHIP (University Hospitals).** (Cr ar; prereq regis med; MTWThF) Staff

5510. **NEUROSURGERY EXTERNSHIP (Veterans Administration Hospital).** (Cr ar; prereq regis med; MTWThF) Staff

- 5511. NEUROSURGERY EXTERNSHIP (Hennepin County Medical Center).** (Cr ar; prereq regis med; MTWThF) Staff
- 5512. NEUROSURGERY EXTERNSHIP (St. Paul-Ramsey Hospital).** (Cr ar; prereq regis med; MTWThF) Staff
- 5520. NEUROSURGERY INVESTIGATION.** (Cr ar; prereq regis med; MTWThF) Staff
- 5530. NEURORADIOLOGICAL CONFERENCE.** (1 cr; prereq regis med; F) Staff
A review of X-ray films and case histories on neurosurgical service.
- 5540. NEUROSURGICAL CONFERENCE.** (1 cr; prereq regis med; Sat) Staff
In-depth review of selected topics in basic and clinical neurosurgery.
- 5550. NEUROPHYSIOLOGICAL LITERATURE SEMINAR.** (1 cr; prereq Medical School course in physiology or equiv with #; hrs ar) Bloedel
Study of selected papers covering several topics in neurophysiology. Correlations between neurological and neurosurgical problems and basic concepts in neurophysiology emphasized.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Required Courses for Graduate Students

- 8305. NEUROSURGICAL DIAGNOSIS.** (4 cr; MTWThF) Chou, French, Seljeskog
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; F) Chou, French, Seljeskog
A review of X-ray films and case histories on neurosurgical service.
- 8320. NEUROSURGICAL CONFERENCE.** (2 cr; Sat) Chou, French, Seljeskog, Bloedel
In-depth review of selected topics in basic and clinical neurosurgery.
- 8322. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART I.** (1 cr; T; offered Su and W) Staff
Review and discussion of topics.
- 8323. NEUROSURGERY-OPHTHALMOLOGY SEMINAR—PART II.** (1 cr; prereq 8322; T; offered F and S) Staff
Advanced review and discussion of topics.
- 8330. NEUROSURGERY LITERATURE SEMINAR.** (2 cr; 1st and 2nd Th evenings) Staff
Review and discussion of current literature relating to neurosurgery and the neurosciences.

Obstetrics and Gynecology (Obst)

SPECIAL TERMS: JUNE 19-JULY 28 AND JULY 31-SEPTEMBER 8

Elective Courses for Undergraduate Students

- **5500. EXTERNSHIP IN OBSTETRICS AND GYNECOLOGY.** (Cr ar; limited enrollment; prereq Phase D) Foreman, staff
Clinical experience that includes total care of inpatients and outpatients on obstetrics and gynecology service at Hennepin County Medical Center, North Memorial Hospital, St. Joseph's Hospital, St. Mary's Hospital, St. Paul-Ramsey Hospital, and University Hospitals. Emphasis on medical aspects of obstetrics and gynecology.
- **5520. OBSTETRICS AND GYNECOLOGY EXTERNSHIP IN CLINICAL PRACTICE.** (Cr ar; limited enrollment; prereq 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.** (Cr ar; limited enrollment; prereq 5500) Foreman, staff
Full-time clinical experience as acting intern on obstetrical and gynecological service at Hennepin County Medical Center, or St. Paul-Ramsey Hospital.

- **5550. PSYCHIATRIC ASPECTS OF OBSTETRICS AND GYNECOLOGY.** (Cr ar; limited enrollment; prereq Phase D) Foreman, Bernstein
Clinical course. Psychiatric problems relating to reproductive system.
- **5560. RESEARCH IN REPRODUCTION.** (Cr ar; limited enrollment; prereq Phase D) Foreman, staff
Topics selected for each student.
- **5575. GYNECOLOGICAL PATHOLOGY AND DIAGNOSTIC CYTOLOGY.** (Cr ar; limited enrollment; prereq Phase D) Foreman, Okagaki, Brooker
Review of daily gynecological histopathology material of surgical and clinical cases from the Ob-Gyn Service. Includes diagnostic cytology of Pap smears encountered in actual practice.
- **5590. PRECEPTORSHIP IN OBSTETRICS AND GYNECOLOGY.** (Cr ar; limited enrollment; prereq 5500) Foreman
Full-time preceptorship in clinical obstetrics and gynecology, in outstate Minnesota, offered by AHEC. Student will receive per diem expenses. Similar to 5520, but in smaller community.

Courses for Graduate Students

- 8201. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff
- 8205. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff
- 8209. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff
- 8210. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff
- 8213. **ADVANCED OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff
- 8217. **SEMINAR IN OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff
- 8221. **SEMINAR IN OBSTETRICS AND GYNECOLOGY.** (Cr ar) Prem, staff
- 8222. **GYNECOLOGICAL ONCOLOGY.** (Cr ar) Prem, staff
- 8223. **GYNECOLOGICAL ONCOLOGY.** (Cr ar) Prem, staff
- 8224. **GYNECOLOGICAL ENDOCRINOLOGY—PART I.** (Cr ar) Prem, staff
- 8225. **GYNECOLOGICAL ENDOCRINOLOGY—PART II.** (Cr ar) Prem, staff
- 8226. **OBSTETRICAL PHYSIOLOGY AND ANESTHESIOLOGY.** (Cr ar) Prem, staff
- 8230. **RESEARCH IN REPRODUCTION.** (Cr ar) Prem, staff

Ophthalmology (Oph)

FIRST TERM

- 8101. **CLINICAL OPHTHALMOLOGY.** (8 cr) Harris, staff
- 8106. **STRABISMUS MANAGEMENT.** (1 cr) Letson
- 8131. **PRACTICAL OCULAR SURGERY.** (3 cr) Harris, staff
- 8151. **BASIC AND APPLIED OPHTHALMOLOGY.** (2 cr) Harris, staff
- 8152. **OPHTHALMOLOGY LABORATORY.** (15 cr) Harris, staff

SECOND TERM

- 8101. **CLINICAL OPHTHALMOLOGY.** (8 cr) Harris, staff
- 8106. **STRABISMUS MANAGEMENT.** (1 cr) Letson
- 8131. **PRACTICAL OCULAR SURGERY.** (3 cr) Harris, staff
- 8152. **OPHTHALMOLOGY LABORATORY.** (15 cr) Harris, staff

Orthopaedic Surgery (OrSu)

SPECIAL TERMS: THREE- AND SIX-WEEK COURSES

Elective Courses for Undergraduate Students

- 5180. **ORTHOPEDICS I.** (Cr ar; prereq regis med)

5185. **ORTHOPEDICS II.** (Cr ar; prereq regis med)
5186. **RESEARCH PROBLEMS IN ORTHOPEDIC SURGERY.** (Cr ar; prereq regis med)
5187. **EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES.** (Cr ar; prereq regis med)
St. Paul-Ramsey Hospital.
5188. **EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES.** (Cr ar; prereq regis med)
Gillette Children's Hospital, St. Paul.
5189. **EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES.** (Cr ar; prereq regis med)
Fairview-St. Mary's Hospitals.
5190. **EXTERNSHIP IN ORTHOPEDIC SURGERY AND FRACTURES.** (Cr ar; prereq regis med)
Veterans Hospital.
5191. **ORTHOPEDIC EXTERNSHIP AT HENNEPIN COUNTY MEDICAL CENTER.** (Cr ar; prereq regis med)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Required Courses for Graduate Students

8401. **ORTHOPEDIC CONFERENCE.** (3 cr) Thompson, Bradford, House, Mayfield, Premer
Review of X-ray films and case histories of patients on the orthopedic inpatient or outpatient service.
8403. **FRACTURES.** (5 cr) Gustilo, staff
Orthopedic fellow acts as house surgeon on the fracture service at Hennepin County Medical Center.
8404. **FRACTURES.** (5 cr) Comfort, staff
Orthopedic fellow acts as house surgeon on the fracture service at St. Paul-Ramsey Hospital.
8405. **ORTHOPEDIC DIAGNOSIS.** (3 cr) Thompson, Bradford, House, Mayfield
Orthopedic fellow assists in instruction of medical students and interns and studies problems in diagnosis in the Outpatient Department and in the University Hospitals.
8407. **PEDIATRIC ORTHOPEDICS.** (5 cr) Winter, staff
Orthopedic fellow acts as house surgeon at Gillette Children's Hospital.
8408. **ORTHOPEDIC PROBLEMS AND MANAGEMENT.** (5 cr) Thompson, Bradford, House, Mayfield, Premer
Orthopedic fellow acts as house surgeon at University and Veterans Hospitals.
8409. **ORTHOPEDIC PROBLEMS AND MANAGEMENT.** (5 cr) Winter, Lonstein
Orthopedic fellow acts as house surgeon on the orthopedic service at Fairview Hospital.
8410. **ORTHOPEDIC PATHOLOGY.** (2 cr) Thompson, Bradford, House, Mayfield, Premer
Seminar for systematic review of pathology of ossified tissues and soft tissues of the extremities.
8411. **ORTHOPEDIC OPERATIVE SURGERY.** (5 cr) Thompson, Bradford, House, Mayfield, Premer
Orthopedic fellow acts as first assistant at operations at University and affiliated hospitals and later may be permitted to operate.
8412. **ORTHOPEDIC ANATOMY.** (2 cr) House
Orthopedic fellow dissects upper and lower extremities and aids in instruction of medical students in anatomy of the extremities.
8416. **ORTHOPEDIC RESEARCH.** (5 cr) Thompson, Bradford, House, Mayfield
Problems in experimental or clinical surgery, University Hospitals.

Otolaryngology (Otol)

SPECIAL TERMS: THREE-, SIX-, AND TWELVE-WEEK COURSES,

JUNE 12-AUGUST 18

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

SPECIAL TERM: EIGHT-WEEK COURSES

- 8220. RESEARCH. (18 cr)
- 8230. CLINICAL OTORHINOLARYNGOLOGY. (6 cr)
- 8231. SURGERY OF EAR, NOSE, THROAT. (4 cr)
- 8232. MAXILLOFACIAL SURGERY. (1 cr)
- 8233. PLASTIC, RECONSTRUCTIVE SURGERY: HEAD, NECK. (1 cr)
- 8234. ANATOMY: HEAD, NECK, TEMPORAL BONE DISSECTION. (2 cr)
- 8235. ROENTGENOLOGY OF HEAD, NECK. (2 cr)
- 8236. PHARMACOLOGY. (2 cr)
- 8237. ENDOSCOPY. (2 cr)
- 8238. PATHOLOGY OF EAR, NOSE, THROAT. (2 cr)
- 8239. OTONEUROLOGY. (2 cr)
- 8240. ALLERGY. (2 cr)
- 8241. TUMOR CLINIC. (1 cr)
- 8242. AUDIOLOGY, SPEECH PATHOLOGY. (2 cr)
- 8243. INTRODUCTION: RESEARCH METHODOLOGY. (2 cr)
- 8244. SEMINAR: CURRENT LITERATURE. (1 cr)
- 8245. MASTER'S THESIS RESEARCH. (Cr ar)
- 8246. PH.D. THESIS RESEARCH. (Cr ar)
- 8248. RESEARCH. (Cr ar)

Pathology (Path)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Courses for Graduate Program

- 5101. GENERAL PATHOLOGY. (6 cr for Phase A period March 6 through August 2; prereq regis Phase A or equiv)
Ratliff, staff
- 5104. AUTOPSIES. (Cr ar; prereq Phase B or equiv) Staff
- 5106. DISEASES OF THE HEART. (1 cr; prereq Phase B or equiv) Edwards
- 5113. SURGICAL PATHOLOGY. (Cr ar; prereq Phase B or equiv) Rosai
- 5140. SEMINAR: EXPERIMENTAL CHRONOBIOLOGY. (1 cr; prereq #) Halberg
- 5141. PROBLEMS IN EXPERIMENTAL CHRONOBIOLOGY. (Cr ar; prereq #) Halberg
- 5169. RESEARCH: HUMAN GENETICS. (Cr ar; prereq #) J Yunis
- 5170. ADVANCED PROBLEMS: MEDICAL GENETICS. (Cr ar; prereq #) J Yunis, staff
- 8200. ADVANCED PROBLEMS IN PATHOLOGY. (Cr ar; prereq #) Staff
- 8201. RESEARCH. (Cr ar; prereq #) Staff
Students with the necessary preliminary training may elect research either as a major or minor in pathology.
- 8207. RESEARCH IN EXPERIMENTAL CHRONOBIOLOGY. (Cr ar; prereq #) Halberg

Pediatrics (Ped)

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Elective Courses

- 5501. PEDIATRIC CLERKSHIP (University Hospitals, Hennepin County Medical Center, St. Paul-Ramsey Hospital, St. Paul Children's Hospital). (Cr ar) Sinaiko

5502. **PEDIATRIC CLERKSHIP WITH OUTSTATE CLINICIANS.** (Cr ar; prereq #) Sinaiko
5512. **PEDIATRIC ACTING INTERNSHIP.** (University Hospitals, St. Paul Children's Hospital, Hennepin County Medical Center). (Cr ar) Sinaiko
5514. **CHILD CARE CLINIC PROGRAM.** (Cr ar) Fisch
5515. **CHILD DEVELOPMENT AT ST PAUL-RAMSEY HOSPITAL.** (Cr ar) Davis
5517. **PRECEPTORSHIP IN CLINICAL PEDIATRICS.** (Cr ar) Ulstrom
5520. **PEDIATRIC OUTPATIENT.** (Cr ar; prereq #) Satran
5521. **AMBULATORY PEDIATRICS AT ST. PAUL CHILDREN'S HOSPITAL.** (Cr ar) Levitt
5522. **AMBULATORY PEDIATRICS AT HENNEPIN COUNTY MEDICAL CENTER.** (Cr ar) Tobin
5523. **OUTPATIENT EXTERNSHIP AT COMMUNITY UNIVERSITY HEALTH CARE CENTER.** (Cr ar; prereq 5501, 5503, 5512, Med 5502) Smelker
5532. **CLINICAL ALLERGY AND IMMUNOLOGY AT UNIVERSITY HOSPITALS.** (Cr ar; prereq 5501, 5503, 5512, Med 5502) Page
5534. **PEDIATRIC CARDIOLOGY AT UNIVERSITY HOSPITALS.** (Cr ar; prereq 5501, 5503, 5512, Med 5502) Moller
5535. **INFECTIOUS DISEASE.** (Cr ar; prereq 5501, 5503, 5512, Med 5502) Ferrieri
5536. **PEDIATRIC HEMATOLOGY-ONCOLOGY AT UNIVERSITY HOSPITALS.** (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Krivit
5538. **PEDIATRIC GASTROENTEROLOGY.** (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Sharp
5539. **NEONATAL MEDICINE EXTERNSHIP.** (Cr ar; prereq 5501, 5502 or Med 5502) Boros
5540. **PEDIATRIC NEUROLOGY.** (Cr ar) Swaiman
5543. **PEDIATRIC NEPHROLOGY.** (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Michael
5544. **PULMONARY DISEASE IN PEDIATRICS.** (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Warwick
5545. **DIAGNOSIS, EVALUATION, AND CARE OF ADULTS AND CHILDREN WITH CANCER.** (Cr ar) Ramsay
5546. **PEDIATRIC PATHOLOGY.** (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Burke
5548. **PEDIATRIC GENETICS.** (Cr ar; prereq 5501, 5503, 5512 or Med 5502) Staff
8200. **GRADUATE SEMINAR: PEDIATRICS.** (1.5 cr) Moller, staff
8202. **PEDIATRICS CLINICS.** (Cr ar; prereq #) Staff
8204. **RESIDENCY IN PEDIATRICS.** (Cr ar; prereq #) Staff
8206. **PEDIATRIC SPECIAL INTEREST.** (Cr ar; for grad students who have completed at least 1½ yrs of general grad pediatric training; prereq #) Staff
8208. **PEDIATRIC RESEARCH.** (Cr ar; prereq #) Moller, staff

Pharmacology (Phcl)

FIRST TERM

5109. **PROBLEMS IN PHARMACOLOGY.** (Cr and hrs ar; prereq #) Shideman, staff
8203. **RESEARCH IN PHARMACOLOGY.** (Cr and hrs ar; prereq #) Shideman, staff

SECOND TERM

5109. **PROBLEMS IN PHARMACOLOGY.** (Cr and hrs ar; prereq #) Shideman, staff
8203. **RESEARCH IN PHARMACOLOGY.** (Cr and hrs ar; prereq #) Shideman, staff

Physical Medicine and Rehabilitation (PMed)

SPECIAL TERM: JULY 1-SEPTEMBER 30

8200. **PHYSICAL MEDICINE SERVICE.** (Cr and hrs ar) Staff

8205. **READINGS.** (1 cr; I-II M; 825 Mayo) Kottke
 8206. **CONFERENCE.** (Cr and hrs ar) Staff
 8210. **RESEARCH IN PHYSICAL MEDICINE.** (Cr and hrs ar) Staff
 8212. **ELECTROMYOGRAPHY.** (Cr and hrs ar) Awad

Occupational Therapy

FIRST AND SECOND TERMS: TWELVE-WEEK COURSES

- 5396, 5397. **FIELDWORK EDUCATION.** (Cr ar; for sr OT students) Eliason
 Six months of supervised training in affiliated hospitals and community centers.

Physical Therapy

FIRST TERM

5255. **CLINICAL TRAINING.** (3 cr; limited to PT students in the professional program; hrs ar at affiliated hospitals)
 Five weeks of supervised practice at affiliated hospitals.
 8103. **PHYSICAL THERAPY CLINIC.** (Cr ar; prereq physical therapy) Staff
 8170. **SPECIAL TOPICS.** (1 cr; prereq #) Staff
 8185. **PROBLEMS IN PHYSICAL THERAPY.** (Cr ar; prereq physical therapy) Staff
 8193. **RESEARCH PROBLEMS IN PHYSICAL THERAPY.** (Cr ar; prereq physical therapy) Staff
 8195. **RESEARCH IN PHYSICAL THERAPY.** (Cr ar; prereq #) Kottke, Skowlund, staff

SECOND TERM

8103. **PHYSICAL THERAPY CLINIC.** (Cr ar; prereq physical therapy) Staff
 8170. **SPECIAL TOPICS.** (1 cr; prereq #) Staff
 8185. **PROBLEMS IN PHYSICAL THERAPY.** (Cr ar; prereq physical therapy) Staff
 8193. **RESEARCH PROBLEMS IN PHYSICAL THERAPY.** (Cr ar; prereq physical therapy) Staff
 8195. **RESEARCH IN PHYSICAL THERAPY.** (Cr ar; prereq #) Kottke, Skowlund, staff

Physiology (Phsl)

FIRST TERM

3051. **HUMAN PHYSIOLOGY.** (5 cr; primarily for baccalaureate nursing students and physical therapy students; prereq zoology and 1 yr college chemistry; \$2 lab fee; lect VI MW, IV and VII-VIII TTh, VI-VII F, HSUnitA 2-530; lab VII-IX MW, HSUnitA 3-110) Staff
 Introduction to human physiology.
 5111. **HUMAN PHYSIOLOGY—April 20-July 29.** (5 cr; primarily for Phase A4 med students; prereq 5110; \$2 lab fee, hrs ar) 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—April 20-July 29.** (5 cr; prereq 8110, anatomy, biochemistry; \$2 lab fee; hrs ar) Staff
 8113. **PROBLEMS IN PHYSIOLOGY.** (Cr and hrs ar) Staff
 Topics assigned for laboratory study; conferences and readings.

- 8202. READINGS IN PHYSIOLOGY.** (Cr and hrs ar) Staff
Topics selected for each student; written reviews prepared and discussed.
- 8203. RESEARCH IN PHYSIOLOGY.** (Cr and hrs ar) Staff

Psychiatry

Adult Psychiatry (AdPy)

SPECIAL TERM: JUNE 19-SEPTEMBER 8

- 5109. CLINICAL PSYCHIATRY.** (9 cr per period) Olson
Contact George W. Knabe, Jr, M.D., St. Luke's Hospital, 915 East First Street, Duluth; telephone (218) 727-6636, extension 660.
- 5110. EXTERNSHIP IN PSYCHIATRY.** (9 cr per period) Cowan
At St. Luke's Hospital, Duluth. See 5109.
- 5120. CLINICAL EXPERIENCE IN INTERVIEWING AND DIAGNOSTIC SKILLS (Veterans Hospital).** (9 cr per period) Posey
- 5222. PRECEPTORSHIPS IN PSYCHIATRY.** (9 cr per period) Hausman, Tuason
- 5500. COMBINED INPATIENT AND CRISIS INTERVENTION CENTER (Hennepin County Medical Center).** (9 cr per period; 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.
- 5507. CLINICAL RESEARCH (University Hospitals, Station 61).** (9 cr per period; hrs ar) Heston
General adult psychiatry with emphasis on pharmacology treatment and research. Inpatients and outpatients.
- 5508. ADULT PSYCHIATRY (University Hospitals, Station 60).** (9 cr per period; hrs ar) Kroll
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.
- 5512. PSYCHOLOGIC ASPECTS OF MEDICAL PRACTICE.** (9 cr per period; Veterans Administration Hospital) Wilder
- 5513. DRUG ABUSE, ALCOHOLISM (St. Mary's Hospital).** (9 cr per period; hrs ar) Mann
Involvement in inpatient service and outpatient follow-up program.
- 5516. ST. MARY'S EXTENDED CARE CENTER-ALCOHOLIC TREATMENT UNIT.** (9 cr per period; St. Mary's Hospital) Mann
- 5515. NEUROPSYCHOLOGY (University Hospitals).** (9 cr per period; hrs ar) Meier
- 5518. COMMUNITY PSYCHIATRY (Five-County Human Development Program, Inc., Braham).** (9 cr per period; hrs ar) Kollmorgen, staff
Participation as a physician member of a multidisciplinary team composed of health science students and mental health professionals.
- 5519. CLINICAL PSYCHIATRY (Abbott Hospital).** (9 cr per period; 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.

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
5800. **CASE CONFERENCE; PSYCHIATRY IN MEDICINE.** (1 cr; prereq MD or #) Popkin, MacKenzie, and Brantner.
5801. **CONSULTATION-LIAISON PSYCHIATRY.** (Cr ar; prereq MD) Popkin, MacKenzie, and staff

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
8221. **SEMINAR: CURRENT LITERATURE (Hennepin County Medical Center).** (1 cr; hrs ar) Simon
8238. **CASE CONFERENCE PSYCHOLOGICAL MEDICINE (Veterans Hospital).** (1 cr; hrs ar) Wilder
8239. **CONTINUOUS CASE SEMINAR.** (1 cr) London
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, #; hrs ar) 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, #; hrs ar) Greenberg, Miner
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.
5522. **ADOLESCENT PSYCHIATRY (University Hospitals, Station 62).** (9 cr per period; hrs ar) Greenberg
Student will be primary therapist (supervised) for selected patients.
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; hrs ar) Greenberg, Hong
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; hrs ar) Lawton, Hong
See 5206.
- 8200. OUTPATIENT CLINICAL CHILD AND ADOLESCENT PSYCHIATRY.** (3-6 cr; 15-30 hrs per wk) Hong
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, Erickson
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.
- 8301. SEMINAR IN CHILD, ADOLESCENT, AND FAMILY PSYCHIATRY.** (1 cr; hrs ar) 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, #; hrs ar) Lawton, Hong
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; hrs ar) 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.
- 8228. 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
Styles of mental health administration and the role of the child psychiatrist; ongoing evaluation of the child psychiatry residency training program.

Health Care Psychology (HCPy)

FIRST TERM

- 5102. HEALTH CARE PSYCHOLOGY CLINIC INTERNSHIP.** (Cr ar; prereq #) Hafner, Petzel, Quast, staff
- 5103. MEDICAL CONSULTATION FOR HEALTH CARE PSYCHOLOGY INTERNS.** (Cr ar; prereq #) Brantner
- 5104. HEALTH CARE PSYCHOLOGY INTERNSHIP AT THE STUDENT HEALTH SERVICE.** (Cr ar; prereq #)
Heiberg

5105. HEALTH CARE PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD. (Cr ar; prereq #) Briggs, staff
5106. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas
5107. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas
5108. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS. (Cr ar; prereq #) Morgan, staff
5109. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Hanvik, Reed, staff
5110. FIELDWORK EXPERIENCE IN HEALTH CARE PSYCHOLOGY. (Cr ar; prereq #) Staff
5112. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Loper, staff
5113. CASE SEMINAR IN HEALTH CARE PSYCHOLOGY. (1 cr; prereq #) Roberts, Schofield, staff
5611. TECHNIQUES OF EVALUATION. (1 cr; prereq regis med; hrs ar) Westermeyer
5701. PROJECT IN CLINICAL PSYCHOLOGY. (Cr ar; hrs ar) Staff
8202. SPECIAL RESEARCH TOPICS. (Cr ar; prereq #) Staff
8203. PSYCHOMETRIC CLERKSHIP. (Cr ar) Staff
8204. INTERNSHIP IN CLINICAL PSYCHOLOGY. (2 or 4 cr; prereq PhD candidate in clinical psychology with #) Staff
8206. MEDICAL PSYCHOLOGY LABORATORY. (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff
8226. TECHNIQUES OF EVALUATION. (1 cr; hrs ar) Westermeyer

SECOND TERM

5102. HEALTH CARE PSYCHOLOGY CLINIC INTERNSHIP. (Cr ar; prereq #) Hafner, Petzel, Quast, staff
5103. MEDICAL CONSULTATION FOR HEALTH CARE PSYCHOLOGY INTERNS. (Cr ar; prereq #) Brantner
5104. HEALTH CARE PSYCHOLOGY INTERNSHIP AT THE STUDENT HEALTH SERVICE. (Cr ar; prereq #) Heiberg
5105. HEALTH CARE PSYCHOLOGY FOR THE PHYSICALLY HANDICAPPED CHILD. (Cr ar; prereq #) Briggs, staff
5106. INTRODUCTION TO NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas
5107. ADVANCED NEUROPSYCHOLOGICAL ASSESSMENT. (Cr ar; prereq #) Meier, Thomas
5108. RURAL COMMUNITY MENTAL HEALTH INTERNSHIP FOR PSYCHOLOGISTS. (Cr ar; prereq #) Morgan, staff
5109. COMMUNITY CHILD GUIDANCE CENTER PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Hanvik, Reed, staff
5110. FIELDWORK EXPERIENCE IN HEALTH CARE PSYCHOLOGY. (Cr ar; prereq #) Staff
5112. STUDENT COUNSELING BUREAU PSYCHOLOGY INTERNSHIP. (Cr ar; prereq #) Loper, staff
5113. CASE SEMINAR IN HEALTH CARE PSYCHOLOGY. (1 cr; prereq #) Roberts, Schofield, staff
5611. TECHNIQUES OF EVALUATION. (1 cr; prereq regis med; hrs ar) Westermeyer
5701. PROJECT IN CLINICAL PSYCHOLOGY. (Cr ar; hrs ar) Staff
8202. SPECIAL RESEARCH TOPICS. (Cr ar; prereq #) Staff
8203. PSYCHOMETRIC CLERKSHIP. (Cr ar) Staff
8204. INTERNSHIP IN CLINICAL PSYCHOLOGY. (2 or 4 cr; prereq PhD candidate in clinical psychology with #) Staff
8206. MEDICAL PSYCHOLOGY LABORATORY. (2 cr; prereq Psy 8611, 8612, 8613, 8614) Staff
8226. TECHNIQUES OF EVALUATION. (1 cr; hrs ar) Westermeyer

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 Medical Center). (Cr and hrs ar; prereq regis med) Tsai
5104. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Paul-Ramsey Hospital). (Cr and hrs ar; prereq regis med) Bjornson
5105. EXTERNSHIP: DIAGNOSTIC RADIOLOGY (St. Luke's Hospital, Duluth). (Cr and hrs ar; prereq regis med) Ahrens, staff
5140. SPECIAL PROBLEMS: ROENTGENOLOGY. (Cr and hrs ar; prereq regis med) Gedgaudas, staff
5240. SPECIAL PROBLEMS: NUCLEAR MEDICINE. (Cr and hrs ar; prereq regis med) Loken, staff

FIRST AND SECOND TERMS: TEN-WEEK COURSES

Required Courses for Graduate Students

0121. MEDICAL ROENTGENOLOGIC CONFERENCE. (No cr; 11:30-12:00 T; Hosp Todd Amph) Gedgaudas, staff
Weekly meetings with the medical staff at which all the important medical cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.
0122. PEDIATRIC ROENTGENOLOGIC CONFERENCE. (No cr; 9:30-10:00 MTWThF; Rigler Library) L'Heureux
Daily meetings with the pediatric staff at which all the important pediatric cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.
0123. SURGICAL ROENTGENOLOGIC CONFERENCE. (No cr; II S; Hosp Todd Amph) Amplatz
Weekly meetings with the surgical staff at which all the important surgical cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.
0124. NEUROSURGICAL ROENTGENOLOGIC CONFERENCE. (No cr; VI F; Hosp Todd Amph) Peterson
Weekly meetings with the neurosurgical staff at which all the important neurosurgical cases that have used X-ray diagnostic procedures are reviewed from both the clinical and roentgenologic points of view.
0125. CARDIOVASCULAR ROENTGENOLOGIC CONFERENCE. (No cr; 12:00-1:00 Th; Rigler Library) Amplatz
8100. GASTROINTESTINAL ROENTGENOLOGY. (Cr ar; prereq #) Feinberg
8101. UROLOGIC ROENTGENOLOGY. (Cr ar; prereq #) Goldberg
8102. NEUROLOGICAL ROENTGENOLOGY. (Cr ar; prereq #) Peterson
8103. CARDIOVASCULAR ROENTGENOLOGY. (Cr ar; prereq #) Amplatz
8104. PEDIATRIC ROENTGENOLOGY. (Cr ar; prereq #) L'Heureux
8105. PULMONARY ROENTGENOLOGY. (Cr ar; prereq #) Gedgaudas, staff
8150. RESEARCH: ROENTGENOLOGY. (Cr ar) Gedgaudas, staff
Problems in roentgen diagnosis.
8200. NUCLEAR MEDICINE. (Cr ar) Loken, staff
8450. RESEARCH: RADIATION BIOLOGY, NUCLEAR MEDICINE. (Cr ar) Staff

Surgery (Surg)

SPECIAL TERMS: JUNE 19-JULY 28 AND JULY 31-SEPTEMBER 8

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: JUNE 30-AUGUST 5 AND AUGUST 7-SEPTEMBER 8

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, Haselow, Kim, Lee, Potish
5506. CANCER DIAGNOSIS AND TREATMENT. (Cr ar; prereq regis med) Levitt, Jones, Haselow, Kim, Lee
5507. ADVANCED EXTERNSHIP IN RADIATION THERAPY. (Cr ar; prereq regis med) Levitt, Jones, Haselow, Kim, Lee, Potish
5508. SPECIAL PROBLEMS IN RADIATION BIOLOGY. (Cr ar)
5510. BASIC PRINCIPLES OF RADIOLOGICAL PHYSICS. (1 cr; 3:00-4:00 F; Rigler Library) Khan, Sewchand, Fullerton
5512. DOSIMETRY OF INTERNAL AND EXTERNAL RADIATION. (1 cr; 8:30-9:30 W; B141 Mayo) Khan, Sewchand, Fullerton
5540. SPECIAL PROBLEMS IN RADIOLOGICAL PHYSICS. (Cr ar; prereq regis med) Khan, Loken, Sewchand, Fullerton
8300. RADIATION THERAPY. (Cr ar)
8310. FUNDAMENTALS OF RADIATION THERAPY. (1 cr; 4:00-5:00 M; B141 Mayo)
8315. RADIATION THERAPY PATHOLOGY. (1 cr)
8320. RADIATION THERAPY TREATMENT PLANNING PROBLEMS. (1 cr)
8325. RADIATION THERAPY PEDIATRICS ONCOLOGY. (1 cr)
8350. RESEARCH IN RADIATION THERAPY. (Cr ar)
8410. SEMINAR: RADIATION BIOLOGY. (1 cr; prereq #) Song, Buchsbaum, Clement
8450. RESEARCH IN RADIATION BIOLOGY. (Cr ar) Song, Buchsbaum, Clement
8550. RESEARCH IN RADIOLOGICAL PHYSICS. (Cr ar) Khan, Loken, Sewchand, Fullerton

Urologic Surgery (Urol)

FIRST TERM

5180. EXTERNSHIP IN UROLOGY. (Cr and hrs ar) Staff

Required Courses for Graduate Students

8250. UROLOGICAL SURGERY. (4 cr; 9:00-12:00 MTThF; Main OR-H) Fraley, others
Urological fellow first assists at operations in the University Hospitals and later is permitted to operate under supervision of the staff.
8251. CYSTOSCOPY AND UROLOGICAL DIAGNOSIS. (4 cr; 8:00-12:00 MTWThF; Cysto Suite) Fraley, others
Urological fellow performs cystoscopies and other diagnostic procedures.

- 8252. UROLOGICAL CONFERENCE.** (4 cr; 4:00-5:00 F, Ward Rds, Sta 57; 9:00-11:00 S, Sta 57 Conf Rm) Fraley, others
Problems in diagnosis and treatment.
- 8253. RESEARCH: UROLOGY.** (4 cr) Fraley, others
Problems in experimental and clinical surgery.
- 8254. UROLOGICAL SEMINAR.** (3 cr) Fraley, others
- 8255. UROLOGICAL-RADIOLOGICAL CONFERENCE.** (3 cr; 1:00-2:00 MTWThF; Mayo A503) Fraley, others
- 8256. UROLOGICAL-PATHOLOGICAL CONFERENCE.** (3 cr; 4:30-5:00 W; Mayo A503) Fraley, others

SECOND TERM

- 5180. EXTERNSHIP IN UROLOGY.** (Cr and hrs ar) Staff

Required Courses for Graduate Students

- 8250. UROLOGICAL SURGERY.** (4 cr; 9:00-12:00 MTThF; Main OR-H) Fraley, others
See First Term.
- 8251. CYSTOSCOPY AND UROLOGICAL DIAGNOSIS.** (4 cr; 8:00-12:00 MTWThF; Cysto Suite) Fraley, others
See First Term.
- 8252. UROLOGICAL CONFERENCE.** (4 cr; 4:00-5:00 F, Ward Rds, Sta 57; 9:00-11:00 S, Sta 57 Conf Rm) Fraley, others
See First Term.
- 8253. RESEARCH: UROLOGY.** (4 cr) Fraley, others
See First Term.
- 8254. UROLOGICAL SEMINAR.** (3 cr) Fraley, others
- 8255. UROLOGICAL-RADIOLOGICAL CONFERENCE.** (3 cr; 1:00-2:00 MTWThF; Mayo A503) Fraley, others
- 8256. UROLOGICAL-PATHOLOGICAL CONFERENCE.** (3 cr; 4:30-5:00 W; Mayo A503) Fraley, others

DEPARTMENT OF MORTUARY SCIENCE

Mortuary Science (Mort)

All courses must be reserved in 114 Vincent Hall (see instructions under "Reserved Courses").

FIRST TERM

- 3090. INDEPENDENT STUDY.** (Cr ar; prereq sr)
- **5040. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 13-30.** (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, 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.

SCHOOL OF NURSING

Nursing (Nurs)

Limited enrollment and reserved courses must be reserved in 3320 Powell Hall.

FIRST TERM

- 5799. SELF-DIRECTED STUDY.** (Cr ar; prereq any two of the following: 5611, 5612, 5613, 5614, written contract with instructor, #; may be used to meet any portion of nursing elective cr requirement) Staff
Opportunity for students to engage in learning experiences not provided for in established nursing elective courses.
- **5999. CLINICAL STUDY.** (1 cr; limited to 15 students; prereq any two of the following: 5611, 5612, 5613, 5614; III-IV F) Ruhland
Use of the research process in the design and implementation of a limited study that focuses on implications for nursing practice.
- 8009. SPECIAL TOPICS IN NURSING.** (Cr ar; prereq #) Staff
- **8010. STRUCTURE OF THE DISCIPLINE OF NURSING.** (3 cr; must be reserved; prereq Δ; II-III MWF) Maykoski
The purposes, characteristics, and kinds of structures of nursing with emphasis on theories, models, and conceptual frameworks.
- **8014. RESEARCH IN NURSING.** (3 cr; must be reserved; prereq inferential statistics, Δ; IV-V MWF) Rode
The research process and research methodologies appropriate to nursing. Analysis of research reports.
- 8050. PROBLEMS IN NURSING.** (1-9 cr; prereq #) Staff
Individual study of a problem.
- 8051. SPECIAL TOPICS IN NURSING RESEARCH.** (1-9 cr; prereq #) King
Seminar and/or individual study.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 5407. SYSTEMATIC PROCESS II.** (2 cr; prereq 5207 or ¶5207; III-IV M) Hansen
Compares the problem-solving process utilized in Systematic Process I with the systematic process used in research. Opportunity to develop confidence in using problem solving and research as tools for working toward nursing care goals and conducting clinical studies.
- 5408. ADAPTATION II.** (2 cr; prereq 5207, LaMP 5170 or ¶LaMP 5170; III-IV W) Grummer
The adaptive process of humankind in the context of disruptive life events. Incorporates concepts of stress, crisis, loss, chronicity, and health to identify generalizations about the human adaptive process. The influence of this knowledge and data on the selection of possible nursing interventions.
- **5611. SYNTHESIS INCORPORATING CONCEPTS OF CHRONICITY.** (4 cr; each lab limited to 8 students; prereq 5407, 5408, 5409, 5404, 5405 or ¶5405, abnormal psychology, Phcl 1009, LaMP 5171 or ¶LaMP 5171; \$2 lab fee)
Clinical course that focuses on the synthesis of systematic process, adaptation, helping relationships, and tools in nursing care of recipients experiencing conditions of long-term nature.
Lect, VII T
Lab A, 8:00-12:00 T A 1. Reese (RN only)
8:00-11:00 W B 2. Snyder (RN only)
Lab B, 8:00-12:00 Th A 3. Lewis
8:00-11:00 F B 4. Lewis
A 5. Colloton
- **5614. SYNTHESIS INCORPORATING CONCEPTS OF HEALTH.** (3 cr; each lab limited to 8 students; prereq 5404, 5405 or ¶5405, 5407, 5408, 5409, abnormal psychology, Phcl 1009, LaMP 5171 or ¶LaMP 5171; \$2 lab fee)
Clinical course that focuses on the synthesis of systematic process, adaptation, helping relationships, and tools in the care of recipients who are not experiencing any major disruptive life event. Some constructs used in conceptualizing health and their relationship to individual and family development. Emphasis on goals and nursing interventions aimed at promotion of health and prevention of disease.
Seminar, VII-VIII Th
Lab A, 8:00-1:00 T B 1. Grummer
Lab B, 8:00-1:00 Th B 2. Beeston (RN only)
A 3. Jones (RN only)
A 4. Juarez
B 5. Juarez

- **8011. MORAL AND ETHICAL POSITIONS IN NURSING.** (3 cr; must be reserved; prereq Δ; II-IV Th) Crisham
Influence of moral and ethical positions on behavior and decision making in nursing. Emphasis on bases for positions taken, such as selected moral and ethical theories, rights and responsibilities, and conflict.
- 8050. PROBLEMS IN NURSING.** (1-9 cr; prereq #) Staff
See First Term.
- **8411. KNOWLEDGE DEVELOPMENT UNDERLYING NURSING THERAPY.** (4-6 cr; must be reserved; prereq 8030; II-III T, lab ar) Egan, Sime
Development of nursing practice for a specified client population. Focus on one element or aspect of an intervention model to expand knowledge in that area. Relevant research literature evaluated.
- **8422. PSYCHIATRIC-MENTAL HEALTH NURSING: FAMILY DYNAMICS AND THERAPY.** (3 cr; must be reserved; prereq 8421; II-III T, lab ar) Kjervik
Family dynamics, development, and communication patterns. Relationship of selected family to community using concepts from systems theory. Clinical practice in family therapy.
- **8435. CHILDBEARING-CHILDREARING FAMILY NURSING II.** (6-9 cr; must be reserved; prereq 8431 or #; \$2 lab fee; II-III T, lab ar) Clatworthy, Taylor
Development, synthesis, and utilization of intervention models as applied to a child and his or her family and to a childbearing family unit.
- **8451. TEACHING NURSING.** (4 cr; must be reserved; prereq any section of 8030, †course in learning theory and #; III-IV TTh) Gustafson
Use of theories of learning to develop an intervention model for teaching nursing. Testing the intervention model in simulated situations.

SECOND TERM

- 5620. INDEPENDENT STUDY IN NURSING TOPICS.** (1-9 cr; prereq #) Staff
See Ten-Week Courses.
- **5718. CONTEMPORARY PUBLIC HEALTH NURSING.** (6 cr; limited to 8 students; prereq 5611, 5612, 5613, 5614, and PubH 5006 or †PubH 5006; \$2 lab fee) Gingrich-Crass
Opportunity for student to refine and broaden skills in meeting identified health needs of a specified community. Focus on health promotion concepts, family-centered nursing, community assessment skills, helping relationship skills, and peer review.
Seminar, II-III M, VI-VII F
Lab, 8:00-1:00 TTh, 8:00-12:00 WF
- 5799. SELF-DIRECTED STUDY.** (Cr ar; prereq any two of the following: 5611, 5612, 5613, 5614, written contract with instructor, #; may be used to meet any portion of nursing elective cr requirement) Staff
See First Term.
- **5999. CLINICAL STUDY.** (1 cr; limited to 15 students; prereq any two of the following: 5611, 5612, 5613, 5614; III-IV F) Ruhland
See First Term.
- 8009. SPECIAL TOPICS IN NURSING.** (Cr ar; prereq #) Staff
- **8012. CONCEPTUAL FRAMEWORK FOR NURSING PRACTICE.** (3 cr; must be reserved; prereq 8010 or †8010; II-III MWF) Mansfield
Exploration and reconceptualization of assumptions, values, and beliefs underlying learner's view of nursing and nursing practice. Structure of a nursing conceptual framework and development of personal framework. Concept of an intervention model and systematic process that underlies development of such a model.
- 8050. PROBLEMS IN NURSING.** (1-9 cr; prereq #) Staff
See First Term.

COLLEGE OF PHARMACY

Pharmacy (Phar)

SPECIAL TERM: JUNE 12-AUGUST 18

- 0295. PHARMACY EXTERNSHIP.** (No cr; prereq 3rd-yr pharmacy student; 40 hrs per wk for 3 months)
Supervised and evaluated practical experience under college coordinated field preceptors.
- 0399. PHARM.D. CLERKSHIP.** (No cr; prereq 5312 or #)
Monitoring of patient drug therapy in University Hospitals and other affiliated institutions.

- **5265. DRUGS AND THE ELDERLY.** (2 cr for 10 wks; prereq #; limited enrollment; Owre 12)
Psychological, sociological, physiological/pharmacological, and economic aspects of aging and drug utilization among the elderly.
- 5266. DRUGS AND THE ELDERLY WORKSHOP.** (1-3 cr for 10 wks; prereq 5265 and #)
Seminar/discussion/workshop sessions on specific drug problems, communication skills with the elderly, and problem-solving techniques. Clinical experiences include home visits to individuals with drug problems and presentations to senior citizens groups on a variety of drug-related subjects.
- 5270. CLINICAL CLERKSHIP.** (4 cr for 10 wks; HUnitA 2-580)
Supervised delivery of pharmaceutical services at University Hospitals, affiliated institutions, or other practice settings.
- 5280. CONTEMPORARY PHARMACY.** (2 cr; prereq 2nd- or 3rd-yr pharmacy student, #)
Contemporary topics in pharmacy.
- 5281. OVER-THE-COUNTER PREPARATIONS.** (2 cr for 10 wks; prereq 3rd-yr pharmacy student; Owre 12)
Evaluation of nonprescription medication and preparation of student for triage role in preventive medicine.
- 5291. HOSPITAL PHARMACY.** (2 cr for 10 wks; lect and hospital visitations)
History, organization, and administration of pharmaceutical services in institutional settings.
- 5299. SPECIAL PROBLEMS.** (Cr ar; prereq #)
- 5301. CLINICAL THERAPEUTICS.** (3 cr for 10 wks; prereq 5350, Phcl 5102, or #; HSUnitA 2-820)
Clinical therapeutics of common disease entities.
- 5650. DISPENSING PHARMACY.** (3 cr for 10 wks; prereq 5640; MIMA 125)
Technology, record systems, interprofessional relationships, drug use control, and other factors involved in dispensing prescription medicine.
- 5651. DISPENSING PHARMACY LABORATORY.** (2 cr for 10 wks; prereq 5650; S-N grading; \$2 lab fee)
- 5670. BIOPHARMACEUTICS—DRUG INFORMATION EVALUATION.** (4 cr for 10 wks; prereq 5330, Phcl 5102, or #; Owre 12)
Procedures of drug information retrieval and evaluation with application to pharmacy practice. Processes of drug absorption, distribution, metabolism, and excretion.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq #)

SECOND TERM: JULY 17-AUGUST 18

- 5696. PARENTERAL PRODUCTS.** (3 cr; prereq 5640, MicB 3103 or #)
Principles and procedures involved in manufacture of parenteral products. Note: First class meeting will be Monday, July 17.

SCHOOL OF PUBLIC HEALTH

Public Health (PubH)

Courses with limited enrollment must be reserved in 1360 Mayo unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

- **3001. PERSONAL AND COMMUNITY HEALTH.** (3 cr, §3004; meets with 3004, 3033; limited enrollment, reserved in JohH 12; III-IV MTWThF; HSUnitA 2-690) Rothenberger
Fundamental principles of health conservation and disease prevention.
- **3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH.** (5 cr, §3001, §3033; limited enrollment, reserved in JohH 12; III-IV MTWThF; HSUnitA 2-690) Rothenberger
Introduction to scientific, sociocultural, and attitudinal aspects of communicable and degenerative diseases, environmental and occupational health hazards, alcohol and drug problems; emphasis on role of education in health conservation, disease control, and drug abuse.
- **3033. FUNDAMENTALS OF ALCOHOL AND DRUG ABUSE—June 13-23.** (2 cr, §3004; meets with 3001, 3004; limited enrollment; III-IV MTWThF; HSUnitA 2-690) Rothenberger
Lecture, discussion, and readings on the scientific, sociocultural, and attitudinal aspects of alcohol and other drug abuse problems. Emphasis on incidence, prevalence, high risk populations, prevention, and intervention.

- 5005. TOPICS IN PUBLIC HEALTH.** (Cr ar; prereq advance proposal and #) Staff
Individualized, directed instruction. Selected readings in public health with discussion based on these readings.
- 5006. INTRODUCTION TO COMMUNITY HEALTH.** (5 cr, §Nurs 5625; prereq # or nursing students, nurses, public health students, other health professionals; I-II MTWThF; HSUnitA 2-690) Greene
Lectures, discussions, seminars, individualized readings on critical and current issues in community health, emphasizing public health programs and controversies.
- **5040. DEATH EDUCATION IN CONTEMPORARY SOCIETY—June 13-30.** (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; MMA 100) Fredlund, 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 4 cr for 5061 and 5062. . . students must register for both courses this term; prereq 5054, 5055, 5056; 20 hrs per wk) Craig, Mills
Review of the procedures and techniques utilized in collecting health education data; visitation to major health centers in the metropolitan area and discussion of the goals and organization of each; identification and discussion of representative health education programs and opportunities in the metropolitan area.
- 5600. FIELD EXPERIENCE IN PUBLIC HEALTH NUTRITION.** (Cr ar; prereq #) Brown, staff
Placement in an approved agency with opportunity for experience in nutritional aspects of public health programs.
- 5601. SEMINAR: PUBLIC HEALTH NUTRITION.** (Cr ar; prereq #) Brown, Fleming
- 5609. TOPICS: INDEPENDENT STUDY IN PUBLIC HEALTH NUTRITION.** (Cr ar; prereq #) Brown, Fleming
- 5654. TOPICS: DENTAL PUBLIC HEALTH.** (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.
- 5657. INDEPENDENT STUDY IN DENTAL PUBLIC HEALTH.** (Cr ar; prereq #) Block, staff
Independent study, under tutorial guidance, of selected problems and current issues in the field of dental health and dental health services.
- 5660. FIELD EXPERIENCE: DENTAL PUBLIC HEALTH.** (Cr ar; prereq 5701)
Supervised field experience in selected community or public health agencies and institutions.
- 5702. PUBLIC HEALTH ADMINISTRATION CLERKSHIP.** (Cr ar; prereq 5701)
Assignment to State Health Department or other health agency for supervised work on a project of limited scope and preparation of a formal report.
- 5704. FIELD EXPERIENCE: PUBLIC HEALTH ADMINISTRATION.** (Cr ar; prereq #) Block
Supervised field experience at a management level in selected community or public health agencies and institutions.
- 5749. TOPICS: PUBLIC HEALTH ADMINISTRATION.** (Cr ar; prereq #) Block
Selected readings with discussion based on these readings.
- 8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES.** (Cr ar; prereq #) Staff
Section 1—Environmental health students only. Section 2—Other students majoring in public health.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- **5004. FIELD INSTRUCTION IN PUBLIC HEALTH.** (10 cr for 10 wks; limited to 30 students; prereq grad student in public health, social work, or other health or helping field. 5008 offered spring 1978, and #; 20-30 hrs per wk)
Generalized, function-oriented or discipline-oriented community experience under academic and professional supervision. Emphasis on application of acquired knowledge and skills to relevant health issues and problems. This offering: Interdisciplinary Team Building. A team field project involving the application of team skills to improve the outcome of selected public health projects. Development of skills such as resource sharing and utilization, verbal and nonverbal communications, giving and receiving feedback, leadership roles and styles, negotiations, decision making and problem solving, conflict utilization, and process intervention. See Special Programs section.
- 5575. TOPICS: PUBLIC HEALTH NURSING.** (Cr ar; prereq #) Staff
Topics of interest.
- **5585. PUBLIC HEALTH NURSING.** (6 cr for 10 wks; prereq current RN licensure and #; limited enrollment) Staff
Designed for nurses with a baccalaureate degree who are interested in public health nursing certification and others interested in gaining theoretical knowledge and clinical skills in community health nursing.
- 8530. ADMINISTRATION/SUPERVISION/TEACHING IN PUBLIC HEALTH NURSING.** (Cr ar; prereq #) Staff
Focus on nursing roles, functions, practice, and education for improvement of delivery of health care; principles for teaching, counseling, evaluation, and financial management. Supervised practicum in service or educational setting, except for practicum in collegiate programs.

SECOND TERM

- 5005. TOPICS IN PUBLIC HEALTH.** (Cr ar; prereq #) Staff
See First Term.
- **5032. EDUCATIONAL ASPECTS OF DRUG USE AND ABUSE—July 24-August 4.** (3 cr, \$Hlth 5400; limited to 50 students; prereq education sr, certified tchr, school nurse or #: 9:00-12:00 MTWThF; HSUnitA 2-520) Rothenberger, Hockhauser
Basic background information on alcohol and other drugs and chemicals with emphasis on curriculum concepts, teaching methodology, materials, and referral procedures appropriate for elementary, junior, and senior high schools.
- **5300. COMPARATIVE MEDICINE AND PUBLIC HEALTH.** (2 cr; limited to 14 students; VI-VII TTh; HSUnitA 2-542)
Survey of comparative medicine in human relationship to the biologic environment, interrelationship between animal and human health, source of animal diseases, ecology of zoonoses; food production and hygiene; laboratory animal medicine.
- 5600. FIELD COURSE IN PUBLIC HEALTH NUTRITION.** (Cr ar; prereq #)
See First Term.
- 5601. SEMINAR: INTRODUCTION TO PUBLIC HEALTH NUTRITION POLICIES AND PRACTICES.** (Cr ar; prereq #) Brown, Fleming
- 5609. TOPICS: PUBLIC HEALTH NUTRITION.** (Cr ar; prereq #) Brown, Fleming
- 5654. TOPICS: DENTAL PUBLIC HEALTH.** (Cr ar; prereq #) Staff
See First Term.
- 5657. INDEPENDENT STUDY IN DENTAL PUBLIC HEALTH.** (Cr ar; prereq #) Block, staff
See First Term.
- 5660. FIELD EXPERIENCE: DENTAL PUBLIC HEALTH.** (Cr ar; prereq #) Block, staff
See First Term.
- 5702. PUBLIC HEALTH ADMINISTRATION CLERKSHIP.** (Cr ar; prereq 5701)
See First Term.
- 5704. FIELD EXPERIENCE: PUBLIC HEALTH ADMINISTRATION.** (Cr ar; prereq #) Block
See First Term.
- 5749. TOPICS: PUBLIC HEALTH ADMINISTRATION.** (Cr ar; prereq #) Block
See First Term.
- 8002. FIELD OBSERVATION OF SELECTED PUBLIC HEALTH PRACTICES.** (Cr ar; prereq #) Staff
See First Term.

Biometry (PubH)

FIRST TERM

- 5400. INTRODUCTION TO QUANTITATIVE METHODS IN THE HEALTH AND LIFE SCIENCES.** (4 cr; for students majoring in the biological and health sciences; prereq Biol 1011, Chem 1005, Math 1231, #: 1 MTWThF; HSUnitA 2-680, 2-676) McLugh
Basic quantitative methods for the design and analysis of clinical and laboratory studies in biology and the health sciences.
- 5456. BIOMETRY CONSULTING SEMINAR.** (Cr ar; prereq biometry major) Boen, staff
Consultant and consultee interaction; communication and formulation of the biometric problem. Role and responsibility of the biometrician. Robustness and relevance of frequently used analytical techniques. Internship experiences.
- 5470. TOPICS IN BIOMETRY.** (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.
- 8400. SEMINAR IN BIOMETRY.** (Cr ar) Staff
- 8449. TOPICS IN BIOMETRY.** (Cr ar; prereq 5450 and #) Staff
Studies in special topics for advanced students.
- 8450. RESEARCH IN BIOMETRY.** (Cr ar) Staff
Opportunities for qualified students to pursue research work.

SECOND TERM

- 5456. BIOMETRY CONSULTING SEMINAR.** (Cr ar; prereq biometry major) Boen
See First Term.

- 5470. TOPICS IN BIOMETRY.** (Cr ar; prereq #) Staff
See First Term.
- 8400. SEMINAR IN BIOMETRY.** (Cr ar) Staff
- 8449. TOPICS IN BIOMETRY.** (Cr ar; prereq 5450 and #) Staff
See First Term.
- 8450. RESEARCH IN BIOMETRY.** (Cr ar) Staff
See First Term.

Environmental Health (PubH)

FIRST TERM

- 5150. TOPICS IN ENVIRONMENTAL HEALTH.** (Cr ar; prereq #) Staff
Selected readings with discussions of problems.
- 5170. TOPICS IN ENVIRONMENTAL BIOLOGY.** (Cr ar; prereq #) Staff
Selected readings with discussion of control techniques.
- 5180. TOPICS IN AIR POLLUTION.** (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.
- 5183. PROBLEMS OF AIR POLLUTION CONTROL.** (Cr ar; prereq 5181, #) Paulus
Special supervised studies involving laboratory and field investigation procedures; review of pertinent literature.
- 5200. TOPICS IN RADIOLOGICAL HEALTH.** (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.
- 5210. TOPICS IN OCCUPATIONAL HEALTH.** (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.
- 5220. TOPICS IN FOOD SANITATION.** (Cr ar; prereq #) Staff
Review of literature and practice to identify association of food sanitation problems to public health.
- 5230. TOPICS IN INSTITUTIONAL ENVIRONMENTAL HEALTH.** (Cr ar; prereq #) Staff
Review of literature and practice to identify institutional environmental health problems.
- 5240. TOPICS IN WATER HYGIENE.** (Cr ar; prereq #) Staff
Selected readings and discussions of problems relating to the health aspects of water supply and waste water systems.
- 8150. RESEARCH: ENVIRONMENTAL HEALTH.** (Cr ar) Staff
Opportunities for qualified students to pursue research in the importance to public health of environmental stresses on human beings.
- 8170. RESEARCH: ENVIRONMENTAL BIOLOGY.** (Cr ar; prereq #) Ruschmeyer
- 8180. RESEARCH: AIR POLLUTION.** (Cr ar; prereq #) Paulus
- 8200. RESEARCH: RADIOLOGICAL HEALTH.** (Cr ar; prereq #) Barber
- 8208. FIELD PRACTICE IN RADIOLOGICAL HEALTH.** (Cr ar; prereq #) Barber
- 8210. RESEARCH: OCCUPATIONAL HEALTH.** (Cr ar; prereq #) McJilton
- 8220. RESEARCH: FOOD SANITATION.** (Cr ar; prereq #) Pflug
- 8230. RESEARCH: INSTITUTIONAL ENVIRONMENTAL HEALTH.** (Cr ar; prereq #) Vesley
- 8240. RESEARCH: WATER HYGIENE.** (Cr ar; prereq #) Straub

SECOND TERM

- 5150. TOPICS IN ENVIRONMENTAL HEALTH.** (Cr ar; prereq #) Staff
See First Term.
- 5170. TOPICS IN ENVIRONMENTAL BIOLOGY.** (Cr ar; prereq #) Staff
See First Term.
- 5180. TOPICS IN AIR POLLUTION.** (Cr ar; prereq #) Staff
See First Term.
- 5183. PROBLEMS OF AIR POLLUTION CONTROL.** (Cr ar; prereq 5181, #) Paulus
See First Term.

5200. **TOPICS IN RADIOLOGICAL HEALTH.** (Cr ar; prereq #) Staff
See First Term.
5210. **TOPICS IN OCCUPATIONAL HEALTH.** (Cr ar; prereq #) Staff
See First Term.
5220. **TOPICS IN FOOD SANITATION.** (Cr ar; prereq #) Staff
See First Term.
5230. **TOPICS IN INSTITUTIONAL ENVIRONMENTAL HEALTH.** (Cr ar; prereq #) Staff
See First Term.
5240. **TOPICS IN WATER HYGIENE.** (Cr ar; prereq #) Staff
See First Term.
8150. **RESEARCH: ENVIRONMENTAL HEALTH.** (Cr ar) Staff
See First Term.
8170. **RESEARCH: ENVIRONMENTAL BIOLOGY.** (Cr ar; prereq #) Ruschmeyer
8180. **RESEARCH: AIR POLLUTION.** (Cr ar; prereq #) Paulus
8200. **RESEARCH: RADIOLOGICAL HEALTH.** (Cr ar; prereq #) Barber
8208. **FIELD PRACTICE IN RADIOLOGICAL HEALTH.** (Cr ar; prereq #) Barber
8210. **RESEARCH: OCCUPATIONAL HEALTH.** (Cr ar; prereq #) McJilton
8220. **RESEARCH: FOOD SANITATION.** (Cr ar; prereq #) Pflug
8230. **RESEARCH: INSTITUTIONAL ENVIRONMENTAL HEALTH.** (Cr ar; prereq #) Vesley
8240. **RESEARCH: WATER HYGIENE.** (Cr ar; prereq #) Straub

Epidemiology (PubH)

See the Special Programs section for a series of courses offered through Continuing Education and Extension.

FIRST TERM

5379. **TOPICS IN EPIDEMIOLOGY.** (Cr ar; prereq #) Staff
Selected readings with discussion based on these readings.
8330. **RESEARCH: EPIDEMIOLOGY.** (Cr ar) Staff
Opportunities offered by the School of Public Health and various cooperating organizations for qualified students to pursue research work.

SECOND TERM

5379. **TOPICS IN EPIDEMIOLOGY.** (Cr ar; prereq #) Staff
See First Term.
8330. **RESEARCH: EPIDEMIOLOGY.** (Cr ar) Staff
See First Term.

Hospital and Health Care Administration (PubH)

FIRST TERM

5765. **HOSPITAL DEPARTMENTAL OPERATIONS.** (3 cr; prereq #; VI-VII MWF; HSUnitA 2-533) Sweetland
The operation, management, and functions of hospital departments. Presented from the point of view of what an administrator needs to know about a department in order to supervise the department head.
5792. **LEGAL ASPECTS OF HOSPITAL AND HEALTH CARE ADMINISTRATION.** (3 cr; prereq #; II-III TTh; HSUnitA 2-580) Holloway
Laws affecting administration of hospitals and other health care organizations; administrative law, corporate and business law, labor law, civil liability, and tax-related issues. Focuses on legal issues relevant to the administrator and the decision-making and planning processes.

- 5793. HOSPITAL FINANCIAL STATEMENT ANALYSIS.** (3 cr; prereq 5764, 5791; I-II MF; MMA 100) Oszustowicz
Case studies and readings involving review and analysis of actual hospital financial statements, third-party payer cost reports, and other financial documents. Students apply key financial ratios to financial statement analysis to test their ability to apply course material presented in the winter and spring quarters and to become familiar with basic financial documents.
- 5794. FINANCIAL MANAGEMENT SEMINARS.** (3 cr; prereq 5764, 5791; III-IV MF; MMA 100) Oszustowicz
Major financial management topics presented by outside experts in the fields of public accounting, investment banking, lease financing, insurance counseling, hospital-based physician financial negotiation, rate setting/rate review negotiation, etc., for class analysis and practical application. Representatives from government and third-party payers will discuss the impact of legislation and regulation on health care financial management.
- 5796. INTERNAL OPERATIONS OF A MENTAL HEALTH FACILITY—July 10-20.** (15 cr; prereq 1 yr experience as mental health facility administrator and #; I-X MTWThF; Law 65) Malban, staff
A 12-month program of on-campus residential (2 weeks) and off-campus independent study that includes periodic seminars and monthly classes under program preceptors. Principles of management, organizational behavior, personnel, problem solving and decision making, financial management, mental health professionals and paraprofessionals, and mental health programs and services.
- 5797. EXTERNAL RELATIONSHIPS AFFECTING THE ROLE AND FUNCTION OF THE MENTAL HEALTH FACILITY—June 19-30.** (15 cr; prereq 5796; I-X MTWThF; BA 128, 130, 136 160, RarigC 616) Malban, staff
A 12-month program of on-campus residential (2 weeks) and off-campus independent study that includes periodic seminars and monthly classes under program preceptors. Governance, legal aspects, public education and information, evaluation of mental health programs, prevention and primary treatment in mental health, current trends and concepts, biostatistics and quantitative methods.
- 5799. MENTAL HEALTH ADMINISTRATION SEMINAR.** (2 cr; restricted to and required of students enrolled in mental health administration training) Malban
Readings, group discussion, debate and presentation of current issues in the mental health field. Field trips. Follow-up to the A. K. Rice Institute experience.
- 8796. TOPICS IN HEALTH ECONOMICS.** (3 cr; prereq one economics course and #; VI-VIII TTh; HSUnitA 2-548) Dahl
General principles of health economics are applied to current issues in health such as insurance, licensure, family practice, malpractice, and hospital costs. Models of hospital functioning, area planning, time management, and disease intervention are presented within the framework of economic analysis and used to explain and predict health behavior. Concepts of cost benefit and cost effectiveness analysis and their application to problems in health care delivery.

SECOND TERM

- 5752. CLERKSHIP.** (4 cr; prereq enrollment in 5755) Bieter, staff, clinical preceptors
Survey and solution of management problem and preparation of formal report in an administrative residency organization.
- 5755.** ADMINISTRATIVE RESIDENCY.** (Cr ar; prereq #) Dornblaser, staff, clinical preceptors
Eleven months of fieldwork in an approved health care planning or operating organization, weighted rotation through departments, solution of management problems, and special projects. Preparation of formal report.
- 5775. MANAGEMENT AND ORGANIZATION IN HOSPITAL AND HEALTH CARE FACILITIES.** (15 cr; prereq 1 yr experience as health care facility administrator and #) Weckwerth, staff
A 12-month program of on-campus residential (3 weeks) and off-campus independent study that 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
A 12-month program of on-campus residential (3 weeks) and off-campus independent study that 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, change theory.
- 5777. EXTERNAL FORCES AFFECTING HEALTH CARE DELIVERY—September 5-15.** (25 cr; prereq 5776 or #; I-IX MTWThF; RarigC 610, 616) Weckwerth, staff
A 10-month program of on-campus residential (3 weeks) and off-campus study that includes three regional seminars covering financing, human resources, organizing, social policy, and project planning and design. Requires a project that can be either a management study or a research thesis. Each student must verbally present and defend the project in symposium at end of course.

5778. PATIENT CARE MANAGEMENT AND ORGANIZATION WITHIN THE HOSPITAL AND HEALTH CARE ORGANIZATION. (25 cr; prereq present employment as administrator of patient care [director of nursing or equiv] and #) Danielsen, Weckwerth, staff

A 12-month program 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.

5779. MANAGING MULTIPLE FORCES: INTERNAL AND EXTERNAL ASPECTS OF PATIENT CARE ADMINISTRATION. (Cr ar; prereq present employment as administrator of patient care [director of nursing or equiv], 5778 and #) Weckwerth, Danielsen, Gordon, staff

A 12-month program of on-campus (3 weeks) and independent study that begins with a 1-week introductory residential session each August. Seminars on planning, organizing and staffing, directing and controlling during the initial phase. Demonstration or research project required. Students return to campus the following summer to share conclusions of their projects with their peers.

5798. SOCIAL, POLITICAL, ECONOMIC, AND GOVERNMENTAL FORCES AFFECTING THE ROLE AND SERVICES OF THE MENTAL HEALTH FACILITY. (25 cr; prereq 5797 or practicing administrator with advanced degree and 3 yrs experience and #) Malban, staff

A 12-month program of on-campus residential (2 weeks) and off-campus independent study that includes periodic seminars and monthly classes under program preceptors. Demonstration and research projects required. Mental health; community, regional, state, and national planning; legislation; affirmative action; consumerism and citizen participation; economics; political and social issues.

College of Home Economics

Undergraduate and graduate majors in the various fields of the College of Home Economics will find a variety of courses offered by the departments of Design, Family Social Science, Food Science and Nutrition, and Textiles and Clothing as well as by the Center for Youth Development and Research. Many of the courses will interest secondary school home economics teachers for certification purposes. Further information may be obtained by writing Gertrude Strinden, College of Home Economics, University of Minnesota, St. Paul, Minnesota 55108. (See also Home Economics Education and Vocational and Technical Education under the College of Education.)

Design (Dsgn)

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

FIRST TERM

- 1501. INTRODUCTION TO DESIGN.** (3 cr; IV MTWThF; McNH 33) Blade
Awareness of design in the near environment.
- **1521. COLOR AND DESIGN.** (4 cr; limited to 24 students; \$2 lab fee; I-II MTWThF; McNH 258) Peifer
Color concepts and their applications to design.
 - **1523. VISUAL PRESENTATION.** (4 cr; limited to 24 students; III-IV MTWThF; McNH 262) Milner
Development of basic drawing skills for the designer.
 - **3527. THREE-DIMENSIONAL DESIGN.** (4 cr; limited to 24 students; I-II MTWThF; McNH B3) Dekker
Study and application of principles of three-dimensional design. Special reference to interior design and furnishings forms.
- 3535. DESIGN PROCESS: MATERIALS.** (4 cr; VI-VII MTWThF; McNH B9) Abell
Design of visual concepts explored through a series of selected materials.
- 5584. READINGS IN DESIGN** (1-3 cr; not open to srs; prereq #: hrs ar) Esteros and others
Independent study and review of books and periodicals. Written reports.
- 5585. PROBLEMS IN DESIGN: GENERAL.** (1-3 cr; prereq #: hrs ar) Esteros and others
Independent study under tutorial guidance.
- 5586. PROBLEMS: HOUSING AND/OR INTERIOR DESIGN:** (2-4 cr per qtr [12 cr max]; prereq # and Δ) Esteros and others.
Independent study under tutorial guidance.
- 8586-8587. PROBLEMS: DESIGN.** (1-5 cr per term; 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 260)
Application of principles from behavioral sciences to dating, courtship, mate selection, engagement, mixed marriages, roles of men and women, interaction of marital spouses, and marital stability.

- **1025. PARENTHOOD.** (4 cr; limited enrollment; III MTWThF; BlegH 340)
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 310) Neubeck
Nature of sexual functions, sexual development, ethics and attitudes, research problems.
- **5025. PARENTING—June 12-23.** (3 cr; limited enrollment; prereq 1025, 5200 or 5202 or #; II-IV MTWThF; ClaOff B42) Budd
Parenting methods, focusing 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; BioSci 6) Hey
The family as an institution and system of relationships. Current developments in study of the family. Changes in American society and their influence on family life.
- 5230. INDEPENDENT STUDY.** (Cr ar [max 4 cr]) Gage, Hey, Olson
- 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
- **5240. SPECIAL TOPICS IN FAMILY SOCIAL SCIENCE: CONSUMERISM—July 31-August 11.** (2-6 cr per qtr [max 16 cr]; limited enrollment; prereq set by instructor for each topic; VI-VIII MTWThF; PalmC 15) Gage
- 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 (FSn)

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

FIRST TERM

- **1602. PRINCIPLES OF NUTRITION.** (4 cr; limited to 25 students; prereq one course in biology and one course in chemistry or equiv in natural science sequence; I-II MWF, II TTh; FScN 15) York, Hamm
Survey of fundamental principles of nutrition including requirements for various nutrients and results of excess or deficient intake of these nutrients.
- **3472. PRINCIPLES OF FOOD PURCHASING.** (4 cr; limited to 25 students; prereq 5 cr in food science and nutrition; III-IV M, IV TWThF, 2 hrs ar; McNH 146) Trammell
Principles of purchasing basic groups of foods. Relative cost of key nutrients from alternate items within the food group. Food prices and indices of change. Laws and regulations pertinent to the labeling of food. Food standards and grades. Functional role of food additives.
- 3720. ADMINISTRATIVE EXPERIENCE: HOSPITALITY OR FOOD SERVICE ENTERPRISE.** (5 cr; prereq 3760, sr in hospitality and food service management or #; hrs ar) Staff
Planned management experience in a selected food service or hospitality business, including understanding of the operation, planning, purchasing, personnel management, financial management, supervision, and related functions.
- 5111. INDEPENDENT STUDY IN FOOD SCIENCE AND NUTRITION.** (1-5 cr [may be repeated for cr]; prereq Δ; \$2 lab fee; hrs ar) Staff
Individual laboratory or library research in some area related to food chemistry, food processing, nutrition, food service, or hospitality management.
- 5321. INDEPENDENT STUDY IN FOOD MICROBIOLOGY.** (1-5 cr; prereq sr, Δ; \$2 lab fee; hrs ar) Tatini
Laboratory or library research on problems related to the microbiology of dairy and food products.
- **5790. QUANTITY FOOD PREPARATION PRACTICES—June 12-23.** (3 cr; limited to 16 students; prereq baccalaureate degree and current or impending affiliation with occupational food program in a secondary school; \$2 lab fee; 8:00-12:00 MTWThF; DinC 152) Billings
Storage, preparation, service, and pricing of selected menu items. Students investigate and seek solutions to problems related to quantity food service. Opportunity to integrate lectures, laboratory experiences, and independent study with instructional programs in occupational foods.

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

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

SECOND TERM

1102. TECHNOLOGY OF FOOD PROCESSING. (4 cr; prereq high school chemistry and biology; I-II MWF, II TTh;
ABLMS 125) Shapero

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

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

See First Term.

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

See First Term.

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

See First Term.

● **5404. CURRENT ISSUES IN FOOD AND NUTRITION—July 17-28.** (3 cr; limited to 25 students; prereq 15 cr in
food science and nutrition or #; \$2 lab fee; 9:00-11:30 MTWThF; FScN 15) Levine

Evaluation of popular and scientific literature as it deals with nutrition, food additives, food safety, food fads, health foods, environmental contamination, the consumer movement, naturally occurring food toxicants, processed foods, synthetic foods, organically grown foods.

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

See First Term.

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

See First Term.

Textiles and Clothing (TexC)

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

FIRST TERM

● **1601. BASIC CLOTHING CONSTRUCTION.** (2 cr; limited to 20 students; prereq 11602; \$2 lab fee; II-III
MTWThF; McNH 470) Peterson

Basic principles and techniques for creating clothing.

● **1602. PATTERN FITTING AND ALTERATION.** (2 cr; limited to 20 students; prereq 11601; \$2 lab fee; II-III
MTWThF; McNH 470) Gazzuolo

Analysis of figure problems; alteration of commercial patterns to adjust to any figure problem. Development of individual patterns from commercial basic patterns.

● **3601. TAILORING.** (4 cr; limited to 20 students; prereq 1601, 1602, 3621, or #; \$2 lab fee; V-VII MTWThF; McNH
470) Sieben

Problems in tailoring a lined wool garment; speed tailoring techniques.

● **3622. TEXTILES FOR INTERIORS.** (3 cr; limited to 22 students; prereq 3621; \$2 lab fee; II-III MTWThF; McNH
340) Franzen

Developments and trends in fiber, yarn, construction, and finish of textiles for upholstery, and floor, wall, and window coverings.

● **3642. APPAREL INDUSTRIES.** (4 cr; limited to 50 students; prereq Econ 1002 or AgEc 1030; IV-V MTWThF;
McNH 69) Nemecek

Structure, operation, and problems of the domestic and foreign apparel industries including ready-to-wear, couture, and auxiliary fashion sectors. Interrelationships with the textile industry and distributors.

● **5626. RECYCLING PROCESSES.** (3 cr; limited to 25 students; prereq 5621; III MTWThF; McNH 69) R Johnson
Principles and practices in recovery of initial appearance and properties of textile products; application to restoration of historic textile materials, water pollution by effluents from wet cleaning processes.

- **5641. TOPICS IN MERCHANDISING—June 12-23.** (3 cr [max 6 cr]; limited to 35 students; prereq 3643, 3644 and/or #; I-III MTWThF; ClaOff B36) *Druy*
Study of a current issue related to merchandising of textile and clothing products. Designed for fashion merchandising teachers or for nonmajors who want an overview of the area. Topics include comparative study of merchandising techniques used by retailers, principles of merchandise selection and distribution, merchandise management.
- **5680. SPECIAL TOPICS IN TEXTILES AND CLOTHING.** (3 cr; limited to 35 students; prereq Δ; VI MTWThF; McNH 69) *Grindereng*
Review of research and methodology. The topic for this offering is Clothing Problems of Low Income Families.
- 8621. READINGS IN TEXTILES.** (1-3 cr; prereq #; hrs ar) *R Johnson*
Independent reading useful for individual programs but not available in other course offerings.
- 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 minimum 12 cr in TexC courses, #; hrs ar) *Grindereng*
Independent study; survey of literature in selected areas related to human behavioral aspects of clothing and textiles. Written reports.
- 8663. PROBLEMS: CLOTHING AND TEXTILES.** (3-9 cr [max 9 cr]; prereq #; hrs ar) *Grindereng*
Independent study in human behavioral aspects of clothing or textiles.

Center for Youth Development and Research (YoSt)

FIRST TERM

- 5120. INDEPENDENT STUDY IN YOUTH STUDIES.** (Cr ar [max 12 cr per qtr]; prereq #; hrs ar) *Seltzer, staff*
Independent reading and/or research under faculty supervision.

SECOND TERM

- 5120. INDEPENDENT STUDY IN YOUTH STUDIES.** (Cr ar [max 12 cr per qtr]; prereq #; hrs ar) *Seltzer, staff*
See First Term.

College of Liberal Arts

College of Liberal Arts courses seek primarily to provide knowledge and understanding of the world and of the social and intellectual problems of modern life through exploration of both historical and contemporary subject matter. Although many courses are designed for specialized or professional interests, almost all contribute to general education. Courses are open not only to CLA degree candidates but also to students enrolled in other colleges inside and outside of the University. They serve students enrolled for a variety of purposes: progress toward graduate or undergraduate degrees, personal or professional enrichment, advancement of scholastic records, and many others.

CLA summer courses offer a wide selection from the regular curriculum. In addition, many courses from business, medical, scientific, agricultural, and other divisions of the University are open to CLA summer students who have completed the necessary prerequisites.

Summer session registration does not of itself constitute admission to CLA or to the Graduate School; students working toward degrees or wishing to attend during the regular academic year must file standard admission applications.

Students should be aware that credit, cancel-add, and other procedures in summer sometimes differ from those of the regular year. Problems or questions may be brought to the CLA summer session advising office, 30 Johnston Hall.

Afro-American Studies (Afro)

FIRST TERM

- 1021. INTRODUCTION: AFRICAN STUDIES.** (4 cr; III-IV MTWTh; SocSci 860) Pike
Survey and integration of diverse themes in African studies, with reference to both content and methods. Historical perspectives.
- 3001. INTRODUCTION TO WEST AFRICAN HISTORY.** (4 cr; II MTWThF; SocSci 860) Coifman
Similarities and dissimilarities in the historical experience of several West African peoples. Early times to ca. 1600.
- 3970. DIRECTED STUDIES.** (1-15 cr; prereq #) Staff
- 5970. DIRECTED STUDIES.** (1-6 cr; qualified sr and grad students may register with # for work on tutorial basis)
Staff

SECOND TERM

- 3301. AFRO-CARIBBEAN, AFRO-HISPANIC, AND AFRO-BRAZILIAN MUSIC.** (4 cr, §Mus 3709; III-IV MTWTh; BlegH) Southall
Transmissions and links between the musical cultures of Africa, the Caribbean, South and Central America.
- 3970. DIRECTED STUDIES.** (1-15 cr; prereq #) Staff
- 5970. DIRECTED STUDIES.** (1-6 cr; qualified sr and grad students may register with # for work on tutorial basis)
Staff

American Indian Studies (Amln)

FIRST TERM

5322. **CONTEMPORARY INDIAN EDUCATION.** (4 cr; prereq 3131 or #; IV MTWThF; BlegH 130) Beaulieu
Critical issues in the education of American Indians.

SECOND TERM

5411. **URBAN INDIAN COMMUNITIES.** (4 cr; prereq 3061 or 3311 or #; BlegH 404) Raymond
A social science and historical analysis of the rapid cityward Indian migration since World War II.

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) Shreve
Individualism in American life and thought.
- 3970. **DIRECTED STUDIES.** (1-15 cr; prereq #, Δ) Staff
- 8201. **INTRODUCTION TO AMERICAN STUDIES.** (3 cr; limited to 12 students; prereq MA candidate VI-VII MTh; SocSci 628) Staff
Exposition of interdisciplinary methods and of the concept of American studies; reading of classics in American civilization; extended exploration of a topic.
- 8970. **INDEPENDENT READINGS IN AMERICAN CIVILIZATION.** (Cr and hrs ar; prereq consent of program chair) Staff

SECOND TERM

- 3970. **DIRECTED STUDIES.** (1-15 cr; prereq #, Δ) Staff
- 8970. **INDEPENDENT READINGS IN AMERICAN CIVILIZATION.** (Cr and hrs ar; prereq consent of program chair) Staff

Ancient Near Eastern and Jewish Studies—See Near and Middle Eastern Studies

Anthropology (Anth)

FIRST TERM

- 1101. **INTRODUCTION TO PREHISTORY.** (5 cr, §1101H; lect I MTWThF; ForH 115) Johnson
World prehistory as investigated by archaeologists; methods and concepts employed by archaeologists in the study of prehistoric human biological and cultural development.
- 1102. **INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY.** (5 cr, §1115, §5102; lect III MTWTh; Ph 210) Kiste
Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world.
- 3970. **DIRECTED STUDIES.** (Cr and hrs ar; prereq #) Staff
- 5141. **CULTURE AND PERSONALITY.** (5 cr; prereq 1102 or # [waived for majors in public health, nursing, psychology, sociology, and social work]; III MTWThF; ForH 155) Rowe
Role of culture in formation of personality. Problems of individual adjustments to demands of culture. Psychological approach to culture.

8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (Cr and hrs ar; prereq #) Staff

8950. ADVANCED RESEARCH. (Cr and hrs ar; prereq grad, #) Staff

SECOND TERM

1102. INTRODUCTION TO SOCIAL AND CULTURAL ANTHROPOLOGY. (5 cr) Kiste

See First Term.

Sec 1, VI TTh, Ph 166, Prell-Foldes

Sec 2, VI MW, Ph 166, Prell-Foldes

3211. INDIANS OF NORTH AMERICA. (5 cr; prereq 1102 or #: IV MTWThF; ForH 155) Spencer
Aboriginal cultures of native North America. Effects of culture contact. Contemporary problems of Indian reservations and communities.

3970. DIRECTED STUDIES. (Cr and hrs ar; prereq #) Staff

5151. CULTURAL CHANGE AND DEVELOPMENT. (5 cr; prereq 1102 or #: IV MTWThF; ForH 175) Miller
Processes of cultural change; invention, diffusion, and acculturation. Effects of colonialism, urbanization, and modernization. Analysis of developing societies. Applied anthropology.

8508. ADVANCED FIELD TECHNIQUES IN ARCHAEOLOGY. (Cr and hrs ar; prereq #) Staff

8950. ADVANCED RESEARCH. (Cr and hrs ar; prereq grad, #) Staff

Arabic—See Near and Middle Eastern Studies

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; 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. Meets with 3001.
- **1016. INTRODUCTION TO ASIAN ART.** (4 cr, \$3013; limited to 140 students; IV MTWThF; Jones 207B) Asher
Major themes of Indian and Far Eastern art.
- **3001. PRINCIPLES OF VISUAL ARTS.** (4 cr; limited to 60 students; II MTWThF; Arch 25) Torbert
Similar to 1001 in organization and content with expanded reading and contact with works of art. Meets with 1001.
- **3012. HISTORY OF 19TH- AND 20TH-CENTURY ART.** (4 cr; limited to 140 students; V MTWThF; Arch 25)
Paskus
Major monuments and concepts of the modern period: sculpture, architecture, painting, and prints.
- **3014. ART OF INDIA.** (4 cr; limited to 65 students; II MTWThF; Jones 207B) Asher
Indian sculpture and architecture from the prehistoric Indus Valley civilization through the major historical periods. Hindu and Buddhist art from 300 B.C. to 1200 A.D.
- **3935. ARTS OF AFRICA, OCEANIA, AND NORTH AMERICA.** (4 cr; limited to 65 students; IV MTWThF; Jones 207A) Smith
Survey of traditional arts and crafts of Africa, Oceania, and the Americas. Emphasis on method, theory, and cross-cultural analysis.
- **5324. 15TH-CENTURY PAINTING IN NORTHERN EUROPE.** (5 cr; prereq 3009 or 3011, grad or #: limited to 55 students; III MTWThF; Jones 207A) Steyaert
Painting in the Netherlands, France, and Germany during the late Gothic period; its influences.
- **5464. LATER 20TH-CENTURY PAINTING.** (5 cr; prereq one American or modern art course or #: limited to 65 students; IV MTWThF; Jones 207B) Paskus
Painting after the mid-1920s.
- **5925. NATIVE AMERICAN ARTS: THE FAR WEST.** (4 cr; prereq jr, sr or #: limited to 65 students; II MTWThF; Jones 207A) Smith
Detailed survey and analysis of the art and archaeology of the American Southwest, California, and the Northwest Coast. Sculpture, crafts, costuming, and architectural forms considered in terms of their historical development and cultural significance.

SECOND TERM

- **1015. ART IN WESTERN CIVILIZATION.** (4 cr; limited to 140 students; I-II MTW; Arch 25) Waldfoegel
Major achievements of Western artists 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.
- **3009. HISTORY OF MEDIEVAL ART.** (4 cr; limited to 65 students; III MTWThF; Jones 207A) Stones
Medieval architecture, painting, and sculpture from early Christian to Gothic period.
- **3011. HISTORY OF RENAISSANCE AND BAROQUE ART.** (4 cr; limited to 140 students; III MTWThF; Jones 207B) Canedy
The major monuments in architecture, sculpture, and painting from the early 14th century through the baroque period.
- **3465. MASTER PAINTERS OF THE 19TH CENTURY.** (4 cr; limited to 140 students; IV MTWThF; Jones 207B) Waldfoegel
European artists selected for their originality, aesthetic excellence, or subsequent influence. Goya, Constable, Cezanne, and Van Gogh.
- **3577. THE ARTS IN AMERICA: COLONIAL ERA THROUGH CIVIL WAR.** (4 cr; limited to 65 students; IV MTWThF; Jones 207A) Marling
American architecture, painting, sculpture, and the popular and decorative arts examined in their social, historical, and cultural context.
- **5521. 20TH-CENTURY ART IN THE UNITED STATES.** (4 cr; prereq 4 cr of art history; limited to 65 students; II MTWThF; Jones 207A) Marling
See First Term.

Arts, Studio (ArtS)

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

The Department of Studio Arts covers part of the cost of expendable materials by requiring students in most of its courses to purchase fee cards from the bursar by the end of the second week of classes.

FIRST TERM

- **1101. DRAWING I.** (4 cr; each section limited to 25 students)
Introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums.
 - Sec 1, I-II MTWThF, ArtB 140, Feinberg
 - Sec 2, I-II MTWThF, ArtB 141, Myers
 - Sec 3, III-IV MTWThF, ArtB 160, Somberg
- **1102. DRAWING II.** (4 cr; limited to 25 students; prereq 1101; III-IV MTWThF; Art B151) Abbott
Work from life and nature; introduction to color and pictorial structure.
- **1104. COLOR.** (4 cr; limited to 25 students; prereq 1101; I-II MTWThF; ArtB 160) Somberg
Intensive investigation of color and its visual implication.
- **1105. BEGINNING PAINTING.** (4 cr; limited to 15 students; I-II MTWThF; ArtB 161) Hendler
Contemporary and traditional surfaces in oil and acrylic media. Meets with 3120.
- **1302. SCULPTURE.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 50) Potratz
Study of structure with emphasis on form and space. Clay, plaster, wood. Mold making and casting.
- **1401. INTRODUCTION TO STUDIO ARTS.** (4 cr; limited to 170 students; III-IV MTWThF; BlegH 5) Hendler
Concepts of visual art making in their contemporary and historical context. The concerns, media, and environment of the practicing artist. Offers broad aesthetic foundation for entering beginning courses in any medium offered by the department and better understanding of the creative process, visual expression, and criteria. Lectures, demonstrations, and discussions.
- **1510. PRINTMAKING: INTAGLIO.** (4 cr per qtr [max 8 cr]; limited to 20 students; I-II MTWThF; ArtB 170) Priede
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) Henkel
The photographic medium and its background and meaning today. Lectures on contemporary and historical use of photography. Methods of use of camera, film development, and enlarging. Emphasis on the creative process.

- **1801. CERAMIC PROCESSES.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 10) Hoard
Clay work by hand and forming on potter's wheel. Ceramics as creative expression, with technical considerations of clays, glazes, and kilns. Pottery and sculptural approaches.
- **3110. DRAWING.** (4 cr per qtr [12 cr max]; limited to 25 students; prereq 1102; III-IV MTWThF; ArtB 150) Gray
Drawing from model, still life, nature. Principles of anatomy.
- **3120. PAINTING.** (4 cr per qtr [12 cr max]; limited to 10 students; prereq 1105 and 8 cr of 3110 or #; I-II MTWThF; ArtB 161) Hendler
Media and problems in painting; individual projects and instruction. Meets with 1105
- **3160. WATERCOLOR.** (4 cr per qtr [12 cr max]; limited to 15 students; prereq 1101, 1104, or #)
Introduction to transparent watercolor; gouache, casein, tempera. Figure, still life, landscape, abstract design. Meets with 5160.
Sec 1, I-II MTWThF, ArtB 151, Busa
Sec 2, III-IV MTWThF, ArtB 141, Myers
- **3301. SCULPTURE: DIRECT METAL.** (4 cr; limited to 7 students; prereq 1301, 1302; I-II MTWThF; ArtB 65) Baldwin
Welding and brazing. Meets with 3305, 5310, 5350.
- **3303. SCULPTURE: CAST METAL.** (4 cr; prereq 1301, 1302; limited to 10 students; III-IV MTWThF; HoIB) Potratz
Lost wax and sand casting in bronze, aluminum, iron. Meets with 5330.
- **3305. SCULPTURE: KINETICS.** (4 cr; limited to 7 students; prereq 1301, 1302; I-II MTWThF; ArtB 65) Baldwin
Constructions, kinetics, electronics. Meets with 3301, 5310, 5350.
- **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) Priede
Intaglio techniques on metal and collagraph. Embossing. Meets with 5510.
- **3701. FILMMAKING.** (4 cr; limited to 8 students; III-IV MTWThF; ArtB 120) Strommer
Practical aspects of making films. Meets with 3740.
- **3710. PHOTOGRAPHY.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1701 or Jour 1301 or #; III-IV MTWThF; ArtB 131) Henkel
Continued work in photographic controls and processes. Introduction to related photosensitive media. Emphasis on the creative process, with attention given to individual interests and requirements.
- **3740. FILM WORKSHOP.** (4 cr per qtr [12 cr max]; limited to 7 students; prereq #; III-IV MTWThF; ArtB 120) Strommer
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; ArtB 10) Hoard
Emphasis on wheel throwing. Advanced design problems and introduction to glaze and clay experimentation. Development of personal expression in ceramic medium. Meets with 5810.
- 3970. DIRECTED STUDY.** (1-5 cr per qtr [8 cr max]; prereq 24 cr in studio arts and #)
- 3980. DIRECTED INSTRUCTION.** (1-5 cr per qtr [8 cr max]; prereq #)
Students assist in teaching a course they have completed.
- **5110. DRAWING.** (4 cr per qtr [16 cr max]; limited to 25 students; prereq 12 cr of 3110 or equiv; III-IV MTWThF; ArtB 140) Busa
Drawing in all mediums from life.
- **5160. WATERCOLOR.** (4 cr per qtr [16 cr max]; limited to 10 students; prereq 3160 or #)
Advanced watercolor techniques, aesthetic directions. Individual concepts and development of sensibilities. Meets with 3160.
Sec 1, I-II MTWThF, ArtB 151, Busa
Sec 2, III-IV MTWThF, ArtB 141, Myers
- **5310. SCULPTURE: DIRECT METAL.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 3301; I-II MTWThF; ArtB 65) Baldwin
Meets with 3301, 3305, 5350.
- **5330. SCULPTURE: CAST METAL.** (4 cr per qtr [16 cr max]; prereq 3303; limited to 5 students; III-IV MTWThF; HoIB) Potratz
Lost wax and sand casting in bronze, aluminum, iron. Meets with 3303.
- **5350. SCULPTURE: KINETICS.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 3305; I-II MTWThF; ArtB 65) Baldwin
Constructions, kinetics, electronics. Meets with 3301, 3305, 5310.
- **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) Priede
Color processes, intaglio, and combined techniques. Meets with 3510.

- **5810. CERAMICS.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 12 cr of 3810 or #; III-IV MTWThF; ArtB 10) Hoard
Aesthetic awareness and development; techniques and materials. Meets with 3810.
- 5970. DIRECTED STUDY.** (1-5 cr per qtr [12 cr max]; prereq 24 cr in studio arts and #)
- 8110. DRAWING.** (3 cr per qtr [9 cr max]; prereq #) Busa, Hendler, Somberg, Abbott, Gray, Feinberg
- 8120. PAINTING.** (3 cr per qtr [18 cr max]; prereq #) Busa, Hendler, Somberg, Abbott, Gray, Feinberg
- 8310. SCULPTURE: DIRECT METAL.** (3 cr per qtr [9 cr max]; prereq #) Baldwin
- 8330. SCULPTURE: CAST METAL.** (3 cr per qtr [9 cr max]; prereq #) Potratz
- 8350. SCULPTURE: KINETICS.** (3 cr per qtr [9 cr max]; prereq #) Baldwin
- 8510. PRINTMAKING.** (3 cr per qtr [27 cr max]; prereq #) Friede
- 8710. PHOTOGRAPHY.** (3 cr per qtr [18 cr max]; prereq #) Henkel
- 8810. CERAMICS.** (3 cr per qtr [18 cr max]; prereq #) Hoard

SECOND TERM

- **1101. DRAWING I.** (4 cr; each section limited to 25 students)
See First Term.
Sec 1, I-II MTWThF, ArtB 140, Roode
Sec 2, III-IV, MTWThF, ArtB 161, Cowette
- **1102. DRAWING II.** (4 cr; limited to 25 students; prereq 1101; I-II MTWThF; ArtB 161) Cowette
See First Term.
- **1302. SCULPTURE.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 65) Rose
See First Term.
- **1701. PHOTO MEDIUM.** (4 cr; limited to 20 students; I-II MTWThF; ArtB 131) Brooks
See First Term.
- **1801. CERAMIC PROCESSES.** (4 cr; limited to 20 students; VI-VII MTWThF; ArtB 10) Lane
See First Term.
- **3110. DRAWING.** (4 cr per qtr [12 cr max]; limited to 25 students; prereq 1102; III-IV MTWThF; ArtB 140) Roode
See First Term.
- **3120. PAINTING.** (4 cr per qtr [12 cr max]; limited to 10 students; prereq 1105 and 8 cr of 3110 or #; III-IV MTWThF; ArtB 151) Rowan
See First Term.
- **3160. WATERCOLOR.** (4 cr per qtr [12 cr max]; limited to 15 students; prereq 1101, 1104, or #; I-II MTWThF; ArtB 151) Rowan
See First Term. Meets with 5160.
- **3302. SCULPTURE: PLASTICS MEDIA.** (4 cr; limited to 10 students; prereq 1301, 1302; III-IV MTWThF; ArtB 50) Rose
Meets with 5320.
- **3710. PHOTOGRAPHY.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1701 or Jour 1301 or #; III-IV MTWThF; ArtB 131) Brooks
See First Term.
- **3810. CERAMIC DESIGN.** (4 cr per qtr [12 cr max]; limited to 20 students; prereq 1801 or #; III-IV MTWThF; ArtB 10) Lane
See First Term.
- 3970. DIRECTED STUDY.** (1-5 cr per qtr [8 cr max]; prereq 24 cr in studio arts and #)
- 3980. DIRECTED INSTRUCTION.** (1-5 cr per qtr [8 cr max]; prereq #)
See First Term.
- **5120. PAINTING.** (4 cr per qtr [16 cr max]; limited to 10 students; prereq 12 cr of 3120 and #; III-IV MTWThF; ArtB 151) Rowan
See First Term. Meets with 3120.
- **5160. WATERCOLOR.** (4 cr per qtr [16 cr max]; limited to 10 students; prereq 3160 or #; I-II MTWThF; ArtB 151) Rowan
See First Term. Meets with 3160.
- **5320. SCULPTURE: PLASTICS MEDIA.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 3302; III-IV MTWThF; ArtB 35) Rose
Meets with 3302.

- **5810. CERAMICS.** (4 cr per qtr [16 cr max]; limited to 5 students; prereq 12 cr of 3810 or #; III-IV MTWThF; ArtB 10) Lane
See First Term.
- 5970. DIRECTED STUDY.** (1-5 cr per qtr [12 cr max]; prereq 24 cr in studio arts and #)
- 8110. DRAWING.** (3 cr per qtr [9 cr max]; prereq #) Rowan, Roode, Cowette
- 8120. PAINTING.** (3 cr per qtr [18 cr max]; prereq #) Rowan, Roode, Cowette
- 8320. SCULPTURE: PLASTICS MEDIA.** (3 cr per qtr [9 cr max]; prereq #) Rose
- 8710. PHOTOGRAPHY.** (3 cr per qtr [18 cr max]; prereq #) Brooks

Chicano Studies (Chic)

FIRST TERM

- 3507. INTRODUCTION TO CHICANO LITERATURE.** (4 cr; II MTWThF; ForH 175) Hinojosa-Smith
Chicano fiction, poetry, and drama.

SECOND TERM

- 3212. LA CHICANA.** (4 cr; III MTWThF; ForH 170) Trujillo
Examines the philosophy and psychology of the Chicano in order to understand the Chicana. Women of La Raza—those who have made an impact in literature, history, sociology, and politics. Literature by and about the Chicana.

Classics

*Classics (Clas)*¹

FIRST TERM

- 1042. GREEK AND ROMAN MYTHOLOGY.** (3 cr; prereq soph; I MTWThF; FoIH 202) Germain
Classical myths; stories of gods, demigods, and heroes that are a basic component of European cultural heritage; their artistic, religious, psychological, and anthropological implications.
- 3007. THE WORLD OF GREECE.** (4 cr, \$5007; III MTWThF; FoIH 202) Mellor
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. The golden age of Greece in the 5th century B.C. to the expansion of the Greek spirit under Alexander.
- 3051. GREEK ARCHAEOLOGY: ARCHAIC, CLASSICAL, AND HELLENISTIC.** (4 cr; II MTWThF; FoIH 201) Sahin
An introductory survey of Greek archaeology with emphasis on the archaic, classical, and Hellenistic periods.
- 5120. FIELD RESEARCH IN ARCHAEOLOGY.** (4 cr)
Field excavation, survey, and research. Techniques of excavation and exploration; interpretation of archaeological materials.
Sicily, month of July
Field school in archaeological method conducted by the Center for the Archaeological and Anthropological Research of the Belice Valley (Sicily) at the site of Castelazzo. See Special Programs section.

SECOND TERM

- 1043. INTRODUCTION TO GREEK AND ROMAN ARCHAEOLOGY** (4 cr; II MTWThF; FoIH 204) Schrunk, Walsh
Archaeological evidence of selected aspects of daily life in prehistoric and classical times, including such activities as food producing, town building, and craft making.

¹Knowledge of Greek or Latin is not required.

- 3008. THE WORLD OF ROME.** (4 cr, §5008; IV MTWThF; FoIH 306) Sheets
General survey of Roman civilization from its origins to the reign of Constantine. The Roman way of life as seen in art, history, literature, and philosophy. The Etruscans and the golden age of Rome under Augustus.
- 5008. THE WORLD OF ROME.** (4 cr, §3008; IV MTWThF; FoIH 306) Sheets
Meets with 3008; students do additional work for advanced undergraduate and graduate credit.
- 5111. INFLUENCES ON THE ENGLISH LANGUAGE FROM LATIN AND GREEK: COMPARATIVE STUDY.** (5 cr, §1045-3045-3046; I MTWThF; FoIH 204) Erickson
Principles of word derivation. Greek and Latin prefixes, suffixes, and word roots etymologically productive for English; contrast of cultural aspects of the languages; comparison of grammatical features; semantic change. Knowledge of Greek or Latin not required. See Special Programs section.
- 5969. MATERIALS WORKSHOP FOR WORD STUDY.** (5 cr; prereq §5111 or #; III-IV MTWThF; FoIH 204) Erickson
Methods of teaching word study and etymology; use of computer assisted instruction in word study; preparation, analysis, of materials to meet varying instructional requirements. A companion course to Clas 5111. Knowledge of Latin or Greek not required. See Special Programs section.

Latin (Lat)

FIRST TERM

- 1101-1102†. BEGINNING LATIN.** (5 cr per qtr; prereq 1101 or equiv for 1102; II-IV MTWThF; FoIH 204) Ruebel
Mastery of structure of Latin, for attaining reading knowledge; oral reading and composition. See Special Programs section.
- 3001. BEGINNING LATIN: INTENSIVE ACCELERATED.** (10 cr, §1101-1102-1103, §3051-3052; II-IV MTWThF; FoIH 108) Melis
Ten class hours weekly, plus individual and small group sessions. Grammar, syntax, composition, and reading. See Special Programs section.

SECOND TERM

- 3104. LATIN READINGS.** (5 cr; prereq 1104 or equiv or #; III MTWThF; FoIH 302) Sonkowsky
Reading of selected Latin authors, development of reading proficiency, introduction to cultural and literary studies as in 1104, with advanced assignments. Meets with 8120.
- 8120. LATIN TEXT COURSE.** (3 cr; prereq 3052 or Δ; restricted to students in depts other than Classics; III MTWThF; FoIH 302) Sonkowsky
For nonmajors who wish text work in Latin for a minor or related field. Meets with 3104. Supplementary work at the discretion of the instructor.

Communication Disorders (CDIs)

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

FIRST TERM

- **3100. CLINICAL AND RESEARCH OBSERVATION.** (2 cr; S-N only; limited to 10 students; prereq 2nd-qtr jr or sr majoring in communication disorders, #) Chaiklin, Starr, Haroldson
Supervised observation of clinical procedures such as evaluation and treatment of persons with communication disorders or of research relating to normal and disordered communication.
- 3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY.** (4 cr; II-III TTh; FoIH 303) Haroldson
Concepts basic to understanding normal and abnormal speech and hearing functions. Selected communication problems. Strategies and systems of delivery of clinical services.
- 5704. NOISE AND MAN.** (4 cr; prereq 5301 or #; II MTWThF; 118 Medical Research East) Ward
Temporary and permanent effects of steady, intermittent, and impulse noise on hearing and health. Annoyance and community noise. Noise measurement, reduction, and control; ear defenders and their limitations. Hearing conservation programs; preemployment testing and monitoring audiometry.

5900. TOPICS IN COMMUNICATION DISORDERS

Sec 1, Clinical Management and Evaluation of Neurogenic Speech and Language Problems in Children, 4 cr, III-IV, FolH 303, Yoss

Emphasis on dysarthria, acquired and developmental aphasia, developmental apraxia of speech.

Sec 2, Administration, Coordination, and Supervision of Speech and Language Services, 4 cr, VI-VIII TTh, FolH 303, Yoss

Personnel, service delivery options, training and in-service work, relationship to other professionals, research opportunities, staff expansion.

Sec 3, The Nature and Nurture of the Human Voice, 2 cr, IV TTh, FolH 303, Starr

Designed for persons in the speaking professions (i.e., teachers, actors, singers, lawyers) and for those who teach others to speak or sing. The physical, acoustical, and psychological bases of voice. Medical and functional conditions associated with voice disorders. Strategies and procedures used in management and prevention of voice problems.

5970. DIRECTED STUDIES. (Cr ar [may be repeated for cr]; prereq #) Staff

Directed readings and preparation of reports on selected subjects.

8520. ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY. (2, 4, or 6 cr [may be repeated for cr]; prereq #; \$2 lab fee) McDermott, Starr, Haroldson

Specialized clinical practice. Evaluation and clinical management of persons with communication disorders.

8714. SELECTION AND USE OF HEARING AIDS. (3 cr; prereq 8306 or #; IV MTWTh; ShH 119) 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 #; \$2 lab fee) Chaiklin

Supervised internship experiences for graduate students working with communication disorders of persons with auditory impairment.

8990. DIRECTED RESEARCH. (Cr ar [may be repeated for cr]; prereq #; \$2 lab fee) Staff

Open to graduate students engaged in research.

SECOND TERM

● **3100. CLINICAL AND RESEARCH OBSERVATION.** (2 cr; S-N only; limited to 10 students; prereq 2nd-qtr jr or sr majoring in communication disorders, #) Staff

See First Term.

3101. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY. (4 cr; II-III TTh; FolH 303) Costley, Weber

See First Term.

5970. DIRECTED STUDIES. (Cr ar [may be repeated for cr]; prereq #) Staff

See First Term.

8520. ADVANCED CLINICAL PRACTICE IN SPEECH PATHOLOGY. (2, 4, or 6 cr [may be repeated for cr]; prereq #; \$2 lab fee) Staff

See First Term.

8720. CLINICAL METHODS AND PRACTICE IN AUDIOLOGY. (2, 4, or 6 cr [may be repeated for cr]; prereq #; \$2 lab fee) Staff

See First Term.

8990. DIRECTED RESEARCH. (Cr ar [may be repeated for cr]; prereq #; \$2 lab fee) Staff

See First Term.

Composition—See English

Criminal Justice Studies (CJS)

FIRST TERM

5101. CRIMINAL LAW. (4 cr; 8:00-9:30 TWTh; Law 15) Sarlaha

General criminal law, emphasizing its philosophical underpinnings. Substantive law of homicide, theft, conspiracy, and attempt, defenses of insanity, self-defense, and mistake of fact or law.

- 5102. CRIMINAL PROCEDURE.** (4 cr; 9:30-11:00 TWTh; Law 15) Samaha
Processes by which persons are convicted of crime. Police discretion to arrest, the constitutional law of arrest, search and seizure, role of the prosecutor, plea bargaining, sentencing, and postconviction relief.

SECOND TERM

- 5101. CRIMINAL LAW.** (4 cr; 9:30-11:00 TWTh; BlegH 420)
See First Term.
- 5102. CRIMINAL PROCEDURE.** (4 cr; 8:00-9:30 TWTh; BlegH 420)
See First Term.

East Asian Languages

Chinese (Chn)

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 summer courses.

- 1011-1012-1013}. INTENSIVE FIRST-YEAR CHINESE.** (15 qtr cr for both terms [10 semester cr]; I-IV MTWThF; KoltH S136) Liu
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, AndH 230
 - 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 240
 - Sec 2, III MTWThF, BlegH 240
 - Sec 3, IV 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
- **3102. MACROECONOMIC THEORY.** (4 cr, §5152; limited to 50 students; prereq 1001, 1002, Math 1111 or equiv or #; IV MTWThF; BlegH 255)
Determinants of national income, employment, and price level; aggregate consumption and investment.

- **3501. LABOR ECONOMICS.** (4 cr, §5531; limited to 40 students; not open to economics majors; prereq 1001, 1002; III MTWThF; BlegH 130)
Role of labor in economy; labor as a factor of production, population, and the labor force; economics of labor markets; labor market institutions; theories of wages and employment; unions and collective bargaining; public policy.
- **3605. CONSUMER DECISION MAKING.** (4 cr; limited to 50 students; prereq 1001, 1002 or equiv; III MTWThF; BlegH 120)
Application of economic principles to major decisions of consumers. Payoff in improved decisions versus cost of search. Expenditure control. Saving; optimal distribution of assets; insurance principles. Consumer protection. Economics of health care.
- **3701. MONEY AND BANKING.** (4 cr, §5721; limited to 40 students; prereq 1001, 1002 or equiv; not open to economics majors; I MTWThF; BlegH 10)
Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve system, and monetary policy.
- **3801. ELEMENTS OF PUBLIC FINANCE.** (4 cr, §5821; limited to 40 students; prereq 1001, 1002 or equiv; not open to economics majors; II MTWThF; AndH 350)
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.
- 3970. DIRECTED STUDIES.** (Cr ar; prereq 1002, #)
- 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD.** (3 cr, §3101; prereq 1001, 1002, 1 qtr calculus, grad student or #)
Individual decision making by households and firms under conditions of monopoly, competition; some welfare economics.
 Sec 1, II MTWThF, BlegH 215
 Sec 2, III MTWThF, BlegH 215
- 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT.** (3 cr, §3102; prereq 1001, 1002, 1 qtr calculus, grad student or #; IV MTWThF; BlegH 255)
Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding.
- **5531. LABOR ECONOMICS.** (4 cr, §3501; limited to 40 students; prereq 3101, 3102 or equiv; III MTWThF; BlegH 130)
See 3501.
- **5621. ECONOMICS OF URBAN PROBLEMS.** (4 cr; limited to 50 students; prereq 1001, 1002 or equiv; IV MTWThF; BlegH 215) Coen
Unemployment and central city decay. Minimum guaranteed income proposals. Low income housing policies. Public policies toward health care. Financing public education. Fiscal problems of cities. Mass transit issues.
- **5721. MONEY AND BANKING.** (4 cr, §3701, §5701; limited to 40 students; prereq 3102 or equiv; I MTWThF; BlegH 10)
See 3701.
- **5821. ELEMENTS OF PUBLIC FINANCE.** (4 cr, §3801; limited to 40 students; prereq 3101...3131 recommended; II MTWThF; AndH 350)
See 3801.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq #) Staff
Areas useful to individual programs and objectives not available in regular course offerings.
- 8990. INDIVIDUAL GRADUATE RESEARCH.** (Cr ar) Staff

SECOND TERM

- **1001. PRINCIPLES OF MACROECONOMICS.** (4 cr, §1004, §1014, §3001, §3002; each section limited to 50 students; prereq 3rd-4th fr)
See First Term.
 Sec 1, I MTWThF, BlegH 220
 Sec 2, II MTWThF, BlegH 250
- **1002. PRINCIPLES OF MICROECONOMICS.** (4 cr, §1005, §1015, §3001, §3002; each section limited to 50 students; prereq 3rd-4th fr)
See First Term.
 Sec 1, I MTWThF, BlegH 440
 Sec 2, II MTWThF, BlegH 440
 Sec 3, III MTWThF, BlegH 440
 Sec 4, IV MTWThF, BlegH 420

- **3101. MICROECONOMIC THEORY.** (4 cr, §5151; each section limited to 40 students; prereq 1001, 1002, Math 1111 or equiv or #)
See First Term.
Sec 1, II MTWThF, BlegH 220
Sec 2, III MTWThF, BlegH 220
- **3102. MACROECONOMIC THEORY.** (4 cr, §5152; limited to 40 students; prereq 1001, 1002, Math 1111 or equiv or #; IV MTWThF; BlegH 125)
See First Term.
- **3131. WELFARE ECONOMICS.** (4 cr; limited to 50 students; prereq 3101 or 3101H or equiv; I MTWThF; BlegH 10)
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.
- **3711. MACROECONOMIC POLICY.** (4 cr, §3731, §5731; limited to 40 students; not open to economic majors; prereq 1001, 1002 or equiv; III MTWThF; BlegH 130)
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.
- 3970. DIRECTED STUDIES.** (Cr ar; prereq 1002, #)
- 5151. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD.** (3 cr, §3101; prereq 1001, 1002, 1 qtr calculus, grad student or #)
See First Term.
Sec 1, II MTWThF, BlegH 220
Sec 2, III MTWThF, BlegH 220
- 5152. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT.** (3 cr, §3102; prereq 1001, 1002, 1 qtr calculus, grad student or #; IV MTWThF; BlegH 125)
See First Term.
- **5307. COMPARATIVE ECONOMIC SYSTEMS.** (4 cr, §5337; limited to 40 students; not open to economics majors; prereq 1001, 1002 or equiv; II MTWThF; BlegH 205)
Functions of all economic systems; the market economy, liberal socialism, centrally planned economy. Analysis of American and Soviet economies.
- **5337. COMPARATIVE ECONOMIC SYSTEMS.** (4 cr, §5307; limited to 40 students; prereq 3101, 3102 or #; II MTWThF; BlegH 205)
See 5307.
- **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 rates, international monetary reform.
- **5431. INTERNATIONAL ECONOMICS.** (4 cr, §5401; limited to 40 students; prereq 3101, 3102 or equiv or #; IV MTWThF; BlegH 155)
- **5731. MACROECONOMIC POLICY.** (4 cr, §3711, §3731; limited to 40 students; prereq 3102; III MTWThF; BlegH 130)
See 3711.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq #) Staff
See First Term.
- 8990. 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

- **1012. INTRODUCTION TO THE LITERATURE OF THE RENAISSANCE: 1485-1660.** (4 cr; limited to 40 students; I MTWThF; LindH 302) L. Durham
Typical authors: More, Sidney, Spenser, Shakespeare, Donne, Milton.

- **1015. INTRODUCTION TO VICTORIAN LITERATURE: 1832-1901.** (4 cr; limited to 40 students; II MTWThF; LindH 302) Hirsch
Typical authors: Tennyson, Browning, Hopkins, Arnold, Dickens, the Brontës.
- **1017. INTRODUCTION TO MODERN LITERATURE: POETRY.** (4 cr; limited to 40 students; III MTWThF; LindH 302) Luke
Selected texts; critical discussion and writing.
- **1018. INTRODUCTION TO MODERN LITERATURE: PROSE FICTION.** (4 cr; limited to 40 students; IV MTWThF; LindH 302) Nelson
Selected texts; critical discussion and writing.
- 1241. INTRODUCTION TO SHAKESPEARE.** (4 cr; III MTWThF; LindH 305) Luke
Lecture survey of Shakespeare's work, treating approximately 10 plays. For students in all colleges of the University.
- 3112. SURVEY OF ENGLISH LITERATURE.** (4 cr; II MTWThF; LindH 215) McClure
Historical survey of major figures, movements, and trends in English literature. Milton to Johnson, including Dryden, Swift, and Pope.
- 3241. SHAKESPEARE.** (4 cr; IV MTWThF; LindH 215) Clayton
Plays from Shakespeare's early and middle periods. All sections will read *A Midsummer Night's Dream*, *Hamlet*, a history play, and three or four other plays.
- 3242. SHAKESPEARE.** (4 cr; II MTWThF; LindH 303) Steinmann
Plays from the middle and late periods. All sections will read *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays.
- 3411. AMERICAN LITERATURE.** (4 cr; IV MTWThF; LindH 305) Griffin
Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course, with wide reading. Beginnings through Hawthorne.
- 3455. AMERICAN SHORT STORY.** (4 cr; II MTWThF; Arch 55) Ross
Readings from the 18th century to the present.
- 5151. 18TH-CENTURY ENGLISH NOVEL.** (4 cr; IV MTWThF; LindH 217) McClure
Novels by such authors as Defoe, Richardson, Fielding, Smollett, Sterne, and Austen.
- 5261. MILTON.** (4 cr; III MTWThF; LindH 217) Haley
Paradise Lost, *Samson Agonistes*, minor poems, *Areopagitica*, and often, although not always, *Paradise Regained*.
- 5311. ROMANTIC WRITERS: WORDSWORTH.** (4 cr; I MTWThF; LindH 217) Luke
- 5432. AMERICAN POETRY.** (4 cr; IV MTWThF; LindH 203) Ross
Major figures; historical and intellectual background; poetic theory since 1890. Typical authors: Frost, Stevens, Pound, Eliot, Moore, Williams.
- 5451. AMERICAN NOVEL.** (4 cr; II MTWThF; LindH 305) Griffin
Through the 19th century. Typical authors: Cooper, Hawthorne, Melville, Stowe, Twain, James.
- 5831. AMERICAN ENGLISH.** (4 cr; prereq 5851 or #; I MTWThF; LindH 305) MacLeish
History of the English language in the United States; significant regional variation.
- 5851. STRUCTURE OF MODERN ENGLISH.** (4 cr, §3851; III MTWThF; LindH 203) MacLeish
Modern English grammar: phonology, syntax, and semantics; variations and change.
- 5860. STUDIES IN THE ENGLISH LANGUAGE: TRADITIONAL ENGLISH GRAMMAR.** (4 cr; prereq 5851 or #; IV MTWThF; LindH 229) Steinmann
Investigation of such grammatical notions as parts of speech (adjective, adverb, noun, etc.), functions (subject, direct object, modifier, etc.), clauses (independent, relative, etc.), person, number, gender, case, tense, voice, aspect, mood, and agreement. Analysis of sentences and discourses. Readings in traditional grammar (Poutsma, Jespersen, Quirk, etc.)
- 5940. FIGURES IN ENGLISH AND AMERICAN LITERATURE: INTENSIVE SHAKESPEARE.** (4 cr; III MTWThF; LindH 215) Clayton
Close study of two to four plays.

SECOND TERM

- **1014. INTRODUCTION TO ROMANTIC LITERATURE: 1789-1832.** (4 cr; limited to 40 students; II MTWThF; LindH 215) O'Brien
Typical authors: Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.
- **1016. INTRODUCTION TO AMERICAN LITERATURE.** (4 cr; limited to 40 students; I MTWThF; LindH 203) Geffen
Selected texts; critical discussion and writing.

3113. **SURVEY OF ENGLISH LITERATURE.** (4 cr; IV MTWThF; LindH 305) Rosendahl
Blake to Yeats, including Wordsworth, Coleridge, Keats, Tennyson, and Browning.
3241. **SHAKESPEARE.** (4 cr; IV MTWThF; LindH 215) Madden
See First Term.
3242. **SHAKESPEARE.** (4 cr; II MTWThF; LindH 305) Rosendahl
See First Term.
3251. **THE KING JAMES BIBLE AS LITERATURE.** (4 cr; IV MTWThF; LindH 217) O'Brien
The Old Testament and literary tradition. The historical narratives, prophets, psalms, and wisdom literature.
3412. **AMERICAN LITERATURE.** (4 cr; III MTWThF; LindH 305) Geffen
Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Thoreau and Melville through James.
- 3851. **THE ENGLISH LANGUAGE.** (4 cr, \$5851; limited to 50 students; I MTWThF; LindH 305) Brown
An introduction to the English language including English grammars, phonetics and phonology, British and American dialects, and native-language acquisition.
5152. **19TH-CENTURY ENGLISH NOVEL.** (4 cr; III MTWThF; LindH 203) Madden
Novels by such authors as Scott, Dickens, the Brontës, Thackeray, Eliot, and Hardy.
5221. **CHAUCER I: THE CANTERBURY TALES.** (5 cr; III-IV MTWThF; LindH 229) McNally
Reading of *The Canterbury Tales*, Chaucer's language. This course is a prerequisite to all other courses in Middle English literature (5215-5222).
5312. **ROMANTIC WRITERS: BLAKE.** (4 cr; III MTWThF; LindH 215) Sugnet
5452. **AMERICAN NOVEL.** (4 cr; IV MTWThF; LindH 302) Furia
Late 19th and 20th centuries. Typical authors: James, Dreiser, Cather, Hemingway, Fitzgerald, Faulkner.
5543. **HAWTHORNE AND MELVILLE.** (4 cr; II MTWThF; LindH 217) Roth
5610. **20TH-CENTURY WRITERS: POST-WORLD WAR II BRITISH LITERATURE.** (4 cr; I MTWThF; LindH 217)
Reed
A survey of British literature since World War II, concentrating primarily on the novel but with some drama and poetry. The approach is critical, with consideration of technique and form as well as social history.
5920. **TOPICS IN ENGLISH AND AMERICAN LITERATURE: POPULAR FICTION.** (4 cr; IV MTWThF; LindH 203)
Roth
The nature and appeal of popular fiction studied through conventions of particular adventure forms; i.e., the western, science fiction, detective fiction, and the thriller.

English Composition (Comp)

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

FIRST TERM

- 1001.¹ **INTRODUCTORY COMPOSITION.** (4 cr; each section limited to 28 students; prereq assignment to Category 3 or 5, or completion of 0001...# after first day of class)
Guided practice in the fundamental structural and stylistic features of exposition and argumentation. Not an introduction to literary studies or to humanities.
Sec 1, II MTWThF, LindH 203, Staff
Sec 2, III MTWThF, LindH 229, Hirsch
Sec 3, IV MTWThF, LindH 303, Staff
- 1002.¹ **INTRODUCTORY COMPOSITION.** (4 cr; limited to 28 students; prereq assignment to Category 2 or completion of 1001...# after first day of class; IV MTWThF; LindH 303) Haley
See 1001.
- 1027.¹ **INTERMEDIATE COMPOSITION.** (4 cr; limited to 25 students; prereq soph and completion of freshman English or Δ...# after first day of class; II MTWThF, LindH 217) Nelson
Mastery of expository forms (e.g., comparison, analysis, cause-effect) and strategies of tone and diction for clear, accurate style.

¹Any student absent the first day (Tuesday, June 13, for first term, and Tuesday, July 18, for second term) will lose his or her place in class.

- **3030. WORKSHOP: IMAGINATIVE WRITING—June 12-30.** (6 cr; limited to 25 students; I-III MTWThF; Kolth S137) Carson
Discussion of the creative process in writing poetry, fiction, and drama, and intensive practice in all three genres. Designed for the student with some background in creative writing but who is not yet ready to specialize in any one genre.
- 3085. CONFERENCE COURSE IN ADVANCED COMPOSITION.** (1-4 cr; prereq completion of fr English, Δ; hrs ar)
Frequent writing conferences for individual students; lectures and discussion sessions in cooperation with major department; special arrangements for IT and CLA students.
- **3101. WORKSHOP: FICTION WRITING—June 12-30.** (6 cr; limited to 20 students; prereq #; VI-VIII MTWThF; LindH 203) Burns
Students will read and criticize each others' work. Study of the writer's notebook, character, tension, narrative line, fragmented narrative, and other aspects of fiction writing. Meets with 5101.
- **3104. WORKSHOP: POETRY WRITING—June 12-30.** (6 cr; limited to 20 students; prereq #; III-IV MTWThF; Arch 60) Browne
Students investigate the many possible ways of writing contemporary poetry, with generous reference to the modern and premodern tradition. numerous assignments, experiments, reading. Meets with 5104.
- **5101. WORKSHOP: FICTION WRITING—June 12-30.** (6 cr; limited to 20 students; prereq #; VI-VIII MTWThF; LindH 203) Burns
See 3101.
- **5104. WORKSHOP: POETRY WRITING—June 12-30.** (6 cr; limited to 20 students; prereq #; III-IV MTWThF; Arch 60) Browne
See 3104.

SECOND TERM

- **1001.¹ INTRODUCTORY COMPOSITION.** (4 cr; limited to 28 students; prereq assignment to Category 3 or 5 or completion of 0001...# after first day of class; III MTWThF; LindH 217) Brown
See First Term.
- **1002.¹ INTRODUCTORY COMPOSITION.** (4 cr; each section limited to 28 students; prereq assignment to Category 2 or completion of 1001...# after first day of class)
See 1001 First Term.
Sec 1, I MTWThF, LindH 303, Sugnet
Sec 2, II MTWThF, LindH 303, Furia

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 1977 by a faculty selection committee [grad students must also have approval of adviser]) Borg, Irish, Younoszai, Kayan, Emmert
Directed field study (SPAN program) in Israel, Mexico, Taiwan, and Yugoslavia, investigating current economic, political, educational, cultural, and religious patterns of life. Each participant studies the country carefully before leaving and writes a comprehensive report on 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; limited to 30 students; II-III MTWThF; FoIH 203)

¹Any student absent the first day (Tuesday, June 13, for first term, and Tuesday, July 18, for second term) will lose his or her place in class.

- **1102. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school French; I-II MTWThF; FolH 207)
- **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; III-IV MTWThF; FolH 208)
- **3015. FRENCH CONVERSATION AND COMPOSITION.** (5 cr; limited to 8 students; prereq 1105; III-IV MWF; FolH 307) Robinson
Combines traditional conversational and composition courses. Orthoepic in approach, seeking command of French both in pronunciation and grammar. Includes pastiche work, free composition, and translation from and into French.
- **3601. FRENCH LITERATURE IN ENGLISH TRANSLATION.** (5 cr [cr does not count toward French major]; limited to 40 students; taught in English; IV-V MWF; FolH 104) Akehurst
Representative works from medieval times to present examined through movements, genres, or themes.
- **3602. FRENCH LITERATURE IN TRANSLATION.** (5 cr [cr does not count toward French major]; limited to 40 students; taught in English; VI-VII MWF; FolH 104) Lock
See 3601.
- 3970. DIRECTED READINGS.** (1-5 cr; prereq undergrad, Δ)
- **5443. CLASSICAL COMEDY: MOLIERE.** (5 cr; prereq 3209 or above; limited to 20 students; V-VI MW, VI F; FolH 205) Renaud
Meets with 5607.
- **5607. CLASSICAL COMEDY: MOLIERE IN TRANSLATION.** (5 cr [cr does not count toward French major]; limited to 10 students; taught in English; V-VI MW, V F; FolH 205) Renaud
Study in depth of some ten plays by Moliere through various themes and perspectives. Meets with 5443.
- 8970. DIRECTED READINGS.** (1-5 cr; prereq # and consent of dept chair; hrs ar) Staff

FIRST AND SECOND TERMS: TEN-WEEK COURSE

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must register in both terms of the summer session and may not enroll in other summer courses.

- **1101-1102-1103†. BEGINNING FRENCH.** (15 cr for both terms; limited to 30 students)
Sec 1, II-IV MTWThF, FolH 209

SECOND TERM

- **1102. BEGINNING FRENCH.** (5 cr; each section limited to 30 students; prereq 1101 or 1 yr high school French)
Sec 1, II-III MTWThF, FolH 203
- **1103. BEGINNING FRENCH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school French; I-II MTWThF; FolH 208)
- **1105. INTERMEDIATE FRENCH.** (5 cr; limited to 30 students; prereq 1104; III-IV MTWThF; FolH 208)
- **3016. ADVANCED FRENCH COMPOSITION AND CONVERSATION.** (5 cr; limited to 18 students; prereq 3015 or #; III-IV MWF; FolH 103)
- **3604. MODERN FRENCH CINEMA: ITS LITERARY AND CULTURAL IMPACT.** (5 cr [cr does not count toward French major]; limited to 60 students; taught in English; \$2 lab fee; IV-VI TTh; ChEng 240) Conley
French cinema as an innovative art form; its effects on French arts and modern culture; the aesthetic vocabulary linked with French literary creation, 1920-70.
- 3970. DIRECTED READINGS.** (1-5 cr; prereq undergrad, Δ) Staff
- **5384. 20TH-CENTURY FRENCH DRAMA: EXISTENTIALISM TO THE PRESENT.** (5 cr; limited to 25 students; prereq 3209 or above; V-VI MWF; FolH 103) Antal
Anouilh, Sartre, Camus, Genet, Ionesco, Beckett, Arrabal, and less-recognized dramatists of the last decade.
- 8970. DIRECTED READINGS.** (1-5 cr; prereq # and consent of dept chair; hrs ar) Staff

Italian (Ital)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must register in both terms of the summer session and may not enroll in other summer courses.

- **1101-1102-1103†. BEGINNING ITALIAN.** (15 cr for both terms; limited to 30 students, must be reserved in JohH 12; II-IV MTWThF; FolH 304)
A course with speaking objectives based on an audiolingual approach. Students learn to understand and express fundamental structures of the language. Includes audiovisual aids.

SECOND TERM

- 5609. DANTE (IN ENGLISH).** (5 cr prereq #; [cr does not count toward Italian major]; II-III MWF; FolH 205 Pierce)

Geography (Geog)

FIRST TERM

- 3111. GEOGRAPHY OF MINNESOTA.** (4 cr; II MTWThF; BlegH 415) Rice
Physical resources, population, and commercial production. Field trips to eastern Minnesota.
- 3141. AFRICA.** (4 cr; I MTWThF; BlegH 415) Scott
Regional differentiation of human groups and environments; culture contact and problems of underdeveloped countries south of the Sahara.
- 3331. ECONOMIC GEOGRAPHY.** (4 cr; IV MTWThF; BlegH 415) R Adams
World patterns of economic activity; levels of development; appraisal of resources, production, circulation, and consumption; principles, models, and planning of economic behavior.
- **3441. LANDFORM GEOGRAPHY.** (4 cr; limited to 40 students; I MTWThF; BlegH 445) Brown
Landform resources in regional setting with emphasis on North America.
- 3870. DIRECTED STUDIES.** (1-15 cr per qtr) Staff
- 5112. WESTERN UNITED STATES.** (4 cr; III MTWThF; BlegH 440) Mather
Physical and human resources of western United States.
- 5383. TRANSPORTATION GEOGRAPHY.** (4 cr; prereq 3331 or #; III MTWThF; BlegH 415) Lea
Principles and theory of spatial development of transport systems; interaction of resource use and network growth; commodity and passenger flows; case studies at national, regional, and local (urban) levels.
- 8970. DIRECTED READINGS.** (1-5 cr) Staff

SECOND TERM

- 1301. HUMAN GEOGRAPHY.** (5 cr, §1302; I MTWThF; BlegH 435) Hart
Geography of population and principal ways of life; capacity of earth for future population.
- 3101. GEOGRAPHY OF UNITED STATES AND CANADA.** (4 cr; III MTWThF; BlegH 435) Hart
Interaction of the aspirations and abilities of different groups of people with the complexities of the natural environment to produce regional differentiation in the United States and Canada.
- 3211. EAST ASIA.** (4 cr, §5211; II MTWThF; BlegH 435) Hsu
Physical and human geography of China, Korea, and Japan; population pressure, economic development, and international relations.
- 3371. URBAN GEOGRAPHY.** (4 cr; II MTWThF; BlegH 425) Lea
Character, distribution, and development of cities in present-day world. Internal and external locational relationships.
- **3511. INTRODUCTION TO CARTOGRAPHY.** (4 cr; limited to 20 students per lab; prereq 5 cr in geography or #; \$2 lab fee; lect IV MTWThF; BlegH 445) Hsu
Principles of map design, compilation, specification, and drafting. Map symbols. History of cartography. Projections—analysis of construction, properties, and uses.
Lab 1, V T, BlegH 455
Lab 2, V Th, BlegH 455

3970. DIRECTED STUDIES. (1-15 cr per qtr) Staff

5701. FIELD RESEARCH. (4 cr; prereq 12 cr in geography and #) Lukermann
Field investigation in physical, cultural, and economic geography; techniques of analysis and presentation; reconstruction of environments. See Special Programs section.

8330. SEMINAR: AGRICULTURAL GEOGRAPHY. (3 cr; prereq #; III-IV T; SocSci 307) Mather

8700. SEMINAR: HISTORICAL FIELD. (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 using the facilities of Ludwig-Maximilians Universität, Munich, Germany. Permission of the German department is required for registration. See Special Programs section.

FIRST TERM

- **1101. BEGINNING GERMAN.** (5 cr, §1110; each section limited to 30 students)
Understanding, speaking, reading, and writing. Emphasis on reading.
Sec 1, I-II MTWThF, FolH 104
Sec 2, I-II MTWThF, FolH 105
Sec 3, III-IV MTWThF, FolH 105
- **1103. BEGINNING GERMAN.** (5 cr, §1110; limited to 30 students; prereq 1102; II-III MTWThF; FolH 107)
Wakefield
See 1101.
- **1301. INTERMEDIATE GERMAN.** (5 cr; limited to 30 students; prereq 1003 or 1103 or 15 cr of 1110 or placement; II-III MTWThF; FolH 305) Plummer
Expansion of basic skills.
- **3104. READING AND ANALYSIS OF LITERARY TEXTS: PROSE.** (4 cr; limited to 25 students; required of all German majors; prereq 1302; III MTWThF; FolH 207) Duroche
Reading fluency; appreciation of literary values through literary interpretation and familiarization with critical terminology.
- **3501. CONTEMPORARY GERMANY.** (4 cr; limited to 30 students; prereq 1 yr college German or 3 yrs high school German; IV MTWThF; FolH 205) Hirschbach
Introduction to culture and civilization of present-day West and East Germany.
- **3641. INTRODUCTION TO GERMAN FOLKLORE.** (4 cr [cr does not count toward German major]; limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; requires no knowledge of German; II MTWThF; FolH 205) Liberman
Traditional folklore genres; charms (magic), legends, fairy tales, ballads.
- 5510. TOPICS IN CONTEMPORARY GERMAN CULTURE: GERMAN DEMOCRATIC REPUBLIC.** (4 cr; prereq 3513 or equiv; II MTWThF; FolH 103) Hirschbach
In-depth examination of one topic in contemporary German culture in order to develop a methodology of Landeskunde.
- 5970. DIRECTED STUDIES.** (1-5 cr) Duroche
Guided individual reading or study.

SECOND TERM

- **1102. BEGINNING GERMAN.** (5 cr, §1110; each section limited to 30 students; prereq 1101)
See 1101 First Term.
Sec 1, I-II MTWThF, FolH 201, Fullerton
Sec 2, I-II MTWThF, FolH 105

- **3602. GERMAN LITERATURE IN TRANSLATION.** (4 cr [cr does not count toward German major]; limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; knowledge of German not required; II MTWThF; FolH 207)
Representative literary works from the age of Goethe, related to other literatures.
- 3604. GERMAN LITERATURE IN TRANSLATION AND THE FILM.** (4 cr; 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 by doing a portion of the reading in German; \$2 lab fee; III-IV MTWTh; HSUnitA 2-520) Plummer
Attitudes in modern Germany seen through literature and the film. Representative works related to historical and intellectual developments in modern Germany. Literary and cinematic treatment of similar thematic material.
- **3610. MODERN GERMAN AUTHORS IN TRANSLATION.** (4 cr [cr does not count toward German major]; limited to 30 students; may be used in fulfillment of Route II, Part B of BA foreign language requirement; knowledge of German not required; IV MTWThF; FolH 302)

Greek—See Classics

Hebrew—See Near and Middle Eastern Studies

Hindi—See South Asian Studies

History (Hist)

FIRST TERM

- 1001. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1001H, §3001; not open to jrs, srs; II MTWThF; AndH 230) Thayer
Development of Western Europe to 1715.
- 1053. ANCIENT CIVILIZATION.** (5 cr, §3053; III MTWThF; AndH 230) Lawson
Roman civilization to 305 A.D.
- 1101. INTRODUCTION TO MEDIEVAL AND RENAISSANCE HISTORY.** (4 cr, §1111, §3101; I MTWThF) Bachrach
The early Middle Ages, decline of Rome, barbarian kingdoms, Carolingian empire.
- 1301. AMERICAN HISTORY.** (4 cr, §1301H; I MTWThF; BlegH 130) Menard
Colonial, early national period through sectional crisis.
- 1401. SURVEY OF LATIN AMERICAN HISTORY.** (4 cr, §3401; III MTWThF; BlegH 10) Schwartz
Colonial period to 1800.
- 3001. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1001, §1001H; II MTWThF; AndH 230) Thayer
See 1001.
- 3053. ANCIENT CIVILIZATION** (3 cr, §1053; III MTWThF; AndH 230) Lawson
See 1053.
- 3101. INTRODUCTION TO MEDIEVAL AND RENAISSANCE HISTORY.** (4 cr, §1101, §1111; I MTWThF) Bachrach
See 1101.
- 3200. SELECTED CONTEMPORARY PROBLEM: REVOLUTION IN SOUTHERN AFRICA.** (4 cr; I MTWThF; BlegH 155) Isaacman
- 3222. EUROPEAN SOCIAL HISTORY THROUGH LITERATURE.** (4 cr; III MTWThF; BlegH 155) Rudolph
Use of novels, short stories as main sources.
- 3273. HISTORY OF SCANDINAVIA.** (4 cr; IV MTWThF; BlegH 155) Metcalf
Modern Scandinavia—19th, 20th centuries.
- 3401. SURVEY OF LATIN AMERICAN HISTORY.** (4 cr, §1401; III MTWThF; BlegH 10) Schwartz
See 1401.
- 3471. 20TH-CENTURY JAPAN.** (4 cr, §5471; IV MTWThF; BlegH 150) Marshall
The modern transformation, 1870s to 1970s.

- 3804. ERA OF THE AMERICAN REVOLUTION.** (4 cr; II MTWThF; BlegH 120) Howe
Causes and consequences of the Revolution.
- 3822. UNITED STATES IN THE 20TH CENTURY.** (4 cr; III MTWThF; BlegH 120) Berman
1920 to 1945.
- 3881. HISTORY OF AMERICAN FOREIGN RELATIONS.** (4 cr; II MTWThF; BlegH 130) Brauer
Foreign policy and diplomacy of American independence and territorial and commercial expansion, 1775-1900.
- 3970. DIRECTED STUDIES.** (1-15 cr; prereq #)
Guided individual reading or study. Open to qualified students for 1 or more quarters.
- 3990. DIRECTED RESEARCH.** (1-15 cr; prereq #)
Qualified students, with consent of instructor, work on a tutorial basis.
- 5211. FRANCE IN THE OLD REGIME.** (4 cr; II MTWThF; BlegH 10) Bamford
From the origins of France to the Revolution of 1789.
- 5264. MODERN RUSSIA: 18TH CENTURY BACKGROUND.** (4 cr; III MTWThF; BlegH 115) Stavrou
Foundation of the Russian empire, modernization and expansion under Peter the Great and Catherine the Great. Russia's Europeanization.
- 5286. DIPLOMATIC HISTORY OF EUROPE IN THE 19TH AND 20TH CENTURIES.** (4 cr; III MTWThF; BlegH 235)
Kieft
1918 to present. Post-World War I peace settlement, causes of World War II, evolution of Cold War, and the Middle East.
- 5341. AMERICAN ECONOMIC HISTORY.** (4 cr; II MTWThF; BlegH 130) Green
Colonial period to 1865.
- 5471. TWENTIETH CENTURY JAPAN.** (5 cr, §3471; IV MTWThF; BlegH 150) Marshall
See 3471.
- 5970. DIRECTED STUDIES.** (1-15 cr; prereq #)
Qualified senior and graduate students may register for work on tutorial basis. Guided individual reading or study.
- 5990. DIRECTED RESEARCH.** (1-15 cr; prereq #)
Qualified senior and graduate students may register for work on tutorial basis.

SECOND TERM

- 1002. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1002H, §3002; not open to jrs, srs; II MTWThF; AndH 370) Tracy
Revolution, liberalism, and nationalism to 1870.
- 1003. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1003H, §3003; not open to jrs, srs; IV MTWThF; BlegH 235) Noonan
1870 to recent times.
- 1051. ANCIENT CIVILIZATION.** (3 cr, §3051; IV MTWThF; BlegH 130) Kelly
Near East to 500 B.C.
- 1302. AMERICAN HISTORY.** (4 cr, §1302H; III MTWThF; BlegH 125) Spear
Modern America.
- 1433. HISTORY OF AFRICA.** (4 cr, §3433; III MTWThF; BlegH 150) Kaba
1880 to present. The abuses of colonialism, African opposition and the liberation struggles.
- 1453. ASIAN CIVILIZATIONS.** (4 cr, §3453; II MTWThF; BlegH 150) Kopf
The decline of empires, European domination, cultural renaissance and nationalism.
- 3002. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1002, §1002H; II MTWThF; AndH 370) Tracy
See 1002.
- 3003. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4 cr, §1003, §1003H; IV MTWThF; BlegH 235)
Noonan
See 1003.
- 3051. ANCIENT CIVILIZATION.** (3 cr, §1051; IV MTWThF; BlegH 130) Kelly
See 1051.
- 3433. HISTORY OF AFRICA.** (4 cr, §1433; III MTWThF; BlegH 150) Kaba
See 1433.
- 3453. ASIAN CIVILIZATIONS.** (4 cr, §1453; II MTWThF; BlegH 150) Kopf
See 1453.

- 3467. REPUBLICAN CHINA: THE NATIONALIST REVOLUTION, 1900 TO THE PRESENT.** (4 cr, §5467; III MTWThF; BlegH 155) Farmer
Development of Chinese nationalism; interventions of Soviet Union, Japan, and the United States; failure of Kuomintang.
- 3970. DIRECTED STUDIES.** (1-15 cr; prereq #)
See First Term.
- 3990. DIRECTED RESEARCH.** (1-15 cr; prereq #)
See First Term.
- 5112. EUROPE IN HIGH MIDDLE AGES.** (4 cr; I MTWThF; BlegH 135) Reyerson
The medieval revival, 900-1150.
- **5381. MINNESOTA HISTORY WORKSHOP—July 17-28.** (5 cr; limited to 100 students, must be reserved at 1425 University Ave SE)
See Special Programs section.
- 5467. REPUBLICAN CHINA: THE NATIONALIST REVOLUTION, 1900 TO THE PRESENT.** (4 cr, §3467; III MTWThF; BlegH 155) Farmer
See 3467.
- 5970. DIRECTED STUDIES.** (1-15 cr; prereq #)
See First Term.
- 5990. DIRECTED RESEARCH.** (1-15 cr; prereq #)
See First Term.

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, §3001, §Rhet 1301; limited to 65 students; III-IV MW; ForH 120) Thomas
Eighteenth-century Europe. Old Regime through French Revolution and Napoleon; new science, Enlightenment, cult of sensibility; rococo, neoclassicism, incipient romanticism. Works by creative persons such as Pope, Voltaire, Rousseau, Diderot, Goethe, Watteau, Boucher, Hogarth, David, Goya, Mozart, Haydn.
- **1101. THE LIFE OF THE MIND: INTRODUCTION TO METHODS IN THE HUMANITIES.** (5 cr; limited to 35 students; I-II TTh; ForH 349) D'Andrea
Ways of reading and appreciating poetry, sculpture, history, philosophy, painting, rhetoric, music, and film. Works by creative persons such as Stevens, Einstein, Henry Moore, Bach, Lincoln, Plato, Genet, Euclid, Joyce, and Fellini.
- **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 civilizations. Correlations with literature, folklore, and certain anomalies of archaeology, geography, and psychology. Readings in Campbell, Fairservis, Gordon, Milton, de Santillana.
- **3012. EUROPEAN HERITAGE: ROMAN.** (5 cr, §1012, §Rhet 3322; limited to 65 students; prereq jr or sr; I-II MW; ForH 349) Leppert
Roman civilization of the late Republic and Empire, rise of Christianity. Literature, religion, philosophy, art, architecture. Integrative study of selected works influential in modern Western culture; e.g., Caesar, Lucretius, Virgil, Ovid, Seneca, Petronius, Augustine, Boethius.
- **3061. COUNTER-FAITH IN CONTEMPORARY NOVELS.** (5 cr; limited to 65 students; prereq 1004 or 3004; III-IV MW; ForH rm ar) Tapp
Selected writings of Camus, Clarke, Heinlein, Hesse, Huxley, Kazantzakis, Sartre, Skinner, Vonnegut — examined as embodiments of alternative faith perspectives and sensibilities that have emerged in alienation from the Western past.

SECOND TERM

- **1002. HUMANITIES IN THE MODERN WORLD II.** (5 cr, §3002, §Rhet 1302; limited to 65 students; III-IV MW; ForH 120) Kliger
Romanticism, liberalism, socialism; industrial revolution, materialism, cult of the individual and some counterstatements; realism, naturalism. Selected works by creative persons such as Wordsworth, Byron, Adam Smith, Bentham, Marx, Mill, Stendhal, Flaubert, Ibsen, Dostoevsky, Delacroix, Courbet, Daumier, Beethoven, Berlioz, Liszt.

- **1004. HUMANITIES IN THE MODERN WORLD IV.** (5 cr, §3004, §Rhet 3381; limited to 65 students; II MTWThF; ForH 155) Bryan
Europe ca. 1914-1940. Ideas and forms of society and culture: Leninist, fascist-Nazi, Freudian, neoorthodox. Expressionism, dada, surrealism. Selected works by creative persons such as Lenin, Freud, Kafka, Elliot, Duchamp, Klee, Kollwitz, Dali, Picasso, Stravinsky, Schönberg, Bartok, Wright, Gropius.

Indic—See South Asian Studies

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 Westbrook Hall, 373-7550), or for varying credit 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 offering.

Italian—See French and Italian

Jewish Studies—See Near and Middle Eastern Studies

Journalism and Mass Communication (Jour)

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

FIRST TERM

- 1005. VISUAL COMMUNICATION.** (3 cr; prereq 3rd-qtr 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 . . . photocommunication students must also pass 1301 with a C or better; III-IV MTWThF; MurH 212) Sim
Study and practice in fact gathering and journalistic writing. Problems in judgment and handling of news and news features.
- 1201. PRINCIPLES OF ADVERTISING.** (4 cr; prereq 1001 recommended for journalism majors; II MTWThF; MurH 311) Freund
Theory, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, radio, television as advertising media.
- 3776. MASS COMMUNICATIONS LAW.** (4 cr; prereq 1001 or 1011, 1101 or #; II MTWThF; MurH 308) Gillmor
Origins and background of principles of press law. The press and the First Amendment. Libel and its defenses. Confidentiality of sources. Pornography, free press and fair trial. Freedom of information or the public's right to know. Access to the media. Privacy. Advertising law, lobbying, antitrust laws. The regulation of broadcasting.

- 5182. PUBLICATION WORKSHOP—June 13-30.** (4 cr; for those who plan to advise high school or college newspapers, yearbooks, magazines; not open to journalism majors; 1:00-4:30 MTWThF; MurH 308) Staff
Intensive study of the role of high school newspaper and yearbook; analysis of content; study of design and makeup, typography, photography processes. Specially planned for secondary school publication advisers. See Special Programs section.
- 5221. PUBLICATION GRAPHICS.** (4 cr; prereq 3121 or 3231 or 8 cr in 3xxx- or 5xxx-level courses in art and design; \$2 lab fee; III MTWThF; MurH 315-20) Wilson
Processes in graphic communication. Technique and production of illustration. Significant graphic arts developments.
- 5501. COMMUNICATION AND PUBLIC OPINION I.** (4 cr, §Soc 5355; prereq 15 cr in social science depts; II MTWThF; MurH 420) Carter
Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation.
- 5601. HISTORY OF JOURNALISM.** (4 cr; III MTWThF; MurH 308) Emery
Development of American newspapers and periodicals from beginnings in Europe to present day; rise of radio and television; relation of communications developments to political, economic, and social trends.
- 5721. MASS MEDIA IN A DYNAMIC SOCIETY.** (4 cr; prereq 1201 or 3121 for journalism majors ...others #; I MTWThF; MurH 308) Ismach
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
- 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...or Δ where waiver of prereqs is warranted; also pass 1301 with a C or better; III-IV MTWThF; MurH 212) Hage
See First Term.
- **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; I MTWThF; MurH 212) Dennis
Reporting and editing news of courts and municipal, county, state, federal administrative and legislative agencies.
- **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.
- 5251. PSYCHOLOGY OF ADVERTISING.** (4 cr, §Psy 5751; prereq Psy 1001; IV MTWThF; SciCB 375) Jones
Psychological principles, research techniques, and applications in advertising and selling. Consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.
- 5549. PUBLIC RELATIONS.** (4 cr; prereq 15 cr in social science depts...# for nonmajors; III MTWThF; MurH 311) Lindsay
History and development of public relations practice and principles. Process and applications in a variety of institutional settings. Critique of public relations in contemporary society.
- 5970. ADVANCED PROJECTS IN JOURNALISM.** (1-4 cr [may be repeated for max 8 cr]; prereq journalism major, B avg, #) Staff
- 8990. SPECIAL PROBLEMS IN MASS COMMUNICATION.** (4 cr; for grad major or minor in mass communication; prereq #) Staff
See First Term.

Latin—See Classics

Library School (Lib)¹

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

FIRST TERM

- **5101. INTRODUCTION TO LIBRARIES AND LIBRARIANSHIP.** (5 cr; limited to 50 students; \$2 lab fee; II-III MTWTh, VH 1; lab I-V F, ar) Olson
Librarianship as a profession; development of libraries as social agencies; principles of library administration and management.
- 5102. MEDIA CENTER ADMINISTRATION.** (3 cr; prereq 5101, 5221, 5401; V-VI MW; WaLib 339) Olson
Organization and administration at the school building level of the library as the single agency that encompasses all forms of instructional materials; philosophy and objectives of services; administration and organization plans, procedures, and relationships.
- **5221. RECORDS OF KNOWLEDGE.** (4 cr; limited to 50 students; \$2 lab fee; V-VI MTWTh, VH 1; lab I-V F, ar) Rohde
History and development of the records of knowledge in relation to the communication problems of society; principles of selection and dissemination to meet library clientele information needs.
- **8223. GENERAL BIBLIOGRAPHY.** (4 cr; limited to 30 students; prereq 5101, 5221, 5401; III-IV MW; WaLib 339) Thomas
Major national and trade bibliographies with emphasis on those of the United States, Great Britain, France, Germany, and Russia; their use in selection and acquisition of print and nonprint materials and in the preparation of bibliographies.
- **8224. SUBJECT BIBLIOGRAPHY.** (4 cr; limited to 25 students; prereq 5101, 5221, 5401; III-IV TTh; WaLib 339) Thomas
The world of learning and the various disciplines as they have developed in the United States; the bibliographic apparatus in relation to the structure of the disciplines.
- **8402. ORGANIZATION OF INFORMATION II.** (4 cr; limited to 25 students; prereq 5101, 5221, 5401; \$2 lab fee; II-III MW; WaLib 339) Brekhuis
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.
- **8411. LIBRARY MECHANIZATION AND SYSTEMS ANALYSIS.** (4 cr; limited to 25 students; prereq 5101, 5221, 5401; \$2 lab fee; II-III TTh; WaLib 339) Brekhuis
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
Graduate students under Plan B may register for at least 4 credits in library research with the approval of the professor who will guide the research project.

SECOND TERM

- **5401. ORGANIZATION OF INFORMATION I.** (4 cr; limited to 50 students; \$2 lab fee; III-IV MTWTh; Ph 210) Simonton
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; \$2 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.
- 8233. HISTORY OF CHILDREN'S LITERATURE.** (4 cr; prereq 5101, 5221, 5401; VI-VII MW; WaLib 339) McClaskey
The history and study of children's literature in relation to social history with special reference to current applications for library services.
- 8241. HISTORY OF BOOKS AND PRINTING.** (4 cr; prereq 5101, 5221, 5401; V-VI TTh; WaLib 339) Maack
Bookmaking in its various forms from earliest times to the present. Development of the alphabet and the manuscript book; invention and spread of printing; design of the modern book with emphasis on aesthetic and technical aspects.

¹The Library School is a professional school that offers only graduate degrees and courses. Courses numbered 8000 and above are open only to graduate students and to librarians who hold a fifth-year degree in library science. Courses numbered at the 5000 level are open to anyone who has been admitted to the Graduate School or to any undergraduate in the College of Liberal Arts or the College of Education. A student who does not fall in one of the above categories must have registration for any library science course approved by an adviser in the Library School office, 419 Walter Library.

8970. **INDEPENDENT STUDY.** (Cr ar; prereq #) Staff

8990. **LIBRARY RESEARCH.** (Cr ar; prereq #) Staff
See First Term.

Linguistics (Ling)

FIRST TERM

3301. **PHONETICS.** (5 cr, §5003, §5301; prereq 3001 or ¶3001 or #; VI-VII MTWThF; FolH 103) Houlihan
Physiology and acoustics of speech sounds; practice and drill in production and perception. Meets with 5003 and 5301.

3811. **LANGUAGE LOYALTY AND BILINGUALISM IN MINNESOTA.** (4 cr; II MTWThF, 1 hr ar; FolH) Downing
Linguistic ecology; maintenance and loss of immigrant and native languages in America; linguistic borrowing; foreign accents; types of bilingual behavior; research strategies; student research on bilingual communities in the Twin Cities and surrounding areas.

5001. **INTRODUCTION TO LINGUISTICS.** (5 cr, §3001, §3005; III-IV MWF, III TTh; FolH 302) Kac, Sanders

5003. **APPLIED PHONETICS.** (4 cr, §3301, §5301; not open to linguistics majors; prereq 5001 or ¶5001 or #; VI-VII MTWThF; FolH 103) 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 ¶5001 or #; VI-VII MTWThF; FolH 103) Houlihan
See 3301. Meets with 3301 and 5003.

SECOND TERM

5721. **ENGLISH AS A SECOND LANGUAGE: METHODS.** (4 cr; prereq 3001 or 5001 or #; III-IV MWF; FolH 108)
Godfrey
Linguistics applied to teaching English as a second language.

Music (Mus)

(See also *Music Education under College of Education*)

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

FIRST TERM

1001. **FUNDAMENTALS OF MUSIC.** (4 cr; for non-music majors)
Basic musical symbols, vocabulary, rhythm, design, scale structures, intervals, chords. Development of basic piano skills; playing simple accompaniments.

Sec 1, I MTWThF, WuH 320, Baldwin

Sec 2, V MTWThF, WuH 320, Baldwin

1507. **SURVEY OF MELODIC AND HARMONIC PROCEDURES.** (3 cr; prereq #; I MTWThF; WuH 320) Gross
Principles of melodic and harmonic structure.

1517. **EAR-TRAINING AND SIGHT-SINGING.** (3 cr; prereq #; III MTWThF; WuH 320) Gross
Development of aural skills with concentration on sight-singing, interval recognition, melodic and harmonic dictation, and vocal improvisation.

1804. **WORLD MUSIC.** (4 cr; III MTWThF; ScH 4) Kagan
Music in universal perspective. Traits distinguishing styles, and cultural factors that influence musical creativity. Music of different cultures compared to examine forms and traits, to develop listening abilities and an understanding of human musical expressions.

3970. **DIRECTED STUDIES.** (1-15 cr; prereq #, Δ; hrs ar; ScH 104) Staff
Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students.

5370. **VOCAL PERFORMANCE SEMINAR.** (2 cr; prereq 18 cr in applied voice and #; VII MTWThF; ScH 108) Ware
Vocal performance in a seminar setting. Performance problems—stage deportment, interpretation, vocal technique, lyric diction.

- 5377. THE ADOLESCENT SINGING VOICE.** (3 cr; prereq 3xxx clearance in voice for vocal majors or 6 cr of applied voice for non-vocal majors; IV MTWThF; MusEd 101) Schuessler
Principles of voice for teaching adolescent singers. Directed teaching, required readings, and study of relevant repertoire.
- 5385. CHORAL CONDUCTING.** (4 cr; prereq #: II MTWThF; WuH 7A) Lancaster
Hand techniques, sound control, articulation, breath control, intonation, and other aspects of choral work.
- 5570. SEMINAR IN COMPOSITION—June 12-July 7.** (4 cr; prereq #: 10:10-12:40 MTWThF; ScH 103) Ultan
Aesthetic and technological influences on compositional attitudes and techniques; includes notation, electronic synthesis, new and expanded instrumental resources, and multimedia composition (e.g., stage and film).
- 5601. HISTORY OF OPERA.** (3 cr; prereq 9 cr in history of music, art, theatre, or European history from 1600, or #: VI MTWThF; WuH 7A) Sutton
Origins of opera; development as a musicodramatic form through analysis of libretto and music of representative masterpieces of the late Renaissance, baroque, classical, romantic, and contemporary periods.
- 5611. HYMNOLOGY.** (4 cr; prereq 6 cr in 1603-1604-1605-1606 or #: I MTWThF; ScH 3) Riedel
History of hymn texts and tunes. Byzantine and Roman hymns. Lutheran, Anglican, Baptist, Congregational, Methodist, Presbyterian, Unitarian, and other hymns. History of hymn books and hymn settings.
- 5705. LATIN AMERICAN MUSIC.** (4 cr; II MTWThF; ScH 4) Riedel
Pre-Maya and pre-Inca times through colonial period to present. Music of Indians in Brazil, Inca countries. Afro-American, Ibero-Latin American music. Folk, popular, contemporary music.
- 5950. TOPICS IN MUSIC**
- Sec 1, Vocal Techniques for Choral Directors,** 4 cr, prereq sr or grad student and #, III MTWThF, WuH 7A, Jorgenson
A practicum for choral directors. Vocal tract physiology, empirical and scientific approaches to vocal development, choral voicing.
- Sec 2, Romantic German/French Solo Vocal Repertoire,** 2 cr, prereq 3204, minimum 18 cr in applied voice and #, V MTWThF, MusEd 101, Davis
Master lessons in and coaching of standard German lieder and French melodie of the romantic/neoromantic era. Emphasis on vocal technique, musicianship, language pronunciation, style, and interpretation.
- 8990x.* SPECIAL PROBLEMS.** (2-12 cr; prereq 5841; hrs ar; ScH 104) Riedel, Ultan

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 Department of Music, 106 Scott Hall, regarding the mode and level of applied music appropriate for fulfillment of specific requirements for their degree program. To register for 3xxx-level credit in applied music, the student must have completed 12 credits at the 1xxx level on the appropriate instrument and must pass a qualifying examination.

Courses in applied music carry 2 credits (minimum of 5 hours of private lessons) per summer term. Fees for non-music majors are based on individual lessons: \$85 for 0-2 credits. Music and music education majors at the 12xx or 13xx level in their major instrument pay \$55 for 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 exempt from payment of these fees as are M.F.A. and D.M.A. students taking applied music at the 83xx level.

The music fees are treated as course fees; that is, they are applied *in addition to tuition for all students in each summer term.*

COURSES IN APPLIED MUSIC

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	Frøed, Weiser, Ivory, Braginsky
Harpichord	0102	1102	3102	5102	1202	3202	8202	1302	3302	8302	Burriss
Organ	0103	1103	3103	5103	1203	3203	8203	1303	3303	8303	Fleischer, Lancaster
Voice	0104	1104	3104	5104	1204	3204	8204	1304	3304	8304	Schuessler, Ware, Davis, Wilson
Violin	0105	1105	3105	5105	1205	3205	8205	1305	3305	8305	Adams
Viola	0106	1106	3106	5106	1206	3206	8206	1306	3306	8306	Ar
Cello	0107	1107	3107	5107	1207	3207	8207	1307	3307	8307	Remenikova, 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	D Eagle, E Eagle, Niosi, Opava, Zeitlin
Oboe	0111	1111	3111	5111	1211	3211	8211	1311	3311	8311	Angelucci, Capps, Holub
Clarinet	0112	1112	3112	5112	1212	3212	8212	1312	3312	8312	Anderson, Haugen
Saxophone	0113	1113	3113	5113	1213	3213	8213	1313	3313	8313	Anderson, Haugen
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
Trumpet	0116	1116	3116	5116	1216	3216	8216	1316	3316	8316	Ar
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
Percussion	0121	1121	3121	5121	1221	3221	8221	1321	3321	8321	Dahlgren
Harp	0122	1122	3122	5122	1222	3222	8222	1322	3322	8322	Miller
Guitar	0123	1123	3123	5123	1223	3223	8223	1323	3323	8323	Ar
Accordion	0124	1124	3124	5124	1224	3224	8224	1324	3324	8324	Malmberg

SECOND TERM

1001. FUNDAMENTALS OF MUSIC. (4 cr; for non-music majors)

See First Term.

Sec 1, II MTWThF, WuH 320, Anderson

Sec 2, III MTWThF, WuH 320, Anderson

● **1051. PIANO CLASS FOR NON-MUSIC MAJORS.** (2 cr; each section limited to 24 students)

Basic beginning keyboard skills of sight-reading, harmonization, transposition, and improvisation for nonmusicians.

Sec 1, II MTWThF, MusEd 200, Hilley

Sec 2, III MTWThF, MusEd 200, Hilley

1508. SURVEY OF MELODIC AND HARMONIC PROCEDURES. (3 cr; prereq #: II MTWThF; ScH 103) Fetler

See 1507 First Term.

1518. EAR-TRAINING AND SIGHT-SINGING. (3 cr; prereq #: III MTWThF; ScH 103) Fetler

See 1517 First Term.

3709. AFRICAN MUSIC IN THE AMERICAN HERITAGE. (4 cr, §Afro 3301; III-IV MTWTh; BlegH 260) Southall

Links between African music and music of black America, West Indies, South and Central America. Afro-Cuban style and modern jazz.

3970. DIRECTED STUDIES. (1-15 cr; prereq #, Δ; hrs ar; ScH 104) Staff

See First Term.

5028. HISTORY OF MUSICAL STYLES. (4 cr; IV MTWThF; ScH 103) Cardamone-Jackson

Classical period, early romantic period, nationalism.

5950. TOPICS IN MUSIC; EDITING 15TH-CENTURY MUSIC FOR PERFORMANCE: (3 cr; V MTWThF; ScH 103)

Cardamone-Jackson

Transcription of Franco-Flemish compositions from manuscript sources, editing scores to achieve historically authentic performances.

8990x.* SPECIAL PROBLEMS. (2-12 cr; prereq 5841; hrs ar; ScH 203) Cardamone-Jackson, Fetler

Courses in Applied Music

See First Term.

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	McNab, Braginsky
Harpsichord	0102	1102	3102	5102	1202	3202	8202	1302	3302	8302	Ar
Organ	0103	1103	3103	5103	1203	3203	8203	1303	3303	8303	Fleischer, Lancaster
Voice	0104	1104	3104	5104	1204	3204	8204	1304	3304	8304	Davis
Violin	0105	1105	3105	5105	1205	3205	8205	1305	3305	8305	Adams
Viola	0106	1106	3106	5106	1206	3206	8206	1306	3306	8306	Ar
Cello	0107	1107	3107	5107	1207	3207	8207	1307	3307	8307	Remanikova, 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	D Eagle, E Eagle, Niosi, Opava, Zeitlin
Oboe	0111	1111	3111	5111	1211	3211	8211	1311	3311	8311	Capps, Holub
Clarinet	0112	1112	3112	5112	1212	3212	8212	1312	3312	8312	Haugen
Saxophone	0113	1113	3113	5113	1213	3213	8213	1313	3313	8313	Haugen
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
Trumpet	0116	1116	3116	5116	1216	3216	8216	1316	3316	8316	Baldwin
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
Percussion	0121	1121	3121	5121	1221	3221	8221	1321	3321	8321	Ar
Harp	0122	1122	3122	5122	1222	3222	8222	1322	3322	8322	Miller
Guitar	0123	1123	3123	5123	1223	3223	8223	1323	3323	8323	Ar
Accordion	0124	1124	3124	5124	1224	3224	8224	1324	3324	8324	Malmberg

Natural Science (NSci)

SECOND TERM

1005. PHYSICAL WORLD: CHEMISTRY. (4 cr, §Chem 1001-1002, §Chem 1004-1005, §Chem 1031-1032, §Chem 1014; prereq 1 yr high school algebra . . . high school chemistry and NSci 1004 recommended; II MTWThF; SciCB 175)

Fundamental concepts of chemistry, the structure of matter, and the important reactions and products of our physical world. Scientific methods and principles are developed from lecture and experiments to help students understand their environment and problems faced in improving it.

Near and Middle Eastern Studies

Ancient Near Eastern and Jewish Studies (ANEJ)

FIRST TERM

5970. DIRECTED STUDIES. (1-4 cr; prereq #)
Guided individual reading or study.

SECOND TERM

3601. POLITICS AND RELIGION IN THE BIBLE. (4 cr; II MTWThF; FolH 104) Porton
Crucial political, social, and religious issues in the biblical narratives. Lecture and discussion. Knowledge of Hebrew not required.

5970. DIRECTED STUDIES. (1-4 cr; prereq #)
See First Term.

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 of the summer session and may not enroll in other summer courses.

1101-1102-1103†. BEGINNING ARABIC. (15 cr for both terms; I-III MTWThF; KolH S132) Koury, Chejne
Fundamentals of Arabic, based on audiolingual method; aural comprehension, pronunciation, practical reading knowledge, and basic grammar.

SECOND TERM

5970. DIRECTED READINGS. (Cr ar; prereq #) Chejne

Hebrew (Hebr)

FIRST TERM

3980. DIRECTED INSTRUCTION. (1-5 cr; prereq #)
Observation and discussion of language classes. Gradually increased participation of student in preparation and presentation of instructional materials to an elementary class. Evaluation of materials, teaching techniques. Seminars with instructor and staff on problems of language teaching.

5970. DIRECTED READINGS. (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or #)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

A concentrated program of study in which undergraduate and graduate students may earn 15 credit hours, the equivalent of a full year's sequence in language. Students must register in both terms of the summer session and may not enroll in other summer courses.

1101-1102-1103. BEGINNING HEBREW ("ULPAN"). (15 cr for both terms; I-III MTWThF; Lind 325) Paradise, Reisman

Specially designed summer program combining language study with learning experiences in Israeli culture and group activities that stimulate active use of the language. Introduction to speaking, reading, and listening comprehension of modern Hebrew. May serve as a basis for biblical study.

SECOND TERM

3980. DIRECTED INSTRUCTION. (1-5 cr; prereq #)
See First Term.

5970. DIRECTED READINGS. (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or #)

Jewish Studies (JwSt)

FIRST TERM

3126. MODERN JUDAISM. (4 cr; II MTWThF; FolH 308) Zahavy
Jewish theology, religion, and ideology in the 19th and 20th centuries. The Holocaust. Contemporary theology and practice: the rabbi, synagogue, talmudic academy, average Jew. American Judaism: orthodox, conservative, reform. Zionism in Europe and America. Hasidism.

5970. DIRECTED STUDIES. (1-4 cr; prereq #)
Guided individual reading or study.

SECOND TERM

5970. DIRECTED STUDIES. (1-4 cr; prereq #)
See First Term.

Personal Orientation (PO)

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

FIRST TERM

● **1001. HOW TO STUDY.** (2 cr [does not count toward BA degree]; limited to 30 students; I MTWThF; Jones 2)
Practical assistance in developing efficient study habits, organizing materials, preparing for examinations, and improving speed and comprehension of reading.

SECOND TERM

● **1001. HOW TO STUDY.** (2 cr [does not count toward BA degree]; limited to 30 students; I MTWThF; Jones 2)
See First Term.

Philosophy (Phil)

FIRST TERM

- 1001. LOGIC.** (5 cr; III MTWThF; ForH 55) Lewis
Application of formal techniques for evaluating arguments.
- 1003. ETHICS.** (5 cr; II MTWThF; ForH 150) Hopkins
Problems that arise when human beings attempt to think systematically about conduct and value.
- 3001. GENERAL HISTORY OF WESTERN PHILOSOPHY.** (5 cr; IV MTWThF; ForH 285) Dahl
Greek philosophy, pre-Socratics, Socrates, Plato, Aristotle.
- 3302. MORAL PROBLEMS OF CONTEMPORARY SOCIETY.** (5 cr; III MTWThF; ForH 150) Root
Selected problems of current interest.
- 3631. LOGIC OF SCIENTIFIC REASONING.** (5 cr; \$5631; prereq 1001 or 3201; II MTWThF; ForH 285) Savage
Principles of scientific method; contemporary approaches to scientific inference.
- 3970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 5760. SELECTED TOPICS IN PHILOSOPHY: MEDICAL ETHICS.** (5 cr per qtr; prereq 53xxx-5xxx cr in philosophy or #; IV MTWThF; ForH 115) Dolan
Moral problems confronting physicians, patients, and others concerned with medical treatment, medical research, and public health policy.
- 5911. PHILOSOPHY OF MODERN LITERATURE.** (5 cr; prereq major or concentration in philosophy or literature, or #; III MTWThF; ForH 175) Mason
Basic philosophical ideas in modern civilization as expressed in major works of literature. See Special Programs section.
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 8970. DIRECTED STUDY AND RESEARCH.** (1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

SECOND TERM

- 1001. LOGIC.** (5 cr; II MTWThF; ForH 120) Hanson
See First Term.
- 1002. INTRODUCTION TO PHILOSOPHY.** (5 cr; III MTWThF; ForH 285) Buchanan
Problems, principal methods and schools of philosophy; historical and contemporary views.
- 3003. GENERAL HISTORY OF WESTERN PHILOSOPHY.** (5 cr; IV MTWThF; ForH 115) Hochberg
Modern philosophy from Descartes through Hume.
- 3502. INTRODUCTION TO AESTHETICS.** (5 cr; II MTWThF; ForH 175) Eaton
Development of aesthetic theories from Plato to Tolstoy.
- 3970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 5632. PHILOSOPHY OF CREATIVITY.** (5 cr; III MTWThF; ForH 175) Gunderson
Classical and contemporary theories of creativity. Ways in which creative processes are similar and dissimilar for artistic work in various media and for scientific endeavor. The relevance of understanding creativity to problem solving, teaching, and learning. Students will be encouraged to work with creative processes appropriate to their own interests.
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
- 8970. DIRECTED STUDY AND RESEARCH.** (1-5 cr; prereq passed written prelim exam for the PhD in philosophy) Staff

Political Science (Pol)

FIRST TERM

- 1001. AMERICAN GOVERNMENT AND POLITICS.** (5 cr; II-III TWTh; AndH 330) Shaw
Principles, organization, processes, functions of government, and the interplay of political forces in the United States. Attention throughout to current issues.
- 1027. URBAN POLITICS.** (4 cr; V MTWThF; BlegH 135) Nimitz
Urban politics and issues facing American cities. Political conflicts over economic and social problems.

- 1031. SELECTED PROBLEMS IN AMERICAN PUBLIC POLICY.** (4 cr; IV MTWThF; BlegH 115)
Analysis of major public policy issues in such areas as social welfare, education, and economics; forces molding policy choices and the impact of such choices.
- 3308. THE UNITED STATES CONGRESS.** (4 cr; prereq 1001 or #; V MTWThF; BlegH 215) Morris
Internal organization, committee system, party leadership, norms, recruitment; legislative policy making; relationship with the president and bureaucracy; interest groups, political party, and constituency influences on the congressional process.
- 3310. TOPICS IN AMERICAN POLITICS: THE BORN-AGAIN PRESIDENCY.** (4 cr; prereq 1001 or #, 3306; I MTWThF; BlegH 115) Eyestone
Successes and failures of the Carter administration, Jimmy Carter as a political personality, Carter's impact on the presidency and on American politics.
- 3825. INTERNATIONAL POLITICS.** (4 cr; prereq 1025 or 1026 or 8 cr in political science or #; III MTWThF; AndH 370) Job
Analysis of selected issues in contemporary international relations such as limitation of arms races, settlement of conflicts, regulation of the oceans, creation of a new international economic order.
- 5303. THE AMERICAN DEMOCRACY.** (4 cr; prereq 1001 or 6 cr in social science or #; II MTWThF; BlegH 115) Sullivan
The American political system, its institutions and processes. Political decision making, influence, and elites. Ideals and reality of democracy in the United States.
- 5666. DEVELOPMENT OF POLITICAL THOUGHT: EARLY MODERN.** (4 cr; prereq 1051 or 9 cr in social science or #; IV MTWThF; BlegH 210) Ball
Renaissance; Machiavelli; More; Reformation and Counter-Reformation; English Civil War; Hobbes and Locke; rise of liberalism; Montesquieu and Rousseau; French Revolution and reaction.

SECOND TERM

- 1001. AMERICAN GOVERNMENT AND POLITICS.** (5 cr; IV-V TWTh; BlegH 150) Walcott
See First Term.
- 1026. AMERICAN FOREIGN POLICY.** (4 cr; III MTWThF; BlegH 255) Ori
Institutions and processes that determine American foreign policy; major developments in U.S. foreign policy since World War II; contemporary issues in U.S. policy.
- 1051. INTRODUCTION TO POLITICAL ANALYSIS.** (5 cr; I-II TWTh; BlegH 255) Kvakiv
Formation of political communities, political participation, policy making, compliance, legitimacy, political development, types of political systems. Empirical and normative problems. Comparisons among major countries.
- 3773. POLITICAL DEVELOPMENT.** (4 cr; prereq 1051 or #; V MTWThF; BlegH 135) Benjamin
Political problems of new nations; political consequences of breakdown of traditional society; problems of developing new institutional forms and procedures.
- 3810. TOPICS IN INTERNATIONAL POLITICS: INTERNATIONAL POLITICS OF PETROLEUM.** (4 cr; II MTWThF; BlegH 335) Sampson
The current petroleum situation; relationships between oil exporting nations, oil importing nations, and oil companies; policy options available to various countries or coalitions of countries; effects of the oil situation in the Middle East and elsewhere.
- 5455. LATIN AMERICAN GOVERNMENT AND POLITICS.** (5 cr; prereq 1051 or #; I-II TWTh; BlegH 5) Wynia
Latin American political heritage, political processes, contemporary public policy issues; problems of social, economic, and political change in selected countries.
- 5741. POLITICAL BEHAVIOR OF WOMEN.** (4 cr; prereq 1001 or 1051 or #; IV MTWThF; BlegH 205) Gray
Women as political actors. Mass political behavior, women's political movements, women in political parties and elective office, the status of women in different societies.
- 5884. THE INTERNATIONAL SYSTEM.** (4 cr; prereq 1025 or 1026 or 3825 or 2826; III MTWThF; BlegH 215) Hopmann
Structure of the international system; balance of power, bipolar systems, other international systems; theories of stability, change, conflict, and cooperation as related to contemporary international system.

Portuguese—See Spanish and Portuguese

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 11001; \$2 lab fee)
Experiments illustrating contemporary subject matter such as sensory psychology, psychophysics, perception, motivation, verbal behavior, animal and human learning, problem solving, and psychological measurement.
Sec 1, II-IV MF, II-III W, E1H 150
Sec 2, VI-VIII MF, VI-VII W, E1H 160
- 3011. INTRODUCTION TO PSYCHOLOGY OF LEARNING.** (4 cr; prereq 1001, 1005 or Biol 1107 or #; III MTWThF; E1H N119) Trapold
Basic methods in study of learning. Fundamental concepts and principles governing the learning process.
- 3031. SENSATION AND PERCEPTION.** (4 cr; prereq 1001, 1004; II MTWThF; E1H N119)
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; III MTWThF; MMA 100) Bersheid
Theories and research in social psychology. Effects upon the individual's attitudes and behavior of other persons, mass communications, and group membership.
- 3604. INTRODUCTION TO ABNORMAL PSYCHOLOGY.** (4 cr, \$5604-5605; prereq 1001; II MTWThF; SciCB 375) Leon
Surveys the field of abnormal psychology. Etiologies of behavioral disorders; available treatment.
- 3801. INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS.** (4 cr; prereq 1001 or equiv; III MTWThF; AndH 210)
Quantification as it pertains to research problems in psychology. Descriptive and inferential statistics, including hypothesis testing and some nonparametric statistics. Examples from various areas of psychology.
- 3970. DIRECTED STUDIES.** (1-8 cr; prereq #; hrs ar) Lofquist
Independent study or small seminars; designed to permit students to pursue their interests through special reading or study.
- 3990H. HONORS COURSE: PROJECT IN PSYCHOLOGY.** (Cr ar; prereq sr, #; hrs ar) Lofquist
Individual library study or empirical investigation.
- 5014. PSYCHOLOGY OF HUMAN LEARNING AND MEMORY.** (4 cr; prereq 1005, except for students in honors sequence and grad students; V MTWThF; E1H N119)
Processes and principles in human learning and memory. Feedback, instruction and learning, individual differences in learning, cognitive processes in learning and retention, theories of human memory.
- 5054. PSYCHOLOGY OF LANGUAGE.** (4 cr; prereq 3011, except for students in honors sequence and grad students; IV MTWThF; E1H 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 student; 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.
- 8519. PRACTICUM IN REHABILITATION COUNSELING.** (3 cr; prereq 5803 or #; hrs ar)
Counseling experience with physically and emotionally disabled clients in approved public and private rehabilitation agencies.
- 8520. FIELDWORK IN APPLIED PSYCHOLOGY.** (Cr ar; prereq #; hrs ar)
- 8560. INTERNSHIP IN COUNSELING PSYCHOLOGY.** (Cr ar; prereq #; hrs ar)
- 8614. PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT.** (2 cr; prereq student in clinical psychology program, 1CIPsy 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-qr 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; \$2 lab fee)
See 1004 First Term.
Sec 1, II-IV MF, II-III W, E1H 50
Sec 2, VI-VIII MF, VI-VII W, E1H 60
- 3061. INTRODUCTION TO PHYSIOLOGICAL PSYCHOLOGY.** (4 cr, §5061; prereq 1001, 1005 or Biol 1011 or #; IV MTWThF; E1H N119) Roberts
Survey of neural mechanisms of motivation, emotion, sleep-wakefulness cycle, learning, and communication in animals and humans.
- 3101. INTRODUCTION TO PERSONALITY.** (4 cr, §5101; prereq 1001; II MTWThF; SciCB 325) Tellegen
Concepts of personality, personality theory, empirical research in the field of personality, personality assessment.
- 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 grad students; III MTWThF; E1H N119) Peterson
Major theories of learning and contemporary theories of information processing and cognition.
- 5045. THE PSYCHOLOGY OF MOTIVATION.** (4 cr; prereq 3011 or # for undergrad students; II MTWThF; E1H N119) Trapold
Survey of classic and contemporary research and theory pertaining to motivation in animal and human behavior. Emphasis on the role of motivation in systematic accounts of behavior.
- 5751. PSYCHOLOGY OF ADVERTISING.** (4 cr, §Jour 5251; prereq 1001; IV MTWThF; SciCB 375) Jones
Psychological principles, research techniques, and applications in advertising and selling. Relevant consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depends.
- 8519. PRACTICUM IN REHABILITATION COUNSELING.** (3 cr; prereq 5803 or #; hrs ar)
See First Term.
- 8520. FIELDWORK IN APPLIED PSYCHOLOGY.** (Cr ar; prereq #; hrs ar)
- 8560. INTERNSHIP IN COUNSELING PSYCHOLOGY.** (Cr ar; prereq #; hrs ar)
- 8614. PROFESSIONAL METHODS IN CLINICAL PSYCHOLOGY I: ASSESSMENT.** (2 cr; prereq student in clinical psychology program, 1CIPsy 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

- 3970. DIRECTED STUDIES.** (1-15 cr; prereq #)
- 5114. WORKSHOP ON MINNESOTA GOVERNMENT.** (3 cr; VI-VII TWTh; BlegH 340) Warp, others
Background study through lecture, panel discussion, and seminar sessions of selected public policy issues that currently confront Minnesota's governmental units.
- 5661. ISSUES IN AGING.** (4 cr; prereq grad student or #; I-III MW; BlegH 404) Bader
Policy-relevant findings of gerontological research. Focus on current and potential approaches of and constraints on decision makers, bureaucrats, and practitioners. Existing legislation and programs designed for older Americans.

5771. ADMINISTRATIVE INTERNSHIP. (3 cr; prereq Δ; hrs ar) Warp
Fieldwork in an approved administrative agency under the joint supervision of an employee of the agency and a member of the faculty. Rotation through various assignments, solution of special problems, seminar discussion of experiences, and preparation of an internship report.

8981. INDIVIDUAL READINGS, RESEARCH IN PUBLIC POLICY ANALYSIS, ADMINISTRATION. (Cr ar; prereq #)

SECOND TERM

3970. DIRECTED STUDIES. (1-15 cr; prereq #)

5115. WORKSHOP ON MINNESOTA GOVERNMENT. (3 cr; VI-VII TWTh; BlegH 335) Warp, others
See 5114 First Term.

5781. ADMINISTRATIVE INTERNSHIP. (3 cr; prereq #; hrs ar) Warp
See 5771 First Term.

8991. INDIVIDUAL READINGS, RESEARCH IN PUBLIC POLICY ANALYSIS, ADMINISTRATION. (Cr ar; prereq #)

Religious Studies (RelS)

See also JwSt 3126, Modern Judaism, First Term, under Jewish Studies.

FIRST TERM

1001. INTRODUCTION TO RELIGIOUS STUDIES. (4 cr, §5001; II MTWThF; FolH 302) Malandra
Individual and social religious behavior; methodologies for studying it; and emergence of modern religious studies. Theistic Western religions (Judaism, Christianity, Islam) and nontheistic Buddhism.

5970. DIRECTED STUDIES. (3-5 cr; prereq Δ)

Russian—See Slavic and East European Languages

Scandinavian (Scan)

FIRST TERM

3601. SCANDINAVIAN LITERATURE IN TRANSLATION. (4 cr [no cr toward major]; I MTWThF; FolH 108)
Lieberman

Major literary works from the Middle Ages to the present.

3602. THE TALES OF HANS CHRISTIAN ANDERSEN. (4 cr; IV MTWThF; FolH 202) Mishler
Hans Christian Andersen's stories and tales (read in English).

5614. THE DRAMA OF IBSEN AND STRINDBERG. (4 cr; prereq # for majors; III MTWThF; FolH 104) Stockenström

Selected plays of Scandinavia's two major dramatists, in the context of modern theatre (readings in translation for nonmajors).

Slavic and East European Languages

Russian (Russ)

FIRST AND SECOND TERMS: TEN-WEEK COURSE

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must register in both terms of the summer session and may not enroll in other summer courses.

1101-1102-1103†. BEGINNING INTENSIVE RUSSIAN. (15 cr for both terms; I-III MTWThF; WuH 130)
Speaking, reading, and understanding Russian through acquisition of basic patterns of speech.

Social Work (SW)

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

FIRST TERM

- **1001. INTRODUCTION TO SOCIAL WELFARE AND COMMUNITY SERVICES.** (5 cr; limited to 50 students; II-III MTWTh; BlegH 420) Au Claire
A sampling of the fields of community-based social services, representative of societal responses to needs. Characteristics of such services reviewed historically, dynamically, and comparatively.
- **3984. INTRODUCTION TO COMMUNITY DEVELOPMENT.** (4 cr; limited to 30 students; prereq 1001 or #; II-IV TWTh; BlegH 260) Frumkin
The trends, pace, and dynamics that dominate urban communities; strategies used to achieve neighborhood goals; factors that control and influence change in planning. Action on the community level.
- **5010. SEMINAR: SPECIAL TOPICS—TRANSITIONS INTO ADULTHOOD: NORMATIVE CRISES IN THE ADULT LIFE CYCLE.** (3 cr; limited to 30 students; prereq 1001, 3005, and jr, sr, or grad student in social work; V-VIII F; BlegH 245) Phillipp
Theories of adult development as well as intervention strategies for working with adults from various cohorts. Emphasis in normative transitions ("crises") in the adult life cycle (e.g., becoming a parent or grandparent, losing a spouse).
- 8010. FIELD INSTRUCTION I.** (4 cr or cr ar by # [max 12 cr required]; prereq #; hrs ar) Adkins
- 8020. FIELD INSTRUCTION II.** (4 cr or cr ar by # [max 12 cr required]; prereq 8010; hrs ar) Adkins
- **8350. SPECIAL TOPICS: COMMUNITY DEVELOPMENT AND ADMINISTRATION—WOMEN IN ADMINISTRATION.** (3 cr; limited to 30 students; prereq #; 3:00-5:00 TTh; BlegH 245) Kruzich
Aspects of both process and task-skill development in selected areas of administration.

SECOND TERM

- 8010. FIELD INSTRUCTION I.** (4 cr or cr ar by #; prereq #; hrs ar)
- 8020. FIELD INSTRUCTION II.** (4 cr or cr ar by #; prereq 8010; hrs ar)
- **8250. SPECIAL TOPICS: HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT—ETHNICITY AND THE AMERICAN FAMILY.** (3 cr; limited to 25 students; prereq 5201, 8202, or #; III-IV TTh BlegH 210) Red Horse
Contemporary American family life and the impact of ethnic and cultural issues on the development and life-styles of the American family.
- **8406. SUPERVISION AND CONSULTATION IN SOCIAL WORK PRACTICE.** (3 cr; limited to 40 students; prereq 8401 or #; I-III M; BlegH 420) Compton
Principles and practices of administration, education, support, consultation, and staff development.
- **8407. STRATEGIES OF FAMILY INTERVENTION.** (3 cr; limited to 20 students; prereq 8401 or #; II T, II-IV W; SocSci 860) McCubbin
Seminar on methods of helping families cope with interpersonal problems.

Sociology (Soc)

FIRST TERM

- 1001. INTRODUCTION TO SOCIOLOGY.** (4 cr; III MTWThF; AndH 250) Tavakoli
A survey of the main fields of sociology and current social problems.
- 1960. TOPICS: SOCIAL PROBLEMS.** (4 cr; V MTWThF; BlegH 220) Lauderdale
- 3102. SOCIOLOGY OF LAW AND SOCIAL CONTROL ORGANIZATIONS.** (4 cr; prereq 1001 or equiv; VI MTWThF; BlegH 255) Cohen
Societal reaction to deviance through law and its implementation by social control organizations such as schools, public and private welfare agencies, and criminal justice, juvenile justice, and mental health systems. Recommended to be taken prior to 3103.

- 3503. SEX, ROMANCE, AND RELATIONSHIPS.** (4 cr; prereq 1001; VII MTWThF; BlegH 215) Bulbulian
Sociological perspectives on sexual socialization; ideas of masculinity and femininity; history and func-
tions of love and romance; characteristics of romantic relationships, intimacy, emotionality, sexuality,
exclusivity; sexual deviance in relation to sexual norms.
- 3957. SOCIAL GERONTOLOGY: ELDERLY IN AMERICAN SOCIETY.** (4 cr; prereq 1001 or #; V MTWThF; BlegH
255) Mangan
Situations and problems facing aging people in modern societies. Aspects of human aging from a
sociological perspective.
- 3970. DIRECTED STUDIES.** (1-15 cr per qtr; prereq #)
Guided individual reading or study.
- 5111. SOCIOLOGY OF DEVIANT BEHAVIOR.** (4 cr; prereq 3103 or #; III MTWThF; BlegH 350) Lauderdale
Sociological conceptions of the nature of deviant behavior, social processes associated with the careers
of deviants, and the relationship of deviancy to the problems of social control.
- 5201. INTRODUCTION TO SOCIAL PSYCHOLOGY.** (4 cr [no cr for sociology majors]; prereq 8 cr in sociology,
anthropology, psychology, political science, or economics; I MTWThF; BlegH 360) Sykes
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 disorgani-
zation; cultural influence and its limits.
- 5711. ELEMENTS OF SOCIOLOGICAL ANALYSIS.** (4 cr; prereq 3505, 3506 or 5201, 5401 or equiv or #; IV
MTWThF; BlegH 404) Reynolds
Premises upon which social theories are developed. Construction of social theory.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

- 3801. SOCIOLOGICAL METHODS I: DESCRIPTIVE STATISTICS.** (5 cr; prereq basic algebra or Math 0009; \$2 lab
fee; lect 11:15-12:30 TTh; two 1-hr labs assigned 1st day of class; BlegH 110) T Anderson
Descriptive statistics in analysis of sociological data, measures of central tendency, deviation, correlation
and regression graphs, simple treatment of three and four variables, probability.

SECOND TERM

- 1001. INTRODUCTION TO SOCIOLOGY.** (4 cr; II MTWThF; BlegH 235) Bradley
See First Term.
- 3103. CRIMINOLOGY.** (4 cr, §3101; prereq 1001 or equiv...3102 recommended; III MTWThF; BlegH 415) Inverari-
ty
General survey of field of criminology.
- 3405. INEQUALITY: INTRODUCTION TO STRATIFICATION.** (4 cr; prereq 1001; IV MTWThF; BlegH 105) Caine
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 and 3506 or #; VII MTWThF; BlegH 205) Mattessich
Evolution of family, development of unity or disunity, roles of family members, methods of investigation.
- 3551. WORLD POPULATION PROBLEMS.** (4 cr; V MTWThF; BlegH 155) Kennedy
Population growth and natural resources, basis population dynamics, fertility and mortality in less
developed and industrialized nations, population forecasts, population policies to reduce fertility.
- 3970. DIRECTED STUDIES.** (1-15 cr per qtr; prereq #)
See First Term.
- 5141. JUVENILE DELINQUENCY.** (4 cr; prereq 3102, 3103 or #. . .CJS 5101, 5102 recommended; VI MTWThF;
BlegH 225) Inverarity
Advanced study of juvenile delinquency and societal response to it through regulatory agencies; special
characteristics of juvenile justice institutions.
- 5301. SOCIAL MOVEMENTS.** (4 cr; III MTWThF; BlegH 404) Estep
- 5401. SOCIAL ORGANIZATION.** (4 cr [no cr for sociology majors], §3505; prereq 8 cr in sociology, anthropolo-
gy, psychology, political science, or economics; II MTWThF; BlegH 105) Mattessich
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.
- 5956. SOCIOLOGY OF DEATH.** (4 cr; prereq jr or sr, 8 cr in sociology or #; I MTWThF; BlegH 205)
Issues and problems that mortality presents in contemporary society.
- 5970. DIRECTED STUDIES.** (1-15 cr per qtr; prereq #)
See First Term.

South Asian Studies

Indic (Indc)

FIRST TERM

3411. **INTRODUCTION TO INDIAN PHILOSOPHY.** (4 cr, §5411; IV MTWThF; FolH 107) Junghare
Major concepts; principal schools of Indian philosophy; traditional and contemporary views.
5411. **INTRODUCTION TO INDIAN PHILOSOPHY.** (4 cr, §3411; IV MTWThF; FolH 107) Junghare
See 3411.

Spanish and Portuguese

Spanish (Span)

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

FIRST TERM

- **1101. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; each section limited to 30 students)
Emphasis on speaking and understanding Spanish; pronunciation; writing and reading skills; basic grammar; cultural aspects of language and civilizations of Spain and Spanish America.
Sec 1, I-II MTWThF, FolH 102
Sec 2, I-II MTWThF, KoltH S133
- **1102. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; prereq 1101 or 1 yr high school Spanish; II-III MTWThF; LindH 320)
See 1101.
- **1103. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; II-III MTWThF; NH 122)
See 1101.
- **1104. INTERMEDIATE SPANISH, ORAL APPROACH: INTERPRETATION OF MODERN PROBLEMS.** (4 cr; limited to 30 students; prereq 1103 or 3 yrs high school Spanish; 9:40-11:05 MTWThF; LindH 315)
Continued emphasis on speaking and comprehension; development of reading and writing skills based on materials from Spain and Spanish America dealing with current issues. Grammar review; frequent compositions and oral presentations to build vocabulary.
- **3001. SPANISH PRONUNCIATION: STANDARD, COLLOQUIAL, DIALECTAL.** (2 cr; limited to 20 students; prereq 1105 or #: II MWF; FolH 303) Narvaez
Correct contemporary standard Spanish pronunciation; listening and imitation exercises, weekly progress recordings, and private interviews. Introduction to local, regional, and social variants of the language of Spain and Spanish America.
- 3014. SPANISH COMPOSITION AND COMMUNICATION SKILLS: EVERYDAY SPEECH, ARGOT, DIALOGUE.** (5 cr; prereq 1105 or #: IV-V MTWThF; FolH 203) Narvaez
Further development of speaking and writing skills with aid of native speakers; emphasis on cultural comparisons, current events, topics of concern to Spanish and American students; continuing grammar review; daily discussions; writing workshops.
- 3610. TOPICS: SPANISH, SPANISH-AMERICAN LITERATURE IN TRANSLATION: SPANISH-AMERICAN DRAMA.** (4 cr per qtr [12 cr max. . . cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]; taught in English; IV MTWThF; FolH 201) Vidal
Hispanic and/or Latin-American groups of writers, universal themes, literary motifs, relationships between literature and other disciplines.
- 3614. DON QUIJOTE: A STUDY OF LOST ILLUSIONS.** (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]; taught in English; V MTWThF; FolH 201) Jones
Study of the novel in many facets: the "madness" of its characters, the relation of their actions and attitudes to the theme of reality/illusion and to the society of their times.
- 5015. METHODS OF TRANSLATION.** (4 cr; prereq 3021 or #: IV MTWThF; FolH 207) Sousa
Meaning, use, and theories of translation. Techniques and problems of translation from Spanish and Portuguese to English and vice versa. Translation patterns, use of special vocabularies and other adjuncts needed to understand both languages. Practical vocabulary and usage for various fields of work.

- 5910. TOPICS IN SPANISH AND SPANISH-AMERICAN LITERATURE: AVANT-GARDE POETRY IN SPAIN AND LATIN AMERICA.** (4 cr; prereq 3104 or Δ; V MTWThF; FolH 207) Sousa
Major issues in or approaches to Spanish or Spanish-American literature; important groups, movements, trends, issues, methods, genres.
- 5940. FIGURES IN SPANISH AND SPANISH-AMERICAN LITERATURE: BORGES—A CONCEPTION OF HISTORY.** (4 cr per qtr [12 cr max]; prereq 3104 or Δ or Sp-Pt 3104; VI MTWThF; FolH 207) Vidal
Spanish or Latin American major writer or group of writers whose work has made an impact on thought, literature, or social problems. Orientation and method of course depend on instructor.
- 5970. DIRECTED READINGS.** (1-5 cr per qtr [15 cr max]; for MA & PhD candidates; prereq # and Δ; hrs ar) Staff
To fill gaps in students' preparation, especially when courses in certain indispensable topics, figures, periods, or issues have not been offered. Readings in Spanish and/or Spanish-American areas.
- 8970. DIRECTED READINGS IN ROMANCE LANGUAGES.** (Cr and hrs ar; mainly for PhD candidates) Staff
Authors and topics not otherwise offered. Weekly meetings based on student's research and analysis. Student and instructor agree on plan of reading or particular topics, figures, issues, etc. Readings in Spanish and/or Spanish-American areas.

FIRST AND SECOND TERMS: TEN-WEEK COURSE

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must register in both terms of the summer session and may not enroll in other summer courses.

- **1101-1102-1103†. BEGINNING SPANISH.** (15 cr for both terms; limited to 30 students; I-II MTWThF; KoltH S134)
See 1101 First Term.
Sec 1, I-II MTWThF, KoltH S134
Sec 2, I-II MTWThF, KoltH S135

SECOND TERM

- **1101. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; I-II MTWThF; KoltH S133)
See First Term.
- **1102. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; each section limited to 30 students; prereq 1101 or 1 yr high school Spanish)
See 1101 First Term.
Sec 1, II-III MTWThF, KoltH S137
Sec 2, II-III MTWThF, FolH 102
- **1103. BEGINNING SPANISH: ORAL APPROACH.** (5 cr; limited to 30 students; prereq 1102 or 2 yrs high school Spanish; II-III MTWThF; NH 107)
See 1101 First Term.
- **1105. INTERMEDIATE SPANISH, ORAL APPROACH: DISCUSSIONS OF MODERN LITERATURE AND THE PRESS.** (4 cr; limited to 25 students; prereq 1104 or 4 yrs high school Spanish; 9:40-11:05 MTWThF; NH 209A)
See 1104 First Term.
- **3001. SPANISH PRONUNCIATION: STANDARD, COLLOQUIAL, DIALECTAL.** (2 cr; limited to 20 students; prereq 1105 or #; III MWF; FolH 207) Mantini
See First Term.
- **3610. TOPICS: SPANISH, SPANISH-AMERICAN LITERATURE IN TRANSLATION: MACHO MYSTIQUE IN HISPANIC LITERATURE.** (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]; each section limited to 25 students; taught in English; IV MTWThF; FolH 201) Sullivan
Hispanic and/or Latin American groups of writers; universal themes, literary motifs, relationships between literature and other disciplines.
- 3614. DON QUIJOTE: A STUDY OF LOST ILLUSIONS.** (4 cr [cr does not count toward Spanish or Portuguese major but may be used toward Route II language requirement]; taught in English; V MTWThF; FolH 202) Jones
See First Term.
- 5930. TOPICS IN HISPANIC LINGUISTICS: IBERIAN ROMANCE TEXTS.** (4 cr; prereq 3021 or Δ; V MTWThF; FolH 108) Mantini
Problems in Hispanic linguistics, including aspects of Luso-Brazilian language. A variety of linguistic approaches and methods.
- 5970. DIRECTED READINGS.** (1-5 cr per qtr [15 cr max]; for MA and PhD candidates; prereq # and Δ; hrs ar) Staff
See First Term.
- 8970. DIRECTED READINGS IN ROMANCE LANGUAGES.** (Cr and hrs ar) Staff
See First Term.

Portuguese (Port)

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

FIRST AND SECOND TERMS: TEN-WEEK COURSE

A concentrated program of study permitting students to earn 15 hours of credit, the equivalent of a full year's sequence in language. Students must register in both terms of the summer session and may not enroll in other summer courses.

- **1001-1002-1003†. BEGINNING PORTUGUESE.** (15 cr for both terms; limited to 25 students; II-III MTWThF; Kolth S138)

Emphasis on speaking and understanding Portuguese; pronunciation (Brazilian speech stressed); gradual introduction to writing and reading skills; basic grammar; cultural aspects of language and civilizations of Portuguese-speaking world.

Speech-Communication (Spch)

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

For special department offerings see the 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. Individual speaking.

Sec 1, I MTWThF, FolH 307

Sec 2, II MTWThF, FolH 307

- **1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS.** (4 cr; III MTWThF; AndH 270) Jensen

Variables in intrapersonal, interpersonal, and group communication.

- **3201. INTRODUCTION TO BROADCASTING PRODUCTION.** (4 cr; limited to 20 students; \$2 lab fee; IV MTWThF; MurH 302 and RarigC 610)

Fundamentals of practice and theory. Projects and exercises in performance and scripting; studio equipment and procedures.

- **3641. DISCUSSION AND CONFERENCE METHODS.** (4 cr; limited to 30 students; prereq 1101 or 1101H or #; II MTWThF; FolH 306) Jensen

Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings.

- **3970. DIRECTED STUDIES.** (Cr or [cr does not count toward speech-communication major]; prereq at least one course in speech-communication, #, Δ)

Individual study projects in speech-communication. Consultation with an instructor who agrees to supervise the project is required.

- **3980. DIRECTED INSTRUCTION.** (1-4 cr per qtr [max 8 cr... cr does not count toward speech-communication major]; prereq #, Δ)

Students work with an instructor in planning and teaching an undergraduate course.

- **5222. EDUCATIONAL TELEVISION PROGRAMMING AND ADMINISTRATION.** (4 cr prereq 3211 or #; III MTWThF; RarigC 610) Goldstein

Television applied to educational needs; current practices; significant research findings; relative effectiveness of differing types of television utilization; impact of various modes of transmission on programming and administrative concepts.

- **5402. PROBLEMS IN INTERPERSONAL COMMUNICATION.** (4 cr; prereq 3401 or #; IV MTWThF; FolH 306) Cashman

Factors that contribute to misunderstanding, disagreement, and cessation of contact in dyads.

- **5404. LANGUAGE, CULTURE, AND EDUCATION.** (4 cr, §SeEd 5404; limited to 20 students; prereq 1102, 3401 or #: III MTWThF; Pt 111) Piche
Psychological and social-psychological perspectives for study of language-communication; dimensions of language variation (dialects, codes, registers); implications for program development and instructional practices.
- 5405. NONVERBAL COMMUNICATION: THEORY AND RESEARCH.** (4 cr; II MTWThF; RarigC 610) Garvin
Nonverbal (extralinguistic) elements and dimensions of interpersonal communication: gesture, facial expression, posture, clothing, and environment.
- **5412. GROUP AND ORGANIZATIONAL COMMUNICATION.** (4 cr; S-N grading only; limited to 30 students; prereq 5411; \$2 lab fee; V MTWThF; FolH 306) Bormann
Theory and practice of intra- and inter-group communication. Communication of the small, task-oriented group in organizational context; applied small group and organizational communication.
- **5414. AUTHORITY AND POWER IN TASK-ORIENTED COMMUNICATION—June 13-25, July 10.** (4 cr; limited to 60 students; S-N only; prereq 3641 or #: 4:15-6:15 June 13-16, 19-23, July 10; 9-5:30 June 17-18, 24- 25; FolH 306, 307, 308) Shapiro
Authority and power in task-oriented groups. Tavistock-type small group, intergroup, and large group laboratory experiences. Verbal and nonverbal processes that operate in and among groups to facilitate or inhibit effective leadership and followership. See Special Programs section.
- 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.
- 8411. SEMINAR: SMALL GROUP COMMUNICATION.** (3 cr; prereq 1101, 5411; VI-VII TTh; FolH 306) Bormann
Research problems and methods in small group communication.
- 8423. SEMINAR: SEXUAL COMMUNICATION.** (3 cr; prereq 3401, 5402, and #: VI-VII MW; FolH 306) Cashman
Designed for those who work in professional settings in which significant sexual communication is likely to occur. Human sexual communication in interpersonal, management, and various professional settings.
- 8990. RESEARCH.** (Cr ar)
Open to graduate students engaged in research on special problems.

SECOND TERM

- **1101. FUNDAMENTALS OF SPEECH COMMUNICATION: ORAL COMMUNICATION.** (4 cr; limited to 24 students; I MTWThF; FolH 306)
See First Term.
- 1102. FUNDAMENTALS OF SPEECH COMMUNICATION: COMMUNICATION PROCESS.** (4 cr; II MTWThF; FolH 406) Scott
See First Term.
- **3201. INTRODUCTION TO BROADCASTING PRODUCTION.** (4 cr; limited to 20 students; \$2 lab fee; IV MTWThF; RarigC 610) Bart
See First Term.
- **3204. TELEVISION PRODUCTION.** (4 cr; limited to 20 students; prereq 3201; \$2 lab fee; VI MTWThF; RarigC 610) Bart
Problems of production. Equipment and staff organization; interrelationships with program design. Exercises in production.
- 3211. DETERMINANTS OF BROADCAST PROGRAMMING.** (4 cr; II MTWThF; FolH 304) Browne
Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. "Problem" areas in programming.
- 3601. APPROACHES TO PUBLIC DISCOURSE.** (4 cr; prereq 1101; III MTWThF; FolH 406) Scott
Theoretical systems intended to explain or direct the creation and practice of public discourse. From traditional rhetoric to contemporary perspectives.
- * **3970. DIRECTED STUDIES.** (Cr ar [cr does not count toward speech-communication major]; prereq at least one course in speech-communication, #, Δ)
See First Term.
- 3980. DIRECTED INSTRUCTION.** (1-4 cr per qtr [max 8 cr... cr does not count toward speech-communication major]; prereq #, Δ)
See First Term.
- 5231. COMPARATIVE BROADCAST SYSTEMS.** (4 cr; prereq 3211 or #: III MTWThF; FolH 307) Browne
Historical, sociological, and political aspects of various systems of broadcasting throughout the world. American, Canadian, British, French, German, Soviet, and other broadcasting institutions; why and how they are regulated and what impact they have had on political, social, and economic development.

- 5431. THE PROCESS OF PERSUASION.** (4 cr; prereq 1102, Psy 1001; IV MTWThF; FolH 406) Howell
Theories of modern motivational communication. Analysis of the process of social control through persuasive speech.
- 5611. CLASSICAL RHETORIC.** (4 cr; prereq 1101 or 1101H; I MTWThF; FolH 406) Scott
Greek and Roman theories of speechmaking; historical and philosophic context, and influence on education.
- 5970. READINGS IN SPEECH.** (Cr ar; prereq 9 cr in 3xxx-5xxx-level speech courses, #, Δ)
See First Term.
- 8451. SEMINAR: FACE-TO-FACE INTERCULTURAL COMMUNICATION.** (3 cr; prereq if US citizen, Anth 5101 or similar course in cultural anthropology or #. . .5451 recommended; VI-VII TTh; FolH 406) Howell
Factors influencing face-to-face communication in varied cultures, concentrating upon task-oriented communication between North Americans and nationals in the host country. Verbal (linguistic) and nonverbal (nonlinguistic) dimensions of communication.
- 8990. RESEARCH.** (Cr ar)
See First Term.

Statistics (Stat)

FIRST TERM

- 1051. INTRODUCTION TO IDEAS OF STATISTICS.** (4 cr; prereq high school higher algebra; II MTWThF and III WF; VH 2)
Presentation and analysis of data. Probabilistic models for inference. 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 20)
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 20)
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 2)
Confidence intervals, testing hypotheses, regression, ANOVA, sequential and nonparametric methods.

Studio Arts—See Arts, Studio

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; limited to 150 students; 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 1101, 1504 or fl1504 and 3rd-qr fr; I-II MTWThF; RarigC 10) Berry
Creation and presentation of original scenes and skits. Response to imaginative situations.
- **1326. BEGINNING ACTING: TECHNIQUE.** (4 cr; limited to 20 students; prereq 1321; III MTWThF; RarigC 10) Moulton
Fundamentals of body movement, rhythms, and acting technique. Individual and group performances.
- **1328. MIME.** (2 cr; limited to 20 students; prereq 1321; VII MTWThF; RarigC 10) Berry
Techniques and domain of mime explored through class participation.
- **1405H. HONORS COURSE: INTRODUCTION TO THE THEATRE.** (2 cr; limited to 25 students; prereq 1101 and #; IV TTh; RarigC 275; lab ar) Ballet
Enrichment course for students who have completed 1101 with outstanding work.

- **1804. ORAL TRADITIONS, MYTH TO MODERN.** (4 cr; limited to 30 students; IV MTWThF; RarigC 210) Thompson
Oral performance of mythic, folk, and modern literature. Oral interpretation of the epic, lyric, dramatic voices of literature.
- **3326. THEATRE DANCE.** (2 cr; limited to 22 students; prereq 1326; \$2 lab fee; IV MTWThF; RarigC 10) Moulton
Dance techniques for actors; practice and performance of dances in the theatre.
- **3515. TECHNICAL THEATRE PRODUCTION II.** (4 cr; limited to 80 students; prereq 1504; IV-V MTWTh; RarigC 190; lab ar) Crellin
Theory and practice in 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 written Δ, consent of theatre practicum committee) Thompson
Arranged individual creative projects in production of a play, meeting approval of faculty committee in one or more of these areas: playwrighting, directing, acting, and design.
- 5110. THEATRE PERFORMANCE.** (1 cr; [9 cr max]; prereq written permission; S-N only) Thompson
Participation in the rehearsals and performances of a major University Theatre production.
- **5181. CONTEMPORARY BLACK THEATRE.** (4 cr; limited to 15 students; prereq 1504 or Afro 1045 or 3055 or AmSt 1101 or Engl 5175 or #; II-IV MTWTh; RarigC 185) Wolfe
Black consciousness manifested on the American stage. Black plays, playwrights, and the forces that brought them into being.
- 5718. THEATRE MANAGEMENT AND PROMOTION.** (4 cr; prereq 1504, sr or grad student or #; VI-VII MTWTh; RarigC 75) Neely
Theory and practice in ticket office procedures, house management, publicity, and promotion; special problems in college, community, children's, and professional theatres.
- 5950. TOPICS IN THEATRE.** (1-5 cr per qtr [max 12 cr]; prereq # and Δ)
Sec 1, Workshop: Acting in and Directing Black Plays, 2 cr, III-IV MTWTh, RarigC 185, Wolfe
- 5970. DIRECTED READINGS.** (2-6 cr; prereq 9 cr in theatre, # and Δ) Staff
Directed reading and preparation of reports on selected subjects.
- 8980. DIRECTED INSTRUCTION.** (1-3 cr) Staff
Teaching experience in an area in which the student does not hold a teaching assistantship but in which he/she may be required to teach as a professional. Limited to students qualified by course work in the area to be taught.
- 8990. RESEARCH.** (Cr ar; prereq # and Δ) Staff
Open to graduate students engaged in research on special problems.

**SPECIAL TERMS: THREE-WEEK COURSES (July 17-August 4)
AND ONE-WEEK WORKSHOPS (Dates Specified)**

- 1504. ELEMENTS OF TECHNICAL THEATRE.** (4 cr; prereq 1101 or 11101; II-III MTWTh; RarigC 190; lab ar) Brockman
The practice of the arts and crafts of the theatre: scenery construction and painting, stage operation, theatre lighting, costuming.
- **3314. STAGE FENCING AND COMBAT: HISTORY AND EXECUTION.** (2 cr per qtr; limited to 25 students; prereq 1326; \$2 lab fee; I-II MTWThF; RarigC 10) Berry
History of weapons through the ages; fighting and fencing; use of weapons in stage combat.
- 3328. ADVANCED MIME.** (2 cr; prereq 1326, 1328; III-IV MTWThF; RarigC 10) Berry
Techniques of mime put to use in scene study and in creation of original mimetic pieces for performance.
- **3711. STAGE DIRECTION.** (4 cr §3708, §5711; limited to 18 students; prereq 1321, jr or sr; III-V MWF, III-IV TTh; RarigC 185) Adey
Theory of direction: concept and analysis. Blocking and production of short scenes.
- 3801. ORAL INTERPRETATION OF FICTION.** (4 cr; prereq 1504 or 1804 or Spch 1101; 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 written Δ, consent of theatre practicum committee) Josal
See First Term.
- 5110. THEATRE PERFORMANCE.** (1 cr; prereq written permission; S-N only) Adey
See First Term.

- 5173. HISTORY OF THEATRE.** (4 cr; prereq sr or grad theatre major or #; I-II MTWThF; RarigC 20) Nolte
Plays, arts, and crafts of the theatre, late 19th and 20th centuries. Reports and projects.
- 5186. AMERICAN THEATRE.** (4 cr; prereq sr or grad theatre major or #; III-IV MTWThF; RarigC 20) Nolte
The theatre as an aspect of American culture from 1752 to present.
- 5514. ADVANCED PROBLEMS IN SCENE DESIGN.** (4 cr; prereq 3515 or #; III-V MWF, III-IV TTh; RarigC 275; lab ar) Josal
Theory and design of stage scenery. Special projects and reports.
- **5803. ORAL INTERPRETATION OF DRAMA.** (4 cr; limited to 25 students; prereq 1504, 3801, or grad student; III-V MWF, III-IV TTh; RarigC 90) Congdon
Study of selected plays. Solo and group readings.
- 5950. TOPICS IN THEATRE.** (1-5 cr per qtr [max 12 cr]; prereq # and Δ)
Selected topics.
- Sec 1, Workshop: Problems in Stage Movement, July 17-August 4,** 2 cr, VII-VIII MTWTh, RarigC 10, Berry
LeCoq mime and the neutral mask.
- Sec 2, Workshop: Patterning, Cutting, and Fitting Historical Costumes, July 17-21,** 2 cr, VI-IX MTWThF, RarigC 230, Crellin
The Gothic or medieval period.
- Sec 3, Workshop: Problems of Directing, July 17-21,** 2 cr, VI-IX MTWThF, RarigC 185, Adey
Theory of direction: concept, analysis, and problems in producing the play. Exercises in craft and experimental techniques, production of short scenes.
- Sec 4, Workshop: Patterning, Cutting and Fitting Historical Costumes, July 24-28,** 2 cr, VI-IX MTWThF, RarigC 230, Crellin
The Renaissance period.
- Sec 5, Workshop: The Unit Setting, July 24-28,** 2 cr, VI-IX MTWThF, RarigC 275, Josal
The unit setting as a scenic solution to the multiset show. Use of standardized and adaptable levels, steps, ramps, curtains. Design of one multiset production.
- Sec 6, Workshop: Patterning, Cutting, and Fitting Historical Costumes, July 31-August 4,** 2 cr, VI-IX MTWThF, RarigC 230, Crellin
The 18th-century period.
- Sec 7, Workshop: Upholstery for the Theatre, July 31-August 4,** 2 cr, VI-IX MTWThF, RarigC 30, Brockman
Basic materials, tools, and techniques for upholstering theatre props.
- 5970. DIRECTED READINGS.** (2-6 cr; prereq 9 cr in theatre, # and Δ) Staff
See First Term.
- 8980. DIRECTED INSTRUCTION.** (1-3 cr) Staff
See First Term.
- 8990. RESEARCH.** (Cr ar; prereq # and Δ) Staff
See First Term.

Urban Studies (Urbs)

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

FIRST TERM

- **3101. URBAN STUDIES COLLOQUIA.** (2 cr per qtr; S-N only; prereq #; limited to 20 students per group; II-III MW; BlegH 360) Osmera
Introduction to urban problems and problem-solving techniques.
- 3900. INTERNSHIP.** (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ; 5:30-7:30 pm M; 860 SocSci) Osmera
A weekly seminar integrating the internship experience with the academic program. Should be taken during or immediately after the internship.

SECOND TERM

- 3900. INTERNSHIP.** (1-6 cr per qtr [12 cr max]; prereq jr or sr and Δ; 5:30-7:30 pm M; 860 SocSci) Osmera
See First Term.

Women's Studies (WoSt)

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

FIRST TERM

1005. INTRODUCTION TO WOMEN'S STUDIES. (4 cr; II MTWThF; AndH 250)

History of feminism, nationally and locally; women's issues; biological and learned behaviors.

3001. WOMEN: BIOLOGY AND BEHAVIOR. (4 cr; prereq Biol 1011 or Phsi 1001 or #; II MTWThF; ForH 120) Reed

Biological aspects of being a woman. Materials from many disciplines. For women and men.

SECOND TERM

1006. INTRODUCTION TO WOMEN'S STUDIES. (4 cr; II MTWThF; BlegH 155)

See 1005 First Term.

● **3103. THE MODERN FEMINIST NOVEL.** (4 cr; limited to 30 students; prereq fr English or equiv; II MTWThF; ForH 285) Wanhala

Selected twentieth-century novels by British and American women.

Military Science

The Army Reserve Officer's Training Corps (ROTC) summer program offers University students three ways to qualify for ROTC through an accelerated program: 1) entry into the Basic Course (compress 4 years into 3); 2) entry into the Advanced Course (compress 4 years into 2); 3) an alternative to the Two-Year Basic Camp that permits students to remain in the Twin Cities during the summer (compress 4 years into 2). No military obligation is incurred through participation in any of the summer programs. Eligible students who enroll in the Advanced Course receive \$100 per month beginning the next academic year. For information, call 373-2212.

Military Science (Mil)

Courses with limited enrollment must be reserved in 108 Armory (see instructions under "Reserved Courses").

FIRST TERM

- **1014. WORLD MILITARY HISTORY.** (5 cr, §1011, §1012, §1013, §Hist 1951, §1952, §1953, §1954; limited to 50 students; prereq Δ, Leadership Laboratory¹; I-II MTWThF; Armory 116)
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 Laboratory¹; I-II MTWThF; Armory 116)
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.

¹Leadership Laboratory is taught concurrently to all cadets during the summer terms. The laboratory is designed so that students can demonstrate their 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. The laboratory is also designed to assist 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 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1021. ARCHITECTURAL THEORY AND HISTORY.** (4 cr; reserved course; 1021 is prereq to all architectural history courses; III-IV MWF; Arch 25) Winterowd
The philosophy and principles of architecture as an art, development of architecture from ancient times to the present.
- 5056. MODERN ARCHITECTURE.** (4 cr; reserved course; prereq 1021 or #; III-IV MW, IV F; Arch 35) Ohlhausen
History of architecture in America and Europe from the late 19th century until the present time.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- **3082-3083. ARCHITECTURAL DESIGN I.** (6 cr per qtr; limited enrollment; prereq 3081; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) Blair
Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making.
- **3092-3093. ARCHITECTURAL DESIGN II.** (6 cr per qtr; limited enrollment; prereq 3091; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) Blair
Architectural problems with emphasis on development of structure as an integral part of design; site planning.
- **5111. ARCHITECTURAL DESIGN III.** (6 cr; limited enrollment; prereq 3093; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
Advanced architectural problems of complex requirements, involving thorough study and detailed solution; electrical and mechanical equipment and structure as an integral part of design; research techniques. Individual effort and group collaboration.
- **5112. ARCHITECTURAL DESIGN III.** (6 cr; limited enrollment; prereq 5111; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
See 5111.
- **5113. ARCHITECTURAL DESIGN III.** (6 cr; limited enrollment; prereq 5112; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
See 5111.
- **5121. ARCHITECTURAL DESIGN IV.** (9 cr; limited enrollment; prereq 5113, CE 3062; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
Building design and development in the urban context. Individual and collaborative effort; urban problems; reporting on and preparation of large-scale proposals.
- **5122. ARCHITECTURAL DESIGN IV.** (9 cr; limited enrollment; prereq 5121; register for both terms at beginning of first term; \$2 lab fee; VI-X MTWThF; Arch 210) LaVine
See 5121.

SECOND TERM

- **1022. HISTORY OF ENVIRONMENTAL DEVELOPMENT: LANDSCAPE ARCHITECTURE.** (4 cr; reserved course; prereq 1021; III-IV MWF; Arch 25) Winterowd
Introduction to landscape architecture. Forces and individuals that shaped the form of landscape in 19th- and early 20th-century America.
- **1041. ART FOR ARCHITECTURE STUDENTS.** (2 cr; limited enrollment; II-IV T; Arch 10)
Freehand drawing. Emphasis on development of graphics and delineation. Various techniques and media are employed.

SCHOOL OF CHEMISTRY

Chemistry (Chem)

Courses with limited enrollment must be reserved in 5 Lind Hall by IT students and in 12 Johnston Hall by other students unless otherwise indicated (see instructions under "Reserved Courses").

A deposit card is necessary for all laboratory courses; see page xx.

FIRST TERM

- **1001. CHEMICAL PRINCIPLES AND COVALENT SYSTEMS.** (5 cr, 1001-1002†, §1004-1005, §1014, §1031-1032; primarily for forestry and nursing students; a terminal course; limited enrollment, reserved in JohH 12; prereq 2 yrs high school mathematics . . . high school chemistry recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 375; rec V MWF; lab VI-VIII MWF, SmithH ar) Staff
Principles of chemical change; structural concepts of nuclei, atoms, molecules; laws governing dynamic behavior of matter; equilibrium concepts, especially those relevant to living systems; applications of principles with emphasis on organic and biological species.
- **1004. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr, 1004-1005†, §1001-1002, §1014, §1031, §1032; limited enrollment, reserved in CofH 130 for Ag, For, HE . . . LindH 5 for IT . . . JohH 12 for other students; primarily for non-chemistry majors; prereq placement index of Y or predicted mathematics GPA 1.90 on ACT, Math 0009 or college course in algebra . . . 4 yrs high school mathematics . . . high school chemistry and physics recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 325; rec V MWF; lab VI-VIII MWF, SmithH ar)
Introduction to chemistry from the standpoint of atomic structure; periodic properties of elements and compounds derivable from structural considerations; laws governing behavior of matter, theories of solutions, acids, bases, and equilibria.
- **1006. PRINCIPLES OF SOLUTION CHEMISTRY.** (4 cr; limited enrollment, reserved in CofH 130 for Ag, For, HE . . . LindH 5 for IT . . . JohH 12 for other students; prereq 1005 or 1032; \$2 lab fee; lect II MTWThF, SciCB 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 non-chemistry majors; prereq 1005; V-VI MWF; Owre 12)
(Lecture) Modern quantitative methods of analysis.
- **3101. QUANTITATIVE ANALYSIS.** (2 cr, 3100-3101†; limited enrollment; for non-chemistry majors; prereq 3100 or §3100; \$2 lab fee; I-III MTWThF; SmithH 310)
(Laboratory) Modern quantitative methods of analysis including elementary physicochemical procedures.
- **3301. ELEMENTARY ORGANIC CHEMISTRY.** (4 cr; limited enrollment; for non-chemistry majors; prereq 1005 or 1032 or equiv; I MTWTh, II TThF, III F; SmithH 100)
Important classes of organic compounds, both aliphatic and aromatic, and heterocyclic compounds.
- **3305. ELEMENTARY ORGANIC CHEMISTRY LABORATORY.** (2 cr; limited enrollment; prereq 3301 or §3301; \$2 lab fee; lect III T, SmithH 100; lab II-V MW [1st wk of term lab will meet II-V WF], SmithH 349, KoltH 398)
See 3301.
- **3499. SENIOR THESIS.** (Cr ar; must be reserved in LindH 5; prereq #, 4th yr; \$2 lab fee)
Written final senior thesis report.
- 3970. DIRECTED STUDY.** (Cr ar; prereq #; \$2 lab fee)
On- or off-campus learning experiences, individually arranged between a student and faculty member, in areas not covered by regular courses.
- **5520. ELEMENTARY PHYSICAL CHEMISTRY.** (3 cr; limited enrollment, reserved in LindH 5; prereq 1 yr college chemistry, Phys 1291 and 1295 or §Phys 1291 and §1295 or 1106 with #, Math 3211; I-II MWF; SmithH 225)
Brief general survey. Chemical thermodynamics.
- 8990. RESEARCH IN CHEMISTRY.** (Cr and hrs ar; prereq Δ)
- 8991. SPECIAL TOPICS.** (Cr and hrs ar; prereq Δ)

SECOND TERM

- **1002. CHEMICAL PRINCIPLES AND COVALENT SYSTEMS.** (5 cr, 1001-1002†, §1004-1005, §1014, §1031-1032; primarily for forestry and nursing students; a terminal course; limited enrollment, reserved in JohH 12; prereq 2 yrs high school mathematics, high school chemistry recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 375; rec IV MWF; lab VI-VIII MWF, SmithH ar)
See 1001 First Term.
- **1005. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr, 1004-1005†, §1001-1002, §1014, §1031, §1032; limited enrollment, reserved in CoH 130 for Ag, For, HE... LindH 5 for IT... JohH 12 for other students; primarily for non-chemistry majors; prereq placement index of Y or predicted mathematics GPA 1.90 on ACT, Math 0009 or college course in algebra... 4 yrs high school mathematics...high school chemistry and physics recommended; \$2 lab fee; lect 7:50-9:00 MTWThF, SciCB 325; rec V MWF; lab VI-VIII MWF, SmithH ar)
See 1004 First Term.
- NSci 1005. NATURAL SCIENCE—STRUCTURE AND PROPERTIES**
See Natural Science under College of Liberal Arts.
- **3302. ELEMENTARY ORGANIC CHEMISTRY.** (4 cr; limited enrollment; prereq 3301 or equiv; I MTWTh, II TThF, III F; SmithH 100)
See 3301 First Term.
- **3306. ELEMENTARY ORGANIC CHEMISTRY LABORATORY.** (2 cr; limited enrollment; prereq 3302 or §3302; \$2 lab fee; lect III T, SmithH 100; lab 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 5; prereq #, 4th yr; \$2 lab fee)
See First Term.
- 3970. DIRECTED STUDY.** (Cr ar; prereq #; \$2 lab fee)
See First Term.
- **5126. MODERN ANALYTICAL CHEMISTRY.** (4 cr; limited enrollment, reserved in LindH 5; primarily for chemical engineering majors; prereq 3332 and 3335; \$2 lab fee; lect V-VI TTh, KoltH S137; lab I-IV MTWTh, KoltH 297, 299)
Strategies and techniques for solving modern analytical problems. The use of modern instruments in analysis.
- **5133. CHEMICAL INSTRUMENTATION AND ANALYSIS.** (5 cr, §5126; limited enrollment, reserved in LindH 5; prereq 1133, 5534; \$2 lab fee; lect V-VI TTh, KoltH S137; lab I-IV MTWThF, KoltH 297, 299)
An introduction to the methodology and practices of solving analytical problems. Application of modern instrumental techniques to analysis.
- **5521. ELEMENTARY PHYSICAL CHEMISTRY.** (3 cr; limited enrollment, reserved in LindH 5; prereq 1 yr college chemistry, Phys 1291 and 1295 or §Phys 1291 and §1295 or 1106 with #, Math 3211; I-II MWF; SmithH 225)
See 5520 First Term.
- 8990. RESEARCH IN CHEMISTRY.** (Cr and hrs ar; prereq Δ)
- 8992. SPECIAL TOPICS.** (Cr and hrs ar; prereq Δ)

COMPUTER SCIENCE (CSci)

All courses must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 3101. A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING.** (4 cr; prereq Math 1231 or Math 1331 or Math 1621 or #; intended for non-CSci majors; \$2 lab fee; IV MTWThF; MechE 202) Ibarra
FORTRAN computer language with extensions; applications; programming techniques. Brings 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; \$2 lab fee; III MTWThF; MechE 202) Maly
Algorithms, their properties and representation. Elementary concepts in linguistics: syntax, semantics, ambiguities. FORTRAN as a language; applications of FORTRAN to different algorithms; e.g., iteration and recursion, sequential and binary searching, numerical methods.

- 5101. STRUCTURE AND PROGRAMMING OF SOFTWARE SYSTEMS I.** (4 cr, §3107; prereq 1101 or 3101 or 3105 or #; informal lab; intended for non-CSci majors; \$2 lab fee; III-IV MW, IV F; MechE 302) 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 #; \$2 lab fee; III-IV TTh, III F; MechE 302) Sahnii
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. Multiinked structures. Sorting.
- 5301. NUMERICAL ANALYSIS.** (4 cr, §Math 5472; prereq Math 3221, or 3142 and 3211, or #. . . a knowledge of FORTRAN is assumed; informal lab; \$2 lab fee; III MTWThF; LindH 303) Frankowski
General concept of iteration formulas. Solution of equations. Newton's method. Linear systems. Finite differences. Interpolation. Numerical differentiation and integration. Introduction to initial value problems.

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; \$2 lab fee; IV MTWThF; MechE 202) Moher
See First Term.
- 3106. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES II.** (4 cr; prereq 3105 or #; informal lab; \$2 lab fee; III MTWThF; MechE 202) 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; \$2 lab fee; III-IV MW, IV F; MechE 302) 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.

SCHOOL OF EARTH SCIENCES

Geology and Geophysics (Geo)

All courses must be reserved in 5 Lind Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

- **1001. PHYSICAL GEOLOGY.** (5 cr; limited to 52 students, reserved in LindH 5 for IT and JohH 12 for others; \$2 lab fee; lect II MTWThF; PillsH 110) Sawkins
Introduction to scientific method and nature of the earth. Main features of the physical world and processes that have formed them.
Lab 1, III-IV MWF, ForH 180
Lab 2, VI-VII MWF, ForH 180
- 3099. PROBLEMS IN GEOLOGY AND GEOPHYSICS.** (1-6 cr; prereq # and Δ)
Individual research or problem selected on the basis of individual interests and background.
- 3401. INTRODUCTORY MINERALOGY.** (5 cr; prereq 1001 or 1111 or #, 1 term college chemistry, Math 1441; \$2 lab fee; lect III MTWThF, PillsH 110; lab V-VII MTWTh, PillsH 110) 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, and geological, mineral, and 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; \$2 lab fee; lect III MTWThF, PillsH 110; lab V-VII MTWTh, PillsH 100) Zoltai
See 3401.

- **5051. PHYSICAL GEOLOGY FOR TEACHERS.** (4 cr, \$1001, \$1111; limited to 8 students, reserved in LindH5 for IT and JohH 12 for others; only for students holding degrees in education; prereq 1 term college chemistry or physics; \$2 lab fee; lect II MTWThF, seminar V TTh; PillsH 110) Sawkins
Scientific methods and nature of the earth. Main features of the physical world and of the processes that have formed them.
Lab 1, III-IV MWF, ForH 180
Lab 2, VI-VII MWF, ForH 180
- 5110. FIELD GEOLOGY.** (9 cr; limited to students majoring in geology, geophysics or geoengineering; prereq 3103 and #; \$2 lab fee)
Measurement of stratigraphic sections. Fossils and igneous, sedimentary, and metamorphic rocks. Geological surveying on aerial photographs and topographic maps. Preparation of geologic maps and cross sections. Structural and geomorphic features and geologic setting of mineral deposits.
Sec 1, Park City, Utah
Sec 2, Gunnison, Colorado

SECOND TERM

- **1002. HISTORICAL GEOLOGY.** (4 cr; limited to 40 students, reserved in LindH5 for IT and JohH 12 for others; prereq 1001; \$2 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)
See First Term.
- **5052. HISTORICAL GEOLOGY FOR TEACHERS.** (4 cr, \$1002, \$3112; limited to 8 students, reserved in LindH5 for IT and JohH 12 for others; open only to students holding degrees in education; prereq 1001 or 1111 or 5051 or #; \$2 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.
- **5110. FIELD GEOLOGY.** (9 cr; limited to students majoring in geology, geophysics, and geoengineering; prereq 3103 and #; \$2 lab fee)
See First Term.
Sec 1, Park City, Utah
Sec 2, Gunnison, Colorado

COLLEGE OF ENGINEERING

Aerospace Engineering and Mechanics (AEM)

All courses must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- 1015. STATICS.** (4 cr, \$1011; prereq Phys 1271, Math 1231; I-II MWF, II TTh; Aero 225)
Vector algebra. Principles of statics. Application of equations of equilibrium to analysis of simple structures and machines. Statically determinate beams. Cables. Nature and influence of friction.
- 3036. DYNAMICS.** (4 cr; prereq 1011 or 1015, Math 3221; III-IV MWF, III TTh; 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 3-14.** (4 cr; enrollment limited to 30 students; 1:00-5:30 MTWThF; MechE 212) Kaldahl, Aerospace Engineering and Mechanics faculty
Lectures, film reviews, construction and demonstration of classroom aids, involvement with the NASA spacemobile, flight experience, and field trips cover such topics as satellites and probes, model rocketry including a launch, astronaut in space, principles of flight, conventional aircraft, space age education tools. Visits to local aerospace facility and to major aerospace installation in the country. 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 1011 or 1015, 1Math 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 5 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 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

● 3400. MECHANICAL PROPERTIES OF 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 Engineering (CE)

Courses so designated must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

● 5097. ADVANCED DESIGN, ANALYSIS, RESEARCH, OR TUTORIAL IN CIVIL ENGINEERING. (Cr ar; reserved course; prereq #) Cerny
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 #) Cerny
Original work in concrete, structural steel, soils, hydraulics, municipal, sanitary, or transportation problems. Investigations, reports, tests, designs.

Electrical Engineering (EE)

Courses with limited enrollment must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- **1510. ELEMENTS OF ELECTRICAL ENGINEERING.** (5 cr; each section limited to 14 students; prereq Math 3221, Phys 1291 or ¶Phys 1291; \$2 lab fee; I-II MTWThF; MechE 202)
Physical principles underlying the modeling of circuit elements. Two- and three-terminal resistive elements. Kirchhoff's laws. Simple resistive circuits. Linearity in circuits. Storage elements. First-order circuits.
Lab 1, III-V TTh, ElectE 121
Lab 2, V-VII WF, ElectE 121

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- **3000. CIRCUITS.** (4 cr; each section limited to 14 students; not for EE majors; prereq Phys 1291, Math 3221 or ¶Math 3221; \$2 lab fee; lect I MWF; Arch 10)
Linear passive circuits; natural and forced response. Steady-state AC analysis; resonance.
Lab 1, I-II T, ElectE 121
Lab 2, I-II Th, ElectE 121
Lab 3, V-VI Th, ElectE 118
Lab 4, VI-VII W, ElectE 118
- **3001. ELECTRONICS.** (4 cr; each section limited to 14 students; not for EE majors; prereq 3010 or 3000 or ¶3000; \$2 lab fee; lect II MWF; Arch 10)
Network theorems; two-ports, active device models; vacuum diodes, semiconductors, amplifiers, nonlinear devices; logic circuits. (Note that concurrent enrollment is now permitted in EE 3000 and 3001).
Lab 1, I-II T, ElectE 118
Lab 2, I-II Th, ElectE 118
Lab 3, VI-VIII M, ElectE 118
- **3010. CIRCUITS, SIGNALS, AND SYSTEMS I.** (4 cr, \$1501; limited enrollment; prereq 1510; IV MWF, VI-VII M; Arch 40)
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 40)
Continuous, discrete-time systems. Feedback: stability, applications.
- **3050. ELECTRONICS.** (4 cr; limited enrollment; prereq 3010 or ¶3010; I MWF, VI-VII W; Arch 40)
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; \$2 lab fee)
Lab 1, I-IV T, ElectE 205
Lab 2, V-VIII Th, ElectE 205
- **3402. JUNIOR ELECTRICAL ENGINEERING LABORATORY.** (2 cr; each section limited to 12 students; prereq 5050 or ¶5050; \$2 lab fee)
Lab 1, V-VIII T, ElectE 216
Lab 2, I-IV Th, ElectE 216
Lab 3, V-VIII Th, ElectE 216
- **3476. INDUSTRIAL ASSIGNMENT I.** (2 cr; limited enrollment; prereq regis in engineering intern program)
Industrial work assignment in engineering intern program. Grade based on formal written report covering the quarter's work assignment.

- **3477. INDUSTRIAL ASSIGNMENT II.** (2 cr; limited enrollment; prereq 3476)
See 3476.
- **3478. INDUSTRIAL ASSIGNMENT III.** (2 cr; limited enrollment; prereq 3477)
See 3476.
- **3479. INDUSTRIAL ASSIGNMENT IV.** (2 cr; limited enrollment; prereq 3478)
See 3476.
- **5050. NONLINEAR ELECTRONIC CIRCUITS.** (4 cr; limited enrollment; prereq 3051, 3012 or 3012; 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 55)
Integrated logic circuits. Design using logic circuits, memory elements, sequential circuits. Transmission lines and digital signals.
- **5100. ELECTROMAGNETIC FIELDS III.** (4 cr; limited enrollment; prereq 3101; I MWF, VI-VII W; Arch 55)
Plane-wave propagation, transmission lines, antennas, and other topics.
- **5101. ELECTROMAGNETIC FIELDS LABORATORY.** (1 cr; each section limited to 12 students; prereq 3401, 5100 or 5100; \$2 lab fee)
Lab 1, V-VIII alt T, ElectE 204
Lab 2, I-IV alt Th, ElectE 204

Mechanical Engineering

Industrial Engineering/Operations Research (IEOR)

Courses with limited enrollment must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- **5030. QUALITY CONTROL AND RELIABILITY.** (4 cr; limited to 30 students; prereq 5000, Math 1231, ME 3900; lect IV-V MTWTh; MechE 102) 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 102) 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 108) Arora
Scientific management, mathematical models, methods engineering, work measurement, worker satisfaction and participation, wage payment plans, break-even analysis, incremental costs, the time value of money and the present value concept; cost quality and inventory control; production scheduling, plant locations, and layout; linear programming, PERT, and the systems approach to management problems.

Mechanical Engineering (ME)

Courses with limited enrollment must be reserved in 5 Lind Hall (see instructions under "Reserved Courses").

FIRST TERM

- **3201. MECHANICAL ENGINEERING SYSTEMS ANALYSIS.** (4 cr; limited to 30 students; prereq Math 3221; lect V MTWThF, rec VII-VIII TTh; MechE 102) Frohrib
Modeling and analytic description of mechanical systems. Properties of linear models with emphasis on automatic computation solution. *Necessary background includes differential equations.*
- **3205. ENGINEERING SYSTEMS DESIGN.** (4 cr; limited to 30 students; prereq engineering system dynamics and kinematics [3201, 3203]; III-IV MTWTh; MechE 108) Kleinhenz
Application of fundamental concepts to the design of typical mechanical components. Engineering approach to the analysis and synthesis of machines and systems. Specification of materials in engineering design. Optimum design criteria.
- **3301. THERMODYNAMICS.** (4 cr; limited to 30 students; prereq introductory thermodynamics and basic calculus, Chem 1014, or Phys 1281, Math 3221 or equiv; III TWTh, IV MTWThF; MechE 221) Scott
Properties, equations of state, processes, and cycles for various thermodynamic systems. Development of first and second laws of thermodynamics, correlating heat, work, and mass transfer. Equilibrium irreversibility and mixtures.
- **5460. INTERNAL COMBUSTION ENGINES.** (4 cr; limited to 30 students; prereq 3301 or equiv; 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 5; prereq regis in engineering intern program) Springer
Engineering intern industry laboratory assignment (work quarter). Grade based on formal written report covering the industrial work assignment.

SECOND TERM

- **3303. APPLIED THERMODYNAMICS.** (4 cr; limited to 30 students; prereq 3301; III 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 mixtures.
- **5260. ENGINEERING MATERIALS AND PROCESSING.** (4 cr; limited to 30 students; prereq Phys 1291, Chem 1004, and 1st-yr calculus; \$2 lab fee; lect V MTWThF, MechE 102) Donath
Introduction to materials and processing including physical and metallurgical properties, consolidation, etc. Material processing including machining, welding, and deformation processes:
Lab 1, VII-IX TTh, MechE 70
Lab 2, VII-IX MW, MechE 70
- **5342. HEAT TRANSFER.** (4 cr; limited to 30 students; prereq Math 3221, CE 3400 or equiv; lect II MWF, III MTWThF; 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.

SCHOOL OF MATHEMATICS

Mathematics (Math)

Courses with limited enrollment must be reserved in 5 Lind Hall or 12 Johnston Hall unless otherwise indicated (see instructions under "Reserved Courses").

FIRST TERM

- **0009. PREPARATORY MATHEMATICS.** (No cr; limited enrollment, reserved in JohH 12)
Designed to supplement the background in algebra for those whose background is insufficient. Covers most of the material of high school elementary and higher algebra courses, with emphasis on the latter.
Sec 1, I-II MTWThF, VH 206
Sec 2, III-IV MTWThF, VH 113

- **1005. FOUNDATIONS OF ARITHMETIC.** (3 cr [not available for CLA cr]; limited enrollment, reserved in JohH 12; prereq 1 yr elementary algebra and 1 yr high school geometry or equiv, or Δ ; III MTWThF; KoltH S135)
 Logical and axiomatic basis of the rules for arithmetical operations with integers, rational numbers, and real irrational numbers as necessary background for teaching arithmetic in elementary school. History of the subject and its role in our culture and civilization.
- **1008. TRIGONOMETRY.** (3 cr [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 higher algebra or 0009 . . . §1111 allowed)
 Analytic trigonometry emphasizing identities, equations, and properties of the functions; right and oblique triangles without logarithmic computation.
 Sec 1, II MTWThF, VH 207
 Sec 2, IV MTWThF, VH 206
- **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, Arch 45
 Sec 2, III-IV MTWThF, Arch 50
- **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 207)
 (For students in the social sciences, behavioral sciences, and pre-business administration.) Elementary computer programming, logical analysis, probability and stochastic models, Markov chains, linear systems and programming, matrix operations, and applications.
- **1142. INTRODUCTION TO CALCULUS.** (5 cr, §1211; limited enrollment, reserved in JohH 12; prereq 1111 or 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, partial differentiation, applications.
 Sec 1, I-II MTWThF, VH 20
 Sec 2, III-IV MTWThF, Arch 15
- **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 209
- **1211. ANALYSIS I.** (5 cr, §1142, §1311; limited enrollment; prereq grade of C or better in 1201 or high school higher algebra, trigonometry, geometry and math placement score)
 Analytic geometry and calculus of one variable, applications. Infinite series and sequences.
 Sec 1, I-II MTWThF, Arch 35
 Sec 2, III-IV MTWThF, Arch 45
- **1221. ANALYSIS II.** (5 cr, 1321; limited enrollment; prereq grade of C or better in 1211 or equiv)
 See 1211.
 Sec 1, I-II MTWThF, VH 16
 Sec 2, III-IV MTWThF, VH 16
- **1231. ANALYSIS III.** (5 cr, 1331; limited enrollment; prereq grade of C or better in 1221 or equiv)
 See 1211.
 Sec 1, I-II MTWThF, Møche 302
 Sec 2, III-IV MTWThF, VH 5
- **3211. ANALYSIS IV.** (5 cr, §3521; limited enrollment; prereq grade of C or better in 1231 or equiv)
 Partial differentiation, chain rule, implicit functions, applications. Multiple integrals in two and three dimensions.
 Sec 1, I-II MTWThF, VH 211
 Sec 2, III-IV MTWThF, VH 311

- **3221. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS.** (5 cr, §3142, §3511; limited enrollment, reserved in LindH 5; prereq grade of C or better in 1231 or equiv; III-IV MTWThF; VH 211)
 Vectors, systems of linear equations, matrices, determinants, bases, eigenvalues. Linear differential equations and systems with constant coefficients, initial value problem and general solution, variation of parameters for inhomogeneous equations.
- **3231. VECTOR ANALYSIS.** (4 cr, §5601-5602; limited enrollment, reserved in LindH 5; prereq grade of C or better in 3211 or equiv; I MWF, II MTWThF; VH 364)
 Scalar and vector products, derivatives, geometry of space curves, del operator, line and surface integrals, divergence and Stokes' theorem, transformation of coordinates, dyadics, applications. Mostly a technique course, intended mainly for students whose interests are not theoretical but who wish to learn the relevant mathematical facts and methods.
- **5209. THEORY OF NUMBERS.** (4 cr; limited enrollment, reserved in JohH 12; prereq 3211 or 3411; III WF, IV MTWThF; VH 6)
 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 WF, IV MTWThF; KoltH S140)
 Systems of linear equations, finite dimensional linear spaces, bases, linear transformations, matrices, determinants, eigenvalues, reduction to canonical forms, quadratic and bilinear forms, applications.
- **5457. METHODS OF APPLIED MATHEMATICS.** (4 cr; limited enrollment, reserved in LindH 5; prereq 3211 and 3221 or equiv; II MTWThF, III TTh; KoltH S140)
 Integrated study of analytic tools used in applications of mathematics; emphasis on technique. Real and complex variables, matrices, ordinary and partial differential equations, calculus of variations, asymptotic expansions.
- **5601. ADVANCED CALCULUS.** (4 cr; limited enrollment; prereq 3211 or 3411 or equiv; II MTWThF, III TTh; VH 6)
 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; III TTh, IV MTWThF; VH 203)
 Basic concepts. Enumeration including binomial counting, permutations, generating functions, inclusion-exclusion principle, recurrence relations. Emphasis on application. Introduction to matching theory and designs.

SECOND TERM

- **0009. PREPARATORY MATHEMATICS.** (No cr; limited enrollment, reserved in JohH 12; I-II MTWThF; VH 211)
 See First Term.
- **1006. FOUNDATIONS OF ARITHMETIC.** (3 cr; limited enrollment, reserved in JohH 12; prereq 1005; III MTWThF; KoltH S135)
 Includes topics from the following: Definitions of rational and irrational numbers, definitions of addition, subtraction, multiplication, and division of fractions; methods for operations on rational and real numbers; the real number line and inequalities; topics from geometry and congruences.
- **1008. TRIGONOMETRY.** (3 cr [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 higher algebra or 0009 . . . §1111 allowed)
 See First Term.
 Sec 1, II MTWThF, KoltH S140
 Sec 2, IV MTWThF, KoltH S135
- **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 113
 Sec 2, III-IV MTWThF, VH 113
- **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 206
 Sec 2, III-IV MTWThF, BlegH 10

- **1201. PRE-CALCULUS.** (5 cr, §1111, §1131, §1141; limited enrollment; prereq 0009 or high school higher algebra and 1008 or high school trigonometry)
See First Term.
Sec 1, I-II MTWThF, VH 207
Sec 2, III-IV MTWThF, VH 207
- **1211. ANALYSIS I.** (5 cr, §1142, §1311; limited enrollment; prereq grade of C or better in 1201 or high school higher algebra, trigonometry, geometry and math placement score)
See First Term.
Sec 1, I-II MTWThF, VH 311
Sec 2, III-IV MTWThF, VH 311
- **1221. ANALYSIS II.** (5 cr, §1321; limited enrollment; prereq grade of C or better in 1211 or equiv)
See 1211 First Term.
Sec 1, I-II MTWThF, Arch 35
Sec 2, III-IV MTWThF, VH 1
- **1231. ANALYSIS III.** (5 cr, §1331; limited enrollment; prereq grade of C or better in 1221 or equiv)
See 1211 First Term.
Sec 1, I-II MTWThF, VH 16
Sec 2, III-IV MTWThF, VH 16
- **3211. ANALYSIS IV.** (5 cr, §3521; limited enrollment; prereq grade of C or better in 1231 or equiv; III-IV MTWThF; Arch 5)
See First Term.
- **3221. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS.** (5 cr, §3142, §3511; limited enrollment, reserved in LindH 5; prereq grade of C or better in 1231 or equiv)
See First Term.
Sec 1, I-II MTWThF, Arch 5
Sec 2, III-IV MTWThF, VH 211
- **3231. VECTOR ANALYSIS.** (4 cr, §5601-5602; limited enrollment, reserved in LindH 5; prereq grade of C or better in 3211 or equiv; III MTWThF, IV MWF; VH 206)
See First Term.
- **5243. LINEAR ALGEBRA WITH APPLICATIONS.** (4 cr, §5283-5284; limited enrollment; prereq 5242; III WF, IV MTWThF; KolIH S140)
See 5242 First Term.
- **5458. METHODS OF APPLIED MATHEMATICS.** (4 cr; limited enrollment, reserved in LindH 5; prereq 5457, or 3211 and 3221, or equiv; II MTWThF, III TTh; VH 203)
See 5457 First Term.
- **5602. ADVANCED CALCULUS.** (4 cr; limited enrollment; prereq 5601; II MTWThF, III TTh; VH 209)
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 WF, IV MTWThF; VH 209)
Elementary principles of probability, total and compound probability, expectation, repeated trials. Other possible topics: Stirling's formula, the probability integral, geometrical probability, probability of causes, Bayes' theorem, errors of observation, principle of least squares.

SCHOOL OF PHYSICS AND ASTRONOMY

Astronomy (Ast)

FIRST TERM

- **1015. DESCRIPTIVE ASTRONOMY LAB.** (1 cr; S-N only; limited to 20 students; prereq 1011; \$2 lab fee; 4 lab hrs per wk)
Sec 1, V-VI MW, Ph 342, 9:00-10:00 pm, Ph 450
Sec 2, VII-VIII MW, Ph 342, 10:00-11:00 pm, Ph 450
Sec 3, V-VI TTh, Ph 342, 9:00-10:00 pm, Ph 450

Physics (Phys)

Courses with limited enrollment must be reserved in 5 Lind Hall by IT students and in 12 Johnston Hall by others (see instructions under "Reserved Courses").

FIRST TERM

- **1004. PHYSICAL WORLD: PHYSICS.** (4 cr; Sequiv courses in physics; limited to 48 students; prereq 1 yr high school algebra; II MTWThF and I TTh; Ph 133)
Topics from astronomy and physics selected to illustrate the methods of science and to acquaint students with the physical universe.
- 1005. PHYSICS LABORATORY.** (1 cr; S-N only; prereq 1004 or ¶1004; \$2 lab fee)
Laboratory experiments offered in conjunction with 1004. Lab section assigned first 2 days of class.
- **1031. GENERAL PHYSICS.** (5 cr; limited to 96 students; primarily for students interested in technical topics; prereq high school algebra and plane geometry; I MTWThF, II MWF; Ph 170)
Demonstration lectures, problem sessions, and laboratory exercises. Applications of physics. Mechanics, random processes, gases and fluids, electrical circuits, feedback and control, waves, light, optical instruments, atoms and spectra, nuclei, and radioactivity.
- 1035. GENERAL PHYSICS LAB.** (1 cr; S-N only; prereq 1031 or ¶1031; \$2 lab fee)
Laboratory experiments offered in conjunction with 1031. Lab section assigned first 2 days of class.

FIRST AND SECOND TERMS: TEN-WEEK COURSES

- 1271. GENERAL PHYSICS.** (4 cr; prereq Math 1221 or ¶Math 1221 or Math 1321 or ¶Math 1321 or Math 1621 or ¶Math 1621; may be taken with or without lab 1275; I MTWThF; Ph 166)
Calculus-level general physics course. Mechanics.
- **1275. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 64 students; prereq 1271 or ¶1271; \$2 lab fee; 2 lab hrs per wk ar)
Laboratory exercises in mechanics.
- **1281. GENERAL PHYSICS.** (4 cr; prereq 1271, Math 1231 or ¶Math 1231 or Math 1331 or ¶Math 1331 or Math 1621 or ¶Math 1621; may be taken with or without lab 1285; III MTWThF; Ph 170)
Calculus-level general physics course. Heat and electricity.
- **1285. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 48 students; prereq 1281 or ¶1281; \$2 lab fee; 2 lab hrs per wk ar)
Laboratory exercises in heat and electricity.
- 1291. GENERAL PHYSICS.** (4 cr; prereq 1281; may be taken with or without lab 1295; III MTWThF; Ph 133)
Calculus-level general physics course. Magnetism and optics.
- **1295. PHYSICS LABORATORY.** (1 cr; S-N only; limited to 64 students; prereq 1291 or ¶1291; \$2 lab fee; 2 lab hrs per wk ar)
Laboratory exercises in magnetism and optics.

SECOND TERM

- **1035. GENERAL PHYSICS.** (4 cr; limited to 96 students; primarily for students interested in topics useful in various technical areas; prereq 1031; I MTWThF, II MWF; Ph 170)
See 1031 First Term.
- 1036. GENERAL PHYSICS LAB.** (1 cr; S-N only; prereq 1032 or ¶1032; \$2 lab fee)
Laboratory experiments offered in conjunction with 1032. Lab section assigned first 2 days of class.

University College

University College offers three nontraditional degree programs and three nondegree programs designed to promote flexible learning experiences.

The oldest of the degree programs is the Inter-College Program (321 Walter Library). 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 particular interests or 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 two degree programs are experimental in nature. University Without Walls (201 Wesbrook) serves students who have met barriers in their attempts to participate in traditional undergraduate programs. The UWW staff assists students in defining educational goals and in locating University and other appropriate resources for reaching those goals.

The University Scholars Program (321 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 three nondegree programs sponsored by University College are the Foreign Studies Program, an independent study program, and the Students' College in Duluth. The Foreign Studies Program (1246 Social Sciences Building) is an individualized, interdisciplinary minor that integrates a foreign study experience and related course work with a major in any University of Minnesota college.

University College makes available to students regularly enrolled in any undergraduate college of the University an opportunity for intercollegiate independent study. A student may earn from 3 to 15 degree credits registering for independent study projects under UC 3075. The student designs his or her own project and works with an appropriate faculty member who supervises and evaluates the project.

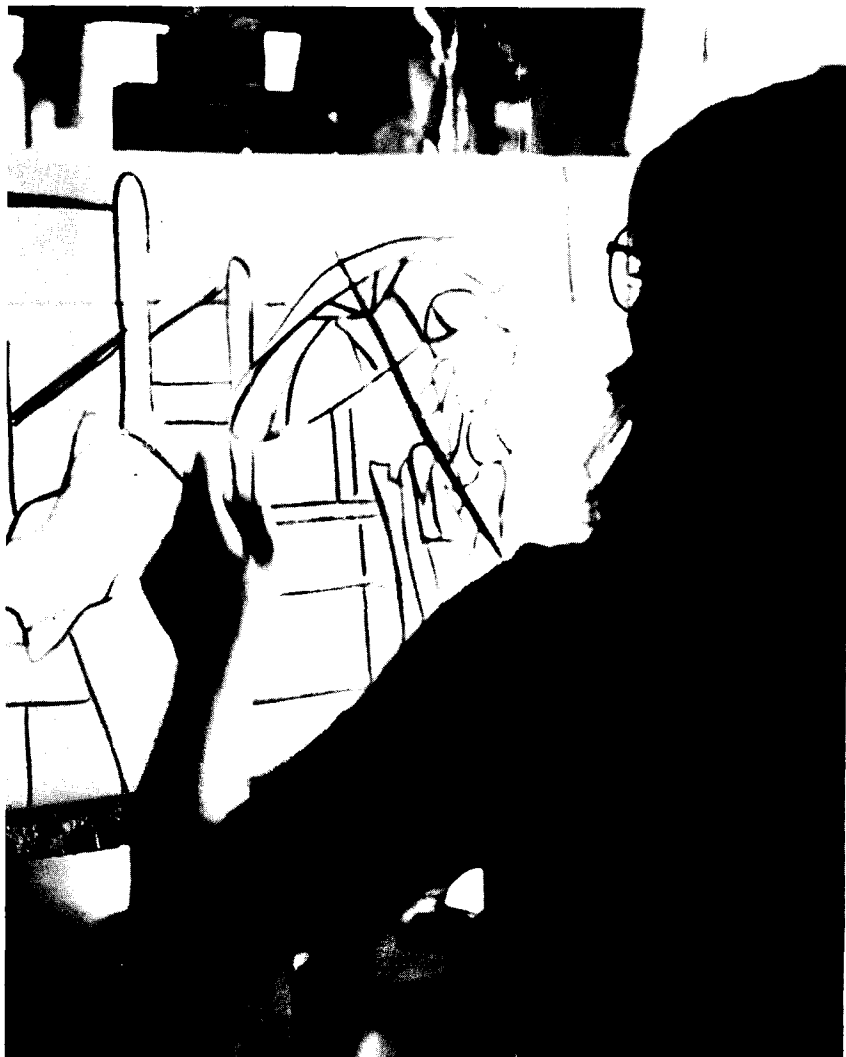
The Students' College on the Duluth campus gives students the opportunity to create, implement, and manage human services programs on the UMD campus and in the city of Duluth.

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 THE HUMANITIES.** (4 cr; I MTWThF; Ph 133) 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)

College of Veterinary Medicine (CVM)

FIRST TERM

5760. CLINICS. (16 cr; prereq #: I-IX MTWThF; VetH) Staff
Laboratories for the application of principles and techniques of medicine, surgery, obstetrics, radiology, pathology, clinical pathology, parasitology, pharmacology, physiology, and public health to the diagnosis, prognosis, treatment, prevention, and eradication of disease in domestic animals.

Large Animal Clinical Sciences (LACS)

FIRST TERM

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (Cr ar; prereq 5650 or equiv or #)
Anderson, Diesch, Pullen, Robinson
Individual study arranged with faculty member.

SECOND TERM

5680. PROBLEMS IN VETERINARY EPIDEMIOLOGY AND PUBLIC HEALTH. (Cr ar; prereq 5650 or equiv or #)
Anderson, Diesch, Pullen, Robinson
See First Term.

Small Animal Clinical Sciences (SACS)

FIRST TERM

- 8391. ADVANCED SMALL ANIMAL SURGERY.** (Cr ar; prereq 5350 or equiv, #) Brasmer, Wallace
Surgery of the various systems in small animals with preoperative and postoperative evaluation and treatment.
- 8490. ADVANCED VETERINARY RADIOLOGY.** (Cr ar; prereq 5450 or equiv, #) Jessen, Hanlon
Lecture and laboratory. Radiological diagnostic procedures and interpretation as applied to veterinary medicine.

SECOND TERM

- 8391. ADVANCED SMALL ANIMAL SURGERY.** (Cr ar; prereq 5350 or equiv, #) Brasmer, Wallace
See First Term.
- 8490. ADVANCED VETERINARY RADIOLOGY.** (Cr ar; prereq 5450 or equiv, #) Jessen, Hanlon
See First Term.

Veterinary Biology (VB)

FIRST TERM

- 5149.* **TOPICS OF ORGANOLGY.** (1-5 cr [may be repeated for cr]; prereq 8110 or equiv, #) Staff
Lecture and laboratory presentation of selected organ systems of domestic and laboratory animals.
- 8112-8113-8114. **RESEARCH PROPOSITIONS IN MORPHOLOGY.** (2 cr per qtr; prereq #) Staff
Each student defines an unsolved morphologic problem, hypothesizes a solution, and proposes an experimental approach to test the hypothesis. Written and oral presentation of proposition are evaluated by departmental graduate faculty.
- 8134-8135. **COMPARATIVE VETERINARY NEUROLOGY.** (4 cr per qtr; prereq 5100, #) Fletcher
Correlated studies of the central nervous system of domestic animals. Emphasis on relating neuroanatomy to neurophysiology.
8136. **EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY.** (3 cr; prereq 8135, #) Fletcher
Principles, methods, and laboratory exercises in investigating the central nervous system of domestic animals.
8349. **RESEARCH IN PHYSIOLOGY.** (Cr ar, §AnSc 8830; prereq #) Staff
Individual research under faculty direction. Topics to be determined by consultation; may be a specialized aspect of a thesis problem or an independent problem of mutual interest to graduate student and adviser.
8448. **PROBLEMS IN VETERINARY PHARMACOLOGY.** (Cr ar; prereq 5401 or equiv, #) Staff

SECOND TERM

- 5149.* **TOPICS OF ORGANOLGY.** (1-5 cr [may be repeated for cr]; prereq 8110 or equiv, #) Staff
See First Term.
- 8112-8113-8114. **RESEARCH PROPOSITIONS IN MORPHOLOGY.** (2 cr per qtr; prereq #) Staff
See First Term.
- 8134-8135. **COMPARATIVE VETERINARY NEUROLOGY.** (4 cr per qtr; prereq 5100, #) Fletcher
See First Term.
8136. **EXPERIMENTAL COMPARATIVE VETERINARY NEUROLOGY.** (3 cr; prereq 8135, #) Fletcher
See First Term.
8349. **RESEARCH IN PHYSIOLOGY.** (Cr ar, §AnSc 8830; prereq #) Staff
See First Term.
8448. **PROBLEMS IN VETERINARY PHARMACOLOGY.** (Cr ar; prereq 5401 or equiv, #) Staff

Veterinary Pathobiology (VPB)

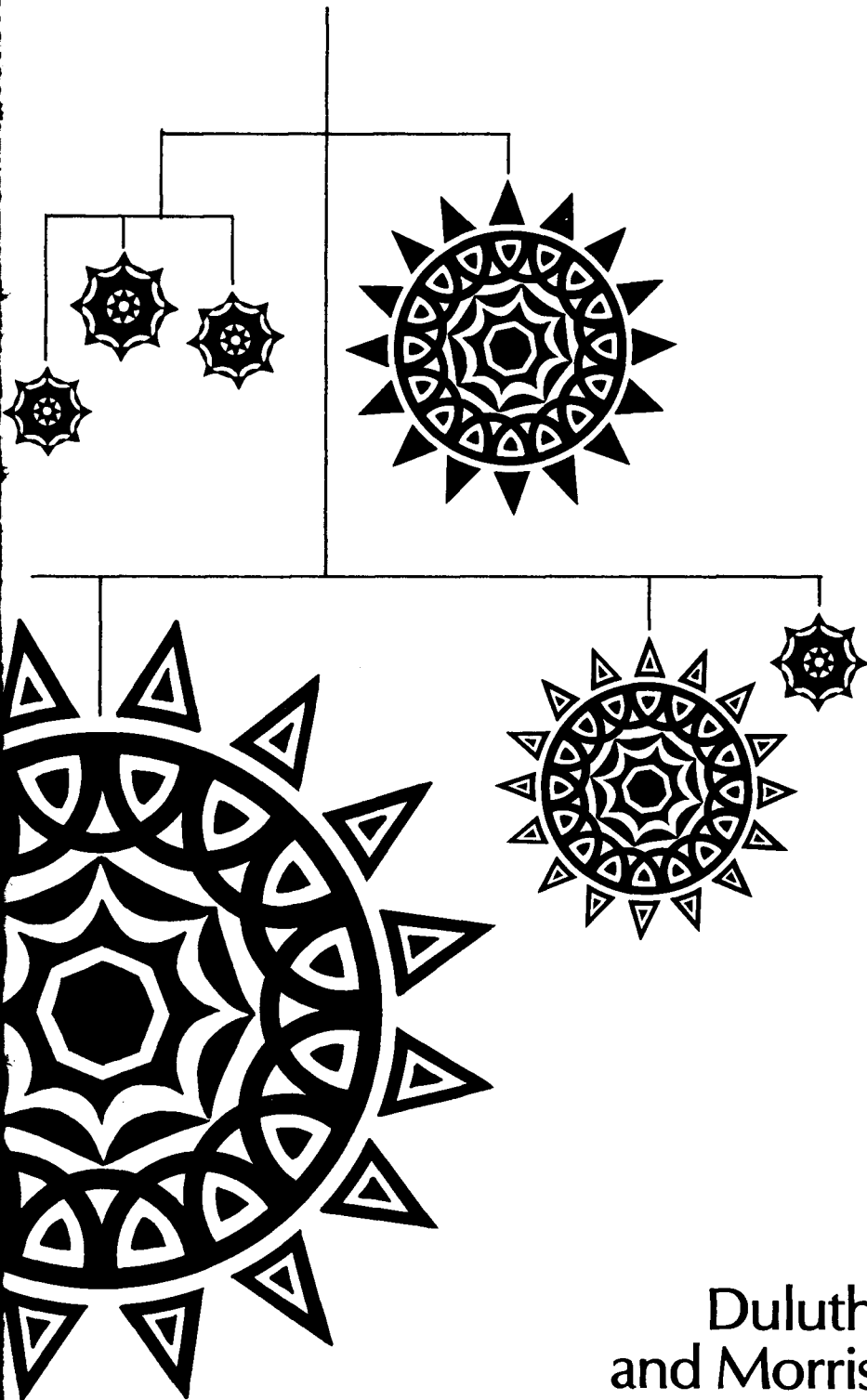
FIRST TERM

5521. **SURGICAL PATHOLOGY.** (3 cr; prereq #) Barnes, staff
Preparation and interpretation of surgical and necropsy specimens.
5522. **DIAGNOSTIC PATHOLOGY.** (5 cr; prereq #) Barnes
History, necropsy lesions, laboratory results, and histopathology in the diagnosis of animal diseases.
8530. **ONCOLOGY.** (4 cr; prereq #) Kurtz
8531. **VETERINARY NECROPSIES.** (1-5 cr; prereq 5503 or equiv) Ruth, staff
Necropsy techniques, examination of tissue sections, and preparation of records.
8533. **PROBLEMS: PATHOLOGY.** (Cr ar; prereq #) Johnson, staff
8534. **PROBLEMS: CLINICAL PATHOLOGY.** (Cr ar; prereq #) Perman, Stevens
8648. **PROBLEMS IN VETERINARY PARASITOLOGY.** (Cr ar; prereq 5602 or equiv, #) Griffiths
8720. **ADVANCED VETERINARY MICROBIOLOGY.** (Cr ar; prereq #) Staff
Special topics, techniques, collateral reading, and conferences.
8721. **ADVANCED POULTRY DISEASES.** (Cr ar; prereq 5704, #) Pomeroy, Newman
Investigation of infectious disease problems of poultry.
8725. **CELL CULTURE TECHNIQUES.** (2 cr; prereq 5703 or equiv, #) Shope
Laboratory exercises and discussions on culture of vertebrate cells; proper preparation of all materials necessary for handling cell cultures; establishment of primary cell cultures by various techniques and maintenance of cells as monolayers or in suspension. Animal viruses used for plaque assays, neutralization tests, limited fluorescent antibody techniques and microtitration. Laboratory work in student's specific area of interest.

SECOND TERM

- 5521. SURGICAL PATHOLOGY.** (3 cr; prereq #) Barnes, staff
See First Term.
- 5522. DIAGNOSTIC PATHOLOGY.** (5 cr; prereq #) Barnes
See First Term.
- 8531. VETERINARY NECROPSIES.** (1-5 cr; prereq 5503 or equiv) Ruth, staff
See First Term.
- 8533. PROBLEMS: PATHOLOGY.** (Cr ar; prereq #) Johnson, staff
- 8534. PROBLEMS: CLINICAL PATHOLOGY.** (Cr ar; prereq #) Perman, Stevens
- 8648. PROBLEMS IN VETERINARY PARASITOLOGY.** (Cr ar; prereq 5602 or equiv, #) Griffiths
- 8720. ADVANCED VETERINARY MICROBIOLOGY.** (Cr ar; prereq #) Staff
See First Term.
- 8721. ADVANCED POULTRY DISEASES.** (Cr ar; prereq 5704, #) Pomeroy, Newman
See First Term.





Duluth
and Morris

University of Minnesota, Duluth

The Duluth campus is an exciting location for summer 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 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 for 17 areas of concentration for the master of arts, master of science, master of business administration, master of industrial safety, master of social work, and master of education degrees, and the specialist certificate in educational administration.

A separate Summer Session bulletin, including all courses offered on the Duluth campus, is available. For a copy of this bulletin and for more detailed information, write: UMD Summer Session, 403 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

GRADUATE PROGRAM

The Graduate School on the Duluth campus offers a master of arts degree with majors in art, education (elementary-secondary), 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, chemistry (analytical, inorganic, organic, physical, or biochemistry), geology, and physics. These pro-

grams are designed for teachers and for those planning additional graduate study or careers in industry. The specialist certificate in educational administration may be obtained with emphasis in elementary, secondary, or general school administration. Also offered are a master of social work program with emphasis on social development and a master of business administration program.

The graduate 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 current *University of Minnesota, Duluth, General Bulletin*, which may be obtained by writing to the UMD News Service, 305 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

Students who have not already applied for admission to the Graduate School and who contemplate a program of graduate studies at Duluth may request information and application forms from the Graduate School Office, 431 Administration Building, University of Minnesota, Duluth, Minnesota 55812. Information concerning selection of courses and other degree requirements can also be obtained from the Graduate School assistant dean.

Applications for summer 1978 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—by May 15 for first term and June 15 for second term. Students who wish to become a candidate 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 a graduate program at another university 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 the Graduate School will recognize 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 to accommodate individuals interested in either the teaching or practice of art. Both art history and art education are available as related fields. Inquiries concerning the specific program should be directed to: Department of Art, 317 Humanities Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in 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 Plan B projects in three courses 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 on the Duluth campus will involve the research phase of the M.S. degree.

Master's Degree in Communicative Disorders

A graduate major under Plan B is offered leading to the master of arts degree in communicative disorders. Summer session offerings are designed to integrate academic, research, and clinical endeavors. Correspondence may be addressed to the Department of Communicative Disorders, 5 Home Economics Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Education

The M.A. program in education, open to elementary and secondary teachers, permits students to major in education, education (emphasis art), education (emphasis music), elementary education, or secondary education.

The work in related fields may include areas such as educational administration, psychological foundations, psychological applications, special education, physical education, industrial education, health education, home economics education, as well as other subjects that 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, Bohannon Hall, University of Minnesota, 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, 224 Bohannon Hall, University of Minnesota, 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. Several courses, workshops, and seminars are offered this summer. An announcement describing these programs will be sent upon request to: Director of Graduate Study in Educational Administration, College of Education, 224 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Educational Psychology

A master's degree program in guidance and counseling is available on the Duluth campus. Courses in psychological foundations and psychological applications as well as other required related courses are offered during both summer terms.

Certain courses in this program have limited enrollments or require special arrangements. Therefore, students interested should make every effort to consult with their adviser prior to or during registration. In addition, course descriptions and prerequisites should be studied carefully. Correspondence should be addressed to: Director of Counselor Training, Department of Psychology, 336 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in English

Two programs lead to a master of arts degree in English. One offers a broad study of literature, and the second emphasizes preparation for teaching, 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 listed 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, 420 Humanities Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Geology

The M.S. degree in geology is offered under Plan A and Plan B. These programs are designed for those wishing to prepare for professional employment, for further graduate study leading to the Ph.D. degree, or for teaching geology at the college or junior college level. Although no graduate-level courses for the master's degree program, other than graduate research and fieldwork (camp), are offered in geology during the summer session, students interested in beginning their course work in the fall are reminded that the application deadline is August 1. Details concerning prerequisites for the M.S. degree in geology may be obtained from: Director of Graduate Study, Department of Geology, 229 Mathematics-Geology Building, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in History

The master's degree in history is awarded upon fulfillment of either of two alternative programs—Plan A (with thesis) or Plan B (without thesis). The programs are designed for students who are preparing for doctoral study, 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 1 academic year or in equivalent summer sessions work. Inquiries should be addressed to: Director of Graduate Study, Department of History, 265 A. B. Anderson Hall, University of Minnesota, Duluth, Minnesota 55812.

Master's Degree in Physics

The M.S. in physics is a Plan A program that requires 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 School of Social Development offers programs designed to prepare students for careers in regional and national social development. Programs concentrate on institutional change planned to bring about a better correspondence between human needs and social policies and programs. Emphasis is placed on community organization; social policy formulation and analysis; social program administration, coordination, and evaluation; and regional planning. A master of social work (M.S.W.) degree program commences in September each year. Students admitted with advanced standing also begin the academic program in September. Specific information may be obtained from: School of Social Development, 295 Marshall W. Alworth Hall, University of Minnesota, 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 or her 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, 240 Bohannon Hall, University of Minnesota, 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, 101 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

MEDICAL SCHOOL SUMMER COURSES

The Duluth School of Medicine, established in 1969, was designed to offer 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, is available. 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 at UMD. Inquiries should be addressed to: Director, Sixth Year Certification Program in Educational Administration, College of Education, 117 Bohannon Hall, University of Minnesota, 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 is 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: Learning Disabilities, Special Education Programs, Department of Psychology, 209 Bohannon Hall, University of Minnesota, Duluth, Minnesota 55812.

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 productions take place in the new Marshall Performing Arts Center. Sixteen to 20 credit hours in theatre courses are offered through program participation. Small scholarships are available to selected experienced actors and technicians who are expected to provide leadership for the company.

CONTINUING EDUCATION AND EXTENSION PROGRAMS

A number of noncredit, short-term programs will be offered on the UMD campus through the Duluth Continuing Education and Extension Center during the summer session. For information and a brochure describing the offerings contact: Director of Continuing Education and Extension, 403 Administration Building, University of Minnesota, Duluth, Minnesota 55812.

Accommodations should be secured by participants through the Housing Office at UMD.

University of Minnesota, Morris

The University of Minnesota, Morris, is located in west central Minnesota, near some of the state's finest resort and fishing areas. Morris, a community of 5,300, 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 activities and recreational facilities of the community are available to students, and the University also has a variety of recreational facilities and cultural activities geared toward summer students.

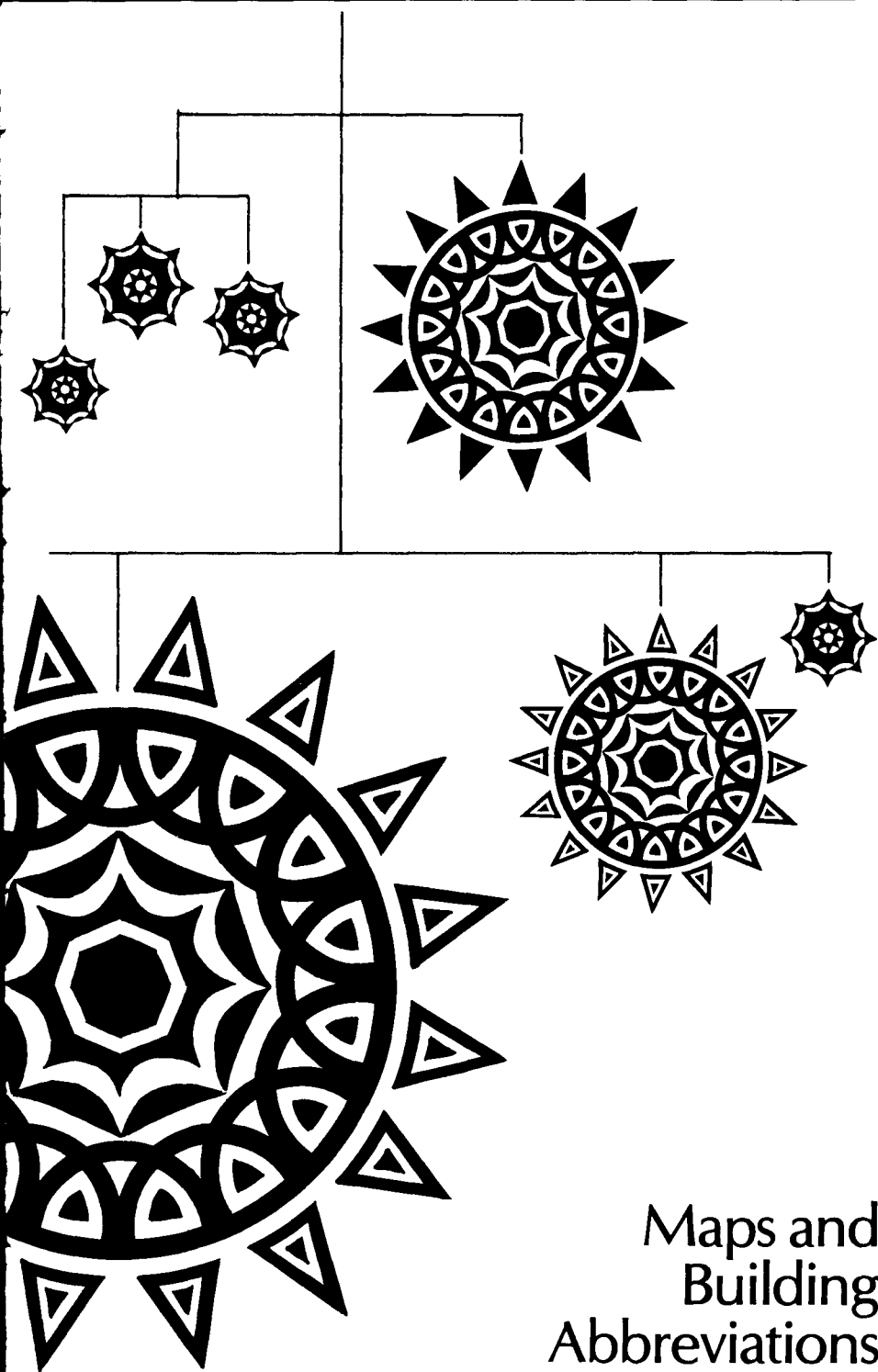
The 1978 session schedule includes liberal arts and sciences courses as well as courses designed to meet requirements for the competency-based social science major and the human services major. Students working on general education requirements or on courses to satisfy the most recent state regulations for secondary school social studies certification will find the 1978 UMM summer session of particular interest.

A separate Summer Session bulletin describing UMM summer procedures and course offerings is available from: UMM Summer Session, 226 Community Services Building, University of Minnesota, Morris, Minnesota 56267; telephone (612) 589-2482.

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. Students may pursue 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 that 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 that meets the preprofessional liberal arts requirements of the professional schools of the University of Minnesota or of other institutions.



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

DiehlH, Diehl Hall

ECDO, Education Career Development Office
(1425 University Ave SE)
EconRes, Economics Research Building
EdH, Eddy Hall
ElectE, Electrical Engineering Building
EltH, Elliott Hall
Ex, Experimental Engineering Building

FieldHse, University Field House
FolH, Folwell Hall
Forth, 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

MirdH, Millard Hall
MMA, Mayo Memorial Auditorium
MNH, Bell Museum of Natural History
MorH, Morrill Hall
MRRC, Mineral Resources Research Center
MUHi, Marshall-University High School
(1313 5th St. SE)
MurH, Murphy Hall
MusEd, Music Education

NCCE, Nolte Center for Continuing Education
NH, Nicholson Hall
NMA, Northrop Memorial Auditorium
NorrisH, Norris Hall (formerly Norris
Gymnasium for Women)

Owre, Owre Hall

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)

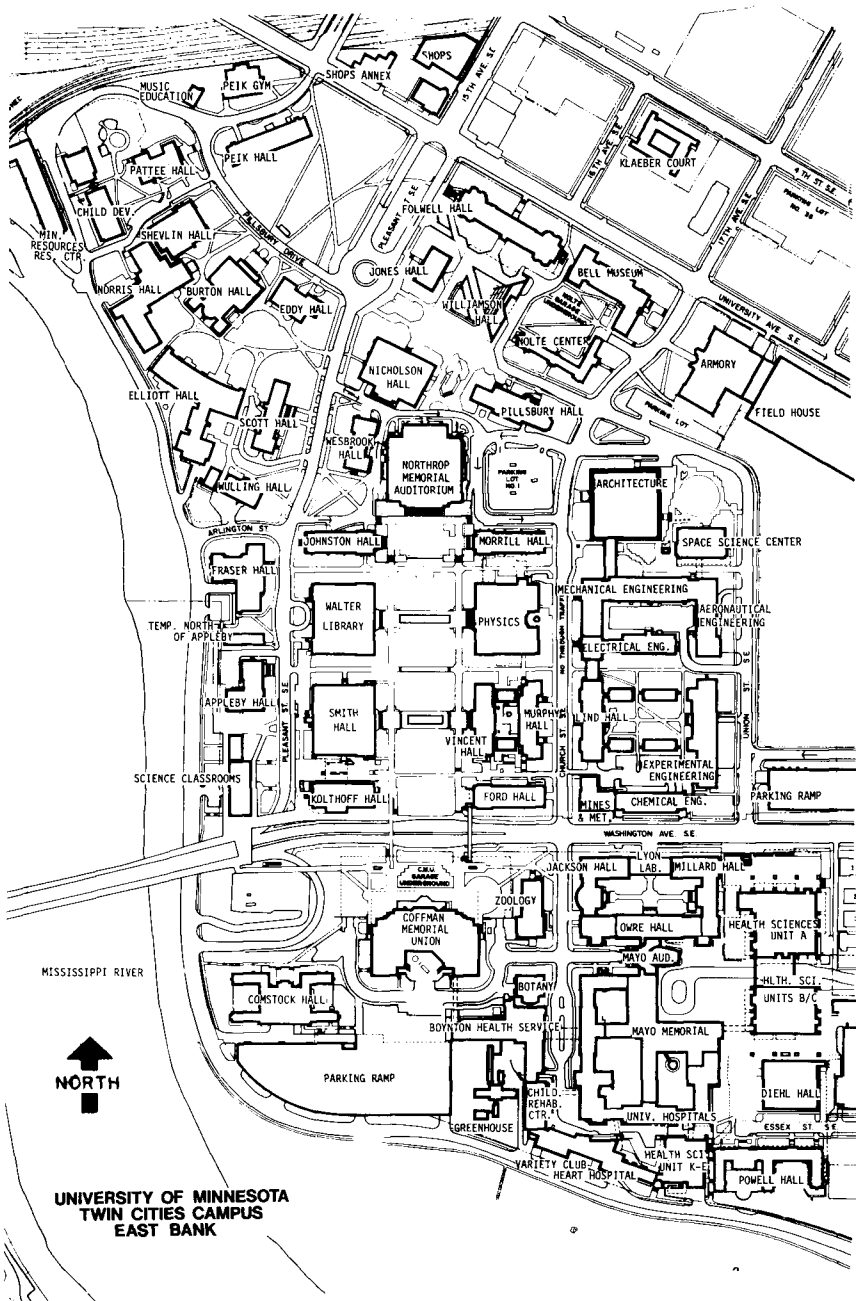
SaH, Sanford Hall
ScH, Scott Hall
SciCB, Science Classroom Building
ShAn, Shops Annex
ShH, Shevlin Hall
SmithH, Smith Hall
SpSci, Space Science Center
Stad, Stadium

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, Wesbrook Hall
WmsA, Williams Arena
WmsonH, Williamson Hall
WuH, Wulling Hall

Z, Zoology Building



West Bank

AndH, Anderson Hall
ArtB, Art Building

BA, Business Administration Building
BlegH, Blegen Hall

Law, Law School

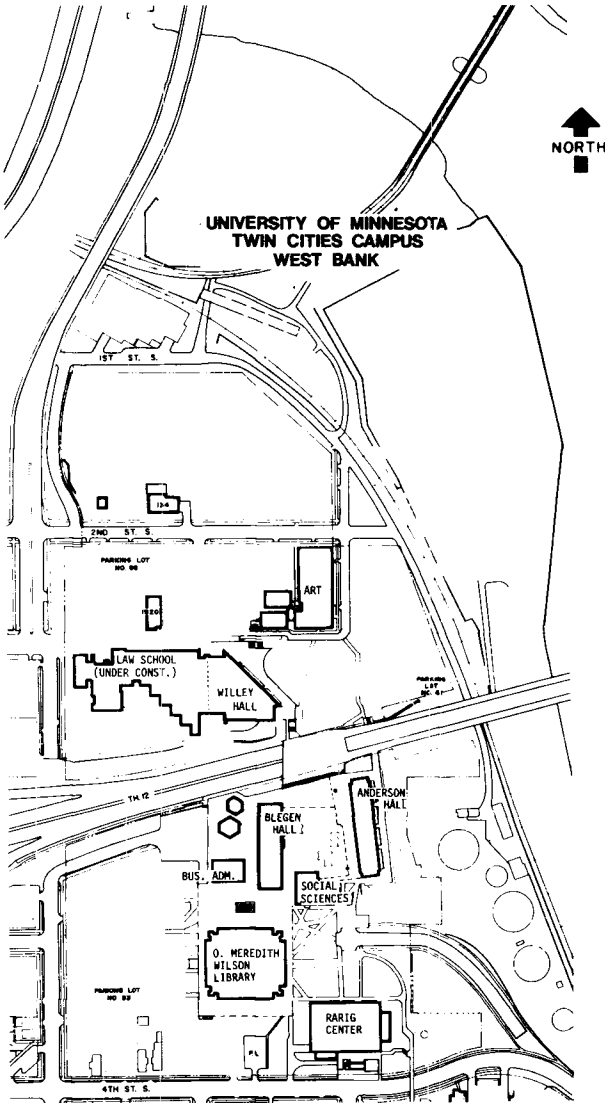
MdbH, Middlebrook Hall

OMWL, O Meredith Wilson Library

RarigC, Rarig Center

SBkSt, Smith Bookstore
SocSci, Social Sciences Building

WilleyH, Willey Hall



ST. PAUL

ABLMS, Andrew Boss Laboratory (Meat Science)
AdmServ, Administrative Services Building
(2610 University Ave)
AgEng, Agricultural Engineering Building
AgLib, Agriculture Library
Agr, Agronomy Building
AgrSH, Agronomy Seed House
AlderH (Old Horticultural Science), Alderman Hall

BaH, Bailey Hall
BB, Bull Barn
BCB, Beef Cattle Barn
BeH, Berry House (1304 Cleveland Ave N)
BFH, Botany Field House
BioSci, Biological Sciences Center

CI, Crop Improvement Building
CISS, Crop Improvement Seed Stocks Building
ClaOff, Classroom-Office Building
CoffH, Coffey Hall
CrRes, Crops Research Building

DCB, Dairy Cattle Barn
DinC, Dining Center

FCFH, Farm Crops Field House
FP, Forest Products Building
FScN, Food Science and Nutrition

GH, Green Hall
GorL, Gortner Laboratory of Biochemistry
Gym, Gymnasium

HB, Horse Barn
HckrH, Haecker Hall
HodsonH, Hodson Hall
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
PatH, Peters Hall
PG, Poultry Group
PISci, Plant Sciences Building
PM, Post-Mortem
PPFL, Plant Pathology Field Laboratory

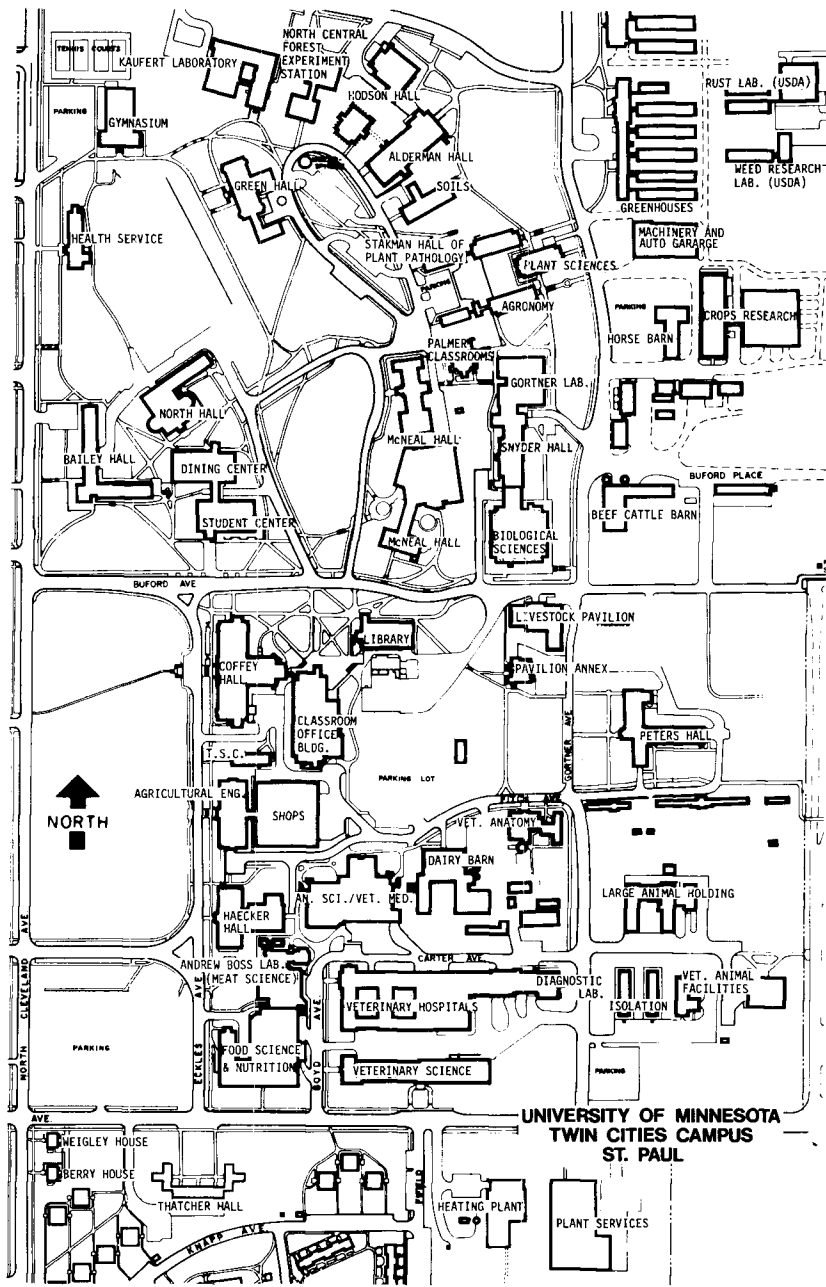
RustL, Rust Laboratory (USDA)

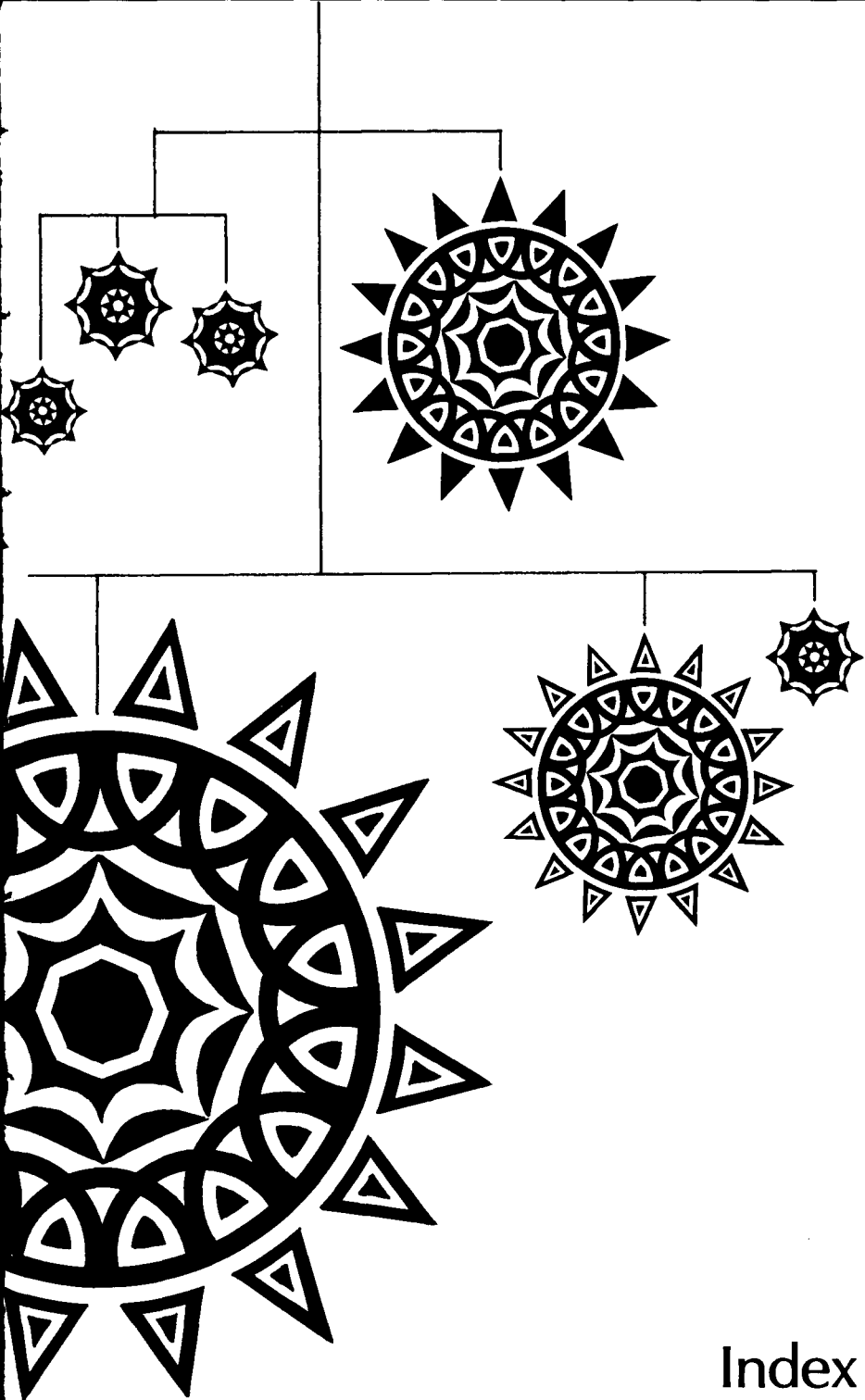
SB, Swine Barn
ShB, Sheep Barn
SheepR, Sheep Research
SnH, Snyder Hall
So, Soils Building
StakH, Stakman Hall of Plant Pathology
StCen, Student Center

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





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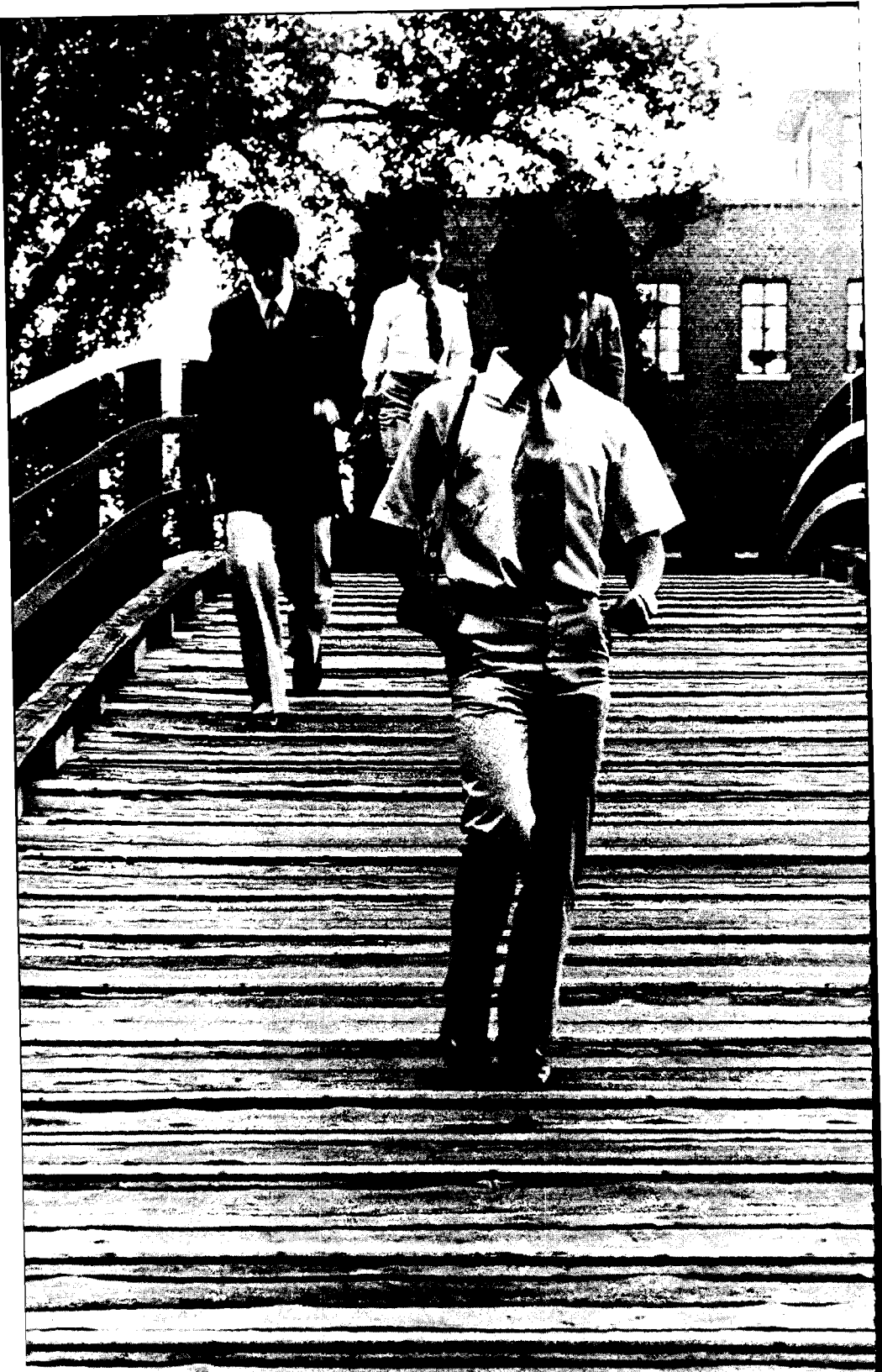
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University of Minnesota Bulletin

JANUARY 3, 1978



Lake Itasca Biology Session

Summer 1978



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*Lake
Itasca
Biology
Session*

First Term June 11-July 15
Second Term July 16-August 19



General Information

Sponsored by the Summer Session at the Lake Itasca Forestry and Biological Station, the Biology Session is a joint enterprise of various departments of the College of Biological Sciences, the College of Agriculture, and the College of Forestry. By agreement, the University of Wisconsin and the University of North Dakota participate in making policy for and planning the Biology Session through membership on the advisory committee.

The Lake Itasca Forestry and Biological Station is located on the east shore of Lake Itasca in Itasca State Park — just a mile from the headwaters of the Mississippi River in northwestern Minnesota.

EQUAL OPPORTUNITY STATEMENT

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

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

RESEARCH AND ACADEMIC OPPORTUNITIES

THE ITASCA HABITATS

Itasca Park—an ecological area of national renown — embraces 50 square miles of forests traversed by a fine system of roads and trails. Within this area are located many lakes of different types, providing unusual field opportunities for work in limnology, phycology, aquatic insects, fungi, as well as related fields. The forests of the park are unique. Here the northern coniferous and deciduous types of the central hardwood region meet. In addition, the many bog areas provide a wide variety of plant communities for study. Itasca's forests have been protected for over a half century, and many have never been cut — here, truly, is an excellent array of virgin timber stands and communities developing into climax types.

Forty miles to the west a dramatic break from the forests to the prairies occurs where true prairie associations can be found on the bed of ancient Lake Agassiz. To the north lie the Red Lakes and immense expanses of northern bog types.

This meeting of the three great plant regions of the eastern United States provides for study not only varied ecosystems but also a singular range of fauna and flora with southern, northern, and western origins. Opportunities to observe birds closely during June and July are particularly outstanding. An abundance of interesting animals, such as nesting bald eagles, breeding loons, beaver, raccoons, and deer, affords many striking behavioral and ecological problems for study.

INDEPENDENT INVESTIGATORS

Qualified investigators may arrange with the chairman to pursue research in various fields of terrestrial and freshwater biology during any season.

COURSE WORK AND RESEARCH

The variety of courses available in both terms I and II allows opportunity to choose an entire summer of either intensive work in a particular field of interest or a sampling of several types of field experiences.

Graduate and undergraduate students in biology will find an excellent field laboratory for both research and course work. Graduate students may devote themselves exclusively to research problem work.

Students in forestry, plant pathology, soils, and fisheries and wildlife management will find course work closely related to their field as well as a broad spectrum of essential background courses in botany, ecology, entomology, and zoology.

For teachers of biology in high schools and colleges, the session offers opportunity for advanced study through course work or independent research.

Advanced students and research workers needing laboratory space and special equipment should make prior arrangements with the chairman.

INSTRUCTIONAL FACILITIES

Eleven well-equipped laboratories are located in six buildings. Much of the instruction takes place in the field, where many varied habitats are within walking distance of the station.

A fine herbarium of the region and collections of insects, bird skins, and small mammal skins are available for study. Four complete sets of aerial photos of the park area, made in 1938, 1951, 1959, and 1966, are maintained at the station along with stereoscopic equipment.

The station equipment includes necessary compound and dissecting microscopes, collecting apparatus, various types of nets, boats, and other accessories for instruction and research.

The library has ample room for study and important journals and books basic to fieldwork. Other journals and books are available from the University Libraries.

ADMISSION AND REGISTRATION INFORMATION

ADMISSION

Courses are open to all qualified graduate and undergraduate students who have completed the usual preliminary course work in biological subjects. General rules for admission of undergraduates to the summer session apply to the Biology Session. Students are advised to review these regulations in the general *Summer Session Bulletin*.

Summer-Only Students—Students with previous college work who wish to attend the summer session only may do so without filing an application for admission to the University, provided they are in good standing and are not a candidate for a degree.

Graduate Students—Any student who holds a bachelor's degree and plans to use credits earned in summer session toward a graduate degree or expects to receive graduate credit for such work should apply for admission directly to the Graduate School. The application must be submitted complete in every detail — one official transcript from each college attended, the credentials examination fee (if required), and any required test results — at least 4 weeks prior to the opening of the summer term in which the student expects to register (Thursday, May 11, 1978, for first term; Thursday, June 15, 1978, for second term).

A student currently enrolled in an advanced degree program of a graduate school at another accredited college or university in the United States may request permission to register in the Graduate School of the University of Minnesota as a transient graduate student by completing Graduate School form 57. No credentials examination fee or supporting materials are required for the transient student form. Permission to register as a transient student will be granted, to the applicant who qualifies, for 1 summer session (terms I and/or II) or 1 academic-year quarter, and will not extend beyond that single session or quarter.

Requests for Graduate School application forms, including transient student forms, and all correspondence related to Graduate School admission should be directed to the Graduate School, 307 Johnston Hall, 101 Pleasant Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

SCHOLARSHIPS

The following awards are available for qualified students:

Alexander P. Anderson and Lydia Anderson Fellowships, at \$350 each, are available only to persons holding a degree from the University of Minnesota. For information and applications write to the Graduate School, University of Minnesota, Minneapolis, Minnesota 55455.

Caroline M. Crosby Memorial Fellowship in Botany provides for tuition, room and board, travel, and miscellaneous expenses up to \$400. Open only to students majoring in botany at the University of Minnesota. For information and applications write to the Graduate School, University of Minnesota, Minneapolis, Minnesota 55455.

Malvin and Josephine Herz Foundation Fellowship is offered to encourage an outstanding student in ornithological research. For information and applications write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Fishery and Wildlife Management Spring and Summer Scholarships are provided by the Minnehaha Chapter, Izaak Walton League, Question Club of Minneapolis, and the James R. Beer Memorial Scholarship of the Minnesota Student Chapter of the Wildlife Society. For information and applications write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

University of North Dakota Biology Scholarship, for tuition and fees, is open to any University of North Dakota student attending summer term I or II. Students wishing to be considered should write to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

RESERVATIONS

Since both the housing facilities and the enrollment size of each class are limited, early application for reservations is recommended. Students should complete the

Request for Reservation form found on page 23 of this bulletin and mail it to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. *This form must be accompanied by a recent transcript of the student's academic record, a listing of courses being taken at present, a deposit of \$40, and a letter of evaluation from the student's adviser or supervisor.* The deposit will be applied toward the tuition fee at the time of registration or will be returned to the student if space is not available.

Assignments to classes will be verified no later than April 10. They will be determined on the basis of need, date of application, prerequisites for the courses desired, scholarship, and letters of recommendation. Late applications will be accepted up to the day of registration (June 11 for first term and July 16 for second term), since openings occur from time to time even in those classes that usually close early.

REGISTRATION

All courses offered at the station must be reserved. Class reservation cards will be held for students who have been notified of acceptance after submission of the Request for Reservation.

Class reservation cards may be picked up at 130 Coffey Hall in St. Paul during regular summer session registration periods. Whenever possible, students should complete their registration at the Office of Admissions and Records on the Twin Cities campus (either Minneapolis or St. Paul).

Registration by out-of-town students can be completed at the station on June 11 for first term or on July 16 for second term. The necessary cards will be held with the reservation.

Students may register each term for 10 credits or less. A maximum load may include one 10-credit course, two 5-credit courses, or one 5-credit course and a research problem (1 to 5 credits). Students enrolling for both summer terms are advised to register for no more than three 5-credit courses. EBB 5815 and EBB 5834 (5 credits each) require a great deal of time.

CHANGES IN REGISTRATION

Students accepted into the program who wish to enter courses that have filled early should place their names on the official waiting list. In the event of cancellations, students on the waiting list will be accommodated first.

Changes in registration must be approved by the chairman and are strongly discouraged after registration day (June 11, first term; July 16, second term). No changes in registration are permitted after the second meeting of class. Dropping a course, for any reason, must be approved by the chairman, following consultation between the student and instructor.

CANCELLATION

Late cancellations often result in vacancies in classes that earlier could have been filled by persons wishing to attend the Biology Session. Cancellation for any reason should be reported immediately to the chairman by phone, followed by a statement in writing.

TUITION, FEES, AND OTHER COSTS

ACADEMIC FEES

The following fees are payable each 5-week term by every regular registrant on or before June 11 or July 16.¹

	<i>5 credits</i>	<i>10 credits</i>
Tuition	\$75.00	\$150.00
Student Services Fee	15.00	15.00
Laboratory Fee	8.50	8.50
	\$98.50	\$173.50

A \$40 deposit is required of all persons requesting reservations for course work during the Biology Session. This fee will be returned if written notice of cancellation is *postmarked* before May 1 for the first term or June 10 for the second term. When registration is completed, the \$40 deposit will be applied to the tuition fee.

Persons registering at the University of Minnesota for the first time must pay a \$3 record service fee.

Students enrolled in the Graduate School who have completed all of their graduate work with the exception of the thesis may register for thesis work only upon payment of \$69 tuition and the student services and laboratory fees per term.

Independent investigators will pay a research table fee of \$5 per week and the laboratory fee of \$8.50 per term.

LATE FEES

Tuition and fees are payable at the time of registration: on or before June 11 for first term or July 16 for second term. Late fees will be charged as follows:

June 12-16 or July 17-21	\$6
June 19-23 or July 24-28	\$10
Thereafter	\$20

No registration will be accepted after June 11 or July 16 without the approval of the chairman of the Field Biology Program and payment of the late fee.

ROOM AND BOARD COSTS

There is a service charge of \$25 per term for dormitory facilities. A charge of \$140 for board is payable to the Itasca Dining Club, which is run on an actual cost basis. These fees are payable at the beginning of each term.

TRANSPORTATION COSTS

University vehicles are available for class field trips. A charge, determined on an actual cost basis, will be made to each student using them. Costs usually range from less than \$1 to \$15. Courses that commonly utilize University vehicles for long or frequent field trips are: Bot 5801, 5821, 8970; EBB 5814, 5815, 5817, 5834; PIPa 5102; Soil 5532.

¹The tuition fee stated above was charged in the 1977 session. Final determination of tuition for the 1978 session had not been made at the time this bulletin was printed.

ON-CAMPUS ARRANGEMENTS

TRANSPORTATION

Public transportation is available by bus to and from Park Rapids or Bemidji and by air to and from Bemidji. The depots are 24 and 42 miles from the station respectively. Students will be met upon arrival if prior arrangements are made with the chairman. State Highway 200 and U.S. Highway 71 provide easy access by car into the park.

CABINS

There are ten cabins for men, each accommodating eight students, and eight cabins for women, each accommodating six students. Women's cabins are equipped with toilets and 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 for use of the campground. The weekly charge is \$5. Applications should be made well in advance of the session.

ACCOMMODATIONS FOR VISITORS

There are no facilities at the station for accommodating guests of students. Students expecting guests must make arrangements for their housing off campus. Meals for guests can be arranged at the Itasca Dining Club if meal tickets are purchased in advance.

MEALS

The Itasca Dining Club, a cooperative formed each year by the students and managed for them by the chairman, serves meals in an attractive dining hall located on the lakeshore. The well-balanced meals are carefully planned and prepared by experienced cooks.

PERSONAL NEEDS

Students must provide their own pillows, bed linen, towels, and blankets. Since the nights are often cool, it is suggested that students bring two or three wool blankets. Essential personal equipment includes serviceable clothing (especially shoes or boots for fieldwork), a warm jacket, rain gear, a swimming suit, a flashlight, notebooks, pocket field manuals, and the equipment necessary for individual work in the field or laboratory.

BOOKS

A branch of the University Bookstores is maintained at the station to make books and student supplies readily available. All texts should be purchased at Itasca.

HEALTH SERVICE

Students will be furnished medical care and up to 15 days of hospitalization at the nearest medical facility in case of emergency illness or accident and on approval of the chairman. These benefits will not include such items as physical examinations, treatment of chronic conditions, or payment for drugs. A registered nurse will be on duty at the station.

MAIL

Mail for students should be addressed to: Itasca Biology Session, Lake Itasca P.O., Minnesota 56460.

RECREATION

Recreational opportunities such as swimming, fishing, canoeing, and hiking in the park are excellent. Volleyball, softball, and horseshoe equipment is available at the station. Evening social events may be planned by the students. Weekly evening lectures by staff members or visiting scientists and outstanding films on field biology will be scheduled.

RULES OF CAMP

Rules of camp are kept at a minimum. Students are expected to keep their own quarters clean and orderly. Students may bring their own cars, but garages and repair services are not provided. Weekend absences and extended field trips must be reported in advance. Domestic pets are not allowed at the station.

Off campus and within park boundaries Minnesota State Park regulations govern. The State Park entry sticker (\$5) must be bought for private cars at the park entrance.



Staff and Faculty

ADMINISTRATIVE STAFF

Office

David F. Parnellee, Director
Arlene Fosdick, Principal Secretary
Janet L. Bosanko, Summer Session Secretary

Buildings and Grounds

Robert P. Boyle, Resident Manager

Research

David M. Bosanko, Resident Biologist

Library

Rose Mary Schaefer, Librarian

Bookstore

Vera Boyle, Manager

Dining Club

Gary Bennett, Chef

SUMMER FACULTY

Ernest O. Beal, Professor of Biology, Western Kentucky University, has major research interests in experimental approaches to the ecology, taxonomy, and evolution of aquatic vascular plants.

Alan P. Covich, Assistant Professor, University of Oklahoma, is currently studying the stability of omnivore-dominated food webs in lakes and streams. He is relating optimal foraging among benthic macroinvertebrates such as crayfish, to historical changes in aquatic plants and gastropod community structure.

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.

Norman L. Ford, Associate Professor, St. John's University, Collegeville, Minnesota, is currently studying the ecology and behavior of several species of passerine birds.

Rudolph T. Franklin, Associate Professor, University of Georgia, is interested in the ecology, behavior, and biological control of forest insects, especially the bark beetles and certain weevils of the coniferous forests.

Steven Green, Assistant Professor, Research Center for Ecology and Ethology, Rockefeller University, Millbrook, New York, focuses his research interests on animal communication and social organization. He has conducted field research in India, Africa, and Japan, studying the role played by habitat structure and other environmental variables in shaping the behavior of primate social groups.

Bernid Heinrich, Associate Professor, University of California, Berkeley, is studying temperature regulation, energetics, and foraging patterns of insects.

Steven Hubbell, Associate Professor, University of Iowa, is a population and community ecologist working on foraging strategies of social insects and behavioral aspects of resource partitioning. He has a broad interest in theoretical ecology.

Frances C. James, Associate Professor, Florida State University, is an ecologist interested in habitat relationships of birds, bird behavior, and geographic variation in morphology.

Leslie K. Johnson, Assistant Professor of Zoology, University of Iowa, is doing research on the role that communication about resources plays in the focusing strategies of eusocial bees and is interested in the adaptive significance of aggressive behavior.

Peter Kilham, Associate Professor, University of Michigan, is interested in the ecology of marine and freshwater phytoplankton and the hydrogeochemistry of tropical lakes and rivers.

Richard L. Meyer, Professor, University of Arkansas, is engaged in research on the chrysophytes and dinoflagellates of the Itasca region and in investigation of phytoplankton ecology in reservoirs and lakes.

Patrice A. Morrow, Assistant Professor, University of Minnesota, studies plant-insect interactions and is especially interested in the role of herbivorous insects in determining plant community structure.

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.

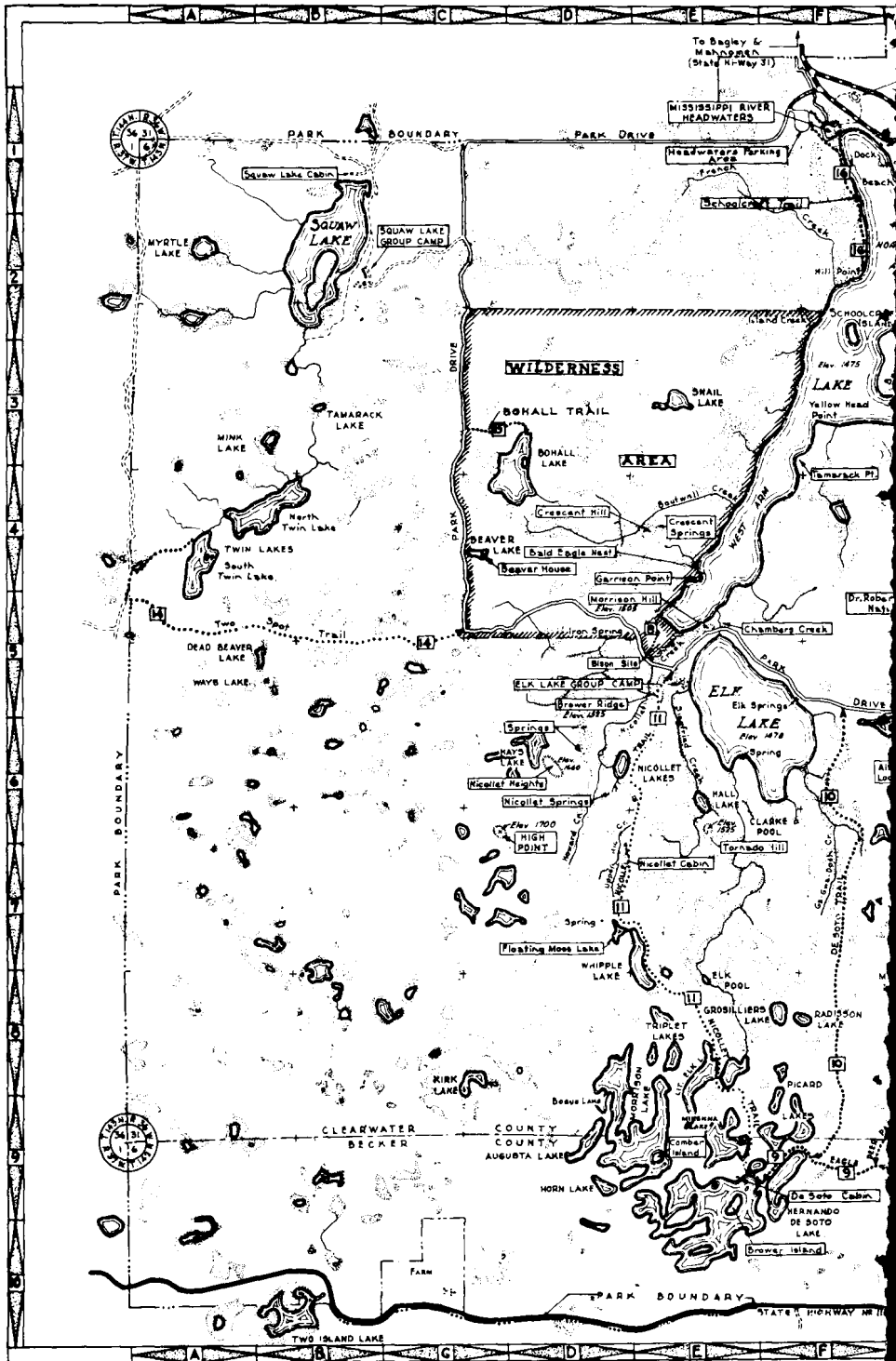
Ellen Shaffer, Assistant Professor of Biology, Hiram College, Hiram, Ohio, has conducted research on the distribution of trematode infections in snails of the Itasca region. For the past three summers she has taught at a biology field station in Colorado.

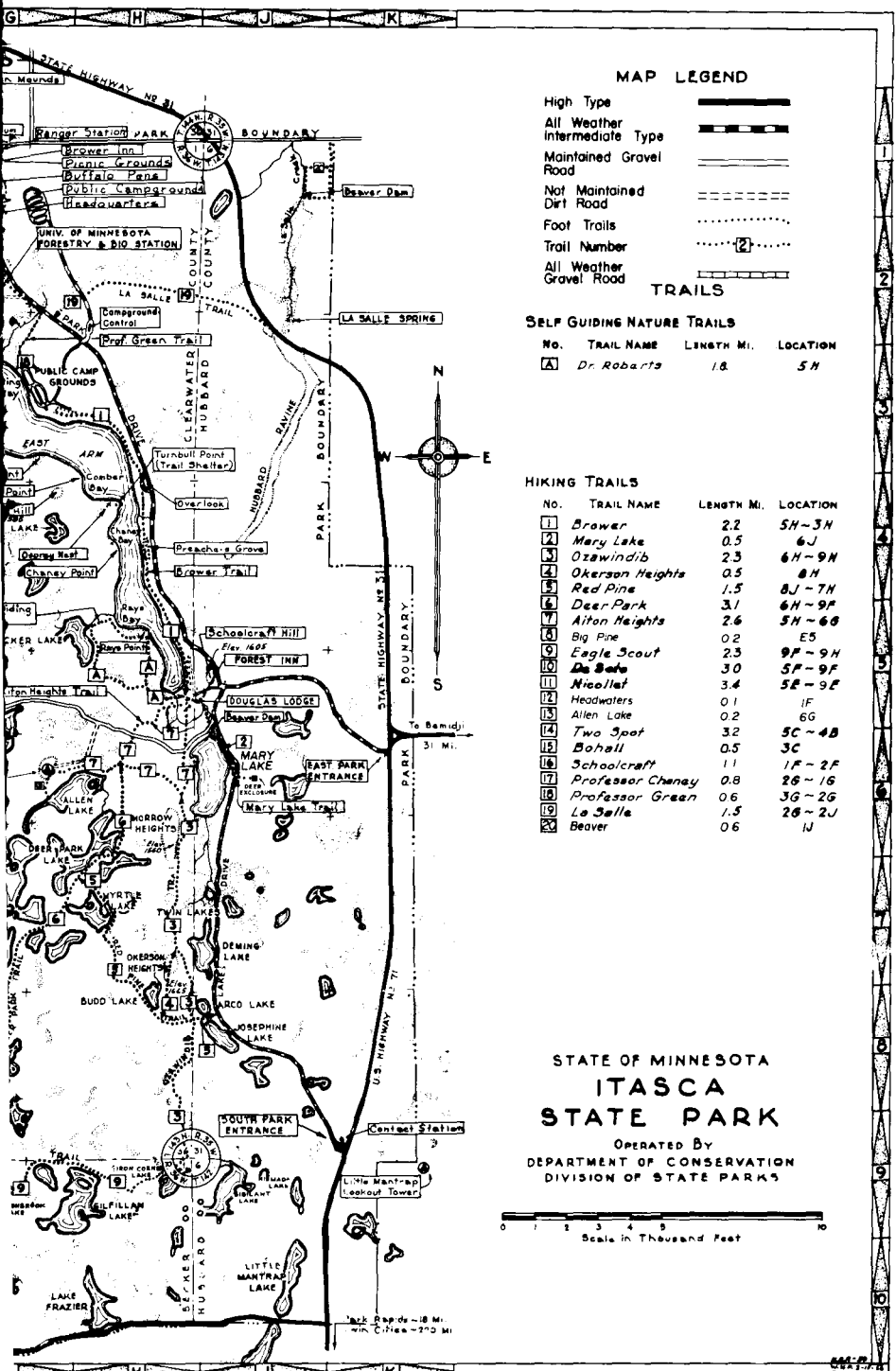
Elwin L. Stewart, Assistant Professor of Plant Pathology, University of Minnesota, has specialized in the taxonomy and ecology of mycorrhizal hypogeous fungi and worked on fungi isolated from decaying wood products. He is currently involved in mycorrhizae research.

G. David Tilman, Assistant Professor of Ecology, University of Minnesota, is a theoretically oriented population ecologist studying interspecific competition for resources, with interests in evolutionary ecology. His current research focuses on competition between freshwater algae, mutualism between plants and ants, and evolution of sexuality.

Clifford M. Wetmore, Associate Professor, University of Minnesota, has collected lichens extensively throughout North America and has published monographic and floristic papers in lichenology.

Mary F. Willson, Professor, University of Illinois, has research interests in a diversity of problems in evolutionary ecology. Her earlier work focused on mating systems and foraging ecology of birds. Recently, her research effort has centered on reproductive biology of plants, specifically floral display and pollination biology of milkweeds, phenology of spring woodland ephemerals, and the ecology of bird-dispersed fruits.





MAP LEGEND

- High Type
- All Weather Intermediate Type
- Maintained Gravel Road
- Not Maintained Dirt Road
- Foot Trails
- Trail Number 2
- All Weather Gravel Road

TRAILS

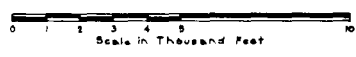
SELF GUIDING NATURE TRAILS

No.	TRAIL NAME	LENGTH MI.	LOCATION
A	Dr. Roberts	1.8	5N

HIKING TRAILS

No.	TRAIL NAME	LENGTH MI.	LOCATION
1	Brower	2.2	5H-3N
2	Mary Lake	0.5	6J
3	Ozawindib	2.3	6H-9N
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-6F
8	Big Pine	0.2	E5
9	Eagle Scout	2.3	9F-9H
10	De Soto	3.0	5F-9F
11	Nicollat	3.4	5E-9F
12	Headwaters	0.1	1F
13	Allen Lake	0.2	6G
14	Two Spot	3.2	5C-4B
15	Bohall	0.5	3C
16	Schoolcraft	1.1	7F-2F
17	Professor Chaney	0.8	2E-1E
18	Professor Green	0.6	3G-2G
19	La Salle	1.5	2E-2J
20	Beaver	0.6	N

STATE OF MINNESOTA
ITASCA
STATE PARK
 OPERATED BY
 DEPARTMENT OF CONSERVATION
 DIVISION OF STATE PARKS



Courses of Instruction

‡ Means "concurrent registration."
Means "consent of instructor is required."
Classes begin at 8:00 a.m. and continue all day.

BIOLOGY (Biol)

- 5870. ITASCA SEMINAR.** (Cr ar; prereq #) Staff
Topic selected and scheduled by interested staff members and students during registration.
- 5890. RESEARCH PROBLEMS AT ITASCA IN ECOLOGY AND BEHAVIORAL BIOLOGY; OR ENTOMOLOGY, FISHERIES, AND WILDLIFE; OR PLANT PATHOLOGY; OR SOIL SCIENCE.** (Cr ar; prereq #) Staff
Undergraduate and graduate students may develop a short-term research project in any departmental area listed above during one or both terms.

BOTANY (Bot)

- 3990. RESEARCH PROBLEMS.** (1-5 cr; prereq #) Staff
Individual research for undergraduates.
- 5801. SUMMER FLORA OF MINNESOTA.** (5 cr; limited to 20 students; prereq course in taxonomy; MTh; I term) Ownbey
Survey of the summer flowering plants and ferns of the state with particular reference to local flora. Identification by technical keys; important plant families; field recognition of common species; habitat preferences; collecting methods; literature; taxonomic methods.
- 5805. AQUATIC FLOWERING PLANTS.** (5 cr; limited to 20 students; prereq course in taxonomy; MTh; II term) Beal
The higher plants of aquatic and marsh habitats. Identification and collection; association of species; relations to the habitat; adaptive morphology and food value to wildlife.
- 5811. FRESHWATER ALGAE.** (5 cr; limited to 20 students; prereq 10 cr botany, biology, or zoology; TF; I term) Meyer
The 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.
- 5821. LICHENS.** (5 cr; limited to 20 students; prereq 10 cr in botany or zoology or #; WS; II term) Webmore
Taxonomy, ecology, and floristics of lichens of northern Minnesota; identification, sampling methods, microchemistry as a taxonomic tool.
- 8990. GRADUATE RESEARCH PROBLEMS.** (Cr ar; prereq #) Staff

ECOLOGY AND BEHAVIORAL BIOLOGY (EBB)

- 5812. AQUATIC ECOLOGY.** (5 cr; limited to 20 students; prereq 15 cr biology, 5 cr chemistry; WS; I and II terms) Covich, Kilham
General limnology of lakes with emphasis on the biology of lakes in the Itasca region as related to their physical and chemical stratification in summer. Team projects in field research.

- 5814. COMMUNITY STRUCTURE AND FUNCTIONING.** (5 cr; limited to 20 students; prereq course in ecology; TF; II term) Cushing
Communities represented in Itasca Park and vicinity and their dynamic relationships. Relationships of local communities to the flora and fauna of Minnesota as a whole. Use of modern methods of community analysis and measurement.
- 5815. FIELD ETHOLOGY.** (5 cr; limited to 15 students; prereq course in behavior or ecology; TF; I term) Green
Field course emphasizing the methods of studying behavior of wild animals. Quantitative techniques; sound recording, motion picture photography, sound tape and film analysis, capturing and marking techniques. An individual research project and term paper on the social behavior of one species is required. Individual projects require considerable outside time.
- 5817. VERTEBRATE ECOLOGY.** (5 cr; limited to 15 students; prereq course in ecology; TF; II term) Ford
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.
- 5831. NATURAL HISTORY OF INVERTEBRATES.** (5 cr; limited to 20 students; prereq Biol 1106; WS; I term) Shaffer
Advanced taxonomic and ecological survey of local fauna and independent ecological studies of several taxonomic groups.
- 5834. FIELD ORNITHOLOGY.** (5 cr; limited to 15 students; prereq Biol 1106 or equiv; TF; I term) James
Emphasis on the breeding season, biology, and behavioral ecology of birds in the Itasca Park region. Field trips are taken to a variety of habitats to learn bird identification and observe and practice techniques for conducting field studies. Laboratory sessions investigate family distinctions and species identification. Individual field projects.
- 8800. EXPERIMENTAL AND THEORETICAL ECOLOGY.** (10 cr one term, 20 cr both terms; limited to 24 students each term; prereq admission to a grad program and #¹; hrs ar; I and II terms) Term I: Heinrich, Morrow, Tilman [coordinator]; II term: Hubbell, Johnson, Willson [coordinator]
The formulation and testing of ecological theory under field conditions. Group and individual research projects, lectures, seminars, and student presentations on topics such as coevolution, life history strategies, behavioral strategies, resource allocation, and community structure. Content of II term course will differ from I term course according to backgrounds and interests of instructors.

ENTOMOLOGY (Ent)

- 5020. FIELD ENTOMOLOGY.** (5 cr; limited to 15 students; prereq introductory biology; MTh; I and II terms) Franklin
Insect fauna in various natural habitats of the park and surrounding areas. Field trips, collection and identification of insects, and studies of general morphology, life histories, and habitats of local species.

PLANT PATHOLOGY (PIPa)

- 5102. INTRODUCTORY MYCOLOGY.** (5 cr; limited to 15 students; prereq 6 cr botany; TF; 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.

¹For consent of the instructors, address inquiries to the Chairman, Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

PROPOSED COURSE PROGRAMS

To help students make the most effective use of the academic resources of the Biology Session, the following projected program of courses is presented. Changes in the projected schedule may be made to take advantage of especially competent staff members or to meet enrollment needs.

Annual Course Offerings

Bot 5801, 5805, 5811
EBB 5812, 5814, 5815, 5834
Ent 5020
PlPa 5102

Proposed Courses for 1979

Bot 5815. Bryophytes
Bot 8970. Special Topics: Biology of the Ferns
EBB 5820. Wetland Ecology
EBB 8800. Experimental and Theoretical Ecology
EBB ----. Fire Ecology
FW 5103. Basic Fisheries Biology
Soil 5532. Soils and Ecosystem

SPRING TERM

A number of courses are offered at the Forestry and Biological Station during spring quarter. Most of these courses commence on the Twin Cities campus and move to Itasca on about May 1 for a 5-week period of intensive fieldwork during an attractive time of year. Interested persons should contact the Chairman of the Field Biology Program, 349 Bell Museum of Natural History, 10 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Proposed Courses for 1978 Spring Term

Bot ----.¹ Field Botany (5 cr)
EBB 5817. Vertebrate Ecology (5 cr)
EBB 5834. Field Ornithology (5 cr)
FW 5106. Wildlife Biology (Cr ar)

¹New course being designed for students majoring in wildlife biology.



Recent Research Publications

- BAKER, A. L. and A. J. BROOK. Optical density profiles as an aid to the study of microstratified phytoplankton populations in lakes. *Archiv für 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 *Derepoxis* (Chrysophyceae). *J. Phycol.*, 7:66. 1971.
- MEYER, R. L. and A. J. BROOK. Freshwater algae from Itasca State Park, Minnesota. IV. Cyanophyta, Rhodophyta, Chloromonadophyceae 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 caddis flies (Trichoptera) in temporary pools. Royal Ontario Museum, Life Sciences Contribution #88. 1973.
- BOERNKE, W. E. Natural variations in hepatic and kidney arginase activities in Minnesota anuran amphibians. *Comp. Biochem. Physiol.*, 47B:201-207. 1974.
- MCINTYRE, JUDITH W. Territorial affinity of a common loon. *Bird Banding*. 1974.
- PARMELEE, DAVID F. The nest of the northern parula. *Living Bird*, 12:197-199. 1974.
- SCHLICHTING, H. E., JR. Ejection of microalgae into the air via bursting bubbles. *J. Allergy and Clinical Immunology*, 53(3):185-188. 1974.
- SCHLICHTING, H. E., JR. Survival of some freshwater algae under extreme environmental conditions. *Trans. Amer. Microsc. Soc.* 93(4):610-613. 1974.
- SCHLICHTING, H. E., JR. Periodicity and seasonality of airborne algae and protozoa. In *Phenology and Seasonality Modeling*, Ecological Studies, 8:407-413. 1974.
- SCHLICHTING, H. E., JR., G. N. PRENDEVILLE and M. D. GUIRY. New techniques for biological monitoring of water quality. *Biocontrol Techniques*, 1(1):1-3. 1974.
- WALSBY, A. E. and A. R. KLEMER. The role of gas vacuoles in the microstratification of a population of *Oscillatoria agardhii* var. *isotrix* in Denning Lake, Minnesota. *Arch. Hydrobiol.* 74(3):375-392. 1974.
- WHITESIDE, M. C. Chydorid (Cladocera) ecology: seasonal patterns and abundance of populations in Elk Lake, Minnesota. *Ecology*, 55(3):538-550. 1974.
- BAKKO, EUGENE B. A field water balance study of gray squirrels (*Sciurus carolinensis*) and red squirrels (*Tamiasciurus hudsonicus*). *Comp. Biochem. Physiol.*, 51A:759-768. 1975.
- BAKKO, EUGENE B. Influence of collecting techniques on estimate of natural renal function in red squirrels. *Amer. Midl. Nat.* 97(2):502-504. 1975.
- BUELL, MURRAY F. and HELEN F. BUELL. Moat bogs in the Itasca Park area, Minnesota. *Bull. Torrey Bot. Club*, 102(1):6-9. 1975.
- GILBERTSON, D. E. and L. SCHMID. Free amino acids in the hemolymph of five species of pulmonate snails. *Comp. Biochem. Physiol.*, 51B:201-203. 1975.
- GILBERTSON, D. E. and R. WEDLUND. Studies on schistosome dermatitis ("swimmer's itch") in Minnesota. *J. Minn. Acad. Sci.* 41:28-30. 1975.
- LARSON, O. R. and W. C. SCHARF. New helminth records from Minnesota mammals. *Proc. Helminthological Soc. Wash.*, 42(2):174-175. 1975.
- SCHLICHTING, H. E., JR. Some subaerial algae from Ireland. *Br. Phycol. J.*, 10:257-261. 1975.

- WIGGINS, GLENN B. Contributions to the systematics of the caddis fly family Limnephilidae (Trichoptera): II. *Can. Ent.*, 107:325-336. 1975.
- HEIDEMANN, MERLE KNUDSON and LEWIS W. ORING. Functional analysis of spotted sandpiper (*Actitis macularia*) song. *Behaviour*, 56 (1-3):182-193. 1976.
- KLEMER, A. R. The vertical distribution of *Oscillatoria agardhii* var. *isathrix*. *Arch. Hydrobiol.*, 78(3):343-362. 1976.
- MCCOLL, J. G. and JOANNA BURGER. Chemical inputs by a colony of Franklin's gulls nesting in cattails. *Amer. Midl. Nat.*, 96(2):270-280. 1976.
- MCINTYRE, JUDY. The common loon: part I. *Loon*, 48(3):126-127. 1976.
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Graduate Student Theses

- 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.
- BALI, I. J. Movements, habitat use, and behavior of wood duck (*Aix sponsa*) broods in north-central Minnesota as determined by radio tracking. M.S. Thesis. 1971.
- BLAND, R. D. The spatial distribution of desmids in certain northern Minnesota lakes. Ph.D. Thesis. 1971.
- BROWN, E. B. Some aspects of the ecology of the small, winter-active mammals of a field and adjacent woods in Itasca State Park, Minnesota. Ph.D. Thesis. 1971.
- GILMER, DAVID S. Home range and habitat use of breeding mallards (*Anas platyrhynchos*) and wood ducks (*Aix sponsa*) in north-central Minnesota as determined by radio tracking. Ph.D. Thesis. 1971.
- LANG, JEFFREY W. Overwintering of three species of snakes in northwestern Minnesota. M.S. Thesis, University of North Dakota. 1971.
- STARK, DONNA M. I. A paleolimnological study of Elk Lake in Itasca State Park, Clearwater County, Minnesota. Ph.D. Thesis. 1971.
- URBAN, RICHARD D. The psammion dynamics on bars and beaches of two small northwestern Minnesota streams. Ph.D. Thesis, University of North Dakota. 1971.
- BOERNKE, WILLIAM F. Adaptations of the amphibian ornithine-urea cycle enzyme, arginase. Ph.D. Thesis. 1972.
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- BAKER, ALAN L. Microstratification of phytoplankton in selected Minnesota lakes. Ph.D. Thesis. 1973.
- BAKKO, EUGENE. Comparative study of water balance of four sciurid rodents. Ph.D. Thesis. 1973.
- KLEMER, ANDREW R. Factors affecting the vertical distribution of a blue-green alga. Ph.D. Thesis. 1973.
- COINER, SUSAN T. Some aspects of the behavior and physiology of the chipmunk, *Tamias striatus*. M.S. Thesis. 1974.
- PIVORUN, EDWARD B. Studies on thermoregulation and metabolism of hibernating chipmunks. Ph.D. Thesis. 1974.
- HALL, RONALD J. Life history, drift, and production rate of the steam mayfly (*Tricorythodes athratus* McDunough) in the headwaters of the Mississippi River. Ph.D. Thesis. 1975.
- HAMAS, MICHAEL J. Ecological and physiological adaptations for breeding in the belted kingfisher (*Megasceryle alcyon*). Ph.D. Thesis. 1975.
- MCINTYRE, JUDITH W. The breeding biology and behavior of the common loon in relation to man-altered environments. Ph.D. Thesis. 1975.
- AASENG, NORMAN EDWARD. The history, nature, and extent of the major logging operations in Itasca State Park (1901-1919). M.S. Thesis. 1976.
- BAKER, KATHLEEN KROMER. Taxonomy and ecology of *Aphanizomenon* in five Minnesota lakes. Ph.D. Thesis. 1976.
- RUBBELKE, DONALD L. Distribution and relative abundance of potential prey of spotted sandpipers (*Actitis macularia* L.) on Little Pelican Island, Leech Lake, Cass County, Minnesota. M.S. Thesis, University of North Dakota. 1976.
- WINTER, J. D. Movements and behavior of largemouth bass (*Micropterus salmoides*) and steelhead (*Salmo gairdneri*) determined by radio telemetry. Ph.D. Thesis. 1976.
- COINER, SUSAN T. A comparison of seasonal patterns in epithelial sodium transport among three species of rapid frogs from different habitats. Ph.D. Thesis. 1977.
- PEZALLA, VIRGINIA A. MOYLE. The behavioral ecology of a dragonfly, *Libellula pulchella*. Ph.D. Thesis. 1977.



Condensed Course Schedule¹

I TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5801	Bot 5811	EBB 5812	Bot 5801	Bot 5811	EBB 5812
Ent 5020	EBB 5815	EBB 5831	Ent 5020	EBB 5815	EBB 5831
	EBB 5834			EBB 5834	

EBB 8800 (special 10-credit course) to be arranged.

II TERM

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Bot 5805	EBB 5814	Bot 5821	Bot 5805	EBB 5814	Bot 5821
Ent 5020	EBB 5817	EBB 5812	Ent 5020	EBB 5817	EBB 5812
	PIPa 5102			PIPa 5102	

EBB 8800 (special 10-credit course) to be arranged.

¹Schedule only one course per day.

Request for Reservation—ITASCA BIOLOGY SESSION

Name _____ Date _____

Current Address _____

City _____ State _____ Zip _____

Telephone: Office _____ Home _____

Present Status: Grad, Adult Special, Freshman, Sophomore, Junior, Senior (circle one)

Status by Summer 1978: _____

University or College Now Attending: _____

If U of M, College in Which Last Enrolled _____ Year _____

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 a \$40 deposit (check or money order payable to the University of Minnesota) to be credited to the tuition fee upon completion of registration. A letter of evaluation from my adviser or supervisor and a recent transcript of my academic record, including a listing of all courses being taken at present, are enclosed or will be sent directly (circle one).

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349 Bell Museum of Natural History
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