

**University of Minnesota**

**72**  
**74**

**Bulletin**

JULY 17, 1972

13

**college of  
liberal arts**



UNIVERSITY OF MINNESOTA

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# 1972-1974 CLA BULLETIN

## Section I

Pages 3 to 29

Section I provides information about the College of Liberal Arts and its services: Registration, class procedures, grading, program planning, degree requirements, special learning opportunities, many other matters of importance to students. A directory of Section I appears here; a full Index follows Section III.

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## Section II

Pages 30 to 232

This section describes courses open to CLA students. Departments are alphabetically arranged.

## Section III

Pages 233 to 243

Here you will find information about requirements of professional schools in the University for which one or more years of CLA work are prerequisite.

## REGENTS' HUMAN RIGHTS POLICY

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

## **This Bulletin and Other Information Sources**

The *Bulletin* is one of the guides you will use frequently in making your educational decisions. It provides information about the College's courses, major programs, special opportunities, requirements, and procedures. But you will need to supplement it with other publications and aids:

**Class Schedule**—Distributed each quarter with your registration materials to tell you times, places, usually instructors of the courses you select (the *Fall Schedule* lists all three quarters). Since this *Bulletin* is biennial, the quarterly *Class Schedule* will be your principal guide to changes in courses, class hours, and so on.

**Official Daily Bulletin**—A regular column in the *Minnesota Daily* that keeps you up to date on course and other changes, as well as other current University developments. You are expected to know any of its contents that affect you.

**General Information Bulletin**—Eighty pages of information on matters of general University interest: The year's calendar, fees, living arrangements, employment assistance, and many other subjects.

**Other Bulletins**—At your right as you enter the Morrill Hall main lobby you will find a rack with scores of University bulletins. You are likely to use some of these if you plan to enter professional training in education, law, medicine, or some other area. You may obtain copies of those you need from the nearby Information Window.

A *Supplement to the CLA Bulletin*, reporting the most recent changes in course information, is usually published in odd-number years (this would bring out a *Supplement* in the summer of 1973).

**Your Adviser**—Essential in educational planning is the College advisory system. Every student in the College of Liberal Arts (CLA for short) is assigned to an adviser, a junior or senior faculty member available to help students with questions they may not be able to answer themselves. You'll find further information about advisers and the advisory system on page 27.

Your use of all of these aids will be some measure of the effectiveness of your education.

# College of Liberal Arts

## Section I

### What Is a Liberal Arts College?

One might think that a liberal arts college seeks to be all things to all men. This is oversimplification. But it is not a misstatement—at Minnesota or at any large university—to say that the arts college is at the heart of things. It provides educational services and stimulation to every part of its institution. Though its primary concern is in the program and degree work of its own students, it serves those from other colleges in many significant ways, and it helps to make other colleges' advantages available to its own students. It is a cross-breeder, a catalyst, a blender of knowledge.

The breadth that characterizes liberal education is thus built into the organization and function of the Arts College. Through the College you will gain not only a foundation in some specific field of knowledge, but also an introduction to other fields to prepare you for life in a complex world.

The College of Liberal Arts has as many aspects as it has students. As you enroll in it, other students beside you are enrolling too. But it's doubtful that any one of them is planning precisely what you, in the course of your education, will plan. The College's thousands of opportunities mean that a personal, individualized program awaits each student. And the College moves with its times, changes each year. No former student had quite the educational experience you will select.

### How Do You Plan a "Liberal Education"?

It isn't easy. For one thing, the very richness of opportunity makes selections hard. For another, most students seek not only broad education but also a degree of specialization in a chosen field that will guide them to useful, satisfying lives. The problem is to integrate the two goals. It can be done.

The University, dedicated to the importance of a wide-ranging perspective to aid in life's decision-making, offers a beginning guide through its principle that everybody who earns one of its bachelor's degrees become acquainted with four basic fields of knowledge: **Communication, Language, Symbolic Systems; Physical and Biological Science; Man and Society; Artistic Expression.** Most CLA degree programs ask you to take work in all these fields. In such work you are sure to find two things: That in some fields you will want to dig below ground level; and that knowledge in them forms a fundamental base, a point of reference, for your specialized work.

Your specialized work—in most cases your major program—is the opportunity for learning in depth, for acquiring intellectual tools that penetrate below surfaces, for developing at least an initial understanding of the areas of knowledge and interrelationships that you expect to shape your future life. The College offers some 50 established majors; it also makes available formalized or individualized interdepartmental majors. (The experimental Bachelor of Elected Studies program, available to a limited number of students, does not require a major concentration. See page 7.)

The "distribution plan" that guides students in gaining breadth of education, and the courses approved for the Route II language requirements in the B.A. program, are described on pages 9 to 14; details of major work are outlined in pages 14-15; interdepartmental majors on page 14; the B.F.A., B.S., B.E.S. degrees on pages 7 to 15.

## General Information

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Your use of the College's opportunities, and the profit you get from them, are your own responsibility. The College will help in every way it can devise, but in the end you follow your own lead.

## The Student and the College

Every Arts College student is assigned to one of 12 College offices. Most freshmen and a few sophomores meet their advisers at the assigned offices. Juniors, seniors, and most sophomores are assigned to department offices or faculty advisers whom they meet in individual offices. But they go to their College offices for such purposes as to procure registration materials; to consult representatives of the Scholastic Committee (see page 28); and for classification of courses under distribution or Route II guidelines, changes in graduation standards or major programs, and other matters.

### THE COLLEGE OFFICES

*Freshmen* are assigned to one of three freshman offices: 30 Johnston Hall (373-2912); 126 Johnston Hall (373-5086); 206 Temporary North of Mines (373-5795).

*Sophomores*: 220 Johnston Hall (373-2880).

*Upper Division* (juniors and seniors): Humanities and Fine Arts, 206 Folwell Hall (373-5245); Sciences, Mathematics, Journalism, Psychology, interdepartmental, 223 Johnston Hall (373-2819); Social Sciences, 122 Social Sciences Building (373-4237).

*Bachelor of Elected Studies* (Upper and Lower Division): 49 Johnston Hall (376-7467).

*Honors Program* (Upper and Lower Division): 115 Johnston Hall (373-7930, Lower Division; 373-5116, Upper Division).

*Martin Luther King Program*: 19 Johnston Hall (373-9739).

*Adult Special*: 225 Johnston Hall (373-2906).

**Class Designations**—A student's class designation determines his eligibility for some courses, and is used in other contexts. Steady progress toward graduation is a matter of importance to all degree candidates.

Any beginning student (except an adult special) without college credits is a *freshman*, and is so designated until he earns 39 credits. Other designations:

*Sophomore*: A student with 39 or more credits who has not been admitted to Upper Division.

*Junior*: A student admitted to Upper Division who has fewer than 135 credits (procedures for transferring to Upper Division are described on pages 20-21).

*Senior*: An Upper Division student with 135 or more credits.

*Graduate*: A student admitted to Graduate School.

*Adult Special*: A nondegree candidate (see page 20).

### STUDENT ORGANIZATIONS

**Student Intermediary Board**—The official voice of students in Arts College affairs is the Student Intermediary Board (the CLA Board), a 25-member council partly elected and partly appointed. A primary responsibility of the Board is nomination of students to membership (in most cases as voting members) on College administrative, policy, and other committees. The Board originates and criticizes

proposals on curricular, instructional, and student personnel issues; it has played an increasingly significant role in College educational decisions in recent years.

The College has designated the Board as the channel for student proposals for new courses, course changes, and improvement of educational opportunities. The Board also maintains liaison with departmental student organizations and gives them support and counsel.

To implement the College's encouragement of student interest and participation in CLA affairs, Board members and nonmembers approved by the Board work with College task forces, councils, and special committees. Any student who wishes to contribute to CLA effectiveness should declare his interest at the Board office, 101 Johnston Hall.

**Student Ombudsman Service**—"SOS," the Intermediary Board-initiated and student-operated agency for help to students, is modeled after the Scandinavian public defense pattern. It answers questions, provides services, aids in personal or curricular problems, investigates complaints, and seeks to correct misunderstandings about University and College procedures. You may drop in to the SOS office, 102 Johnston Hall, or telephone (373-9788) any day between 8 a.m. and 4 p.m. for advice or assistance with faculty-, University-, or College-related problems. SOS has given assistance to thousands of students since its establishment in 1968.

**Honors Student Council**—With the goal of improving the College's honors programs and broadening its educational effectiveness, the Honors Student Council works with the College faculty to evaluate courses and programs, propose and help develop new programs, and enhance students' educational experience. Its programs are initiated and carried out largely through three standing committees: curriculum, programs and facilities, public relations. It arranges social and discussion sessions involving students and faculty; it has contributed to independent study opportunities, and the honors colloquium and seminar systems. For some years it has published *Academy*, a quarterly journal that provides an outlet for the creative work of student writers and artists. *Academy* and the Council both headquarter in 115 Johnston Hall (373-7930).

**Departmental Student Organizations**—Students in many CLA departments maintain organizations for liaison with faculty and for the conduct of departmental student activities. The College encourages these organizations; they also receive assistance in formation and operation from the Student Intermediary Board.

## STUDENT RECORDS—GRIEVANCE PROCEDURES

College as well as University regulations provide full protection of the confidentiality of student records. Most information in departmental and College records is released only upon written consent of the students concerned. Data about periods and divisions of enrollment, degrees earned, majors, and honors are considered public information; grades, conduct records, and the like are not.

An established "grievance procedure" exists in the College. If a student believes he has justifiable complaint about a grade or about classroom procedures, he is asked to confer about it with the instructor involved. If a solution satisfactory to him is not reached, he should take the complaint to the department or school head. If these informal procedures do not yield satisfactory resolution, the department's committee on academic freedom and responsibility (a student-faculty group) can be assembled to hear the charge. Further appeals proceed to College-level and University-level appeal committees.

The College Scholastic Committee is empowered to interpret and enforce CLA academic regulations and to hear student petitions concerning their application. See page 28.

## General Information

College and University provisions for examination of allegations of student misconduct are described on page 28.

## College Organization

**Departments and Schools; Divisional Councils**—Though the basic unit of organization of the College is the department, the College also includes five professional schools and several programs (a program offers a group of related courses, often leading to a degree, drawn from a number of departments; the degree is usually interdepartmental). These units have general autonomy in faculty personnel matters and internal procedures, though budget decisions are reviewed at College and University levels. Proposals for courses and majors usually originate in departments, but they are subject to review by appropriate divisional councils (Humanities and Fine Arts, Natural Sciences, Social Sciences), which make all final curricular decisions except those that are College-wide, such as graduation requirements.

**College Government**—The legislative authority of the College is the All-College Council, which comprises the three divisional councils. Divisional Council faculty members (about 110) are elected by departments in ratio to department size; 6 junior staff members and 3 graduate students are appointed by the dean, upon departmental nominations; and 15 undergraduates (5 on each Divisional Council) are nominated by the Student Intermediary Board. The dean also appoints the faculty-student membership of the Curriculum Committee, the Instruction Committee, and the Student Personnel Council. Almost all College committees have undergraduate membership, and most have graduate student and junior faculty members. Standing and ad hoc committees propose most educational policy and curriculum decisions, subject when appropriate to All-College Council review.

## Admissions

Applicants to CLA who meet the College's entrance qualifications\* are eligible for consideration for admission at undergraduate levels appropriate to their educational experience. They request admission and information materials by mail, telephone, or in person, at the University Office of Admissions, 6 Morrill Hall. A non-refundable \$10 credentials examination fee, payable to the University of Minnesota, must be attached to the application. It is always advisable to file applications well in advance of the usual deadlines (July 15 for fall, November 15 for winter, February 15 for spring). High school students are urged to apply between November 1 and April 1 for the following fall.

New students are not formally admitted to the College for Summer Session, though they can attend as summer-only students and apply for admission for following quarters. Summer credits thus earned count toward graduation.

Applicants for admission as freshmen must take the tests of the American College Testing (ACT) program and have the scores reported to the Office of Admissions before admission can be completed. (The tests are necessary to insure correct placement in some introductory courses.) Tests should be taken at the earliest test date during senior year in high school (information about dates is available in high schools or at the ACT Central Registration Unit, Box 168, Iowa City, Iowa 52240). A \$6 testing fee is charged.

Special arrangement for admission of outstanding students who have not graduated from high school is possible.

Entrance requirements for Minnesota residents vary from those for nonresidents.

\*See *General Information Bulletin*.

**Adult Special Admissions**—Students who want CLA courses in limited areas, without planning for degrees, may be admitted as adult specials (admissions are restricted because of enrollment pressures). Ordinarily an adult special (AS) must be 24 years old or have a bachelor's degree.

This type of admission is *not* open as an avenue of improvement of grade average to gain admission to Graduate School or other University colleges or schools; nor to students rejected by the Graduate School.

**Orientation-Registration Programs**—Because a good beginning is so important to later success, the College devotes careful attention to the initial orientation and registration of its entering students. Some programs are voluntary (Welcome Week and New Student Camps, preceding the fall quarter, for instance); some are required during the initial CLA registration period (the 1- or 2-day programs before each quarter).

Every student is invited to take part in as many of these programs as possible, to familiarize himself with the academic routines of a big campus as well as the scores of outside-of-class opportunities that he can make part of his education. Upperclass students and College personnel play roles in introducing the College and University to new students.

Information about programs is mailed to newly-admitted students in time to permit them to participate.

## **GRADUATION STANDARDS AND REQUIREMENTS**

Three types of 4-year bachelor's degrees are generally available to CLA students: bachelor of arts (B.A.), fine arts (B.F.A.), and science (B.S.). The experimental bachelor of elected studies (B.E.S.) is open to a small number of students. Many of the requirements for the four degrees are uniform; the chart on page 8 shows uniformities and differences, and additional information appears in the following pages.

### **SPECIAL NOTES**

1. The requirements stated here are mandatory for students (except those in the B.E.S. program) who register in CLA for the first time after spring quarter, 1972, and for students who last registered in Lower Division before Summer Session, 1970, and return after spring quarter, 1972.

2. B.A. degrees are offered or planned in all departments and programs in CLA except Criminal Justice Studies, Library Sciences, and Public Affairs. B.S. degrees are authorized in Economics and Urban Studies; it is expected that others will be added.

3. B.F.A. degrees offer opportunity for students with special qualifications in studio art, music, or theatre to prepare for professional work. Applicants in these areas must demonstrate superior professional promise to gain admission. Progress of accepted candidates is reviewed annually. Detailed information about admission and requirements can be obtained from department offices or the B.F.A. booklet available in the Humanities and Fine Arts Division office, 206 Folwell Hall.

4. The B.E.S. program, designed to give individual students maximum latitude in planning degree patterns, was introduced experimentally in 1972. CLA students may enter it at designated enrollment periods, after they have earned 12 credits and before they earn 106. Selection is by lot. B.E.S. advisers are in 49 Johnston Hall (376-7467).

## CLA BACHELOR'S DEGREE REQUIREMENTS

| Type of Requirement        | Bachelor of Arts   | Bachelor of Science                              | Bachelor of Fine Arts                            | Bachelor of Elected Studies<br>(experimental)               |
|----------------------------|--|--|--|---|
| <b>TOTAL CREDITS</b>       | 180  | 180  | 180  | 180   |
| <b>CLA CREDITS</b>         | 45 in residence<br>30 in senior year   | 45 in residence<br>30 in senior year             | Last 45 in residence                             | 45 in residence<br>30 in senior year                        |
| <b>UD CREDITS</b>          | 75 total<br>30 outside major   | 75 total   | Usually at least 75                              | 75 total  |
| <b>QUALITY STANDARDS</b>   | Grades of A, B, C, or S in 180 CLA cr, in 75 CLA Upper Division cr, and in the minimum number of Upper Division credits required by the major department (credits of D earned at Minnesota or other institutions after the summer of 1972 will count toward all requirements other than the foregoing) |  |  | Same as for other degrees, except that no major is required |
| <b>ENGLISH COMPOSITION</b> | Comp 1001/2 or 1011/2<br>or Comm 1001/2 or exem.   | Comp 1001/2 or 1011/2<br>or Comm 1001/2 or exem. | Comp 1001/2 or 1011/2<br>or Comm 1001/2 or exem. |   |
| <b>FOREIGN LANGUAGE</b>    | Completion of stated language requirement  |  |  |   |
| <b>GROUP DISTRIBUTION</b>  | See pages 11-14  | See pages 11-14                                  | See B.F.A. distribution requirements             |   |
| <b>MAJOR</b>               | Completion of approved program   | Completion of approved program                   | Completion of approved program                   |   |

The B.E.S. degree program gives students wide flexibility in selection of course work. Subject only to the quantity and quality requirements shown in the chart on page 8, each individual degree candidate designs his program to suit his own needs, and to provide the components of a liberal education (described on page 3) in the way he thinks most appropriate for him.

## ENGLISH COMPOSITION REQUIREMENTS

All students must have English placement classification before entering any of these courses. Unless exempt, a freshman must complete Engl 1001/2, or 1011/2, or Comm 1001/2. The courses may not be used to satisfy group distribution requirements.

## FOREIGN LANGUAGE REQUIREMENT FOR THE B. A.

Two "routes" are available to meet this requirement. Route I is intended to equip a student with basic proficiency in use of a foreign language; Route II puts less emphasis on language use but requires supplementary study of the cultures and societies in which the chosen language is the principal communication medium.

*Route I:* Complete at least 23 credits in one foreign language, or pass a validation examination at that level.

High school language study usually relates to the requirement thus:

| <b>High School Study</b> | <b>Additional College Study</b>                 |
|--------------------------|---|
| 4 years                  | at least 3 cr in same language at higher level  |
| 3 years                  | at least 8 cr in same language at higher level  |
| 2 years                  | at least 13 cr in same language at higher level |
| 1 year                   | at least 18 cr in same language at higher level |

Students with two or more years of high school Latin may satisfy the requirement by continuing in Latin on the schedule above, or by taking 15 credits in another language. High school study in another language counts toward the 15 credits, in accordance with Schedule II, A below.

*Route II:* Complete at least 27 credits, as follows:

A. At least 15 credits in one foreign language or validation at that level. High school study usually relates to the requirement thus:

| <b>High School Study</b> | <b>Additional College Study</b>             |
|--------------------------|---|
| 3 years or more          | none in college                             |
| 2 years                  | 5 credits in same language at higher level  |
| 1 year                   | 10 credits in same language at higher level |

B. 12 credits (7 for those with 4 years' high school study in one language) in courses concerned with a country or countries that use the language chosen to meet the requirement. A list of courses that may be so used appears below; it is also available, frequently updated, in College offices. Courses elected for this purpose may not be used to satisfy group distribution requirements. (Study in the language beyond the 15-credit level may be used as part of this 12-credit requirement.)

Repetition in college of language study at a level completed in high school (for "refresher" purposes or other reasons) must be taken on the SN grade system.

The following courses, approved as of Summer 1972, to meet Route II, B requirements, are listed alphabetically by the language to which they apply.

**Key:** /—a series linked by slashes must be taken in the order shown.  
 ,—a series linked by commas may be entered any quarter.  
 ;—a semicolon separates discrete courses or series of courses.

## General Information

### ARABIC

Arab 3201/2/3; 3511/2/3; 3521/2/3; 3531;  
3531-H; 3541/2; 3551/2/3; 5501/2/3;  
5511H/2H/3H  
Anth 5251; 5252  
ArtH 3909  
Hist 5274,5

### CHINESE

Ortl 3501  
Hist 5241,2,3; 5247,8  
Mus 5661; 5662; 5751,2,3  
Phil 5036; 5046; 5052

### GREEK

Clas 1001,2,3; 1042; 1046; 1142; 3071; 3081;  
3082; 5001; 5002; 5004; 5007; 5101  
ArtH 3152; 5102; 5103; 5106  
Hist 1052; 1062; 3052; 5061,2,3; 5276  
Hum 1011; 3011; 3211  
Math 3071  
Phil 3001,2; 5005; 5008; 5012  
Pol 5664  
Spch 5611  
Anth 5281  
ArtH 5711; 5765; 5766  
Geog 5211  
Hist 5461,2; 5464,5; 5467,8; 5497,8  
Pol 5454

### CHIPPEWA

AmIn 3061; 5121; 5131; 5211  
Anth 3211; 5212

### FRENCH

Fren 3599; 3601/2/3; 3604; 3605  
ArtH 3303; 5357  
Hist 5211,2,3; 5231,2  
Phil 5034

### GERMAN

Ger 3601,2,3; 3604; 3610; 5601,2,3  
ArtH 5458

### HEBREW

Hebr 3051,2; 3107; 3115; 3117; 3501/2  
Hist 5051,2,3  
SSci 3403/4

### INDIC

Indc 1501,2,3; 1504/5,6; 3201/2; 3203;  
3504/5,6; 5090; 5201; 5202; 5301;  
5302; 5401; 5510; 5701; 5702; 5710;  
5801  
Hndi 3801  
Anth 5261; 5262; 5263  
ArtH 1014; 5709; 5775; 5776; 5924  
Geog 5212  
Hist 5451,2; 5455  
Mus 5665; 5811; 5812  
Phil 5801; 5802; 5803; 5804; 5805; 5806  
Pol 5446/7

### ITALIAN

Ital 1501; 5601,2,3; 5609; 5610  
ArtH 5306; 5307; 5313; 5314  
Hist 5254,5,6  
Mus 5663

### JAPANESE

Ortl 3502  
Anth 5281; 5971  
ArtH 5712; 5767  
Hist 3491,2; 5471,2  
Pol 5453

### LATIN

Clas 1004,5,6; 1042; 1046; 1142; 3073; 3083;  
5001; 5002; 5003; 5004; 5008;  
5086; 5101  
ArtH 3152; 5104; 5105; 5170  
Hist 1053; 1063; 3053; 3112; 5071,2,3  
Hum 1012; 3012  
Phil 3001,2  
Pol 5664  
Spch 5611

### PERSIAN

Hist 5459  
Pers 5601

### POLISH

Plsh 3601,2,3  
Hist 5244,5,6  
Slav 1501

### PORTUGUESE

Anth 5221  
Econ 5311; 5341  
Geog 3121; 5132  
Hist 1401,2; 3401, 2; 5401,2,3;  
5420; 5421,2  
Mus 5704,5,6  
Pol 5455; 5456  
Soc 5315; 5671  
Span 1501; 1502; 1503

### RUSSIAN

Russ 3501,2,3; 3601,2,3; 5201,2,3; 5204;  
5301/2/3; 5401,2; 5403; 5404,5; 5406;  
5407/8; 5409; 5501 (for Russian  
literature in translation, see Department)  
Econ 5313  
Geog 3181  
Hist 5134,5,6; 5244,5,6; 5264,5,6; 5294,5  
Slav 1501

### SCANDINAVIAN

(Danish, Finnish, Icelandic, Norwegian,  
Swedish)  
Scan 3501; 3601; 5501; 5502; 5503; 5601  
Finnish only—3604; 5421; 5605; 5606;  
5607; 5608; 5611; 5612; 5613; 5615;  
5616; 5617; 5619  
ArtH 3654; 3655; 5105; 5641; 5642; 5644  
Geog 5173  
Hist 5271,2,3  
Mus 5707  
Phil 5054  
Pol 5444; 5445

### SLAVIC

Pol 3603

### SPANISH

Span 1501; 1502; 1503  
Anth 5221; 5222

Arab 5501/2/3  
Arth 5911  
Econ 5311; 5341  
Geog 3121; 5131; 5132  
Hist 1401,2; 3401,2; 5419; 5420; 5424,5;  
5426; 5427  
Mus 5704,5,6  
Pol 5455; 5456  
Soc 5315; 5671

SWAHILI  
Anth 5241,2,3; 5251; 5252  
Geog 3141; 5141  
Hist 1431,2,3; 5441,2,3; 5444,5,6  
Pol 5448

TURKISH  
Turk 5601  
Anth 5251

## B.A. and B.S. Distribution Requirements

Your choice of a portion of your degree work to assure the balance and breadth that are part of a University of Minnesota program is guided through the plan described below. The scope of CLA offerings is so wide that in every field you will be able to choose among courses not only to meet the plan's requirement but also to satisfy your own interests, to enrich your understanding, and to stimulate you to explore more deeply.

You would usually be wise to spread your distribution choices over your 4 years of college. Most students elect a large portion of such work in their first 2 years—you'll find that introduction to a well-chosen variety of fields will make your Upper Division work more fruitful. At the same time, you will be taking courses that are prerequisite to Upper Division requirements or elective work. As you gain perspective, you move toward more concentrated fields of study.

You meet these breadth-and-balance requirements by completing at least 48 credits, distributed thus:

Group A - Communication, Language, Symbolic Systems  
8 to 10 credits (normally 2 courses)

Group B - Physical and Biological Sciences  
12 to 15 credits (normally 3 courses)

Group C - Man and Society  
16 to 20 credits (normally 4 courses)

Group D - Artistic Expression  
12 to 15 credits (normally 3 courses)

*Notes:* 1. No more than 12 credits from any one department may be used to meet these requirements; but courses from one department may be used in different groups if so classified.

2. Courses used to meet the English composition requirement and the foreign language requirement (including those used in Route II, part B) may not be used to meet distribution requirements.

3. Distribution requirements may be met by examination (consult your College office). CLEP examinations may be used for partial fulfillment.

4. Honors courses or sections may be substituted for regular courses or sections unless otherwise specified.

5. Distribution requirements in the three B.F.A. programs may differ from those for the B.A. and B.S. See the B.F.A. booklet, available in the Humanities and Fine Arts Division office, 206 Folwell.

### GROUP DISTRIBUTION COURSE LIST

Almost every CLA course may be used toward the distribution requirements; most courses' classifications are shown with their descriptions in Section II of this *Bulletin*. The list below, identifying courses with few prerequisites, shows courses most often used for distribution purposes. Some courses may be used under more than one group, though no course may be used twice.

## General Information

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### Group A: COMMUNICATION, LANGUAGE, SYMBOLIC SYSTEMS

Transfer from GC: 1402, 1405, 1442, 1443, 1451, 1452, 1454, 1461, 1462, 1463, 1464, 1471, 1533, 1824  
Acct 1024/5/6  
Afro 1101/2/3  
Anth 5421 (now 5161)  
CDIS (old SSPA) 3101, 3108 (no other CDIS courses apply to distribution requirements)  
Clas 1046, 1048, 3048, 5046, 5101, 5107, 5124  
CIPh—All courses  
Comp—All courses  
Engl 3851, 5815, 5821, 5831, 5843, 5851, 5871, 5873, 5876. Students exempt from English composition may apply 6 cr toward the Group A requirement upon English Department approval.  
*Foreign Languages:* Any foreign language skill course may be used in this area provided it is not used to meet the foreign language requirement and provided it is not included in Group C or D.  
Fren 3011, 3021, 3022, 3031  
Geog 3511, 3531, 3551, 5511, 5512, 5531, 5532  
Ger 3011/2/3, 3014/5/6, 3701  
Grk 5011, 5012/3, 5701/2  
Indc 1001, 5001  
Ital 3011, 3012, 3021  
Jour 1001, 1011, 1012  
Lat 3011, 5011, 5012/3, 5471, 5701,2,3  
Ling—All courses  
Math—All courses except 1005, 1006  
Pers 5101/2/3  
Phil 1001, 1011, 3201, 3202, 3601, 5101, 5105, 5202, 5231, 5802  
Psy 3801, 5861, 5863  
PubH 5400, 5430/1/2, 5450/2/4, 5451/3/5  
Rhet 1147 (1 cr only)  
Russ 3011, 3012, 3013, 3021, 3022, 3023  
Soc 3801, 3802, 3803, 5801, 5805, 5806, 5814, 5815, 5816, 5831/2/3  
Spch 1101, 1105H, 1102, 1106, 1108, 1110, 3108, 3601, 3605, 3615, 3620, 3621, 3641, 5404, 5451, 5603, 5611, 5615, 5616, 5617, 5618, 5619  
Stat—All courses except 5061, 5071, 5301, 5601  
Urdu 5131/2/3, 5161/2/3

### Group B: PHYSICAL AND BIOLOGICAL SCIENCES

Transfer from GC: 1111, 1131, 1132 (if 1137 is taken), 1137, 1161, 1162, 1171 (if 1777 is taken), 1172, 1177, 1181  
Ast 1008, 1009, 1011, 1012, 1013  
Biol 1001/2†, 1011  
Bot 1001, 1009, 1012, 3003, 3109, 5103, 5105  
Chem 1004/5†, 1006, 1301, 3100 with 3101, 1031/2/3  
Ecol 1004, 1005, 3001  
GCB 1101, 3022  
Geo 1001, 1002, 1007, 1008, 1012, 1013, 1111, 1112, 1601, 3014, 3101, 3401, 5004  
Geog 1425  
IT 3101, 3201, 3301, 3401  
MicB 1011  
NSci 1004/5†,1006  
Phys 1014/24 with labs 1015/25, 1031/2, 1041/2, 1104/5/6, 1121/2, 1271/81/91 with labs 1275/85/95, 3801  
Zool 1013

### Group C: MAN AND SOCIETY

Transfer from GC: 1182, 1211, 1212, 1213, 1221, 1226, 1227, 1231, 1232, 1233, 1234, 1235, 1236, 1241, 1242, 1243, 1251, 1252, 1261, 1271, 1281, 1282, 1283, 1285, 1291, 1295, 1296, 1297, 1351, 1355, 1357, 1385, 1386, 1501, 1511, 1701, 1721, 1722, 1811, 1813, 1815, 1817  
Afro 1015, 1036/7, 1441, 1442, 3001/2/3, 3061, 3075, 3076, 3081/2, 3091, 3092, 3098, 3455, 3551, 5001/2, 5101, 5102, 5103, 5401  
AgEc 1010, 1020  
AmIn 1101, 1102, 1041, 3061, 5112, 5121, 5131, 5570, 5990  
AmSt—All courses  
Anth—All courses except 5421 (now 5161)

## B.A. and B.S. Distribution Requirements

Arab 3511/2/3, 3531, 3551/2/3  
Arch 1001/2/3  
CJS—All courses  
Clas 1001, 1002, 1003, 1004, 1005, 1006, 1011, 1022, 1033, 1042, 1044, 1055, 1066,  
1142, 3071, 3072, 3073, 5004, 5071, 5072, 5073  
CPsy—All courses  
Econ—All courses  
EPsy 5121, 5122  
FSoS—All courses  
Fren 3501/2/3  
Geog—All courses except 1425, assigned to Group B, 5211, and all Geog listings under A  
Ger 5331  
Grk 5794  
Heb 3131/2, 3501, 3502  
Hist—All courses  
Hum—All courses  
Indc 1501/2/3, 1504/5/6, 3504/5/6, 3507, 3533, 5511/2, 5520, 5531/2/3  
Ital 3501/2/3  
Jour 1003, 1701, 3021, 3776, 5501, 5514, 5601, 5603, 5611, 5615, 5721, 5801, 5825,  
5826  
Lat 5794  
LatAmSt 5101  
Lib 5001, 5221  
MidEst 3125, 3501, 3502, 3503, 3555  
MilSci 21, 22, 23 if taken 1968-69 or 1969-70  
NSci 5171/2/3  
Ortl 3501, 3502  
Pers 3501, 3502  
Phil 1002, 1003, 1004, 3001, 3002, 3003, 3004, 3202, 3302, 3415, 5003, 5005, 5008,  
5021, 5033, 5034, 5035, 5036, 5041, 5042, 5043, 5044, 5054, 5301, 5302, 5311,  
5401, 5414, 5521, 5611, 5612, 5621, 5781, 5801  
Phys 5901, 5902, 5903  
Pol—All courses except 3085  
Psy—All courses except 3801 and 5861, assigned to Group A; and 3031, 5061, 5062,  
5071, assigned to Group B  
RelS 1031/2/3, 3970, 3999  
Russ 3501, 3502, 3503  
Scan 1504, 3501  
SSci—All courses  
SW—All courses  
Soc—All courses (except listings under A, and 5208 and 5561 which may not be used  
in distribution requirements)  
SPAN 3001/2/3  
Spch 1103, 3401, 5211, 5222, 5231, 5232, 5233, 5401, 5402, 5403, 5421, 5431, 5432,  
5441, 5451, 5602

### Group D: ARTISTIC EXPRESSION

Transfer from GC: 1311, 1312, 1313, 1331, 1333, 1335, 1361, 1362, 1365, 1367, 1371,  
1372, 1373, 1374, 1381, 1384, 1391, 1472, 1481, 1483, 1485, 1486, 1536, 1812,  
1816  
Afro 1301  
AmIn 5211  
AmSt—All courses  
Arab 3201/2/3, 3351, 5211/2  
Arch 1021, 1022, 1023, 5051, 5052, 5053, 5054, 5055, 5056  
ArtH—All courses  
ArtS—All courses  
Clas 1009, 3009, 3081, 3082, 3083, 3091, 3092, 3093, 5081, 5082, 5083, 5091/2/3,  
5107/8/9, 5115  
Chin 5201, 5202, 5203  
Engl—All courses except 3601, 5633, 5646, 5666, 5667, 5674  
*Foreign Languages:* Any Upper Division foreign *literature* course may be used in this  
area provided it is not used to meet the foreign language requirement.  
Fren 3601/2/3  
Ger 3104, 3105, 3201, 3202, 3203, 3301, 3302, 3303, 3311, 3312, 3313, 3321, 3322,  
3323, 3331, 3332, 3341, 3342, 3401, 3402, 3403, 3601, 3602, 3603  
Grk 1104/5, 3106/7, 3368, 3375, 3376, 3377, 3378, 3379, 3461, 3464, 3471, 3474,  
5264, 5265, 5266, 5371, 5372, 5373, 5374, 5375, 5376, 5377, 5378, 5379, 5381

## General Information

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HE 1501, 1521, 1541  
Heb 3201/2/3, 3121/2/3, 3301/2/3  
Hum—All courses  
Inde 3201/2/3, 5301, 5302, 5401, 5802  
Ital 3601/2/3  
Jap 5201, 5202, 5203  
Jour 3221, 5606, 5171  
LA 1021, 3062/3  
Lat 1104/5, 3106, 3461, 3462, 3463, 3464, 3465, 3466, 3467, 3468, 3469, 3471, 3472, 3473, 3474, 3475, 3476, 3477, 3478, 3479, 5235, 5264/5/6, 5371, 5372, 5373, 5374, 5375, 5376, 5377, 5378, 5379, 5715  
MdGk 1104/5/6  
MidE 3101  
Mus—All courses  
MuEd 3557  
Pers 5990  
Phil 5501, 5911  
Russ 3601/2/3, 5403, 5409  
Scan 5503, 5512, 5601, 5631, 5632, 5633, 5670  
Spch 3201, 3202, 3203, 3204, 5201, old 81-82, 5204  
Span 3611, 5416  
Th—All courses except 3102, 3103, 3104, 3105, 3106, 3107, 3412H, 3413H, 3414H, 5100, 5101, 5501, which may not be used in any area

## OTHER DEGREE REQUIREMENTS

**Required Background Courses**—Most major programs under departmental headings in Section II of this Bulletin suggest or require “background courses.” Your should plan your freshman and sophomore programs to include a considerable number of these, since they are preparation for entrance to advanced courses in your major or other Upper Division work. Most of them satisfy some of the distribution requirements.

**Outside-of-Major Requirement**—All degree programs except those composing interdepartmental majors and B.E.S. programs must include 30 or more Upper Division credits outside the major department. No “minor” is required.

**Major Sequence**—More than 50 major sequences—fields of Upper Division concentration, often career-oriented, based on adequate (often prescribed) preparation—are offered in the College; Section II of this Bulletin describes them. Since their requirements change from time to time, you should check with your adviser, your College office, or your departmental office for up-to-date information (you can obtain from any of these the most recent “major requirements” sheet).

1. *Departmental Majors*—These majors, which appear in Section II under the headings **Major Sequence for B.A.**, are designed as integrated programs of concentration. Each represents its department’s judgment as to what constitutes appropriate initial study, at the undergraduate level, of its discipline. Departmental majors may be modified only by department or major adviser consent.

Students may take “double majors” by completing all requirements for two areas of concentration. They may enter double-major programs at the beginning of senior year, but should start to meet basic requirements earlier.

2. *Interdepartmental Majors*—“Established” interdepartmental majors are offered in these fields: American Studies, Humanities, Latin-American Studies, Pre-theological Training, Religious Studies, Social Welfare, Urban Studies. See Section II.

The individual interdepartmental major permits a student to design a B.A. sequence to meet his special needs. Such a major resembles the formalized major sequence in providing balance, unity, and areas of concentration. It is unique, however, in its personal and purposeful design. A student’s plan for the major states his particular objectives and outlines integrated course selections in several groups,

usually from three or more departments. It should if possible foreshadow his "senior project," a major paper reporting study and research related to the objectives for which his coursework is preparation.

The degree requirements are substantially those of the B.A. program outlined on page 8, except that the "30 Upper Division credits outside major" stipulation is omitted and the major as defined must include 80 credits, 60 of them Upper Division.

Advising and program approval services for these programs are available in the Interdepartmental Major office, 106 Johnston Hall. Faculty members in appropriate disciplines assist in program development.

3. *Majors in Combined Programs*—Programs that combine B.A. degree work with preparation for dentistry or medicine substitute professional courses for the major field, but otherwise must meet B.A. requirements. These programs, leading to B.A. plus M.D. or D.D.S. degrees, require 7 years of study. See Section III.

**Quality of Work**—All students, to earn bachelor's degrees in the Arts College, must do S or C, or better, work as indicated in the chart on page 8.

Grades earned at other institutions, though entered on Minnesota grade records, may not be counted to make up grade deficiencies in Minnesota courses. Grades earned in other University of Minnesota colleges (except General College), if CLA accepts them, are counted in figuring the average. Failures in acceptable courses taken elsewhere will be entered on your record.

**Former B.A. Requirements**—Some B.A. candidates may have designed degree programs under the "old" requirements. Information about former requirements and students to whom they apply appears on page 232.

**Bachelor's Degrees Earned While Registered in Other Colleges**—Students registered in other Twin Cities Campus colleges may earn CLA degrees by completing all CLA degree requirements for the desired degrees except the CLA residence requirement (this does not apply to the BES degree).

## Associate in Liberal Arts (2-year) Degree

If you are not sure you will continue your University education beyond 2 years, or if you wish formal recognition that you have completed 2 year's work, you may wish to work toward the associate in liberal arts (A.L.A.) degree. This degree is recognition of successful completion of a program largely devoted to general education. As evidence of liberal arts achievement, it is advantageous as preparation for further education, either professional or general.

**A.L.A. Requirements**—1. 90 cr, 45 or more with A, B, or C grades. 2. At least 45 cr earned in CLA residence. 3. CLA English composition requirement. 4. Four of the following: *a.* Foreign language through the college 3rd-4th level, or exemption by examination based on 3 yrs of high school work, or completion of 4 yrs of high school study (one language only); *b.* 8 to 10 cr in Distribution Group A; *c.* 12 to 15 cr in Group B; *d.* 16 to 20 cr in Group C; *e.* 12 to 15 cr in Group D.

If you meet these requirements *and apply for the degree*, it will be awarded even though you plan to continue in the Upper Division or a professional school. Applications go to window 14, Admissions and Records, Morrill Hall.

## School of Cross-Disciplinary Studies (SCDS)

The School of Cross-Disciplinary Studies is designed to meet three educational needs that cut across the boundaries of traditional subject-matter areas.

**Articulated Lower Division Course Sequences**—Small core groups of faculty

## General Information

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from different disciplines will offer sequences of interrelated courses, each representing the approach of its own discipline but all presented to demonstrate the integration of varying subject fields. These courses will meet some of the CLA group distribution requirements. Freshmen and sophomores (about 200 can be accommodated in each sequence) who wish to participate in a curriculum centering around integrated problems or themes should consult their advisers about work in the School, or inquire about it in 203 Johnston Hall.

**Experimental Interdisciplinary Courses**—Experimental courses to serve cross-disciplinary needs, examining problems that do not fit within established departmental areas, will be provided under SCDS direction. Such courses will be listed in quarterly *Class Schedules*.

**Upper Division Interdepartmental Programs**—Majors or Upper Division programs that cut across traditional lines (Urban Studies, Religious Studies, Latin-American Studies, and other such areas) are to be planned with SCDS sponsorship and advice. The School's functions will range from aid in constructing individually-designed interdepartmental majors to development of continuing formal programs involving many students.

## REGISTRATION

Registration is the process of signing up for the specific courses you select for the coming quarter. In essence, registration is a contract: The College agrees to make certain instruction and other facilities available to you, and you agree to seek attentively to benefit from them. Your first obligation is proper registration. Errors, late registration, failure to observe established procedures, or excess of changes are costly to you and sometimes impositions on other students.

Printed instructions are issued to you with registration materials. The better your understanding of them, the easier your registration. Your adviser or your orientation leader will try to answer your questions.

### HOW TO REGISTER

These are the usual steps in registration (details follow):

1. Obtain registration materials, including Registration Permit.
2. Plan a tentative course program.
3. Consult with your adviser (sometimes required, always helpful).
4. Reserve class places in Class Reservations office.
5. Turn in registration materials to a recorder's clerk in Johnston or Morrill Hall, and get your fee statement.
6. Pay fees.

Some registrations require approval of instructors, departments, or a representative of the Scholastic Committee. *Your registration is never complete until your fees are paid.*

**Registration Materials and Permits**—New freshmen and advanced standing students (those transferring to Minnesota from other institutions) receive their registration permits and some materials through the mail; they obtain other instructions when they appear for their orientation-registration programs. Continuing students get them from designated distribution points, usually in or near their college or Division offices.

Students wishing to transfer from other University of Minnesota colleges to the Arts College should apply for authorization at the Change of College Window,

6 Morrill Hall, on the Minneapolis campus, or appropriate offices on other University campuses. Once admitted to CLA, they usually obtain their registration permits from the colleges they are leaving.

Students returning to the College after absences procure registration permits at Window 10 or 14, 105 Morrill. They then go to a CLA office for other registration materials and information.

**Course Levels**—Courses numbered in the 1xxx series (example: Afro 1015) are Lower Division courses, often without prerequisites and open to most students. Those at the 3xxx level, Upper Division courses, are primarily for juniors and seniors, although sophomores with C averages are usually admitted. Courses at the 5xxx level are open to juniors, seniors, and graduate students, and to 3rd-quarter sophomores with instructor and Scholastic Committee approval. Those numbered 8xxx and above, graduate courses (not listed in this *Bulletin*), are not open to undergraduates.

**Adviser Approval**—Students who have discussed programs with advisers prior to registration time will not need second meetings to get signatures on registration cards; the cards will be accepted if the schedules on them conform to adviser-student advance planning. Appointments during registration periods may be made if necessary, but time for them may be limited.

Most Upper Division students may register without adviser signatures; but frequent conferences are helpful.

**Closed-Section Information**—Information updated several times daily to tell you which courses and sections of courses remain open is available at all College offices and at additional Johnston Hall locations.

**Reserving Courses**—You reserve places in “controlled” courses (those whose titles are in boldface type in *Class Schedules*) by presenting approved registration cards and ID cards to the Class Reservations office, 12 Johnston Hall. There you get entry cards for the courses you have chosen. (The many courses in light type in the *Class Schedule* are not controlled and don’t require permits.) See “Special Permission to Enter Courses” section below.

**Completing Registration**—Two steps remain before registration is complete:

1—**Fee Statements:** You obtain your fee statement by presenting all registration materials to a recorder’s clerk, either in 18 Johnston Hall or at Window 10 or 14 Morrill Hall. All forms and cards in your registration packet must be filled out before you turn them in.

2—**Fee Payment:** When you pay your fees, registration is complete (no grades will be granted and no course work considered authorized until fees are paid). The fee statement shows the deadline for payment without late-payment penalty. Paying fees by mail is often more convenient than doing so in person.

The *General Information Bulletin* gives information on fees and expenses.

**Registration Dates**—For continuing students, these dates are scheduled, for winter and spring registrations, in the last four weeks of fall and winter quarters; they come during August for fall registrations. Specific dates are announced in the *Official Daily Bulletin*. CLA students enroll in sequential order based on their last initials—the order rotates every quarter to equalize early registration advantages. The tentative sequences for 1972-74 are shown following Section III.

## PERMISSION TO ENTER COURSES

Special permission is needed to enter some courses, usually those of controlled size or requiring specified backgrounds. Course listings in the *Class Schedule* show

## General Information

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by symbols when instructor (#) or department ( $\Delta$ ) permission is required. In some cases, written permission must be presented to the Reservations office.

**Admission to Closed Sections**—Limits on class or section size are established according to the maximum number of students who can be taught effectively in a given course, or in some cases by size of the classroom to be used. Instructors order books and make other plans according to expected enrollments; difficult problems arise if limits are not observed. Permission to enter a closed section is, therefore, a privilege that cannot be extended frequently.

You may apply for such permission, however, to a class's instructor or, sometimes, its department. Should permission be granted, you will need a written statement for the Reservations office.

**Independent Study**—All independent study, directed study, or extra credit registrations require instructor and department approval. Registration materials include full information on procedures for such registration. Approval must be procured before registration can be completed.

## Special Course Procedures

The CLA Scholastic Committee is a student-faculty committee responsible for interpreting and enforcing the academic and scholastic regulations of the College (see page 28). Among the principal registration requests for which its approval may be required are these:

**Maximum and Minimum Credit Loads**—Most students register for 15 or 16 credits of course work each quarter. To take fewer than 12, Lower Division students must obtain Scholastic Committee permission; Upper Division students must submit statements of reasons for "light" loads. If you carry outside jobs or responsibilities that demand 20 or more hours a week you are advised to hold to the 12-credit limit; if your outside activities take more than 30 hours you should register for less. (In general, it is unwise to work more than 15 to 20 hours a week while going to college.)

The maximum credit load is normally 19 credits a quarter. Heavier loads require Scholastic Committee permission.

**CLA Credit for Courses in Other University of Minnesota Colleges**—All courses listed in Section II of this *Bulletin* are open to CLA students for credit as indicated. If you wish to take courses not so listed, you should inquire at your College office as to whether they are acceptable for CLA credit.

**Repeating a Course**—You may repeat a course you have failed, without special permission; both the old and the new grade will stand on your record. You don't have to repeat a failed course, however, unless you need it to meet a prerequisite or other requirement.

Repetition of a course for which you have gained credit is not usually permitted; Scholastic Committee approval is required.

**Repeating High School Work**—Normally students register in the college mathematics or foreign language courses for which high school units make them eligible. If you think you are not prepared to continue at such a level in a foreign language, consult your adviser about assignment to a course that repeats high school work. If your adviser approves, Scholastic Committee approval is not necessary (you will receive credit for such work, but only on the SN grading basis).

Trigonometry may be repeated in college without approval.

**Auditing Courses (no credit)**—Auditing (sometimes called "visiting") a

course involves enrollment as an auditor and attendance at a course, but does not permit active participation in its classroom or other activities. No credit may be earned, and no grade assigned. Other conditions:

- You need Scholastic Committee permission for enrollment, which will not be permitted until the controlled-registration period has ended.
- You may not later take the course for credit.
- You pay the regular fee for the course, but it counts only partially in your credit load.
- The course will appear on your grade record with the symbol V.

**Other No-credit Courses**—Arrangements may be made in some circumstances to take full part in a course's work and receive a grade in it, under a no-credit registration (the grade does not count). Scholastic Committee permission is necessary. The plan is sometimes employed by students who wish to review work previously taken.

**Courses in Continuing Education and Extension**—Registration in evening or Continuing Education and Extension (formerly General Extension Division) television classes while registered in CLA requires Scholastic Committee approval. The decision usually relates to total study and work load. See page 18.

**Credits in Graduate School**—If you need no more than 9 credits to achieve the 180 required for a bachelor's degree, you may petition to take a limited amount of work for graduate credit. Previous approval must be obtained from the Graduate School. Such work will not count toward the bachelor's degree.

With Scholastic Committee and Graduate School approval, students needing no more than 6 credits for a bachelor's degree may be registered in Graduate School as well as in CLA.

**Credit for Courses Prerequisite to Courses Accredited**—If, by mistake or by special permission, you take a course without fulfilling a prerequisite, you may not later take the prerequisite for credit unless you obtain Scholastic Committee approval.

## CHANGES OF REGISTRATION—"CANCEL-ADD"

Your registration, as described on page . . ., is an agreement that you will complete the work for which you have signed up. But you may change the agreement by going through the change-of-registration procedure, commonly called "cancel-adding."

You should keep in mind that merely ceasing to attend a class or to do assigned work does not release you from your agreement. Informal approval of either cancelling or adding by an instructor or your adviser is not sufficient. Your registration change must be officially recorded. Failure to adhere to the guidelines is likely to cost you time or credit; and sometimes it denies other students places in the classes you are dropping.

So it is important to observe the established procedures. The steps in either cancelling or adding a course are these:

1. Get a cancel-add form from your College office.
2. If you are in Lower Division, get your adviser's approval (except for a B.E.S. program).
3. Get instructor and/or Scholastic Committee approval when necessary (see below).
4. Check with Class Reservations office, 12 Johnston Hall, if the change occurs during the first two weeks of a quarter (unless the course involved is not a reserved class).
5. Turn in the cancel-add form at Window 10 or 14 Morrill Hall.
6. If the change moves you above or below 12 credits, ask for your altered fee statement at the same windows.

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**When You May Cancel-Add**—Cancel-adds will *not* be accepted until the registration-by-alphabet period has ended (this to assure a first chance for every student). Exceptions will be granted only to meet serious hour-conflict problems, or to rectify errors made by College or University staff.

**Late Additions and Cancellations**—Registration changes after a quarter opens (especially additions) are discouraged. But you are permitted to add classes during the first week of a quarter, or cancel through the second week, simply by filing the cancel-add form. Consultation with instructor and adviser is always advisable.

After the first week, you may add courses only with written permission of instructor and the Scholastic Committee. You may cancel after the second week of a quarter once in an academic year—never more often except under extraordinary circumstances and with Scholastic Committee approval. You should note that because it is difficult to add courses after the first week, a second-week or later cancellation may leave you with an unbalanced schedule. Cancellation after the sixth week of the quarter is permitted only under the most unusual circumstances.

**Cancelling Out of College**—To leave the University during a quarter, you must cancel all current registration (mere absence from classes does not cancel your registration). Your record will show Ws or Is under the conditions stated on page 22.

When you “cancel out of school,” or plan not to return in a succeeding quarter, you check your financial status at window 10 or 14 Morrill Hall, cancel any existing registrations, and state your intent at your CLA office. It is often helpful to discuss with a CLA counselor or your adviser your plans for return or transfer, the validity of leaving school, financial needs, and prospective employment.

### Adult Special Registration

1. An adult special student may register for up to 8 credits or 2 courses in 1xxx, 3xxx, or 5xxx courses for which he has prerequisites. (If courses selected are primarily in another college, registration should be made through that college. 8xxx courses are offered only through Graduate School.)
2. Registration for more than one 5xxx-level course in a single department requires the department's approval.
3. Credit obtained by work in other institutions will not be recorded while you remain in adult special status.
4. You may audit courses according to the procedure described on page 18.
5. Each quarter's registration must be approved in 225 Johnston Hall.
6. Registration dates are those designated for undergraduates.
7. You must maintain a C average. Probation or exclusion may occur if you do not do so, or if you develop an excess of incompletes or withdrawals.
8. Only graduate courses taken *during an adult special's first quarter* may be submitted, by petition, for Graduate School acceptance.
9. Exceptions to CLA regulations must be approved by a Scholastic Committee representative in 225 Johnston Hall.

Applications for AS registration are to be made through the Office of Admissions and Records, but must be approved in 225 Johnston Hall.

## UPPER DIVISION PROCEDURES

Transfer to Upper Division in B.A., B.S., or B.F.A. programs is an important advance in educational progress—one you should make as soon as you become eligible. Your adviser in Upper Division work is usually a teacher in your major department. Upper Division status is a prerequisite for many of the courses you want to take.

**Who May Apply**—Any CLA bachelor's degree candidate who has earned 84 credits (or will do so in the current quarter) with an average of C or better is eligible (if his record is slightly below C, he may apply for probationary admission). Group distribution requirements may be completed after Upper Division admission.

**When and Where to Apply**—Application procedures must be started at an Upper Division or Honors office in the first four weeks of the quarter in which you will complete 84 credits. You apply at the Honors office if you wish to plan an honors program, at the Social Science or Humanities-Fine Arts office if your major is in either of those areas, or at the 223 Johnston Hall office if your major is in natural sciences, psychology, mathematics, journalism, or an interdepartmental pattern.

**Eligibility for B.F.A. Professional Majors**—Three major programs in the College require demonstrations of professional proficiency before acceptance: applied music, studio arts, and theatre. Information about these requirements is to be obtained from the department offices.

**Application Procedures** (for students already enrolled in CLA)—When you apply for UD admission you will be asked to fill out an application and personal information form, and to provide two copies of your transcript, which must record all college-level work, at Minnesota or elsewhere, for which you have credit or are registered. If your admission is approved, you and your major adviser will prepare a Major Adviser form (obtained at your department office) that will show the major program you are to follow. This form, which you file in your Upper Division office before your admission is complete, constitutes an informal agreement between you and the College upon whose fulfillment your degree will be awarded. It may be amended, however, upon your filing the official amendment form and obtaining the approval of your adviser.

**Status and Senior Year Balance Sheets**—The Upper Division office provides you two records of your academic status and progress: One at the time of your UD admission, the other (Senior Balance Sheet) when you have earned about 135 credits.

**Continuing Education and Extension Transfer Credits**—If you have earned Extension credits in evening classes or independent study (correspondence) work before you enter CLA, you must gain CLA admission before the credits may be counted toward a degree program. A few students take all their degree work in Extension courses (this is possible in only a few CLA major fields); but they must be admitted to CLA in the regular manner before applying for degrees. Their degree requirements are those in effect at the time they are approved for CLA admission.

Any such student considering applying for CLA admission should consult a CEE counselor. Further information may be obtained by telephone (373-3905) or from the *Evening and Special Classes Bulletin*.

## Credits and Grades

**Credit Value**—A credit represents about 3 hours of work a week—about 30 hours in a 10-week quarter. Thus a 4-credit course expects 120 hours of acceptable work. The time may be spent in various combinations of class, laboratory, and other study ("homework").

**Grades**—Two grading systems instituted in the Arts College (and throughout the University) in Fall 1972 record academic accomplishment: ABCDN and SN.

## General Information

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The grade F will no longer be used. The new systems—similar to those replacing traditional grading in many American colleges and universities—indicate by N that a student has failed to complete a course and that he gets no credit for it.

Two additional letter symbols are used on the University's "operational" (internal) record, I for incomplete and W for withdrawal. The operational record is the one used by students and their colleges and advisers: it is destroyed upon a student's graduation. The official University transcript, with the Recorder's authorized seal, is the one for release, at the student's request, outside the University. It records only credits earned and the grades A, B, C, D, and S.

A student indicates on his registration blank which of the two types of evaluation he wishes for each course. He may not change from one to the other after the second week of classes. Certain other restrictions on SN grades are described below.

**The ABCDN System**—The grades A, B, C, and D, record course accomplishment. The grade A describes achievement that is outstanding relative to course requirements; B, work significantly higher than basic requirements; C, achievement meeting basic requirements in every respect. D indicates achievement worthy of credit even though it does not meet every basic requirement. N means that no credit is awarded.

**The SN System**—The grade S signifies achievement that is satisfactory to the instructor in the course or program to which it applies. There is no official relationship between S work and ABCD work. Many instructors establish different expectations for students registered under the different systems. N means no credit.

**Other Grade Symbols**—The symbol I (incomplete) is assigned, in accordance with provisions made clear at the beginning of the quarter, when the instructor has reasonable expectation that the student can complete the work of a course during his next quarter in residence. Should the work not be thus completed, the I becomes N. Instructors may schedule specific dates for make-up examinations during the quarter.

The symbol W means that a student has formally withdrawn from a course, in accordance with established procedures (see pages 19-20).

An X may be recorded in a 2- or 3-quarter course whose grade cannot be assigned until the sequence is completed. X is changed to a permanent grade upon completion of the sequence.

V indicates registration as a noncredit, nongrade-earning auditor or visitor. Under V registration, participation in a course's activities is not authorized.

**Explanation of Grading Procedures**—Instructors have the responsibility to make fully explicit, early in a course, the performance necessary to achieve at each grade level. Students should ask for such explanation if it has not been clearly made.

**Relationships Between "Old" and "New" Grade Systems**—Since the new systems take effect in Fall 1972, a number of details of their use and application are still to be defined. Students are urged to consult appropriate department and College offices, the *Minnesota Daily* and its *Official Daily Bulletin*, and the quarterly *Class Schedule* for information on these topics:

**Grades Earned Before Fall 1972**—These will not be affected by the new systems. Their relationships to future grades and grade records are to be announced. Full transition from old to new systems will not be complete until 1974-75; official transcripts will show both old and new systems, when appropriate.

**Restrictions on SN Registration**—A student must present at least half of his Minnesota credits for a degree (never fewer than 45) with ABCD grades (before

Fall 1972 the requirement was at least 75 percent). Many departments accept no SN enrollments in major programs.

**Acceptance of SN Grades by Other Colleges**—Academic units other than CLA do not always accept P-N or SN credits. The Minnesota Graduate School asks written evaluations or letter grades for such credits submitted for courses that bear on a student's field of specialization, as well as test scores in Graduate Record Examination or appropriate advanced tests, in terms of the proposed graduate major. Most major graduate schools and many professional schools follow similar policies. You should consult appropriate college bulletins or your adviser.

**Grade Point Average (GPA)**—GPA, the traditional symbol to define quality of course work, is under reconsideration in the University. CLA and other University units are considering alternative devices to summarize academic performance. Students should seek—from advisers, College offices, or explanatory materials that may become available—information about application of the new systems to their past work as well as to that completed in Fall 1972 and afterward.

*You will find in this Bulletin frequent references to GPA or grade averages. These references derive from "old" regulations in effect before the new grading systems were approved. Since the changes were made too late for thorough reconsideration and revision, the "old" rules may be temporarily in use or in process of revision.*

**"Satisfactory Progress"**—a CLA student is expected to make "satisfactory progress" in his work; this usually means C or S work in most courses and completion of courses undertaken, at a rate of at least 12 credits a quarter (you need 15 a quarter to earn a degree in 12 quarters—4 years). Unsatisfactory progress is reviewed regularly by the Scholastic Committee (see Scholastic Probation, below). If you are dissatisfied with or worried about your work, you should consult instructors or an adviser promptly.

## Probation, Exclusion, Readmission

**Scholastic Probation**—This is the signal to a student that his academic record is unsatisfactory. You are "put on probation" when your average falls below C in all work, in Upper Division courses, or in UD courses in your major. A student on probation who does not improve his record enough to assure "satisfactory progress" toward a degree may be dropped from the College. If a heavy load of outside work, of campus activity, or of other distraction interferes with academic achievement, a student should make immediate adjustments and seek whatever assistance may be indicated.

Admission to either Lower or Upper Division, when granted to a student whose average is below C, is probationary. Though P-N and SN courses do not count in grade averages, performance in such courses is taken into account.

A student is removed from probation when his academic work has improved enough to indicate continued success.

**Exclusion from CLA**—Accumulation of an excess of substandard work or of Ns usually means that a student is jeopardizing his chance of graduating from CLA, or of transferring to another institution. Continuance in the College is therefore not likely to serve his interests, and he may be excluded from further registration. If he has three or more Ns on his record in three successive quarters, he will ordinarily be discontinued until he has demonstrated that the pattern will not continue.

The Scholastic Committee decides, on the basis of all the evidence in each

## General Information

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individual case, whether to exclude a student. Appeals may be brought by those who think further information presented to the Committee may modify the decision. Appeals are usually granted only when the Committee becomes convinced that drastic changes in the student's academic performance is probable. Representatives of the Committee are always available for consultation on alternatives to college, transfer to other institutions, and the prospects for eventual readmission to CLA.

**Readmission to the College**—Students dropped from the College may return only upon approval of the Scholastic Committee. Strong assurance that the factors that caused exclusion have been corrected must be advanced to obtain approval, together with convincing promise that improved work will follow. Re-accepted students are on strict probation, and they are subject to immediate exclusion if their work becomes unsatisfactory.

Petitions for readmission are normally considered only after an interval of 1 year.

College courses completed while a student is excluded from CLA, either in Extension or another college, must receive Scholastic Committee approval to gain credit in CLA.

## Class Attendance, Examinations, Other Regulations

**Class Attendance**—As a CLA student you are responsible for class attendance, and for ascertaining the particular requirements for attendance in each class or department. You should also learn each instructor's policies concerning make-up work for absences and illness. Either an instructor or a student may consult with the Scholastic Committee concerning the validity of such policies or decisions.

In many courses you must be present at the quarter's opening sessions to confirm your place in the classes.

**Final Examinations**—Students are required to take final examinations at the times shown each quarter in the *Class Schedule*. If a student has examination conflicts or if he has three exams within a 16-hour period, he may request adjustment in his College office at least 2 weeks before the examination period begins.

If a student misses a final, an I or N (no credit) is recorded, depending upon his standing at the time. He must obtain the instructor's permission to make up the work.

**Exemption from College Regulations**—You may discuss exemption from College regulations—concerning late registration, course withdrawal, examination scheduling, or other matters—with a staff member in your College office. Exemptions are granted from time to time to aid students to achieve educational goals in nonregular ways. Sometimes a petition to the Scholastic Committee is necessary; often your needs may be met through consultation with a Committee representative. The receptionist in the office can usually direct you to appropriate procedures.

**Appeals and Suggestions**—Your adviser or a Scholastic Committee representative is a good source of interpretation of College procedures or regulations, and he may be able to suggest suitable changes. The Student Ombudsman Service (102 Johnston Hall, 373-9788) is another channel.

Usually, if after the first call, you are dissatisfied with College or department procedures, you should go to the person or office that is the problem's source. Departments have grievance committees, as does the College—both with student and faculty membership. Advice from your College office may be helpful.

## SPECIAL LEARNING OPPORTUNITIES

To aid students in independent and out-of-class study benefits, the College has established the Office for Special Learning Opportunities (OSLO, 105 Johnston Hall, 373-7550). There you may explore with special advisers the many ways to enrich your learning beyond the usual curriculum, working largely on your own and according to your particular needs and desires. (Some departments have "special learning opportunities" advisers.)

### INDEPENDENT AND DIRECTED STUDY; SPECIAL REGISTRATIONS

**Independent Study**—Opportunities provided by the College make possible a variety of types of individual study, guided or on-your-own, in regular courses or in subjects not covered in the current curriculum.

*Y Registration* permits you to include in your program a course you plan to study in your own way, without class attendance. You must meet such course conditions as examinations and other work on which you and the instructor agree; and the usual fees, deadlines, grade systems, and so on apply. Instructor and department permission are required.

*X Registration* is a way of earning 1 to 3 extra credits in a course you have taken, or are taking, by exploring more deeply a topic drawn from, or related to, the course's content. You need the instructor's permission (with whom you plan your extra work), then the department's.

*Directed Studies* registration (3970 or 5970) lets you undertake and complete academic work of your own design. You need the advance approval and guidance of an instructor and of the department to whose field the course is relevant. You work largely on your own initiative and at your own speed. Credit assignments vary, but normally you count on 30 hours of work a quarter for each credit. Regular evaluation and grading procedures apply.

*Directed Research* (usually 5990) permits guided research under much the conditions and procedures that govern directed study.

*Directed Instruction* (usually 3980) provides opportunity to participate in teaching a course with whose subject matter a student is well acquainted. Instructor and department permission are required. Credits range from 1 to 5 a quarter; a maximum of 8 are applicable toward a degree.

*Interdepartmental Studies*, recorded as ID3970, permits you to earn from 1 to 15 credits in a subject area that crosses department subject-matter lines. Normally you work with more than one instructor. Information about ID courses is available at OSLO.

**Student Initiation of Courses**—Students are invited to suggest new courses for experimental inclusion in the College curriculum. The Student Intermediary Board, which has been designated the channel for transmission of such proposals to the College, can aid and advise in their preparation. OSLO is the usual starting point.

### EXAMINATION PROGRAMS

**Special Examinations for Credit**—A student who thinks his knowledge of a subject equal to that required to complete a particular course may apply to the Scholastic Committee for a credit examination. If review of the application and the applicant's background lead to approval, he makes arrangements with the appropriate instructor to take the exam (the fee is \$20 except in the first quarter of enrollment). Usually no grade is assigned; credits count as non-residence credits toward a degree. A student must be currently enrolled to be eligible; in some cases he is permitted to lower his class load below 12 credits to prepare for a special exam.

## General Information

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**Special Examination for Proficiency**—To meet a prerequisite or satisfy a requirement you may ask Scholastic Committee permission for an examination to demonstrate proficiency (no credit is assigned). There is no fee for this exam.

**College-level Examination Program (CLEP)**—By passing one or more of the nationally-standardized examinations prepared by the College Entrance Examination Board; a student may—either before starting college work or during it—earn up to 32 credits that count (as non-residence credits without grade) toward his degree. Such credits do not count in calculating his percentage of SN credits. Full information about CLEP tests may be obtained from OSLO.

## STUDY IN AREAS OF SPECIAL INTEREST

Students with interests in areas of study for which no formal programs or departments have been established may often, by selection of courses from a number of disciplines, design non-major sequences that serve their needs. The number of such areas is large; two that have been of special recent interest are “Jewish studies” and “women in society.”

In the area of Jewish studies, for example, a student may elect courses in current religious and philosophic thought in many parts of the world (including the Americas); in ancient and modern religions; in the works of Jewish writers and thinkers; in the Hebrew language; in American immigration; and in related topics. Such courses occur in the Departments of American Studies, Classics, History, Humanities, Middle Eastern Languages, Philosophy, and others.

Courses that relate to the roles and achievements of women in society, historically and in contemporary life, are offered in the College—courses that examine, among other topics, the changing relationships between women and men through the course of American history, and “the life styles of educated women” in America. Information about existing and proposed courses may be obtained from the Minnesota Women’s Center, 301 Walter Library (373-3850).

## Honors Opportunities

Honors programs that provide exceptional educational experiences to students of superior achievement are provided at all levels of the College. Resources not alone of the University but also of the metropolitan community contribute to these programs. They center in the Honors office, 115 Johnston Hall (373-7930).

Honors opportunities are of several kinds; principal among them are honors courses and seminars, program and other advising by honors advisers, honors registrations, and graduation with honors.

**Honors Courses and Seminars**—Most of the College’s departments schedule honors courses, some as special sections of regular courses (“HONORS COURSE” included in the title) and some as separate courses (H following the course number). Most such courses are open to any student with an above average record or special interest.

A series of freshman-and-sophomore “colloquia” or weekly discussions on selected topics, under the leadership of selected members of the faculty, community, or student body, is offered each fall, winter, and spring quarter. College Honors Seminars—small groups led by senior faculty in exploration of topics ranging from the art of antiquity through Hegelian philosophy to today’s consumer revolution—are open to junior and senior honors students in CLA and University College.

**Honors Program**—Students may apply for entrance into the Honors program at any time. Admission of new freshmen is based upon high school scores, other relevant achievements, and the applications submitted; other students must present a 3.25\* academic (grade point) average overall, in major courses, and in all Upper Division courses. Continuation in the program depends on satisfactory academic performance and satisfaction of program requirements.

An "honors curriculum" is provided for each major concentration. These vary considerably; they may include series of honors courses, seminars, individual research projects, and tutorial work. A prepared statement about each department's honors program is available at the department or the Honors office.

**Graduation With Honors**—*Cum laude*, *magna cum laude*, or *summa cum laude* graduation involves fulfillment of both College and major department honors requirements, as well as participation in a minimum of honors opportunities. Honors advisers in departments aid students to select and use courses and to complete honors requirements.

## College Services

### FACULTY ADVISERS

If you use it well, the CLA faculty adviser system can help you to meet wisely many of the problems incident to your College work. Advisers assist in course selection, registration, vocational and personal decisions, participation in campus activities, meeting financial problems. CLA staff counselors as well as department and major advisers (and in appropriate cases other University personnel) are always available to you; you should seek them out. You establish contact with "your" faculty adviser thus:

If you enter CLA as a freshman or sophomore, you are directed to a staff adviser to talk about objectives and plans, and to make initial course selections. If you are a freshman without previous college work, you will probably continue to take such problems to this adviser through your first year. You can reach advisers through the Lower Division offices: 30 or 126 Johnston Hall or 206 TNM (room numbers change from time to time).

If you plan to enter medical technology, occupational or physical therapy, or mortuary science, you should ask in 216 Johnston Hall for referral to a special adviser.

If you have had more than 18 credits of previous college work, you will be assigned to a faculty adviser associated with your major, as soon as you choose it.

Before your second year begins, you will have opportunity to indicate your probable major as basis for assignment to a departmental adviser.

Upon admission to Upper Division (in the quarter in which you complete at least 84 credits), you will select or be assigned to a major adviser, who will help you in junior and senior years. This assignment normally occurs in the office of your major department.

Before seeking program advice, you should study this *Bulletin* and prepare a tentative program; this you take to the adviser with records that show your credit standing. The program you and the adviser work out, though it may undergo some change, will likely establish the patterns for your Upper Division work.

**Changing Your Adviser**—Should you wish to change advisers, apply at 216 Johnston Hall for Lower Division or at your Upper Division office.

\* The GPA standard is being reconsidered, under the new grading system. Superior work is required, however summarized.

## **SCHOLASTIC COMMITTEE**

Almost every CLA student, at one time or another, needs to consult the Committee on Student Scholastic Standing (the Scholastic Committee). There are representatives of the Committee in every CLA divisional office.

The Committee is a group of administrators, faculty, and students whose charge is interpreting and enforcing College and University regulations. It is empowered to make exceptions in cases in which regulations work to the educational disadvantage of a student (though it always seeks to maintain the spirit of the regulations).

You are urged to consult a Committee representative on almost any kind of problem, but especially when you are in doubt about your obligations or when a rule seems to conflict with your educational objectives. In many cases the representative can help you to work out adjustments.

## **SCHOLASTIC CONDUCT COMMITTEE**

The Committee on Student Scholastic Conduct, comprising an equal number of students and faculty members, investigates allegations of academic dishonesty referred to it by the CLA faculty and decides on appropriate action. The Committee has authority to place students on disciplinary probation, fail them in courses, suspend them from the College, or take such other action as it thinks justified.

A CLA faculty member may take action in a case that involves a CLA student; his action, however, may not exceed modification of a course grade. He must report any action to the Committee, and the student will be informed of his right to ask a Committee hearing.

The Committee secretary offices in 220 Johnston Hall.

Disciplinary or conduct cases that are nonacademic or that cross college lines are referred to the All-University Committee on Student Behavior.

## **MARTIN LUTHER KING PROGRAM**

A wide range of special services to students in need of significant academic or financial assistance is provided by the CLA office of the Martin Luther King Program (19 Johnston Hall, 373-9739). Financial aids (grants, loans, and work-study opportunities administered by the Office of Student Financial Aid) may be sought through the program; tutoring, academic advice, and personal counseling are provided. Admission to the program is not limited by students' racial or ethnic background, but centers on those with severe financial needs or serious limitations in educational opportunities. The aim of the program is to give as much support as possible to MLK students as they move toward degrees.

## **SCHOLARSHIPS, AWARDS, FINANCIAL AIDS**

A number of CLA departments offer annual scholarships and awards; among them are Art, Classics, English, German, History, Journalism and Mass Communication, Library School, Music, Political Science, Scandinavian, Sociology, Speech-Communication, and Theatre Arts. Department offices provide information about these programs. All-University aids, including loans, are made available through the Office of Student Financial Aid, 107 Armory. The Minnesota Student Association maintains a "small-grants program" to assist in independent-study projects (373-2414).

## COLLEGE PLACEMENT SERVICES

Assistance to graduates in finding appropriate employment is provided both by students' major departments and by the College Placement office, 17 Johnston Hall (373-2818). Seniors are asked to check with their departments and register with the office early in their senior year.

The Placement office arranges interviews with scores of recruiters from business, industry, and government agencies who visit the campus annually, usually in winter quarter. It also counsels seniors on finding employment opportunities that suit their wishes and their capacities.

## All-University Services

The University provides a large number of specialized services and opportunities for all students (see *General Information Bulletin* for details). Among the areas with which they deal, and the appropriate sources of information, are:

Emotional Problems—Mental Health Clinic, Student Health Service, or Student Counseling Bureau

Employment (part-time)—Student Employment Service, 30 Wulling Hall

Evening and Correspondence Courses—Continuing Education and Extension, Nicholson Hall

Financial Helps—Student Financial Aid Office, 107 Armory

Foreign Students—Foreign Student Adviser, 717 East River Road

Fraternities—Student Activities Bureau, 110 TNM

Handicapped Students, Aids for—Division of Vocational Rehabilitation, Student Health Service. See also *General Information Bulletin*.

Health Problems—Student Health Service

Housing—Housing offices, 209 Eddy Hall and 2001 Riverside Avenue, West Bank

Housing (married students)—Commonwealth Terrace Cooperative, 1295 Gibbs Avenue, St. Paul

Legal Problems—Legal Aid Clinic, 720 Washington Avenue S.E., Minneapolis 55414

Parking—Parking Services, Police Department Building

Personal Problems—Student Counseling Bureau, 101 Eddy Hall, or Mental Health Clinic, Health Service

Religious Activities—Religious Activities Coordinator, 16 Morrill Hall

Selective Service Information—National Services Adviser, 105 Morrill Hall

Sororities—Student Activities Bureau, 110 TNM

Speech and Hearing Difficulties — Speech and Hearing Clinic, 110 Shevlin Hall

Student Activities—Student Activities Bureau, 110 TNM; Coffman Union Program office, 229 Coffman Union

Study Skills Improvement—Reading-Study Skills Clinic, 101 Eddy Hall

Veterans' Benefits—National Services Adviser, 105 Morrill Hall

Vocational Counseling—Student Counseling Bureau, 101 Eddy Hall

Work-Study Jobs—Work-Study Program, 107 Armory

## Section II

# COURSE OFFERINGS AND MAJOR SEQUENCES

## COURSE NUMBERING

The course-numbering system in use in the College of Liberal Arts was introduced in Fall 1970. The Numbering System Key below shows its operation; students will find that familiarity with it will facilitate course selection and registration. It is simple, logical, and easy to follow.

Courses completed under "old" numbers—those used before Fall 1970—may not usually be repeated for credit. Old numbers may be found in the *Course Number Conversions* brochure (August 1970) or the 1970-72 *CLA Bulletin*; both of these are available in College offices and many department offices. Students who took work in the University before Fall 1970 may find it necessary to use these references to avoid mis-registrations.

### Numbering System Key

|      |       |  |
|------|-------|--|
| 0xxx | ..... | No degree credit.  |
| 1xxx | ..... | Lower Division course, primarily for freshmen and sophomores.  |
| 3xxx | ..... | Upper Division course, primarily for juniors and seniors; also open to sophomores with C averages overall and in prerequisites.  |
| 5xxx | ..... | Open to juniors, seniors, and graduates; and to 3rd-qr sophomores by permission of Scholastic Committee and sometimes of departments. Petitions for permission should be submitted to CLA offices. |
| 8xxx | ..... | Graduate courses, rarely open to undergraduates. Not listed in this <i>Bulletin</i> ; see <i>Graduate School Bulletin</i> .  |

### Course Numbers with Special Meanings

|              |       |  |
|--------------|-------|--|
| 3970 or 5970 | ..... | Directed Studies or Directed Readings courses. |
| 3980 or 5980 | ..... | Directed Instruction courses.                  |
| 3990 or 5990 | ..... | Directed Research courses.                     |

The final digit 0—3970, 5990—means that the course may be repeated for credit, *if* it is a CLA course. Courses offered for CLA credit by other divisions of the University—e.g., Institute of Technology—do not always use the digit 0 in this way, however.

### Abbreviations and Symbols

|                     |       |   |
|---------------------|-------|---|
| Departmental prefix | ...   | 3- or 4-letter designator for department (for example, Engl for English).                               |
| Course number       | ..... | 4 digits identifying specific course. Number remains the same whenever course is offered.               |
| f,w,s               | ..... | <i>Bulletin</i> indications of quarters in which courses are offered: f means fall, w winter, s spring. |
| Number of credits   | ..... | Shown following course title to indicate cr per qtr for a course or a series.                           |
| 1001,2,3            | ..... | Series with commas may be entered any quarter.  |
| 1001/2/3            | ..... | Series with slashes must be taken in order shown.   |

- † .....Credit awarded only when all courses preceding this symbol are completed.
- § .....No credit for equivalent course preceded by this symbol.
- ¶ .....Concurrent registration permitted in courses preceded by this symbol.
- # .....Consent of instructor required for registration.
- △ .....Consent of department required for registration.
- , .....“And” in series of prerequisites.
- H .....Honors section of regular course.

**Honors Programs**—Most CLA departments offer honors courses or degrees with honors. Specific departmental requirements are described in materials available at the Honors office (115 Johnston) or department offices.

**Assignment of Courses to Distribution Groups A, B, C, D**—This *Bulletin* gives you two guides to use of courses to meet distribution or breadth requirements: The table of courses with no or few prerequisites that are widely so used (pages 12 to 14) and the designation at the end of many course descriptions—(GrA), (GrB), (GrC), (GrD).

## ACCOUNTING

See Business Administration

## AEROSPACE STUDIES

See Reserve Officers' Training Corps

## AFRO-AMERICAN STUDIES (Afro)

**Staff:** George D. King, *chairman*, 214a Social Sciences; Lillian D. Anthony, Reginald Buckner, Victoria B. Coifman, Earl Craig, Geneva H. Southall, Anita B. Tucker, John P. Ward, Milton Williams

The Afro-American Studies major is designed to provide a comprehensive understanding of the Black experience in the broadest geographical and chronological settings. Its interdisciplinary course work bears upon the Black experience in the United States, Africa, and Latin America.

In his senior year each major conducts research for and writes a senior essay under the guidance of an adviser. Field or documentary research can be undertaken in urban or rural communities in the United States, Latin America, or Africa.

**Major Sequence for B.A.:** 1. *Required background courses*—1036, 1301, 1441,2. 2. *Major requirements*—A minimum of 31 cr, as follows: A. 3 courses (minimum of 15 cr) selected from Afro 3001,2,3, 3091,2†, 3098, 5001,2, 5401; Hist 3864,5, 5864/5. B. 3 courses (minimum of 12 cr) from 3055, 3105, 3301, 3455, 3551; Hist 5399, 5941,2,3, 5944,5,6. C. 1 course from the following: 3061/2†, 3072, 3075/6; Hist 5401,2,3, 5420. Research project: Afro 5900—senior essay completed under appropriate faculty supervision.

### LOWER DIVISION COURSES

**1015f,w,s. THE BLACK PROTEST FROM COLONIAL TIMES TO THE PRESENT.** (5 cr)  
Ward

A critical analysis of chronological events and history of Black movements. (GrC)

**1025f,w,s. PERSONALITY OF BLACK PEOPLES.** (4 cr)

Development of the Black psyche and of the Black person and his culture. (GrC)

## Course Offerings and Major Sequences

- 1036f,w,s. BLACK PARTICIPATION IN AMERICAN POLITICS.** (4 cr) Craig  
Participation of the American Black man in administrative, judicial, electoral, and confrontation politics in the United States. (GrC)
- 1045f,w,s. AN INTRODUCTION TO THE HISTORY AND CULTURE OF AFRO-AMERICA.**  
(5 cr) Williams  
The human condition of Blacks in the United States. Information and materials will be drawn from historical and cultural areas of human experience. (GrC)
- 1101f/2w/3s. LANGUAGE ARTS FROM A BLACK PERSPECTIVE.** (4/4/4 cr) Shreve, Stanley  
1101: Personal consciousness in Black literature: 1102: Social consciousness in Black literature. 1103: Contemporary Black social and political movements and thought. (GrA)
- 1221f/2w/3s. BEGINNING SWAHILI.** (5/5/5 cr)  
1221: Beginning grammar and vocabulary; conversation drill. 1222: Grammar and vocabulary continued. Introduction to reading and writing. 1223: Reading and discussion of simple texts. Conversation and writing.
- 1301f,w,s. THE MUSIC OF BLACKNESS** (4 cr) Buckner  
Lectures, discussion, demonstration of Black music in America. (GrD)
- 1441f/2w. AFRO-AMERICAN HISTORY AND CULTURE.** (4,4 cr) King  
1441: To 1865. 1442: Since 1865. (GrC)

### UPPER DIVISION COURSES

- 3001f,2w,3s. INTRODUCTION TO WEST AFRICAN HISTORY.** (4,4,4 cr) Coifman  
Introduction to the historical experience of several West African peoples. 3001: Early times to ca. 1600. 3002: Ca. 1600-1800. 3003: 1800 to present. (GrC)
- 3055f,w,s. FOLKLORE: THE AFRICAN IN AMERICA.** (4 cr; prereq #) Williams  
Manifestations of Afro-American folkways; origin and continuity of patterns of behavior peculiar to the Black life style. Group character, including oral traditions, music, rituals, tales, stories, riddles. (GrD)
- 3061f,s/2w†. BLACK FAMILY.** (4/4† cr; prereq 1045 or 1442 or Hist 3865 or #) Tucker  
The Black family, both as a unit within Black society and within society as a whole. (GrC)
- 3072f,w,s. BLACK RE-EDUCATION AND HUMAN RELATIONS.** (4 cr)  
Afro-American history and human relations. The course offers an opportunity for inductive learning. (GrC)
- 3075f,s/6w. BLACK PEOPLE AND THE WELFARE SYSTEM.** (4/4 cr; prereq #) Tucker  
The welfare system and its effect on Black people who participate in the programs. 3075: Investigations and interviews. 3076: Evaluation of collected data. (GrC)
- 3081f/2w†. BLACK PHILOSOPHY.** (5/5† cr) McGary  
The sum of the history, culture and social thought of Black people in the United States, as base for development of a system of logical reasoning. The clarity and continuity that link past, present, and future. The variables and the constant. (GrC)
- 3091f/2w†. DEVELOPMENT OF A BLACK POLITICAL STRATEGY.** (5/5† cr) Craig  
Political strategies developed by Black philosophers and activists, American and non-American. (GrC)
- 3098s. COMMUNITY POWER STRUCTURE AND AMERICAN BLACKS.** (4 cr) Craig  
A research seminar. The sources of power and influence in the general community and the relationships of power and its possessors to the Black community. (GrC)
- 3105f,w,s. BLACK MUSIC PRIOR TO WORLD WAR I.** (5 cr; §Mus 3708) Southall  
Musical contributions and achievements of Black Americans in the United States during the 19th and early 20th centuries. (GrD)
- 3225f/6w. INTERMEDIATE SWAHILI.** (4/4 cr; prereq 1223 or § for 3225, 3225 for 3226)  
3225: Swahili short stories. Vocabulary and grammar. 3226: Expansion of vocabulary and comprehension of written Swahili. (GrA)
- 3253s. INTRODUCTION TO SWAHILI LITERATURE.** (4 cr; prereq 3226)
- 3301f,w,s. AFRICAN MUSIC IN THE AMERICAN HERITAGE.** (4 cr; §Mus 3709) Southall  
Links between African music and music of Black America, West Indies, South and Central America. The Afro-Cuban style and modern jazz. (GrD)
- 3455w. FANON: HIS LIFE AND IDEAS.** (4 cr; prereq #) Williams  
Fanon's life and his development as a thinker, writer, and revolutionary. (GrC)

- 3551f,w,s. USE OF ORAL DATA IN AFRO-AMERICAN HISTORY.** (4 cr) Coifman  
The kinds of oral data available for reconstructing Afro-American history—how to gather, analyze, and utilize them. (GrC)
- 3970f,w,s. DIRECTED STUDIES.** (1-15 cr; prereq #) Staff
- 5001f,w. LAW AND SOCIETY: A MINORITY POINT OF VIEW.** (5 cr) Ward  
Afro-American history from the point of view of American constitutional development as it relates to the American Black community. (GrC)
- 5002s. LAW AND SOCIETY: A MINORITY POINT OF VIEW — RESEARCH** (5 cr; prereq 5001) Ward  
Research seminar. A continuation of 5001. (GrC)
- 5101f,2w,3s. BLACK WOMEN.** (4,4,4 cr; prereq #)  
A cross-cultural study of novels, poetry, psychology, history, sociology, and musicology bearing on the experience of Black women in Africa, America, and the Third World during the last two centuries. (GrC)
- 5401w. THE INSTITUTIONALIZATION OF RACISM, 1877-1900.** (5 cr) King  
The social, political, and economic forces that resulted in the imposition of second-class citizenship on Black Americans. (GrC)
- 5900w,s. SENIOR SEMINAR.** (2-4 cr; prereq jr, sr, or grad) (GrC)

## AKKADIAN

See Middle Eastern Languages

## AMERICAN INDIAN STUDIES (Amln)

Staff: W. Roger Buffalohead, *acting chairman*, 1214 Social Sciences; Bill Chatfield, Marie DeCora, Timothy Dunnigan, Becky Flute, Rose Foss, George Morrison, Delores Snook

American Indian Studies courses contribute to a broad as well as a specialized knowledge of history, anthropology, law, medicine, education, social work, public health, and other professional fields by providing understanding of past and contemporary Indian life. The Department also acts as a resource base to the Indian and nonIndian community in program development.

The Department curriculum consists of core American Indian courses and courses in the General College, open to students from other colleges, especially for students who plan to major in American Indian studies. An up-to-date list of supporting courses can be obtained from the Department, as well as information about courses approved too late to be contained in this *Bulletin*.

Background courses for advanced work in American Indian studies are 1101, Anth 1002, and Hist 1301,2. Students in General College preparing to transfer to CLA and specialize in American Indian studies should consult the Department.

### LOWER DIVISION COURSES

- 1021f,w/2w,s/3s,f/4f,w/5w,s. BEGINNING OJIBWE.** (5 cr per qtr) Staff  
Acquisition of speaking skills in Ojibwe. Cultural materials defining the Ojibwe heritage.
- 1031f,w/2w,s/3s,f/4f,w/5w,s. BEGINNING DAKOTA.** (5 cr per qtr) Staff  
Acquisition of speaking skills in Dakota. Cultural materials defining the Dakota heritage.
- 1041. LINGUISTIC STRUCTURES OF NATIVE AMERICA.** (4 cr) Dunnigan  
Distribution of American Indian language families; linguistic structures of selected languages; the application of linguistic analysis to the study of American Indian culture. (GrC)
- 1101w,2s. AMERICAN INDIAN HISTORY: A SURVEY.** (4,4 cr; prereq Anth 1002 or an introductory social science course or #) Buffalohead  
Indian history with emphasis upon pluralistic beginnings, Indian-white contacts, the impact of federal Indian policy, and persistence and change in American Indian cultures. (GrC)

## Course Offerings and Major Sequences

### UPPER DIVISION COURSES

- 3061. AMERICAN INDIANS IN THE MODERN WORLD.** (4 cr; prereq 1101,2 or Anth 1002 or #)  
History of the Indian-white relations and the impact of federal Indian policy on American Indians. Persistence and adaptation of Indian cultures in modern times. (GrC)
- 3970. DIRECTED STUDIES.** (Cr ar; prereq #) Staff
- 5112. INDIANS OF THE SOUTHWEST.** (4 cr; prereq 3061 or #) Dunnigan  
Relationships between Indians and other ethnic groups in the southwestern United States and northwest Mexico from an ethno-historical perspective. (GrC)
- 5121. URBAN INDIANS IN THE UNITED STATES.** (4 cr; prereq 3061 or Anth 1002 or Anth 3211 or #) Buffalohead  
Social science and historical analysis of the rapid cityward Indian migration taking place since World War II. (GrC)
- 5131. INDUSTRIALIZATION, EMPLOYMENT, AND THE AMERICAN INDIAN.** (4 cr; prereq 3061 or #)  
Sources of unemployment on Indian reservations; efforts to promote industrialization and economic development; employment and economic problems of urban Indians. (GrC)
- 5211. THE ARTS OF THE AMERICAN INDIAN.** (4 cr; prereq 3061 or 3 cr in art history or #) Morrison  
Visual arts of North American Indians; other arts and art traditions in Central and South America. (GrD)
- 5212. AMERICAN INDIAN CRAFTS.** (4 cr; prereq 5211 or #) Morrison  
Research in the traditional arts of different tribes, paralleled by a studio workshop in which each student will pursue a project in American Indian crafts.
- 5570. EDUCATION AND THE AMERICAN INDIAN.** (Cr ar; §EdAd 8239; prereq 3061 or #)  
Undergraduate seminar: The education of Indian children and youth. Topics selected on a year-to-year basis (GrC)
- 5960. TOPICS IN AMERICAN INDIAN STUDIES.** (Cr ar; prereq 3061 or #)  
Various aspects of American Indian studies. Topics will be listed in the *Class Schedule*.
- 5980. SEMINAR: AMERICAN INDIAN STUDIES.** (Cr ar; prereqs will be stated in the *Class Schedule*)  
Undergraduate seminar concerned with American Indian history. Topics selected on a year-to-year basis.

## AMERICAN STUDIES (AmSt)

**Staff:** Mary C. Turpie, *chairman*, 225 Main Engineering; staff members drawn from the faculty of the College of Liberal Arts.

**Major Sequence for B.A.** 1. *Required background courses*—1101,2,3, or 3111,2,3. 2. *Major Requirements*—The major is offered under interdepartmental major provisions (see page 14). Upper Division courses are to include 44 cr in approved courses, 8 to 12 of them in each of four fields: American history; American literature; American art and philosophy; social sciences in the United States (courses in participating departments accepted for the degree are listed in the bulletin *Program in American Studies* and in the annually-revised list of approved courses, both obtainable in the Program office, 225 Main Engineering); 3301/2/3; 12 cr in courses dealing with foreign civilizations.

### LOWER DIVISION COURSE

- 1101,2,3.\*\* AMERICAN LIFE.** (4,4,4 cr)  
Each quarter is organized around a topic such as individualism in American life and thought, religious and philosophic attitudes in relation to American civilization, or rise of American nationalism and its place in the modern world. (GrC,D)

### UPPER DIVISION COURSES

- 3111,2,3.\*\* INTRODUCTION TO AMERICAN CIVILIZATION.** (4,4,4 cr)  
Each quarter is organized around topics that disclose a major conflict of ideals — for

example, liberty and property in the early republic, individualism and majority rule in the pre-Civil War era, or materialism and idealism in the present industrial age. (GrC,D)

\*\* A student may take any combination of 1101,2,3 and 3111,2,3 up to 12 cr. Upper Division students are urged to take the 3111,2,3 sequence if possible.

**3301/2/3. PROSEMINAR: AMERICAN STUDIES.** (4/4/4 cr; prereq sr, #)

Each quarter is organized around a problem presented by some representative theme, figure, or period. (GrC,D)

**3970. DIRECTED STUDIES.** (1-15 cr, prereq #, Δ) (GrC,D)

## ANATOMY (Anat)

College of Medical Sciences

For a complete list of courses in human anatomy, see the *Medical School Bulletin*.

### LOWER DIVISION COURSE

**1004f,s. ELEMENTARY ANATOMY.** (4 cr; prereq students registered in paramed fields, 1 qtr college biology)

### UPPER DIVISION COURSE

**3970. DIRECTED STUDIES.** (1-5 cr; prereq #)

## ANTHROPOLOGY (Anth)

**Staff:** Elden Johnson, *chairman*, 200 Ford; Luther P. Gerlach, Stephen F. Gudeman, John M. Ingham, Robert C. Kiste, Frank C. Miller, Rupert I. Murrill, Eugene Ogan, Alan W. Rew, William L. Rowe, Harvey B. Sarles, Robert F. Spencer

Anthropology is the study of human evolution and human cultures, past and present.

Anthropology's concern with man and his cultures in all times and places lends to it a singularly appropriate quality for general and liberal education. Anth 1002 is recommended for general background.

**Major Sequence for B.A.:** 1. *Required background courses*—1002, 1501, 1502. 2. *Major requirements*—In Group I: 10 cr (x1xx courses); in Group II: 5 cr in archaeology (x5xx courses), 5 cr in ethnography (x2xx courses). The Department strongly recommends that both courses deal with one area of the world; 10 cr of electives (any Upper Division courses).

Students planning to take graduate work should consult with the director of graduate studies.

### LOWER DIVISION COURSES

**1002. INTRODUCTION TO ANTHROPOLOGY.** (5 cr) Spencer

Origin of man and development of human cultures from earliest times to present. Varieties and range of human behavior as revealed through comparative study of cultures in all parts of the world. (CCTV, 4 lectures per week, 1 discussion section) (GrC)

**1002H. HONORS COURSE: INTRODUCTION TO ANTHROPOLOGY.** (5 cr; prereq GPA 3.0 or #) Staff  
See description for 1002.

**1501. PRINCIPLES OF BIO-CULTURAL EVOLUTION.** (5 cr; prereq 1002 and soph standing or #) Johnson, Murrill, Cassidy, Puleston  
Introduction to evidence and interpretative structures for human biological and cultural evolution. Emphasis on fossil record, primate behavior studies and selected archaeological cultural sequences. (Required with 1502 of prospective majors) (GrC)

**1502. PRINCIPLES OF SOCIAL AND CULTURAL ANTHROPOLOGY.** (5 cr; prereq 1002 and soph standing or #) Staff

## Course Offerings and Major Sequences

Introduction to the theory and concepts of social and cultural anthropology, in the light of classic statements of anthropological theory and classic ethnographic accounts. (Required with 1501 of prospective majors) (GrC)

### UPPER DIVISION COURSES

Anth 3211 and 3511 are open to sophomores who have grades of at least C in 1002.

- 3960. ANTHROPOLOGY PROSEMINAR.** (Cr ar; prereq #) Staff  
Course planned to focus on significant theoretical problems in anthropology. It will vary according to staff interests and student suggestions. (GrC)
- 3970. DIRECTED STUDIES.** (Cr ar; prereq #) Staff (GrC)
- 3980. DIRECTED INSTRUCTION.** (5 cr; prereq #) Spencer  
Teaching seminar for undergraduates assisting in the instruction of introductory anthropology course. Students receive credit for leading discussion sections. (GrC)
- 3991. HONORS SEMINAR.** (5 cr; prereq admission to anth honors program or #) Staff  
Problems of theory and method in the branches of anthropology. (GrC)
- 5910,20. TOPICS IN ANTHROPOLOGY.** (Cr ar; offered by visiting professors when available; whenever offered, topic and prerequisites will be listed in *Class Schedule*)  
Special courses in all branches of anthropology. (GrC)

### Group I

- 3101. HISTORY OF ANTHROPOLOGY.** (5 cr; prereq 1502 and 15 cr in Upper Division anth courses) Kiste  
Beginnings of anthropology as a discipline; associated intellectual climate and context. Developments within sub-fields of archaeology, ethnology, physical anthropology, and linguistics. (GrC)
- 3131. RELIGION AND CULTURE.** (5 cr; prereq 1002; no cr for majors) Kiste  
Introduction to comparative study of religion in its cultural context. (GrC)
- 5112. SOCIAL ANTHROPOLOGY: KINSHIP AND MARRIAGE.** (5 cr; prereq 1502 or #)  
Gudeman, Ogan, Rew  
Systems of kinship and marriage in cross-cultural perspective; relationship to economic, religious, and political institutions; significance of kinship studies for theory and methods in social anthropology. (GrC)
- 5114. STRUCTURAL ANTHROPOLOGY.** (5 cr; prereq 1502 or 5112 or #) Gudeman  
Assumptions, methods, and problems of structural anthropology; structural analysis of kinship, ritual, myth, and social organization. (GrC)
- 5115. ECONOMIC ANTHROPOLOGY.** (5 cr; prereq 1502; waived for majors in economics and business administration) Gerlach, Gudeman  
Analysis and comparison of varied systems of production and distribution; special reference to nonindustrial societies. Relationship between economic and social, political, religious, psychological, and environmental factors. (GrC)
- 5116. CULTURAL ECOLOGY.** (5 cr; prereq 1002 and 10 cr of ethnology)  
Survey of the literature on cultural ecology with emphasis on biological approach to ecosystems and population studies. Major monographs in cultural ecology. (GrC)
- 5121. ANTHROPOLOGY OF LAW.** (5 cr; prereq 1502; waived for majors in other social sciences)  
Theory and method of comparative legal systems. Law's cultural background and relation to society. Functions and evolution of law as revealed in analysis of cultures ranging from primitive to complex. (GrC)
- 5131. ANTHROPOLOGY OF RELIGION AND FOLKLORE.** (5 cr; §3131; prereq 1502 or #)  
Kiste, Spencer  
Varieties and range of religious beliefs and practices. Relation of religion to other aspects of culture. Comparative analysis of folklore, myth, and oral literature. (GrC)
- 5132. SYMBOLIC ANTHROPOLOGY.** (5 cr; prereq 1502 and 5112 or #) Staff  
The study of culture as a system of symbols. (GrC)
- 5141. CULTURE AND PERSONALITY.** (5 cr; prereq 1502 or #; waived for majors in public health, nursing, psychology, sociology, and social work) Ingham, Rowe, Sarles  
Role of culture in formation of personality. Problems of individual adjustments to demands of culture. Psychological approach to culture. (GrC)

- 5145. ANTHROPOLOGY AND EDUCATION** (5 cr; §Hed 5170; prereq 1002) Holt  
Cross-cultural perspectives in examining educational patterns; implicit and explicit cultural assumptions. Methods and approaches to cross-cultural studies in education. (GrC)
- 5146. INNOVATION IN HIGHER EDUCATION.** (5 cr; prereq 5145 or 5151 or §) Miller  
Social organization and cultural values of educational institutions. Role of decision-making in the process of innovation. Analysis of specific changes in higher education. (GrC)
- 5151. CULTURAL CHANGE AND DEVELOPMENT.** (5 cr; prereq 1502) Kiste, Miller, Ogan  
Processes of cultural change; invention, diffusion, and acculturation. Effects of colonialism, urbanization, and modernization. Analysis of developing societies. Applied anthropology. (GrC)
- 5152. ANTHROPOLOGY OF SOCIAL MOVEMENTS.** (5 cr; prereq 1002 or §) Gerlach  
Cross-cultural comparative study of nature, process, and function of social, political, and religious movements of change. Examination of theories and case studies in Christianity, Islam, Asia, Africa, United States. (GrC)
- 5153. URBAN ANTHROPOLOGY.** (5 cr; prereq 1002 or §) Rew, Rowe  
Structure and process in non-Western urban centers; emphasis on the role of rural migrants, relationship of urbanism to political and economic development, role of voluntary associations, adjustment of kinship groups to urban life. (GrC)
- 5154. ANTHROPOLOGY OF COLONIALISM.** (5 cr; prereq 1502 or §) Kiste, Ogan, Rowe  
Social, structural, symbolic, and psychological aspects of the societies of colonizers and the colonized; emphasis on South Asia, Oceania, and Puerto Rico. (GrC)
- 5158. ANTHROPOLOGICAL ANALYSIS OF AMERICAN CULTURE.** (5 cr; prereq 1502 or §) Rowe  
Anthropological perspectives on contemporary American culture and society; emphasis on the study of values, family organization, socialization and kinship, education, and community integration. (GrC)
- 5161. LANGUAGE AND CULTURE.** (5 cr; prereq 1002 or §) Sarles, Spencer  
Relation of language to behavior; languages as systems of thought, logic, and orientation and their impacts on cultures; analysis of selected linguistic and cultural systems; glottochronology. (GrA)
- 5162/3/4. KINESICS.** (5/5½/5 cr; prereq § for 5162 and 5163, 5163 for 5164) Sarles  
Human communication in micro- and macroperspective; non-verbal aspects of interaction within and across cultures. Use of video and cinematic methods of observation; discussion of kinesiology, animal communication, the body as an information transmitting/handling device. (GrC)
- 5171. METHOD AND THEORY OF AMERICAN ARCHAEOLOGY.** (5 cr; prereq 1501) Adams, Johnson  
Examination of field methods, systems of data recording, analytical methods, and their conceptual bases. Abstract theory integrated with specific case material. Laboratory exercises in application of artifact analysis. (GrC)
- 5181. PRIMATE AND HUMAN EVOLUTION.** (5 cr; prereq 1002) Murrill  
Origins and relationships of extinct forms of nonhuman primates and man. (GrC)
- 5182. HUMAN BIOLOGY.** (5 cr; prereq 1002) Murrill  
Evolutionary processes in differential development of races. Physical characteristics, distribution, and relationships of living races. Human genetics and blood types. Influence of various environments on man. (GrC)
- 5183. HUMAN PHYSICAL GROWTH AND DEVELOPMENT.** (5 cr; prereq 1002, waived for majors in child development) Murrill  
Periods of growth — prenatal, birth, infancy, childhood, and adolescence. Sex differences in growth, skeletal maturation. Development and growth of the head. Growth and eruption of teeth. (GrC)

**Group II**

**North America**

- 3211. INDIANS OF NORTH AMERICA.** (5 cr; prereq 1002) Johnson, Spencer  
Aboriginal cultures of North America. Effects of culture contact. Contemporary problems of Indian reservations and communities.
- 3511. ARCHAEOLOGY OF NORTH AMERICA.** (5 cr; prereq 1002) Adams, Johnson  
Survey of prehistoric archaeology of North America north of Mexico. Emphasis on analysis of techniques, methods, and goals of prehistoric archaeology. (GrC)

## Course Offerings and Major Sequences

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- 5212. INDIANS OF THE GREAT PLAINS.** (5 cr; prereq 1002 or #)  
Prehistoric origins of tribes. Cultures of Missouri River tribes and nomads of the Plains. (GrC)

### South America

- 521. INDIANS OF SOUTH AMERICA.** (5 cr; prereq 1002) Gudeman, Ingham  
Ethnographic survey. Prehistory of various areas. Spanish and Portuguese contact and adjustment of various tribes to modern conditions. (GrC)
- 5522. ARCHAEOLOGY OF SOUTH AMERICA.** (5 cr) Adams  
Developmental stage survey of major features of prehistoric cultures of South America. All major ecological zones will be covered. (GrC)

### Middle America

- 5222. PEOPLES AND CULTURES OF MIDDLE AMERICA.** (5 cr; prereq 1502, waived for majors in Latin American Area Studies) Gudeman, Ingham  
Survey of both Indian- and Spanish-speaking peoples of Middle America. Analysis of processes of acculturation that have produced contemporary cultures of Mexico and Central America. (GrC)
- 5223. PEOPLES AND CULTURES OF THE CARIBBEAN.** (5 cr; prereq 1002 or #) Hendricks  
Island and littoral cultures of the Circum-Caribbean. Emphasis on social structure, cultural pluralism, continuity, and change. (GrC)
- 5521. ARCHAEOLOGY OF MIDDLE AMERICA.** (5 cr) Adams  
Developmental stage survey of major features of prehistoric cultures of Mexico and Central America. (GrC)

### Africa and Near East

- 5241,2. PEOPLES AND CULTURES OF AFRICA.** (5,5 cr; prereq 1002 for 5241, 5241 or # for 5242) Gerlach  
**5241:** Cultures of Western and Central Africa. Ecological adaptation, races, languages, social organization, economic systems, political systems, aesthetic expression. Significant theoretical problems in African anthropology. Focus on subjects of key interest such as ecological adaptation, urbanization, migration, change. **5242:** Cultures of Eastern and Southern Africa. See description of 5241. (GrC)
- 5251. ISLAMIC CULTURE SPHERE.** (5 cr; prereq 1002 or #) Gerlach, Spencer  
Mohammed and founding of Islam. Development and spread of Islamic religion, law, government, and other institutions in Middle East, Africa, and Asia. Culture and society in contemporary Middle East. (GrC)
- 5531. PALEOANTHROPOLOGY.** (5 cr) Johnson  
Archaeological record of human cultural origins and developments in Pleistocene and early recent periods in Africa, Europe, and Asia. (GrC)
- 5532. OLD WORLD PREHISTORY: EUROPE-NEAR EAST-EGYPT.** (5 cr) Adams  
Recent period prehistory stressing the origins, development, and dispersion of systems of food production; the origins of urbanism. (GrC)

### Asia

- 5261. INDIAN CULTURE AND SOCIETY.** (5 cr; prereq 1502 or #) Rowe, Spencer  
Survey of tribes, caste, and culture history in South Asia. Cultural influences from India in Southeast Asia. (GrC)
- 5263. MODERN INDIA: TOWNS AND CITIES.** (5 cr; prereq 1502 and 5261 or #) Rowe  
Development of Indian towns and cities from anthropological perspective; urban life, city growth, and urban migration. (GrC)
- 5281. CULTURE AND SOCIETY IN CHINA AND JAPAN.** (5 cr; prereq 1002 or #) Gerlach  
Development of Chinese institutions and other cultural manifestations; their influence on cultures of Japan, Korea, and Vietnam. Analysis of and comparison between contemporary Chinese and Japanese societies. (GrC)
- 5533. ASIAN PREHISTORY.** (5 cr) Johnson  
Origins and developments of major Asian cultural traditions. (GrC)

### Oceania

- 5291,2. ETHNOLOGY OF OCEANIA.** (5,5 cr; prereq 1502) Kiste, Ogan, Rew  
South Pacific cultures. Emphasis upon comparative ethnology of Polynesia and Micronesia (5291), and Melanesia (5292). Impact of Western culture on island societies; significance of Oceania ethnology to anthropological theory. (GrC)

**5591. PREHISTORY OF OCEANIA.** (5 cr)

Prehistory of Oceania with major emphasis on archaeological evidence. Polynesia, Micronesia, Melanesia, Australia, and, insofar as they appear pertinent, Southeast Asia and the Americas. (GrC)

**Group III**

**5316. ETHNOLOGICAL FIELD TECHNIQUES.** (5 cr; prereq sr or grad or #) Miller

Introduction to techniques of field observation, interviewing, and recording; training in field methods, presentation of data, and interpretation of results provided by laboratory exercises. (GrC)

**5366. METHOD AND THEORY IN ANTHROPOLOGICAL LINGUISTICS.** (5 cr; prereq 1002 or #) Sarles, Spencer

Linguistic theory and practice as tools in anthropological field work; analysis of phonological, morphological, and syntactic problems in world languages. (GrC)

**5376su. FIELD RESEARCH IN ARCHAEOLOGY.** (5-10 cr; may be taken for cr only once; prereq 1501) Johnson

Archaeological field excavation, survey, and research in prehistoric sites in Minnesota. Intensive training in excavation techniques, recordation, analysis, and interpretation of archaeological materials. (GrC)

**5386. METHODS IN PHYSICAL ANTHROPOLOGY.** (5 cr; prereq 1002) Murrill

Comparative osteology of man and anthropoid apes. Variations related to sex, age, and race. Observations and measurements on the skeleton. (GrC)

**5387. METHODS IN HUMAN BIOLOGY.** (5 cr; prereq 1002) Cassidy

Anthropometric, dermatoglyphic, radiographic, cephalmetric, and other methods are used in human biology. The specific topics in a class will depend on the interests of the group. (GrC)

**ARABIC**

See Middle Eastern Languages

**ARAMAIC**

See Middle Eastern Languages

**ARCHITECTURE, LANDSCAPE ARCHITECTURE**

Institute of Technology

**Architecture (Arch)**

**Staff:** Ralph Rapson, *head*, 110 Architecture; George C. Winterowd, *director of undergraduate studies in architecture*; Roger B. Martin, *director of undergraduate studies in landscape architecture*; Walter K. Vivrett, *director of graduate studies*; Thomas Bender, Robert Cerny, Roger Clemence, Gunter Dittmar, Carl Graffunder, Dennis Holloway, Hosni Iskander, Valerius Michelson, Leonard Parker, Alan Robinette, James Stageberg

**Major Sequence for B.A.:** 1. *Required background courses*—Phys 1014/24, 1015/25; Math, precalculus and 1211/21/31; ArtS 1107/8/9 or 1101/2; Arch 1021/2/3. 2. *Major requirements*—Arch 3081/2/3, 3091/2/3, any 3 chosen from 5051,2,3,4,5,6.

**Curriculum Alternatives**—The 4-year CLA program, leading to a bachelor of arts degree, is intended primarily as preprofessional training for admission to the Institute of Technology, in which 2 further years will lead to the professional degrees bachelor of architecture or master of architecture. Students who receive either professional degree will be prepared for careers in architecture and for other options related to the physical design of our environment.

Students who prefer to achieve a degree of specialization in environmental design rather than the professional degree should take also Arch 1001/2/3.

Students who intend to seek professional degrees should also include AEM

## Course Offerings and Major Sequences

3092/3, ArtS 3107/8/9, and CE 3600/1. Also desirable are Arch 3061/2 and 3067, although neither carries credit toward the B.A.

The *Institute of Technology Bulletin for 1971-73* lists specific courses leading to the bachelor of architecture degree; the *Bulletin of the Graduate School* lists master of architecture degree requirements.

**Admission Procedures**—Application for admission to the School of Architecture must be made on form AR110, obtained from the School office and submitted with a transcript. No student may enter the sequence courses in architectural design unless he is accepted as a candidate for the professional degree. Architectural design courses, which are sequential, start in the fall quarter. Applications should be submitted as soon as required background courses have been completed, and *not* later than July 1 preceding the academic year for which admission is sought.

Admission will be based on consideration of completion of prearchitecture course requirements, the student's high school and university scholastic record, professional aptitude and objectives, and the resources and facilities of the School of Architecture. Prospective students are urged to consult advisers in the School of Architecture.

### LOWER DIVISION COURSES

**1001f. ENVIRONMENTAL DESIGN: MAN AND ENVIRONMENT.** (4 cr; §LA 1001)

Interaction of man and his environment using the disciplines of the natural and social sciences and the arts as background for readings, lecture, discussion, and workshop sessions. (GrC)

**1002w. ENVIRONMENTAL DESIGN: TOOLS AND PROCESSES.** (4 cr; §LA 1002; prereq 1001)

Nature and the effects of various tools and processes of environmental change, ranging from buildings and landscapes to economic policies, climate, and myths. Readings, lectures, discussions, and workshop sessions. (GrC)

**1003s. ENVIRONMENTAL DESIGN: IMPLEMENTATION AND EVALUATION.** (4 cr; §LA 1003; prereq 1002)

Design projects, discussions, and readings exploring personal abilities to implement and evaluate environmental change. (GrC)

**1021f. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE.** (4 cr; §LA 1021; 4 lect hrs per wk)

Introduction to architecture, philosophy and principles of architecture as an art; survey of architectural history with emphasis on development of contemporary architecture from its 19th-century roots until the present. (GrD)

**1022w. HISTORY OF ENVIRONMENTAL DEVELOPMENT: LANDSCAPE ARCHITECTURE.** (4 cr; §LA 1022; prereq 1021; 4 lect hrs per wk)

Introduction to landscape architecture. Focus on the forces and individuals that shaped the form of landscape in 19th- and early 20th-century America. (GrD)

**1023s. HISTORY OF ENVIRONMENTAL DEVELOPMENT: PLANNING.** (4 cr; §LA 1023; prereq 1022; 4 lect hrs per wk)

Introduction to urban planning. Rise and history of cities as centers of civilization. Collaboration among various disciplines for creating better urban environment and improving the quality of human life in cities. (GrD)

### UPPER DIVISION COURSES

**3061/2. BUILDING SYSTEMS.** (5/5 cr; 4 lect hrs per wk)

Building systems, subsystems, and components; principles of structural theory; materials and methods used in building; new and developing technologies.

**3064/5. ENVIRONMENTAL MANAGEMENT AND CONTROL.** (5/5 cr; prereq 3062; 4 lect hrs per wk)

Environmental-mechanical considerations: comfort technology, space habitability, climate, psychometrics, control and management systems; waste management—plumbing systems and waste disposal techniques. Electrical systems, energy, power distribution and machinery; lighting systems, physiology of seeing, light sources and control; spatial acoustics, noise barriers, absorption.

**3067. INTEGRATED DESIGN SYSTEMS:** (4 cr; 2 lect and 2 seminar hrs per wk)

Integrated design systems; systems approach to defining environmental problems and

managing multidisciplinary inputs; analysis and evaluation of alternative solutions; computer graphics, elements of equipment, interactive modes of use.

- 3081/2/3†. ARCHITECTURAL DESIGN.** (6/6/6† cr; prereq 2nd yr for IT students, jr for CLA students and Δ; 18 lab hrs per wk)  
Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. Architectural drawing. Model making.
- 3091/2/3†. ARCHITECTURAL DESIGN.** (6/6/6† cr; prereq 3083; 18 lab hrs per wk)  
Architectural problems with emphasis on development of structures as an integral part of design; site planning.
- 3970. DIRECTED STUDIES.** (Cr ar; prereq #)  
Areas of study useful to individual program objectives not available in regular course offerings.
- 5051. ANCIENT ARCHITECTURE.** (4 cr; prereq 1021; 3 lect and 1 seminar hr per wk)  
History of development of architecture and urban design in Egypt, Mesopotamia, Crete, Mycenae, and Classic Greece and Rome before Christianity. (GrD)
- 5052. EARLY MEDIEVAL ARCHITECTURE.** (4 cr; prereq 1021; 3 lect and 1 seminar hr per wk)  
History of architecture and urban design during Early Christian, Byzantine, Islamic, Carolingian, and Romanesque periods in the Near East and western Europe until A.D. 1150 (GrD)
- 5053. GOTHIC ARCHITECTURE.** (4 cr; prereq 1021; 3 lect and 1 seminar hr per wk)  
History of architecture and urban design in western Europe from 1150 until 1400. (GrD)
- 5054. RENAISSANCE AND BAROQUE ARCHITECTURE.** (4 cr; prereq 1021; 3 lect and 1 seminar hr per wk)  
History of architecture and urban design in Italy, Spain, France, Germany, and the Low Countries from 1400 until the French Revolution. (GrD)
- 5055. ENGLISH AND EARLY AMERICAN ARCHITECTURE.** (4 cr; prereq 1021; 3 lect and 1 seminar hr per wk)  
Pre-Columbian civilizations and development of architecture and urban design in America and England from 1500 until the Civil War. (GrD)
- 5056. MODERN ARCHITECTURE.** (4 cr; prereq 1021; 3 lect and 1 seminar hr per wk)  
Development of architecture and urban design from early 19th-century sources in Europe and America until the present. (GrD)
- 5101,2,3. TUTORIAL WORK IN HISTORY OF ARCHITECTURE.** (2,2,2 cr; prereq 5056 or #; 1 conf and 5 research hrs per wk)  
Reading and written reports on historical problems.
- 5104. SEMINAR: EUROPEAN ARCHITECTURE.** (3 cr; prereq 5056 or #; 3 seminar hrs per wk)  
Contemporary architecture from the beginning of the modern movement until the present with specific emphasis upon the contributions of August Perret, Peter Behrens, Walter Gropius and the Bauhaus, LeCorbusier, and the early work of Mies van der Rohe.
- 5105. SEMINAR: SCANDINAVIAN ARCHITECTURE.** (3 cr; prereq 5056 or #; 3 seminar hrs per wk)  
Scandinavian architectural history with emphasis upon the origin and development of modern architecture in Denmark, Finland, Norway, and Sweden.
- 5106. SEMINAR: AMERICAN ARCHITECTURE.** (3 cr; prereq 5056 or #; 3 seminar hrs per wk)  
Contemporary United States architecture from the period of Henry Hobson Richardson until the present; the specific contributions of Louis H. Sullivan, Frank Lloyd Wright and his "Prairie School" contemporaries, Eliel and Eero Saarinen, and the later work of Walter Gropius and Mies van der Rohe. Field trip.
- 5111/2/3. ARCHITECTURAL DESIGN.** (6/6/6 cr; prereq 3093; 18 lab hrs per wk)  
Advanced architectural problems of complex requirements, involving thorough study and detailed solution; electrical and mechanical equipment as well as structure as an integral part of design; research techniques. Individual effort and group collaboration.
- 5115/6. STRUCTURE AND FORM IN ARCHITECTURE.** (4/4 cr; prereq AEM 3092; 2 lect and 3 seminar hrs per wk)  
Form as an interface between programmatic requirements for environmental change and the physical means available to the architect; concentration on physical parameters of statics, mechanics of solids, and three-dimensional manipulation of material to arrive at logical solutions for given problems of enclosing space; architectural morphology covered

## Course Offerings and Major Sequences

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- through contemporary and ancient examples and experimental work on models; modular and proportional relationships.
- 5121/2. ARCHITECTURAL DESIGN.** (9/9 cr; prereq 5113 and CE 5601; 27 lab hrs per wk) Building design and development in the urban context. Individual and collaborative effort; survey and analysis of urban problems, reporting and preparation of large-scale proposals.
- 5123. ARCHITECTURAL THESIS.** (12 cr; prereq 5122; submission of a definite thesis program during qtr prior to thesis, and 800 hrs of practical experience; 36 lab hrs per wk) Individual choice, study, and solution of an architectural problem to demonstrate proficiency in all phases of design.
- 5126. PROFESSIONAL PRACTICE.** (4 cr; prereq 2nd year design; two 2-hr seminars per wk, field trips) Relations of the architect to client, contractor, and fellow practitioner; procedures of architectural practice; preparation of contract documents.
- 5130. PLANNING: THE DEVELOPMENT OF URBAN FORM.** (3 cr; prereq #; hrs ar) Physical development of urban place from early Middle East urban revolution to the Industrial Revolution, as a manifestation of changes in underlying social, political, and economic forces as well as of planning theories, if any, to which they gave rise.
- 5134/5/6. PLANNING.** (3/3/3 cr; prereq #) Tutorial work in community facilities and housing.
- 5137. PLANNING: URBAN FUNCTION AND STRUCTURE.** (4 cr; prereq #) Economic, technological, and social factors that underlie the location, distribution, and internal structure of urban settlements. Quantitative and qualitative analysis of social, economic, and physical problems or consequences of contemporary urbanization.
- 5138. PLANNING: THEORY AND METHODOLOGY.** (4 cr; prereq 5137 or #) Logic of a planning process as a method of decision-making. Formulation of goals and evaluation of alternative courses of action, standards, and requirements for specific planning objectives (housing, transportation, and community facilities). Legal, administrative, and fiscal devices for plan implementation. The planning function in government and the role of citizens and private groups.
- 5150. INSTITUTIONAL PLANNING.** (2 cr; prereq 5113 and #)
- 5151,2,3. THEORY OF ARCHITECTURE.** (2,2,2 cr; prereq #) Architecture in a philosophical and theoretical context.
- 5170. CITYSCAPE.** (3 cr; prereq 3093 or #, hrs ar) The city and its components as aesthetic elements. An examination of factors which have helped to generate urban form.
- 5171,2. URBAN FORM.** (3,3 cr; prereq 5113 and 5138) Principles and techniques involved in city design.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq #) Areas of study useful to individual program objectives not available in regular course offerings.

## Landscape Architecture (LA)

Major Sequence for B.A.: 1. *Required background courses*—Chem (5 cr), Math 1441, Biol (10 cr), Geog (5 cr), Geo 1001, ArtH 1001, ArtS 1107/8/9, LA 1001/2/3 or 1021/2/3. 2. *Major requirements*—LA 3081/2/3, 3091/2/3, 5115/6, 5252.

The problems of relating man and the land are the focus of the professional design field of landscape architecture. Within this focus the landscape architect is concerned with wise disposition of land in regard to natural resources as well as with results for man through land modification for human uses. He is concerned with design of the relationships between a specific site and its individual terrain, soil, climate, vegetation, orientation, and views and with the program for development of its proposed facilities, use areas, and circulation needs. He attempts to insure optimal relationships between open spaces and buildings, walks and roads, planting and landforms, in order to resolve best human requirements of utility and beauty in such relationships.

Men and women entering landscape architecture should be committed to solving the problems of effective use of land and landscape; they should have active interest in nature, enjoy observing the patterns and qualities of the landscape; and maintain an interest in drawing and art.

**Curriculum Alternatives**—A 4-year CLA program will lead to the nonprofessional degree bachelor of arts with a major in landscape architecture. Studies may be arranged to allow extension into the advanced professional degree program (1-year minimum) offered by the Institute of Technology and the Institute of Agriculture. Students who intend to continue toward the professional degree should include in addition to the courses listed above basic courses in sociology and economics and Hort 1021/2. Also desirable are MeAg 1400 and LA 3071/2/3 (these courses earn credit only toward the advanced degree).

**Admission Procedures**—Upon completion of prerequisite requirements, application to enter the School of Architecture and Landscape Architecture should be made on form AR110b available at the School or from the Office of Admissions and Records. These should be submitted not later than June 1 of the year during which the student wishes to begin design course work within the School. Admission to beginning design is normally permitted only in the fall quarter.

Approval of admission will be based on consideration of the student's scholastic standing in high school and previous college work; his maturity and experience; availability of work space and instructional resources facilities.

Students who wish to apply for advanced standing within the program are requested to bring examples of their work and grade transcript to discussions with advisers in the School.

#### LOWER DIVISION COURSES

- 1001f. ENVIRONMENTAL DESIGN: MAN AND ENVIRONMENT.** (4 cr; §Arch 1001)  
Exploration of interaction of man and his environment, using the disciplines of natural and social sciences and the arts as background for readings, lectures, discussions, and workshop sessions.
- 1002w. ENVIRONMENTAL DESIGN: TOOLS AND PROCESSES.** (4 cr; §Arch 1002; prereq 1001)  
The nature and effects of various tools and processes of environmental change, ranging from buildings and landscapes to economic policies, climate, and myths. Readings, lectures, discussions, and workshop sessions.
- 1003s. ENVIRONMENTAL DESIGN: IMPLEMENTATION AND EVALUATION.** (4 cr; §Arch 1003; prereq 1002)  
Design projects, discussions, and readings exploring personal abilities to implement and evaluate environmental change.
- 1021f. HISTORY OF ENVIRONMENTAL DEVELOPMENT: ARCHITECTURE.** (4 cr; §Arch 1021; 4 lect hrs per wk)  
Introduction to architecture, philosophy and principles of architecture as an art, survey of architectural history with emphasis upon development of contemporary architecture from its 19th-century roots until the present. (GrD)
- 1022w. HISTORY OF ENVIRONMENTAL DEVELOPMENT: LANDSCAPE ARCHITECTURE.** (4 cr; §Arch 1-022; prereq 1021; 4 lect hrs per wk)  
Focus on investigation of forces and individuals that shaped the form of landscape in 19th- and early 20th-century America.
- 1023s. HISTORY OF ENVIRONMENTAL DEVELOPMENT: PLANNING.** (4 cr; §Arch 1023; prereq 1022; 4 lect hrs per wk)  
Rise and history of cities as centers of civilization. Collaboration among various disciplines for creating better urban environment and improving the quality of human life in cities.
- 1024. LANDSCAPE THEORY.** (4 cr; 3 lect and 3 lab hrs per wk)  
Design elements and forms involving direction, shape, proportion, and color, with emphasis on their function in design; a study of perception and man's relationship to his environment, and the social effects and psychological basis for design.

## Course Offerings and Major Sequences

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### 1025. BASIC VISUALIZATION. (4 cr; 2 lect and 4 lab hrs per wk)

Perspective drawing, landscape sketching, visual analysis of landscape materials, presentation techniques for plans, sections, and elevations.

### 1031. INTRODUCTION TO LANDSCAPE ARCHITECTURE. (4 cr; 4 lect hrs per wk)

Design potential of materials of the landscape; critical assessment of land developments and detail landscapes; the role of the landscape architect in shaping the natural and cultural environment; brief historical review of site developments.

## UPPER DIVISION COURSES

### 3071/2/3. LANDSCAPE TECHNOLOGY I. (4/4/4 cr; prereq CE 3100; 2 lect and 6 lab hrs per wk)

Lectures, exercises, and projects in ground form manipulation, earthwork, computation, and drainage techniques; layout of circulation and landscape utilities systems; land analysis procedures and techniques.

### 3075. LANDSCAPE TECHNOLOGY II. (4 cr; 2 lect and 6 lab hrs per wk)

Lectures, exercises, and projects in materials and construction techniques and working document preparation.

### 3081/2/3. BASIC DESIGN. (6/6/6 cr; prereq LA student; 1 lect and 15 lab hrs per wk)

Lectures and projects that expand awareness of the design potential of environment, develop processes and graphic techniques for problem solving, begin a search toward developing methods of presenting ideas verbally and visually. Design of small-scale site systems with simple variables.

### 3091/2. INTERMEDIATE DESIGN. (6/6 cr; prereq 3083; 2 lect and 12 lab hrs per wk)

The design potential of natural land materials, exploration of landscape survey and analysis techniques, assessment of the elements of environment as they condition design potential, methodologies for solving design problems, methods of expressing landscape form both graphically and through models; design of site systems with simple variables.

### 3093. DETAIL SITE DESIGN. (6 cr; prereq 3092)

Design of small-scale site systems with complex variables.

### 3096. SPECIAL PROBLEMS IN LANDSCAPE ARCHITECTURAL HISTORY. (1-6 cr; prereq #)

### 3097. SPECIAL PROBLEMS IN LANDSCAPE ARCHITECTURAL THEORY. (1-6 cr; prereq #)

### 3098. SPECIAL PROBLEMS IN LANDSCAPE ARCHITECTURAL DESIGN. (1-6 cr; prereq #)

### 3099. SPECIAL PROBLEMS IN LANDSCAPE ARCHITECTURAL TECHNOLOGY. (1-6 cr; prereq #)

### 3101. COMMUNICATING LANDSCAPE QUALITY. (3 cr; 1 lect and 6 lab hrs per wk; prereq 3093 or #)

Lectures and exercises in drawing techniques focused on developing graphic skills for designers working predominantly with exterior environments.

### 5010. PRINCIPLES OF OUTDOOR RECREATION DESIGN AND PLANNING. (4 cr; 4 lect hrs per wk)

For advanced students associated with design, management, and planning of recreation facilities. Planning and design principles related to recreational land use and development: parks, campsites, water areas, highways, summer and winter recreational facilities.

### 5101/2. SITE PLANNING AND DESIGN I AND II. (6/6 cr; 2 lect and 12 lab hrs per wk)

Case study analysis and design of site organizational systems.

### 5103/4. URBAN LANDSCAPE DESIGN I AND II. (6/6 cr; 2 lect and 12 lab hrs per wk)

Case study analysis and design of urban environments.

### 5105/6. RECREATIONAL PLANNING AND DESIGN I AND II. (6/6 cr; prereq 5010; 2 lect and 12 lab hrs per wk)

Development and presentation of landscape design solutions for diverse recreational land use.

### 5107/8. REGIONAL LANDSCAPE DESIGN. (6/6 cr; prereq 3092; 3 lect and 12 lab hrs per wk)

Emphasis on the study of large-scale land areas. Analyzing development potential and evolving solutions for integration of divergent land use patterns such as agricultural, residential, commercial, industrial, and recreational.

### 5110. ADVANCED LANDSCAPE PLANNING AND DESIGN. (6 cr; prereq terminal qtr; 2 lect and 12 lab hrs per wk)

Advanced studies in area of student's option.

- 5115/6. THEORY OF LANDSCAPE FORM AND STRUCTURE.** (2/2 cr; prereq 3091 or #; 4 discussion hrs per wk)  
Landscape perception; application of abstract design principles to the assessment of land developments; psychological and social implications of land developments; the design potential of landscape materials; contemporary problems in all scales and types of land uses.
- 5121/2. LANDSCAPE ARCHITECTURAL DESIGN.** (6/6 cr; prereq #; 1 lect and 15 lab hrs per wk)  
Research analysis and design of large-scale land development problems. Urban design and regional design collaboratives with fellow design professions and technical disciplines.
- 5123. LANDSCAPE ARCHITECTURAL THESIS.** (12 cr; prereq terminal qtr; 36 lab hrs per wk)  
Definition of a landscape problem; research and analysis of design potentials; projection of a solution to the problem to demonstrate proficiency in all phases of landscape architecture. Problem area selected in consultation with instructor.
- 5124. LANDSCAPE ARCHITECTURAL SEMINAR.** (1 cr; prereq terminal yr of study)  
Design principles and design goals in modern society. Review of current site development projects. Investigation in depth into specific areas of land development.
- 5131/2/3. SELECTED PROBLEMS IN LANDSCAPE ARCHITECTURE.** (Cr ar; prereq #)
- 5175. LANDSCAPE TECHNOLOGY II.** (4 cr; 2 lect and 6 lab hrs per wk)  
Lectures, exercises, and projects in materials and construction techniques and working document preparation.
- 5226. PROFESSIONAL PRACTICE.** (4 cr; prereq terminal yr of study)  
Professional ethics, responsibility and relations in business. Office management preparation of professional communications, estimates, specifications, and contracts. Lectures, written exercises, and office visits.
- 5262. HISTORY AND LITERATURE OF LANDSCAPE ARCHITECTURE.** (4 cr; 4 lect hrs per wk)  
A search for design principles as expressed in landscape created by man from ancient times to the contemporary period. Focus on analysis of the visual form of environments as outgrowths of geographical, cultural, and technological determinants.

## ART HISTORY (ArH)

**Staff:** Frederick Asher, Norman Canedy, Frederick Cooper, Sheila McNally, Marion Nelson, Robert Poor, Carl Sheppard, Sidney Simon, John Steyaert, Alison Stones, Michael Stoughton, Donald Torbert, Melvin Waldfoegel

The objective of the Department of Art History is to give students enriched awareness and knowledge of their visual environment and the history of man's interpretation of it through examination of the world's architecture, sculpture, painting, and other visual and graphic arts.

For students interested in advanced work in art history, the Department offers professionally oriented courses at the Upper Division and graduate levels leading to a B.A. degree. M.A. and Ph.D. degrees in the history and criticism of art and an M.A. in museology are also offered.

**Major Sequence for B.A.:** 1. *Required background courses*—4 ArtS cr; 2 college years, or the equivalent, in a foreign language. 2. *Major requirements*—3008, 3009, 3011, 3012; 8 additional ArtH cr at the 3xxx level; 12 ArtH cr at the 5xxx level.

### LOWER DIVISION COURSES

- 1001. INTRODUCTION TO THE VISUAL ARTS.** (4 cr; prereq fr or soph only; §3001) 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. (GrD)
- 1008. CONCEPTS IN ANCIENT ART.** (4 cr; §3008) McNally  
The art of Egypt, Mesopotamia, Greece, and Rome. Visual analysis, problems of style as a cultural phenomenon, and methods and standards of criticism. (GrD)

## Course Offerings and Major Sequences

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- 1015. ART IN WESTERN CIVILIZATION.** (4 cr) Waldfogel  
Major achievements of Western man in the arts seen in their historical and cultural setting. The crux of the course is Sir Kenneth Clark's series of 13 hour-length films entitled "Civilisation" which take the place of lectures. Strongly interdisciplinary. (GrD)
- 1016. INTRODUCTION TO ASIAN ART.** (4 cr; §3013) Asher, Poor  
Selected major themes of Indian and Far Eastern art. (GrD)
- 1016H. HONORS COURSE: INTRODUCTION TO ASIAN ART.** (4 cr; §3013)  
For description, see 1016. (GrD)
- 1017. THE WESTERN TRADITION.** (4 cr) Sheppard  
Introduction to history of art contrasting Far Eastern, Islamic, and Primitive cultural traditions to those of the Western World. (GrD)

### UPPER DIVISION COURSES

- 3001. PRINCIPLES OF THE VISUAL ARTS.** (4 cr; §1001; prereq jr or sr only) Torbert  
Similar to 1001 in organization and content, with expanded reading and contact with works of art. (GrD)
- 3008. HISTORY OF ANCIENT ART.** (4 cr; §1008) Asher, Cooper, McNally  
Architecture, sculpture, and painting of selected early cultures, with stress on those contributing to the development of Western art. (GrD)
- 3009. HISTORY OF MEDIEVAL ART.** (4 cr; §1009) Sheppard, Steyaert, Stones  
Medieval architecture, painting, and sculpture from Early Christian to Gothic. (GrD)
- 3011. HISTORY OF RENAISSANCE AND BAROQUE ART.** (4 cr; §1011) Canedy, Simon, Stoughton  
The major monuments in architecture, sculpture, and painting from the early 14th century through the Baroque. (GrD)
- 3012. HISTORY OF 19TH- AND 20TH-CENTURY ART.** (4 cr; §1012) Cooper, Nelson  
Major monuments and concepts of the modern period: sculpture, architecture, painting, and prints. (GrD)
- 3013. INTRODUCTION TO FAR EASTERN ART.** (4 cr; §1013, 1016) Asher, Poor  
Selected major themes within broad context of Far Eastern art. The arts of China and Japan (not an inclusive historical survey.) (GrD)
- 3014. ART OF INDIA.** (4 cr; §1014) Asher  
Indian sculpture and architecture from the pre-historic Indus Valley civilization through the major historical periods. Emphasis on Hindu and Buddhist art from 300 B.C. to 1200 A.D. (GrD)
- 3053. HISTORY OF LANDSCAPE PAINTING.** (4 cr; offered alt yrs) Waldfogel  
The development of Western landscape sensibility and painting from ancient times to the modern period. (GrD)
- 3059. SUMMER TRAVEL COURSE IN EUROPEAN ART.** (6 cr; prereq §; offered when feasible) Torbert  
Conducted by Department of Art History under auspices of Summer Session. Main phases of ancient, medieval, Renaissance, Baroque, and modern art. Guided visits and discussions at important cultural centers, museums, and cathedrals. (GrD)
- 3142. ART OF EGYPT AND THE ANCIENT NEAR EAST.** (4 cr; offered alt yrs) Asher  
Egyptian art; the art of ancient Mesopotamia and Persia. (GrD)
- 3152. GREEK ART.** (5 cr; §Clas 3152; offered alt yrs) Cooper, McNally  
The classical style of ancient Greece: its origins, characteristics, and importance to later culture. (GrD)
- 3162. ROMAN ART AND ARCHAEOLOGY.** (5 cr; §Clas 3162; prereq 3008 or 3152) Cooper, McNally  
Roman art and material culture seen through study of how it came into being; examination of the degree of change, of continuity, of "progress" or "decay" in the later Empire. (GrD)
- 3212. PATRONS, DOCUMENTS, AND MEDIEVAL ART.** (4 cr; prereq 4 cr Arth or medieval history; offered alt yrs) Stones  
A limited number of specific artistic objects and buildings studied in relation to written evidence about the historical circumstances of their reproduction. (GrD)
- 3224. GOTHIC ART.** (4 cr) Steyaert  
Basic concepts of Gothic style as manifested in architecture, sculpture, and painting. Consideration of the relevance of Gothic to later Western Art. (GrD)

- 3303. BAROQUE AND ROCOCO PAINTING IN FRANCE.** (4 cr; §5357; prereq 3011 or §; offered alt yrs) Stoughton  
French painting of the 17th and first half of the 18th centuries. (GrD)
- 3313. PRACTICE AND THEORY IN ITALIAN RENAISSANCE ART.** (4 cr; prereq 3011; offered alt yrs) Canedy  
Italian Renaissance art history considered topically: the history of Renaissance art history, techniques, iconology, artist/patron relationships. Practices and theories for the visual arts formulated between 1400 and 1600. (GrD)
- 3448. THE VISUAL ARTS IN AMERICA.** (4 cr; offered alt yrs) Torbert  
Selected works of American architecture, sculpture, painting. Decorative and industrial arts from early Colonial days to mid-20th century. (GrD)
- 3466. THE ORIGINS OF MODERN ART.** (4 cr; prereq 4 cr ArH; offered when feasible) Cooper, Simon  
The sources of modernism with emphasis on Impressionism, Post-Impressionism, Symbolism, Arts and Crafts Movement, Aestheticism, and Art Nouveau. (GrD)
- 3467. MODERN ART.** (4 cr) Cooper, Simon  
Major directions in late 19th- and 20th-century art in all media. The influence of advertising mass media and advanced technology on the development of modern art. (GrD)
- 3654. SCANDINAVIAN ART FROM RENAISSANCE TO THE PRESENT DAY.** (4 cr; offered alt yrs) Nelson  
Painting, sculpture, architecture, and decorative arts of the upper classes in Scandinavia; special attention to the 17th and 18th centuries. (GrD)
- 3909. SURVEY OF ISLAMIC ART.** (4 cr; offered when feasible)  
Architecture, painting, and minor arts of the Islamic world. (GrD)
- 3921/2/3. ART OF THE FILM.** (4/4/4 cr)  
Critical study and analysis of the motion picture as an art form. Films of exceptional merit or interest. Analysis of films of various categories, such as narrative, poetic, documentary, experimental. (GrD)
- 3960. HONORS SEMINAR.** (5 cr; prereq ArH honors adviser's §)  
Detailed investigation of a selected problem. (GrD)
- 3970. DIRECTED STUDIES.** (1-5 cr; prereq §) (GrD)
- 3999. TRANSFER COURSES.** (GrD)
- 5102. GREEK SCULPTURE.** (4 cr; §Clas 5102; prereq jr or §) Coulson  
Styles and techniques of Greek sculpture from the archaic period to the end of the 4th century B.C. Sculptors and styles of various schools throughout Greece, Sicily and southern Italy, and Asia Minor. (GrD)
- 5103. HELLENISTIC ART AND ARCHAEOLOGY.** (4 cr; §Clas 5103; prereq jr or §) Coulson  
Greek architecture, sculpture, ceramics, painting and minor arts from the beginning of the 4th century B.C. to the end of the Hellenistic period. City planning, public buildings, and the topography of such sites as Athens, Olynthos, Corinth, Priene, Pergamon. (GrD)
- 5104. ROMAN ARCHITECTURE.** (5 cr; §Clas 5104; prereq 1008 or 3008 or 3162) Cooper, McNally  
The types and techniques of buildings in Rome and the Roman Empire from the 5th century B.C. to the 4th century A.D. Major archaeological sites. (GrD)
- 5105. ROMAN PAINTING AND MOSAICS.** (5 cr; §Clas 5105; prereq 1008 or 3008 or 3162) McNally  
Introduction to Roman painting and mosaics; discussion of specific problems and of sites such as Pompeii and Antioch. (GrD)
- 5106. GREEK PAINTING.** (5 cr; §Clas 5106; prereq 5102 or 5103; offered when feasible) McNally  
Methods of research and analysis in classical art as applied to study of vases: investigation of original objects and of sources. (GrD)
- 5107. ROMAN SCULPTURE.** (4 cr; §Clas 5107; prereq 1008 or 3008 or 3162) Cooper, McNally  
Sculpture of Rome and its provinces from the 1st century B.C. to the 4th century A.D.; the role of sculpture in Roman politics and religion. (GrD)
- 5108. GREEK ARCHITECTURE.** (4 cr; §Clas 5108; prereq 1008 or 3008 or 3152) Cooper, McNally  
Archaic and classical examples of religious and secular architecture with special consideration of their setting in major archaeological sites. (GrD)

## Course Offerings and Major Sequences

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- 5109. INTRODUCTION TO ETRUSCAN ART AND ARCHITECTURE.** (4 cr; §Clas 5109; prereq jr or #) Coulson  
The architecture, sculpture, painting, and minor arts of the Etruscans; their place in political, religious, and social settings. Methods of Etruscan archaeology. (GrD)
- 5203. EARLY MEDIEVAL ART.** (4 cr; prereq 3009, grad or #) Sheppard  
Architecture, sculpture, painting, and selected minor arts of the Mediterranean world and Western Europe from early Christian to Romanesque period. (GrD)
- 5213. INTERNATIONAL GOTHIC.** (5 cr; prereq 4 cr medieval ArtH or #; offered alt yrs) Stones  
Patronage in major centers of culture such as Prague, London, Milan, Paris, and Burgundy, in relation to the artistic production of the late 14th and early 15th centuries. (GrD)
- 5214. GOTHIC ARCHITECTURE.** (5 cr; prereq 4 cr medieval ArtH or #; offered alt yrs) Sheppard, Stones  
Gothic architecture from the mid-12th to the early 16th century in France, Germany, England, Italy, and Spain; the later regional variants. (GrD)
- 5215. ROMANESQUE AND GOTHIC PAINTING.** (5 cr; prereq 4 cr medieval ArtH or #; offered alt yrs) Stones  
Wall and panel painting, mosaics, and manuscript illumination in France, Germany, England, Italy, and Spain, from the 11th to 14th centuries. (GrD)
- 5234. EARLY AND HIGH GOTHIC SCULPTURE.** (4 cr; prereq 3009, grad or #) Steyaert  
Developments in style and iconography of Gothic sculpture, especially in France and Germany. (GrD)
- 5252. BYZANTINE ART.** (5 cr; prereq 5203 or #) Sheppard  
Architecture, sculpture, and painting in the eastern Christian regions from its beginnings to the fall of Constantinople, with reference to its impact on the West. (GrD)
- 5253. ROMANESQUE SCULPTURE.** (4 cr; prereq 9 cr ArtH or #) Sheppard  
Sculpture as developed in France and Italy in the 11th century and manifested throughout Europe in the 12th and early 13th centuries. (GrD)
- 5261. THE ILLUMINATED BOOK.** (5 cr; prereq 4 cr medieval ArtH or #; offered alt yrs) Stones  
Techniques involved in the production of illuminated books in the Middle Ages; the evolution in types of books, decorative schemes, and styles. (GrD)
- 5306. ITALIAN ART OF THE 14TH CENTURY.** (4 cr; prereq 1 ArtH course or #; offered alt yrs) Canedy  
The emergence of Italian painting and the proto-Renaissance; subsequent counter-directions during the periods of the Black Death and international style. (GrD)
- 5307. 15TH-CENTURY ITALIAN ARCHITECTURE, SCULPTURE, AND PAINTING.** (4 cr; prereq 3011 or #) Canedy  
Early Renaissance art from Brunelleschi to Bellini. Development of a "repertory" of monument types that survived to modern times. (GrD)
- 5313. ITALIAN HIGH RENAISSANCE ARCHITECTURE, SCULPTURE, AND PAINTING.** (4 cr; prereq 3011, grad or #) Canedy  
The works of Leonardo da Vinci, Michelangelo, Raphael, and Titian and of outstanding lesser artists working in Florence, Rome, Venice, and northern Italy. Emphasis on painting. (GrD)
- 5314. LATER 16TH-CENTURY ITALIAN ARCHITECTURE, SCULPTURE, AND PAINTING.** (4 cr; prereq 5313, grad or #; offered alt yrs) Canedy  
Mannerism and other trends between the High Renaissance and the Baroque. (GrD)
- 5315. DRAWINGS AND GRAPHICS OF THE RENAISSANCE.** (4 cr; prereq 5307 or 5313, grad or #; offered alt yrs) Canedy  
Drawings and the graphics from the early Renaissance to the Baroque. Original works. (GrD)
- 5323. LATE GOTHIC AND RENAISSANCE SCULPTURE IN NORTHERN EUROPE.** (4 cr; prereq 3009, grad or #) Steyaert  
Sculpture in Germany, France, and the Netherlands from the 14th to the 16th century. (GrD)
- 5324. 15TH-CENTURY PAINTING IN NORTHERN EUROPE.** (4 cr; prereq 3009, grad or #) Steyaert  
Painting in the Netherlands, France, and Germany during the late Gothic period; its influences. (GrD)

- 5326. 16TH-CENTURY PAINTING IN NORTHERN EUROPE.** (4 cr; prereq 3011, grad or #) Steyaert  
Northern Renaissance painting in Germany, the Netherlands, and France. (GrD)
- 5328. THE FLEMISH "PRIMITIVES."** (4 cr; prereq 5326 or #) Steyaert  
Flemish 15th-century painting; the works of Van Eyck, Campin, Van der Weyden, and their followers (Christus, Bouts, Van der Goes, Memling, David). (GrD)
- 5346. BAROQUE ART IN ITALY AND SPAIN.** (5 cr; prereq 3011, grad or #); offered alt yrs) Stoughton  
Italian sculpture, painting, and architecture and Spanish painting of the 17th century. (GrD)
- 5347. BAROQUE ART IN ENGLAND, FRANCE, AND LOWLANDS.** (5 cr; prereq 3011, grad or #; offered alt yrs) Stoughton  
French architecture, painting, and sculpture, Flemish and Dutch painting and English painting and architecture of the 17th century. Emphasis on Rembrandt, Rubens, Poussin, Jones. (GrD)
- 5357. 18TH-CENTURY ART IN FRANCE.** (4 cr; §3303; prereq 3011, grad or #; offered alt yrs) Stoughton  
Rococo and neoclassical art and architecture in France. The painting of Watteau, Boucher, Fragonard, Chardin, David; prints and decorative arts. (GrD)
- 5358. 18TH-CENTURY ART IN ITALY, GERMANY, AUSTRIA.** (4 cr; prereq 3011, grad or #; offered alt yrs) Stoughton  
Architecture, sculpture, and painting; some consideration of prints. (GrD)
- 5441. EARLY 19TH-CENTURY EUROPEAN PAINTING.** (5 cr; §5431; prereq 3 cr ArtH, 19th-century history, literature or #; offered alt yrs) Waldfogel  
Neo-Classicism: the impact of the new understanding of the past, personality, and nature on art and the artist's response to technology and new social and political structures. (GrD)
- 5442. TOPICAL STUDIES IN EARLY 19TH-CENTURY EUROPEAN PAINTING.** (5 cr; prereq 5441; offered alt yrs) Waldfogel  
Selected themes from 5441. (GrD)
- 5443. LATER 19TH-CENTURY EUROPEAN PAINTING.** (5 cr; §5432; prereq 3 cr ArtH, 19th-century history, literature or #; offered alt yrs) Waldfogel  
Realism and estheticism: Ruskinian and French realism; socialism and urbanism; avant-garde and "art for art's sake;" fin de siècle and escapism. (GrD)
- 5444. TOPICAL STUDIES IN LATER 19TH-CENTURY EUROPEAN PAINTING.** (5 cr; prereq 5443; offered alt yrs) Waldfogel  
Selected themes from 5443. (GrD)
- 5463. EARLY 20TH-CENTURY PAINTING.** (5 cr; §5433, 5434; prereq 3012, grad or #) Simon  
Modern painting, mainly before the mid-1920s. (GrD)
- 5464. LATER 20TH CENTURY PAINTING.** (5 cr; §5435; prereq 5463; offered alt yrs) Simon  
Modern painting after the mid-1920s. (GrD)
- 5465. MODERN SCULPTURE.** (5 cr; §5438; prereq 3012 or 2 ArtH courses; offered when feasible) Simon  
Sculpture from Rodin to the present. Major trends and monuments. (GrD)
- 5466. THE AVANT-GARDE.** (5 cr; prereq 3012 or 5463 or #; offered alt yrs) Simon  
History and theory of the avant-garde as applied to contemporary art. The contributions of McLuhan, Cage, Sontag, Buckminster Fuller, Greenberg, and rock music. Influence of "counter culture." (GrD)
- 5467. MODERN ART CRITICISM.** (5 cr; prereq 5463 or 5464 or #; offered alt yrs) Simon  
Critical approaches to modern art. Problems of contemporary critical writing. Criticism workshop. Analysis of the works of influential contemporary critics. (GrD)
- 5535. ART IN THE UNITED STATES.** (4 cr; §3448; prereq 3 cr ArtH or #; offered alt yrs) Cooper, Torbert  
Painting and sculpture. Key works and artists from early settlement through the early 20th century. (GrD)
- 5536. TOPICAL STUDIES: ART IN THE UNITED STATES.** (5 cr; prereq 5535, #; offered alt yrs) Cooper, Torbert  
Seminar dealing with problems in American painting and sculpture from their origins to the early 20th century. (GrD)

## Course Offerings and Major Sequences

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- 5545. AMERICAN ARCHITECTURE.** (5 cr; prereq sr, grad or §; offered alt yrs) Torbert  
American building and European traditions that influenced it from earliest settlement through revivals to about 1890. (GrD)
- 5547. MODERN AMERICAN AND EUROPEAN ARCHITECTURE.** (5 cr; prereq sr, grad or §; offered alt yrs) Torbert  
Modern architecture on the international scene; its influence on work in U. S. (Sullivan, Wright, Behrens, Gropius, Mies, Le Corbusier, Perret, Saarinen, Brewer, Nervi, Torroja, Candela, etc.). (GrD)
- 5641. SCANDINAVIAN ART OF THE 19TH AND 20TH CENTURIES.** (5 cr; prereq 3012 or 3467, grad or §) Nelson  
Painting, sculpture, architecture, and decorative arts. The rise of expressionism in the fine arts and of "Scandinavian Modern" in design. (GrD)
- 5643. PRE-HISTORIC ART OF NORTHERN EUROPE.** (4 cr; prereq 4 cr ArtH or §) Nelson  
Art north of the Alps from the Ice Age through the Celtic period. Cave painting, sculpture, funerary architecture, ceramics, metal work. (GrD)
- 5644. MEDIEVAL ART OF SCANDINAVIA.** (4 cr; prereq 3009, grad or §) Nelson  
Migration, Viking, and Christian art in Scandinavia from the 5th through the 15th centuries—architecture, sculpture, painting, and metal work. (GrD)
- 5645. FOLK ARTS OF SCANDINAVIA.** (4 cr; §3655; prereq 4 cr ArtH or §; offered alt yrs) Nelson  
Wood carving, metal work, decorative painting, weaving, stitchery, and domestic architecture of rural Scandinavia. Its origins in pagan and medieval art. (GrD)
- 5725. CERAMICS IN THE FAR EAST.** (4 cr; offered alt yrs) Poor  
Ceramic art in China, Korea, and Japan from neolithic times to the present. (GrD)
- 5765. EARLY CHINESE ART.** (5 cr; offered alt yrs) Poor  
Ancient ceramics and ritual bronzes; early Buddhist sculpture and Chinese painting. (GrD)
- 5766. CHINESE PAINTING.** (5 cr; offered alt yrs) Poor  
Major works from 4th to 17th centuries. Development of the landscape tradition and literary genre of later Chinese painting. (GrD)
- 5767. JAPANESE PAINTING.** (4 cr; offered alt yrs) Poor  
Japanese pictorial arts from earliest to modern times. Focus on works that exemplify development of indigenous traditions. (GrD)
- 5769. CONNOISSEURSHIP IN ORIENTAL ART.** (5 cr; prereq §; offered alt yrs) Poor  
Direct examination of Oriental art objects in local collections. (GrD)
- 5775. EARLY INDIAN ART.** (4 cr; prereq 4 cr ArtH) Asher  
Sculpture and architecture of India from the Indus Valley civilization through the Kushana period. (GrD)
- 5776. LATER INDIAN ART.** (4 cr) Asher  
Sculpture and architecture of India from the Gupta period through the 12th century. (GrD)
- 5777. PAINTING OF INDIA.** (4 cr) Asher  
Indian painting beginning with the early tradition of mural painting; concentration on miniature painting of the 12th century onward. (GrD)
- 5895. METHODOLOGY.** (4 cr; prereq ArtH major, §)  
Proseminar in the use of bibliographies of various historical periods; all types of reference and source materials. (GrD)
- 5911. ASPECTS OF ARCHITECTURE, SCULPTURE, AND PAINTING OF PRE-COLUMBIAN AMERICA.** (5 cr; prereq sr, grad or §) Torbert  
Aspects of architecture, sculpture, and painting principally in Mexico and Guatemala. Emphasis on Olmec and Maya cultures. (GrD)
- 5921/2/3. ART OF THE FILM.** (4/4/4 cr prereq §; offered when feasible)  
Esthetics of the film. Discussions of editing, montage, sound, and use of the camera, etc. (GrD)
- 5959. SUMMER TRAVEL COURSE IN EUROPEAN ART.** (6 cr; §3059; prereq §) Torbert  
For description, see 3059. (GrD)
- 5970. DIRECTED READINGS.** (1-5 cr; prereq sr, §) (GrD)
- 5990. DIRECTED RESEARCH.** (1-5 cr; prereq sr, §) (GrD)
- 5999. TRANSFER CREDITS.** (GrD)

## ARTS, STUDIO (Arts)

**Staff:** Allen Downs, *chairman*, 210 Art Building; Victor Caglioti, *assistant chairman*; Guy Baldwin, Karl E. Bethke, Peter Busa, Thomas Cowette, David Feinberg, Lynn Gray, Gary Hallman, Raymond Hendler, Curtis Hoard, Warren MacKenzie, George Morrison, Malcolm H. Myers, Katherine Nash, Wayne Potratz, Zigmunds Priede, William Roode, Herman Rowan, Herman Somberg, William Warehall, Saul Warkov

The Studio Arts Department provides introduction to the visual arts through practical experience in studio work.

**Major Sequence for B.A.:** 1. *Required background courses*—One ArtH course at the 1xxx level; two courses chosen from ArtS 1101, 1103, 1301, 12 cr from ArtS 1102, 1104, 1302, 1510, 1520, 1701, 1801. 2. *Major requirements*—At least 28 cr, but no more than 40, in studio courses at 3xxx or 5xxx levels; 8 Upper Division ArtH cr.

**Major Sequence for B.F.A.:** This program, leading to a 4-year professional degree, offers high concentration in studio arts work. It is oriented toward professional work or admission to the M.F.A. program.

**Admission:** Limited to students with 3.0 average in ArtS courses (exceptions are possible). Applicants, either CLA or transfer, must apply for admission no earlier than their final sophomore quarters. Applications are to be made on the form available at the ArtS or Humanities and Fine Arts office. Admission will be based on a student's scholastic record, a portfolio or slides of his work, and the recommendations he offers. It is expected that transfer students will present at least 15 cr in beginning studio experience, or the equivalent, at application.

Accepted candidates are subject to review, and candidacy may be terminated if performance is unsatisfactory. In case of termination, a candidate may transfer to a B.A. program.

1. *Required background courses*—ArtS 1101, 1104, 1301, 1501 or 1503, 1701, 1801; 12 additional ArtS Lower Division elective cr; 8 Lower Division ArtH cr. 2. *Major Requirements*—28 cr in one ArtS field of specialization (drawing and painting, sculpture, photography and film, printmaking, ceramics and glass); 12 additional ArtS Upper Division elective cr. Especially recommended: 5400.

### LOWER DIVISION COURSES

1101. **BASIC DRAWING.** (4 cr)  
Introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums. (GrD)
1102. **DRAWING.** (4 cr; prereq 1101)  
Work from life and nature; introduction to color and pictorial structure. (GrD)
1103. **INTRODUCTION TO STUDIO ARTS.** (4 cr)  
A general introduction to visual art making and its history. Strongly recommended for all beginning students in Studio Arts. (GrD)
1104. **COLOR.** (4 cr; prereq 1101 or 1102)  
Continuing and elaborating upon drawing experiences of 1102; serves as bridge between Lower Division drawing courses and Upper Division painting, printmaking, and other courses where color is used. (GrD)
1107. **DRAWING.** (2 cr; for architects only) (GrD)
1108. **DRAWING** (2 cr; prereq 1107; for architects only) (GrD)
1109. **DRAWING AND PAINTING I.** (2 cr; prereq 1108; for architects only) (GrD)
1301. **BASIC SCULPTURE.** (4 cr) Nash, Kraning, Potratz, Baldwin  
Beginning course. Study of structure with emphasis on form and space. Construction in metal and plaster. (GrD)

## Course Offerings and Major Sequences

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- 1302. BASIC SCULPTURE I.** (4 cr; prereq 1301) Nash, Kraning, Potratz, Baldwin  
Integrates basic principles examined in 1301. Natural form studies for sculptural concepts. Imaginative approach to form. (GrD)
- 1510. INTAGLIO.** (4 cr per qtr, to maximum of 8) Bethke, Johnson  
Techniques of etching and engraving on metal, calligraphy, combined techniques. (GrD)
- 1520. BEGINNING LITHOGRAPHY.** (4 cr per qtr, to maximum of 8; prereq 1101 or #) Priede  
Methods of lithography-planography. (GrD)
- 1701. INTRODUCTION TO PHOTO MEDIUM.** (4 cr)  
The photographic medium, its background and meaning today. Lectures in contemporary and historical use of photography. Problems in use of camera, printing, and enlarging. (GrD)
- 1801. CERAMIC PROCESSES.** (4 cr) MacKenzie, Hoard, Warehall  
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. (GrD)

### UPPER DIVISION COURSES

- 3100. WATER COLOR.** (4 cr per qtr, to maximum of 12; prereq 1101 or equiv, or #) Myers  
Introduction to transparent water color; gouache, casein, and tempera. Figure, still life, landscape, and abstract design. (GrD)
- 3110. DRAWING.** (4 cr per qtr, to maximum of 12; prereq 1102)  
From model, still life, and nature. Principles of anatomy. (GrD)
- 3120. PAINTING.** (4 cr per qtr, to maximum of 12; prereq 1104 and 12 cr of 3110 or #)  
Introduction to medium of oil; individual projects and instruction. (GrD)
- 3130. DRAWING AND DESIGN.** (4 cr per qtr, to maximum of 12; not open to studio arts majors; 2 studio and 1 lect per wk)  
Studio work in varied media; lectures and discussions on theory and practice of contemporary art. (GrD)
- 3140. DRAWING AND PAINTING II.** (2 cr per qtr, to maximum of 6; prereq 1109; for architecture students only) (GrD)
- 3150. PAINTING.** (4 cr per qtr, to maximum of 12; prereq 1101 or 1102 or #)  
Oil and acrylic painting open to general students, as well as art majors. (GrD)
- 3310. DIRECT METAL SCULPTURE.** (4 cr per qtr, to maximum of 12; prereq 1302)  
Welding and brazing. (GrD)
- 3320. MIXED SCULPTURE MEDIA.** (4 cr per qtr, to maximum of 12; prereq 1302)  
Work in stone, wood, plastics, clay, and assemblage. (GrD)
- 3330w,s. METAL CASTING.** (4 cr per qtr, to maximum of 12; prereq 1302)  
Lost wax and sand casting in bronze, aluminum, iron. (GrD)
- 3401. INTERDISCIPLINARY HONORS SEMINAR: MUSIC, STUDIO ARTS, THEATRE.** (2-4 cr; §Mus 3401, Th 3401; prereq jr, sr honors candidate, #) (GrD)
- 3402. INTERDISCIPLINARY HONORS SEMINAR: MUSIC, STUDIO ARTS, THEATRE.** (2-4 cr; §Mus 3402, Th 3402; prereq jr, sr honors candidate, #) (GrD)
- 3510f,w,s. INTAGLIO.** (4 cr per qtr, to maximum of 12; prereq 4 cr of 1510 or #) Bethke, Myers  
(GrD)
- 3701. INTRODUCTION TO ART OF FILM MAKING.** (4 cr; prereq 1701)  
Lectures and practical aspects of making films. (GrD)
- 3710. PHOTOGRAPHY II.** (4 cr per qtr, to maximum of 8; prereq 1701 or Jour 1301 or #)  
Advanced creative problems in color development and printing. Experiments in photographic controls to illustrate limitations and capacities. Use of photography to interpret visual environment; photographer's responsibilities in such use. (GrD)
- 3720f,w,s. FILM WORKSHOP.** (4 cr per qtr, to maximum of 12; prereq #) Downs  
Practical study of motion picture as an art form. Production limited to descriptive and experimental work. (GrD)
- 3810. CERAMIC DESIGN.** (4 cr per qtr, to maximum of 8; prereq 1801 or #) MacKenzie  
Emphasis on wheel throwing. Advanced design problems and introduction to glaze and clay experimentation. Development of personal expression in ceramic medium. (GrD)
- 3970. DIRECTED STUDIES.** (1-5 cr; prereq #) (GrD)

3980. **DIRECTED INSTRUCTION.** (1-5 cr; prereq #)  
Students assist in teaching courses they have already studied. (GrD)
5100. **PROSEMINAR: 20TH-CENTURY ART THEORIES IN PAINTING.** (2 cr; prereq sr, 12 cr of 5120 and #)  
Lectures and discussion. Verbal presentation and analysis of contemporary trends as related to actual process of creativity. (GrD)
5120. **PROBLEMS IN PAINTING.** (4 cr per qtr, to maximum of 24; prereq 12 cr of 3150 and #) (GrD)
- 5130f,w,s. **ADVANCED DRAWING.** (4 cr per qtr, to maximum of 12; primarily for painting majors; prereq 12 cr of 3110 or equiv)  
Drawing in all mediums from life and from imagination. History of drawing. (GrD)
5300. **PROSEMINAR: 20TH-CENTURY ART THEORIES IN SCULPTURE.** (2 cr; prereq #) (GrD)
5310. **DIRECT METAL SCULPTURE.** (4 cr per qtr, to maximum of 8; prereq 12 cr 3310) (GrD)
5320. **CARVING IN STONE AND WOOD.** (4 cr per qtr, to maximum of 8; prereq 12 cr 3320) (GrD)
- 5330w,s. **METAL CASTING.** (4 cr per qtr, to maximum of 8; prereq 12 cr 3330) (GrD)
5340. **EXPERIMENTAL MEDIA.** (4 cr per qtr, to maximum of 12; prereq 8 cr 33xx) (GrD)
5400. **PROSEMINAR: 20TH-CENTURY ART THEORIES.** (2 cr; prereq #) (GrD)
- 5404,5. **HONORS THESIS.** (2-4 cr; prereq #) (GrD)
5500. **PROSEMINAR: 20TH-CENTURY ART THEORIES IN PRINTMAKING.** (2 cr; prereq 5501 and #) (GrD)
5510. **ADVANCED INTAGLIO.** (4 cr per qtr, to maximum of 12; prereq 12 cr of 3510 or #) Bethke, Myers (GrD)
5520. **ADVANCED LITHOGRAPHY.** (4 cr per qtr, to maximum of 12; prereq 4 cr 1520) Priede  
Specialized work in color printing and planographic techniques. (GrD)
5530. **LITHOGRAPHY.** (4 cr per qtr, to maximum of 12; prereq 12 cr of 5520 or #) Priede (GrD)
5700. **PROSEMINAR: PHOTOGRAPHY.** (2 cr; prereq 12 cr of 3720 and #)  
Lectures and discussion of advanced problems involved in appropriate mediums. (GrD)
5710. **ADVANCED PROBLEMS IN PHOTOGRAPHY.** (4 cr per qtr, to maximum of 12; prereq #) (GrD)
5720. **ADVANCED PROBLEMS IN FILM.** (4 cr per qtr, to maximum of 12; prereq #) Downs (GrD)
5810. **GLASS WORKING.** (4 cr per qtr, to maximum of 8; prereq #)  
Techniques in forming glass from its molten state. Creative expression with technical understanding. (GrD)
5820. **ADVANCED PROBLEMS IN CERAMICS.** (4 cr per qtr, to maximum of 12; prereq #)  
Aesthetic awareness and development; techniques and materials. (GrD)
5821. **CERAMIC MATERIALS ANALYSIS.** (4 cr; prereq #)  
Glaze analysis and calculation; glaze types, formulation, materials. Procedures for investigation of unidentified materials. (GrD)
5970. **DIRECTED STUDIES.** (1-5 cr; prereq #) (GrD)

## ASTRONOMY

See Physics and Astronomy

## BEHAVIORAL BIOLOGY

See Ecology and Behavioral Biology

## BENGALI

See South Asian Languages

## BIOCHEMISTRY (BioC)

College of Biological Sciences

Staff: LaVell M. Henderson, *head*, 140 Gortner; John S. Anderson, Victor Bloomfield, Peter J. Chapman, Stanley Dagley, John Gander, Robert Glass, Robert Jenness, Samuel Kirkwood, Irvin Liener, Rex Lovrien, Kenneth Mann, Max Schultze, Huber Warner

Biochemistry is the study of molecules, including especially macromolecules such as proteins and nucleic acids, which occur in living organisms.

A departmental major leading to the B.S. is available through the College of Biological Sciences. (See also listings under Biology.)

### LOWER DIVISION COURSES

**1301f.s. ELEMENTARY BIOCHEMISTRY I.** (5 cr, §Chem 3301; prereq Chem 1005)

Survey of organic chemistry and biochemistry; the chemistry of carbon compounds that occur in nature. The composition, structures, and properties of the major components of plant, animal, and bacterial cells. (GrB)

**1302w. ELEMENTARY BIOCHEMISTRY II.** (4 cr; prereq 1301)

The reaction of organic compounds in the living cell. Metabolic pathways, energy considerations, and biosynthetic processes with emphasis on the aspects essential to an understanding of plant and animal nutrition and physiology. Weekly laboratory. (GrB)

### UPPER DIVISION COURSES

**Biol 3021f.s. BIOCHEMISTRY.** (See Biology listings)

**Biol 3025f.s. LABORATORY IN BIOCHEMISTRY.** (See Biology listings)

**3094. UNDERGRADUATE SEMINAR.** (1 cr; prereq sr biochem maj)

Discussion and reports.

**3990. UNDERGRADUATE RESEARCH.** (1-3 cr; prereq sr biochem maj)

Research problems for B.S. (thesis optional).

**5001w/2s. INTRODUCTION TO BIOCHEMISTRY.** (4/4 cr; prereq Chem 3302 or §; students with grade of A or B in Biol 3021, 3025 may be exempted from 5001; 3 lec, 3 lab hrs/wk)

The fundamentals of the composition, chemical properties, reactions, and interactions of biological materials, illustrated in part through laboratory exercises performed by the student.

**5522f. BIOPHYSICAL CHEMISTRY: STRUCTURE.** (4 cr, §Chem 5522; prereq 2 qtrs physical chemistry, 5741 or 5002 desirable) Bloomfield, Bryant

Methods of structure determination of biological macromolecules. Molecular weight determination, hydrodynamics, scattering and diffraction, optical and magnetic resonance spectroscopy. Application to proteins, nucleic acids, and synthetic analogs.

**5523w. BIOPHYSICAL CHEMISTRY: ENERGETICS.** (3 cr, §Chem 5523; prereq 2 qtrs physical chemistry, 5741 or 5002 desirable) Lovrien, Miller

Energetics of biochemical reactions. Titration, binding, and folding stabilization in macromolecules. Conformational changes and cooperative behavior. Coupling and energy gradients in transport.

**5524s. BIOPHYSICAL CHEMISTRY: DYNAMICS.** (4 cr, §Chem 5524; prereq 2 qtrs physical chemistry, 5741 or 5002 desirable) Lumry, Barnett

Application of thermodynamics, statistical mechanics, and chemical kinetics, solvent effect structure-function relation.

**5741/2w/3s. GENERAL BIOCHEMISTRY.** (3/3/3 cr, §MdBc 5741/2/3; prereq Chem 3303, 5501 or 5520 or ¶Chem 5501 or 5520 or §; offered jointly by Departments of Biochemistry, College of Biological Sciences, and Biochemistry, Medical Sciences)

Lectures on chemical nature, properties, biochemical reactions, and intermediate metabolism of components of biological systems.

**5745f/6w. GENERAL BIOCHEMISTRY LABORATORY.** (3/3 cr; prereq ¶5741/2, cr in analytical chemistry and §)

Laboratory course to accompany 5741/2.

**5970. DIRECTED STUDIES.** (1-3 cr; prereq §, Δ)

Offered to enable students to make up deficiencies in background course work.

**BIOLOGY (Biol)**

College of Biological Sciences

**Staff:** Richard S. Caldecott, *dean*, 123 Snyder Hall; Norman S. Kerr, *associate dean*, P190 Kolthoff; Jeanne T. Lupton, *assistant to the dean*; departmental faculty

Biologists concern themselves with the fundamental properties of living things in studies which range from the interactions of molecules unique to life, through the maintenance and integration of organisms, to the interactions of populations in space and time.

See also listings under anatomy, biochemistry, botany, ecology and behavioral biology, genetics and cell biology, microbiology, physiology, and zoology.

**Major Sequence for B.A.** (the number of majors is limited): 1. *Required background courses*—Biol 1002 or 1011 or  $\Delta$ ; Chem 1004/5, 3301/2 and four additional cr; Math 1211/21/31 and one of the following: 3211, 3142, 3066, 3161, 3221, CICS 3101; Phys 1104/5/6 or 1271/81/91 with 1275/85/95. 2. *Major requirements*—Two of these courses: Biol 3011, 3012, 3013; Biol 3021, 3032, 3041; Biol 5052 or Bot 3131/2 or Bot 5141/2 or MicB 5321/2 or Zool 5104; ten additional Upper Division cr, including at least two courses with laboratory work in biological science; courses chosen from any of the following should be considered courses in the major: anatomy, biochemistry, biology, botany, ecology and behavioral biology, genetics and cell biology, microbiology, physiology, zoology.

For majors leading to the B.S. in biochemistry, biology, botany, ecology, and zoology, see the *College of Biological Sciences Bulletin*.

*Note*—All Biology courses are assigned to Distribution Group B.

**General Education**—Courses especially appropriate for nonscience and non-biology majors include: 1011, 1101, 1102, 1103, 1104, 1105, 1106, 3051; Bot 1009, 1012, 3003, 3071; Ecol 3001, 5027; GCB 3002, 3022, 3201; Zool 3096.

**LOWER DIVISION COURSES**

**1011f,w,s,su. GENERAL BIOLOGY.** (5 cr) Gorham, McKinnell

The importance of biology and its relationship to the life of man. (GrB)

**1101w,s. HEREDITY AND HUMAN SOCIETY.** (4 cr; §3032, GCB 3002, 3022; for students in programs not directly related to biological sciences)

The principles of heredity and their social and cultural implications.

**1102w,s. MICROBES AND MAN.** (4 cr; §3013 or MicB 3103 or 5105; prereq 1002 or 1011) Dagley, Chapman

Microorganisms in relationship to man and his environment; their importance in the processing and preservation of food, waste disposal, and environmental factors; bacterial products of industrial and pharmaceutical importance; role of microorganisms in recycling elements of the biosphere, microorganisms, and disease.

**1103w,s. GENERAL BOTANY.** (5 cr; §3012; prereq 1011)

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

**1104s. ECOLOGY AND MAN.** (4 cr; §Ecol 1003; prereq 1011) Brock

The basic concepts of ecology with special reference to man's increasing impact and exploitation of the environment; stress on the biosphere's limits of energy, resources, and space.

**1105w. INTRODUCTION TO EVOLUTIONARY BIOLOGY.** (4 cr; §Zool 3096; not open to biology majors; prereq 1011 or 1101) Birney, Regal

History and basis of evolutionary thought, with consideration of the history and future of man.

**1106f,w,s. GENERAL ZOOLOGY.** (4 cr; §Biol 3011, Zool 1013; prereq Biol 1011)

Survey of animal phyla; considerations of structure, function, behavior, adaptation, and evolutionary relationships.

## Course Offerings and Major Sequences

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### 1951/2/3†. FRESHMAN COLLOQUIUM. (2/2/2† cr; prereq Δ)

Introduction to disciplines within biology, biological sciences faculty, alternative ways of studying biology, and career opportunities. Each student will plan a possible course of study.

### UPPER DIVISION COURSES

#### 3011f,w. ANIMAL BIOLOGY. (5 cr; §Zool 1013 or Biol 1106; prereq 1002 or 1011 or Δ, Chem 1005) Herman, Gilbertson

Survey of types of animals; emphasis on the varied ways in which different animals have solved similar problems.

#### 3012w,s. PLANT BIOLOGY. (5 cr; §Bot 1001, Biol 1103; prereq 1002 or 1011 or Δ, Chem 1005) Pratt, McLaughlin

Comparative study of growth, development, and function in plants; emphasis on adaptations that have evolved in various groups of plants providing suitable means of support; transport of materials, nutrition, and reproduction; evolution and diversity of plant life.

#### 3013f,w,su. MICROBIOLOGY. (4 cr; §MicB 5105, 3103; prereq 1002 or 1011 or Δ, Chem 3302 or §) Dworkin, Chapman

Taxonomy, anatomy, physiology, biochemistry, and ecology of microbes. Emphasis on molecular structure in relation to bacterial function.

#### 3021f,s. BIOCHEMISTRY. (4 cr; prereq 1002 or 1011 or Δ, Chem 3302) Kirkwood

Introduction to the biochemistry and biophysics of cells; emphasis on enzyme catalysis, cellular energetics, biosynthesis of cellular constituents, and cellular regulatory mechanisms.

#### 3025f,s. LABORATORY IN BIOCHEMISTRY. (1 cr; prereq 3021 or ¶3021) Chapman, Warner

Laboratory course to accompany 3021.

#### 3032f,w,s. GENETICS AND CELL BIOLOGY. (5 cr; §CGB 3022; prereq 3021)

Introduction to the principles of heredity and cell biology, with consideration of both procaryotic and eucaryotic organisms.

#### 3041f,w. ECOLOGY. (4 cr; prereq 1 qtr calculus, 3032 or §) Corbin, McColl, Tester

Interactions of plant and animal populations and their environments. The organization, functioning, and development of ecological systems; population growth and regulation. Modern man's impact on the biosphere.

#### 3045f,s. LABORATORY IN ECOLOGY. (1 cr; prereq 3041) Wright, Tester

Laboratory course to accompany 3041.

#### 3051f. BIOLOGY AND THE FUTURE OF MAN. (4 cr; offered SN only) Pratt, Gorham

A 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 organization.

#### 3950f,w,s. UNDERGRADUATE SEMINAR. (1-2 cr; prereq 2.50 GPA and §) Staff

Seminars will describe the principles of many different experimental techniques. The purpose of the seminars is to acquaint students with the uses, limitations, and sensitivity of physical, chemical, and biological techniques used by the biologist.

#### 3980. DIRECTED INSTRUCTION. (1-5 cr; prereq §, Δ)

#### 5052w,s. GENERAL PHYSIOLOGY. (5 cr; prereq 3011, 3021, Phys 1106 or 1291/95) Sheridan, Goldstein

Lectures and assigned reading on molecular evolution covering prebiotic evolution and tion with emphasis on the application of physical and chemical principles. Major topics include transport, electrical activity of cell membranes, and cell contractility.

#### 5061w,s. DEVELOPMENTAL BIOLOGY. (3 cr; prereq 3032) Spratt, McLaughlin

The study of developing systems and of the control mechanisms of development, from the molecule to the organism.

#### 5065w,s. LABORATORY IN DEVELOPMENTAL BIOLOGY. (2 cr; prereq 5061 or ¶5061) Spratt, McLaughlin

Laboratory course to accompany 5061.

#### 5501s. BIOCHEMICAL EVOLUTION. (4 cr; prereq 5 cr biochemistry) Kirkwood, Jenness

Lectures and assigned reading on molecular evolution covering prebiotic evolution and the phylogeny of important functional molecules and biochemical systems in living organisms.

- 5601f. GENERAL CYTOLOGY.** (3 cr; §3032, GCB 3012, 5051; prereq 10 cr in biology, botany or zoology, elementary genetics or §) Johnson, Cunningham  
Introductory analysis of structure growth and function of cells and organelles.
- 5605f. GENERAL CYTOLOGY LABORATORY.** (2 cr; prereq 5601 or §5601 or 3032 or §3032 or §)  
Experimental approaches to cell structure and function, including specialized forms of light microscopy, autoradiography, cell fractionation, and an introduction to electron microscopy.
- 5951w. THE BIOLOGIST AS SCIENTIST, EDUCATOR, AND CITIZEN.** (3 cr; prereq 15 cr biological sciences) Hooper and staff  
The role of the scientists in decision making and persuasion; teaching methods in biology; the organizational structure of the academic and governmental world.

## BIOMETRY (PubH)

School of Public Health

**Staff:** Marcus O. Kjelsberg, *director*, 1226 Mayo; Glenn E. Bartsch, *director of undergraduate studies*, 1203 Mayo; Eugene Ackerman, Jacob E. Bearman, Dorothy A. Jeffries, Eugene A. Johnson, Richard B. McHugh

Biometry, an interdisciplinary field in the biological and health sciences, interrelates biomedical statistics, health computer science, and mathematical biology in the study of quantitative concepts and research procedures of the life and health sciences.

The biometry program leading to the B.A. prepares the student for a variety of careers: (1) bioscience and health science research; (2) pharmaceutical and related industry; (3) voluntary and governmental health agencies at local, state, national, and international levels. A student interested in a career as a professional biometrician or in teaching should plan for a graduate program, available at several universities including Minnesota.

**Major Sequence for B.A.:** 1. *Required background courses*—Math 1211/21/31 or 1311/21/31 or 1611/21 (premedical students taking 1141,2 may substitute that sequence); Chem 1004/5, Biol 1011. 2. *Major requirements*—PubH 5430, 5450/1/2/3; 14 additional cr chosen from biometry courses (PubH x4xx) numbered 5410 or above, Stat 5121/2/3 or 5131/2/3.

*Note: Biometry courses listed below are offered in the School of Public Health (PubH).*

### UPPER DIVISION COURSES

- PubH 3400. DIRECTED STUDIES.** (Cr ar, may be repeated for cr; prereq §) Staff  
Individual study or research under the guidance of a staff member.
- PubH 5400. INTRODUCTION TO QUANTITATIVE METHODS IN THE LIFE SCIENCES.** (3 cr; primarily for premedical students and students majoring in biological sciences; prereq Biol 1011, Chem 1004/5, Math 1231, §) Johnson  
Basic quantitative methods for the design and analysis of clinical and laboratory studies in biology and medicine.
- PubH 5411. INTRODUCTION TO MATHEMATICAL DEMOGRAPHY.** (3 cr; §Soc 5561; §) DasGupta  
Basic demographic measures and concepts of fertility, mortality, and migration. Introduction to stable population methods and to demographic estimates from incomplete data.
- PubH 5412. SURVEY SAMPLING IN SOCIAL AND HEALTH SCIENCE RESEARCH.** (3 cr; prereq §; §Soc 5970) DasGupta  
Probability sampling in social and health science surveys. Analysis and application of simple random, stratified, systematic, multi-stage, and cluster sampling.
- PubH 5430/1/2. BIOMEDICAL COMPUTING I, II, III.** (3/3/3 cr; prereq Math 1111)  
Data processing concepts and equipment; information storage and retrieval; statistical and analysis packages; dynamic programming; special input/output techniques for

## Course Offerings and Major Sequences

biological laboratory experimentation, epidemiology, hospital information systems, and pattern recognition.

- PubH 5436. ANALYTICAL TECHNIQUES FOR HEALTH DELIVERY SYSTEMS.** (3 cr, prereq calculus and 5450/1 or #) Johnson  
Operations research and systems analysis techniques applied to medical service systems. Emphasis on applications of linear programming, theory of queues, and inventory models in health care systems.
- PubH 5440/1/2. QUANTITATIVE MAMMALIAN BIOLOGY I, II.** (3/3/3 cr; prereq 1-yr sequences in mathematics, physics, chemistry, and biology or #; §Phsl 3052/3)  
Diffusion, surface tension, and mechanics of respiration, circulation, digestion, and locomotion. Chemical aspects of blood, respiration, renal function, nutrition, and metabolism. Endocrine, sensory, neuromuscular, and central neural functioning.
- PubH 5450. BIOMETRY I.** (3 cr; prereq familiarity with basic concepts of calculus desirable and §5451) Bartsch, Jeffries  
Basic concepts in probability, binomial, Poisson and normal probability models for random phenomena in the biological and medical sciences.
- PubH 5451. BIOMETRY LABORATORY I.** (2 cr; prereq §5450) Jeffries  
Application of concepts of probability to the development of probability models for random phenomena in the biological and medical sciences.
- PubH 5452. BIOMETRY II.** (3 cr; prereq 5450 and §5453) Bartsch, Jeffries  
Further consideration of testing statistical hypotheses and interval estimation;  $\chi^2$  applied to frequency data; regression analysis; correlation; analysis of variance; contrasts and multiple comparison techniques.
- PubH 5453. BIOMETRY LABORATORY II.** (2 cr; prereq §5452) Jeffries  
Application of concepts of testing and estimation of the parameters of the basic probability models; application of  $\chi^2$  to goodness of fit and heterogeneity tests; application of regression to bioassay; application of analysis of variance to bioassay.
- PubH 5454. BIOMETRY III.** (3 cr; prereq 5452 and §5455) Bartsch, Jeffries  
Analysis of nested, randomized block, factorial, and split plot designs.
- PubH 5455. BIOMETRY LABORATORY III.** (2 cr; prereq §5454) Jeffries  
Basic designs will be illustrated with numerous examples from the biological sciences.
- PubH 5456. BIOMETRY CONSULTING SEMINAR.** (3 cr; prereq biometry major; offered every quarter) Boen and others  
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. Biometry student internship experiences.
- PubH 5459. INTRODUCTION TO MATHEMATICAL THEORY IN BIOMETRY.** (3 cr; prereq two quarters of calculus, 5455 or #) Jeffries  
Generating functions, curve fitting, iterative estimation, tests, propagation of error, and related topics. Illustrations from epidemics and population growth, bioassay, clinical trials, demography, and other bio-health science areas.
- PubH 5460. DEMOGRAPHY AND HEALTH.** (3 cr; prereq biometry major, others #) Kjelsberg  
Needs, sources, collection, and interpretation of data in the areas of population, mortality, morbidity, natality, and health services.
- PubH 5462. LIFE TABLE TECHNIQUES.** (3 cr; prereq biometry major, others #) Kjelsberg  
Mathematical development of life table techniques and application to follow-up studies in medicine and public health.

## BIostatistics

See Public Health

## Botany (Bot)

College of Biological Sciences

Staff: Albert W. Frenkel, *head*, 8 Botany; Ernst Abbe, Edward Cushing, Eville Gorham, John Hall, Willard Koukari, Herbert Jonas, Donald Lawrence, David McLaughlin, Thomas Morley, Gerald Ownbey, Douglas Pratt, Thomas Soulen, Clifford Wetmore

Botanists study the structure, function, development, classification, evolution, and world-wide distribution and importance of plants ranging from algae and

fungi to higher flowering plants. Special studies range from the molecular basis of plant evolution and development and mechanisms by which plants convert light into chemical energy to the use of plants in the interpretation of the history and prehistory of the world and their impact on human civilizations.

A departmental major leading to the B.S. is available through the College of Biological Sciences.

*Note*—All Botany courses are assigned to Distribution Group B.

**General Education**—Courses especially appropriate for nonmajors are Biol 1103; Bot 1009, 1012, 3003, 3071.

**LOWER DIVISION COURSES**

- 1009s. MINNESOTA PLANT LIFE.** (4 cr; suitable for nonmajors) Morley  
Nontechnical survey of all the groups of plants native to Minnesota; identification and distribution. (GrB)
- 1012f,w. PLANTS USEFUL TO MAN.** (4 cr; for majors or nonmajors) Lawrence, Jonas  
Roles of plants in man's biological and cultural development. Lectures and demonstration of material. (GrB)
- Biol 1103w,s. GENERAL BOTANY.** (5 cr; prereq Biol 1011) Hall  
Levels of organization of plants, plant function, plant growth and development, plant reproduction.

**UPPER DIVISION COURSES**

- 3003s. FIELD BOTANY.** (4 cr; prereq 1009 or Biol 1011 or 1103 or #; intended for prospective teachers) Lawrence  
Plants in nature. Their recognition, geographical distribution, reproductive habits, growth and seasonal development, and uses by aboriginal man. Use of the out-of-doors for teaching natural history. Weekly field trips. (GrB)
- 3071f. PLANTS AND HUMAN AFFAIRS.** (4 cr; prereq 1009 or Biol 1103 desirable) Jonas, Lawrence  
The reciprocal and deterministic interaction between plants and man as illustrated by events and developments in agriculture, industry, trade, domestic and foreign affairs, medicine, religious customs, and the arts.
- 3109w. PLANT ANATOMY.** (5 cr; prereq Biol 1002, 1103 or 3012) Hall  
Structure and development of plants with special reference to vascular plants.
- 3131f,s. SURVEY OF PLANT PHYSIOLOGY.** (3 cr; prereq Biol 1002, 1103, or 3012, Chem 3301 or BioC 1301) Staff  
Physiological principles underlying the processes that occur in living plants, with emphasis on higher plants. Growth and development, mineral nutrition, water relations and solute metabolism, respiration, photosynthesis.
- 3132f,s. PLANT PHYSIOLOGY LABORATORY.** (2 cr; prereq 3131 or ¶3131)  
Laboratory course to accompany 3131.
- 3201s. ELEMENTARY TAXONOMY.** (3 cr; prereq Biol 1002, 1103, or 3012) Morley  
Taxonomy of ferns, gymnosperms, and flowering plants (representative material drawn largely from Minnesota spring flora). Families of plants and their relationships; floral structure and function; taxonomic terms; nomenclature; literature; methods of collection and identification. Two or three field trips.
- 3950f,w,s. UNDERGRADUATE PROSEMINAR.** (1 cr per qtr; prereq #)  
Biological topics of current interest.
- 3970f,w,s. INDEPENDENT STUDIES.** (1-5 cr per qtr; prereq #)  
Individual study on selected topics or problems; selected readings and use of scientific literature.
- 3990f,w,s. RESEARCH PROBLEMS.** (1-5 cr per qtr; prereq #)  
Individual research for undergraduate majors.
- 5103f. BIOLOGY OF NONVASCULAR PLANTS.** (5 cr; prereq Biol 1103 or 3012) McLaughlin, Wetmore  
Algae, fungi, lichens, and bryophytes. Characteristics of the groups, evolutionary relationships, life cycles, comparative morphology (including ultrastructure), and comparative nutrition. Living materials emphasized in the laboratory. (GrB)

## Course Offerings and Major Sequences

- 5105w. MORPHOLOGY OF VASCULAR PLANTS.** (5 cr; prereq Biol 1103 or 3012 or #) Abbe  
Vegetative and reproductive structure of living and fossil vascular plants. Their evolutionary relationships based on phylogenetic principles. (GrB)
- 5111w. DEVELOPMENTAL PLANT ANATOMY.** (5 cr; prereq Biol 1002, 1103, or 3012) Abbe  
Microscopic structure of vascular plants; development in the root, stem, and leaf.
- 5141w. SURVEY OF PLANT PHYSIOLOGY.** (3 cr; prereq Biol 1002, 1103, or 3012, 1 yr physics, course in organic chemistry or biochemistry; §PIPh 5141) Frenkel  
Physiological processes in living plants, with emphasis on higher plants. Growth and development, energy relations, mineral nutrition, water relations, respiration, photosynthesis, and nitrogen metabolism.
- 5142w. PLANT PHYSIOLOGY LABORATORY.** (2 cr; prereq 5141 or ¶5141)  
Laboratory course to accompany 5141.
- 5182s. PLANT METABOLISM.** (3 cr; prereq course in biochemistry; §PIPh 5182) Soulen  
Plant metabolism including photosynthesis, respiration and the synthesis of macromolecules by plants. Structure-function relations at the plant, cell and subcellular level. Energy flow in the plant system and regulation of plant metabolism.
- 5183w. WATER, MINERALS, AND TRANSLOCATION.** (4 cr; prereq course in biology, physics, and organic chemistry or biochemistry; §PIPh 5183) Stadelmann, Smith  
Membrane phenomena and osmotic properties of cells. Uptake, movement, and loss of water in plants; the effects of external factors. The translocation of organic substances. The absorption, distribution, and function of inorganic elements.
- 5184f. PLANT GROWTH AND DEVELOPMENT.** (3 cr; prereq course in biology and organic chemistry; §PIPh 5184) Brun, Haissig  
Growth of higher plants: division and differentiation of cells, development of plant organs, the effects of external factors on plant growth, photosynthesis and respiration in relation to plant development and the nature and action of plant growth substances.
- 5205s. FLORA OF MINNESOTA.** (4 cr; prereq 3201 or #) Ownbey  
The vascular plants of Minnesota; taxonomic and floristic relationships; geographical distribution and variation; collecting and identification; field trips.
- 5231f. INTRODUCTION TO THE STUDY OF ALGAE.** (5 cr; prereq 10 cr in botany or biology or #; offered 1972-73 and alt yrs) Brook  
Structure, reproduction, and life histories of major algal divisions.
- 5801su. SUMMER FLORA OF MINNESOTA.** (5 cr; prereq 3201 or #; offered at Itasca)  
Flowering plants and ferns of the state; local flora. Collection and identification; distribution in Minnesota; literature and taxonomic methods.
- 5805su. AQUATIC FLOWERING PLANTS.** (5 cr; prereq 3201 or #; offered at Itasca)  
Higher plants of aquatic and marsh habitats. Identification and collection; association of species; relations to habitat; adaptive morphology and food value to wildlife. Association of species; relation to the habitat.
- 5811su. FRESHWATER ALGAE.** (5 cr; prereq 10 cr in biology or #; offered at Itasca)  
Morphology and taxonomy of freshwater algae; collection and identification of local algae.
- 5815su. BRYOPHYTES.** (5 cr; prereq 10 cr in biology or #; offered at Itasca)  
Field and laboratory study of the mosses and liverworts of Minnesota.
- 5821su. LICHENS.** (5 cr; prereq 10 cr in botany or zoology or #; offered at Itasca)  
Taxonomy, ecology, and floristics of the lichens of northern Minnesota; identification, sampling methods, microchemistry as a taxonomic tool.
- 5970f,w,s. BASIC BOTANY.** (Cr ar; prereq Biol 1002, 1103, or 3012 and #) Staff  
Individual work in a special discipline.

## BUSINESS ADMINISTRATION (BA)

College of Business Administration

Business administration courses listed below are open to CLA students. There is no CLA major in business administration, but some of the courses may count toward a major in economics.

### LOWER DIVISION COURSES

- Acct 1050f,w,s. PRINCIPLES OF ACCOUNTING I.** (4 cr; prereq 3rd qtr fr)  
Introduction to basic financial accounting concepts and their application to the recording and reporting of business events.

**Acct 1051f,w,s. PRINCIPLES OF ACCOUNTING II.** (4 cr; prereq 1050)

Accounting analysis and reports for management and investor decision making.

**QA 1050f,w,s. ELEMENTARY MANAGERIAL STATISTICS.** (4 cr; prereq Math 1131 or 1141 or equiv)

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. (GrA)

**UPPER DIVISION COURSES**

Upper Division courses in business administration are open only to Upper Division students or business majors.

**BLaw 3058. INTRODUCTION TO LAW, AND THE LAW OF CONTRACTS AND AGENCY.** (4 cr; prereq Econ 1002 or equiv)

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

**BFin 3000. FINANCE FUNDAMENTALS.** (4 cr; prereq Acct 1051)

A comprehensive analytical introduction to the principal concepts in finance. The business environment; valuation theory. Management decisions concerning uses and sources of funds; capital budgeting. The nation's financial markets.

**Ins 3100. RISK MANAGEMENT AND INSURANCE.** (4 cr; §8100)

Recognition and evaluation of 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, automobile insurance.

**IR 3002. INDUSTRIAL RELATIONS SYSTEMS: LABOR MARKETS AND THE MANAGEMENT OF HUMAN RESOURCES.** (4 cr; prereq Econ 1001, 1002, Psy 1001)

Labor markets, manpower management, federal-state employment policies, and the resolution of industrial conflict. Processes of valuing, employing, developing, motivating, and maintaining human resources in an industrial society.

**IR 3007. COLLECTIVE BARGAINING NEGOTIATIONS AND MODERN LABOR RELATIONS.** (4 cr)

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; significant trends.

**IR 3010. HUMAN RELATIONS AND APPLIED ORGANIZATION THEORY.** (4 cr)

Human relations problems in modern organizations; approaches to their solution. Philosophies and theories of human relations and their translation into policy. Discussions, cases, role-playing, and skill-building sessions.

**Mmgt 3001. FUNDAMENTALS OF MANAGEMENT.** (4 cr; §8001)

The principal functional areas of management: concepts, theory, research, and operational problems. Factors and relationships necessary to achieve organizational objectives: establishment of goals, policies, procedures; organizational structure and behavior; leadership; control systems.

**Mktg 3000. PRINCIPLES OF MARKETING.** (4 cr; prereq Econ 1002 or equiv)

Basic policy and strategy issues in marketing and environmental factors that affect these issues. Legal, behavioral, ethical, competitive, economic, and technological factors as they affect product, pricing, promotion, and marketing channel decisions.

**Mktg 3085. PRICE AND PRODUCT POLICY.** (4 cr; prereq 3000)

Managerial aspects of pricing and product policies and strategies. Methods and factors in developing and updating product line and pricing decisions in industrial and consumer markets. Pricing and product line objectives, product planning and evaluation; managing the product line, environmental factors affecting product and pricing strategies, quantitative aspects of product line and pricing decisions.

**MIS 3100. COMPUTERS AND SYSTEMS DESIGN.** (4 cr; §8208; prereq 3098 or 3099 or ¶ and OAM 3055)

Concepts of computer logic and computer systems. Application of introductory software systems to the development of models for organization decision making. The student will program decision models and basic file-oriented information systems using FORTRAN and COBOL.

## Course Offerings and Major Sequences

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**OAM 3055. INTRODUCTION TO MANAGEMENT SCIENCES.** (4 cr; prereq QA 1050, MIS 3099 or ¶, Math 1142 or equiv)

First course in the use of analytical approaches and techniques within business contexts. The role of mathematical models, statistical techniques related to data acquisition, and the use of computers and computer techniques in solving organizational problems: deterministic and stochastic models. Problem solving and case analysis.

**OAM 5056. APPLICATIONS OF ANALYTICAL METHODS AND COMPUTERS IN OPERATIONS MANAGEMENT AND ANALYSIS.** (5 cr; prereq OAM 3055 or §)

The application of forecasting methods, optimization techniques; simulation; product and project management methods; inventory models, quality control techniques and computer technology problems encountered in organizational management. Problem solving and case analysis.

**Tran 3054. FUNDAMENTALS OF TRANSPORTATION.** (4 cr; §8154; prereq Econ 1002 or equiv)

Organization and economic aspects of transportation systems of United States, including rail, highway, air, pipeline, and water transportation. Administration of transportation by its users, its providers (carriers), and government.

## CELL BIOLOGY

See Genetics and Cell Biology

## CHEMISTRY (Chem)

Institute of Technology

**Staff:** Robert M. Hexter, *chairman*, 139A Smith Hall; Archie S. Wilson, *associate chairman*, 139 Smith Hall; Ronald E. Barnett, Ernest H. Baughman, Victor A. Bloomfield, Richard F. Borch, Robert C. Brasted, J. Doyle Britton, Robert G. Bryant, Sidney E. Buttrill, Lawrence E. Conroy, Bryce L. Crawford, Jr., John S. Dahler, H. Ted Davis, Raymond M. Dodson, John E. Ellis, Stuart W. Fenton, W. Ronald Gentry, J. Zanos Gougoutas, Gary R. Gray, C. Fred Koelsch, Maurice M. Kreevoy, Edward Leete, Sanford Lipsky, Rufus W. Lumry, C. Alden Mead, Edward J. Meehan, Wilmer G. Miller, Albert J. Moscovitz, Victor G. Mossotti, Wayland E. Noland, Paul R. O'Connor, John Overend, Louis H. Pignolet, Stephen Prager, Warren L. Reynolds, William B. Schwabacher, Harold S. Swofford, Donald G. Truhlar, Frederic A. Van-Catledge, John E. Wertz

**Major Sequences for B.A.:** Chemistry offers six different "tracks" or programs of study leading to B.A. degrees. Seven chemistry courses—the "core courses"—as well as the required background courses are common to all tracks. The student chooses the track most suitable for his interests and educational goals after completing the core courses: 1031, 1032, 1034, 3034, 3201, 5126, 5505. 1. *Required background courses*—Phys 1271/75, 1281/85, 1291/95; Math 1211, 1221, 1231, 3211. Chemistry majors must acquire a knowledge of German sufficient to read chemical literature. 2. *Major requirements—Basic track* (for students who plan graduate work in chemistry): Chem 5502, 5703, and 11 elective Upper Division Chem cr chosen in consultation with adviser.

*Biophysical chemistry track*—Chem 5522, 5523, 5524 and at least 12 cr chosen in consultation with adviser from BioC 5741, 5742, 5743, 5745, 5746; Chem 5342, 5580, 5125; MicB 3103; ChEn 5751, 5752, 5753; Gen 3012, 5082; BPhy 5156, 5157.

*Chemical instrumentation track*—Chem 5126, 5127, and at least 10 cr chosen in consultation with adviser.

*Materials science track*—MatS 5011, 5012, 5013, and at least 8 cr chosen in consultation with adviser.

*Eco-Chemistry track*—Water chemistry, consumer chemistry, and at least 12 cr chosen in consultation with adviser.

*Open track* (for students who wish to formulate special programs for special goals, under approval of director of undergraduate studies)—At least 20 Upper Division cr chosen in consultation with adviser.

*Note*—All Chemistry courses are assigned to Distribution Group B.

*College of Education*—For the specialized chemistry curricula, see the *College of Education Bulletin*.

*Note*—Each student must present a deposit card for admission to laboratory sections. See Deposit Cards section of *Class Schedule*.

#### LOWER DIVISION COURSES

**1004/5†. GENERAL PRINCIPLES OF CHEMISTRY.** (5/5 cr; §1014 or 1031/2; prereq predicted Math GPA 1.90 on ACT, Math 0009 or college course in algebra, 4 yrs high school math and high school chem recommended; 4 lect, 1 rec, and 3 lab hrs per wk; primarily for nonchem majors)

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. (GrB)

**1006. PRINCIPLES OF SOLUTION CHEMISTRY.** (4 cr; prereq 1005 or 1032; 3 lect and 4 lab hrs per wk)

Lecture and laboratory work related to chemistry of selected cations and anions. Detection and behavior of ions; heterogeneous and homogeneous equilibria systems. Attention to oxidation-reduction systematics; complex ion formation as it relates to aqueous solution chemistry; general chemical phenomena interrelated with structure. (GrB)

**1014. GENERAL PRINCIPLES OF CHEMISTRY.** (4 cr; §1004, 1031; prereq Phys 1210/5, 1220/5 or #; 3 lect and 4 lab hrs per wk; primarily for engineering majors—sophomores and above)

Fundamental principles of chemistry. A terminal course.

**1031. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr; §1004, 1014; prereq 4 yrs high school math, 1 yr high school chemistry, 1 yr high school physics recommended; 3 lect, 1 lect discussion, 1 lab discussion plus one 4-hr lab per wk)

A consolidation of the basic principles of chemistry with those of qualitative and quantitative analysis; stoichiometry, development and use of structural concepts, energetics and geometry of molecule, bonding, and the behavior of the gaseous and liquid states. (GrB)

**1032. GENERAL PRINCIPLES OF CHEMISTRY.** (5 cr; §1005; prereq 1031; 3 lect, 1 lect discussion, 1 lab discussion plus one 4-hr lab per wk)

A continuation of the development of the basic principles of chemistry utilizing quantitative techniques. The solid state, theory of solutions, equilibrium, gas and condensed phases, behavior and nature of the solution process, acids and bases. (GrB)

**1034. SYNTHESIS I.** (5 cr; prereq 1032; 4 lect, 1 lab discussion plus one 4-hr lab per wk)

Structure, synthesis and reactions of organic compounds. The relationship of organic chemistry to problems of health and environment. Laboratory work to illustrate principles.

**1301. CARBON COMPOUNDS.** (4 cr; for students in engineering, except chemical and mining; prereq 1005, or 1032; 4 lect hrs per wk; cannot be substituted for 3301 or 3302)

Carbon compounds; emphasis on compounds useful as engineering materials, and processes by which such compounds are made. (GrB)

#### UPPER DIVISION COURSES

**3034. SYNTHESIS II.** (5 cr; prereq 1034; 4 lect, 1 lab discussion plus one 4-hr lab per wk)

Continuation of Chem 1034. The relationship of organic chemistry to living systems. Laboratory work to illustrate.

**3100. QUANTITATIVE ANALYSIS.** (3 cr, 3100,1†; for nonchemistry majors; prereq 1005)

Modern quantitative methods of analysis. Lecture. (GrB)

**3101. QUANTITATIVE ANALYSIS.** (2 cr; for nonchemistry majors; prereq 3100 or ¶3100)

Modern quantitative methods of analysis, including elementary physicochemical procedures. Laboratory. (GrB)

**3102. INTRODUCTION TO ANALYTICAL CHEMISTRY.** (4 cr; for physics majors; prereq 1014, 3 lect and 4 lab hrs per wk)

Equilibria involved in analytical processes. Properties and formation of precipitates. Methods of separation. Introduction to electrochemical methods.

## Course Offerings and Major Sequences

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- 3201. RATES AND MECHANISMS.** (5 cr; prereq 3034 or equivalent; 3 lect, one 3-hr lab plus lab discussion as arranged per wk)  
Fundamentals of rates and mechanisms of chemical processes. Potential energy surfaces. Absolute rate theory.
- 3301. ELEMENTARY ORGANIC CHEMISTRY.** (5 cr; prereq 1005 or 1032 or equiv; 3 lect, 1 lab conf, 1 quiz, and 4 lab hrs per wk)  
Important classes of organic compounds, both aliphatic and aromatic, together with some heterocyclic compounds. In laboratory, the preparation of typical substances.
- 3302. ELEMENTARY ORGANIC CHEMISTRY.** (5 cr; prereq 3301; 3 lect, 1 lab conf, 1 quiz, and 4 lab hrs per wk)  
For description, see 3301.
- 3303. ELEMENTARY ORGANIC CHEMISTRY.** (4 cr; prereq 3302; 3303 is prereq to all other advanced courses in organic chemistry; 3 lect per wk)
- 3304. ELEMENTARY ORGANIC CHEMISTRY LABORATORY.** (4 cr; prereq 3303 or ¶3303; 8 lab hrs and 1 lect and 1 conf hr per wk; prereq to all advanced courses in organic chemistry)  
Reactions of typical functional groups and introduction to methods of organic qualitative analysis.
- 3305. HONORS COURSE: ELEMENTARY ORGANIC CHEMISTRY.** (5 cr; prereq 1005 or 1032, chem major or ‡; 3 lect, 1 lab conf, 1 quiz, and 4 lab hrs per wk)  
For description, see 3301.
- 3306. HONORS COURSE: ELEMENTARY ORGANIC CHEMISTRY.** (5 cr; prereq 3301 or 3305, chem major or ‡; 3 lect, 1 lab conf, 1 quiz, and 4 lab hrs per wk)  
For description, see 3301.
- 3307. HONORS COURSE: ELEMENTARY ORGANIC CHEMISTRY.** (4 cr; prereq 3302 or 3306, chem major or ‡; 3303 is prerequisite to all other advanced courses in organic chemistry; 3 lect and one discussion or quiz section per wk)  
Correlation of organic reactions by mechanism.
- 3499. SENIOR THESIS.** (Cr ar; prereq ‡, 4th yr)  
Written final senior thesis report.
- 3590. INTRODUCTION TO PRINCIPLES OF CHEMISTRY.** (3 cr; prereq Math 1111 or equiv and 1 yr general chemistry and 1 yr college physics.  
Especially for biological concentrators minoring in biochemistry.
- 3591,2,3. SPECIAL TOPICS IN PHYSICAL CHEMISTRY.** (2,2,2 cr; prereq 5504 or 5521)  
Topics in physical chemistry—areas of current research. Primarily for third- and fourth-year chemistry majors.
- 3751. INORGANIC CHEMISTRY LABORATORY.** (2 cr; prereq 5701 and ¶5702)  
Synthesis and physical measurements of selected compounds. Equilibria and kinetics of selected reaction systems.
- 3752,3. ADVANCED INORGANIC CHEMISTRY LABORATORY.** (2,2 cr; prereq Chem 3751, ‡)  
Advanced laboratory work in physical and synthetic methods. Specific experiments will be determined by student-instructor consultation. Detailed instructions for a wide variety of experiments.
- 5120. PHYSICAL-CHEMICAL METHODS OF ANALYSIS.** (4 cr; prereq elementary analytical chemistry and 5501; 3 lect, 1 demonstration per wk)  
Lecture. Optical and electrochemical methods and methods of separation.
- 5121. PHYSICAL-CHEMICAL METHODS OF ANALYSIS.** (4 cr; prereq 5120)  
Laboratory course. Quantitative application of electrochemical, optical and other physical techniques.
- 5122. ADVANCED ANALYTICAL CHEMISTRY.** (4 cr; prereq elementary analytical chem and 5501)  
Equilibria in aqueous and nonaqueous systems.
- 5123. ELECTROCHEMICAL METHODS OF ANALYSIS.** (4 cr; prereq 5120 or 8101)  
Lecture. Potentiometric, coulometric, polarographic, and other electrical methods.
- 5124. ELECTROCHEMICAL METHODS OF ANALYSIS.** (3 cr; prereq 5123)  
Laboratory course.
- 5125. CHEMICAL INSTRUMENTATION.** (4 cr; prereq 5121 or equiv)  
Chemical application of operational amplifiers. Instrumental techniques for detection and measurement.

- 5126. MODERN ANALYTICAL CHEMISTRY.** (5 cr; prereq 3034; 2 lect, two 3-hr lab and 1 lab discussion per wk)  
Strategies and techniques for solving modern analytical problems. The use of modern instruments in analysis.
- 5127. ANALOG INSTRUMENTATION.** (5 cr; prereq Phys 1291, Math 3211; 3 lect and two 4-hr labs per wk)  
Basic principles of electronic design and circuitry, servo systems, operational amplifiers, feed-back control, oscillators.
- 5128. DIGITAL INSTRUMENTATION.** (5 cr; prereq Phys 1291, Math 3211; 3 lect and two 4-hr labs per wk)  
Simple switching devices such as semi-conductor diodes and transistors; high speed integrated circuits; binary, decimal and modulo-M counters.
- 5301. SPECTRAL METHODS FOR ORGANIC QUALITATIVE ANALYSIS.** (4 cr; §8302; prereq 3303; 3 lect and 1 conf hr per wk)  
Practical application of nuclear magnetic resonance and infrared spectral analysis to solution of organic problems.
- 5302. ADVANCED ORGANIC CHEMISTRY LABORATORY WORK.** (2-5 cr; prereq 3304; 6-15 hrs lab work ar)  
Selected laboratory synthetic problems—may include original work. Individual instruction.
- 5309. INTERMEDIATE ORGANIC CHEMISTRY.** (4 cr; prereq 3303 and 5502; 3 lect and 1 rec period)  
Introduction to various aspects of physical organic chemistry.
- 5342. CHEMISTRY OF NATURAL PRODUCTS.** (3 cr; prereq 3303; offered 1972-73 and alt yrs)  
Biosynthesis of secondary natural products with emphasis on alkaloids, terpenes, and acetogenins.
- 5343. CHEMISTRY OF NATURAL PRODUCTS.** (3 cr; prereq 3303; offered 1973-74 and alt yrs)  
Steroidal hormones, their isolation, proof of structure, synthesis, and action.
- 5344. HETEROCYCLIC COMPOUNDS.** (3 cr; prereq 3303; offered 1973-74 and alt yrs)  
Typical classes of heterocyclic compounds, their chemical and physical properties and uses, synthesis.
- 5365. ORGANIC QUALITATIVE ANALYSIS.** (4 cr; §3304; prereq 3303; 8 lab hrs and 2 conf hrs per wk)  
Reactions of typical functional groups and introduction to methods of organic qualitative analysis.
- 5501. PHYSICAL CHEMISTRY.** (4 cr; prereq 1 yr college chemistry, Phys 1291 or ¶Phys 1291, or 1106 with §, Math 3211)  
Basic thermodynamics.
- 5502. PHYSICAL CHEMISTRY.** (4 cr; prereq 1 yr college chemistry, Phys 1291 or ¶Phys 1291, or 1106 with §, Math 3211)  
Atomic and molecular structure.
- 5503. PHYSICAL CHEMISTRY.** (4 cr; prereq 5501 and 5502)  
Statistical mechanics and reaction kinetics.
- 5504. PHYSICAL CHEMISTRY.** (4 cr; prereq 5503)  
Electrolytic solutions, electrochemistry, theory of liquid and solid states.
- 5505. STATISTICAL THERMODYNAMICS.** (4 cr; prereq 1 yr college chemistry, Phys 1291 or ¶Phys 1291, or 1106 with §, Math 3211)  
Classical statistical mechanics as applied to lattice model treatments of liquids and solutions.
- 5510. ANALYSIS OF DATA.** (1 cr; prereq 5501 or 5502 or 5521)  
Statistical and numerical treatment of physicochemical measurements.
- 5511.2. LABORATORY.** (1, 2, or 3 cr; prereq 5510)  
Measurement and interpretation of physicochemical properties.
- 5520/1. ELEMENTARY PHYSICAL CHEMISTRY.** (3/3 cr; prereq 1 yr college chemistry, Phys 1291 or ¶Phys 1291 or 1106 or §, Math 3211 with §)  
Brief general survey. **5520:** Chemical thermodynamics. **5521:** Kinetics, statistical mechanics, molecular structure.

## Course Offerings and Major Sequences

- 5522. BIOPHYSICAL CHEMISTRY: STRUCTURE.** (4 cr; §BioC 5522; prereq 2 qtrs physical chemistry, BioC 5741, 5002 or equiv desirable)  
Methods of structure determination of biological macromolecules. Molecular weight determination, hydrodynamics, scattering and diffraction, optical and magnetic resonance spectroscopy. Application to proteins, nucleic acids, polysaccharides, synthetic analogs, and membrane transport.
- 5523. BIOPHYSICAL CHEMISTRY: ENERGETICS.** (3 cr; §BioC 5523; prereq 2 qtrs physical chemistry, BioC 5741, 5002 or equiv desirable)  
Energetics of biochemical reactions. Titration, binding, and folding stabilization in macromolecules. Conformational changes and cooperative behavior. Coupling and energy gradients in transport.
- 5524. BIOPHYSICAL CHEMISTRY: DYNAMICS.** (4 cr; §BioC 5524; prereq 2 qtrs physical chemistry, BioC 5741, 5002 or equiv desirable)  
Application of thermodynamics, statistical mechanics, and chemical kinetics to biological systems. Theoretical and experimental enzyme kinetics, solvent effect, structure-function relation.
- 5530. THERMODYNAMICS.** (4 cr; prereq minimum of two qtrs physical chemistry)  
Application to gases, chemical reactions, solutions, phase equilibria.
- 5531. ATOMIC AND MOLECULAR STRUCTURE.** (4 cr; prereq minimum of 2 qtrs physical chemistry)  
Introduction to quantum mechanics with application to structure and bonding.
- 5571/2. MOLECULAR SPECTROSCOPY.** (4/4 cr; prereq 5502 or 5531 or equiv for 5571)  
An examination of various types of molecular spectroscopy from the standpoint of how structure information is obtained from spectra.
- 5574. MOLECULAR STRUCTURE AND SCATTERING.** (3 cr; prereq 5572)  
Determination of geometrical structure of molecules by x-ray, electron and neutron scattering. The effect of internal molecular motions on the structural determination. Inelastic scattering and molecular energies.
- 5580. PHYSICAL CHEMISTRY OF POLYMERS.** (3 cr; prereq 5503 or §; offered spring 1974 and alternate years)  
Molecular weight distribution, statistical mechanics of polymer solutions, network polymers, viscosity, light scattering, viscoelastic behavior.
- 5610. POLYMERIC MATERIALS.** (4 cr; §MatS 5610; prereq 5501 or §; 3 lect and one 3-hr lab per wk)  
Polymerization and structure of synthetic and bipolymers. Crystallinity, physical properties, and viscoelastic behavior. Application of polymers and their environmental degradation.
- 5701. INORGANIC CHEMISTRY I.** (4 cr; prereq 5501, 5502; 3 lect, 1 conf per wk)  
Atomic structure, structure and bonding in covalent molecules and ionic crystals, thermochemistry of chemical bonding. Applications to chemistry of nontransition elements.
- 5702. INORGANIC CHEMISTRY II.** (4 cr; prereq 5701)  
Chemistry of transition metal and rare earth compounds; nomenclature and stereochemistry; thermodynamics and kinetics of complex ion reactions, crystal field, ligand field, molecular orbital, and valence bond descriptions of bonding; solution chemistry of transition elements.
- 5703. ADVANCED INORGANIC CHEMISTRY.** (5 cr; prereq 3201 and 5502)  
Modern treatment of transition and non-transition metal chemistry. Structure, bonding, and stereochemistry of inorganic and organometallic compounds. Selected current topics.
- 5791,2,3. SELECTED TOPICS IN INORGANIC CHEMISTRY.** (2,2,2 cr; prereq Chem 5702,  $\Delta$ )  
Topics of current interest in inorganic chemistry.

## CHICANO STUDIES (Chic)

The new Department of Chicano Studies is formulating its program as this *Bulletin* goes to press. Information about its courses and faculty will be available in forthcoming *Class Schedules*, and may be obtained from the Department office, 207 Scott Hall.

The Department proposes not only to provide needed course sequences for Chicano students but also to offer to others the opportunity to explore the cultural

and historical heritage of Chicano life. Among the topics of its courses, the first of which are to be available in 1972-73, will be Chicano literature and history, the study of Mexican-American social and cultural relations, and training in English for the Spanish-speaking as well as in Spanish for those with minimal acquaintance with the language.

## CHILD PSYCHOLOGY (CPsy)

College of Education

**Staff:** Willard W. Hartup, *director*, 196 Child Development; John C. Masters, *director of undergraduate studies*; Robert H. Wozniak, *departmental honors adviser*; Ann J. Carlson, William R. Charlesworth, W. Andrew Collins, Suzanne A. DuPrau, John H. Flavell, Ilene S. Horowitz, Michael P. Maratsos, Shirley G. Moore, Anne D. Pick, Herbert L. Pick, Merrill F. Roff, Philip H. Salapatek, Sandra Scarr-Salapatek, L. Alan Sroufe, Mildred C. Templin, Peter Wolff (1972-73), Albert Yonas

Child psychology concerns behavioral development and maintenance from the prenatal period to maturity in the spheres of cognition, language, learning, perception, personality, and social behavior.

**Major Sequences for B.A.:** 1. *Required background courses*—Psy 1001, 1004/5 or 5 cr of introductory psychology. 2. *Major requirements*—*Honors major sequence* requirements are described in materials obtainable at the Honors office, 115 Johnston Hall, or the department office, 104B Child Development.

*General major sequence* requirements (for students with broad interest in the development and behavior of children but not necessarily plans for work beyond the B.A.)—CPsy 3301, 5303; Psy 3801; 12 additional cr in Upper Division CPsy courses; not fewer than 8 nor more than 16 cr in CPsy courses or courses chosen from Psy 5012/3†, 5014, 5015, 5018, 5031, 5041/2†, 5061, 5062, 5125/6†, 5134, 5201, 5604/5†.

*Majors in child psychology may not count toward graduation more than 44 Upper Division cr in child psychology, educational psychology, and psychology combined.*

Students majoring in child psychology, especially those intending to pursue graduate study, are urged to elect courses in mathematics (especially Math 1141, 1142, or 1141/2 or 1211/21), genetics, anthropology, sociology, and philosophy of science.

The following courses are offered on a independent study basis during the academic year *only* and not during either of the summer sessions: 5311, 5313, 5333, 5335, 5339, 5341, 5343, 5345. Independent study materials may be obtained in 151 Child Development.

For a specialized curriculum in nursery school and kindergarten education, see *College of Education Bulletin*. Students interested in studies leading to certification for nursery school education should consult the adviser to the certification program, 181 Child Development. Inquiries regarding the major in child psychology should go to the undergraduate advisory committee, 104B Child Development.

### LOWER DIVISION COURSE

1970†,w,s. **DIRECTED READINGS IN CHILD PSYCHOLOGY.** (Cr ar; prereq #) Staff Reading in a selected area in child psychology. (GrC)

### UPPER DIVISION COURSES

3301†,w,s. **CHILD PSYCHOLOGY.** (4 cr; prereq 5 cr in introductory psychology) Flavell, Charlesworth, Salapatek, Yonas, Maratsos, others  
Introduction to science of child behavior; critical review of theories and research. (GrC)

## Course Offerings and Major Sequences

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- 3301H. HONORS COURSE: CHILD PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology and #)
- 3360. HONORS COURSE: JUNIOR SEMINAR.** (4 cr; prereq 3301 and #) Masters and others  
Broad coverage of child psychology research; special attention to methodology. (GrC)
- 3361. HONORS COURSE: SENIOR SEMINAR.** (4 cr; prereq 3301 and #) Yonas and others  
Systems, theories, and methods of child psychology; design and conduct of experiments with children. (GrC)
- 3980. DIRECTED INSTRUCTION.** (1-4 cr, maximum 4; prereq #; SN only)  
Undergraduates serve as teaching assistants in courses they have successfully completed for credit.
- 5303f,w,s. ADOLESCENT PSYCHOLOGY.** (4 cr; prereq 5 cr introductory psychology) Masters, Sroufe, Collins and others  
Physical, cognitive, and social development during adolescence. (GrC)
- 5311. BEHAVIOR PROBLEMS.** (4 cr; prereq 3301 or equiv) Sroufe  
Types, origin, development, and treatment of behavior difficulties in normal children. (GrC)
- 5313f. PSYCHOLOGY OF ATYPICAL CHILDREN.** (4 cr; prereq 3301 or equiv) Templin  
Problems of research, assessments, and behavior associated with atypicality; evaluation of research in areas of major concern for sensory, language, intellectual, and physical deviation. (GrC)
- 5315. INTRODUCTION TO MENTAL RETARDATION.** (4 cr; §SpEd 5120; prereq 3301 or equiv)  
Psychological and educational problems related to the mentally retarded.
- 5319w. CLINICAL PROCEDURES WITH CHILDREN.** (4 cr; prereq 12 cr in child psychology, psychology, educational psychology, or sociology)  
Methods of clinical psychology emphasizing basic concepts and research problems in clinical work with children; primarily for students not majoring in clinical psychology. (GrC)
- 5330f,w,s. DIRECTED EXPERIENCES WITH CHILDREN.** (4 cr; prereq 3301 and #; SN only) Wozniak, DuPrau and others  
Intellectual and/or social development of children as individuals or members of peer groups. Quarter experiences offered in case study, social behavior, cognitive stimulation of children. (GrC)
- 5331f,s. PROCESSES OF SOCIALIZATION OF CHILDREN.** (4 cr; prereq 3301 or grad) Hartup, Masters, Collins  
Processes of social learning: identification, imitation, reward and punishment, internalization, and object choice. (GrC)
- 5333. PERSONALITY DEVELOPMENT.** (4 cr; prereq 5331; offered 1972-73 and alt yrs) Masters  
Psychoanalytic and behavior theory formulations and related research literature in content areas (e.g., attachment, dependency, aggression, and sex typing). (GrC)
- 5335. PEER RELATIONS.** (4 cr; prereq 5331; offered 1973-74 and alt yrs) Moore  
Peer influences; social interactions and social relations; developmental changes. (GrC)
- 5339. PARENT-CHILD RELATIONS.** (4 cr; prereq 5331; offered 1972-73 and alt yrs)  
Parent-child relations and evaluation of relevant research literature. (GrC)
- 5341. PERCEPTUAL DEVELOPMENT.** (4 cr; prereq 3301) Yonas  
Perceptual learning and the development of sensory and perceptual processes. (GrC)
- 5343. COGNITIVE DEVELOPMENT.** (4 cr; prereq 3301 or equiv) Pick, Wolff  
Development of cognitive processes; discussion of relevant theory, research literature, and methodology. (GrC)
- 5345s. LANGUAGE DEVELOPMENT.** (4 cr; prereq 3301) Templin  
Development of structure and function of language; factors influencing development; methodological problems, language scales, theories. (GrC)
- 5347. LEARNING IN CHILDREN.** (4 cr; prereq 3301) Wozniak  
Current research on learning and problem solving in children; application to practical contexts. (GrC)
- 5970f,w,s. DIRECTED READINGS.** (Cr ar; prereq #) Staff  
Independent reading. (GrC)
- 5990f,w,s. DIRECTED RESEARCH.** (Cr ar; prereq #) Staff  
Individual empirical investigation. (GrC)

**CHINESE**

See East Asian Languages

**CIVIL ENGINEERING (CE)**

Institute of Technology

**UPPER DIVISION COURSES****5210. INTRODUCTION TO TRANSPORTATION PLANNING.** (4 cr; prereq #)

The transportation planning process as applied to urban areas; data requirements and travel characteristics; trip generation analysis; models of travel distribution; transit characteristics and usage; selection and evaluation of alternate transportation proposals; transportation and land link usages.

**5420. INTRODUCTION TO WATER RESOURCES MANAGEMENT.** (4 cr)

The state of the water resource; water resources planning; implementation of planning.

**CLASSICS**

**Staff:** Robert P. Sonkowsky, *chairman*, 310 Folwell Hall; Gerald Erickson, *director of undergraduate studies*; George Rochefort, *coordinator of undergraduate advising*; R. Joseph Schork, *director of graduate studies*; William D. E. Coulson, Elizabeth Fisher, Jackson Hershbell, A. Thomas Kraabel, William A. McDonald, Walter Nichipor, Donald C. Swanson, Mary Xiroyanni

Classics, the knowledge and study of the human experience of ancient Greece and Rome, encompasses prehistoric times as well as the interpenetration between classical culture and the ancient Near East and Minoan-Mycenaean civilization. It embraces Greek and Latin studies in the medieval, renaissance, and modern periods. Greek and Latin literatures and archaeological and artistic remains offer humane approaches to many fields of study: literature, philology, metrics, oral reading, rhetoric and poetics, archaeology, mythology, religion, philosophy, art criticism, daily life.

Most sophomores can qualify for 3xxx courses. Students with 4 years of high school Latin, 3 years of high school Greek, or advanced placement may begin 3xxx courses as entering freshmen. All courses are open to nonmajors.

Courses with the designation Classics (Clas) require no knowledge of Greek or Latin language.

Major programs are offered in Greek and Latin. Students who wish to undertake advanced work in both languages or design double majors should consult the Department as soon as possible. An interdepartmental major with concentration in Classics can be designed. Work in Classics, Classical Philology, or Modern Greek may form part of Greek or Latin majors.

**Major Sequences for B.A.:** 1. *Required background courses*—Greek: Grk 1105 or 1122H or 3052 or 3 yrs high school Greek; Latin: Lat 1105 or 1122H or 3052 or 4 yrs high school Latin (students with 2 yrs high school Latin should enter 1003; those with 3 yrs, 1104; with 4 yrs or advanced placement, any 3xxx course). 2. *Major requirements*—Greek: 20 cr in Greek courses numbered above 3052; 15 additional cr in courses of the same level in Classics or Classical Philology, in closely related departments, in Greek courses, or in a combination of these. Latin: 20 cr in Latin courses numbered above 3052; 15 additional cr in courses of the same level in Classics or Classical Philology, in closely related departments, in Latin courses, or in a combination of these.

**Greek (Grk)****LOWER DIVISION COURSES****1101/2†. BEGINNING CLASSICAL GREEK.** (5/5† cr; prereq for 1102, 1101 or equiv)

Acquaints students with the "real" language. Practice with language structure in context

## Course Offerings and Major Sequences

of graded reading materials. Before course ends, students are reading *New Testament*, Aesop, Xenophon, and Plato. Stress on oral reading and on composition.

**1103. SELECTIONS FROM GREEK PROSE.** (5 cr; prereq 1102 or equiv)

Readings mainly in Plato, Xenophon, and Herodotus.

**1104f,5w. GREEK READINGS.** (5.5 cr; prereq for 1104, 1103 or 2 years high school Greek or  $\Delta$ ; for 1105, 1104 or  $\Delta$ )

Intensive reading of selected Greek authors; development of reading proficiency in ancient Greek texts; brief introduction to authors' ideas and styles. (GrD)

**1111/22. HONORS COURSE: BEGINNING CLASSICAL GREEK.** (5/5 cr; prereq registration in Honors division, or high ability as indicated by college entrance records)

### UPPER DIVISION COURSES

**3051f/2w†. READING CLASSICAL GREEK.** (5/5† cr; §1101/2)

Intensive beginning course. Previous experience in another foreign language is highly desirable.

**3106s. GREEK READINGS.** (5 cr; prereq 1105 or 3052 or 1122H or  $\Delta$ )

Intensive reading of selected Greek authors; development of reading proficiency in ancient Greek texts; textual criticism, secondary sources, and influence on world literature. (GrD)

**3107. BIBLICAL GREEK.** (5 cr; prereq 1104 or 1105 or 3052 or 1122H or  $\Delta$ )

Readings in the Greek texts of the *Old and New Testaments*, apocrypha, and early Christian documents. Primary emphasis on reading proficiency and content, as opposed to problems of historical linguistics and theology. (GrD)

**3461,2,3,4,5,6,7; 3471,2,3,4,5. ADVANCED UNDERGRADUATE GREEK.** (5 cr per qtr; prereq 3106 or 3107 or 3 yrs high school Greek or  $\Delta$ )

A 2-year cycle of courses. Only one of the courses listed for a given quarter will be offered. 1972-73: 3461f, Orators or 3462f, Plato. 3463w, Lyric Poetry or 3464w, New Comedy or 3465w, Lucian. 3466s, Herodotus or 3467s, Thucydides. 1973-74: 3471f, Euripides or 3472f, Sophocles. 3473w, Aristophanes or 3474w, Byzantine Greek. 3475s, Homer. (GrD)

**3590. LANGUAGE AND CULTURE SEMINAR.** (5 cr; prereq 10 cr Upper Division Grk)

Topics in ancient culture, intellectual and literary history, studied with the aid of knowledge of Greek language. Enrollment limited to 10 students.

**3960. HONORS TUTORIAL.** (5 cr; prereq  $\Delta$ )

**5012. PROSE COMPOSITION.** (2 cr; prereq Greek diagnostic exam for grad majors in wk prior to beginning of Fall classes and  $\Delta$ ) (GrA)

**5264,5,6. SURVEY OF GREEK LITERATURE.** (4,4,4 cr; prereq §5012)

5264: Epic and lyric poetry. 5265: Prose. 5266: Drama. (GrD)

**5371,2,3,4,5,6,7,8,9. GREEK LITERATURE.** (3 cr per qtr)

Authors read vary from term to term; different appropriate authors are studied in each course. 5371: Oratory. 5372: Tragedy. 5373: Comedy. 5374: History. 5375: Philosophy. 5376: Religious texts. 5377: Epic. 5378: Lyric. 5379: Romance. (GrD)

**5381. BYZANTINE TEXTS.** (3 cr; prereq 2 yrs of classical Greek or §)

Representative texts of Byzantine literature in the original. (GrD)

**5621. GREEK PALEOGRAPHY.** (3 cr; prereq 5 cr Upper Division Greek or §)

Styles of writing found in Greek literary papyri and later manuscripts and investigation of the transmission of ancient Greek texts.

**5794. PROSEMINAR: INTRODUCTION TO CLASSICAL STUDIES.** (3 cr; §Lat 5794; required of all new grad students; prereq grad major or §)

Survey of research in classical scholarship, methods and bibliography, textual history and criticism. (GrC)

**5970. DIRECTED STUDIES.** (1-5 cr; prereq § and  $\Delta$ )

Course designed to permit the student to pursue his interests in special reading and/or study.

**5980. DIRECTED INSTRUCTION.** (Cr ar; prereq § and  $\Delta$ )

**5990. DIRECTED RESEARCH.** (Cr ar)

**Modern Greek (MdGk)****LOWER DIVISION COURSES**

1101/2/3. **BEGINNING MODERN GREEK.** (5/5/5 cr)

Initial experience in talking and reading demotic Greek. Pattern-practice drill, simple readings, some grammar.

1104/5. **INTERMEDIATE MODERN GREEK.** (4/4 cr) (GrD)

**UPPER DIVISION COURSES**

5970. **DIRECTED STUDIES.** (1-5 cr)

Course designed to permit the student to pursue his interests in special reading and/or study.

5980. **DIRECTED INSTRUCTION.** (Cr ar; prereq # and  $\Delta$ )

5990. **DIRECTED RESEARCH.** (Cr ar)

**Latin (Lat)****LOWER DIVISION COURSES**

1003f. **INTERMEDIATE LATIN.** (5 cr; prereq 2 yrs high school Latin or equiv or  $\Delta$ )

Refresher course and continuation of previous training. Selections from Caesar, Cicero, Virgil, and others. Students with more than 2 years high school Latin who need review may register under SN only.

1101f,2w,3s. **BEGINNING LATIN.** (5,5,5 cr)

Gradual mastery of structure of Latin, for attaining reading knowledge; practice in oral reading and composition.

1104f,5w. **LATIN READINGS.** (5,5 cr; prereq for 1104, 1103 or 3 yrs high school Latin or 1003 or  $\Delta$ ; prereq for 1105, 1104 or 1003 or  $\Delta$ )

Intensive reading of selected Latin authors; emphasis on development of reading proficiency in ancient Latin texts; brief introduction to authors' ideas and styles. (GrD)

1111/22. **HONORS COURSE: BEGINNING LATIN.** (5/5 cr; prereq regis in Honors division or high ability as indicated by college entrance record)

**UPPER DIVISION COURSES**

3011. **PROSE COMPOSITION.** (5 cr; prereq # or  $\Delta$ ) (GrA)

3051f/2w†. **READING LATIN.** (5/5† cr; §1101,2,3; prereq jr)

Intensive beginning course. Previous experience in another foreign language is highly desirable.

3106s. **LATIN READINGS.** (5 cr; prereq 1105 or 3052 or 1122H or  $\Delta$ )

Intensive reading of selected Latin authors; development of reading proficiency in ancient Latin texts; textual criticism, secondary sources, and influence on world literature. (GrD)

3461,2,3,4,5,6,7; 3471,2,3,4,5,6. **ADVANCED UNDERGRADUATE LATIN.** (5 cr; prereq 3106 or 4 yrs high school Latin or  $\Delta$ )

A 2-year cycle of courses. Only one of the courses listed for a given quarter will be offered. 1972-73: 3461f, Cicero or 3462f, Livy. 3463w, Comedy or 3464w, Catullus or 3465w, Medieval Latin. 3466s, Petronius or 3467s, Horace. 1973-74: 3471f, Virgil or 3472f, Elegy. 3473w, Tacitus or 3474w, Seneca. 3475s, Satire or 3476s, Lucretius. (GrD)

3590. **LANGUAGE AND CULTURE SEMINAR.** (5 cr; prereq 10 cr in Upper Division Latin)

Topics in ancient culture, intellectual and literary history, studied with the aid of knowledge of Latin language. Enrollment limited to 10 students.

3960. **HONORS TUTORIAL.** (5 cr; prereq  $\Delta$ )

5012. **PROSE COMPOSITION.** (2 cr; prereq Latin diagnostic exam for grad majors in wk prior to beginning of Fall classes and  $\Delta$ ) (GrA)

5038. **ORAL INTERPRETATION OF CLASSICAL LATIN LITERATURE.** (5 cr; §Th 5831;

prereq 2 yrs Latin or equiv and Th 3801 or 3321 or #) Sonkowsky

Phonetics, prosody, and oral performance of selected texts in classical Latin.

5235. **MEDIEVAL LATIN.** (3 cr; prereq #)

Latin literature from 5th to 12th century; Carolingian and 12th-century Renaissance. (GrD)

## Course Offerings and Major Sequences

- 5264/5/6. GRADUATE SURVEY.** (4/4/4 cr; prereq ¶5012)  
5264: Latin literature of the Republic. 5265: Latin literature of the Augustan Age.  
5266: Latin literature of the Empire. (GrD)
- 5371,2,3,4,5,6,7,8,9. LATIN LITERATURE.** (3 cr per qtr)  
Authors read vary from term to term; different appropriate authors are studied in each course. 5371: History. 5372: Epistles and essays. 5373: Oratory. 5374: Epic and pastoral poetry. 5375: Lyric and elegiac poetry. 5376: Drama. 5377: Satire. 5378: Law. 5379: Religious texts. (GrD)
- 5701/2/3†. STRUCTURE OF LATIN.** (1-2 cr per qtr; prereq sr or grad, 10 Upper Division cr or equiv, §) Erickson  
Integrated review of basic Latin structures; application of current linguistic theories to Latin texts; substitution, transformation, and expansion of Latin patterns; special problems in reading Latin. (GrA)
- 5715. NEW CRITICAL APPROACHES TO CLASSICAL TEXTS.** (3 cr; prereq 15 cr Upper Division Latin and §; recommended for Latin teaching majors)  
Designed to bring teachers up to date in significant research, especially in authors read in secondary schools. Recent approaches to Caesar, Cicero, Ovid, Virgil, Horace, Catullus, Livy, Tacitus are described and evaluated. (GrD)
- 5794. PROSEMINAR: INTRODUCTION TO CLASSICAL STUDIES.** (3 cr; §Grk 5794; required of all new grad students; prereq grad major or §)  
Survey of fields of research in classical scholarship, methods and bibliography, textual history and criticism. (GrC)
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq § and Δ)  
Course designed to permit the student to pursue his interests in special reading and/or study.
- 5980. DIRECTED INSTRUCTION.** (Cr ar; prereq § and Δ)
- 5990. DIRECTED RESEARCH.** (Cr ar)

## Classical Philology (ClPh)

### UPPER DIVISION COURSES

- 3773. HELLENISTIC GREEK.** (4 cr; prereq §) Swanson  
Koiné language used in *New Testament*, the papyri, and other documents from 3rd century B.C. to 2nd century A.D. General principles of language study. (GrA)
- 5715. INTRODUCTION TO CLASSICAL PHILOLOGY.** (2 cr; prereq §) Swanson  
Sounds and forms of the classical languages; principles of linguistic paleontology. This course is essential to all other work in classical philology. (GrA)
- 5716. HISTORY OF GREEK.** (4 cr; prereq 5715 or equiv and 2 yrs Greek) Swanson  
Semantic and formal development of Greek, from Mycenaean to Romanic; readings, reports, lectures. (GrA)
- 5717. HISTORY OF LATIN.** (4 cr; prereq 5715 or equiv or § and 2 yrs Latin) Swanson  
Readings in Old Latin philological texts; introduction to Latin etymology, word-formation, loanwords, historical syntax. (GrA)
- 5718. GREEK DIALECTS.** (4 cr; prereq 5715 and 2 yrs Greek or §) Swanson  
Epigraphic and literary monuments illustrating ancient Hellenic dialectology. Some consideration of the age-and-area hypothesis and of proto-Greek. (GrA)
- 5733. VULGAR LATIN.** (4 cr; prereq §; recommended for all students of language) Swanson  
Development of Romance languages; readings of documents that reveal the lexical, phonological, and syntactic systems of colloquial Latin. (GrA)
- 5735. OSCAN-UMBRIAN.** (4 cr; prereq 5715 and 5717 or §) Swanson  
Epigraphic and onomastic techniques for the interpretation of Indo-European languages of early Italy. (GrA)
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq § and Δ) (GrA)

## Classics (Clas) (courses for which no knowledge of Greek or Latin is required)

### Classical Humanities

### LOWER DIVISION COURSES

- 1001,2,3. INTRODUCTION TO CLASSICAL CIVILIZATION: GREECE.** (4,4,4 cr)  
1001: *World of Homer: Heroic Tradition and Intellectual Awakening.* Transition in values

and institutions from monolithic society represented in Homeric epic to relatively open society of archaic age. Cultural dynamism and contact with Near East. 1002: *Age of Pericles: City-state and Intellectual Maturity*. "Golden age" and classical ideal of self-realization in service to the polis. Explosion of creativity in literature, philosophy, art. Ideological struggle between democracy and authoritarianism. Failure of city-state. 1003: *Age of Alexander: Cosmopolitanism and Cultural Fusion*. Hellenistic "big government" and rise of individualism. Spread of Greek culture to Near East. New emphases in literature, philosophy, art, and especially in science and religion. (GrC)

**1004,5,6. INTRODUCTION TO CLASSICAL CIVILIZATION: ROME.** (4,4,4 cr)

1004: *World of Cato*. Changing values and institutions of early Roman agrarian society; rise of republic. Greek and Etruscan influences; clash with Carthage. 1005: *World of Augustus*. From anarchy to Pax Romana, and consequences for Roman world. 1006: *World of Constantine*. Consolidation and expansion of empire. World of Roman law and rise of Christianity. (GrC)

**1011,22,33,44,55,66. HONORS COURSES: INTRODUCTION TO CLASSICAL CIVILIZATION.** (5 cr per qtr; prereq regis in Honors division or § or Δ)

Students attend lectures in 1001,2,3,4,5,6 and meet with lecturer one additional period each week. (GrC)

**1042. GREEK AND ROMAN MYTHOLOGY.** (2 cr; prereq soph)

Classical myths; stories of gods, demigods, and heroes that are a basic component of European cultural heritage; their artistic, religious, psychological, and anthropological implications. (GrC)

**1048. TECHNICAL TERMS OF SCIENCE, MEDICINE, AND HUMANITIES.** (3 cr; §3048; prereq soph)

Presentation in English contexts of Greek and Latin prefixes, suffixes, and roots basic in modern technical vocabularies. (GrA)

**1061. INTRODUCTION TO BYZANTINE CIVILIZATION.** (3 cr; §5061)

Greco-Roman backgrounds of Byzantine civilization. The culture of the Eastern Empire through the study of history, religion, education, art, literature in translation.

**UPPER DIVISION COURSES**

**3048. TECHNICAL TERMS OF SCIENCE, MEDICINE, AND HUMANITIES.** (3 cr; §1048; prereq jr)

Meets with 1048, but requires additional work for Upper Division credit. (GrA)

**3071. RELIGION IN ANTIQUITY: GREEK, HELLENISTIC.** (4 cr; §5071; prereq jr) Kraabel

Greek religion of the Archaic, classical, and Hellenistic periods. Eclipse of city-state and "failure of nerve." Mystery religions and impact of eastern cults. Ancient myths and need for allegory. Ruler-worship. Gnosticism. Judaism in Greek world; Dead Sea scrolls. (GrC)

**3072. RELIGION IN ANTIQUITY: BEGINNINGS OF CHRISTIANITY.** (4 cr; §5072; prereq 3071 or 3073) Kraabel

First-century Israel under Roman rule. Jesus of Nazareth. Earliest Christian communities. Jewish Christianity. Mission to gentiles. Paul the apostle. Beginnings of *New Testament*. (GrC)

**3073. RELIGION IN ANTIQUITY: ROMAN, EARLY CHRISTIAN.** (4 cr; §5073; prereq jr) Kraabel

The Etruscans. Republican religion. Appeal of non-Roman cults. Ruler worship. Christians in Asia Minor, Egypt, and the West. Popular piety, Christian and non-Christian. Rabbinic Judaism. Varieties of Christianity in 2nd and 3rd centuries. Influence of Greco-Roman culture upon emerging Church. Constantine and Julian. (GrC)

**3081. CLASSICAL EPIC IN TRANSLATION.** (4 cr; §5081; prereq 8 cr in English literature beyond Engl 1003, or in foreign literature, or Δ) Schork

Reading of Homer's *Iliad* and *Odyssey*, Virgil's *Aeneid*, with attention to cultural context of epic, the heroic character, epic formulas, and poetic techniques. (GrD)

**3082. GREEK TRAGEDY IN TRANSLATION (AESCHYLUS, SOPHOCLES, EURIPIDES).** (4 cr; §5082; prereq 8 cr in English literature beyond Engl 1003, or in foreign literature, or Δ)

Origin of European drama as distinct literary form; characteristics of Greek tragedy; ancient theaters and theatrical conventions. Discussion of selected tragedies. Understanding problems posed in relation to cultural patterns of the time. (GrD)

**3083. ARISTOPHANES AND ROMAN DRAMA IN TRANSLATION (ARISTOPHANES, MENANDER, PLAUTUS, TERENCE, SENECA).** (4 cr; §5083; prereq 8 cr in English literature beyond Engl 1003, or in foreign literature, or Δ)

## Course Offerings and Major Sequences

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- Introductory material organized as in Clas 3082, with emphasis on tradition of comedy. Reading of representative comedies and three Senecan tragedies. (GrD)
3181. **HONORS COURSE: CLASSICAL EPIC IN TRANSLATION.** (5 cr; prereq regis in Honors division or § or Δ)  
Students attend lectures in 3081 and meet with lecturer one additional period each week.
3282. **HONORS COURSE: GREEK TRAGEDY IN TRANSLATION (AESCHYLUS, SOPHOCLES, EURIPIDES).** (5 cr; prereq regis in Honors division or § or Δ)  
Students attend lectures in 3082 and meet with lecturer one additional period each week.
3383. **HONORS COURSE: ARISTOPHANES AND ROMAN DRAMA IN TRANSLATION (ARISTOPHANES, MENANDER, PLAUTUS, TERENCE, SENECA).** (5 cr; prereq regis in Honors division or § or Δ)  
Students attend lectures in 3083 and meet with lecturer one additional period each week.
5001. **GREEK AND ROMAN LYRIC POETRY.** (4 cr; prereq 2 courses in English literature beyond Engl 1003, or 1004, or in foreign literature, or Δ)  
Readings in translation from Greek lyric poets, Catullus, Horace, and minor Latin lyricists; cultural patterns of the times; survival of such poetry in modern times.
5002. **ANCIENT SATIRE.** (4 cr; prereq 2 courses in English literature beyond Engl 1003, or 1004, or in foreign literature, or Δ)  
Ancient satire from Homer to Juvenal. Readings in translation from Homer, Aesop, Archilochus, Aristophanes, and Lucian. Introduction to the form of Roman satire, with readings from Lucilius, Horace, Persius, Petronius, Martial, and Juvenal. Survival of Roman satire in English literature.
5003. **THE ANCIENT NOVEL AND ROMANCE.** (4 cr; prereq 2 courses in English literature beyond Engl 1003, or 1004, or in foreign literature, or Δ)  
Development of the ancient novel. Readings in translation from ancient Greek novelists and from Apuleius and Petronius.
5004. **EROTICISM AND FAMILY LIFE IN THE GRAECO-ROMAN WORLD.** (4 cr) Erickson  
Analysis of Greek and Roman family life in the shaping of personality; diachronic change in modes of erotic expression; narcissism and homosexuality; status of women; evolving views of sexual morality compared to present trends. Examples from art and literature. (GrC)
5005. **MADNESS AND DEVIANT BEHAVIOR IN ANCIENT GREECE AND ROME.** (4 cr; prereq soph, 2 cr in Clas) Erickson  
Analysis of definitions of madness in Greece and Rome and theories of its etiology; assessment of predisposing factors in Greece and Rome; examples of madness from mythology, legend, and history; cross-cultural comparison with contemporary United States.
5061. **INTRODUCTION TO BYZANTINE CIVILIZATION.** (3 cr; §1061)  
Greco-Roman backgrounds of Byzantine civilization. The culture of the Eastern Empire through the study of history, religion, education, art, literature in translation. Requires additional work for graduate credit.
5071. **RELIGION IN ANTIQUITY: GREEK, HELLENISTIC.** (4 cr; §3071; prereq §)  
Meets with 3071; students do additional work for advanced credit. (GrC)
5072. **RELIGION IN ANTIQUITY: BEGINNINGS OF CHRISTIANITY.** (4 cr; §3072; prereq §)  
Meets with 3072; students do additional work for advanced credit. (GrC)
5073. **RELIGION IN ANTIQUITY: ROMAN, EARLY CHRISTIAN.** (4 cr; §3073; prereq §)  
Meets with 3073; students do additional work for advanced credit. (GrC)
5081. **CLASSICAL EPIC IN TRANSLATION.** (4 cr; §3081) Schork  
Meets with 3081, but advanced independent work in addition to regular class assignments is required. (GrD)
5082. **GREEK TRAGEDY IN TRANSLATION.** (4 cr; §3082)  
Meets with 3082, with additional independent work required. (GrD)
5083. **ARISTOPHANES AND ROMAN DRAMA IN TRANSLATION.** (4 cr; §3083)  
Meets with 3083, but advanced independent work in addition to regular class assignments is required. (GrD)
5085. **GREEK PHILOSOPHY: THE PRESOCRATICS TO PLATO.** (4 cr; prereq jr) Hershbell  
Fragments of the presocratics and Sophists and selected dialogues of Plato.
5086. **GREEK PHILOSOPHY: ARISTOTLE AND POST-ARISTOTELIAN THOUGHT.** (4 cr; prereq Δ) Hershbell  
Excerpts from the writings of Aristotle, with special attention to his metaphysical and

ethical writings. Fragments of Stoic and Sceptic writers; the extant works of Epicurus; Diogenes Laertius; Sextus Empiricus; Plutarch's polemical works against the Stoics.

- 5115. CLASSICAL HUMANITIES PROSEMINAR.** (4 cr; prereq  $\Delta$ )  
Integrates various disciplines within field of Classics. Several faculty members present introductions to special studies. Coordinator conducts discussions toward synoptic view of classical culture. (GrD)
- Spch 5611. CLASSICAL RHETORIC.** (4 cr; prereq Spch 1101 or 1105) Scott  
Greek and Roman theories of speechmaking; historical and philosophic context and influence on education.
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq  $\#$  and  $\Delta$ )
- 5980. DIRECTED INSTRUCTION.** (Cr ar; prereq  $\#$  and  $\Delta$ )
- 5990. DIRECTED RESEARCH.** (Cr ar)

### Archaeology

- 3152. GREEK ART.** (5 cr;  $\S$ ArH 3152; offered alt yrs)  
The Classical style of ancient Greece: its origins, its characteristics, and its importance to later culture.
- 3162. ROMAN ART AND ARCHAEOLOGY.** (5 cr;  $\S$ ArH 3162; prereq ArH 3008 or Clas/ArH 3152)  
Examination of what is Roman in Roman Art and material culture through study of how it comes into being; examination of the degree of change, of continuity, of "progress" or "decay" in the later Empire.
- 5089. INTRODUCTION TO BIBLICAL ARCHAEOLOGY.** (4 cr; prereq jr) Kraabel  
Survey of archaeological data relevant to the Jewish Scriptures and the *New Testament*: major sites in "the Holy Land" and in other areas of the Mediterranean and the Near East. The evidence of pottery, inscriptions, manuscripts, and coins. Excavation methods. Archaeology as a tool for the study of ancient religions. Requires additional work for graduate credit.
- 5101. INTRODUCTION TO PREHISTORIC GREEK ARCHAEOLOGY.** (4 cr; prereq jr or  $\#$ )  
McDonald  
Aims and methods of modern field archaeology; the record of human habitation in the Aegean area from earliest times until the end of the Bronze Age with concentration on the Mycenaean period; the use of archaeological evidence as the basis for historical reconstruction. (GrA)
- 5102. GREEK SCULPTURE.** (4 cr;  $\S$ ArH 5102; prereq jr or  $\#$ ) Coulson  
Styles and techniques of Greek sculpture from the archaic period down to the end of the 4th century B.C. Sculptors and styles of various schools throughout Greece, Sicily and Southern Italy, and Asia Minor.
- 5103. HELLENISTIC ART AND ARCHAEOLOGY.** (4 cr;  $\S$ ArH 5103; prereq jr or  $\#$ ) Coulson  
Greek architecture, sculpture, ceramics, painting, and minor arts from the beginning of the 4th century B.C. to the end of the Hellenistic period. City planning, public buildings, and the topography of such sites as Athens, Olynthos, Corinth, Priene, Pergamon.
- 5104. ROMAN ARCHITECTURE.** (5 cr;  $\S$ ArH 5104; prereq ArH 1008 or 3008 or ArH/Clas 3162) McNally  
Types and techniques of buildings in Rome and throughout the Empire from the 5th century B.C. to the 4th century A.D. Major archaeological sites.
- 5105. ROMAN PAINTING AND MOSAICS.** (5 cr;  $\S$ ArH 5105; prereq ArH 1008 or 3008 or Clas/ArH 3162) McNally  
Roman painting and mosaics; discussion of specific problems. Sites such as Pompeii and Antioch.
- 5106. GREEK PAINTING.** (5 cr;  $\S$ ArH 5106; prereq 5102 or 5103; offered when feasible)  
Cooper, McNally  
Methods of research and analysis in classical art as applied to study of vases; investigation of original objects and of sources.
- 5107. ROMAN SCULPTURE.** (4 cr;  $\S$ ArH 5107; prereq ArH 1008 or 3008 or ArH/Clas 3162)  
Sculpture from Rome and its provinces from the 1st century B.C. to the 4th century A.D.; the role of sculpture in Roman politics and religion. (GrA,D)
- 5108. GREEK ARCHITECTURE.** (4 cr;  $\S$ ArH 5108; prereq ArH 1008 or 3008 or ArH/Clas 3152) Cooper, McNally  
Archaic and Classical examples of religious and secular architecture. Their setting in major archaeological sites. (GrD)

## Course Offerings and Major Sequences

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- 5109. INTRODUCTION TO ETRUSCAN ART AND ARCHITECTURE.** (4 cr; §Arth 5109; prereq jr or §) Coulson  
The architecture, sculpture, painting, and minor arts of the Etruscans. Place of this art into its political, religious, and social setting. The methods of Etruscan archaeology. (GrD)
- 5110. PROSEMINAR: CLASSICAL ARCHAEOLOGY.** (4 cr; prereq §)
- 5120. FIELD RESEARCH IN ARCHAEOLOGY.** (3-6 cr; prereq §) Kraabel, McDonald  
Field excavation, survey, and research in archaeological sites in Greece, Turkey, Italy or the Mediterranean area. Intensive training in techniques of excavation and exploration; analysis and interpretation of archaeological materials.

## COLLEGE HONORS SEMINARS (CHS)

### (Honors Division)

College Honors Seminars are open to all juniors and seniors in the College of Liberal Arts and the University College who are in the Honors program. In contrast to departmental honors offerings, which emphasize depth of learning within fields, College Honors Seminars are designed to serve the interests of students of high motivation and intellectual ability outside the areas of their majors. The seminars cover a wide range of subjects, are often of an interdisciplinary character, and deal with problems and ideas not separately treated in the regular curricular offerings of the College. To enhance the effect of the seminars as models of innovative instruction, each is offered only once.

A list of current seminar offerings is available in the Honors office, 115 Johnston Hall, and in the *Class Schedule* each quarter.

## COMMUNICATION (COMM)

Staff: J. Vernon Jensen, *director*, 116A Klæber Court; Daniel V. Bryan, Jean Ward

### LOWER DIVISION COURSES

Courses in written and oral communication, theoretical and practical, to prepare the student to meet effectively various communicative demands in contemporary settings; instruction individualized by conferences, tutorials, and small group sessions.

**1001f,w,s/2f,w,s. COMMUNICATION.** (4/4 cr; §Engl 1001,2 or 1311H,2H; prereq assignment to English Placement Category 1, 1A or 2; meets B.A. English Composition requirement)

**1001:** The process of communication, language and nonverbal means of communicating, clarity and appropriateness in expository discourse; practice in writing and speaking with direction and criticism. **1002:** Deliberation, reasoning, nonlogical appeals, and ethical concerns in problem solving and persuasive discourse; practice in writing and speaking with direction and criticism.

**1001Hf/2Hw. HONORS COURSE: COMMUNICATION.** (4/4 cr; §Engl 1001/2 or 1311H/2H; prereq assignment to Category 1, 1A or 2 and Δ)

**1003f,w,s. COMMUNICATION.** (4 cr; prereq 1001/2)

Mass communication in a rhetorical perspective: communicators, messages, media, effects, and social implications. Practical work in written and oral discourse. (GrA)

### UPPER DIVISION COURSE

**3980f,w,s. DIRECTED INSTRUCTION.** (1-3 cr; prereq 1001/2 and §)

Learning opportunity through teaching others. Students work with instructors in planning and teaching freshman Communication courses.

## COMMUNICATION DISORDERS (CDIs)

**Staff:** Clark D. Starr, *chairman*, 110 Shevlin Hall; Patricia Broen, Robert H. Brookshire, Joseph H. Chaiklin, Frederic L. Darley, Samuel K. Haroldson, Frank M. Lassman, Richard R. Martin, Richard P. McDermott, Emily Oxman, Gerald M. Siegel, Charles E. Speaks, Suzanne B. Struckmann, Mildred C. Templin, W. Dixon Ward

The major in speech and hearing science is designed to provide students a basic understanding of the acoustic, physiological, linguistic, and psychological bases of normal and disordered oral communication. The major serves as a preprofessional program for students who seek professional careers as clinical speech pathologists, audiologists, or speech and hearing scientists. Students contemplating majors in this area should consult an adviser in the Department of Communication Disorders regarding pending curriculum revisions.

**Major Sequence for B.A.:** 1. *Required background courses*—Psy 1001, 1004/5; Math 1111. 2. *Major requirements*—CDIs 3101, 5301,2,3,4, 5701 and 4 additional Upper Division CDIs cr chosen in consultation with adviser.

Lower Division students are urged to acquire a broad background in the natural and social sciences. Suggested courses are: Anth 1002, Biol 1001, Soc 1001, Econ 1001, Spch 1001, Phil 1001, Psy 3011, CPsy 3301, Ling 3001/2. Students should begin their Upper Division programs in fall or spring terms.

### UPPER DIVISION COURSES

- 3100f,w,s. CLINICAL OBSERVATION AND PRACTICE.** (Cr ar; may be repeated; prereq major in CDIs and #)  
Supervised clinical observation and participation in the evaluation and treatment of persons presenting communication disorders.
- 3101f,s. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY.** (4 cr) McDermott  
Concepts basic to understanding normal and abnormal speech and hearing functions. Survey of selected communication problems. Strategies and systems of delivery of clinical services. (GrA)
- 5202. SYMPOSIUM IN SPEECH SCIENCE, PATHOLOGY, AND AUDIOLOGY.** (4 cr; prereq grad major or professional paid experience beyond undergrad major or #)
- 5301f. INTRODUCTION TO ACOUSTICS.** (5 cr) Speaks  
Elements of acoustics necessary to understand quantitative aspects of speech pathology and audiology. Nature of sound, sound transmission, units of measurement, acoustic characteristics of speech, and use of elementary electroacoustic systems.
- 5302f. ANATOMY AND PHYSIOLOGY OF THE SPEECH AND HEARING MECHANISMS.** (4 cr) Lassman, McDermott  
Gross anatomy, physiology, and function of structures related to phonation, articulation, and audition.
- 5303f. PHONEMICS LABORATORY.** (2 cr)  
Introduction to phonemic analysis of speech, the IPA classification system, and articulatory correlates of English phonemes. Laboratory transcription of isolated sounds, words, and connected speech.
- 5304w. SPEECH AND HEARING SCIENCE.** (5 cr; prereq 5301, 5302, 5303, or #) Speaks  
Critical analysis of experimental data concerning the physiologic, acoustic, and perceptual parameters of speech and fundamental concepts in normal audition.
- 5305s. LABORATORY INSTRUMENTATION.** (4 cr; prereq 5301 or #) Speaks  
Basic concepts in electronics and of electroacoustic systems appropriate to the study of speech and hearing.
- 5306w. HEARING SCIENCE.** (4 cr; prereq 5301 or Psy 3031 or #) Ward  
Fundamental concepts in normal audition. Psychoacoustic methods; sensitivity and acuity; loudness, pitch, timbre; distortion, aural harmonics; masking, adaptation; auditory reflex, binaural phenomena, localization. With laboratory.

## Course Offerings and Major Sequences

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- 5502w. STUTTERING.** (4 cr; prereq 3101 or §) Martin  
Description, nature, and treatment of stuttering in children and adults. Students will be involved at various levels in actual therapeutic and research activities.
- 5504w. ARTICULATION DISORDERS.** (4 cr; prereq 3101, 5301, 5302) McDermott  
Consideration of impaired articulation performance and associated factors. Principles of diagnosis and clinical management. Observation of clinical activities.
- 5506s. APHASIA.** (2 cr; prereq 3101, 5302, or §) Brookshire  
Ideology, diagnosis, and rehabilitation of speech and language disorders in adults. Discussion of brain damage. Students will observe evaluation and treatment sessions several times during the course.
- 5507f. CLEFT PALATE, ORAL-FACIAL ANOMALIES AND SPEECH.** (4 cr; prereq 3101 or §) Starr  
Relationships between oral-facial structures and speech. Emphasis on speech problems associated with dental and palatal anomalies and on their clinical management. Observations of clinical activities.
- 5508s. VOICE DISORDERS.** (4 cr; prereq 3101 or §) Starr  
Physical and physiological bases of normal voice production. Voice disorders (pitch, loudness, quality), their symptomatology, etiology, and clinical management. Laryngectomy and other organic disorders.
- 5512f. SPEECH DEVELOPMENT AND RETARDATION.** (4 cr; prereq 3101) Siegel  
Theory and experimental research dealing with speech development as related to delayed or retarded speech.
- 5513w. SPEECH DELAY: PSYCHOLINGUISTIC APPROACHES.** (4 cr; prereq 3101 or §) Siegel  
Basic concepts in psycholinguistics applied to delayed language. Three class meetings per week plus off-campus assignments.
- 5514s. SPEECH DELAY: DEVELOPMENT AND ASSESSMENT.** (4 cr; prereq 5513 or §) Siegel  
Continued application of psycholinguistics to delayed speech and language, plus consideration of language assessment. Three class meetings per week plus off-campus assignments.
- 5701f,s. HEARING DISORDERS.** (4 cr; prereq 3101, 5301, 5302) Lassman, Chaiklin  
Basic orientation to audiology with emphasis on hearing disorders; medical and surgical management, overview of major audiometric procedures, with laboratory demonstration; overview of audiologic and educational approaches to different types and degrees of hearing defects; psychological effects of hearing impairment.
- 5702f,w. HEARING MEASUREMENT.** (4 cr; prereq 5301, 5302, 5701) Chaiklin  
Pure-tone audiometry, masking; bone-conduction theory; calibration; audiometer function; screening audiometry; emphasis on research bases of basic procedures. Four hours of laboratory per week in addition to lectures.
- 5703w. COMMUNICATION PROBLEMS OF THE HEARING IMPAIRED.** (4 cr; prereq 5701 or §) Lassman  
Effects of impaired hearing on speech and language development. Development of speech and language for hearing impaired individuals through speech, speech-reading, auditory training, and other special methods and philosophies.
- 5704s. NOISE AND MAN.** (3 cr; prereq 5301 or §) 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; pre-employment testing and monitoring audiometry.
- 5970. DIRECTED READINGS.** (Cr ar; can be repeated; prereq §)

## COMPARATIVE LITERATURE (CLit)

For description of the graduate program in comparative literature, see *Graduate School Bulletin*. The program does not offer an undergraduate degree.

## COMPOSITION

See English

# COMPUTER, INFORMATION, AND CONTROL SCIENCES (CICS)

Institute of Technology

Staff: J. Ben Rosen, *head*, 114 Main Engineering; William D. Munro, *associate head*, 120 Main Engineering; Donald L. Boyd, Kenneth M. Brown, Krzysztof S. Frankowski, William R. Franta, Wolfgang Giloi, Hans C. Gyllstrom, Allen R. Hanson, Oscar H. Ibarra, Jay A. Leavitt, Kurt J. Maly, Naftaly Minsky, Peter Nicholson, Marvin L. Stein

Computer science is concerned with the study of hardware and software (programming) aspects of high speed computing devices and with the application of these devices to solution of a broad spectrum of technological and business problems. Bachelor's degree training in computer science can be obtained in either CLA or IT. The details of the IT program are available in the *Institute of Technology Bulletin*. Both curricula are designed to give the student a broad base in the foundation subjects of computer science. By means of the senior option and a choice of alternatives in required courses, it is possible for a student to build on the basic foundation a concentration in the areas of computer science that interest him most. This training prepares for a variety of industrial and governmental positions involving computer usage, as well as for pursuit of graduate work.

**Major Sequence for B.A.:** 1. *Required background courses*—Math 1311, 1321, 1331, 3142, 3211; Stat 3091; at least one additional Upper Division Math or Stat course. 2. *Major requirements*—CICS 1105, 1106, 3001, 3107, 5101, 5102, 5104, 5107, 5121, 5301, 5400, 5501; senior option—at least two courses chosen from one of the following areas: A—CICS 5001, 5002, 5105, 5302, 5304, 5305; or B—CICS 5106, 5108, 5200, 5201, 5202, 5401, 5499, 5502, 5503, 5511.

*Note*—All CICS courses are assigned to Distribution Group A.

## LOWER DIVISION COURSES

**1100f,w,s. INTRODUCTION TO FORTRAN PROGRAMMING I.** (2 cr; prereq Math 1211 or 1311 or 1611 or §Math 1211 or 1311 or 1611 or §; informal lab)

Computer programming using FORTRAN; elementary-intermediate level applications. Sections of this course will be organized according to students' interests and disciplines. See 3101.

**1101w,s. INTRODUCTION TO FORTRAN PROGRAMMING II.** (2 cr; prereq 1100 and Math 1211 or 1311 or 1611 or §; informal lab; no cr for CICS majors)

Continuation of 1100; extended applications including some numerical methods.

**1105f,w. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES I.** (4 cr; prereq 1100 or equivalent programming knowledge or §, Math 1231 or 1331 or 1621 or §; informal lab)

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.)

**1106w,s. FUNDAMENTALS OF ALGORITHMS AND LANGUAGES II.** (4 cr; prereq 1105 or §; informal lab)

Algorithms for non-numerical 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.

## UPPER DIVISION COURSES

**3001s. PERSPECTIVES ON COMPUTERS AND SOCIETY.** (4 cr; prereq soph or §; informal lab)

The impact of computers on society. Partnership or confrontation. History of development. Potential for use. Computer utility. Privacy in a computer society. The future of computers. The ultimate machine. Computers in business, industry, art, music, the home.

## Course Offerings and Major Sequences

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- 3101f,w,s. A FORTRAN INTRODUCTION TO COMPUTER PROGRAMMING.** (4 cr; prereq Math 1231 or 1331 or 1621 or #; intended for non-CICS majors)  
FORTRAN computer language with extensions; applications; programming techniques. Advanced competence in FORTRAN programming. Integral nonscheduled lab.
- 3107f,s. INTRODUCTION TO ASSEMBLY LANGUAGE PROGRAMMING.** (4 cr; prereq 1101 or 1105 or 3101 or #; informal lab)  
Number bases and representation. Analysis of a simple computer: machine language instructions, addressing, indexing. Assembly language coding: floating point arithmetic, looping, testing, character manipulation, logical operations; subroutine linkage and transfer. Students will write assembly language programs.
- 5001f. THEORY AND APPLICATION OF LINEAR PROGRAMMING ALGORITHMS.** (4 cr; prereq 1101 or 1105 or 3101, Math 3211 or 3142 or #; informal lab)  
Convex polyhedral sets; extreme points; linear systems; primal and revised simplex algorithms; duality theory and Kuhn-Tucker conditions; post-optimality analysis; initial feasible solutions; storage and retrieval problems; commercial linear programming codes.
- 5002w. COMPUTATIONAL METHODS FOR NONLINEAR PROGRAMMING.** (4 cr; prereq 5001 or #; informal lab)  
Convex functions and domains; nonlinear optimality conditions and duality; unconstrained minimization methods; convergence rates; minimization methods for linear and nonlinear constraints; penalty functions; acceleration of convergence; nonconvex problems.
- 5101f,w. STRUCTURE AND PROGRAMMING OF SOFTWARE SYSTEMS I.** (4 cr; prereq 3107 or #; informal lab)  
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.
- 5102w,s. STRUCTURE AND PROGRAMMING OF SOFTWARE SYSTEMS II.** (4 cr; prereq 5101 or #; informal lab)  
Relocatability and base addressing. Creating an assembler: source code scanning, symbol table management, stacking, template macro processing, etc. Microprogramming. Students will design and run an assembler.
- 5104f. SYSTEM SIMULATION: LANGUAGES AND TECHNIQUES.** (4 cr; prereq 3107; informal lab)  
Simulation methodology including random number generation, queueing, service times, discrete random variables, design of experiments. Simulation languages, flow- and event-oriented: GPSS, SIMULA, SIMSCRIPT. Model building. Applications to job shops, business, operations research, operating systems.
- 5105s. THEORY OF MACHINE ARITHMETIC.** (4 cr; prereq 3107 or #; informal lab)  
Residue class arithmetic. Congruences and complement arithmetic. Integral additive and subtractive accumulators. Multiplication and division by shifting and accumulation. Applications to absolute value and sign arithmetic, scaling and the floating point operation.
- 5106s. STRUCTURE OF HIGHER LEVEL LANGUAGES.** (4 cr; prereq 5101 or #)  
Formal definition of programming languages. Syntax. Semantics. The Algol Report. Introduction to Algol. Applications. Extensions of concepts to other languages. List structures. List languages. List processing. Basics of compilers and compiler implementation.
- 5107f. COMPUTER GRAPHICS.** (4 cr; prereq 3107 or #)  
Arrangement of data base and display files. Representation of data types of display equipment available, calligraphic and raster. Character generators. Display processors. Clipping, windowing, and the hidden surface problem. Applications.
- 5108w. MATRIX DESCRIPTION AND SYNTHESIS OF LOGICAL ALGORITHMS FOR MICROPROGRAMMING.** (4 cr; prereq 3107, 5201, Math 3211, or #; informal lab)  
A special matrix calculus developed and applied to the description and synthesis of combinational, iterative, and sequential networks. Applications to state reduction, minimization of logical algorithms and structural implementation of microprograms.
- 5121w. DATA STRUCTURES.** (4 cr; prereq 5101 or #)  
Concepts and representation of data. Linear lists and strings; arrays and orthogonal lists; tree structures. Storage systems and structures; storage allocation and compactification; multilinked structures. Applications.
- 5199f,w,s. PROBLEMS IN LANGUAGES AND SYSTEMS.** (1,2,3, or 4 cr per qtr; prereq #; same number may be used for more than 1 qtr)  
Special courses or individual study arranged with faculty member.
- 5200s. INTRODUCTION TO ANALOG AND HYBRID COMPUTATION.** (4 cr; prereq 1101 with #, and Math 3221 or Math 3061, or #; 3 lec and 1 lab)

Organization of analog and hybrid computers. Programming for analog and hybrid computers. Interface equipment including analog-to-digital and digital-to-analog conversion. Simulation languages. Case studies and problem solutions.

- 5201w/2s. COMPUTER ENGINEERING.** (4 cr; prereq 3107 or #; 3 lec and 1 lab per qtr)  
 (Same as EE 5350/1) Boolean analysis, algebra, and operators in relay circuits. Analysis of Boolean networks. Limitations of practical circuits. Fan-in, fan-out relays. Algebraic synthesis. Multilevel factorization. The Cray borrow pyramid. Synchronous sequential circuits, Mealy model, flip-flop and clocking practices. System block diagrams. Register types and transfer methods. Clock generation and control. Polyphase clock generation. Sequences, sequence functions, ring counters.
- 5299f,s,w. PROBLEMS IN MACHINE DESIGN.** (1,2,3, or 4 cr per qtr; prereq #; same number may be used for more than 1 qtr)  
 Special courses or individual study arranged with faculty member.
- 5301f,w. NUMERICAL ANALYSIS.** (4 cr; §Math 5472; prereq Math 3221, or Math 3142 and Math 3211, or #; a knowledge of FORTRAN is assumed; informal lab)  
 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.
- 5302w,s. NUMERICAL ANALYSIS.** (4 cr; §Math 5473; prereq 5301, Math 5601, or #; informal lab)  
 General theory of linear approximations. Norms. Error estimates. Convergence rates. Least squares. Orthogonal polynomials, Chebychev interpolation theory. Gaussian quadrature. Further solutions of equations. Multipoint iteration formulas. Starting values. Iterative schemes for linear algebra. Conditioning. Jacobi's method. Differential equations. Initial value problems. Systems of equations. Runge-Kutta. Stability.
- 5304s. COMPUTATIONAL ASPECTS OF MATRIX THEORY.** (4 cr; prereq 5302 or #; informal lab)  
 Computational pitfalls. Conditioning. Iterative methods. Relaxation methods. Various reduction and elimination schemes. Hessenberg matrices. Methods of Lancos, Givens, Householder. Eigenvalue problems. Bounds for eigenvalues.
- 5305s. NUMERICAL SOLUTIONS OF INITIAL AND BOUNDARY VALUE PROBLEMS.** (4 cr; prereq 5302 or #; informal lab)  
 Linear two point boundary value problems. The eigenvalue problem. Tau and Galerkin methods. Nonlinear two point problems. Shooting method. Newton-Kantorovich method. Numerical solutions of problems in partial differential equations. Laplace, heat, and wave equations.
- 5399f,w,s. PROBLEMS IN NUMERICAL ANALYSIS.** (1,2,3, or 4 cr per qtr; prereq #; same number may be used for more than 1 qtr)  
 Special courses or individual study arranged with faculty member.
- 5400f. INTRODUCTION TO AUTOMATA THEORY.** (4 cr; prereq 1106 or #; informal lab)  
 Turing machines, computable functions, unsolvability of the halting problem. Finite state models: equivalence, minimization, synthesis of finite state systems, state assignment, decomposition. Survey of other automata.
- 5401w. INTRODUCTION TO FORMAL LANGUAGES.** (4 cr; prereq 5400; informal lab)  
 Formal grammars and languages and related automata. Language hierarchy. Context free languages and grammars. Pushdown automata. Normal form theorems. Operations on languages. Decidability and undecidability results. Parsing algorithms. Applications to programming.
- 5499f,w,s. PROBLEMS IN COMPUTATIONAL THEORY OR LOGIC.** (1,2,3, or 4 cr per qtr; prereq #; same number may be used for more than 1 qtr)  
 Special courses or individual study arranged with faculty member.
- 5501f. ARTIFICIAL INTELLIGENCE AND HEURISTIC PROGRAMMING.** (4 cr; prereq 1106 or #; informal lab)  
 Concept of a "mechanized" intelligence; the IQ of current systems. Game playing, particularly heuristic search techniques. Neural networks and their mechanical analogues. Methodologies in pattern recognition and applications. The frame problem in AI and implications for robotics. Natural language processing and deductive question answering.
- 5502f. INTRODUCTION TO OPERATING SYSTEMS.** (4 cr; prereq 5102 or #; informal lab)  
 Definition and historical development of operating systems. Classification of systems as batch-processing, interactive and realtime systems. Abstractions and implementations of properties common to most systems. Concurrency and related control problems. Resource allocation. Storage allocation. Program modularity. Sharing. Multiplexing. Protection. Performance optimization.

## Course Offerings and Major Sequences

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### 5503w. INTRODUCTION TO COMPILERS. (4 cr; prereq 5102 or §; informal lab)

Compiler structure. Simple compilation: scanning, statement recognition, expression translation, generation of reverse Polish, triplets, quadruplets, and assembly language code. Simple economization. Symbol table organization, memory organization and recursion. Selfcompilation by means of bootstrapping. Syntax-directed translation via context-free grammars and other formalisms. Illustrative examples.

### 5511. ADVANCED TOPICS IN ARTIFICIAL INTELLIGENCE. (4 cr; prereq 5501 and 5400 or §)

"Systems" employing AI techniques. Examples include Shakey (the SRI robot), the Edinburgh hand-eye project, the MIT robot, etc. Methods of integrating eyes, hands, ears, etc. into a functioning unit. Natural language facilities: representational schemes, parsing algorithms, semantic memories. Students design and implement phases of a large system.

### 5599, 5699, 5799. PROBLEMS: NON-NUMERIC COMPUTATION, CONTROL SCIENCE, INFORMATION SCIENCE. (1,2,3, or 4 cr per qtr; prereq §; same number may be used for more than 1 qtr)

Special courses or individual study arranged with faculty member.

## CRIMINAL JUSTICE STUDIES (CJS)

Staff: David A. Ward, *chairman*, 167 Social Sciences; Barry Feld, Carl P. Malmquist, Thomas O. Murton, Joel Samaha

The Department offers an interdisciplinary program designed to permit students to specialize in criminal justice and related studies. The specialization may be earned in conjunction with a 2-year associate in liberal arts degree in either CLA or General College, a 4-year B.A., or a 4-year B.S. degree in University College. Students specializing in the field should select related majors or individual study programs.

There is no major in criminal justice studies.

CJS courses, all of which are at Upper Division and graduate levels, are open to students who have met their prerequisites. *Required preparatory courses:* CJS 5101 and 4 cr from CJS 5106, Psy 5641, Soc 5111; CJS 5102 and either Soc 5105 or 5125; 8 elective cr from a list in the Criminal Justice Studies office, 167 Social Sciences.

### UPPER DIVISION COURSES

#### 5001,2,3. THE ROLE AND FUNCTION OF MUNICIPAL POLICE ADMINISTRATION IN A CHANGING SOCIETY. (4,4,4 cr; prereq 5001 for 5002 and 5003, or 5001 for 5003, or §)

5001: The development of American policing; its goals and the evolution of its structure; analysis of the political setting in which it operates. 5002: Police organization, management, and functions; executive responsibilities; policy formulation and implementation; management of staff units. 5003: Organization and management of police services; theory and practice of administration; roles of investigative, juvenile, vice, and other programs. (GrC)

#### 5101. CRIMINAL LAW. (4 cr)

General criminal law with particular attention to its philosophical underpinnings. The substantive law of homicide, theft, conspiracy, and attempt and the defenses of insanity, self-defense, and mistake of fact or law. (GrC)

#### 5102. CRIMINAL PROCEDURE. (4 cr)

The processes by which persons are convicted of crime. Police discretion to arrest, the constitutional law of arrest, search and seizure, the role of the prosecutor, plea bargaining, sentencing, and post-conviction relief. (GrC)

#### 5105. ORIGINS OF THE FIFTH AMENDMENT. (4 cr)

History of the right against self-incrimination from its origins to the ratification of the Constitution in 1791. Evaluation of Chief Justice Magruder's remark: "Our forefathers, when they wrote this provision into the Fifth Amendment, had in mind a lot of history which has largely been forgotten today." (GrC)

- 5106. LAW AND SOCIAL ISSUES.** (4 cr; prereq Soc 3101)  
How far the law can go in solving pressing social issues that impinge on individual liberties, such as sexual relations, drug use, abortion, family relationships. (GrC)
- 5201. POLICE AND COMMUNITY RELATIONS.** (4 cr)  
Critical issues in the police and community relationship; the nature of the relationship; an assessment of the problem; evaluation of present programs; agenda for change. (GrC)
- 5202. COMPARATIVE CRIMINAL JUSTICE ADMINISTRATION.** (4 cr)  
Application of the comparative method to the fields of law enforcement, court, and correctional administration; analysis of criminal justice activities in a variety of governmental settings. (GrC)
- 5970. DIRECTED STUDIES.** (1-15 cr; prereq #) (GrC)

## DUTCH

See German

## EAST ASIAN LANGUAGES

**Staff:** Edward M. Copeland, *chairman*, 321 Folwell; Chun-Jo Liu, Owen Lovell, Richard B. Mather, Amy T. Matsumoto, Tsung-Shun Na, Hide Shohara, Reiko Tsukimura, Stephen Wang

The Department aims to advance in-depth understanding of the East Asian cultural complex, stressing a firm foundation of philological and linguistic competence. B.A. degrees in Chinese and Japanese are awarded.

### Chinese (Chin)

**Major Sequence for B.A.:** 1. *Required background courses*—1101/2/3, 1104/5/6. 2. *Major requirements*—3101/2/3, 5201,2,3 and 12 cr from courses numbered above 5xxx.

#### LOWER DIVISION COURSES

- 1101/2/3. BEGINNING CHINESE.** (5/5/5 cr)
- 1104/5/6. INTERMEDIATE CHINESE.** (5/5/5 cr; prereq 1103; ¶3101/2/3)

#### UPPER DIVISION COURSES

- 3090. HONORS TUTORIAL.** (4 cr per qtr; prereq Δ)
- 3101/2/3. BEGINNING LITERARY CHINESE.** (4/4/4 cr; prereq 1103; ¶1104/5/6)
- 3970. DIRECTED STUDIES.** (1-15 cr ar; prereq #) Staff
- 3980. DIRECTED TEACHING.** (1-5 cr; prereq #) Staff
- 5020. ADVANCED CONVERSATION AND COMPOSITION.** (4 cr; prereq 3103)
- 5112. HISTORY OF THE CHINESE LANGUAGE.** (4 cr)
- 5113. STRUCTURE OF STANDARD CHINESE.** (4 cr; prereq introductory course in linguistics)
- 5201,2,3. SURVEY OF CHINESE LITERATURE.** (4,4,4 cr; prereq 3103 plus 9 cr in Literature) (GrD)
- 5261/2/3. SIX DYNASTIES LITERARY TEXTS.** (4/4/4 cr; prereq 3103; offered 1973-74 and alt yrs)
- 5271,2,3. POETRY OF T'ANG AND SUNG PERIODS.** (4,4,4 cr; prereq 1103; offered 1972-73 and alt yrs)
- 5274,5,6. LITERATURE OF YUAN, MING AND CH'ING PERIODS.** (4,4,4 cr; prereq 3103, 5601 or #)
- 5281,2,3. 20TH-CENTURY CHINESE LITERATURE.** (4,4,4 cr; prereq 5601)
- 5601w. VERNACULAR TEXTS.** (4 cr; prereq 1106 and 3103 or #)
- 5604. CHINESE DOCUMENTS.** (4 cr prereq 3103 or #; offered 1972-73 and alt yrs)

## Course Offerings and Major Sequences

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5701,2,3. STUDIES IN CHINESE LINGUISTICS. (4,4,4 cr; prereq 5112 or #)

5990. DIRECTED RESEARCH IN CHINESE LITERATURE. (4 cr per qtr; prereq 3103 or #)

### Japanese (Jpn)

Major Sequence for B.A.: 1. *Required background courses*—1101/2/3, 1104/5/6. 2. *Major requirements*—3101/2/3, 5201,2,3 and 12 cr selected from other courses numbered above 3103.

#### LOWER DIVISION COURSES

1101/2/3. BEGINNING JAPANESE. (5/5/5 cr)

1104/5/6. INTERMEDIATE JAPANESE. (5/5/5 cr; prereq 1103)

1112/3. ACCELERATED JAPANESE. (10/10 cr; prereq Δ)

#### UPPER DIVISION COURSES

3090. HONORS COURSE: HONORS TUTORIAL IN READING. (4 cr; prereq Δ)

3101/2/3. ADVANCED JAPANESE. (4/4/4 cr; prereq 1106)

3970. DIRECTED STUDIES. (1-15 cr ar; prereq #) Staff

3980. DIRECTED TEACHING. (1-5 cr; prereq #) Staff

5111/2/3. STRUCTURE OF JAPANESE. (4/4/4 cr; prereq 3103 and Ling 3003 or #)  
Phonology, morphology, syntax.

5201,2,3. SURVEY OF JAPANESE LITERATURE. (4,4,4 cr; prereq 3103; offered 1972-73 and alt yrs) (GrD)

5261/2. CLASSICAL JAPANESE PROSE. (4/4 cr; prereq 3103)

5271/2. POETRY OF NARA AND HEIAN PERIODS. (4/4 cr; prereq 3103; offered 1973-74 and alt yrs)

5281/2/3. MODERN JAPANESE LITERATURE. (4/4/4 cr; prereq 5603)

5601/2/3. READINGS IN CONTEMPORARY JAPANESE TEXTS. (4/4/4 cr; prereq 3103)

5990. HONORS COURSE: DIRECTED RESEARCH IN JAPANESE LITERATURE. (4 cr per qtr; prereq 3103 or #)

### Oriental (Ortl)

#### UPPER DIVISION COURSES

3501. ASIAN CIVILIZATION: CHINA. (4 cr; prereq soph with #, jr) (GrC)

3502. ASIAN CIVILIZATION: JAPAN. (4 cr; prereq soph with #, jr) (GrC)

## ECOLOGY AND BEHAVIORAL BIOLOGY (Ecol)

College of Biological Sciences

Staff: Alan J. Brook, *head*, BioScience Center; Elmer Birney, Robert Bright, Kenneth Corbin, Robert Maxwell, John McColl, D. Frank McKinney, Robert Megard, David Parmelee, Richard Phillips, Joseph Shapiro, Donald Siniff, John Tester, Harrison Tordoff, Herbert Wright, Jr.

Ecology is concerned with organism environment interaction and the study of the structure and functioning of ecosystems.

A departmental major leading to the B.S. is available through the College of Biological Sciences.

**General Education**—Courses especially appropriate for nonmajors include Biol 1104, 1105, 3001, 5027.

*Note*—All Ecol courses are assigned to Distribution Group B.

**LOWER DIVISION COURSES**

- Biol 1104s. ECOLOGY AND MAN.** (4 cr; §Ecol 1003; prereq Biol 1011) Brook  
Basic concepts of ecology with special reference to man's increasing impact and exploitation of the environment and the biosphere's limits in energy, resources, and space.
- Biol 1105w. INTRODUCTION TO EVOLUTIONARY BIOLOGY.** (4 cr; §Zool 3096; not open to biology majors; prereq Biol 1011 or 1101) Birney, Regal  
History and basis of evolutionary thought; the history and future of man.

**UPPER DIVISION COURSES**

- 3001w. INTRODUCTION TO ECOLOGY.** (4 cr; §Biol 1104, open to jrs and above but not to biology majors) Brook  
Basic concepts in ecology dealing with the organization, development, and functioning of ecosystems; population growth and regulation. Man's impact on such systems. (GrB)
- 3004w. FUNDAMENTALS OF ECOLOGY.** (4 cr; not open to biology majors; prereq Biol 1002 or 1011) Tester  
Relationships between organisms and their environment; ecosystem structure and function emphasizing energy flow, biogeochemical cycling and succession; population dynamics; introduction to regional biotic communities.
- 3101f,w,s. ECOLOGY FOR ENGINEERS AND PHYSICAL SCIENTISTS.** (4 cr; §1003, 3001, Biol 1104; not open to biology majors; prereq Math 1231) Staff  
Course for engineers and physical science students to present a scientifically sound understanding of the basis for the existence and continued existence of life on the earth.
- 3390f,w,s. RESEARCH PROBLEMS.** (1-6 cr; prereq #) Staff  
Individual research for undergraduate majors in biology.
- 5014f. ECOLOGY OF PLANT COMMUNITIES.** (5 cr; prereq 3004 or Biol 3041; 3 Saturday field trips required) Cushing  
Description, classification, and mapping of plant communities; theory of their structure, interrelationships, development, and stability. Field trips to local vegetation types; analysis of quantitative data.
- 5015w. STRUCTURE AND FUNCTIONING OF TERRESTRIAL ECOSYSTEMS.** (4 or 6 cr; prereq Biol 3041 and #) McColl  
Energy flow and cycles of water and nutrients in relation to productivity, development and regulation of ecosystems.
- 5016s. ECOLOGICAL PLANT GEOGRAPHY.** (3 or 5 cr; prereq 3004 or Biol 3041 or #; offered 1973-74 and alt yrs) Lawrence, Cushing  
Ecological principles of plant distribution and landscape analysis, vegetation regions of North America, interpretation of regional vegetation patterns.
- 5018su. WETLAND ECOLOGY.** (5 cr; prereq 15 cr in biological sciences, introductory chemistry, or #, Biol 3041 recommended; offered at Itasca) Staff  
Nature, origin, and development of lake, marsh, swamp, and bog ecosystems; environmental control and productivity.
- 5019su. QUATERNARY PALEOECOLOGY.** (5 cr; prereq 3001 or Biol 3041 or #; offered 1972 and alt yrs at Itasca)  
Problems and techniques in the reconstruction of past communities and ecosystems from fossil evidence in deposits of Quaternary age. Field and laboratory methods in the collection and description of stratigraphic sequences and the identification and quantitative analysis of fossil assemblages.
- 5022w. ANIMAL BEHAVIOR.** (4 cr; prereq #) McKinney  
Introduction to ethology; the causation, development, evolution, and adaptive significance of behavior.
- 5023w. BEHAVIORAL ADAPTATIONS.** (5 cr; prereq 5022 and Biol 3041 and #) McKinney  
Current problems in areas of overlap among ethology, ecology, and evolution with special emphasis on social systems, spacing mechanisms, and communication.
- 5024f. PHYSICAL ASPECTS OF FIELD BIOLOGY I.** (5 cr; prereq 1 yr physics, 1 yr calculus) Maxwell  
The continuity principle in relating meteorological parameters to biologic systems and the modeling of environmental interactions with organisms.
- 5025w. PHYSICAL ASPECTS OF FIELD BIOLOGY II.** (4 cr; prereq 5024) Maxwell  
Elements of a measuring system and determination of meteorological parameters to study the physical relationships between an organism and its environment.

## Course Offerings and Major Sequences

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- 5026su. PHYSICAL ASPECTS OF FIELD BIOLOGY III.** (2-5 cr; prereq 5025 or §; also offered at Itasca) Maxwell  
Field application of the principles of biometeorology and basic measuring systems presented in 5024 and 5025.
- 5027w. HUMAN POPULATION, ENVIRONMENT, AND RESOURCES.** (4 cr)  
Discussion of local, national, and world demographic problems. Impact of population on environment, resources and resource allocation; ecological implications. Birth and death control programs. Demographic models; optimal rate predictions.
- 5028s. ADVANCED ECOSYSTEM ANALYSIS.** (5 cr; prereq 5015, §) McColl  
Individual projects including literature review, field data collection, and/or laboratory analysis and synthesis of results. Projects will relate to cycling of water or chemical elements, or to energy flow in ecosystems at the Cedar Creek Natural History Area. Weekly half-day field trips.
- 5029w. POPULATION ECOLOGY.** (4 cr; prereq 3004 or Biol 3041, one course in statistics) Tester, Siniff  
Factors involved in the regulation, growth, and general dynamics of populations. Major topics include data needed to describe populations, population growth, population models, and regulatory mechanisms.
- Geol 5601. LIMNOLOGY.** (4 cr; §Ecol 5018; prereq Chem 1005 or equiv, §) Shapiro  
Limnological description and analysis of the "events" occurring in lakes, reservoirs, and ponds, beginning with their origins and progressing through a study of their physics, chemistry, and biology. Interrelationships of these parameters, and effects of civilization on lakes. Laboratory, field trips.
- 5812su. AQUATIC ECOLOGY.** (5 cr; prereq 15 cr incl Biol 1002, 3011, or 1106 or Zool 1013; offered at Itasca) Staff  
Conditions for life in the water and distribution of aquatic animals.
- 5813su. ADVANCED LIMNOLOGY.** (5 cr; prereq 5812; offered at Itasca) Megard  
Current topics in limnological research; emphasis on the analysis of aquatic productivity. Lectures, laboratory, field work.
- 5814su. COMMUNITY STRUCTURE AND FUNCTION.** (5 cr; prereq 3004 or Biol 3041 or §; offered at Itasca) Staff  
Communities in Itasca Park and vicinity and their dynamic relationships. Relationships of local communities to the flora and fauna as a whole. Modern methods of community analysis and measurement of environmental factors.
- 5815su. FIELD ETHOLOGY.** (5 cr; prereq Biol 3011, Zool 5077 or 5834 recommended; offered at Itasca) Staff  
Studies of behavioral evolution, motivation, and ontogeny stressing the relationship between environment and behavior by using field research techniques.
- 5816su. ECOLOGY OF FRESHWATER ALGAE.** (5 cr; prereq Bot 5231 or Bot 5811 or §; offered at Itasca) Brook  
Aspects of algal ecology in lakes and ponds, phytoplankton, benthos, and periphyton; also in streams, bogs, soils, and other terrestrial habitats. Laboratory instruction in relevant research techniques.
- 5817su. VERTEBRATE ECOLOGY.** (5 cr; §old Ent 162; prereq 3004 or Biol 3041; offered at Itasca) Staff  
Field work on populations and their relationships to local environments; habitat analysis and ecological research methods. Individual and team research projects, field trips, and lectures.
- 5818su. QUANTITATIVE ECOLOGY.** (5 cr; prereq 9 cr in ecology; offered at Itasca) Staff  
Lectures, discussions, and field studies on populations, communities, and ecosystems. Emphasis on methods of sampling and measuring ecological parameters and on data analysis and interpretation.
- 5819su. SOILS AND THE ECOSYSTEM.** (5 cr; §Soil 5532; prereq 3004 or Biol 3041 or §; offered at Itasca) Farnum  
Formation and distribution of soils in relationship to vegetation, climate, and other soil-forming factors. Interrelationships of soils in the ecosystem.

## ECONOMICS (Econ)

Staff: N. J. Simler, *chairman*, 1035 Business Administration; Edward Coen, *director of undergraduate studies*; Francis M. Boddy, O. H. Brownlee, John

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Economics seeks to describe how the economy works, to define criteria for assessing its efficiency in providing goods and services, and to evaluate alternative techniques of social control intended to increase economic efficiency and equity.

A major in economics is useful for those contemplating careers in business, law, government, or teaching. Though it does not provide specialized vocational skills, it familiarizes the student with the basic features of the economic environment. For senior staff positions in business and government and for college teaching, graduate work is essential. Prospective public school teachers should consult the *College of Education Bulletin*.

**Major Sequences:** Described below are alternative majors, the B.A. and the B.S. The B.A. sequence is relatively non-mathematical and non-quantitative; the B.S. sequence emphasizes mathematical and statistical methods in economics. Students contemplating graduate work in economics or careers as professional economists in business, government, or college teaching are strongly advised to select the B.S. program. Advisers for majors and pre-majors are the director of undergraduate studies and his assistant (1035 Business Administration, 373-3690).

**Major Sequence for B.A.:** 1. *Required background courses*—1001 or 1001H, 1002 or 1002H or equivalent; Math 1111 or 1141 or 1131 or equivalent. 2. *Major requirements*—35 Upper Division cr, to include 3101 or 3101H or 5151, 3102 or 3102H or 5152, 3131 or 3131H (students are urged to take 3101 and/or 3102 in the first quarter of Upper Division work, and to follow soon with 3131), and additional elected courses (no more than 8 cr from 3970 and 5970, except by permission, and no more than 2 courses from QA 3050, 3054, Stat 3091, 5101, 5121/2, 5131/2, 5302, PubH 5450/2/4, 5451/3/5). Honors sections are recommended for honors students and those with superior records, as well as 5xxx courses chosen from the following list (consult adviser before registering): 5161/2/3, 5661, 5164/5/6, 5171/2, 5181/2, 5261/2/3, 5461/2/3, 5561/2, 5671/2/3, 5761/2, 5861/2/3, and any course having 5161 or 5164 as prerequisite.

*Special Note:* Econ 3001/2, 3501, 3601, 3701, 3801, 5301, 5307, 5311, 5401, 5701 are not open to economics majors.

**Major Sequence for B.S.:** 1. *Required background courses*—1001 or 1001H, 1002 or 1002H or equivalent; Math 1211/21/31 or 1311/21/31 or 1611/21 or equivalent. 2. *Major requirements*—Math 3142 or 3221 or 3511 (3211 also recommended); Stat 5121,2 or 5131,2 or 3091, 5101; Econ 3101H, 3102H, 3131 or 3131H; Econ 3251 or 5261 or Stat 5302; two 5xxx courses chosen from those suggested for superior students under B.A. major requirements; 20 additional Upper Division or graduate level economics cr, or 16 such cr and one math or stat course approved by adviser.

**General Education**—Courses with few prerequisites that may especially interest nonmajors are 1001,2, 1014,5, 1041, 3001/2, 5041 (no course prerequisites); 3501, 3601, 3701, 3801, 3970, 5021, 5301, 5307, 5311, 5313, 5315, 5401, 5611, 5621 (prerequisite for each, 1001,2).

#### LOWER DIVISION COURSES

1001f,w,s. PRINCIPLES OF MACROECONOMICS. (4 cr; §1004, 1015, 3001, 3002; prereq 3rd qtr fr)

National income; money and banking; business cycles; international trade. (GrC)

## Course Offerings and Major Sequences

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- 1001Hf,w,s. HONORS COURSE: PRINCIPLES OF MACROECONOMICS.** (5 cr; §1004, 1015, 3001, 3002; prereq 3rd qtr fr; B average recommended) (GrC)
- 1002f,w,s. PRINCIPLES OF MICROECONOMICS.** (4 cr; §1005, 1015, 3001, 3002; prereq 3rd qtr fr)  
Demand and supply; competition and monopoly; the distribution of income. (GrC)
- 1002Hf,w,s. HONORS COURSE: PRINCIPLES OF MICROECONOMICS.** (5 cr; §1005, 1015, 3001, 3002; prereq 3rd qtr fr; B average recommended) (GrC)
- 1004f,w,s. PRINCIPLES OF MACROECONOMICS.** (4 cr; §1001; prereq 1 qtr calculus)  
For description, see 1001. (GrC)
- 1005f,w,s. PRINCIPLES OF MICROECONOMICS.** (4 cr; §1002; prereq 1 qtr calculus)  
Demand and supply; competition and monopoly; the distribution of income. (GrC)
- 1014w. SCOPE, METHODS, AND APPLICATION OF ECONOMICS.** (5 cr [no cr if taken after 1001,2 or equiv])  
Overview of economics. Different professional economics specialists explain type of work in their fields. Types of problems for which study of economics is useful. (GrC)
- 1015s. INTRODUCTION TO ECONOMIC ANALYSIS.** (3 cr; §1002, 1005; prereq 1014; may substitute for 1002 as prereq for intermediate courses in economics)  
Elementary training in analytical approach; applications to production and different market structures in American economy. (GrC)
- 1041. DECISION-MAKING FOR CONSUMERS.** (4 cr; §5041)  
Application of economic principles to major decisions of consumers. Improved decisions versus cost of search. Sources of consumer information. Decision making under uncertainty. Expenditure control. Saving; optimal distribution of assets; insurance principles. Consumer protection. Economics of health care. (GrC)

### UPPER DIVISION COURSES

- 3001f/2w. ECONOMIC PROBLEMS OF AMERICAN ECONOMY.** (5/5 cr; §1001, 1002, 1004, 1005, 1014, 1015; not available to econ majors for Upper Division credit; offered 1971-72 and alt yrs)  
General education in economics for average citizen. (GrC)
- 3021. SURVEY OF ECONOMIC IDEAS.** (3-5 cr; prereq 1001,2 or equiv)  
Economic thinking from Adam Smith to J. M. Keynes; impact of industrial revolution and business cycle on formation of theory. (GrC)
- 3041. CURRENT ISSUES WORKSHOP.** (3-4 cr; prereq 3101 or A grade in 1002 or §)  
Problems of current interest will be analyzed each qtr using the tools and viewpoint of economic theory. Course with emphasis on discussion rather than lectures, with active student participation. (GrC)
- 5021. ECONOMICS, ETHICS, AND ECONOMIC PHILOSOPHY.** (5 cr; prereq 1001,2 or equiv; offered when feasible)  
Literature and issues it raises; relation of ethics to economic organization, practice, and policy. Different economic philosophies; elements involved in formulation of economic philosophy. (GrC)
- 5031,2,3. CURRENT ECONOMIC ISSUES.** (3-5, 3-5, 3-5 cr [with § course may be taken more than once]; prereq 3101,2 or equiv or §; offered when feasible)  
Current controversies over economic policy and problems that underlie controversies. Selected topics. (GrC)

### Consumer Economics

- 5041. DECISION-MAKING FOR CONSUMERS.** (4 cr; §1041)  
For description, see 1041. (GrC)
- 5051. ECONOMIC BEHAVIOR OF THE HOUSEHOLD.** (4 cr; prereq 3101,2)  
Sample survey techniques. Concept of saving. Models of household behavior. Review of regression analysis. Traditional demand analysis; consumer anticipations approach to forecasting demand. Consumption-saving hypotheses. Consumption and capital. The value of time. (GrC)
- 5053. ECONOMIC ORGANIZATION OF THE HOUSEHOLD.** (4 cr for undergrads, 3 cr for grads; §AgEc 5580; prereq 3101)  
The household as a multi-product firm producing monetary and in-kind income, human capital, and satisfaction. Its relationships with the labor market, consumer-good market, housing market, and public-good market. The household, information, and uncertainty. (GrC)

**5055. GOVERNMENT AND THE CONSUMER.** (4 cr for undergrads, 3 cr for grads; §AgEc 5590; prereq 3101)

Consumer sovereignty. Measures of consumer well-being. Publicly supplied goods and services. Effects of government policies on the consumer in private and public markets. Informational imperfections. Consumer protection and redress. (GrC)

**Economic Theory****3101f,w,s. MICROECONOMIC THEORY.** (4 cr; prereq 1001,2, Math 1111 or 1141 or 1131, or equiv)

Behavior of households, firms and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions. (GrC)

**3101H. HONORS COURSE: MICROECONOMIC THEORY.** (5 cr; prereq 1001,2, 1 qtr calculus; B average recommended) (GrC)**3102f,w,s. MACROECONOMIC THEORY.** (4 cr; prereq 1001,2, Math 1111 or 1141 or 1131, or equiv)

Determinants of national income, employment, and price level; aggregate consumption, investment, and government demand; the money market; the labor market. (GrC)

**3102H. HONORS COURSE: MACROECONOMIC THEORY.** (5 cr; prereq 3101 or 3101H or §, 1 qtr calculus; B average recommended) (GrC)**3131f,w,s. WELFARE ECONOMICS.** (4 cr; prereq 3101 or equiv)

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. (GrC)

**3131H. HONORS COURSE: WELFARE ECONOMICS.** (5 cr; prereq 3101 or 3101H or §, 1 qtr calculus; B average recommended) (GrC)**5111. FOUNDATIONS OF MATHEMATICS FOR SOCIAL SCIENTISTS.** (4 cr; prereq Math 1111 or equiv or §)

Sets. Relations. Partially ordered systems. Functional relations. Elements of logical calculus. Groups. Matrices. Applications mostly in economics, decision and game theory, some in statistics. (GrC)

**5141. BUSINESS CYCLES.** (4 cr; prereq 3102, 3751 or equiv)

Ups and downs of business; causes and statistical data; relationship of cycles to economic growth. Methods of forecasting. Proposals for economic stabilization. (GrC)

**5141H. HONORS COURSE: BUSINESS CYCLES.** (5 cr; prereq 3101,2; B average recommended)**5151f. ELEMENTS OF ECONOMIC ANALYSIS: FIRM AND HOUSEHOLD.** (3 cr; §3101; prereq 1001,2, 1 qtr calculus, grad or §)

Decision making by households and firms under conditions of competition, monopoly, and monopolistic competition. (GrC)

**5152f. ELEMENTS OF ECONOMIC ANALYSIS: INCOME AND EMPLOYMENT.** (3 cr; §3102; prereq 1001,2, 1 qtr calculus, grad or §)

Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding. (GrC)

**5161f,w/2w,s/3s,f. MICROECONOMIC THEORY.** (5/5/5 cr for undergrads, 3/3/3 cr for grads; prereq 3101 or 5151, 2 qtrs calculus, 1 qtr linear algebra, § for undergrads)

Decision problems faced by the household and firm; theories of choice under conditions of certainty and uncertainty. Partial equilibrium analysis of competition and monopoly. General equilibrium analysis. Welfare economics: economic efficiency of alternative market structures; social welfare functions. Dynamics: stability of markets, introduction to capital theory. (GrC)

**5164f,w/5w,s/6s,f. MACROECONOMIC THEORY.** (5/5/5 cr for undergrads, 3/3/3 cr for grads; prereq 3102 or 5152, 1 qtr calculus, 1 qtr linear algebra)

General equilibrium models for determining output, employment, price level and rate of interest. Components of demand for goods (especially consumption and investment demand) and for financial assets. Models of economic fluctuations and growth. (GrC)

**5171/2. HISTORY OF ECONOMIC THOUGHT.** (5/5 cr for undergrads, 3/3 cr for grads; prereq 5162, 5164)

5171: Classical economists, Marx, beginnings of neoclassical economics. 5172: Development of neoclassical economics through 1930s. Origins of macrotheory. (GrC)

**5181/2. DECISION-MAKING AND OPERATIONS ANALYSIS.** (5/5 cr for undergrads, 3/3 cr for grads; prereq 3101 or 5151, 2 qtrs calculus, 1 qtr linear algebra, § for undergrads)

## Course Offerings and Major Sequences

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Applications of mathematical techniques of maximization and minimization. Calculus, linear programming, nonlinear programming, and dynamic programming applied to production, inventory, transportation, selling, and financial problems. (GrC)

### Econometrics

- 3251. INTRODUCTION TO ECONOMETRICS.** (4 cr; prereq 3101,2, 1 qtr calculus, Stat 1051 or equiv)  
Least-squares estimation in two- and three-variable linear model. Significance tests and confidence intervals. Autocorrelation and multicollinearity. Distributed lags. Simultaneous equation systems. Identification, least-squares bias. Two-stage least squares. Econometric case studies. (GrC)
- 5261/2/3. APPLIED ECONOMETRICS.** (5/5/5 cr for undergrads, 3/3/3 cr for grads; prereq 3101,2, Stat 5122, 1 qtr linear algebra, # for undergrads)  
Conceptual basis of econometric theory (omitting many proofs of theorems) with application to economic models. Lab section required. (GrC)

### Economic Development, Comparative Systems, Area Studies

- 5301. ECONOMIC DEVELOPMENT.** (4 cr; §5331; not open to econ majors; prereq 1001,2 or equiv)  
Problems of economic growth in low income countries. Theory of aggregate and per capita income growth. Role of population growth, productivity increases and capital formation. Allocation of resources between consumption and investment and among sectors. International assistance and trade. (GrC)
- 5307. COMPARATIVE ECONOMIC SYSTEMS.** (4 cr, §5337; not open to econ majors; prereq 1001,2 or equiv)  
Functions of all economic systems; the market economy, liberal socialism, centrally planned economy. Analysis of American and Soviet economics. (GrC)
- 5311. ECONOMY OF LATIN AMERICA.** (4 cr; §5341; not open to econ majors; prereq 1001,2 or equiv)  
Current economics problems: exchange controls, land reform, inflation, and fluctuation in prices of basic commodities. Evaluation of foreign aid programs. (GrC)
- 5313. ECONOMY OF U.S.S.R.** (4 cr; prereq 1001,2 or equiv)  
Economic organization, planning and control of use of resources and distribution of product. Performance of economy in agriculture and industry under 5-year plans. External economic policy. Public finance, income distribution, economic incentives. (GrC)
- 5315. ECONOMICS OF ASIA.** (4 cr; prereq 1001,2 or equiv)  
Economic development following contact with Western civilization. Current problems; population growth, capital formation, international economic relations, choice between types of economic organization. (GrC)
- 5331. ECONOMIC DEVELOPMENT.** (4 cr, §5301; prereq 3101,2 or equiv or #)  
For description, see 5301. (GrC)
- 5337. COMPARATIVE ECONOMIC SYSTEMS.** (4 cr; §5307; prereq 3101,2 or equiv or #)  
For description, see 5307. (GrC)
- 5341. ECONOMY OF LATIN AMERICA.** (4 cr; §5311; prereq 3101,2 or equiv or #)  
For description, see 5311. (GrC)
- 5347,8. DEVELOPMENT OF AMERICAN ECONOMY.** (4,4 cr; prereq 3101,2 or equiv or #)  
Applications of economic theory and empirical methods to topics in American economic development, particularly during 19th-century period of accelerated growth and industrialization. (GrC)

### International Economics

- 5401. INTERNATIONAL ECONOMICS.** (4 cr; §5431; not open to econ majors; prereq 1001,2 or equiv)  
The case for free trade. Effects of tariffs; protection of infant industries; common markets. Balancing international receipts and payments, the role of exchange rate changes, international monetary reform. (GrC)
- 5411. U.S. FOREIGN ECONOMIC POLICY.** (4 cr; prereq 5401 or equiv; offered 1972-73 and alt years)  
Development of U.S. foreign economic policy in 20th century and current issues of U.S. foreign economic policy. (GrC)
- 5431. INTERNATIONAL ECONOMICS.** (4 cr; §5401; prereq 3101,2 or equiv or #)  
For description, see 5401. (GrC)

**5461f/2w/3s. INTERNATIONAL TRADE AND PAYMENTS THEORY.** (5/5/5 cr for undergrads, 3/3/3 cr for grads; prereq 3102, 3131, 2 qtrs calculus, # for undergrads, 5162, 5164 for grads)

Gains from trade; effect of trade on factor prices; tariffs; customs unions. Relation of trade theory to growth and development. Balance of payments disequilibrium, exchange rates, capital movements, international liquidity. (GrC)

### Labor Economics

**3501. LABOR ECONOMICS.** (4 cr; §3551; not open to econ majors; prereq 1001,2)

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. (GrC)

**3551. LABOR ECONOMICS.** (4 cr; §3501; prereq 3101,2 or equiv)

For description, see 3501. (GrC)

**5531. ECONOMIC HISTORY OF LABOR.** (4 cr; prereq 3501 or 3551 or #)

Historical analysis of labor in American economic development; labor force characteristics, wage level and structure, migration. Origins and growth of labor organizations and other labor market institutions. Economic and social consequences of these developments. (GrC)

**5534. ECONOMIC SECURITY.** (4 cr; prereq 3501 or equiv or #)

Public and private approaches to problems of economic insecurity. Economic and social implications of private and public programs. Emphasis on economics of income and employment stabilization rather than upon legal or administrative aspects. (GrC)

**5537. LABOR MARKET BEHAVIOR AND REGULATION.** (4 cr; prereq 3551 or equiv or #)

Public and private policies directed at regulation of employer-employee-union relations and labor market behavior. Settlement of disputes. Control of employer and union self-help techniques. Emphasis on economic rather than legal or administrative aspects of policy. (GrC)

**5541. CONTEMPORARY LABOR ISSUES.** (4 cr; prereq 3501 or 3551 or #)

Analysis of important labor problem areas. Current issues examined in light of their broad economic, legal, political, and social implications. (GrC)

**5561/2. WAGES AND EMPLOYMENT.** (5/5 cr for undergrads, 3/3 cr for grads; prereq 3102, 3131, 1 qtr calculus and # for undergrads, 5161, 5164 for grads)

Economic analysis of labor markets and their operation under conditions of individual and collective bargaining. Implications of labor market operations for resource allocation, wage and price stability, income and employment growth. Wage structures and wage levels. Wage and employment theories and practices. Economic impact of the union. (GrC)

### Industrial Organization, Technological Change, Environmental Control, Urban Problems

**3601. INDUSTRIAL ORGANIZATION AND ANTI-TRUST POLICY** (4 cr; §3651; not open to econ majors; prereq 1001,2)

Economic aspects of anti-trust and related policies. Relations between market structure and economic efficiency and welfare. Economic origins of monopoly and other restraints on competition. Purposes and effects of anti-trust and related legislation. (GrC)

**3651f,w,s. INDUSTRIAL ORGANIZATION AND ANTI-TRUST POLICY.** (4 cr; §3601; prereq 3101, 3131 recommended or #)

Economic aspects of anti-trust and related policies. Relations between market structure and economic efficiency and welfare; economic origins of monopoly and other restraints on competition; purposes and effect of antitrust and related legislation. (GrC)

**3651H. HONORS COURSE: INDUSTRIAL ORGANIZATION AND ANTI-TRUST POLICY.** (5 cr; prereq 3131 or equiv, B average recommended) (GrC)

**3655. SCIENCE, TECHNOLOGY AND ECONOMIC GROWTH.** (4 cr; prereq 3101,2 or equiv)

Technical change and economic growth. Determinants of invention; factors affecting rate of innovation and of diffusion of new technology. Rates of return to new technologies. Externalities and public policy; environmental impacts of high-level technologies. (GrC)

**5611. ECONOMICS OF ENVIRONMENTAL CONTROL.** (4 cr; prereq 1001,2 or equiv)

General model of the problem. Partial models appropriate to specific cases. Prediction of rate of environmental deterioration and evaluation of its cost. Ranking of alternative superior technologies. Policies to promote discovery of superior technologies and to encourage their adoption. (GrC)

## Course Offerings and Major Sequences

- 5621. ECONOMICS OF URBAN PROBLEMS.** (4 cr; prereq 1001,2 or equiv)  
Private versus social costs. Housing: space, quality, integration; rehabilitation, renewal. Security: economics of crime and crime prevention. Education: causes and effects of educational deprivation; quality, equality, integration. Transportation: auto, bus, rapid transit; selecting optimal mix. City size: economies and diseconomies of size. (GrC)
- 5661. ECONOMICS OF LOCATION.** (5 cr for undergrads, 3 cr for grads; prereq 3131, 1 qtr calculus and § for undergrads, 5161 for grads)  
Analysis of location of economic activity in relation to resources and markets. Effects of changes in transport costs. Problems associated with urban growth. (GrC)
- 5671f/2w/3s. INDUSTRIAL ORGANIZATION AND GOVERNMENT REGULATION.** (5/5/5 cr for undergrads, 3/3/3 cr for grads; prereq 3131, 1 qtr calculus and § for undergrads, 5161 for grads, regression analysis recommended)  
Profit maximization and other theories of business behavior; profits, assets and barriers to entry; concentration and other aspects of industry structure; scale economies and other determinants of industry structure; performance consequences of alternative industry structures; analysis of business pricing practices; determinants of invention and innovation; economic analysis of anti-trust, conservation, and direct regulatory activities of federal, state, and local governments. (GrC)

### Monetary Economics and Macroeconomic Policy

- 3701. MONEY AND BANKING.** (4 cr; §3751, 5701; prereq 1001,2 or equiv; not open to econ majors)  
Historical development, present characteristics and economic role of financial institutions. Commercial banking, the Federal Reserve System and monetary policy. (GrC)
- 3731. MACROECONOMIC POLICY.** (4 cr; prereq 3102)  
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. (GrC)
- 3731H. HONORS COURSE: MACROECONOMIC POLICY.** (5 cr; prereq 3102; B average recommended)
- 3751. MONEY AND BANKING.** (4 cr; §3701, 5701; prereq 3102 or equiv)  
Historical development, present characteristics, and economic role of financial institutions. Commercial banking, the Federal Reserve System, and monetary policy. (GrC)
- 3751H. HONORS COURSE: MONEY AND BANKING.** (5 cr; prereq 3102 or equiv; B average recommended) (GrC)
- 5701. MONEY, BANKING, AND MONETARY POLICY.** (4 cr; §3701, 3751; not open to econ majors; prereq 1001,2 or equiv or §)  
Economic role of financial institutions, with emphasis on commercial banks, the money supply, and monetary policy. (GrC)
- 5761/2. MONETARY ECONOMICS.** (5/5 cr for undergrads, 3/3 cr for grads; prereq 3131, 5164, 1 yr calculus, § for undergrads, 5162, 5164, §5165 for grads)  
Monetary theory, determinants of value of money. Principal problems of monetary policy. (GrC)

### Public Finance

- 3801. ELEMENTS OF PUBLIC FINANCE.** (4 cr; §3851; not open to econ majors; prereq 1001,2)  
Tax and expenditure policies, primarily at federal level. Impact of tax structure on the distribution of income. Evaluation of public programs. Optimal mix of public and private sector outputs. (GrC)
- 3851f,w,s. ELEMENTS OF PUBLIC FINANCE.** (4 cr; §3801; prereq 3101, 3131 recommended)  
For description, see 3801. (GrC)
- 3851H. HONORS COURSE: ELEMENTS OF PUBLIC FINANCE.** (5 cr; prereq 3101, 3131; B average recommended) (GrC)
- 5811. STATE AND LOCAL FINANCE.** (4 cr; prereq 3851 or equiv)  
Main problems of state and local finance and proposed solutions; interstate comparisons and coordination of practices and policies. (GrC)
- 5831. COST-BENEFIT ANALYSIS.** (4 cr; prereq 3101 or equiv)  
Principles for evaluation of benefits and costs of public projects or programs. Issues connected with definition and measurement of benefits and costs. Rate of return and rate of discount. Treatment of market imperfections, risk and uncertainty. (GrC)

**5861f/2w/3s. PUBLIC FINANCE.** (5/5/5 cr for undergrads, 3/3/3 cr for grads; prereq 3102, 3131, 1 qtr calculus or § for undergrads, 5162, 5165 for grads)

Theory of economic policy. Economic affects of taxes, public debt and public expenditure on resource allocation, employment and income distribution (including techniques of cost-benefit analysis). Current problems of fiscal policy and taxation. (GrC)

#### Directed Studies

**3970. DIRECTED STUDIES.** (Cr ar; prereq §)

Areas useful to individual programs and objectives not available in regular course offerings. (GrC)

**5970. DIRECTED STUDIES.** (Cr ar; prereq §)

Areas useful to individual programs and objectives not available in regular course offerings. (GrC)

## EDUCATION

### Psychological Foundations (PsyF)

College of Education

Two courses in educational psychology, offered by the College of Education, are regularly open to Arts College students:

#### UPPER DIVISION COURSES

**PsyF 5110. INTRODUCTORY STATISTICAL METHODS.** (3 cr)

Basic statistical techniques; comprehension of literature using elementary concepts and methods.

**PsyF 5121. BASIC PRINCIPLES OF MEASUREMENT.** (3 cr; prereq 5110 or 8110 or Psy 3801 or equiv)

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. (GrC)

## ENGLISH (Engl)

**Staff:** William Madden, *chairman*, 207 Main Engineering; William Rosendahl, *assistant chairman*; Edward Griffin, *director of graduate study*, 205 Main Engineering; A. I. Leyasmeyer, *director of undergraduate study*; Raymond McClure, *director of freshman English*, 209 Main Engineering; Paul Alkon, Chester Anderson, Kent Bales, Bernard Bowron, John Clark, Shirley Clark, Thomas Clayton, Lonnie Durham, Margery Durham, Peter Firchow, Charles Foster, Philip Furia, Arthur Geffen, Madelon Gohlke, David Haley, Chadwick Hansen, Gordon Hirsch, J. Dennis Hurrell, Calvin Kendall, Joseph Kwiat, David Luke, Andrew MacLeish, John McNally, Toni A. McNaron, J. Lawrence Mitchell, Robert Moore, Thomas Nelson, Francis Nye, Gordon O'Brien, Peter Reed, Donald Ross, Martin Roth, James Scoggins, Robert Solotaroff, Martin Steinmann, Charles Sugnet, Mary Turpie, Leonard Unger, George T. Wright

The study of the English language and English and American literature, of value and interest in itself, contributes substantially to an understanding of other areas of learning and of life in general. Ideally it provides a special kind of humanistic breadth, depth, and perspective, and resources for verbal communication, to other kinds of study (which in turn enlarge and enhance the understanding and experience of English).

(For courses in freshman English and composition, see page 98.)

Major Sequence for B.A.: 10 courses beyond English composition, 8 of them from the 3xxx or 5xxx series, and 1 a course in Shakespeare. Two composition courses may be counted among the 10. (Students who began English majors

## Course Offerings and Major Sequences

under a previous program may earn the B.A. under either the old or the current requirements.)

The English Department strongly recommends to its majors that, in consultation with senior staff advisers, and with the approval of the director of undergraduate studies, they work out programs that take advantage of the variety and breadth of the Department's offerings. In addition to work in literary history and major authors (notably Shakespeare, Chaucer, and Milton) an ideal program would include some of the following: courses arranged by genre or theme, courses in language, criticism, or writing, and interdisciplinary courses. Normally, a major will take some Lower Division English courses during his sophomore year, and at least three or four Upper Division courses in English during each of his last 2 years. In choosing courses, he will be guided both by his adviser and by his personal tastes.

The Department recommends all kinds of correlative study, but it particularly encourages students of English to take courses in foreign literatures. The study of foreign literatures is best undertaken in the original languages; but most foreign-language departments, including Classics, provide opportunities for examining literary works in translation, and such courses are recommended for their considerable value to students who do not know the original languages. English majors, especially those who look forward to graduate study, should begin foreign-language study as soon as possible. The languages most directly applicable to the study of English are Latin, Greek, French, Italian, and German.

Students who expect to go on to graduate study in English should be aware that courses in Chaucer and Milton may be required of candidates for admission to graduate schools. They are also strongly advised to take some of the Upper Division survey courses (5111 through 5175; 5411,2,3; 5431 through 5471), designed to treat comprehensively the literature of Great Britain and the United States.

### LOWER DIVISION COURSES

- 1011—1030. INTRODUCTORY COURSES IN BRITISH AND AMERICAN LITERATURE.** (4 cr each; prereq satisfaction of English composition requirement)  
Close reading of a few selected texts, with emphasis on critical discussion and writing. Prospective English majors are urged to take one or more of these courses.
- 1011. INTRODUCTION TO OLD AND MIDDLE ENGLISH LITERATURE: SOME MAJOR FIGURES AND THEMES.** (GrD)
- 1012. INTRODUCTION TO THE LITERATURE OF THE RENAISSANCE: SOME MAJOR FIGURES AND THEMES.** (GrD)
- 1013. INTRODUCTION TO RESTORATION AND 18TH-CENTURY LITERATURE: SOME MAJOR FIGURES AND THEMES.** (GrD)
- 1014. INTRODUCTION TO ROMANTIC LITERATURE: SOME MAJOR FIGURES AND THEMES.** (GrD)
- 1015. INTRODUCTION TO VICTORIAN LITERATURE: SOME MAJOR FIGURES AND THEMES.** (GrD)
- 1016. INTRODUCTION TO AMERICAN LITERATURE: SOME MAJOR FIGURES AND THEMES.** (GrD)
- 1017. INTRODUCTION TO MODERN LITERATURE: POETRY.** (GrD)
- 1018. INTRODUCTION TO MODERN LITERATURE: PROSE FICTION.** (GrD)
- 1019. INTRODUCTION TO MODERN LITERATURE: DRAMA.** (GrD)
- 1020 or 1030. INTRODUCTION TO LITERATURE: TOPICS.**  
Topics will be specified in the *Class Schedule*. (GrD)
- 1241. INTRODUCTION TO SHAKESPEARE.** (4 cr; prereq completion of or exemption from English composition requirement)  
Lecture survey of Shakespeare's work, treating approximately 10 plays. Designed for all students in the University. (GrD)

## UPPER DIVISION COURSES

- 3241f,w,s,2f,w,s. SHAKESPEARE.** (4,4 cr; students are urged to take 3241 before 3242)  
**3241:** 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:** Plays from the middle and late periods. All sections will read *King Lear*, *Macbeth*, *The Tempest*, and three or four other plays. (GrD)
- 3241H,2H. HONORS COURSE: SHAKESPEARE.** (4,4 cr; prereq consent of English honors adviser or #) (GrD)
- 3251. THE KING JAMES BIBLE AS LITERATURE.** (4 cr)  
 Readings in the *Old* and *New Testaments* from a literary point of view. Selections from historical narratives, prophets, psalms, tales, wisdom literature, apocalypse. (GrD)
- 3351. 20TH-CENTURY BRITISH POETRY.** (4 cr)  
 A survey of the major poets. (GrD)
- 3851f,w,s. THE ENGLISH LANGUAGE.** (4 cr)  
 Nontechnical examination of the English language designed to explore such basic questions as how you learned English, how your knowledge of it can be described, and what it has in common with other languages. (GrA,D)
- 3910 or 3920. TOPICS IN ENGLISH AND AMERICAN LITERATURE.** (4 cr)  
 Topics will be annually specified in the *Class Schedule*. (GrD)
- 3940 or 3950. FIGURES IN ENGLISH AND AMERICAN LITERATURE.** (4 cr)  
 Figures will be annually specified in the *Class Schedule*. (GrD)
- 3960. HONORS SEMINAR.** (4 cr; prereq consent of English honors adviser) (GrD)
- 3963. HONORS THESIS.** (4 cr; prereq honors candidacy in English and consent of English honors adviser) (GrD)
- 3970. DIRECTED STUDIES.** (1 to 15 cr ar; prereq #) (GrD)
- 3980. DIRECTED INSTRUCTION.** (Cr ar; prereq #) (GrD)
- 5111—5117. SURVEY COURSES IN BRITISH LITERATURE.** (4 cr each)  
 Historical surveys of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture courses with emphasis on wide reading. No papers.
- 5111. OLD AND MIDDLE ENGLISH LITERATURE.**  
 No knowledge of Old English is required; some familiarity with Middle English would be helpful. (GrD)
- 5112. 16TH-CENTURY LITERATURE.** (GrD)
- 5113. 17TH-CENTURY LITERATURE.** (GrD)
- 5114. 18TH-CENTURY LITERATURE.** (GrD)
- 5115. ROMANTIC LITERATURE.** (GrD)
- 5116. VICTORIAN LITERATURE.** (GrD)
- 5117. 20TH-CENTURY LITERATURE.** (GrD)
- 5151. THE 18TH-CENTURY ENGLISH NOVEL.** (4 cr)  
 Selected novels by such authors as Defoe, Richardson, Fielding, Smollett, Sterne, and Jane Austen. (GrD)
- 5152. THE 19TH-CENTURY ENGLISH NOVEL.** (4 cr)  
 Selected novels from the Romantic and Victorian periods by such authors as Scott, Dickens, the Brontës, Thackeray, Eliot, and Hardy. (GrD)
- 5153. THE 20TH-CENTURY ENGLISH NOVEL.** (4 cr)  
 Selected novels by such modern authors as Conrad, Ford, Joyce, Woolf, Lawrence, Forster, Cary, and Waugh. (GrD)
- 5171. MEDIEVAL, TUDOR, AND ELIZABETHAN DRAMA.** (4 cr; prereq 3241 or 3242)  
 Mystery plays, moralities, interludes, academic and court plays; plays of Kyd, Marlowe, Lyly, Greene, and Peele. (GrD)
- 5172. JACOBEAN AND CAROLINE DRAMA.** (4 cr; prereq 3241 or 3242)  
 Selected plays of Jonson, Tourneur, Webster, Middleton, Ford, and others. (GrD)
- 5173. RESTORATION AND 18TH-CENTURY DRAMA.** (4 cr; prereq 3241 or 3242)  
 The heroic play, tragedy, comedy of manners, and sentimental comedy. (GrD)

## Course Offerings and Major Sequences

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- 5174. DRAMA FROM ca. 1800 TO ca. 1920.** (4 cr)  
The beginnings of modern realism, naturalism, and expressionism in English and Continental drama. (GrD)
- 5175. DRAMA SINCE ca. 1920.** (4 cr)  
Chief dramatists, English, American, and Continental. (GrD)
- 5211f,w. OLD ENGLISH (ANGLO-SAXON).** (5 cr)  
Introduction to sounds and grammar with some prose reading. Relation to modern English stressed. (GrD)
- 5212w. READINGS IN OLD ENGLISH PROSE AND VERSE.** (4 cr; prereq 5211)  
Critical reading of texts; introduction to versification. (GrD)
- 5213s. BEOWULF.** (4 cr; prereq 5211)  
Introduction to the Old English poem, with reading of considerable portions of text. (GrD)
- 5215. MAJOR TYPES OF MIDDLE ENGLISH LITERATURE.** (4 cr; prereq 5221)  
Readings in Middle English, in romance, lyric, allegory, and devotional prose. (GrD)
- 5216. MAJOR 14TH-CENTURY POETS.** (4 cr; prereq 5221)  
Readings in Gower, Langland, and the Pearl-poet. (GrD)
- 5221f,w,s. CHAUCER.** (5 cr)  
Selections from *The Canterbury Tales*. Introduction to grammar and literary forms of 14th-century English. (GrD)
- 5222w/3s. ADVANCED CHAUCER.** (4/4 cr; prereq 5221 or equiv)  
Review of *The Canterbury Tales*; reading of the longer poems. (GrD)
- 5230. SPECIALIZED STUDIES IN RENAISSANCE LITERATURE AND CULTURE.** (4 cr)  
Topics will be specified in the *Class Schedule* whenever this course is offered. (GrD)
- 5231. RENAISSANCE PROSE.** (4 cr)  
Readings in the works of such authors as Elyot, Ascham, Hooker, Lyly, Sidney, Donne, Bacon, Burton, and Browne. (GrD)
- 5233. TUDOR AND ELIZABETHAN POETRY.** (4 cr)  
Readings in the works of 16th-century poets, with attention to the sonnet cycles. (GrD)
- 5243,4. ADVANCED SHAKESPEARE I AND II.** (4,4 cr; prereq 3241,2)  
Intensive study of a few plays. These courses are not strictly sequential. (GrD)
- 5247. SPENSER.** (4 cr)  
Readings in *The Faerie Queene*, *The Shepheardes Calendar*, *Amoretti*, and other poems. (GrD)
- 5253. JACOBEAN AND CAROLINE POETRY.** (4 cr)  
Readings in the nondramatic poetry of the earlier 17th century, commonly emphasizing the works of Donne and Jonson and their successors. (GrD)
- 5255,6. 17TH-CENTURY PROSE AND POETRY TO 1660.** (4,4 cr) (GrD)
- 5261f,w,s. MILTON.** (4 cr)  
*Paradise Lost*, *Samson Agonistes*, minor poems, *Areopagitica*, and often, although not always, *Paradise Regained*. (GrD)
- 5281. POPE.** (4 cr)  
Readings in the poetry of Alexander Pope. (GrD)
- 5283. SWIFT.** (4 cr)  
Readings in the prose and poetry of Jonathan Swift. (GrD)
- 5287. DR. JOHNSON AND HIS CIRCLE.** (4 cr)  
Johnson's major works and selected works by writers of the time whom he influenced; secondary emphasis on Boswell. (GrD)
- 5311f, 2w, 3s. ROMANTIC WRITERS.** (4,4,4 cr)  
A close examination of one, two, or three writers each quarter. Authors will be specified in the *Class Schedule*. (GrD)
- 5331f,2w,3s. VICTORIAN WRITERS.** (4,4,4 cr)  
A close examination of one, two, or three writers each quarter. Authors will be specified in the *Class Schedule*. (GrD)
- 5361s. POETRY OF W. B. YEATS.** (4 cr) (GrD)
- 5363,4. JAMES JOYCE.** (4,4 cr)  
Critical reading of the texts. (GrD)

- 5411,2,3. AMERICAN LITERATURE.** (4,4,4 cr each)  
Historical survey of important authors, intellectual currents, movements, conventions, genres, and themes. Lecture course with emphasis on wide reading. 5411: Beginnings through Hawthorne. 5412: Thoreau and Melville through James. 5413: Crane to present. (GrD)
- 5431f,2w. AMERICAN POETRY.** (4,4 cr)  
Critical survey of American poetry from Anne Bradstreet to present; historical and intellectual backgrounds; emphasis upon major figures. (GrD)
- 5451w,2s. AMERICAN NOVEL.** (4,4 cr)  
History of the American novel from beginning to present. (GrD)
- 5455s. AMERICAN SHORT STORY.** (4 cr)  
Historical examination of the American short story from the 18th century to present (GrD)
- 5471s. AMERICAN DRAMA.** (4 cr)  
Critical survey of American drama; primary emphasis upon American drama from 1914 to present; some representative American plays of the 18th, 19th, and early 20th centuries. (GrD)
- 5513,4. EARLY AMERICAN LITERATURE.** (4,4 cr)  
Critical survey: emphasis upon principal writers and major cultural themes, from the Puritans to the Transcendentalists. (GrD)
- 5541w. EMERSON AND THOREAU.** (4 cr) (GrD)
- 5543f. HAWTHORNE AND MELVILLE.** (4 cr) (GrD)
- 5545s. WHITMAN AND MARK TWAIN.** (4 cr) (GrD)
- 5547. HENRY JAMES.** (4 cr) (GrD)
- 5561f. POETRY OF T. S. ELIOT.** (4 cr) (GrD)
- 5591. ORIGINS OF AMERICAN NATURALISM.** (4 cr) (GrD)
- 5593. BLACK WRITERS OF THE UNITED STATES.** (4 cr)  
Prose, poetry, and drama, with emphasis on writers of the 20th century. (GrD)
- 5610. 20TH-CENTURY WRITERS.** (4 cr)  
Authors will vary from year to year, and will be specified in the *Class Schedule*. (GrD)
- 5632. THE ROMANTIC TRADITION.** (4 cr) (GrD)
- 5651,2. TECHNIQUES OF POETRY.** (4,4 cr)  
Studies in the sound, structure, style, and sense of poems. (GrD)
- 5671,2. TECHNIQUES OF THE NOVEL.** (4,4 cr; prereq for undergrad, English major with B avg or #)  
Special studies in novels of the late 19th and 20th centuries with particular regard to structure. (GrD)
- 5691f,2w,3s. FORM AND IDEA IN DRAMATIC LITERATURE.** (4,4,4 cr; prereq 3241,2 recommended)  
Dramatic types, in chronological sequence; analytical reading of selected representative plays. 5691: Tragic and religious drama (classical, medieval, Renaissance, and modern); theories of tragedy. 5692: Comedy (classical, Renaissance, and modern); theories of comedy. 5693: Experimental and nonrealistic drama. (GrD)
- 5711. CLASSIC CRITICAL THEORY AND PRACTICE.** (4 cr)  
Readings in the basic texts, with emphasis on Aristotle and Coleridge and attention to such authors as Plato, Horace, Longinus, Sir Philip Sidney, Dryden, Hume, Dr. Johnson, Arnold, and T. S. Eliot. (GrD)
- 5714. MODERN AND CONTEMPORARY CRITICAL THEORY.** (4 cr)  
Readings in modern and "post-modern" literary criticism, with attention to contemporary movements, theory, and practice. (GrD)
- 5753. LITERATURE AND THE OTHER ARTS.** (4 cr)  
An informal, tentative exploration of possible relationships of literature to drama, music, painting and sculpture, and architecture; how they influence one another and how their aesthetic and social roles are similar and different. Readings in English and American literature and in aesthetic theory; recordings; gallery visits. (GrD)
- 5815s. HISTORY OF ENGLISH LANGUAGE.** (4 cr)  
Historical influences upon, and changes within, language as both popular and literary medium of communication. (GrA,D)
- 5821. OLD AND MIDDLE ENGLISH DIALECTS.** (4 cr; prereq #)  
Dialect differentiation in Old and Middle English, based on phonemic-graphemic theory with some attention to generative theory; close textual analysis of dialect samples. (GrA,D)

## Course Offerings and Major Sequences

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**5831. AMERICAN ENGLISH.** (4 cr)

History of the English language in the United States; significant regional variations. (GrA,D)

**5843. AMERICAN SOCIAL DIALECTS.** (4 cr)

Social and class variation in American English; emphasis upon the dialects of the culturally disadvantaged, and their relation to standard English as a second dialect. (GrA,D)

**5851<sub>f,w,s</sub>. STRUCTURE OF MODERN ENGLISH.** (4 cr)

Introduction to three English grammars—traditional, structural, and transformational—with applications in the study of social and regional variations. (GrA,D)

**5871. LANGUAGE AND LITERATURE.** (4 cr; prereq 5851)

The place of linguistic analysis in a theory of literary criticism; stylistic analysis in Europe and America since 1920; an examination of theories of linguistic description relevant to critical analysis; application to texts in prose and poetry. (GrA,D)

**5873. SEMANTICS: SURVEY OF THEORIES OF MEANING.** (4 cr)

The relationship in English between semantics and syntax. This is not a course in general semantics. (GrA,D)

**5876. GRAMMAR AND RHETORIC.** (4 cr)

Relationship between competence in English (described by a grammar—a syntax and semantics—of English) and effective performance (described by a rhetoric of English) (GrA,D)

**5910 or 5920. TOPICS IN ENGLISH AND AMERICAN LITERATURE.** (4 cr)

Topics will be annually specified in the *Class Schedule*. (GrD)

**5940 or 5950. FIGURES IN ENGLISH AND AMERICAN LITERATURE.** (4 cr)

Figures will be annually specified in the *Class Schedule*. (GrD)

### Composition — English Composition (Comp)

There is no major sequence in composition.

Concurrent registration in introductory composition and in intermediate composition courses is not permitted.

*Placement in composition courses*—No student may register for any freshman course in English composition or communication without presenting a “memorandum on placement” as evidence of his assignment. On the basis of various factors, including examinations, the student is assigned to one of four categories:

*Category 1*—He is not required to take freshman composition or communication (though he may, if he wishes, take Comp 1001/2 or Comm 1001/2, and he is eligible to take any course for which completion of or exemption from the freshman composition requirement is the sole prerequisite).

*Category 1A*—He is subject to the privileges and restrictions above; but he is eligible to take Comp 1006/7/8 and he receives 6 cr of advanced standing in composition.

*Category 2*—He must take Comp 1001/2 or Comm 1001/2.

*Category 3*—He must take Comp 0001; after passing it, he must take Comp 1001/2 or Comm 1001/2.

Comp 1001/2 is an 8-cr 2 qtr sequence offering guided practice in structural and stylistic features of exposition and argumentation. Comm 1001/2 is an 8-cr qtr sequence directed to speaking as well as to writing. The student may satisfy the composition requirement for graduation, and for admission to the Upper Division by completing either of these sequences or by assignment to Category 1 or 1A.

Any student who has already completed one or more quarters of freshman composition in another college or university must consult the Committee on Scholastic Standing before registering for any freshman course in English, composition, or communication.

A student who receives a grade of A in Comp 1001 may, upon his instructor's recommendation, be exempted from further requirement in freshman composition.

**0001.\* PREPARATORY COMPOSITION.** (no cr; prereq assignment to Category 3; see Placement note above)

Remedial course in composition. (GrA)

**1001f,w/2w,s.\* INTRODUCTORY COMPOSITION.** (4/4 cr; prereq assignment to Category 1, 1A, or 2)

Extensive guided practice in the structural and stylistic features of exposition and argumentation. Not an introduction to literary studies or to humanities. (GrA)

**1006/7/8.\* HONORS COURSE: FRESHMAN LITERATURE AND COMPOSITION.** (5/5/5 cr; prereq assignment to Category 1A; see Placement note above)

A course in composition using literature as the basis for discussion and writing. For the exceptionally able student. (GrA)

**Post-Freshman Composition and Creative Writing Courses**

**1027f,w,s/8f,w,s.\* INTERMEDIATE COMPOSITION.** (4/4 cr; prereq\*\*; after 1st day of class new students must have Δ to attend)

1027: For students who wish further experience in writing under criticism. Mastery of basic expository forms (e.g., definition, analysis, evaluation) and sound strategies of tone and diction applied to clear, accurate style. 1028: Open to any student who wishes to write, under criticism, description and narration within an expository framework. (GrA)

**1111-1116. AN INTRODUCTION TO CREATIVE WRITING.**

A highly structured approach to creative writing for students with limited writing experience. Development of techniques; definite assignments.

**1111/2. POETRY I AND II.** (4/4 cr; prereq \*\* for I; I for II) (GrA)

**1113/4. SHORT STORY I AND II.** (4/4 cr; prereq \*\* for I; I for II) (GrA)

**1115/6. PROSE PIECES I AND II.** (4/4 cr; prereq \*\* for I; I for II) (GrA)

**UPPER DIVISION COURSES**

**3095. CONFERENCE COURSE IN ADVANCED COMPOSITION.** (4 cr; prereq completion of or exemption from English composition requirement)

Frequent writing conferences conducted in cooperation with the student's major department; occasional lectures and discussion sessions. (GrA)

**5101,2,3. WRITING OF FICTION.** (4,4,4 cr; prereq submission of portfolio and #; SN grading only)

Principles of composition in the art of fiction. (GrA)

**5104,5,6. WRITING OF POETRY.** (4,4,4 cr; prereq submission of portfolio and #; SN grading only)

Principles of composition in poetry. (GrA)

**5107,8. THE WRITING EXPERIENCE.** (4,4 cr; prereq 1027 or #)

These courses are designed for students who are likely to be called upon to teach creative writing at the secondary or junior-college level, but have no experience in writing beyond 1027/8, and no experience of workshop situations and the social interactions in such groups. (GrA)

**FAMILY SOCIAL SCIENCE (FSoS)**

College of Home Economics

Staff: Richard Hey, *chairman*, 103 Horticulture, Judith Bennett, Kathleen Jeary, Mary Koon, James Maddock, Barbara McLane, Gerhard Neubeck, Paul Rosenblatt, Thomas Walz

Family Social Science offers interdisciplinary service courses. The courses listed here are (except 3260) the same as courses formerly given under the rubric Family Studies; students who completed those courses will not be granted credit for them again.

\* Any student absent the first day will lose his place in class.  
\*\* Must have fulfilled English composition requirement.

## Course Offerings and Major Sequences

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A major leading to the B.S. is offered in the College of Home Economics. Additional courses dealing with the family are available in the Sociology Department and the Institute of Child Development.

### LOWER DIVISION COURSES

- 1001f,w,s. DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE.** (3 cr) Kokosh, Laube, Maddock, McLane, Russell, Sprenkle, Wahlstrom  
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. (GrC)
- 1002f,w,s. DYNAMICS OF DATING, COURTSHIP, AND MARRIAGE.** (3 cr; §1001) Laube, Maddock  
See 1001. Designed for engaged or married students, though some students may be admitted by special permission. (GrC)
- 1025f,w,s. PARENTHOOD.** (4 cr) Maddock, McLane  
Differing concepts of family roles—father, mother, son, daughter, sister, brother—their implications for parent-child and sibling interaction. Effects of parenthood on husband-wife relations. (GrC)

### UPPER DIVISION COURSES

- 3015. LIFE STYLES OF EDUCATED AMERICAN WOMEN.** (4 cr; prereq #) Freeman, Truax  
The roles and statuses of American women and how they compare and reciprocate with those of men. The kind of education a woman gets; what influences it; how she uses it throughout her life. Possibilities and needs for change in terms of future objectives. (GrC)
- 3260. HOME MANAGEMENT PRINCIPLES.** (3 cr; prereq AgEc 1030)  
Managerial aspects of homemaking; work simplification of household activities; financial records and budget making for the individual and the family. (GrC)
- 5001f,w,s. HUMAN SEXUAL BEHAVIOR.** (4 cr; prereq 15 cr in psychology or sociology)  
Neubeck  
Nature of sexual functioning; sexual development, ethics, attitudes; research problems. (GrC)

## FOREIGN STUDY (FoSt) (SPAN Program)

### UPPER DIVISION COURSES

- 3001/2/3. LANGUAGE, CULTURE, AND SOCIETY.** (4/4/4 cr; prereq SPAN membership or #)  
Intensive study of the language, culture, and society of countries to be visited by SPAN groups, a separate section for each country. For further information, call Professor Theofanis Stavrou, 656 Social Science, (373-4636).
- 5960. SEMINAR FOR FOREIGN STUDY.** (12 cr; prereq, apply to Professor Stavrou, or SPAN office, 720 Wash. Ave. S.E., 373-3677)  
Directed field study (SPAN program) in selected foreign countries, investigating current economic, political, educational, cultural, and religious patterns of life. Each student studies his host country and his project during year preceding summer abroad, and writes comprehensive report upon returning.

## FRENCH AND ITALIAN

### French (Fren)

Staff: Peter H. Robinson, *chairman*, 200A Folwell Hall; F. R. P. Akehurst, *College of Education coordinator*, 204½ Folwell Hall; Thomas D. O'Donnell, *undergraduate studies director*, 102 Klaeber Court; Armand R. Renaud, *graduate studies coordinator*, 224 Folwell Hall; George H. Bauer, Harry Baxter, Tom Conley, Ronald L. Chastain, Stephen Davidson, Henry Kalb, Peter Lock, Margaret Mack, Lawrence Mantini, Eileen Sivert, Joseph Waldauer

Major Sequence for B.A.: 1. *Required background courses*—1001/2/3 or 1101/2/3; 1004,5. 2. *Major requirements*—45 cr in courses numbered 3001 and

above, including 3015, 3025 or 3035, 3501 or 3502, 3104, 3201, and 4 Fren courses of which at least 3 are to be literature courses numbered 3209 through 3305.

*Accelerated Sections*—Accelerated sections in the 1001/2/3 sequence allow highly-motivated students to complete the background requirement and enter advanced courses more rapidly than was formerly possible.

**LOWER DIVISION COURSES**

- 1001/2/3. T.V. BEGINNING FRENCH.** (5/5/5 cr; students submitting 1 yr high school French for entrance must take 1002 and those offering 2 yrs must take 1003)  
A course with speaking objectives based on an audio-lingual approach. Students will learn to understand and express fundamental ideas, to write in French anything they can say, and to master the fundamental structures of the language. (See section marked Accelerated Sections)
- 1101/2/3. NON-T.V. BEGINNING FRENCH.** (5/5/5 cr; students submitting 1 yr high school French for entrance must take 1102 and those offering 2 yrs must take 1103)  
For description, see 1001/2/3. See also *Accelerated Sections* above.
- 1004. INTERMEDIATE FRENCH.** (5 cr; prereq 1003 or 1103 or 3 yrs high school French)  
Reviews and supplements knowledge of language structure acquired in 1003 or 1103. Structured oral discussion; the problems of reading and writing French.
- 1004H. HONORS COURSE: INTERMEDIATE FRENCH.** (5 cr; open to superior students on basis of performance in previous qtr or #)
- 1005. INTERMEDIATE FRENCH.** (5 cr; prereq 1004)  
Continuation of 1004; progressively less structured discussion leads to free conversation. Concentrated readings of a cultural nature leading to an introduction to civilization.

**UPPER DIVISION COURSES**

- 3001. PRACTICAL FRENCH CONVERSATION (French House only).** (5 cr; prereq 1002 or 1102 or equiv; offered when feasible)  
Building a practical vocabulary that students can use appropriately in small drill sections, under guidance of instructors.
- 3015. FRENCH CONVERSATION AND COMPOSITION.** (5 cr; prereq 1004H or 1005)  
Combines traditional conversational and composition courses. Othoepic in approach, seeking an acceptable command of French both in pronunciation and grammar. Includes pastiche-work, free composition, and translation from and into French.
- 3015H. HONORS COURSE: FRENCH CONVERSATION AND COMPOSITION.** (5 cr; prereq 1004H with grade of A or B or 1005 with A)  
For description, see 3015.
- 3022. FRENCH PLAY.** (5 cr; prereq 3024 or #) (GrA)
- 3023. ADVANCED FRENCH CONVERSATION (French House only).** (5 cr; Summer Sessions only; offered when feasible)
- 3024. DICTION.** (5 cr; prereq 3015 or #)
- 3025. ADVANCED CONVERSATION.** (5 cr; prereq 3015)  
Seeks to produce a superior command of oral French, including a knowledge of phonetics as applied to spoken French. Emphasis on present-day usage.
- 3035. ADVANCED COMPOSITION.** (5 cr; prereq 3015)  
French composition according to the traditional European method of *thème et version*.
- 3104. INTRODUCTION TO FRENCH LITERARY TEXTS.** (5 cr; prereq 1004H or 1005 or equiv)  
Literary works representing principal genres examined through stylistic analyses and literary explications. Critical terminology; literary problems and techniques.
- 3104H. HONORS COURSE: INTRODUCTION TO FRENCH LITERARY TEXTS.** (5 cr; prereq 1004H or 1005 or equiv and successful completion of a proficiency examination)  
For description, see 3104. Taught in French.
- 3201. THE FRENCH LITERARY TRADITION.** (5 cr; prereq 3104)  
Tradition and innovation in French literature, with emphasis on discussion of specific masterpieces and theoretical works. Taught in French.
- 3209. TOPICS IN MEDIEVAL FRENCH LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in French.

## Course Offerings and Major Sequences

- 3219. TOPICS IN 16TH-CENTURY FRENCH LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in French.
- 3239. TOPICS IN 17TH-CENTURY FRENCH LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in French.
- 3259. TOPICS IN 18TH-CENTURY FRENCH LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in French.
- 3269. TOPICS IN 19TH-CENTURY FRENCH LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in French.
- 3289. TOPICS IN 20TH-CENTURY FRENCH LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in French.
- 3301. FRENCH LYRIC POETRY.** (5 cr; prereq 3201)  
Reading and discussion of selected texts; development of notions of convention and genre. Taught in French.
- 3303. FRENCH DRAMA.** (5 cr; prereq 3201)  
See description of 3301.
- 3305. THE FRENCH NOVEL.** (5 cr; prereq 3201)  
See description of 3301.
- 3501. FRENCH CIVILIZATION AND CULTURE.** (5 cr; prereq 1004H or 1005)  
Systematic study of development of French culture. Oral and written exercises. Taught in French. (GrC)
- 3502. FRENCH CIVILIZATION AND CULTURE.** (5 cr; prereq 1004H or 1005)  
Systematic study of development of French culture. Oral and written exercises. Taught in French. (GrC)
- 3599. THE CONTEMPORARY SCENE IN FRANCE.** (5 cr; prereq knowledge of French helpful but not necessary)  
Exploration of the term *culture*; acquaintance with French daily life; reduction of ethnocentrism; better understanding of American culture. (GrC)
- 3601.2. FRENCH LITERATURE IN ENGLISH TRANSLATION.** (5.5 cr; prereq little or no knowledge of French but an interest in the contribution of French to European and world literature. Does not count toward a French major.)  
Representative works, from medieval times to present day, examined through various movements, genres, or themes. May be used to satisfy the Route II language requirement. (GrD)  
*Note—3603, 3604, and 3605 do not count toward a French major. They may be used toward the Route II language requirement, however.*
- 3603. 20TH-CENTURY FRENCH THEATRE IN TRANSLATION.** (5 cr)  
Critical analysis of significant plays of major 20th-Century French dramatists: Apollinaire, Artaud, Cocteau, Giraudoux, Claudel, Anouilh, Sartre, Camus, Beckett, Genet, Ionesco, and others. Taught in English. (GrD)
- 3604. MODERN FRENCH CINEMA: ITS LITERARY AND CULTURAL IMPACT.** (5 cr)  
The French cinema as an innovative art form; its effects on French arts and modern culture; use of a different esthetic vocabulary closely linked with French literary creation, 1920 to 1970. Taught in English.
- 3605. EXISTENTIALISM IN LITERATURE AND THE ARTS OF 20TH-CENTURY FRANCE.**  
(5 cr)  
Focus on the central role of the art object in the imagination of the existential writer. Examination of the art object in terms of existential aesthetics as revealed in novels, plays, and essays by existential writers. Taught in English.
- 3701. THE DEVELOPMENT OF THE FRENCH LANGUAGE.** (5 cr; prereq 3015 or §)  
The origins and development of the French language. Readings of selected texts. The present stage and development of the language.
- 3970. DIRECTED READINGS.** (3-5 cr; prereq undergraduate, Δ)
- 3980. DIRECTED INSTRUCTION.** (3-5 cr; prereq 3015, § or Δ)
- 5001. ORAL DICTION (French House only).** (5 cr; prereq §; offered when feasible)  
Designed to give advanced students a sensitivity to the language, a sense of shades of expression, and a mastery of certain grammatical and idiomatic difficulties.
- 5011. ADVANCED PROBLEMS IN FRENCH LANGUAGE.** (5 cr; prereq major in French and §) Chastain  
Troublesome aspects of the French language principally in grammar, usage, levels of

expression, and pronunciation. Emphasis on problems most frequently encountered by the native speaker of American English. These will be explored by graduate student teachers through classroom contact with students enrolled in Beginning and Intermediate French.

- 5012. STYLISTICS.** (5 cr; prereq 3035 or #)  
The structural dimensions of literary works, principally as they relate to language. Examples from a variety of genres and periods. Taught in French.
- 5013. INTRODUCTION TO FORMAL ANALYSIS.** (5 cr)  
Outstanding literary texts from Middle Ages to 20th century. Designed to reveal how language, themes, and structure analyzed as a whole, in depth, lead to maximal appreciation of beauty and significance of great literary texts.
- 5201/2/3. FRENCH LITERARY DOCTRINES FROM PLÉIADE TO THE PRESENT.** (5/5/5 cr)  
Examinations of the *théâtre de l'absurde*, *le Nouveau Roman*, and *le Nouveau Nouveau Roman* ("Tel Quel"). Taught in French.
- 5204/5/6. MOUVEMENT DES IDÉES.** (3-5 cr per qtr; prereq 3501, 3502 or #)  
Primarily for graduate students. Taught in French.
- 5208. LITERATURE OF THE LATE MIDDLE AGES.** (5 cr; prereq 3209 or above)  
Poetry, narrative prose, and chroniclers from around the period of the Hundred Years War. Charles d'Orleans, Villon, Christine, Antoine de la Sale, Commines, *Quinze Joyes*, *Cent Nouvelles nouvelles*, and others.
- 5219. HUMANISM AND ITALIANISM IN THE LITERATURE OF THE 16TH CENTURY.** (5 cr; prereq 3209 or above) Renaud  
Systematic study of aspects of Italian civilization of the 14th-15th-16th centuries that lead to the French Renaissance and the Humanistic trends. The study is principally in French and Italian literary works but will also involve some paraliterary works.
- 5259. L'ENCYCLOPEDIE.** (5 cr; prereq 3209 or above)  
The genesis of the *Encyclopédie*; analysis of its major texts and ideas.
- 5261. ROMANTIC POETRY.** (5 cr; prereq 3209 or above)  
Study of the great Romantic poets, their innovations and contributions to the evolution of modern poetry.
- 5262. SYMBOLIST POETS: VERLAINE, MALLARME, RIMBAUD.** (5 cr; prereq 3209 or above) Robinson  
Selected works, representing different aspects of symbolism, studied in depth. Taught in French.
- 5269. FRENCH ROMANTICISM.** (5 cr; prereq 3209 or above) Lock  
A graduate survey of principal theoretical and literary works.
- 5271. PROSE POETRY OF THE 19TH CENTURY.** (5 cr; prereq 3209 or above) Robinson  
Study of prose poems of Baudelaire, Rimbaud, and Lautréamont.
- 5272. POST-SYMBOLIST POETS: LA FORGUE, CORBIERE SAINT-POL ROUX, HENRI DE REGNIER.** (5 cr; prereq 3209 or above) Robinson  
Study of the poetry between Symbolism and Surrealism.
- 5275. HUYSMANS AND VILLIERS (DE L'ISLE-ADAM): THE REACTION.** (5 cr; prereq 3209 or above)  
Understanding of late 19th-century literature through the study of the reaction to Realism and Naturalism in the works of Huysmans, Villiers de l'Isle-Adam and others.
- 5281. EARLY 20TH-CENTURY POETRY: APOLLINAIRE, BRETON, ELUARD.** (5 cr; prereq 3209 or above) Kalb  
Poetry as it emerged out of the "experiments" undertaken at the end of the 19th century that lead to Apollinaire's concept of poetry, and to the Surrealist movement.
- 5301. MEDIEVAL LYRIC POETRY.** (5 cr; prereq 5207 or #) Akehurst  
The origins, form, and content of lyric poetry from the *trouvères* to Villon.
- 5303. MEDIEVAL FRENCH DRAMA.** (5 cr; prereq 5207 or #) Akehurst  
The medieval French theatre from its origins to the Renaissance.
- 5305. MEDIEVAL FRENCH ROMANCE.** (5 cr; prereq 5207 or #) Akehurst  
The roman *courtois*, with emphasis on Cretien de Troyes.
- 5307. MEDIEVAL FRENCH ALLEGORY AND SATIRE.** (5 cr; prereq 5207 or #) Akehurst  
The use of satire and allegory in the French *Fabliaux*, the *Roman de Renart*, and the *Roman de la Rose*.
- 5309. MEDIEVAL FRENCH EPIC.** (5 cr; prereq 5207 or #) Akehurst  
The origins, form, and history of the epic literature of the French middle ages.

## Course Offerings and Major Sequences

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- 5311. POETRY OF THE 16TH CENTURY AFTER SCEVE.** (5 cr; prereq 3209 or above)  
Concentrates on Ronsard and DuBellay but examines the lesser poets of the Pléiade and the first baroque poets, including Sponde, DuBartas, Desportes, Chassignet.
- 5312. RENAISSANCE POETRY BEFORE THE PLEIADE.** (5 cr; prereq 3209 or above) Renaud  
From the Grands Rhétoriciens to Marot and Saint-Gelais, then to "l'école lyonnaise," with special attention to Scève.
- 5313. RENAISSANCE—BAROQUE DRAMA (EXCLUSIVE OF CORNEILLE).** (5 cr; prereq 3209 or above)  
The dramatic genres, particularly the tragedy, from Jodelle to Rotrou.
- 5331. FRENCH POETRY FROM d'AUBIGNE TO La FONTAINE.** (5 cr; prereq 3209 or above) Renaud  
The movement from baroque to classicism, studied in the great verse creations of the 17th century.
- 5333. COMEDY OF THE 16TH AND 17TH CENTURIES (EXCLUSIVE OF MOLIÈRE).** (5 cr; prereq 3209 or above) Renaud  
The rebirth of comedy during the Renaissance, its encounter with the traditional comic genres of the Middle Ages, its elaboration into a new comedy that was a blend of a heritage that came from Greece, Rome, Italy, Spain, and France itself.
- 5335. THE NOVEL OF THE 17TH CENTURY.** (5 cr; prereq 3209 or above) Renaud
- 5338. NON-FICTION PROSE OF THE 16TH AND 17TH CENTURIES.** (5 cr; prereq 3209 or above)  
Significant prose writings of the 16th and 17th centuries other than the novel.
- 5339. SHORT STORIES OF THE 16TH AND 17TH CENTURIES.** (5 cr; prereq 3209 or above) Renaud  
The development of narrative techniques and the variants of short stories in France during the 16th and 17th centuries.
- 5354. DRAMA OF THE 18TH CENTURY.** (5 cr; prereq 3209 or above) Waldauer  
Tragedy, *drame*, comedy (emphasis and the latter).
- 5355. NOVEL OF THE 18TH CENTURY.** (5 cr; prereq 3209 or above) Waldauer  
Emphasis on novels of Prévost, Marivaux, Rousseau, Diderot, and Laclos.
- 5358. GNOMIC LITERATURE OF THE 17TH-18TH CENTURIES.** (5 cr; prereq Upper Division or graduate students who have completed at least one course in French literature numbered 3209 or above)  
The emergence of the genre in antiquity, the Middle Ages and the Renaissance; in-depth analyses of the few great realizations, such as those of La Rochefoucauld, La Bruyère, Chamfort, Vauvenargues.
- 5361. PARNASSIAN POETRY: GAUTIER, LECONTE DE LISLE, HEREDIA.** (5 cr; prereq 3209 or above) Robinson  
Study of the Art for Art's Sake movement and the Parnasse.
- 5363. 19TH-CENTURY DRAMA.** (5 cr; prereq 3209 or above) Lock  
From Alexandre Dumas to Henry Becque and Maeterlinck, with special attention to Hugo.
- 5363. 19TH-CENTURY DRAMA.** (5 cr; prereq 3209 or above) Lock  
The theater of Alfred de Musset.
- 5368. SHORT STORIES OF THE 19TH CENTURY.** (5 cr; prereq 3209 or above) Lock  
From Charles Nodier to Anatole France; particular attention to Daudet and Villiers de l'Isle-Adam. (See 5467 for Flaubert and Maupassant)
- 5380. THE FRENCH NOVEL IN THE 20TH CENTURY.** (5 cr; prereq 3209 or above)  
Trends in the novel in France during the 20th century.
- 5381. CLAUDEL.** (5 cr; prereq 3209 or above) Kalb  
The poetry of the great Catholic poet of the 20th century.
- 5382. VALÉRY AND THE HERITAGE OF SYMBOLISM.** (5 cr; prereq 3209 or above) Kalb  
Thorough study of the poetry of Valéry, with attention to the sources of his concept of poetry.
- 5383. 20TH-CENTURY FRENCH DRAMA TO EXISTENTIALISM.** (5 cr; prereq 3209 or above)  
The main trends, themes and dramatic theories from symbolist and surrealist drama to existentialism.
- 5384. 20TH-CENTURY FRENCH DRAMA: EXISTENTIALISM TO THE PRESENT.** (5 cr; prereq 3209 or above)  
Anouilh, Sartre, Camus, Genet, Ionesco, Beckett, Audiberti as well as less well-recognized dramatists of the last decade.

5391. **RECENT FRENCH POETRY.** (5 cr; prereq 3209 or above) Kalb  
Several contemporary French poets.
5395. **NOVEL OF L'ENTRE-DEUX GUERRES.** (5 cr; prereq 3209 or above)  
This course, a complement to others on the French novel of this century, includes works of Bernanos, Jules Romains, Colette, Duhamel, Giono, Giraudoux, Martin du Gard, and Saint-Exupéry.
5396. **EXISTENTIAL NOVEL.** (5 cr; prereq 3209 or above)  
Stress upon novelists from 1930s to present whose work reveals concern for what Malraux calls the human condition: Malraux, Céline, Sartre, Camus, Blanchot, and Beckett.
5397. **LE NOUVEAU ROMAN.** (5 cr; prereq 3209 or above)  
Includes last existentialist novels and innovations of Nathalie Sarraute, Alain Robbe-Grillet, Michel Butor, and others.
5398. **FRENCH FICTION OF THE LAST DECADE.** (5 cr; prereq 3209 or above)  
A study of representative texts since 1960.
5415. **RABELAIS.** (5 cr; prereq 3209 or above) Renaud  
*Gargantua* and *Pantagruel* in original text.
5418. **MONTAIGNE.** (5 cr; prereq 3209 or above) Renaud  
The *Essais* studied in depth, partially in the light of the *Journal de Voyage*.
5434. **BAROQUE TRAGEDY: CORNEILLE.** (5 cr; prereq 3209 or above) Renaud  
Plays studied both as unique creations and in the perspective of the esthetics of the time.
5438. **PASCAL.** (5 cr; prereq 3209 or above) Renaud  
Though the literary originality of the *Provinciales* is analyzed, the course is principally devoted to *Les Pensées*.
5443. **CLASSICAL COMEDY: MOLIÈRE.** (5 cr; prereq 3209 or above) Renaud
5444. **CLASSICAL TRAGEDY: RACINE.** (5 cr; prereq 3209 or above) Renaud
5455. **BAYLE AND FONTENELLE.** (5 cr; prereq 3209 or above)  
The major philosophical texts of Bayle and Fontenelle; the clandestine texts.
5456. **MONTESQUIEU.** (5 cr; prereq 3209 or above)  
Complete works studied for literary merit and significance as contributions to social and political thought.
5457. **ROUSSEAU.** (5 cr; prereq 3209 or above) Waldauer
5458. **VOLTAIRE.** (5 cr; prereq 3209 or above) Waldauer
5459. **DIDEROT.** (5 cr; prereq 3209 or above) Waldauer
5461. **BAUDELAIRE.** (5 cr; prereq 3209 or above) Robinson  
Analysis of *Les Fleurs du Mal*, in which most of Baudelaire's creative adventures are represented.
5462. **RIMBAUD.** (5 cr; prereq 3209 or above) Robinson  
The poetry and writings of Rimbaud.
5463. **HUGO.** (5 cr; prereq 3209 or above)
5465. **STENDHAL.** (5 cr; prereq 3209 or above) Lock
5466. **BALZAC.** (5 cr; prereq 3209 or above) Lock
5467. **FLAUBERT, MAUPASSANT, AND NARRATIVE TECHNIQUES.** (5 cr; prereq 3209 or above) Lock
5471. **MALLARMÉ.** (5 cr; prereq 3209 or above) Robinson  
The poetry and writings of Mallarmé.
5475. **ZOLA, GONCOURT, AND THE NATURALISTIC NOVEL.** (5 cr; prereq 3209 or above) Lock
5485. **MAURIAQ AND THE CATHOLIC NOVEL.** (5 cr; prereq 3209 or above) Kalb  
*Explication de texte* by individual students.
- 5486/7. **PROUST.** (5/5 cr; prereq 3209 or above) Lock
5488. **GIDE.** (5 cr; prereq 3209 or above)
5505. **FRENCH ROMANCES OF THE MIDDLE AGES AND THE LIBROS DE CABELLERIA.** (5 cr; prereq at least one UD course in the literature of France or Spain) Akehurst, Jones

## Course Offerings and Major Sequences

- The legends of the Breton cycle particularly in French romances; the Amadis de Gaule and the flood of *libros de caballeria*.
- 5509. ITALIAN AVATARS OF FRENCH MEDIEVAL EPICS: BOIARDO, ARIOSTO, TASSO.** (5 cr; prereq at least one literature course in either French or Italian) Akehurst, Schneider  
Brief study of a number of French epics followed by selected readings in Boiardo's *Orlando Innamorato*; close study of Ariosto's *Orlando Furioso* and Tasso's *Gerusalemme Liberata*. Other works examined briefly.
- 5511. IDEALISM IN THE POETRY OF ITALY AND FRANCE: FROM DANTE TO d'AUBIGNÉ.** (5 cr; prereq at least one literature course from one of the courses being studied or #)  
From Dante's transmutation of *l'amour courtois* through Petrarch, Bembo, Tansillo, Scève, Ronsard, DuBellay, Desportes, d'Aubigné and others, the superficially similar but different poetic uses of love and the beloved are studied to appreciate great literary realizations and various concepts of both poetry and reality.
- 5519. THE CONTINENTAL RENAISSANCE IN LITERATURE.** (5 cr; prereq at least one UD course in Italian, Spanish, French, or Portuguese literature; #) Renaud and others  
The origin and dissemination of ideas, attitudes, themes and some literary genres, first in Italy, then in Spain, Portugal, and France.
- 5523. INTERRELATION OF THE DRAMATIC LITERATURE OF FRANCE, ITALY, AND SPAIN IN THE 16TH AND 17TH CENTURIES.** (5 cr; prereq at least one course in the literature of one of the countries studied or #) Renaud
- 5531/2/3. THE BAROQUE IN EUROPEAN LITERATURE: FRANCE, GERMANY, ITALY, PORTUGAL, AND SPAIN, WITH SOME ATTENTION TO HOLLAND AND ENGLAND.** (5/5/5 cr; prereq at least one UD course in the literature of France, Germany, Italy, Portugal, or Spain) Jones, Renaud, Weiss, others  
The baroque in literature as it spread through a Europe whose economy, political and religious thoughts and public feeling maintained many characteristics in common. Movement of the baroque from Italy as it moves in time and space, ever changing yet true to an esthetic rooted in a certain view of the world.
- 5538. NOVELLE, NOVELLA, AND NOUVELLES: FROM BOCCACCIO TO CERVANTES AND MME. DE LA FAYETTE.** (5 cr; prereq at least one UD course in French, Spanish, or Italian literature; #) Renaud  
Boccaccio's tales; the evolution of narrative techniques in Italy, thence into Spain and France. Concentration on the genres called *novelle-novella-nouvelle*. The "first modern novel": *La Princesse de Cleves*, and the elaboration of the realistic novel.
- 5539. NARRATIVE TECHNIQUES AND THEMES IN THE LITERATURE OF FRANCE AND SPAIN FROM THE LIBRO DE BUEN AMOR TO GIL BLAS DE SANTILANE.** (5 cr; prereq at least one UD course in French or Spanish literature; #) Renaud  
Realistic trends, including the picaresque, in the literature of France and Spain between the 14th and 18th centuries; special attention to the 16th and 17th centuries.
- 5559. THE RISE OF ROMANTICISM: GERMANY, ENGLAND, FRANCE.** (5 cr; prereq at least one UD course in literature in German, English or French)  
The emergence of Romanticism in Germany and the British Isles, then its transformation and realization in France.
- 5561. 19TH-CENTURY POETIC THEORY.** (5 cr; prereq 3209 or above) Robinson  
Investigation of poetic theory concerning language, versification, and aesthetics of the 19th century.
- 5565. REALISM IN THE 19TH-CENTURY NOVELS OF FRANCE AND SPAIN.** (5 cr; prereq at least one UD course in French or Spanish literature, preferably in the 19th century; #) Pattison, Lock, Sullivan  
Reactions to Romanticism manifested in a progressive interest in material facts utilized to present a positivist approach to literature, particularly in narrative fiction in France and Spain.
- 5568. FRENCH SYMBOLISM AND ITALIAN HERMETICISM.** (5 cr; prereq at least one pertinent course either in French or Italian literature or #)  
A study of the poetry of Rimbaud, Mallarmé, and Valéry, followed by that of Campana, Ungaretti, and Montale.
- 5569. NATURALISM IN THE FRENCH AND ITALIAN NARRATIVE.** (5 cr; prereq at least one pertinent course either in French or Italian literature or #)  
Analysis of Flaubert, Maupassant, Zola, and other naturalist writers; Verga, Deledda, Fogazzaro, and others.

- 5575. NATURALISM IN FRENCH AND HISPANIC LITERATURES.** (5 cr; prereq at least one UD course in French or Spanish literature; #) Lock, Sullivan  
The movement from preoccupations with material representation (realism) to a desire to represent human nature "as it really is," with concentration on its baser, more brutal side. This pseudo-scientific approach in literature studied in the novels of France, Spain, and some Latin American countries.
- 5581. POETICS OF THE 20TH CENTURY.** (5 cr; prereq 3209 or above) Kalb  
Innovations in versification, aesthetics, and doctrines.
- 5589. STRUCTURAL RHETORICS AS APPLIED TO FRENCH WORKS.** (5 cr; prereq grad standing or #)  
An examination of rhetoric, especially the notions of *écart degré zéro*. Structural classification of classical rhetorical figures. Rhetoric applied to other arts (stories, films, paintings). Use of figures in modern French authors.
- 5599. LITTÉRATURE FRANÇAISE ET SOCIÉTÉ.** (5 cr; prereq 3209 or above)  
Problems and methods of sociological literary criticism.
- 5701/2. STRUCTURE OF MODERN FRENCH: PHONOLOGY, MORPHOLOGY, SYNTAX.** (5/5 cr; prereq 3015 or #) Mantini  
Application of linguistics to study of present-day French.
- 5901. "LE DEUXIÈME SEXE": WOMEN IN FRENCH LITERATURE.** (5 cr; prereq 3209 or above)  
Women as literary objects; misogyny to worship. Point of view in male and female authors. Social versus literary values.

## Italian (Ital)

**Staff:** Peter H. Robinson, *chairman*, 200A Folwell Hall; Arshi Pipa, Marilyn Schneider

**Major Sequence for B.A.:** 1. *Required background courses*—1001/2/3/, 1004.  
2. *Major requirements*—35 cr in courses numbered 3001 and above, including 3031, 3045, 3201, 3501 or 3502, 5013, and 10 cr (2 courses) in Italian literature.

**Accelerated Sections**—Accelerated sections in the 1001/2/3 sequence allow highly-motivated students to complete the background requirement and enter advanced courses more rapidly than was formerly possible.

**General Education**—Italian in translation (3601/2) is offered for nonmajors. Courses recommended for advanced students in Italian are Fren 5209, 5219, 5519, 5531/2/3, 5538.

## LOWER DIVISION COURSES

- 1001/2/3. BEGINNING ITALIAN.** (5/5/5 cr)  
A course with speaking objectives based on an audio-lingual approach. Students will learn to understand and express fundamental ideas, to write in Italian anything they can say, and to master the fundamental structures of the language.
- 1002H/3H/4H. HONORS SEQUENCE: BEGINNING AND INTERMEDIATE ITALIAN.** (5/5/5 cr; prereq A or B grade in previous quarter or #)  
Development of 1001 with progressive emphasis on notions of structure and acquisition of vocabulary based on reading and discussion of literary texts. For prospective Italian majors as well as for highly-motivated students interested in Italian literature and culture.
- 1004. INTERMEDIATE ITALIAN.** (5 cr; prereq 1003 or equiv)  
Consolidation of basic structures and development of oral fluency through readings and discussions. Preparation of students for more advanced language, literature, and civilization courses.
- 1501. ITALIAN CULTURE IN THE MIDDLE AGES AND THE RENAISSANCE.** (5 cr)  
Elements of Italian culture instrumental in shaping Western civilization. Relates cultural aspects of politics, religion, philosophy, science, music, and the arts through literature. Readings of pertinent literary texts. May be used to satisfy Route II language requirement.

## UPPER DIVISION COURSES

- 3015. INTERMEDIATE ITALIAN CONVERSATION AND COMPOSITION.** (5 cr; prereq 1004 or #)  
Combines traditional conversation and composition courses.

## Course Offerings and Major Sequences

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- 3031. WRITING TECHNIQUES.** (5 cr; prereq 3015 or #)  
Specialized course in techniques of essay-writing and translation. Discussion in Italian of problems of expression and composition.
- 3041. INTENSIVE ITALIAN FOR ROMANCE LANGUAGE MAJORS AND MINORS.** (5 cr; prereq 3 yrs of Romance Language study or #)  
Material of first-year Italian covered through comparative study of French, Spanish, and Italian grammar; extensive reading of Italian texts. Completion of course with A or B grade satisfies Graduate School language requirement. See 5042 for continuation of course.
- 3045. ADVANCED ITALIAN COMPOSITION AND CONVERSATION.** (5 cr; prereq 3015 or #)  
Combines traditional advanced composition and conversation courses.
- 3201. THE ITALIAN LITERARY TRADITION.** (5 cr; prereq 3015 or #)  
Tradition and innovation in Italian literature, with emphasis on discussion of specific masterpieces and theoretical works. Taught in Italian.
- 3209. MEDIEVAL ITALIAN LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in Italian.
- 3219. RENAISSANCE AND POST-RENAISSANCE ITALIAN LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in Italian.
- 3289. MODERN ITALIAN LITERATURE.** (5 cr; prereq 3201)  
Reading and discussion of selected texts. Taught in Italian.
- 3301. ITALIAN LYRIC POETRY.** (5 cr; prereq 3201)  
Reading and discussion of selected texts and development of notions of convention and genre. Taught in Italian.
- 3303. ITALIAN DRAMA.** (5 cr; prereq 3201)  
Reading and discussion of selected texts and development of notions of convention and genre. Taught in Italian.
- 3305. THE ITALIAN NOVEL.** (5 cr; prereq 3201)  
Reading and discussion of selected texts and development of notions of convention and genre. Taught in Italian.
- 3501. ITALIAN CIVILIZATION AND CULTURE.** (5 cr; prereq 1004 or #)  
Study of development of Italian culture from the beginning to the Risorgimento. Taught in Italian.
- 3502. MODERN ITALIAN CIVILIZATION AND CULTURE.** (5 cr; prereq 1004 or #)  
Study of modern Italian culture. Taught in Italian.
- 3970. DIRECTED READINGS** (3-5 cr ar; #)
- Most of the following courses offered alternate years or when feasible. Check the Department office or the Class Schedule.*
- 5013. ITALIAN STYLISTICS.** (5 cr; prereq 3201)  
Literary works representing principal genres examined through stylistic analyses and literary explication. Critical terminology; literary problems and techniques. Taught in Italian.
- 5042. INTENSIVE READING OF MODERN ITALIAN NARRATIVE LITERATURE.** (5 cr; prereq 3041 or #)  
20th-century authors read and analyzed from linguistic and literary points of view, to achieve a high level of reading competency and as well as an understanding of the contemporary Italian literary scene. Classes conducted in Italian.
- 5321. CHIVALRIC POETRY: BOIARDO, ARIOSTO, TASSO.** (5 cr)
- 5328. RENAISSANCE PROSE WRITERS: MACHIAVELLI, CASTIGLIONE.** (5 cr)
- 5331. MODERN POETRY: GOZZANO TO QUASIMODO.** (5 cr)
- 5384. MODERN DRAMA: PIRANDELLO TO FABBRI.** (5 cr)
- 5385. MODERN NARRATIVE: SVEVO TO MORAVIA.** (5 cr)
- 5401/2. DANTE: INFERNO, PURGATORIO, PARADISO.** (5/5 cr)
- 5409. DANTE'S MINOR WORKS.** (5 cr)
- 5411. PETRARCH.** (5 cr)

5418. **BOCCACCIO.** (5 cr)  
5451. **PASCOLI AND D'ANNUNZIO.** (5 cr)  
5461. **LEOPARDI AND MANZONI.** (5 cr)  
5568. **FRENCH SYMBOLISM AND ITALIAN HERMETICISM.** (5 cr; prereq at least one pertinent course in French or Italian literature or #)  
The poetry of Rimbaud, Mallarmé, and Valéry, followed by that of Campana, Ungaretti, and Montale.  
5569. **NATURALISM IN THE FRENCH AND ITALIAN NARRATIVE.** (5 cr; prereq at least one pertinent course in French or Italian literature or #)  
Analysis of Flaubert, Maupassant, Zola, and other naturalist writers, followed by analysis of Verga, Deledda, Fogazzaro, and others.  
5601,2,3. **ITALIAN LITERATURE IN ENGLISH TRANSLATION.** (5,5,5 cr; prereq freshmen or sophomores,  $\Delta$ )  
Representative works chosen from medieval times to present day examined through various movements, genres or themes.  
5609. **DANTE (IN ENGLISH).** (5 cr; prereq #)  
5701/2. **ITALIAN LANGUAGE.** (5/5 cr; prereq #)  
5900. **TOPICS IN ITALIAN LITERATURE.** (5 cr; prereq 3209 or above)

## GENETICS AND CELL BIOLOGY (GCB)

College of Biological Sciences

**Staff:** Frederick Forro, Jr., *head*, BioScience Center; V. Elving Anderson, Richard S. Caldecott, Ralph E. Comstock, William Cunningham, Franklin Enfield, David Fan, Daniel Hartl, Robert Herman, Alan Hooper, Sheldon Reed, Murray Rosenberg, Irwin Rubenstein, D. Peter Snustad, Leon Snyder, Val Woodward

Genetics is the study of inheritance, including molecular mechanisms of gene action, human genetics, and the behavior of genes in populations of organisms.

Cell biology is the study of the structure, function, and replication of cells at the microscopic and molecular level.

**General Education**—Courses especially appropriate for nonmajors are Biol 1101; GCB 3201, 3002, 3022.

### LOWER DIVISION COURSE

- Biol 1101w,s. **HEREDITY AND HUMAN SOCIETY.** (4 cr; §GCB 3002, 3022, or Biol 3032; for students in programs not directly related to biological sciences)  
The principles of heredity and their social and cultural implications. (GrB)

### UPPER DIVISION COURSES

- 3002s. **HUMAN GENETICS, SOCIAL AFFAIRS.** (3 cr; §3022, Biol 1101, or 3032; for students in programs not directly related to biological sciences) Anderson, Reed  
Human genetics: the study of individuals, families, populations, and races with respect to differences in intelligence, behavior, disease, and other matters of social concern.  
3022f,w,s. **GENETICS.** (4 cr; primarily designed for students other than CBS majors and CLA biology majors; prereq Biol 1002 or 1011)  
The mechanisms of heredity, their implications for biological populations and applications to practical problems. (GrB)  
3201. **MOLECULAR BIOLOGY FOR ENGINEERS AND PHYSICAL SCIENTISTS.** (3 or 4 cr with term paper; prereq two qtrs chemistry, Math 1231 or 1431 or 1531 or #; not open to biology majors)  
Modern molecular biology; the principles of biological structures and mechanisms of function at the macromolecular and cellular levels of organization.  
3970f,w,s. **INDEPENDENT STUDY.** (Cr ar; prereq #,  $\Delta$ )  
Individual study on selected topics or problems with emphasis on selected readings and use of scientific literature.

## Course Offerings and Major Sequences

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- 3990f,w,s. LABORATORY RESEARCH.** (Cr ar; prereq  $\$, \Delta$ )  
Individual projects on selected topics and problems.
- 5022f,w,s. GENETICS.** (3 cr; §3022, Biol 3032; not open to grad students in genetics)  
The mechanisms of heredity, their implications for biological populations and applications to practical problems.
- 5023su. GENETICS AND THE BIOLOGY OF POPULATIONS.** (3 cr; primarily designed for secondary school teachers; prereq §3022 or  $\$$ ) Hartl  
Elementary development of basic concepts in population genetics and population biology. Population expansion and deterioration of the environment, analysis of gene frequency changes under natural and relaxed selection, genetic loads and reproductive excess, population genetics of quantitative characters, inbreeding, and the genetics of population isolates. Examples drawn largely from human populations.
- 5030f,w,s. LABORATORY: GENETICS.** (2 cr; prereq 3022 or 5022 or Biol 3032 or  $\$$ )  
Emphasis on investigative approaches to analysis of genetic problems. Attention focused on a given organism or related group of organisms may differ from quarter to quarter.
- 5031f. INTERMEDIATE GENETICS I.** (3 cr; prereq 3022 or Biol 3032 and BioC 5002 or 5742 or  $\$$ )  
The mechanics of inheritance. Comparative organization of genetic material in procaryotic and eucaryotic organisms. The use of mutation, complementation, and recombination as operational criteria for genetic analysis.
- 5032w. INTERMEDIATE GENETICS II.** (3 cr; prereq 5031)  
The action of the gene in molecular, cellular, and organismal development. The mechanisms of storage of genetic information, modes of information transfer, and mechanisms of regulating these processes in various biological systems.
- 5033s. INTERMEDIATE GENETICS III.** (3 cr; prereq 3022 or Biol 3032, a course in genetics, a course in biometry or statistics, or  $\$$ )  
Genetic variation in quantitative traits with special attention to fitness. Causes of change of equilibria in gene frequencies, heterosis and inbreeding depression, consequences of natural and artificial selection.
- 5042f. POPULATION, QUANTITATIVE GENETICS.** (3 cr; prereq 5033, Stat 5301 recommended)  
Selection with reference to population changes in gene frequencies and means of quantitative characters. Information required for predicting effects of selection and related research. Emphasis on logical analysis.
- 5043s. HUMAN GENETICS.** (3 cr; prereq 3022 or Biol 3032 or  $\$$ )  
Inherited characteristics in man, particularly in relation to medicine; the relationships of genetics in marriage and social conditions.
- 5044w. METHODS IN HUMAN GENETICS.** (3 cr; prereq 5043 and PubH 5450 and  $\$$ )  
Methods for research in human genetics. Importance of appropriate statistical techniques. Use of genetic concepts in exploring new problems. Individual study of current problems.
- 5051w. INTERMEDIATE CELL BIOLOGY.** (3 cr; §Biol 5601; prereq  $\$,$  introductory biochemistry and molecular genetics recommended)  
Analysis of structure, replication, and function of general and specialized cells and their organelles at the microscopic and molecular level.
- 5052s. QUANTITATIVE TECHNIQUES, CELL BIOLOGY.** (3 cr; prereq  $\$,$  calculus, introductory cellular or molecular biology and biochemistry recommended)  
The use and detection of radioisotopes; the theory and practice of analytical and preparative ultracentrifugation, chromatography, spectroscopy, and electron microscopy; tissue culture and subcellular particle fractionation.
- 5062w. CELLULAR REGULATION.** (3 cr; prereq  $\$$ )  
Control of the biosynthesis and function of protein and nucleic acids; chromosome replication; cell cycle; differentiation in eucaryotic systems.
- 5063s. THEORETICAL POPULATION BIOLOGY.** (3 cr; prereq 5033 or  $\$,$  a familiarity with differential and integral calculus)  
Population genetic theory as related to problems of natural populations.
- 5082s. MEMBRANES AND INTERFACES: PHYSICAL CHEMISTRY OF INTERFACES.** (3 cr; prereq  $\$$ )  
Thermodynamics, statistical mechanics, electrical properties and experimental systems for the study of interfaces. Isolation, dynamic properties, chemistry, and model systems of biological membranes. Cell surface and contact relations.

## GEOGRAPHY (Geog)

**Staff:** Ward J. Barrett, *chairman*, 414 Social Sciences; Ronald F. Abler, John S. Adams, Russell B. Adams, John R. Borchert, Dwight A. Brown, Anthony R. deSouza, John F. Hart, Mei-Ling Hsu, Stuart R. Loomis, Fred E. Lukermann, Eugene C. Mather, Philip W. Porter (on leave 1971-73), John G. Rice, Joseph E. Schwartzberg, Earl P. Scott, Richard H. Skaggs, Roderick H. Squires, Yi-Fu Tuan, John W. Webb

Most definitions of geography emphasize (1) the importance of the relative location of a place or event; (2) the character of regions; (3) the relations between culture and environment, including the processes through which social and physical changes occur.

**Major Sequence for B.A.:** 1. *Required background courses*—Two courses from 1201, 1301, 1311, 1401. 2. *Major requirements*—A minimum of seven 3xxx or 5xxx courses, including five from the following: one technique course 3511 or 3531; one regional course at 5xxx level (5101, 5102, 5111, 5112, 5113, 5131, 5132, 5141, 5171, 5172, 5173, 5181, 5211, 5212); one topical course (3321, 3341, 3351, 3355, 3361, 3371, 3421, 3441, 5331, 5332, 5333, 5372, 5373, 5375, 5376, 5381, 5383, 5391, 5393, 5422, 5433, 5442, 5443); one topical or regional course with field experience\* (5102, 5376, 5381, 5422, 5442, 5443); one course on the history and philosophy of geography (3801, 5801, 5811).

**General Education**—in the Lower Division, 1301, 1311, and 1401 deal with world patterns of resources, population, and production which are an essential part of general education. In the Upper Division, the survey courses of particular countries, continents, or regions of the world offer much of interest to the non-specialist.

### LOWER DIVISION COURSES

#### 1201. INTRODUCTION TO GEOGRAPHIC INQUIRY. (4 cr) Lukermann

An introduction to questions and approaches in geography (e.g., distance, direction, scale, location, hierarchy, metric, and space) with examination of the analyses that these entail. (GrC)

#### 1301f,w,s. HUMAN GEOGRAPHY. (5 cr) Hart, Rice, Schwartzberg, Scott, Tuan, Webb

Geography of population and principal ways of life; capacity of earth for future population. (GrC)

#### 1301Hf,w,s. HONORS COURSE: HUMAN GEOGRAPHY. (5 cr; prereq #)

Students attend lectures in 1301 and meet with lecturer 2 hours per week in honors discussion section.

#### 1311f,w,s. ECONOMIC GEOGRAPHY I: INTRODUCTORY. (5 cr) deSouza, Adams

Analysis of world patterns of economic activity; appraisal of resources, production, circulation, and consumption; principles and potential of economic development. (GrC)

#### 1311Hf,w,s. HONORS COURSE: ECONOMIC GEOGRAPHY I: INTRODUCTORY (5 cr; prereq #)

Students attend lectures in 1311 and meet with lecturer 1 hour per week in honors discussion section.

#### 1401f,w,s. PHYSICAL GEOGRAPHY. (5 cr) Barrett, Brown, Loomis, Skaggs

Major features of distribution patterns of climate, relief, vegetation and soils; regional differences in problems of physical development. (GrC)

#### 1401Hf,w,s. HONORS COURSE: PHYSICAL GEOGRAPHY. (5 cr; prereq #)

Students attend lectures in 1401 and meet with lecturer 2 hours per week in honors discussion section.

\* Courses providing field experience are offered for 6 cr for those wishing to do the field work. Other students may enroll for 4 cr. Students planning to take a course for field experience are asked to consult the instructor in the quarter before enrolling.

## Course Offerings and Major Sequences

- 1425f. INTRODUCTION TO METEOROLOGY.** (4 cr; §Soil 1262; prereq high school algebra and physics or #) Baker, Skaggs  
Nature of the atmosphere and its behavior. Topics include atmospheric composition, structure, stability and motion; precipitation processes, air masses, fronts, cyclones and anticyclones; general weather patterns; meteorological instruments and observation; plotting and analysis of maps; forecasting. (GrB)

### UPPER DIVISION COURSES

#### Regional Studies

- 3101f.s. GEOGRAPHY OF UNITED STATES AND CANADA.** (4 cr; prereq 5 cr in geography or #) Borchert, Hart, Mather  
The manner in which the aspirations and abilities of different groups of people have interacted with the complexities of the natural environment in producing the regional differentiation of the United States and Canada. (GrC)
- 3111f. GEOGRAPHY OF MINNESOTA.** (4 cr) Borchert  
Physical resources, population, and commercial production. Field trips in eastern Minnesota. (GrC)
- 3121w. LATIN AMERICA.** (4 cr) Barrett, Mather  
Major features of physical and human geography of Latin America. (GrC)
- 3141w. AFRICA.** (4 cr; prereq 5 cr in geography or #) DeSouza, Porter, Scott  
Regional differentiation of human groups and environments, with emphasis on culture contact and problems of underdeveloped countries south of the Sahara. (GrC)
- 3161f. EUROPE.** (4 cr) deSouza, Rice, Webb  
Identification and analysis of broad cultural-economic realms in Europe (excluding U.S.S.R.) with brief survey of areal organization of each realm. (GrC)
- 3181w. SOVIET UNION.** (4 cr) R. Adams  
Systematic appraisal by regions of physical resources, population, and economic geography; problems and planning in U.S.S.R. compared with the United States. (GrC)
- 3211. EAST ASIA.** (4 cr; prereq 5 cr in geography or #) Hsu  
Physical and human geography of China, Korea, and Japan: geographic aspects of population pressure, economic development, and international relations. (GrC)
- 3213. SOUTHEAST ASIA.** (4 cr) Schwartzberg  
Physical and human geography of Burma, Thailand, Indochina, Malaysia, Indonesia, and Philippines; geographic aspects of population pressure, development of resources, and international relations. (GrC)
- 3221. AUSTRALIA-NEW ZEALAND-OCEANIA.** (4 cr) Barrett  
Physical and human geography of Australia, New Zealand, Polynesia, and Melanesia; modification of aboriginal land use after European contact, current land use trends in non-European societies, and use and modification of environment by Europeans. (GrC)
- 5101. HISTORICAL GEOGRAPHY OF NORTH AMERICA.** (4 cr) Francaviglia, Lukermann  
The changing spatial ecology of North America from about 1500 to 1900, with special emphasis upon the impact of European modes of living and settlement patterns, and the evolution of a distinctively American scene. (GrC)
- 5102. HISTORICAL GEOGRAPHY OF NORTH AMERICA.** (4 or 6 cr) Francaviglia, Lukermann  
A study of the modification of the American landscape since about 1900, with regard to several changes or revolutions, e.g., the urban, agrarian, and transportation revolutions. (4 cr) Associated field trips in Minnesota and Wisconsin are optional. (2 cr) (GrC)
- 5111f. EASTERN UNITED STATES.** (4 cr) Hart  
Physical and human resources east of Great Plains. (GrC)
- 5112s. WESTERN UNITED STATES.** (4 cr) Mather  
Physical and human resources of western United States. (GrC)
- 5113s. CANADA AND ALASKA.** (4 cr; prereq 10 cr in geography or #) Mather  
Analysis of physical and human geography. Both internal and external areal relationships. (GrC)
- 5131s. MIDDLE AMERICA.** (4 cr) Barrett  
Physical and human geography of West Indies and mainland from Mexico to Colombia. (GrC)
- 5132f. SOUTH AMERICA.** (4 cr) Mather  
Survey of physical resources, population, agriculture, manufacturing, and transportation in countries of South America. (GrC)

- 5141. AFRICA: SELECTED TOPICS.** (4 cr; prereq 3141 or #) deSouza, Porter, Scott  
Case studies of characteristic geographical problems of Africa in regional context, including population pressure, water management, industrialization, commercial and subsistence agriculture, and plural societies. (GrC)
- 5171w. WESTERN EUROPE.** (4 cr; prereq 5 cr in geography or #) R. Adams, Rice  
Physical and human geography as a whole, followed by intensive discussion of selected topics on British Isles, France, Low Countries, Rhine Basin. (GrC)
- 5172w. EAST CENTRAL EUROPE.** (4 cr; prereq 5 cr in geography or #) R. Adams, Rice  
Physical and human geography of the socialist realm of Eastern Europe with comparative analyses of individual countries; emphasis upon the historical, economic, and political diversity with topical case studies. (GrC)
- 5173f. NORDEN.** (4 cr; prereq 5 cr in geography or #) Rice  
Cultural and political development of Scandinavia, Finland, and Iceland. Effects of changing resource appraisal upon patterns of economic activity and human occupancy. (GrC)
- 5181s. REGIONS OF U.S.S.R.** (4 cr; prereq 3181 or #) R. Adams  
Regionalization, production specialization and interchange within U.S.S.R.; effects of policies of centralization and regional autonomy; present trends, prognosis, and comparisons with United States. (GrC)
- 5211. EAST ASIA: REGIONAL ANALYSIS.** (4 cr; prereq 3211 or #) Hsu  
Regional aspects of East Asian life. The effects, within a traditional context, of population growth and modern technology on the transformation of society and reorganization of space. (GrC)
- 5212f. SOUTH ASIA.** (4 cr; prereq 5 cr in geography or #) Schwartzberg  
Physical and human geography of India, Pakistan, Ceylon, Afghanistan, and the Himalayan kingdoms; geographic aspects of social structure, population pressure, economic development, and international relations. (GrC)

### Topical Studies

- 3321s. POLITICAL GEOGRAPHY.** (4 cr; prereq 1301 or #) Schwartzberg  
Scope and methods of political geography; analysis of selected concepts, problems, and areas. (GrC)
- 3341w. ECONOMIC GEOGRAPHY II: INTERMEDIATE.** (4 cr; prereq 1311 or #) R. Adams  
Historical and cultural geography of economic regions; socio-economic structure and trade relations; selected topics, such as industrialization, economic growth, world trade, underdevelopment by nations. (GrC)
- 3351s. NORTH AMERICAN RESOURCE MANAGEMENT.** (4 cr; prereq 1401 or #) Barrett, Skaggs  
Comparative current and historical analysis of factors affecting regional landscapes in Canada, United States, and Mexico; emphasis on interaction of physical setting and institutions; effect of industrialization, urbanization, and population growth on environment. (GrC)
- 3355w. ENVIRONMENTAL ALTERATIONS.** (4 cr) Skaggs  
Analysis of the kinds of disturbances man may introduce into ecosystems and integrated groupings of ecosystems, and the spatial distribution and organization of the effects. (GrC)
- 3361f. ENVIRONMENTAL EVALUATION AND ADAPTATION.** (4 cr) Tuan  
Making "world" out of "environments"; survey of different peoples' evaluation and adaptation to their natural surroundings, with emphasis on past and non-literate cultures. (GrC)
- 3371f. URBAN GEOGRAPHY.** (4 cr; prereq 1301 or 1311 or #) deSouza, J. Adams, Webb.  
Character and distribution of cities in present-day world, including analysis of their development. Emphasis on internal and external locational relationships. (GrC)
- 3421f. CLIMATOLOGY.** (4 cr; prereq 1401 or #) Barrett, Loomis, Skaggs  
World distribution of climatic elements; methods of arranging climatic data; climatic classifications and world distributions of climatic types; general circulation; climatic change and climatic fluctuations. (GrC)
- 3441f. LANDFORM GEOGRAPHY.** (4 cr) Brown, Loomis  
Detailed consideration of landform resources in regional setting; emphasis on North America. (GrC)

## Course Offerings and Major Sequences

- 5331f. SPATIAL ORGANIZATION OF EUROPE TO EARLY MEDIEVAL TIMES.** (4 cr; prereq 5 cr or #) deSouza  
Culture areas of Europe and adjacent regions, including the spread of the neolithic economy, the organization of town and city networks, and the impact of Germanic and other peoples on classical culture regions. (GrC)
- 5332w. SPATIAL ORGANIZATION OF MEDIEVAL EUROPE.** (4 cr; prereq 5 cr in geography or 3161 or #) Rice  
Culture regions of Europe as they had developed by end of Middle Ages. Analysis of these regions as reflected in patterns of trade and network of towns. (GrC)
- 5333s. SPATIAL ORGANIZATION OF MODERN EUROPE.** (4 cr; prereq 5 cr in geography, 3161 or #) Webb  
Historical geography of Europe since 17th century. Areal organization in early modern times. Changes in spatial organization of polity, economy, and settlement. 20th century Europe as a functional region. (GrC)
- 5372/3. METROPOLITAN ANALYSIS I, II.** (4/4 cr) J. Adams  
5372: Urban systems and metropolitan areas, structure and growth; daily urban systems; simulated urban systems; metropolitan population dynamics; social area analysis; transportation systems; travel behavior; land use; retail structure, change. 5373: Neighborhood transition; conflicts in housing, location of facilities, and urban renewal. (GrC)
- 5375/6. AMERICAN CITIES—LOCATION AND GEOGRAPHIC DESIGN.** (4/4 or 6 cr; prereq #) Borchert  
5375: The spread of urbanization across the U.S.; differentiation of city sizes and functions within the nation's resource regions and circulation network; the evolution of today's system of cities and its regional and national management problems. 5376: The internal development of the major metropolitan areas of the U.S.; evolution of today's land-use patterns, activity systems, and metropolitan management problems. (GrC)
- 5381. ECONOMIC GEOGRAPHY III: ADVANCED.** (4 or 6 cr; prereq 1311 or #) R. Adams  
Localization of economic activity; case studies of industries and services; location factors, models, and theory. (GrC)
- 5383s. TRANSPORTATION GEOGRAPHY.** (4 cr; prereq 1311 or #) R. Adams  
Principles and theory of spatial development of transport systems; interaction of resource use and network growth; commodity and passenger flows; case studies at national, regional, and local (urban) levels. (GrC)
- 5391s. RURAL GEOGRAPHY.** (4 cr) Mather  
Geographic components and assemblages of rural settlement. World patterns and geographic problems of rural settlement on the American scene. (GrC)
- 5393. THE LOOK OF THE LAND.** (5 cr) Hart  
The major components of landscapes, with emphasis on interaction between manmade structures and distinctive rural landscapes in North America and northwestern Europe. (GrC)
- 5422w. MICROCLIMATOLOGY.** (4 or 6 cr; prereq 3421 or #) Barrett, Skaggs  
Detailed study of heat and moisture balance of the earth; reception and disposal of precipitation and energy in local natural and manmade environments. Field experience in measurement of energy flows available. (GrC)
- 5433w. DYNAMIC AND SYNOPTIC CLIMATOLOGY.** (4 cr; prereq 3421 or #) Skaggs  
Application of dynamic and synoptic meteorological theory to broadscale climate genesis; introduction to explanatory climatological models. (GrC)
- 5442w. GEOMORPHOMETRY.** (4 or 6 cr) Brown, Loomis, Skaggs  
The theoretical, statistical, and descriptive applications of numerical techniques to geomorphic process and form problems. Optional field credit is available for relevant field work. (GrC)
- 5443. GLACIAL AND PERIGLACIAL GEOMORPHOLOGY.** (4 or 6 cr; prereq 1401 or #) Loomis  
An examination of geomorphic patterns and processes in present and past ice-modified landscapes, with emphasis on alpine and continental glacier-related settings in North America. (GrC)

### History and Philosophy of Geography

- 3801f. DEVELOPMENT OF GEOGRAPHIC THOUGHT.** (4 cr; \$5801; prereq 15 cr in geography) Lukermann  
Concepts and methods of geography; different schools of geographic thought as expressed in literature of last century. (GrC)

**5001/2. GEOGRAPHICAL ANALYSIS I, II (4/4 cr) J. Adams**

5001: Order, science, and geography; measurement, relationship, and classification; location and spatial interaction; spatial diffusion processes; spatial decision-making. 5002: Models of ecological conflict and equilibrium in man-environment relationships. (GrC)

**5801. DEVELOPMENT OF GEOGRAPHIC THOUGHT. (4 cr; §3801; prereq sr or grad, 15 cr in geography) Lukermann**

For description, see 3801. (GrC)

**5811. ENVIRONMENTALISM, ENVIRONMENT, AND THE QUALITY OF LIFE. (4 cr; prereq §) Tuan**

Ideas about environmentalism with emphasis on those that lead to the organization of the physical environment into human settings (rural and urban) in the belief that they affect life's ideals. (GrC)

**Geographical Techniques**

**3311f,w,s. MAPS AND MAP INTERPRETATION. (4 cr; prereq soph, 5 cr in geography or §) Brown, Hsu, Porter**

Uses and abuses of maps. Interpretation of topographic and statistical maps. Survey of map sources; the air photo as a map. Emphasis on map analysis with minimum of drafting. (GrC)

**3511f,w,s. INTRODUCTION TO CARTOGRAPHY. (4 cr; prereq 5 cr in geography or §) Brown, Hsu, Loomis, Porter**

Principles of map design, compilation, specification, and drafting. Map symbols. History of cartography. Projections—analysis of construction, properties, and uses. (GrA)

**3531f. QUANTITATIVE METHODS. (4 cr) R. Adams, Hart, Skaggs**

Applications of quantitative techniques to problems of classification, measurement, areal association and sampling, and comparative regional analysis. Examples from geographical literature employing statistical sources commonly used by geographers. (GrA)

**3551w. INTRODUCTION TO REMOTE SENSING. (4 cr; prereq 10 cr in geography or §) Brown, Porter, Skaggs, Loomis**

The theory and applications of imaging remote sensors to environmental problems. Analysis and interpretation of remote sensor images in geographic studies. (GrA)

**5511w. CARTOGRAPHIC ANALYSIS. (4 cr; prereq 3511, 3531, or §) Brown, Hsu, Porter**

Analysis of cartographic techniques of representing quantitative data on maps. Principles of generalization. Sampling techniques for areal data and other quantitative techniques related to mapping. (GrA)

**5512s. CARTOGRAPHY: TOPICS. (4 cr; prereq 3511, 3531, or §) Brown, Hsu, Porter**

Advanced statistical mapping techniques, selected topics and cartography: visual perception, automation, spatial statistics, history of cartography. (GrA)

**5531w. QUANTITATIVE RESEARCH DESIGN. (4 cr; prereq 3531, Soc 3801, or §) R. Adams, Skaggs**

Formulation of quantitative problems for hypothesis-testing, sampling, model-building; applications to computer methods; study of literature and problem work. (GrA)

**Directed and Special Studies**

**3950. HONORS COURSE: UNDERGRADUATE SEMINAR. (3 cr; prereq 10 cr in geography, B avg and §) Staff**

Supervised investigation of selected topics.

**3970. DIRECTED READINGS. (1-15 cr) Staff**

**3990. DIRECTED RESEARCH. (1-15 cr) Staff**

**5299s. PROSEMINAR: EAST AND SOUTH ASIA. (4 cr; §Hist 5549; prereq sr; integrating course for students majoring in East and South Asian area studies program) Interdepartmental staff (GrC)**

**5353. SEMINAR FOR IN-SERVICE TEACHERS. (3 cr; available only to in-service teachers) Hart**

Survey and discussion of the variety of materials, organizational approaches, and teaching strategies in geography that are available to secondary school teachers of geography and social studies. (GrC)

**5900. TOPICS IN GEOGRAPHY. (4 cr; prereq sr or grad and Δ)**

Special topics and regions offered by visiting professors in their research fields. (GrC)

## GEOLOGY AND GEOPHYSICS (Geo)

School of Earth Sciences  
Institute of Technology

**Staff:** V. Rama Murthy, *head of School of Earth Sciences*, 106 Pillsbury Hall; Harold M. Mooney, *associate chairman*, 208B Pillsbury Hall; Clement G. Chase, *director of undergraduate studies*, 208A Pillsbury Hall; Strathmore R. B. Cooke, Henry T. Hall, Roger LeB. Hooke, Peter J. Hudleston, William Normark, Walter E. Parham, Hans-Olaf Pfannkuch, George Rapp, Jr., Frederick J. Sawkins, Joseph Shapiro, Paul K. Sims, Robert E. Sloan, James Stout, Frederick M. Swain, Paul Weiblen, Herbert E. Wright, Jr., Tibor Zoltai

Geology is concerned with the physical, chemical, and biological processes that continuously restructure and redistribute the material on and within the earth, and the historical development of the earth through these shaping processes.

**Major Sequence for B.A.:** 1. *Required background courses* (Lower Division)—Geo 1111 (or 1001), Chem 1004/5, 1006, Math 1201/11/21, 1231, Biol 1011, 1104, Bot 1001, Phys 1271/81/91 or 1275/85/95. 2. *Major requirements*—Geo 3101/2/3, 5110, Chem 3100,1,2,3, Stat 3091, CICS 3101, Math 3066, 3142. The Department urges that the Math and Chem sequences be started in freshman year, and the Geo in sophomore year.

The Department also offers three degree options in IT: general geology, mineralogy and petrology, geophysics. Students who contemplate scientific careers are urged to confer with the Department director of undergraduate studies about program choice.

### LOWER DIVISION COURSES

- 1001f,w,s. PHYSICAL GEOLOGY.** (5 cr; 3 lect hrs, one 2-hr lab, 1 rec hr per week) Staff  
Scientific method and nature of the earth; main features of the world and the processes that have formed them. (GrB)
- 1001H. HONORS SECTION: PHYSICAL GEOLOGY.** (5 cr)  
Course for nonscience majors. Taught on an informal basis by senior faculty; provides an introduction to the world of geology. Lectures, field trips, and special lab problems.
- 1002f,w,s. HISTORICAL GEOLOGY.** (4 cr; prereq 1001 or 1111; 3 lect hrs, one 2-hr lab per wk) Sloan  
Evolution of earth from its origin; succession of physical and biological events of past 600 million years. (GrB)
- 1007. ENVIRONMENTAL GEOLOGY.** (4 cr; prereq 1001, §1008)  
Geological application in resource management, land use planning, etc. Geological evolution of the biosphere and the impact of man's activities on its resources. Geological hazards. The Twin Cities area as a geological environment. Lectures, labs, and field trips. (GrB)
- 1008. GEOLOGY AND MAN.** (4 cr; no prereq; §1001, 1007)  
Man in his physical environment and the broad nature of earth science; geological hazards, natural resources; geological aspects of pollution and land use; soil composition as related to nutrition and disease. Lectures, labs, and field trips. (GrB)
- 1011. DRIFTING CONTINENTS.** (4 cr; no prereq; 3 lect per wk, one 2-hr lab per wk) Sawkins, Chase  
The revolution in recent geological thinking. Integration of diverse geological elements—volcanoes, earthquakes, mountain chains, wandering continents, earth resources.
- 1012f. EARTH AS A PLANET.** (4 cr)  
A survey course, with 3 lectures and one problem solving laboratory session, dealing with the origin and evolution of the earth, its structure and composition in relation to other planets and the cosmic abundances and mode of formation of elements in the solar system.
- 1013f. ORIGIN AND EVOLUTION OF LIFE.** (4 cr)  
Geological evidence of the origin and increasing complexity of living systems, including biogenesis, single-celled organisms, plants, animals, and ecosystems. Problems of extra-terrestrial life.

- 1111f. INTRODUCTORY PHYSICAL GEOLOGY.** (5 cr; for prospective majors and others desiring more intensive course; prereq high school or college chemistry or §; 3 lect hrs, 1 rec hr, and two 2-hr labs per wk) Weiblen (GrB)
- 1112s. HISTORICAL AND STRATIGRAPHIC GEOLOGY.** (5 cr; for prospective majors and others desiring more intensive course; prereq 1111 or §; 3 lect hrs, 1 rec hr, and two 2-hr labs per wk) Swain (GrB)
- 1601. OCEANOGRAPHY.** (4 cr) Normark  
Marine geology, physical oceanography, chemistry of the seas, biological oceanography, resources of the sea. Career opportunities in oceanography and related fields. (GrB)
- 1602. OCEANOGRAPHY.** (5 cr; no prereq; concurrent lect with 1601 plus lab) Normark
- UPPER DIVISION COURSES**
- 3099f,w,s. PROBLEMS IN GEOLOGY AND GEOPHYSICS.** (1-6 cr; prereq § and Δ)  
Individual research or problem selected on the basis of individual interests and background.
- 3101f. SURFICIAL GEOLOGIC PROCESSES.** (5 cr; prereq 3401 or §) Hooke  
Geologic processes at the surface of the earth. Geomorphology, limnology, groundwater geology, sedimentology. Field trips. (GrB)
- 3102. PETROLOGY.** (5 cr; prereq 3401 and 3101 or §) Stout  
The lithologic character and genesis of igneous and metamorphic rocks.
- 3103. STRUCTURAL AND FIELD GEOLOGY.** (5 cr; prereq 3102 or §) Hudleston  
Primary and secondary structures of rocks; mechanics and modes of deformation, introduction to field methods in geology. Field trips.
- 3401w. INTRODUCTORY MINERALOGY.** (5 cr; prereq 1001 or 1111 or §; 1 term college chemistry, Math 1201 or equivalent; 3 lect and 6 lab hrs per wk) Rapp  
Introduction to crystallography, crystal chemistry, and mineralogy. (GrB)
- 5002s. STRUCTURAL GEOLOGY.** (4 cr; §3103 or equiv; not open to geology, geophysics, geo-engineering, mineral resources engineering, and metallurgy-materials science majors; prereq 3401 or 5004 or §; 3 lect and 2 lab hrs per wk)  
Primary and secondary structures of rocks, mechanics and modes of deformation, structural techniques. Laboratory exercises in three-dimensional representation and solution of selected structural problems.
- 5004w. MINERALOGY.** (4 cr; §3401; not open to geology, geophysics and geological, mineral and metallurgical engineering majors; open to majors in College of AFHE and post-grad students in education; prereq 1001 or 1111 or §; 1 term college chemistry, Math 1201; 3 lect and 6 lab hrs per wk) Rapp  
Crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Minerals in natural rock systems. (GrB)
- 5102s. PHYSICAL STRATIGRAPHY.** (4 cr; prereq 3103) Swain  
Modern literature and lab work on Paleozoic, Mesozoic, and Cenozoic stratigraphy; geosynclinal and shelf development, oceanic and lacustrine deposits.
- 5110. FIELD GEOLOGY.** (9 cr; restricted to students majoring in geology, geophysics, and geological engineering; prereq 3103 and §)  
Measurement of stratigraphic sections; study of fossils and igneous, sedimentary, and metamorphic rocks. Geological surveying on aerial photographs and topographic maps. Geologic map preparation. Geologic setting of mineral deposits.
- 5151f. INTRODUCTION TO PALEONTOLOGY.** (5 cr; prereq 1002 or 1112 or §) Sloan  
Morphology and classification of major fossil groups.
- 5152. INVERTEBRATE PALEONTOLOGY.** (5 cr; prereq 5151; 3 lect and 4 lab hrs per wk; offered on demand)  
Morphology, classification, and ecology of selected groups of invertebrate fossils.
- 5154f. VERTEBRATE PALEONTOLOGY I.** (5 cr; prereq 5151 or Zool 5124) Sloan  
Morphology, evolution, and stratigraphic distribution of fossil fish, amphibians, reptiles, and birds.
- 5155w. VERTEBRATE PALEONTOLOGY II.** (5 cr; prereq 5154 or Zool 5124) Sloan  
Morphology, evolution, and stratigraphic distribution of fossil mammals.
- 5251s. GEOMORPHOLOGY.** (5 cr; prereq 1001, Math 1111, Geo 3101 required and 3401 recommended for geology majors, or §) Hooke  
Quantitative study of landform processes in various regions of the earth and on other planets. Weathering, slope and shore processes, fluvial erosion and deposition, wind action, impact phenomena, and tectonics. Field trips 1st, 5th, 7th, and 9th Saturdays. Term project.

## Course Offerings and Major Sequences

- 5252f. PROBLEMS IN GEOMORPHOLOGY.** (3 cr; prereq 5251; offered 1971-72 and alt yrs)  
Hooke  
Detailed study of selected geomorphic processes. Emphasis on fluvial processes and arid region geomorphology.
- 5255. GLACIOLOGY.** (3 cr; prereq Math 3221 or equiv or #; offered 1971-72 and alt yrs)  
Hooke  
Theories of glacier flow. Internal structures and heat flow in glaciers. Reading assignments, problems term paper.
- 5261. GLACIAL GEOLOGY.** (4 cr, 5 cr with term paper; prereq 1002 or 1112)  
Formation and characteristics of modern glaciers; erosional and depositional features of Pleistocene glaciers; history of Quaternary environmental changes in glaciated and nonglaciated areas. Field trips.
- 5301. INTRODUCTORY GEOCHEMISTRY.** (4 cr; prereq Chem 5501 or 5502 and 5521) Hall, Murthy  
Application of thermodynamics to geologic problems. The origin and distribution of major and minor elements in the earth; differentiation history of the earth into crust, mantle, and core; thermodynamics, trace element distribution, and isotopic tracers in geological processes.
- 5351. METAL SULFIDE DEPOSITS.** (5 cr; prereq 3401, 3103 or #) Sawkins  
Nature and distribution of sulfide deposits; analysis of processes by which metals are concentrated in magmatic, hydrothermal, sedimentary environments.
- 5401. CRYSTAL CHEMISTRY OF MINERALS.** (4 cr; prereq 3401, 1 yr college chemistry; 3 lect and 2 lab hrs per wk) Zoltai  
Basic concepts of symmetry, packing, coordination, and bonding of atoms in crystal structures. Classification and discussion of crystal structures and crystal chemistry of minerals.
- 5452. IGNEOUS AND METAMORPHIC PETROLOGY.** (4 cr; prereq 3102, Chem 5502 or 5521, Math 3211 or #)  
Rock associations, textures, and structures of world-wide igneous provinces and metamorphic terranes. Petrogenesis in light of phase equilibria, experimental studies, and current interpretations. Laboratory and term paper.
- 5505. PHYSICS AND CHEMISTRY OF THE EARTH I.** (4 cr; prereq Phy 1295)  
Earthquake seismology; physical structure of the earth's crust and deep interior; gravity field of the earth.
- 5506. PHYSICS AND CHEMISTRY OF THE EARTH II.** (4 cr; prereq 5505 or #)  
Origins and chemical evolution of the earth through geologic time.
- 5507. PHYSICS AND CHEMISTRY OF THE EARTH III.** (4 cr; prereq 5506 or #)  
Gravity and magnetic fields of the earth; paleomagnetism; thermal history of the earth.
- 5511s. PRINCIPLES OF GRAVITY AND MAGNETIC EXPLORATION.** (3 cr; prereq Phys 1291) Mooney  
Instrumentation, surveying techniques, reduction of data, interpretation, case histories.
- 5512w. PRINCIPLES OF SEISMIC EXPLORATION.** (3 cr; §5522; prereq Phys 1291)  
Reflection and refraction seismology; theory, interpretation, instruments.
- 5522. PRINCIPLES OF REFRACTION SEISMIC EXPLORATION.** (2 cr; §5512; principally for civil engineering and geo-engineering students; prereq Phy 1291)
- 5601f. LIMNOLOGY.** (4 cr; §Ecol 128; prereq Chem 1005 or equiv and #) Shapiro  
Events occurring in lakes, reservoirs, and ponds, from their origins through study of their physics, chemistry, and biology. Interrelationships of these parameters. Effects of civilization on lakes. Laboratory, field trips.
- 5611s. GROUNDWATER GEOLOGY.** (3 cr; prereq 1001 or 1111, Math 1231, 1 qtr physics and chemistry, or #)  
Origin, occurrence, and movements of groundwater. Characteristics of major aquifers and aquitards. Exploratory investigations. Hydrogeologic units and boundaries. Principles and theoretical aspects of recharge. Quality of groundwater supplies.
- 5642. INTRODUCTORY MARINE GEOLOGY.** (4 cr; prereq upper division geology major or grad student and completion of core curriculum or #) Normark  
Physiography and structure of ocean basins and continental margins with consideration of their development applying the concepts of global tectonics. Review of marine geological techniques.
- 5652. SEDIMENTOLOGY.** (4 cr; prereq 3101, 3102, 3103 and 5642 or #)  
Sedimentary processes and products; modern marine depositional environments. Clastic sedimentation on continental margins.

## GERMAN (Ger)

**Staff:** Wolfgang F. Taraba, *chairman*, 219 Folwell Hall; Frank D. Hirschbach, *director of graduate studies*, 216 Folwell Hall; Gerhard H. Weiss, *director of undergraduate studies*, 221 Folwell Hall; Gary Alley, Leonard L. Duroche, Evelyn S. Firchow, Martha Formanek, Mark A. Lowry, Edwin F. Menze, Thomas Plummer, Herman Ramras, Ray Wakefield, Cecil Wood

German as a college-level discipline comprises the study of the spoken language and of German literature and culture by means of the original language, as well as of courses in German literature in translation that may be used to fulfill part of the Route II foreign language requirement.

**Major Sequence for B.A.:** 1. *Required background courses*—1001/2/3 or 1101/2/3 or equiv. 2. *Major requirements*—36 cr in German courses numbered 3011 or above, including 3401,2 and at least 12 other cr in literature courses.

For requirements for a teacher's certificate, see the *College of Education Bulletin*.

### LOWER DIVISION COURSES

#### Dutch (Dut)

**1201f/2w/3s. BEGINNING DUTCH.** (5/5/5 cr)

**1201/2:** Basic experience in speaking, reading, and understanding Dutch language through acquisition of basic speech patterns. **1203:** Reading and analysis of literary texts. Knowledge of German recommended but not required.

**1301/2. INTERMEDIATE DUTCH.** (4/4 cr; prereq Dut 1203)

**1301:** Reading and analysis of masterpieces of Dutch literature from the modern period. **1302:** From the 17th century.

#### German (Ger)

**1001f/2w/3s. BEGINNING GERMAN: ORAL APPROACH.** (5/5/5 cr; §corresponding qtrs of 1101/2/3 or HS German; lectures on CCTV 2 times per wk, small drill sections 3 times per wk) Formanek

Speaking and oral comprehension developed through study of basic speech patterns and German structure. Reading knowledge developed in later part of course. Some sections use computer-assisted instruction.

**1101f,w/2f,w,s/3f,w,s. BEGINNING GERMAN.** (5/5/5 cr; §corresponding qtrs of 1001/2/3 or HS German; 5 class meetings per wk)

Understanding, speaking, and reading German through acquisition of basic speech patterns and reading and analysis of texts. Attention to all language skills, but ultimate emphasis on reading. Uses language laboratory.

**1301f,w,s. INTERMEDIATE GERMAN.** (5 cr; prereq 1003, 1103, or 3 yr HS German)

### UPPER DIVISION COURSES

**3011f/2w/3s. COMPOSITION AND CONVERSATION.** (4/4/4 cr; prereq 1301)

German grammar; colloquial usage and original compositions. Systematic development of vocabulary for use in everyday life. (GrA)

**3014/5. ADVANCED COMPOSITION AND CONVERSATION.** (4/4 cr; prereq 3013) (GrA)

**3040s. GERMAN PLAY.** (1 or 2 cr; prereq 1003 or 1103)

Practice in use of standard German through participation in dramatic productions.

**3104f,w,s. READING AND ANALYSIS OF LITERARY TEXTS.** (4 cr; not open to students who have had literature courses 3xxx or above; prereq 1301 or 4 yrs HS German)

Selected readings to develop reading fluency and appreciation of literary values. (GrD)

**3105f,w,s. INTERPRETATION OF LITERATURE.** (4 cr; recommended especially for German majors and advanced students; prereq 3104 or §)

Basic techniques of literary interpretation and familiarization with critical terminology. Oral and written interpretations by students analyzed and evaluated in class. (GrD)

## Course Offerings and Major Sequences

- 3291f,2w,3s. MODERN GERMAN LITERATURE.** (4,4,4 cr; prereq 3104)  
Reading in modern German literature and discussion of its historical, social, and philosophical background.
- 3301f,2w,3s. LYRIC POETRY FROM GOETHE TO RILKE.** (4,4,4 cr; prereq 3104 or §)  
3301: Goethe period. 3302: Heine to end of 19th century. 3303: 20th century. (GrD)
- 3310. STUDIES IN MODERN GERMAN AUTHORS.** (4 cr; prereq 3104 or §)  
The important works of one author studied in depth. Such authors as Kleist, Heine, Büchner, Hofmannsthal, and others will be discussed.
- 3311f,2w,3s. GERMAN DRAMA FROM LESSING TO PRESENT.** (4,4,4 cr; prereq 3104 or §)  
Menze  
Outstanding German dramatic works. 3311: Classical period. 3312: 19th century. 3313: Naturalism, impressionism, expressionism. (GrD)
- 3331. DIE DEUTSCHE KOMÖDIE.** (4 cr; prereq 8 cr in literature courses at 3xxx and above) (GrD)
- 3341f/2w. HONORS COURSE: PROSEMINAR IN GERMAN.** (4/2 cr; prereq candidacy for honors in German)  
3341: Lectures on significant themes in German literature, discussion of assigned readings. 3342: Students write papers supervised by professors of their choice. (GrD)
- 3401,2. LITERATURE FROM 1650 THROUGH THE CLASSICAL PERIOD.** (4,4 cr; prereq 8 cr in literature courses 3105 and above) (GrD)
- 3403s. FAUST I.** (4 cr; prereq 8 cr in literature courses 3105 and above) Ramras (GrD)
- 3450. SENIOR SEMINAR IN GERMAN LITERATURE.** (4 cr; prereq 12 cr in literature courses 3105 and above, §)  
Study in-depth of the works of one individual author or a specific aspect of German literature.
- 3501f,w,s. CONTEMPORARY GERMANY.** (4 cr; prereq 1003 or 1103)  
Introduction to culture and civilization of present-day Germany.
- 3511f,2w,3s. GERMAN CIVILIZATION AND CULTURE.** (4,4,4 cr; prereq 4 cr in literature courses 3xxx and above) Weiss  
Important movements and leading personalities in art, music, science, religion, and education. Discussions and lectures supplemented with demonstration materials. Taught in German.
- 3590. DIRECTED STUDIES IN GERMAN-SPEAKING COUNTRIES.** (5 cr; prereq 3501, §)  
Weiss  
Student prepares for research abroad on a selected topic during quarter prior to departure, completes research abroad. Grade based on written report and oral examination after return.
- 3601f,2w,3s. GERMAN LITERATURE IN TRANSLATION.** (4,4,4 cr)  
Representative literary works from medieval to modern times read in translation and related to other literatures. Not open for credit toward a German major. Requires no knowledge of German. (GrD)
- 3604. GERMAN LITERATURE IN TRANSLATION AND THE FILM.** (4 cr)  
Modern German culture seen through literature and the film. Representative works read in translation related to historical and intellectual developments in modern Germany. Students compare novelistic and cinematic treatment of similar thematic material. Requires no knowledge of German.
- 3610. MODERN GERMAN AUTHORS IN TRANSLATION.** (4 cr)  
Study in-depth of one author, such as Thomas Mann, Kafka, Hesse, Brecht, Grass, or others. Selection of authors will vary from time to time. Not open for credit toward a German major. Requires no knowledge of German.
- 3701. HISTORY OF GERMAN LANGUAGE.** (4 cr; prereq 8 cr in literature courses 3xxx and above) Wood (GrA)
- 3702. BEGINNING MIDDLE HIGH GERMAN.** (4 cr; prereq 8 cr in literature courses 3xxx and above) Wood, Firschow, Wakefield  
Middle High German grammar. Reading of selected Middle High German literary texts. For juniors and seniors. Knowledge of modern German recommended.

*Courses in the 5xxx range are open to seniors upon recommendation of advisers. Prereq: 16 cr in literature courses numbered 3105 and above or equiv, plus specific course prereq.*

## Composition

- 5011. ADVANCED COMPOSITION FOR GRADUATE STUDENTS.** (4 cr; prereq 3015 or equiv)
- 5021. THE GRAMMAR OF STYLE.** (4 cr; prereq #)  
Systematic analysis of language style, using objective criteria to generate statements about German language texts (GrA)

## Literature

- 5101,2. THE STRUCTURE OF MODERN GERMAN.** (4,4 cr) Firschow, Wood  
5101: German phonology. 5102: German structure.
- 5331. CULTURAL ANALYSIS.** (4 cr; prereq 1 qtr of German Civilization and Culture or equiv)  
Weiss  
Techniques of cultural analysis (contrastive, anthropological, traditional) through examination of literary texts, newspapers, language usage, etc. as well as "cultural myths" and forms of humor. Culture in translation. (GrC)
- 5351s. DAS LIED.** (4 cr; prereq 12 cr in literature courses)  
A diachronic survey of the development of the genre, stressing interaction between poetry and music, tracing the *Kunstlied*, *volkstümliches Lied*, and *Volkstied*.
- 5601f,2w,3s. DRAMA IN TRANSLATION.** (4,4,4 cr; prereq 8 cr in theatre arts or in literature above 3001) Menze  
Not open for credit toward a German major. Requires no knowledge of German.
- 5970. DIRECTED READINGS.** (1-5 cr)

## GREEK

See Classics

## HEBREW

See Middle Eastern Languages

## HINDI

See South Asian Languages

## HISTORY (Hist)

Staff: Clarke A. Chambers, *chairman*, 614a Social Sciences; John R. Howe, *associate chairman*, 614b Social Sciences; Josef L. Altholz, Kinley J. Brauer, *director of graduate studies*, 633 Social Sciences; David O. Kieft, *director of undergraduate studies*, 668 Social Sciences; Bernard S. Bachrach, Paul W. Bamford, Hyman Berman, W. Roger Buffalohead, Peter N. Carroll, Edward L. Farmer, Carol Gold, George D. Green, Allen F. Isaacman, Tom B. Jones, Lansiné Kaba, Thomas Kelly, David Kopf, Stanford E. Lehmberg, David Lelyveld, Rodney C. Loehr, Byron K. Marshall, J. Peyton McCrary, John Modell, John K. Munholland, Paul L. Murphy, David Noble, Thomas S. Noonan, Otto P. Pflanze, Carla R. Phillips, Richard L. Rudolph, Joel Samaha, Stuart Schwartz, Allan H. Spear, Theofanis G. Stavrou, Romeyn Taylor, John A. Thayer, James D. Tracy, Rudolph J. Vecoli, Stuart L. Wagner, William Wright

Major Sequence for B.A.: 1. *Required background courses*—Four quarters of survey courses chosen from 1001,2,3 or 1051,2,3 or 1101,2,3 or 1151,2,3 or 1301,2 or 1401,2 or 1431,2,3 or 1451,2,3. Two of the four quarters must be taken in sequence. Students are urged to complete these survey courses while in Lower Division. Upper Division majors who have not done so should take Upper Division equivalents of the Lower Division surveys: 3001,2,3, 3051,2,3, 3101,2,3 or 3151,2 or 3401,2 or 3431,2,3 or 3451,2,3. 2. *Major requirements*—A minimum of 8 Upper Division courses in history, including at least 4 in an area of concentration; 3961—

## Course Offerings and Major Sequences

the 5-cr major research paper course. Each spring quarter, every history major seeking to graduate in the next academic year must sign up for 3961 in the Department office, indicating the quarter in which he will take the course and the general area of his work. *Distribution* (these courses may count as part of the required Lower Division or Upper Division courses): A minimum of two courses each from the "modern" and "pre-modern" categories of courses; at least one course from each of three different geographical areas of the world. *Extra requirement* (for majors admitted to Upper Division for Fall 1972 or later)—*One* of the following: a. Language requirement Route I; or b. Language requirement Route II, plus a year of a second foreign language (or validation at that level); or c. 3 courses chosen from Soc 3801,2,3, PsyF 5110, 5120, 5122, all Stat courses, all Math courses above 1141, all CICS courses above 3101.

Students planning to major in history should obtain the *Description of the Undergraduate History Major* from the Department office. They should also check the undergraduate bulletin board located outside of the departmental office for any changes subsequent to the printing of this Bulletin.

The *Description of the History Major* lists "modern" and "pre-modern" courses and geographical areas, and suggests areas of concentration.

Students who have taken most of their courses under the 3-cr module will have slightly different requirements, and should consult the Department undergraduate studies office.

In special cases students will be allowed to substitute Upper Division courses numbered 3460 or above in lieu of the prerequisite survey courses. Such substituted courses may *not* also be used to fill the Upper Division major requirements.

A student who has completed Lower Division prerequisites may use additional Upper Division survey courses (those numbered from 3001 to 3453) for Upper Division credit, provided that they do not fall in the student's area of concentration.

Students planning to do advanced work in history should acquire a reading knowledge of French, German, or other appropriate language in their early undergraduate years.

**Honors in History**—Students majoring in history who have a University average of 3.0 and an average of 3.25 in history courses may apply for honors in history.

In the junior year the candidate for honors in history will be expected to take two Upper Division courses and 3951H/2H. If for one reason or another it is not possible to take the honors course in the junior year, another Upper Division sequence course (2 quarters) may be substituted; the honors course would then be taken in the senior year. The Department strongly urges that 3951H/2H be taken in the junior year. In the senior year the honors candidate will take two Upper Division courses and one of the proseminars (numbered 5500 or above) in which he will prepare a research paper.

When an honors program is completed a committee (made up of chairman of department, professor in charge of the honors course, and professor under whom research paper was written) will pass upon the award of honors, high honors, or highest honors in history.

**Requirements for a Teacher's Certificate** (applicable only to students in the College of Education)—Major: a minimum of 48 cr, at least 30 in Upper Division courses numbered 3500 or above. Minor: a minimum of 29 cr, at least 12 in courses numbered 3500 or above. See the *College of Education Bulletin* for details.

No recommendation for a history certificate will be given unless the candidate has taken 1301,2 or equivalent.

For a specialized minor curriculum in social studies see the *College of Education Bulletin*.

**General Education**—History offerings numbered below 5500 are designed to serve the needs of students from all areas of the University. For Lower Division students, any of the courses listed as such fit the category general education and provide the basis for advanced work. For Upper Division students who have had no previous work in history, the Department recommends courses numbered between 3001 and 3499.

#### LOWER DIVISION COURSES

- 1001f,2w,3s. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4,4,4 cr; not open to jrs, srs) Kieft, Munholland, Noonan, Bamford, Rudolph, Thayer, Wright  
**1001:** Development of western European civilization to 1715. **1002:** Revolution, liberalism, and nationalism to 1870. **1003:** 1870 to recent times. (GrC)
- 1001H,2Hw,3Hs. HONORS COURSE: INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4,4,4 cr; prereq #) Kieft, Munholland, Noonan, Bamford, Rudolph, Thayer, Wright
- 1051f,2w,3s. ANCIENT CIVILIZATION.** (5,5,5 cr) Jones, Kelly  
**1051:** Near East to 500 B.C. **1052:** Greek Civilization, 750 to 323 B.C. **1053:** Roman Civilization to 305 A.D. Lectures and 2 additional hours per week to discuss assigned readings. (GrC)
- 1101f,2w,3s. MEDIEVAL AND RENAISSANCE HISTORY.** (4,4,4 cr) Bachrach  
**1101:** Early Middle Ages. **1102:** High Middle Ages. **1103:** Later Middle Ages and early Renaissance. (GrC)
- 1111f,2w,3s. MEDIEVAL AND RENAISSANCE HISTORY WITH BASIC READINGS.** (6,6,6 cr; prereq #) Bachrach  
 Students attend lectures in 1101,2,3 and meet with lecturer 2 hrs per week to discuss readings, problems in historiography, and research methods relative to medieval and renaissance history. (GrC)
- 1121f,2w,3s. HONORS COURSE: MEDIEVAL, RENAISSANCE HISTORY.** (1,1,1 cr; prereq # must be taken concurrently with 1101,2,3 or 1111,2,3) Bachrach  
 Students attend lectures in 1101,2,3 and meet with lecturer 1 hour every week to discuss readings, problems in historiography, and research methods relative to medieval and renaissance history. (GrC)
- 1151,2. ENGLISH HISTORY.** (4,4 cr) Altholz, Lehmborg  
**1151:** England to the crisis of the 17th century. **1152:** From the 17th century to the present. (GrC)
- 1301,2. AMERICAN HISTORY.** (4,4 cr; prereq soph; offered qtrly) Berman, Brauer, Carroll, Chambers, Green, Howe, McCrary, Modell, Murphy, Spear  
**1301:** Colonial, early national period through sectional crisis. **1302:** Modern America. (GrC)
- 1301H,2H. HONORS COURSE: AMERICAN HISTORY.** (4,4 cr; prereq soph and #; offered qtrly) Berman, Brauer, Carroll, Chambers, Green, Howe, McCrary, Modell, Murphy, Spear (GrC)
- 1310. TOPICS IN AMERICAN HISTORY.** (4 cr; prereq soph; course may be repeated, with change of topic) Staff (GrC)
- 1401,2. SURVEY OF LATIN-AMERICAN HISTORY.** (5,5 cr; §3401,2) Schwartz, Wagner  
**1401:** The colonial period through independence. **1402:** The national period. (GrC)
- 1431,2,3. HISTORY OF AFRICA.** (4,4,4 cr; §3431,2,3) Isaacman, Kaba (GrC)
- 1451f,2w,3s. ASIAN CIVILIZATIONS.** (5,5,5 cr; §3451,2,3) Farmer, Kopf, Lelyveld, Marshall, Taylor  
**1451:** Ancient societies in East, South, and West Asia. **1452:** 5th through the 18th centuries. **1453:** The modern era. (GrC)
- 1951f,2w,3s. WORLD MILITARY HISTORY: A SURVEY.** (2,2,2 cr; §Mil 1011,2,3; may not be used to satisfy requirements for major in history) Loehr  
**1951:** From ancient times to the Thirty Years War. **1952:** from 1648 to the Crimean War. **1953:** From the American Civil War to World War II. (GrC)
- 1954. WORLD MILITARY HISTORY.** (5 cr)  
 Telescopes Hist 1951,2,3 for a 5-week Summer session course. Mainly for ROTC cadets, but open to others. (GrC)

## Course Offerings and Major Sequences

### UPPER DIVISION COURSES

- 3001f,2w,3s. INTRODUCTION TO MODERN EUROPEAN HISTORY.** (4,4,4 cr; §1001,2,3)  
Kieft, Munholland, Noonan, Bamford, Rudolph, Thayer, Wright (GrC)
- 3051f,2w,3s. ANCIENT CIVILIZATION.** (3,3,3 cr; §1051,2,3) Jones, Kelly (GrC)
- 3101f,2w,3s. INTRODUCTION TO MEDIEVAL AND RENAISSANCE HISTORY.** (4,4,4 cr;  
§1101,2,3) Bachrach (GrC)
- 3151,2. ENGLISH HISTORY.** (4,4 cr; §1151,2) Altholz, Lehmborg (GrC)
- 3200. CONTEMPORARY PROBLEMS IN HISTORICAL PERSPECTIVE.** (4 cr)  
Comparative treatment of a selected contemporary problem (e.g., urbanization, social change, nationalism, inter-cultural conflict, revolution) in historical perspective. (GrC)
- 3401,2. SURVEY OF LATIN-AMERICAN HISTORY.** (5,5 cr; §1401,2) Schwartz, Wagner (GrC)
- 3431,2,3. HISTORY OF AFRICA.** (4,4 cr; §1431,2,3) Isaacman, Kaba (GrC)
- 3451f,2w,3s. ASIAN CIVILIZATIONS.** (5,5,5 cr; §1451,2,3) Farmer, Lyleveld, Kopf, Marshall, Taylor (GrC)
- 3464f,5w. MODERN CHINA.** (4,4 cr) Farmer  
3464: China in the Ming and Ch'ing, 1350-1750. 3465: China's Response to the West, 1750-1911, (GrC)
- 3467f,8w. 20TH-CENTURY CHINA.** (4,4 cr) Farmer  
3467: The Republic. 3468: The People's Republic. (GrC)
- 3471. 20TH-CENTURY JAPAN.** (4 cr; §5471) Marshall  
The modern transformation, 1870s to 1970s. (GrC)
- 3472. EARLY MODERN JAPAN.** (4 cr; §5472) Marshall  
Tradition and change in Tokugawa society. (GrC)
- 3481,2,3. HISTORY OF SOUTH ASIA.** (4,4,4 cr; §5481,2,3) Kopf, Lelyveld  
Introduction to the history of South Asia from social, cultural, political, and economic perspectives. (GrC)
- 3484. HISTORY OF SOUTHEAST ASIA.** (4 cr)  
Development of societies and states in Asian region bordered by culture and political spheres of China and India. (GrC)
- 3500. HISTORIOGRAPHY AND HISTORICAL METHOD SEMINAR.** (3 cr; prereq 2 unrelated hist courses 3501 or higher or §)  
Introduction to source types, to some of the problems of method inherent in various source materials, and to the main currents in the Western historiographical tradition.
- Heb 3501f,2w. ANCIENT ISRAEL.** (4,4 cr) Paradise  
History of Israel and development of its religion as seen against background of ancient Near East. No knowledge of Hebrew required. (GrC)
- Mide 3541f/2w/3s. HISTORY OF ARABS.** (4/4/4 cr; prereq § for 3541; §5511, §5512, §5513) Chejne  
3541: Pre-Islamic days to downfall of Umayyads. 3542: Abbasids to fall of Baghdad in 1258. 3543: From crusades to modern times. (GrC)
- 3801,2. COLONIAL PERIOD OF AMERICAN HISTORY.** (4,4 cr) Carroll  
3801: English background, colonization to 1689. 3802: Provincial America, 1689-1765. (GrC)
- 3804,5. ERA OF THE AMERICAN REVOLUTION.** (4,4 cr) Howe  
3804: Causes and consequences of the Revolution. 3805: Establishing the New Nation. (GrC)
- 3821,2,3. UNITED STATES IN THE 20TH CENTURY.** (4,4,4 cr)  
3821: From 1890 to 1920. 3822: 1920 to 1945. 3823: 1945 to present. (GrC)
- 3841. AMERICAN BUSINESS HISTORY.** (5 cr) Green (GrC)
- 3861,2. HISTORY OF AMERICAN IMMIGRATION.** (4,4 cr; offered 1973-74 and alt yrs)  
Vecoli  
3861: To 1880. 3862: Since 1880. (GrC)
- 3864,5. AFRO-AMERICAN HISTORY.** (4,4 cr) Spear  
3864: From 1619 through reconstruction. 3865: Since reconstruction. (GrC)
- 3881,2. HISTORY OF AMERICAN FOREIGN RELATIONS.** (4,4 cr) Brauer  
3881: 1775 to 1900. 3882: 1900 to present. (GrC)

- 3951/2†. HONORS COURSE: HISTORY.** (4/4† cr; prereq candidacy for honors in history, ‡) (GrC)
- 3961f,w,s. MAJOR PAPER.** (5 cr; prereq Δ) (GrC)
- 3970. DIRECTED STUDIES.** (1-15 cr; prereq ‡; qualified sr students may register with § for work on tutorial basis) (GrC)
- 3990. DIRECTED RESEARCH.** (1-15 cr; prereq ‡) Qualified students may register for one or more quarters with consent of instructor for work and training on a tutorial basis. (GrC)
- 5011,2. QUANTITATIVE METHODS IN HISTORICAL RESEARCH.** (4,4 cr; prereq one postsurvey course in any social science) Modell (GrC)
- 5021/2. COMPARATIVE STUDY OF THE FAMILY IN HISTORY: INDIA AND AMERICA.** (4/4 cr; prereq ‡) Lelyveld, Modell  
Historical information on the family employed to test a series of hypotheses regarding change. The shift from agrarian to industrial society. (GrC)
- 5024,5,6. HISTORY OF MEDICINE.** (4,4,4 cr)  
5024: Antiquity and Middle Ages. 5025: Early Modern Europe. 5026: 19th and 20th Centuries and American. (GrC)
- 5031/2. A SOCIAL HISTORY OF ANGLO-AMERICAN LAW.** (4/4 cr) Samaha  
Treats law as a social institution. Traces the development of the Anglo-American legal system from its inception as unsophisticated attempt to settle disputes by self-help to a highly complex structure relying almost exclusively on formal, professionalized judicial machinery supported by political power to enforce its decisions. (GrC)
- 5041,2. EXPANSION OF EUROPE.** (3,3 cr)  
5041: Era of discovery, 1400-1736. 5042: Later colonization, 1763-WWII. (GrC)
- 5051f,2w,3s. ANCIENT NEAR EAST.** (3,3,3 cr) Jones (GrC)
- 5061,2,3. GREECE TO 200 B.C.** (3,3,3 cr) Kelly (GrC)
- 5071f,2w,3s. HISTORY OF ROME.** (3,3,3 cr) Jones. (GrC)
- 5100. SELECTED TOPICS IN EARLY MEDIEVAL EUROPE.** (5 cr ea qtr; prereq 1101 or 3101 or equiv or ‡; reading knowledge of Fr or Ger desirable) (GrC)
- 5111,2. EUROPE IN HIGH MIDDLE AGES.** (4,4 cr)  
5111: The medieval revival, 1050-1200. 5112: The crisis of medieval civilization, 1200-1350. (GrC)
- 5121,2. EUROPE IN THE EARLY RENAISSANCE.** (4,4 cr offered 1972-73 and alt yrs) Tracy  
5121: Italy 1300-1494. 5122: France, Germany, and the Low Countries, 1300-1494. (GrC)
- 5123,4. EUROPE IN THE 16TH CENTURY.** (4,4 cr) Tracy  
5123: The Age of Reformation, 1494-1550. 5124: Europe divided, 1550-1600. (GrC)
- 5131,2,3. BYZANTINE HISTORY.** (3,3,3 cr)  
5131: Later Roman Empire to 565. 5132: Rise of Byzantium to 976. 5133: From Basil II to 1453. (GrC)
- 5134f,5w,6s. HISTORY OF EARLY RUSSIA.** (4,4,4 cr; prereq ‡) Noonan (GrC)
- 5141,2. ENGLISH CONSTITUTIONAL HISTORY TO 1485.** (4,4 cr)  
5141: From the Anglo Saxons through the Magna Carta. 5142: From the Magna Carta to the Tudors. (GrC)
- 5151,2,3. MODERN ENGLAND: TUDOR AND STUART PERIODS.** (4,4,4 cr) Lehmborg  
5151: 1485 to 1558. 5152: 1558-1625. 5153: 1625-1689. (GrC)
- 5171f,2w,3s. MODERN ENGLAND: 1783 TO PRESENT.** (4,4,4 cr) Altholz  
5171: 1783 to 1846. 5172: 1846 to 1901, Victorian era. 5173: 1901 to 1951, war and social change. (GrC)
- 5201,2. EARLY MODERN EUROPE.** (4,4 cr; offered when feasible) Bamford  
5201: Reformation and religious wars to 1648. 5202: The age of absolutism. (GrC)
- 5204,5. SOCIAL AND ECONOMIC HISTORY OF EARLY MODERN EUROPE.** (4,4 cr) Phillips  
Social, economic, and demographic change to the industrial revolution.
- 5211. FRANCE IN THE OLD REGIME.** (4 cr; offered 1973-74 and alt yrs) Bamford (GrC)
- 5212w. FRENCH REVOLUTION AND NAPOLEON.** (4 cr; offered 1972 and alt yrs) Bamford (GrC)
- 5221,2. 20TH CENTURY EUROPE.** (4,4 cr) Munholland  
5221: From 1890 to the Great Depression. 5222: From the Great Depression to the present. (GrC)

## Course Offerings and Major Sequences

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- 5231. MODERN FRANCE.** (5 cr; offered 1973 and alt yrs) Munholland  
History of France from 1815 to present. (GrC)
- 5241,2,3. HISTORY OF GERMANY.** (4,4,4 cr; 2 qtrs offered ea yr) Pflanze  
5241: From 911 to 1648. 5242: From 1648 to 1871. 5243: Since 1871. (GrC)
- 5244,5. CENTRAL EUROPE.** (4,4 cr; prereq 1003) Wright  
5244: Central Europe to the Congress of Vienna. 5245: Central Europe since 1815. (GrC)
- 5247. HISTORY OF AUSTRIA.** (4 cr; offered 1972-73 and alt yrs) Wright  
Austria from the 16th century through the Second Republic. (GrC)
- 5254,5. HISTORY OF MODERN ITALY.** (4,4 cr; offered 1973-74 and alt yrs) Thayer  
5254: From the 18th century to 1870. 5255: From 1870 to present. (GrC)
- 5264,5,6. MODERN RUSSIA.** (4,4,4 cr) Stavrou  
5264: 18th-century background. 5265: The 19th century. 5266: Revolutions and Soviet regime. (GrC)
- 5271,2,3. HISTORY OF SCANDINAVIA.** (4,4,4 cr) Gold  
5271: Medieval Scandinavia. 5272: 16th, 17th, and 18th centuries. 5273: Modern Scandinavia (19th and 20th centuries). (GrC)
- 5274,5. MODERN NEAR EAST: OTTOMAN EMPIRE AND SUCCESSOR STATES.** (4,4 cr)  
Stavrou  
5274: From 1792 to Congress of Berlin. 5275: From Congress to present. (GrC)
- 5276. INTELLECTUAL AND CULTURAL HISTORY OF MODERN GREECE.** (5 cr; prereq 5274; 5275 rec) Stavrou  
Literary and cultural contributions of modern Greece in national and European contexts. (GrC)
- 5281,2,3. INTELLECTUAL AND CULTURAL HISTORY OF MODERN EUROPE.** (3,3,3 cr; offered 1972-73 and alt yrs) Thayer  
5281: The 18th century and its background. 5282: Early 19th century. 5283: Late 19th and 20th centuries. (GrC)
- 5284,5,6. DIPLOMATIC HISTORY OF EUROPE IN THE 19TH AND 20TH CENTURIES.** (4,4,4 cr) Kieft  
5284: 1789 to 1871. 5285: 1871 to 1918. 5286: 1918 to present. (GrC)
- 5287. DIPLOMATIC HISTORY OF EUROPE FROM 1648 TO 1789.** (4 cr; when feasible) Kieft (GrC)
- 5291,2. ECONOMIC HISTORY OF EUROPE.** (4,4 cr) Rudolph  
Problems in the economic history and development of Europe; relationship of the economy to the social-political structure. (GrC)
- 5294,5. PROBLEMS IN THE ECONOMIC HISTORY OF RUSSIA AND EASTERN EUROPE.** (4,4 cr; offered 1973-74 and alt yrs) Rudolph  
5294: Pre-1917. 5295: 1917 to present. (GrC)
- 5317,8. AMERICAN HISTORY 1850-1900.** (4,4 cr) Loehr  
5317: 1850-1865. 5318: 1865-1900. (GrC)
- 5331,2. AMERICAN CONSTITUTIONAL HISTORY.** (4,4 cr; offered 1972-73 and alt yrs) Murphy  
5331: English and colonial background through the middle period. 5332: Law as social control in modern America. (GrC)
- 5334,5. HISTORY OF CIVIL LIBERTIES AND CIVIL RIGHTS IN THE UNITED STATES.** (4,4 cr; offered 1973-74 and alt yrs) Murphy  
5334: Liberty, equality and justice in pre-industrial American society. 5335: Civil liberties and civil rights conflicts in industrial America. (GrC)
- 5339. GREAT FIGURES IN AMERICAN JURISPRUDENCE.** (4 cr) Murphy  
Analysis of role of leading jurists and legal thinkers in shaping American public law. (GrC)
- 5341,2. AMERICAN ECONOMIC HISTORY.** (4,4 cr) Loehr  
5341: Colonial period to 1865. 5342: 1865 to present. (GrC)
- 5344,5. HISTORY OF AMERICAN LABOR.** (4,4 cr) Berman  
5344: Pre-industrial experience and early industrialization. 5345: Labor in the mature industrial society. (GrC)
- 5349. AMERICAN AGRICULTURAL HISTORY.** (3 cr; prereq #; offered when feasible) (GrC)
- 5354,5. AMERICAN URBAN HISTORY.** (4,4 cr) Modell  
5354: Pre-industrial America. 5355: Industrial America. (GrC)

- 5371.2. RECENT INTELLECTUAL HISTORY OF THE UNITED STATES.** (4,4 cr) Noble  
(GrC)
- 5379. PROBLEMS IN COLONIAL AMERICAN HISTORY.** (4 cr; prereq 3801 or 3802 or #)  
Carroll  
Specific problems in colonial history with emphasis upon intellectual and cultural history.  
(GrC)
- 5389. SOVIET RUSSIAN-AMERICAN RELATIONS, 1917 TO PRESENT.** (4 cr; offered  
when feasible) Brauer  
Russian-American relations since the Russian Revolution, emphasizing political, diplo-  
matic, economic, and military problems and American foreign policy. (GrC)
- 5391.2. HISTORY OF THE SOUTH.** (4,4 cr) McCrary  
**5391:** Slavery and the antebellum South, 1607-1861. **5392:** Reconstruction of Southern  
society, 1861-1914. (GrC)
- 5419: HISTORY OF ARGENTINA.** (4 cr) Wagner  
Political, social, and economic history of Argentina since independence. (GrC)
- 5420. TOPICS IN LATIN AMERICAN HISTORY.** (4 cr; prereq #) Schwartz, Wagner  
Detailed treatment of historical themes common to the entire Latin-American area. Course  
content changes from quarter to quarter. (GrC)
- 5421.2. HISTORY OF BRAZIL.** (4,4 cr) Schwartz  
**5421:** Survey of colonial Brazilian development, 1500-1808. **5422:** Modern Brazil, 1808  
to present. (GrC)
- 5424.5. HISTORY OF MEXICO.** (4,4 cr) Schwartz, Wagner  
**5424:** Pre-Colombian period through colonial era. **5425:** Development of the Mexican  
nation. (GrC)
- 5426. HISTORY OF THE ANDEAN REPUBLICS.** (4 cr; offered 1972-73 and alt yrs) Wagner  
Comparative historical development of Bolivia, Colombia, Ecuador and Peru since inde-  
pendence. (GrC)
- 5429. SLAVERY IN THE AMERICAS.** (4 cr; §Sci 3507) Isaacman, Schwartz, Spear  
Comparative analysis of slavery in the Americas from the African origins of the trade to  
emancipation. (GrC)
- 5431. ISLAM AND NATIONALISM: WEST AFRICA AND SOUTH ASIA.** (4 cr; prereq prev  
course work relevant to Islam, West Africa or South Asia or #) Kaba, Lelyveld  
Comparative study of religious and political ideologies and movements in two regions of  
Islamic civilization during European colonial domination. (GrC)
- 5432.3. PROBLEMS IN CONTEMPORARY AFRICA.** (4,4 cr; offered 1972-73) Kaba  
**5432:** Introduction and spread of Islam in Africa. **5433:** Process of Islamization and polit-  
ical influence of Islamic ideology. (GrC)
- 5434.5. SPREAD OF ISLAM.** (4,4 cr) Kaba  
**5434:** The introduction and spread of Islam into Africa. **5435:** The process and agents of  
Islamization and the rise of the Islamic ideology for political purposes. (GrC)
- 5444.5. PROBLEMS IN CENTRAL AND SOUTHERN AFRICAN HISTORY.** (4,4 cr; open also  
to sophomores who have passed 1431.2,3) Isaacman (GrC)
- 5447. PROBLEMS IN EAST AFRICA.** (4 cr; offered 1973-74 and alt yrs) Isaacman  
Advanced course in African history focusing on specific themes and methodological prob-  
lems. (GrC)
- 5454.5. MUSLIMS IN MODERN INDIAN HISTORY.** (4,4 cr; offered 1972-73 and alt yrs)  
Lelyveld  
**5454:** Decline of the Mughals and establishment of British rule, 1757-1857. **5455:** Cul-  
tural and social change; political mobilization of Indian Muslims, 1857-1947. (GrC)
- 5458.9. MODERN SOUTH ASIA: SOCIAL HISTORY.** (4,4 cr; offered 1973-74) Kopf, Lelyveld  
Selected problems in the social history of South Asia. (GrC)
- 5461.2. CHINESE HISTORY TO A.D. 1368.** (4,4 cr) Taylor  
**5461:** To 211 B.C. **5462:** To 1368. (GrC)
- 5464. EARLY MODERN CHINA: THE MING AND EARLY CH'ING, 1350-1750.** (4 cr; of-  
fered 1972-73 and alt yrs) Farmer  
Political and social institutions in early Ming; 16th and 17th century social and cultural  
trends; Manchu conquest and early Western contacts. (GrC)
- 5465. CHINA'S RESPONSE TO THE WEST, 1750-1911.** (4 cr; offered 1972-73 and alt yrs)  
Farmer  
Decline of imperial system; Western impact; cultural crisis and revolution. (GrC)

## Course Offerings and Major Sequences

- 5467. REPUBLICAN CHINA: THE NATIONALIST REVOLUTION, 1900 TO PRESENT.** (4 cr; offered 1973-74 and alt yrs) Farmer  
Development of Chinese nationalism; interventions of Soviet Union, Japan and the United States, failure of Kuomintang. (GrC)
- 5468. PEOPLE'S REPUBLIC OF CHINA: THE COMMUNIST REVOLUTION, 1900 TO PRESENT.** (4 cr; offered 1973-74 and alt yrs) Farmer  
Introduction of Marxism to China; rise of Communist Party; restructuring Chinese society. (GrC)
- 5471. 20TH-CENTURY JAPAN.** (5 cr; §3471) Marshall  
The Modern Transformation, 1870s to 1970s. (GrC)
- 5472. EARLY MODERN JAPAN.** (5 cr; §3472) Marshall  
Tradition and change in Tokugawa society. (GrC)
- 5481,2,3. HISTORY OF SOUTH ASIA.** (4,4,4 cr; §3481,2,3) Kopf, Lelyveld  
Introduction to the history of South Asia from social, cultural, political, and economic perspectives. (GrC)
- 5489. HISTORY OF HINDUSTANI CULTURE.** (4 cr; §Indc 5533; offered Spring 1973 and when feasible) Lelyveld, Silver (GrC)

### Proseminars

- 5501f/2w/3†s. HISTORY OF INDIA.** (4/4/4† cr) Kopf (GrC)
- 5511f,2†w. CHINESE HISTORY TO A.D. 1368.** (3,3† cr) Taylor (GrC)
- 5514,5. MODERN CHINA.** (4,4 cr; prereq #)  
5514: China in the Ming and early Ch'ing, 1350-1750. 5515: Late Ch'ing, 1750-1911. (GrC)
- 5517,8. 20TH-CENTURY CHINESE HISTORY.** (3-5 cr per qtr; offered 1972 and 1973 and alt yrs; prereq #) Farmer  
5517: The Republic. 5518: The People's Republic. (GrC)
- 5519. 20TH-CENTURY CHINESE HISTORY.** (5 cr; prereq #) (GrC)
- 5522. CURRENT INTERPRETATIONS AND TOPICS IN JAPANESE HISTORY.** (5 cr; prereq #) (GrC)
- 5534s. SOUTHEAST ASIAN HISTORY.** (3 cr; offered when feasible) (GrC)
- 5547. HISTORIOGRAPHY OF MODERN SOUTH ASIA.** (5 cr)  
Critical survey of the historical literature of modern South Asia; an attempt to define the major problem facing students in the field. (GrC)
- 5549s. EAST AND SOUTH ASIA.** (3 cr; same as Anth 5971, Geog 5299, Ortl 5551, and Pol 5486; integrating course for students majoring in East and South Asia area studies program) Interdepartmental staff (GrC)
- 5551f/2w/3†s. ANCIENT HISTORY.** (3/3/3† cr) Jones (GrC)
- 5561f/2w/3†s. ANCIENT HISTORY.** (3/3/3† cr) Kelly (GrC)
- 5601f,2w,3s. EARLY MEDIEVAL WESTERN EUROPE.** (3,3,3 cr; prereq 1101 or 3051 or equiv, #, reading knowledge of French or German)  
Bachrach (GrC)
- 5611f/2w/3s. MEDIEVAL HISTORY.** (3/3/3† cr; prereq 1 yr of medieval history or equiv, #, reading knowledge of French or German) (GrC)
- 5621f/2w/3†s. RENAISSANCE AND REFORMATION HISTORY.** (3/3/3† cr) Tracy
- 5634w,5s. MEDIEVAL RUSSIAN HISTORY.** (3,3 cr; prereq 5134,5,6 or # and reading knowledge of Russian, French or German) Noonan (GrC)
- 5641f/2w/3†s. MEDIEVAL ENGLISH HISTORY.** (3/3/3† cr; prereq 1 yr of medieval history or equiv, #, reading knowledge of French or German. (GrC)
- 5651f/2w/3†s. ENGLISH HISTORY: TUDOR AND STUART PERIODS.** (3/3/3† cr) Lehmborg (GrC)
- 5671f/2w/3†s. MODERN ENGLAND: 1783 TO PRESENT.** (3/3/3† cr; offered 1973-74 and alt yrs) Altholz (GrC)
- 5711f/2w/3†s. FRENCH REVOLUTION AND NAPOLEON.** (3/3/3† cr) Bamford (GrC)
- 5721f/2w/3†s. RECENT EUROPEAN HISTORY.** (3/3/3† cr; prereq lect course in 20th-century Europe or World War II or #) (GrC)

- 5731f/2w/3†s. 17TH-CENTURY FRANCE. (3/3/3† cr; prereq reading knowledge of French) Bamford (GrC)
- 5741f,2w. GERMANY AND CENTRAL EUROPE IN 18TH CENTURY. (3,3 cr) Wright (GrC)
- 5744f/5w/6†s. 19TH-CENTURY GERMANY. (3/3/3† cr; prereq reading knowledge of German, §) Pflanze (GrC)
- 5761f/2w/3†s. RUSSIAN HISTORY. (3/3/3† cr; prereq 5136 and reading knowledge of Russian, German, or French or §) Stavrou (GrC)
- 5771f/2w/3†s. SCANDINAVIAN HISTORY. (3/3/3† cr) (GrC)
5774. READINGS IN THE MODERN NEAR EAST: THE OTTOMAN EMPIRE AND THE SUCCESSOR STATES. (3 cr; prereq 5274,5) (GrC)
- 5777f/8w/9†s. HISTORY OF THE HAPSBURG MONARCHY. (3/3/3† cr; prereq §) Wright (GrC)
- 5781/2†. MODERN EUROPEAN INTELLECTUAL HISTORY. (3/3† cr) Thayer (GrC)
- 5784w,5†s. DIPLOMATIC HISTORY OF 19TH- AND 20TH-CENTURY EUROPE. (3,3† cr) Kieft  
5784: From 1815 to 1914. 5785: From 1914 to present. (GrC)
- 5787/8†. RELIGIOUS HISTORY OF MODERN EUROPE. (3/3† cr; offered 1972-73 and alt yrs) Altholz (GrC)
- 5791f/2w/3†s. EUROPEAN ECONOMIC HISTORY SINCE 1500. (3/3/3† cr) Rudolph (GrC)
- 5794f/5w/6†s. HISTORY OF EUROPEAN COMMERCE. (3/3/3† cr) Bamford (GrC)
- 5801f/2†w. 17TH- AND 18TH-CENTURY AMERICAN HISTORY. (4/4† cr) Carroll (GrC)
- 5804f/5w/6†s. ERA OF AMERICAN REVOLUTION. (3/3/3† cr) Howe (GrC)
5811. 19TH-CENTURY AMERICAN HISTORY. (4 cr) McCrary (GrC)
- 5817f/8w/9†s. AMERICAN HISTORY, 1850-1900. (3/3/3† cr; offered 1973-74 and alt yrs) Loehr (GrC)
- 5821f/2†w. AMERICAN HISTORY IN 20TH-CENTURY. (4/4† cr; prereq §) Chambers (GrC)
- 5831f,2w,3s. AMERICAN POLITICAL AND CONSTITUTIONAL HISTORY. (3,3,3 cr; prereq 5331,2 or §) Murphy (GrC)
- 5841f/2w/3†s. AMERICAN ECONOMIC HISTORY. (3/3/3† cr; offered 1972-73 and alt yrs) Loehr (GrC)
- 5844f/5w/6†s. AMERICAN LABOR HISTORY. (3/3/3† cr; offered 1973-74 and alt yrs) Berman (GrC)
- 5847,8. AMERICAN BUSINESS HISTORY. (4,4 cr; prereq §) Green (GrC)
- 5854/5†. AMERICAN URBAN HISTORY. (3/3† cr) (GrC)
- 5861/2†. HISTORY OF AMERICAN IMMIGRATION. (3/3† cr) Vecoli (GrC)
- 5864w/5†s. AFRO-AMERICAN HISTORY. (4/4† cr; prereq § for 5864, 5864 for 5865) Spear (GrC)
- 5871f/2†w. INTELLECTUAL HISTORY OF UNITED STATES IN 19TH, 20TH CENTURIES. (4/4† cr) Noble (GrC)
- 5881,2. AMERICAN FOREIGN RELATIONS. (4,4 cr; prereq §) Brauer (GrC)
- 5897/8/9†. LITERATURE OF AMERICAN HISTORY. (3/3/3† cr; prereq §; required of grad students planning Ph.D. programs in American history)  
Problems of historiography and survey of major interpretations in American history. (GrC)
- 5901f/2w/3†s. LATIN AMERICAN HISTORY. (5/5/5† cr; prereq reading knowledge of Spanish; offered when feasible) Schwartz, Wagner (GrC)
5930. TOPICS IN COMPARATIVE THIRD WORLD HISTORY. (5 cr)  
Comparative analysis of recurring themes in Third World History. (GrC)
- 5931s. HISTORY OF AFRICA. (3 cr; prereq 5431, 5432 or §) (GrC)
5932. AFRICAN HISTORIOGRAPHY. (4 cr; prereq § for Upper Division students) Kaba (GrC)
5939. METHODOLOGY FOR THE STUDY OF AFRICAN HISTORY. (3 cr) (GrC)
- 5941,2,3. AFRICAN HISTORY. (3,3,3 cr; prereq §)  
Research training centering on West and North Africa. (GrC)

## Course Offerings and Major Sequences

- 5944,5,6. AFRICAN HISTORY.** (3,3,3 cr; prereq #) Isaacman  
Research training centering on East, Central and South Africa. (GrC)
- 5951f,2fs. HISTORY OF HISTORICAL THOUGHT.** (3,3† cr); Pflanze (GrC)
- 5954,5. INTERDISCIPLINARY APPROACHES TO HISTORY.** (3,3 cr; prereq #) (GrC)
- 5957. SOCIAL HISTORY OF ANGLO-AMERICAN LAW.** (4 cr) Samaha  
Course treats law as a cultural and social institution, not as a mere means to social control. It deals with law in action as opposed to law in the books and will relate law and institutions in the legal order to social, cultural, and economic developments. (GrC)
- 5961w/2fs. EXPANSION OF EUROPE.** (3/3† cr) (GrC)
- 5964s. ATLANTIC COMMUNITY: EARLY MODERN ORIGINS.** (3 cr; offered when feasible) (GrC)
- 5970. DIRECTED STUDIES.** (1-15 cr; prereq #; qualified sr and grad students may register with # for work on tutorial basis) (GrC)
- 5990. DIRECTED RESEARCH.** (1-15 cr; prereq #; qualified sr and grad students may register with # for work on tutorial basis) (GrC)

## HISTORY OF SCIENCE

Institute of Technology

These courses, open to all CLA students, require no technical or scientific preparation. They may be entered any quarter.

- 1811. HISTORY OF ANCIENT AND MEDIEVAL SCIENCE.** (4 cr)  
Physics and biological sciences in antiquity; their transmission to and development in the Middle Ages; Egyptian and Babylonian mathematics and astronomy; the systems of Aristotle, Galen, and Ptolemy; medieval mechanics and cosmology; alchemy and astrology.
- 1812. HISTORY OF 16TH- AND 18TH-CENTURY SCIENCE.** (4 cr)  
The "scientific revolution." Copernican revolution; mechanics (Galileo and Newton); anatomy and physiology (Vesalius and Harvey); chemistry (Lavoisier). The relations of the "new" science to the "new" philosophy and to the emerging Western industrial society.
- 1813. HISTORY OF 19TH- AND 20TH-CENTURY SCIENCE.** (4 cr)  
Development of physics, biology, chemistry, and geology. Darwin and evolution; genetics; electricity; atomic physics. Philosophical and social issues: social Darwinism and the development of atomic weapons.

## HOME ECONOMICS (HE)

College of Home Economics

Home economics courses listed in this *Bulletin* are open to CLA students; to enter others, permission of the CLA Scholastic Committee and the chairman of the subject area in the College of Home Economics is necessary. Many home economics courses are controlled in size; tally cards may be obtained at 130 Coffey Hall or the CLA Class Reservations office, 12 Johnston Hall.

Suggested home economics concentrations are those in interior design (1552, 1553; 5551, 5554 or 5512; 5514 or 5552; 5568) or in design (1521, 1523, 1541, 5531, 5517). Individual courses recommended are 1531, 1533, 3563, 5531, 5533, 5563.

### Design (Dsgn)

**Staff:** Gertrude A. Esteros, *chairman*, 315 McNeal; Richard A. Abell, Homa Amir-Fazli, Ann Erickson, Eugene Larkin, Ted Lentz, Juliette Myren, Virginia Nagle, Joseph Ordos, Robert Shank, Judith Tarapchak

### LOWER DIVISION COURSES

- 1501. INTRODUCTION TO DESIGN.** (3 cr)  
Awareness of design in the near environment. (GrD)
- 1521. COLOR.** (3 cr)  
Color theory and color interaction. (GrD)

- 1523. DRAWING I.** (4 cr)  
Development of basic skills in drawing.
- 1531. TEXTILE DESIGN I.** (3 cr)  
Sources and resources of textile media. Individual designing in textile construction techniques and/or applied media. Studio problems.
- 1533. JEWELRY DESIGN I.** (4 cr)  
Contemporary jewelry making processes and materials.
- 1541. COSTUME DESIGN I.** (3 cr; prereq 1521, 1523 or 1525 or #)  
Problems in color, texture, design for individual. Introduction to sketching. Folk and regional costume. (GrD)
- 1552. INTRODUCTION TO HOUSING AND INTERIOR DESIGN.** (3 cr; §1551; prereq soph)  
Problems involved in choosing a location for and in planning or selecting a dwelling unit and its furnishings. Emphasis on design and appraisal of individual family needs.
- 1553. INTERIOR DESIGN I.** (3 cr; prereq 1525, 1552, AgEn 1010 or equiv)  
Design for living space needs; design quality of furnishing elements. Selection and co-ordination of fabrics, furniture, accessories.

#### UPPER DIVISION COURSES

- 3563. ART AND ENVIRONMENT.** (3 cr; prereq soph)  
Art and design in housing; an individual's role and responsibility; contemporary and historic examples of alternative approaches to design of physical home environment.
- 5505. ART HISTORY.** (4 cr)  
Art from Egyptian period to present. Painting, sculpture, and architecture of the past studied for influences on contemporary period. Field trips.
- 5512. HISTORY OF EUROPEAN FURNITURE AND INTERIORS.** (3-4 cr; prereq 5505 or equiv)  
Furniture and interiors from ancient times through the 19th century.
- 5514. HISTORY OF AMERICAN FURNITURE AND INTERIORS.** (3-4 cr; prereq 5505 or equiv, 5512)  
Historic styles of American interiors and furnishings from the 17th century to the 20th century.
- 5531. TEXTILE DESIGN III.** (3-4 cr; prereq demonstrated proficiency, #)  
Designing in one selected textile technique. Studio problems.
- 5533. JEWELRY DESIGN III.** (4 cr; prereq 3533)  
Advanced processes and design in jewelry construction.
- 5541. COSTUME DESIGN III.** (3 cr; prereq 1604, 3541 or #)  
Advanced problems in draping and sketching. Pencil, crayon, and water color techniques; studies and reports on selected topics.
- 5565. HOMES OF THE WORLD.** (3-4 cr; prereq 1551 or 1553 or 1563 or equiv)  
Home design in selected regions of the world.

**Family Social Science (FSoS)**—See page 99

#### Food Science and Nutrition

##### Foods (HE)

Staff: Joan Gordon, *chairman*, 253 McNeal; Eugenia Davis, Julie Jones, Esther Trammell

#### LOWER DIVISION COURSE

- 1301. FUNDAMENTAL PRINCIPLES OF FOOD PREPARATION.** (5 cr; prereq 2 qtr of in-organ chem, organ chem rec)  
Application of fundamental science principles to food cookery and preservation procedures. An experimental approach to the preparation and evaluation of food quality.

#### UPPER DIVISION COURSE

- 3302. ADVANCED FOOD PREPARATION PRINCIPLES.** (3 cr; prereq HE 1301, BioC 1301)  
Continuation of 1301. Food science principles that underlie cookery processes and food preparation.

##### Nutrition (HE)

Staff: Lura Morse, *acting chairman*, 231 McNeal; Marguerita Billings, Margaret Doyle, Louise Mullan, Robert Olson, Patricia Swan

## Course Offerings and Major Sequences

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### LOWER DIVISION COURSE

#### 1381. PRINCIPLES OF NUTRITION. (3 cr; §GC 1735)

Quantitative and qualitative aspects of nutritional requirements. Interrelationships between physiological processes and dietary requirements. Problems of food faddism.

### UPPER DIVISION COURSE

#### 3381. CURRENT PROBLEMS IN NUTRITION. (3 cr; §5361; prereq 1381, physiology or human biology)

Major nutritional problems facing the world today. Consideration of protein-calorie malnutrition, obesity, nutritional status of adolescents, and special nutritional problems of infants and aged.

## Textiles and Clothing

Staff: Margaret P. Grindereng, *chairman*, 323 McNeal; Sarah Cox, Ruth Franzen, Barbara Nemecek, Gloria Williams

### LOWER DIVISION COURSE

#### 1661. ESTHETIC PRINCIPLES IN CLOTHING SELECTION. (2 cr; not open to srs)

Perception of design elements and art principles in clothing in relation to individual physical color and other differences. Experience in creating illusions in relation to clothing and appearance.

### UPPER DIVISION COURSE

#### 3621. TEXTILES. (4 cr; prereq 3rd qtr soph, Chem 1003, NSci 1002 or 1005 or §)

Basic physical, chemical, and biological characteristics of fiber, yarn, and fabric structures; interrelationship with choice, maintenance, and performance of consumer textiles.

## HUMANITIES (Hum)

Staff: Paul D'Andrea, *director*, 310 Ford Hall; Gary L. Alley, Robert J. Ames, George H. Bauer, Daniel V. Bryan, Jackson Hershbell, George Klinger, Joseph J. Kwiat, Albert Milgrom, Mischa Penn, Robert Tapp, Gary C. Thomas, James Tracy, Kenneth Zimmerman. *Office*: 310 Ford Hall.

The subject of the humanities is man; his values, aspirations, and limitations. The subject is approached through carefully integrated study of literature, philosophy, history and the arts. Though humanities is a distinct field of study, it avails itself of the material of the social sciences, which deal with relations between men; and of the natural sciences to the extent that they shed light on human nature. The works studied in courses are selected for their capacity to express man's perennial effort to identify the nature of the human condition.

**Major Sequence for B.A.:** This is an interdepartmental major. Requirements include courses in the Humanities Program along with several groups of electives in other departments of the College. 1. *Required background courses*—25 Hum cr, 20 of them from a combination of European Heritage and Modern World courses (no more than 10 may be taken in Lower Division, at least 5 must be European Heritage, the other 15 European Heritage or Modern World; the remaining 5 may be from any Upper Division courses except the proseminars); 9 cr in Humanities proseminars. 2. *45 Upper Division cr* distributed as follows—18 to 21 cr chosen from among anthropology, geography, history, linguistics, philosophy, political science, psychology, sociology; 24 to 27 cr in literature (English or foreign, ancient or modern), history of art, history of music, history of theatre, studio arts, studio music, theatre or oral interpretation.

Courses labeled "Humanities" are listed below. Other courses acceptable in the program are listed under departments mentioned in the statement above.

**LOWER DIVISION COURSES**

- 1001f,w,s. HUMANITIES IN MODERN WORLD I.** (5 cr; §3001, Rhet 1301)  
Old Regime, French Revolution and Napoleonic era, neoclassicism, and romanticism; Pope, Voltaire, Rousseau, Burke, Goethe, and Tolstoy. (GrD)
- 1002f,w,s. HUMANITIES IN MODERN WORLD II.** (5 cr; §3002, Rhet 1302; prereq 1001)  
Industrial Revolution, liberalism and socialism, individualism; Smith, Malthus, Carlyle, Marx, Ibsen, Mill, Zola, Flaubert, Tolstoy, and Dostoevski. (GrC,D)
- 1003f,w,s. HUMANITIES IN MODERN WORLD III.** (5 cr; §3003, Rhet 1303; prereq 1002)  
Impact of science and theory of evolution; religion and morals in changing world; Darwin and evolutionists, Nietzsche, Kierkegaard, Chekhov, Turgenev, Mann. (GrC,D)
- 1004f,w,s. HUMANITIES IN MODERN WORLD IV.** (5 cr; §3004, Rhet 3381; prereq 1001 or 1002 or 1003)  
Humanities between the two world wars. Communism, fascism, Freudianism, modern art and philosophy, existentialism. Lenin, Freud, Joyce, T. S. Eliot, Kafka, and others. (GrC,D)
- 1001Hf,2Hw,3Hs,4Hf,w,s. HONORS COURSE: HUMANITIES IN MODERN WORLD.** (5,5,5,5 cr, § corresponding qtr of 1001,2,3,4; § Rhet 1301,2,3, 3381; prereq # or Δ; limited to 15 students of high ability as demonstrated in other humanities classes or in GPA or in high school achievement) (GrC,D)
- 1009. SCIENCE AND HUMANITIES.** (5 cr)  
The warfare between the scientific and humanistic cultures, through consideration of documents from Goethe and Newton to Snow, Leavis, A. Huxley, J. Bronowski, and others. Humanistic scholarship and methodological character of sciences, creativity in arts and sciences, science and human values. (GrC,D)
- 1011f,2w,3s. EUROPEAN HERITAGE.** (5,5,5 cr; §3011, §Rhet 3321 for 1011; §3012, §Rhet 3322 for 1012; §3013, §Rhet 3323 for 1013)  
Masterpieces of European civilization from Homer to Cervantes. Literature, philosophy, theology, arts of Greece, Rome, Middle Ages, and Renaissance. Ideals and forces of continuing importance to modern world. 1011: Greek heritage. 1012: Roman and medieval heritage. 1013: Renaissance and reformation. (GrC,D)

**UPPER DIVISION COURSES**

- 3001f,w,2w,s,3f,s. HUMANITIES IN MODERN WORLD.** (5,5,5 cr; § corresponding qtr of 1001,2,3; Rhet 1301,2,3; prereq jr or sr)  
Similar to 1001,2,3; more reading, papers. (GrC,D)
- 3004f,w,s. HUMANITIES IN MODERN WORLD.** (5 cr; §1004, Rhet 3381; prereq jr or sr)  
Similar to 1004; more reading, papers. (GrC,D)
- 3004H. HONORS COURSE: HUMANITIES IN MODERN WORLD.** (5 cr; §1004, Rhet 3381; limited to 20 students of high ability as demonstrated by grades in humanities courses or GPA; prereq # or Δ) (GrC,D)
- 3005. HUMANITIES IN MODERN WORLD V.** (5 cr; prereq 1004 or 3004)  
Intellectual climate of Western world since World War II. Existentialism and "the absurd"; alienation, irrationalism; anti-hero in literature; new theology; Zen. (GrC,D)
- 3006. THE CREATIVE IMAGINATION IN THE 20TH CENTURY.** (5 cr)  
Aspects of creativity in the 20th century through study of major works of painters, sculptors, musicians, and writers such as Marcel Duchamp, Pablo Picasso, John Cage, and André Gide. The choice of artists will vary. (GrC,D)
- 3011,2,3. EUROPEAN HERITAGE.** (5,5,5 cr; § corresponding qtr of 1011,2,3; Rhet 3321,2,3; prereq jr or sr)  
Similar to 1011,2,3; more reading, papers. (GrC,D)
- 3038. THE POLITICAL NOVEL.** (5 cr; prereq jr, sr, or #) Zimmerman  
Selected novels from Stendhal to the present; critical study of work by major authors; consideration of theories of human nature; relation of the individual and society; philosophy of history and political action; experience and ideology; the political novel as a genre. (GrC,D)
- 3044. HONORS THESIS.** (3 cr; prereq sr, candidate for magna or summa honors in humanities, Δ) (GrD)
- 3045. RACIAL THOUGHT: A CONCEPTUAL SURVEY, 19TH AND 20TH CENTURIES.** (5 cr; prereq jr, sr, or #) Penn  
"Racial" thought as an assemblage of historically and conceptually diverse philosophic and cultural ideologies; divergent "racial" outlooks against the background of the

## Course Offerings and Major Sequences

particular philosophic, scientific, and religious aspirations of the periods under consideration. Gobineau, Disraeli, Renan, Taine, Chamberlain, Putnam, Benedict, Montague, etc. (GrC,D)

- 3049. SCIENCE AND HUMANITIES.** (5 cr; prereq jr, sr, or ♯) Penn  
Warfare between scientific and humanistic cultures, through consideration of decisive documents from Ficino and Vives to recent work of Polanyi, Koestler, Bronowski, and A. Huxley. (GrC,D)
- 3101f,2w,3s. THE MEANING OF HUMANITY: SOCIETY AND TECHNOLOGY: COMMUNITY.** (4,4,4 cr) Roshwald  
**3101:** The problem of the essence of man and the factors determining his course, explored through a variety of theories such as those of Marx, Freud, Plato. **3102:** The impact of technology on human conditions and the attitude of man to technology, examined philosophically and sociologically. **3103:** The meaning of man as a social being and in the variety of groups in which human beings participate. (GrC,D)
- 3104f,5w,6s. LIBERTY: A CONCEPTUAL AND INSTITUTIONAL ANALYSIS.** (4,4,4 cr; prereq 3104 for 3105, 3105 for 3106 or ♯) Roshwald  
**3104:** The meaning of liberty, in theory and practice. Individual and collective liberty. Liberty and civilization. Conflict among different values of liberty. **3105:** Liberty and the comparative study of civilizations. How different civilizations deal with varieties of liberties. **3106:** Colloquium discussing the implications of 3104 and 3105. (GrC,D)
- 3403/4. MODERN ISRAEL.** (4/4 cr; prereq 3403 for 3404) Roshwald  
Study and analysis of modern Israel, its historical origins, and its political and social institutions. 3403 is a proseminar. (GrC,D)
- 3970. DIRECTED STUDIES.** (Cr ar; prereq ♯)  
Course designed to permit the individual student to pursue his interests in special reading and/or study. (GrC,D)
- 5030f,w,s. HUMANITIES PROSEMINAR.** (3,3,3 cr; prereq sr)  
Integrated review of humanities materials: arts, sciences, and civilization. (GrC,D)
- 5030Hf,w,s. HONORS COURSE: HUMANITIES PROSEMINAR.** (3,3,3 cr; for honors candidates in humanities and others with overall grade average of B or better; prereq sr and ♯)  
Topics same as for 5030. (GrD)

## INDIC

See South Asian Languages

## INTERDEPARTMENTAL MAJORS

These majors, which are individually designed, are described on page 14. Further information may be obtained from the Office for Interdepartmental Majors and Programs, 106 Johnston Hall.

## INTERDEPARTMENTAL STUDIES (ID)

The interdepartmental directed study course provides opportunity for individual students to plan and carry out study and research of topics that do not fall within the scope of an existing department or program. The course is appropriate for interdepartmental majors, but is available to all students in the College.

A student in the course works with an adviser in the Office for Special Learning Opportunities (OSLO), 105 Johnston Hall, and with two or more instructors. The student's outline for a course, which he presents to OSLO for approval, should show his objectives, the subject matter he is to study, the study methods he proposes, the means of evaluation, and the consent of instructors involved. Further information is available at the OSLO office.

### UPPER DIVISION COURSE

- 3970. DIRECTED STUDIES.** (3-15 cr; prereq ♯ of All-College Curriculum Review Committee, represented by OSLO)  
Individual readings and research on topics of cross-disciplinary nature.

## INTERNATIONAL RELATIONS (IntR)

**Staff:** Davis B. Bobrow, *director*, 1246B Social Sciences; Roger W. Benjamin, Richard N. Blue, Kinley J. Brauer, Donald R. Browne, Roy E. Carter, Jr., John S. Chipman, Edward Coen, Harold C. Deutsch, Rodolfo O. Floripe, Robert T. Holt, P. Terrence Hopmann, William S. Howell, Robert E. Kennedy, David O. Kieft, David Kopf, Robert Lindsay, Charles H. McLaughlin, John K. Munholland, Ellen B. Pirro, Robert E. Riggs, William C. Rogers, Enid C. B. Schoettle, Joseph E. Schwartzberg, Harlan M. Smith, Gordon I. Swanson

International relations is concerned with all forms of human activity that connect or cross the boundaries between nations and/or cultural areas. The program, multidisciplinary in nature, is designed to acquaint the student with a variety of methodological and substantive approaches to the field. It includes courses from the social sciences and humanities and, in some areas of concentration, may include courses from professional schools and colleges as well. The program office is in the Harold Scott Quigley Center of International Studies.

**Major Sequence for B.A.:** 1. *Required background courses*—No courses are formally required as background for the major, but Pol 1025 is recommended as a general introduction. The major responsibility in Lower Division for prospective majors is completion of courses prerequisite to those they may wish to take at Upper Division level. This will reduce the likelihood of UD scheduling conflicts, which are always a hazard given the number of requirements for the major program. Careful planning to complete all definite and probable prerequisites should start early, preferably upon entrance into the University. Students should first consult the bulletin *Programs in International Relations*, available at the Quigley Center of International Studies. Additional guidance may be obtained from major advisers or from the Quigley Center. 2. *Major requirements*—In consultation with major advisers, students will select Upper Division courses totalling at least 48 credits in one of the three curricula approved for the major program. These are: General International Relations; International Development; and International and Cross-Cultural Communication. Each curriculum brings together a variety of substantive and analytic courses, as well as opportunity to take one or more of the program's integrating proseminars. The curricula include some required courses, but offer students the opportunity to choose electives appropriate to their interests and career objectives so long as they support the overall program.

In addition to the 48 or more credits required for the major program, students are required to obtain something above minimal proficiency in one modern foreign language. For this reason, students without a demonstrable proficiency are required to complete the equivalent of the basic Upper Division conversation and/or composition courses in a foreign language of their choice. Course and credit requirements differ for various languages.

A detailed statement of all requirements and courses for each of the curricula appears in the bulletin *Programs in International Relations*.

Graduate training in international relations as a separate field is no longer available. Interested students are referred to the graduate program in public affairs with specialization in international affairs.

### UPPER DIVISION COURSES

**3091. HONORS COURSE: SUPERVISED RESEARCH PAPER.** (3 cr; prereq sr honors candidate in international relations,  $\Delta$ )

**5901. APPROACHES TO INTERNATIONAL RELATIONS.** (4 cr; prereq major in international relations)

An integrating proseminar designed to synthesize the approaches of different academic disciplines to the study of major problems of international relations. Topical focus will vary quarterly.

## ITALIAN

See French and Italian

## JAPANESE

See East Asian Languages

## JOURNALISM AND MASS COMMUNICATION (Jour)

Staff: Robert L. Jones, *director*, 111 Murphy Hall; George S. Hage, *head, news-editorial sequence*; Willard L. Thompson, *head, advertising sequence*; Irving E. Fang, *head, broadcast journalism sequence*; R. Smith Schuneman, *head, photographic communication sequence*; J. C. Sim, *placement director*; Walter H. Brovald, Roy E. Carter, Jr., Edwin Emery, J. Edward Gerald, Donald M. Gillmor, Virginia A. Harris, Robert Lindsay, J. N. Peterman, Phillip J. Tichenor, Daniel B. Wackman, Jean W. Ward, Harold W. Wilson

The work of the School of Journalism and Mass Communication concerns the theories and practices of mass communication media, historical and contemporary, and the development of skills and techniques requisite for successful practice of written, oral, and visual mass communication. Preparation for occupation in these fields rests on a broad liberal education, a knowledge of the social and professional responsibilities of the journalist, and requisite competence in journalistic procedures. A journalism major must meet all CLA general education requirements and those of a professional program planned in conference with his adviser. About three-fourths of his university work is in social science and humanities courses and other areas of liberal education, and the remainder in journalism courses (many of which have liberal education emphases).

No student whose average is lower than C will be permitted to enroll in any journalism course, in either Lower or Upper Division.

The School offers degree programs at three levels: B.A. programs in four sequences—news-editorial, advertising, broadcast journalism, photographic communication (specializations within these areas are available); M.A. research and professional graduate programs; Ph.D. programs in mass communication.

**Major Sequences for B.A.:** 1. *Required background courses*—All prospective majors must take 1001, 1005; and at least 5 cr each in American government and politics, American history (any level), and principles of economics. For *news-editorial sequence*: Jour 1101, 1701 or 3776, Comp 1027. For *advertising sequence*: Jour 1201, Comp 1027, Psy 1001 or equivalent. For *broadcast journalism sequence*: Jour 1101, 1701 or 3776, Spch 1102, 1106 or 1101. For *photographic communication sequence*: Jour 1101, 1301, 1701 or 3776. It is expected that prejournalism students have developed, or will develop as they begin journalism courses, skill in typewriting. 2. *Major requirements*—Basic core requirements considered essential for professional preparation mark all B.A. programs; most are met in Upper Division. No more than 48 cr in journalism may count toward a B.A.

Coordination of B.A. with prospective M.A. work may be achieved through programs planned carefully with advisers in junior year. Such a program provides expanded specialized preparation in mass communication and appropriate background, over 3 years. The School urges qualified students to consider this plan, which may involve double or interdepartmental majors.

*News-Editorial B.A. Requirements*—3121, 3155, 5131 or 5133, 5501, 5601; one writing-emphasis course from 5141, 5143, 5144, 5171, 3173; 8 additional UD jour

cr to a minimum of 32. Students of superior scholarship may substitute 4 "outside" additional cr with adviser approval. Other modifications of sequence requirements may be approved by the adviser.

This sequence seeks to prepare students for daily and weekly newspaper reporting, editing, editorial, and interpretive writing; editorial direction and administration; press association work; critical writing, science and technical writing; magazine writing and editing; industrial journalism; graphic arts design; newspaper management, circulation, promotion; public relations, public opinion analysis; mass communications research; journalism teaching.

**Advertising B.A. Requirements**—3231, 3241, 5251, 5501, 5261, 5274; Mktg 3000; for advertising management emphasis, 5263 and 4 additional UD cr; for creative emphasis, 5272 and 4 additional UD cr (5221, 5233, 5252 recommended).

Advertising majors wishing special training in broadcasting, in marketing, or in commercial design should consult their advisers and the *School of Journalism Bulletin*. This sequence seeks to prepare students for print and broadcast advertising; advertising agency work; manufacturers' and retail advertising departments; copywriting and layout; broadcast production; typography and graphic design; media, market, and consumer analysis; public relations; media management; mass communications research; advertising teaching.

**Broadcast Journalism B.A. Requirements**—3121, 3401, 3451, 5402, 5442, 5611; either 5501, 5615, or 5721; 4 additional UD jour cr (3421, 3486, 5444 recommended); Spch 3201 and 3203 or 3204 (5202, 5231, 5232 also recommended).

This sequence seeks to prepare students for work as television and radio journalists; it emphasizes practice in news writing, filming, editing film and tape, reporting, interviewing, preparing newscasts, delivery. (The sequence contains the basic courses for work as newspaper and press association reporters).

**Photographic Communication B.A. Requirements**—5353 or 3401, 5376 or 5402, 3121 or 3486, 5615, 5501 or 5721; 8 additional UD jour cr to minimum of 30; recommended courses are Spch 3201, 3204, ArtS 3704, 3705 or 5701, 5702.

This sequence seeks to prepare students for professional careers in photography and film; newspaper, magazine, and free lance photojournalism; business, industry, and government photography; news and documentary film production.

**Professional Emphases in Specialized Fields**—Specialized programs reinforcing professional interests may be planned in consultation with advisers; it is often wise to plan such programs over a 5-year period. Full information about these specializations may be obtained from School advisers or from the *School of Journalism Bulletin*. The more common areas of specialization, though not the only ones, are:

Agricultural and home economics journalism (major sequences in collaboration with the Institute of Agriculture and the School of Home Economics may be planned); broadcast advertising; creative graphic arts; magazine journalism; media management; public relations.

Students expecting to specialize at the graduate level in advertising or mass communication research should elect Jour 5531 and work in statistics chosen in consultation with graduate advisers.

**General Education**—1003, 1011, and 3021 are planned especially for non-majors. 1001 and 1005 are open without prerequisites. Courses dealing primarily with social aspects of mass communication, open to nonprofessional students, are: 5171, 5251, 5252, 5501, 5531, 5549, 5601, 5603, 5606, 5611, 5615, 5721, 5777, 5801, 5825.

#### LOWER DIVISION COURSES

**1001f,w,s. INTRODUCTION TO MASS COMMUNICATIONS.** (2 cr; prereq 2nd qtr fr with B avg in English, 3rd qtr fr with C avg in English or soph) Brovald

Nature, functions, and responsibilities of communication media and agencies from point of view of professional journalist. News, opinion, entertainment, and persuasion functions; specialized communication; aspects of advertising. (GrA)

## Course Offerings and Major Sequences

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- 1002. COMMUNICATION IN THE MODERN WORLD: INTERPERSONAL COMMUNICATION.**  
See Spch 1102.
- 1003w. COMMUNICATION IN THE MODERN WORLD: MASS MEDIA.** (4 cr; §Spch 1103)  
Mass media and their social and cultural effects. Interaction between audience and media. Popular arts. Related areas of communication; advertising, public relations, propaganda. Future of mass media. (GrC)
- 1004. COMMUNICATION IN THE MODERN WORLD: THE PERFORMING ARTS.**  
See Spch 1104.
- 1005w,s. VISUAL COMMUNICATION.** (3 cr; prereq 3rd qtr fr) Schuneman  
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.
- 1011f,w,s. JOURNALISTIC TECHNIQUES FOR NONMAJORS.** (5 cr; prereq Engl comp or equiv, C avg) Sim  
General view of the printed mass media. Forms of news and feature stories; basics of mass communication law. Basics of publications editing, headlines, makeup for business publications. Lecture and laboratory. (GrA)
- 1101f,w,s. REPORTING.** (5 cr; prereq 3rd qtr fr with B avg in English or soph, 1001; type 35 words per min) Hage, Brovald, Fang, Sim  
Fact-gathering and journalistic writing. Problems in judgment and handling of news and news features.
- 1201f,w,s. PRINCIPLES OF ADVERTISING.** (4 cr; prereq soph, 1001, C avg and ¶Comp 1207; Jour 1001 or ¶1001 for Upper Division students) Thompson, Peterman  
Theory, principles, and functions of advertising; its role in economic, social, and market-  
ing structure. Newspapers, magazines, radio, television as advertising media.
- 1301f,w,s. BEGINNING PHOTOJOURNALISM.** (4 cr; prereq 1001, 1005, or ¶1005)  
Photography as creative means of communication. Fundamentals of photography; use of news cameras; basic darkroom processes. Lectures and laboratory.
- 1701f,w,s. MASS COMMUNICATIONS LAW.** (2 cr; prereq 1001, ¶1101) Gerald, Sim  
Origins and background of principles of press law. Libel and its defenses, penalties. Right of privacy; problems of fair trial. Law and self-regulation in advertising, in broadcast media. Copyright, obscenity statutes. (GrC)

### UPPER DIVISION COURSES

Upper Division courses are open to Lower Division students only by permission of the Scholastic Committee.

#### Surveys

- 3021s. MASS COMMUNICATIONS AND THE NEWS.** (4 cr; not open to jour majors) Fang, Sim  
The mass media in contemporary society: structure, organization, professional norms, and audience compositions. Press and broadcasting; role of media in news dissemination. (GrC)
- 3051. SURVEY OF JOURNALISM TECHNIQUES.** (5 cr; open only with department permission to grad or adult special students without undergrad majors or minors; offered when feasible)  
Concentrated survey of and practice in principal journalistic techniques. Fundamentals of fact gathering and writing, editing for news media. Lectures and laboratory.

#### News-Editorial

- 3121f,w,s. PUBLIC AFFAIRS REPORTING.** (4 cr; prereq soph with B avg in 1001 and 1101 or jr, 1101, C avg, Comp 1027 or ¶) Hage  
Reporting and editing news of courts and municipal, county, state, federal administrative and legislative agencies.
- 3155f,w,s. PUBLICATIONS EDITING.** (4 cr; prereq 3121) Sim, Brovald  
Selection and editing of news-editorial content of newspapers, brochures, magazines. Newspaper makeup, magazine format. Press association teletype service. Lectures and laboratory.
- 3173f,w. MAGAZINE WRITING AND EDITING.** (4 cr; prereq 3121 or 1101 and ¶) Hage  
Planning and writing feature articles for general, class, and trade publications; marketing; problems of magazine editing, layout, design, and makeup.

- 3176w. BUSINESS AND INDUSTRIAL JOURNALISM.** (4 cr; prereq 1011 or 3121 or 3241)  
Wilson  
Analysis of content, staffs, design and production of business and company publications. On the job projects of gathering material for and writing feature articles for the business and company press.
- 3182s. SUPERVISION OF SCHOOL PUBLICATIONS.** (4 cr; for students who plan to become advisers of high school or college newspapers, yearbooks, magazines; prereq 1011 or 3121) Sim  
Editorial content, staff organization, editing, typography, makeup, business management.
- 3193s. COMMUNITY NEWSPAPER.** (4 cr; prereq 1101 or 1011 or #) Brovald, Sim  
The community newspaper (weekly and small daily) as an editorial product and as a business. Aspects of news, opinion, advertising, production. Role of the editor in the community.
- 3776f. MASS COMMUNICATION LAW.** (4 cr; prereq 1001 or 1011, 1101 or #) Gillmor  
Brief historical background, First Amendment rights, basic law of defamation, free press and fair trial, access to news, access to the press, privacy, contempt, obscenity, regulation of broadcasting and advertising, anti-trust controls. (GrC)
- 5131f,w,s. INTERPRETIVE REPORTING.** (4 cr; prereq sr, 3121) Gerald, Carter, Ward  
Interpretive and investigative reporting. Interpretive features and series. Advanced problems in material gathering and specialized reporting of government, politics, welfare, and the arts.
- 5133w. SPECIALIZED REPORTING: SOCIAL AND PHYSICAL SCIENCES.** (4 cr; prereq 3121 or 3176 or #) Tichenor  
Role of journalistic communication in science; scientist-journalist relationships; communicating results of scientific investigations to public, specialized audiences, industry.
- 5141w. OPINION WRITING IN AMERICA.** (4 cr; prereq sr, jour major) Emery, Gerald  
Oral and written analysis of major political, economic, and social developments. Persuasive communication in newspapers and magazines; columnists; commentators.
- 5142. INTERPRETATION OF CONTEMPORARY AFFAIRS.** (4 cr; prereq sr, jour major; offered when feasible) Gerald  
Major economic developments and their social and political impacts; interpretation in editorial and interpretative articles.
- 5143s. INTERPRETATION OF SCIENCE AND TECHNOLOGY.** (4 cr; prereq 5133, 5501 and Phil 5601) Tichenor  
Scientific research and technological development as reported in mass and specialized media; critical study of science content in media; audience impact.
- 5144f. URBAN JOURNALISM I: THEORY AND PRACTICE.** (4 cr; prereq 3121, 5131, or grad, professional experience, or #)  
The role and performance of mass media in reporting urban problems; specialized reporting and commentary; urban media policy and news gathering techniques; critical analysis of media content; reporting projects and appropriate readings.
- 5171s. CRITICAL WRITING.** (4 cr; prereq an Upper Division writing course and #) Hage  
Books, theater, and motion picture reviews. Analysis of leading critics and critical periodicals. Reviews are written weekly. (GrD)

## Advertising

- 3231f,s. ADVERTISING GRAPHICS.** (4 cr; prereq 1005 or 1201) Wilson  
Principles of design and layout; preparation of copy for print and film; uses of type; type legibility; illustration; printing processes.
- 3241f,s. ADVERTISING COPYWRITING.** (4 cr; prereq 1201, 3231) Harris  
Advertising appeals and strategy; development and presentation of advertising for print and broadcast. Individual and group projects.
- 5221f,w. GRAPHIC ARTS: PROCESSES.** (4 cr; prereq 3121 or 3231 or 8 cr in Upper Division art and design) Wilson  
Processes in graphic communication. Technique and production of illustration. Significant graphic arts developments.
- 5233s. GRAPHIC DESIGN ANALYSIS.** (4 cr; prereq 3155, 5221, or 3231, 5221, or #) Wilson  
Technological development in graphics and its effect on format and efficiency; historical and current trends; field studies, creative problems.
- 5251f,w. PSYCHOLOGY OF ADVERTISING.** (4 cr; §Psy 5751; prereq Psy 1001) Peterman  
Psychological principles, research techniques, and applications in advertising and selling.

## Course Offerings and Major Sequences

Consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depend.

**5252s. PSYCHOLOGY OF CREATIVITY IN ADVERTISING.** (4 cr; prereq 5251 or Psy 5751)  
Peterman

The theories, mechanisms, and correlates of creativity. Theoretical, experimental, and pragmatically-derived "explanations" and examples considered and applied in supervised practicum sessions.

**5261f,w. ADVERTISING: MEDIA ANALYSIS.** (4 cr; prereq 1201, Mktg 3000, or §) Brovald  
Characteristics of the print and electronic media; their role in advertising; selection and scheduling; rate structures and policies; evaluation and use of media and market measurements and data.

**5263s. ADVERTISING CAMPAIGN PLANNING AND MEDIA STRATEGY.** (4 cr; prereq 3241, 5261, or §) Peterman

Relation of campaign strategy to media measurement, evaluation, and planning. Coordination of advertising campaigns; media scheduling and purchasing.

**5272w. ADVERTISING COPY-GRAPHICS.** (4 cr; prereq sr, 3241, 5251) Wilson, Harris  
Copy and graphics design for print and television advertising. Preparation and presentation of ads and commercials for consumer, business, industrial, corporate, and public service advertisers. For senior advertising majors.

**5274f,w,s. CURRENT ADVERTISING DEVELOPMENTS AND PROBLEMS.** (4 cr; prereq sr, 5251, 5261 and either 5263 or 5272) Peterman, Thompson

Creative, management, research, media, and technical developments in advertising. Specific problems and case studies in advertising-marketing process.

### Photographic Communication

**5353w. PHOTOGRAPHIC COMMUNICATION.** (4 cr; prereq 3121 or ¶3121 and 1005 or ¶1005) Schuneman

Principles of photographic communication in the mass media. Multi-channel communication theories, communicative overtones. Visual sources, layout, objectivity in editing. Experimental creative projects.

**5376f. ADVANCED PHOTOJOURNALISM.** (5 cr; prereq 1005, 1301, 3121) Schuneman  
Photography's materials and processes for visual reporting in newspapers and magazines. Thematic visual series. Dynamics of visual content; pattern, texture, movement. Use of miniature camera, light, and lighting. Color photography.

**5377s. DOCUMENTARY PHOTOGRAPHY.** (4 cr; prereq 5353, 5376) Schuneman  
Definition, scope, research, and approaches of the documentary picture story for magazines, picture books, and multi-media presentations. Series, sequences, and essays. Photographic markets.

### Broadcast Journalism

**3401f,w. BASIC CINEMATOGRAPHY.** (4 cr; prereq 1001, 1005 and §)

Fundamentals of practice and theory in film communication. Creative and technical applications in television news, documentary, and advertising films. Emphasis on projects and analysis.

**3421. RADIO AND TELEVISION STATION ADMINISTRATION.** (4 cr; prereq 5611 or Δ)

Role of the broadcasting station in American life. Basic issues in station operation; frequency and channel allocations, cross-channel affiliations.

**3451f. TELEVISION AND RADIO NEWS.** (5 cr; prereq 3121 or §; 2 lect, 3 lab, 3 news production hrs per wk) Fang

Broadcast news: techniques of writing, interviewing, delivery, audio tape editing, graphics preparation. Production of radio newcasts and a radio documentary.

**3486w. RADIO AND TELEVISION SCRIPT WRITING.** (4 cr; prereq 3121 and § for four majors, 1001 and § for speech-radio majors) Harris

Planning and writing scripts for broadcast in variety of program areas.

**5402s. FILM PRODUCTION.** (5 cr; prereq 3401 and 3421 or 3486 or Spch 3204)

Directed projects in planning, shooting, and editing silent and sound film. Creative production. Lectures, laboratory work, field experience.

**5442w. ADVANCED TELEVISION NEWS.** (5 cr; prereq 3451; 2 lect, 3 lab, 3 news production hrs per wk) Fang

Newsfilm editing; preparation and delivery of television newcasts. Current problems; legal and ethical considerations.

- 5444s. TELEVISION AND RADIO DOCUMENTARY.** (4 cr; prereq 5402 and 5442 with B or better in each; 1 hr lect, field and lab hrs as needed) Fang  
Scope and techniques. Students are required to produce television or radio news documentaries of broadcast quality.

### Theory and Methodology

- 5501f.s. COMMUNICATION AND PUBLIC OPINION I.** (4 cr; prereq 15 cr in social science depts) Tichenor, Carter, Fang  
Theories of communication process and of persuasion and attitude change. Functions of interpersonal and mediated communication in diffusion of information and in opinion formation. (GrC)
- 5515. COMMUNICATIONS ANALYSIS: CONTENT, AUDIENCES, EFFECTS.** (4 cr; prereq #) Staff  
Quantitative methods used in studying mass media content, audiences, and effects.
- 5531w. COMMUNICATION AND PUBLIC OPINION II.** (5 cr; prereq 5501 or Soc 5355) Carter, Wackman, Tichenor  
Advanced study of theories and research findings in opinion formation, persuasion, and diffusion of information. Social science contributions to studies of the process and effects of mass communication.
- 5549f. PUBLIC RELATIONS.** (4 cr; prereq 15 cr in social science depts, # for nonmajors)  
History and development of public relations practice and principles. Process and applications in a variety of institutional settings. Analysis and critique of public relations efforts in contemporary society.

### History

- 5601f.s. HISTORY OF JOURNALISM.** (4 cr) Emery, Schuneman  
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. (GrC)
- 5603s. TOPICS IN HISTORY OF JOURNALISM.** (4 cr; prereq 5601 Emery)  
Intensive study of significant individuals, newspapers, and periodicals in the United States, 1865-1920. Individual research projects. (GrC)
- 5606s. LITERARY ASPECTS OF JOURNALISM.** (4 cr; prereq #) Hage  
Literary aspects of journalism as exemplified in, and influenced by, English and American writers, past and present. Lectures, discussions, weekly papers. (GrD)
- 5611s. DEVELOPMENT OF AMERICAN BROADCASTING.** (4 cr) Lindsay, Paulu  
Historical and economic development of radio and television in United States; government regulation, industry self-regulation, forms of social control; issues in contemporary broadcasting. (GrC)
- 5615w. DEVELOPMENT OF PHOTOJOURNALISM AND DOCUMENTARY FILM.** (5 cr) Schuneman  
History of visual communication and its utilization by the mass media. Principal contributors, visual styles, and changing evaluative criteria, 1839 to present. Analysis of important films, photographs. Individual research projects. (GrC)

### Social Institutions

- 5721w.s. MASS MEDIA IN A DYNAMIC SOCIETY.** (4 cr; prereq 1201 or 3121 for jour majors, # for others) Gillmor  
Economic, political, and social determinants of character and content of mass communications. Patterns of operations, effect on content, and relative social utility. Theory of mass society. (GrC)
- 5731s. CURRENT COMMUNICATIONS PROBLEMS.** (4 cr; prereq jour sr and #) Gerald  
Individual project method used for analyses of communications problems of current importance in light of their social, economic, and technological environment.
- 5731H. HONORS COURSE: CURRENT COMMUNICATIONS PROBLEMS.**  
See 5731.
- 5777f.s. CONTEMPORARY PROBLEMS IN FREEDOM OF SPEECH AND PRESS.** (4 cr; prereq 15 cr in social science depts) Gerald, Gillmor  
Anglo-American concept of freedom and responsibility, constitutional development in United States, areas of present tension. Bill of Rights and journalism today.

## Course Offerings and Major Sequences

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### International Communications

**5801f. INTERNATIONAL COMMUNICATION.** (4 cr; prereq 15 cr in social science depts)  
Lindsay

Global telecommunications, channels, artifacts of international mass communication. Problems in free flow of information. Roles of international organizations. Mass communication in social, political, educational, economic development. (GrC)

**5825w. WORLD COMMUNICATION SYSTEMS.** (4 cr; prereq 15 cr in social science depts)

Lindsay

Description and analyses, divergencies and congruence in the world's mass communication systems. Putative issues raised by novel additions to the global telecommunications grid. Effects and import of near- and deep-future communications. (GrC)

### Projects

**5971f,w,s. ADVANCED PROJECTS IN JOURNALISM.** (1-4 cr per qtr, may be repeated for max of 8 cr; prereq journalism major, B avg, #)

**5971Hf,w,s. HONORS COURSE: ADVANCED PROJECTS IN JOURNALISM.**

See 5971.

## LANDSCAPE ARCHITECTURE

See Architecture

## LATIN

See Classics

## LATIN AMERICAN STUDIES (LAS)

The interdepartmental major in Latin American studies is designed, through a combination of language and area courses, to contribute to a liberal education as well as to prepare specialists in the study and knowledge of Latin America. It offers an integrated multi-disciplinary program leading to B.A. degrees chosen from a wide range of academic opportunities. Further information may be obtained from the Office for Interdepartmental Majors and Programs, 106 Johnston Hall.

**Major Sequence for B.A.:** 1. *Language requirement*—Completion of a language sequence through Spanish 1105 or Portuguese 1105. Students who already have some language skill are encouraged to satisfy as much of this requirement as possible by taking proficiency examinations provided by the Department of Spanish and Portuguese. 2. *Required background courses*—Hist 1401 or 3401, and 1402 or 3402, preferably but not necessarily in sequence. 3. *Major requirements*—At least 48 Upper Division cr selected as follows: 16 cr from at least three social sciences chosen from Anth 5221, 5222, 5223, 5521, 5522; Econ 5311 or 5341; Geog 3121, 5131, 5132; LAS 5101; Pol 5455; Soc 5315, 5671; 8 cr from ArtH 5911; LAS 5101; Mus 5704,5; Port 3212, 3213, 3501, 3502, 5212,3,4, 5225; Span 3251,2,3, 3501, 3512, 5551, 5552, 5553 5581, 5582, 5583, 5584; 12 additional cr from courses listed above or from Hist 5419, 5420, 5421,2, 5424,5, 5901/2; additional cr to bring to 48 the total of cr completed for the major. These may be selected from among courses listed above or from Afro 3301; AgEc 5720; Anth 5115, 5151; ArtH 5347; Econ 5301 or 5331, 5401 or 5431, 5411; Geog 3341; Hist 3881, 3882, 5429; Pol 5771, 5773; Port 3211, 3721; Soc 5511, 5675; Span 3104, 3211, 3212, 3213, 3502, 3721, 5711,2.

A student may take up to 10 of his Upper Division major cr on the SN basis. Upon approval of his adviser, he may take up to 15 of them under independent study and directed research options in individual departments or through ID 3970 or LAS 5970. The adviser is to determine to which of the categories such credits may appropriately be applied. Field experience in Latin America is encouraged when feasible, and when appropriate the student may arrange for credit through one of these options.

*Concentration within the major*—In consultation with his adviser, each student must develop a program of course work which provides a focus for his studies, a general theme around which he will organize his program (for example, development).

#### UPPER DIVISION COURSES

- 5101. SOURCE MATERIALS FOR LATIN AMERICAN STUDIES.** (5 cr; prereq jr, sr, or grad, reading knowledge of Spanish and/or Portuguese, or #)  
 Research sources, particularly bibliographic; reference materials and principal works within each discipline. Designed to prepare students for research in Latin American Studies utilizing a discipline-centered approach.
- 5970. DIRECTED STUDIES.** (Cr ar; prereq #)

### LIBRARY SCHOOL (Lib)

**Staff:** David K. Berninghausen, *director*, 3 Walter; Joan H. Leigh, *assistant to the director*; Elmo Brekhus, Nancy J. Freeman, Harris C. McClaskey, E. W. McDiarmid, Lowell E. Olson, Raymond H. Shove, Wesley C. Simonton, Edward B. Stanford

The Library School is a graduate, professional school offering a master's degree program as minimum preparation for careers in library and information service. Admission requirements may be found in the *Library School Bulletin* and the *Graduate School Bulletin*.

Lib 5101, 5221, and 5401 are available, however, as electives for Arts College students, particularly those who wish to determine vocational interests in the field.

Undergraduates planning a career in college, public, or special libraries are invited to visit the Library School office, 3 Walter, for advice. Arts College students who wish to prepare for school librarianship should either register in the College of Education, since a teacher's certificate is required in addition to library science course work, or inquire in the Library School office about a special program available to them after graduation from the Arts College.

#### UPPER DIVISION COURSES

- 5101. INTRODUCTION TO LIBRARIES AND LIBRARIANSHIP.** (5 cr) McClaskey  
 Librarianship as a profession; development of libraries as social agencies; principles of library administration and management.
- 5221. RECORDS OF KNOWLEDGE.** (4 cr) Freeman  
 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. (GrC)
- 5401. ORGANIZATION OF INFORMATION I.** (4 cr) Brekhus  
 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.

### LINGUISTICS (Ling)

**Staff:** Walter Lehn, *chairman*, 142 Klaeber Court; Betty Wallace Robinett, *director*, Program in English as a Second Language, 152 Klaeber Court; Kathleen Houlihan, Larry G. Hutchinson, Michael Kac, Rocky V. Miranda, Ralph S. Nash, Gerald A. Sanders, Amy Sheldon

Linguistics is the science concerned with the nature of human language and the principles governing its acquisition, use, and change.

**Major Sequence for B.A.:** *Major requirements*—3001, 3301, 3601, 5201, 5302; 12 additional cr in Upper Division courses, no more than 8 of them in any one

## Course Offerings and Major Sequences

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area (e.g., phonology, syntax); 3 years of college study in one foreign language, or 2 years in one and 1 year in a second (this requirement can be satisfied either by course work or by examination) and 4 cr in the history and/or structure of a language used in satisfying this requirement.

A list of approved courses in other departments that may be elected as part of a major in linguistics is available in the Department office.

**General Education**—Courses appropriate for nonmajors: 1001/2, 3001, 3005, 3301, 3601, 5001, 5003, 5006, 5501/2, 5601/2, 5605/6/7, 5691, 5701, 5741/2, 5751/2, 5805, 5811, 5821.

### LOWER DIVISION COURSE

**1001/2. INTRODUCTION TO STUDY OF LANGUAGE.** (2/4 cr; may not be used as prereq for adv courses in linguistics) (GrA)

### UPPER DIVISION COURSES

**3001. INTRODUCTION TO LINGUISTICS.** (5 cr) (GrA)

**3005. LINGUISTICS FOR FOREIGN LANGUAGE TEACHERS.** (4 cr; §1001 or 3001) (GrA)

**3051/2. HONORS COURSE: LINGUISTICS.** (4/4 cr; prereq candidacy for honors in linguistics) (GrA)

**3301. PHONETICS.** (5 cr; prereq 3001 or §) (GrA)

**3601. INTRODUCTION TO HISTORICAL LINGUISTICS.** (4 cr; prereq 3001 or §) (GrA)

**3970. DIRECTED STUDIES.** (1-5 cr; prereq linguistics major, §) (GrA)

**5001. INTRODUCTION TO LINGUISTICS.** (4 cr; §3001 or 3005 or linguistics major) (GrA)

**5003. APPLIED PHONETICS.** (5 cr; §3301 or linguistics major; prereq 5001 or §)  
Primarily for teachers of English as a second language. (GrA)

**5006. GENERAL PHONETICS.** (4 cr; prereq 3301 or §)  
Survey of physiological and instrumental studies of speech sounds. (GrA)

**5008. INSTRUMENTAL PHONETICS.** (4 cr; prereq 5006 or §)  
Instrumental studies and acoustic parameters of speech sounds. (GrA)

**5011/2/3. MATHEMATICAL LINGUISTICS.** (4/4/4 cr; prereq linguistics major or §)  
The propositional and first order predicate calculi; nonclassical logics; set theory; axiomatics; algebra; grammar; automata theory. (GrA)

**5201/2. INTRODUCTION TO SYNTAX.** (4/4 cr; prereq 3001 or §)  
Description and explanation of syntactic phenomena in natural languages. (GrA)

**5206/7/8. SYNTAX.** (4/4/4 cr; prereq 5202, 5302 or §)  
Analysis and explanation of facts about the syntax of natural languages. (GrA)

**5211. SEMANTICS.** (4 cr; prereq 5202, 5302 or §)  
Studies in the linguistic analysis and explanation of synonymy, analyticity, presupposition, and other meaning relations in natural languages. (GrA)

**5302. INTRODUCTION TO PHONOLOGY.** (4 cr; prereq 3301 or §) (GrA)

**5303/4. PHONOLOGY.** (4/4 cr; prereq 5202, 5302 or §) (GrA)

**5501/2. AMERICAN INDIAN LINGUISTICS.** (4/4 cr; prereq 5202, 5302 or §)  
Genetic and typological survey of representative languages. (GrA)

**5601/2. LANGUAGE CHANGE AND LINGUISTIC RECONSTRUCTION.** (4/4 cr; prereq 3601 or §) (GrA)

**5605/6/7. INDO-EUROPEAN LINGUISTICS.** (4/4/4 cr; prereq 3601 or §)  
Reconstruction and investigation of phonology, morphology, and syntax of the Indo-European languages) (GrA)

**5621. INDO-ARYAN LINGUISTICS.** (4 cr; prereq 3601 or §) (GrA)

**5691. HISTORY OF LINGUISTICS.** (4 cr; prereq 3601, 5202, 5302 or §) (GrA)

**5701. CONTRASTIVE LINGUISTICS.** (4 cr; prereq 5003 or §) (GrA)

**5711. FIELD METHODS IN LINGUISTICS.** (4 cr; prereq 5202, 5302 or §)  
Methods of collecting linguistic data from informants. (GrA)

- 5741/2. LINGUISTIC DESCRIPTION OF MODERN ENGLISH.** (4/4 cr; prereq 3001 or 5001 or #)  
 Word and sentence structure in present-day English. (GrA)
- 5751/2. APPLIED TRANSFORMATIONAL GRAMMAR.** (4/4 cr)  
 Survey of transformational grammar from 1957 to the present; techniques of grammar construction, evaluation, and presentation; role of grammar in teaching composition skills. (GrA)
- 5805. PSYCHOLINGUISTICS.** (4 cr; prereq 5202, 5302 or #)  
 Examination of empirical studies of language acquisition and processing. (GrA)
- 5811. ENTHOLINGUISTICS.** (4 cr; prereq 3001 or 5001 or #)  
 Intersection of linguistic and nonlinguistic cultural dimensions. (GrA)
- 5821. SOCIOLINGUISTICS.** (4 cr; prereq 3001 or 5001 or #)  
 Social dimensions of linguistic diversity. (GrA)
- 5910. SEMINAR IN LINGUISTICS.** (4 cr; prereq #) (GrA)
- 5970. DIRECTED STUDIES.** (1-5 cr; prereq linguistics major, #) (GrA)

## MARATHI

See South Asian Languages

## MATHEMATICS (Math)

Institute of Technology

**Staff:** Johannes Nitsche, *head*, 127 Vincent Hall; Howard Jenkins, *associate head*; James Thompson, *director of undergraduate studies*; Robert Cameron, *director of graduate studies*; Alfred Aeppli, Stephen Agard, Donald Aronson, John Baxter, Thomas Berger, George Brauer, Jonathan Brezin, Rafael Chacon, Chang-Shing Chen, Edward Cline, David Cohoon, John Eagon, Robert Ellis, Eugene Fabes, Bert Fristedt, E. Gebhard Fuhrken, Lisl Gaal, Steven Gaal, Hillel Gershenson, Jesus Gil de Lamadrid, Eugene Goldberg, Jay Goldman, Leon Green, Siegfried Grosser, Robert Hardt, Laurence Harper, David Heath, Melvin Hochster, Naresh Jain, James Joichi, Donald Kahn, Gopinath Kallianpur, Harvey Keynes, David Kinderlehrer, Marvin Kohn, Stacy Loughton, Howard Levine, Walter Littman, Warren Loud, Albert Marden, Lawrence Markus, Charles McCarthy, Richard McGehee, Norman Meyers, Willard Miller, Chester Miracle, Steven Orey, Daniel Pedoe, John Piepenbrink, William Pohl, Marian Pour-El, Karel Prikry, William Pruitt, Peter Rejto, Edgar Reich, J. Ian Richards, Wayne Richter, Nestor Riviere, Joel Roberts, Arthur Sagle, David Sattinger, George Sell, James Serrin, Leonard Shapiro, Yasutaka Sibuya, Donald Singley, Warren Stenberg, David Storvick, Charlotte Striebel, Norris Weaver, Hans Weinberger

The Mathematics Department offers a program leading to the Bachelor of Science degree in the Institute of Technology and a program leading to the Bachelor of Arts degree in the College of Liberal Arts. Details of the B.S. program are in the *Institute of Technology Bulletin*.

**Major Sequence for B.A.:** 1. *Required background courses*—Students planning to major in mathematics are expected to obtain, during their first and second years, a knowledge of (i) calculus of functions of one variable and (ii) multi-variable calculus, linear algebra and differential equations. Requirement (i) may be satisfied by taking 1211/21/31, 1311/21/31, or 1611/21; requirement (ii) by taking 3511/21/31, 3611/21, 3211/21, or 3211, 3142 and 3066 or 5521. Students who select the latter option may use 5521 to satisfy the requirements below. Mathematics majors who take 1211/21/31 or 1311/21/31 to satisfy (i) are urged to take 3511/21/31. Those who take 1611/21 to satisfy (i) should take 3611/21. Math majors who do not take 3531 are strongly urged to take 3675 before attempting 5xxx courses. 2. *Major requirements*—36 cr from among 3531, 3581, 3582, 3583,

## Course Offerings and Major Sequences

3675, or any math courses at the 5xxx level. The 36 cr must include two 2-course 5xxx-level math sequences (unless an alternative program is approved by the student's adviser), one an analysis sequence (5601/2, 5606/7, or 5612/3) and the other an algebra sequence (5242/3 or 5282/3). All math majors are urged to take the undergraduate orientation seminar, 5920, during junior year.

**Placement of Students**—A math placement score based upon high school record, score on the ACT test and placement exams will be determined for each entering freshman. Results will be available in the student's college office. Students whose preparation is not adequate will be required to take 1201 (pre-calculus) before registering for 1211 or 1311. Students whose placement scores are sufficiently high will be eligible to register for 1611 (accelerated calculus). Advanced standing students will be placed in appropriate courses according to their previous work and, in some cases, on the basis of placement exams.

**Honors Courses and Graduation with Honors**—The Mathematics Department will offer each year an honors sequence, 1511/21/31, for first year students in both IT and CLA. This sequence is intended for students having unusual mathematical sophistication and a deep interest in theoretical mathematics. Students will be selected from those eligible for 1211/21/31. Interested students should consult the Mathematics Department.

Application for admission to the departmental honors program may be made by any well-qualified Arts College major in mathematics, preferably early in his junior year. More detailed information is available in the Department office, 127 Vincent Hall.

### LOWER DIVISION COURSES

**0009f,w,s. PREPARATORY MATHEMATICS.** (No cr; for students whose background in algebra is insufficient; 5 hrs per wk; special fee)

Covers material of high school higher algebra courses. (GrA)

**1001f/2w. MATHEMATICS.** (4/4 cr; §1421 or 1221 or above for 1001...§1431 or 1231 or above for 1002; for students not planning to register for courses in usual mathematics curriculum; prereq HS geom and HS higher alg or §)

Genesis of mathematics in applied problems and in imagination; currently important areas or research and application; esthetic, cultural, humanistic qualities. Emphasizes illustrative material. (GrA)

**1005f,w,s./6w,s. FOUNDATIONS OF ARITHMETIC.** (3/3 cr [not available for CLA students]; prereq 1 yr elem alg, 1 yr HS geom or equiv and enrollment as elem educ student, or  $\Delta$ )

Logical and axiomatic basis of rules for arithmetical operations with integers, rational and irrational numbers; real number line and inequalities as necessary background for teaching arithmetic in elementary school; topics from geometry and congruences; history of the subject and its role in our culture and civilization.

**1008f,w,s. TRIGONOMETRY.** (3 cr; prereq plane geom, HS higher alg, math placement score ...§1111)

Analytic trigonometry, identities, equations, properties of the functions; right and oblique triangle without logarithmic computation. (GrA)

**1111f,w,s. COLLEGE ALGEBRA AND ANALYTIC GEOMETRY.** (5 cr; §1141, 1201, 1411, 1441; prereq HS higher alg and math placement score)

Functions, graphs, quadratic equations, progressions, inequalities, complex numbers, theory of equations, permutations and combinations, probability, systems of equations, determinants, conics and standard position, logarithms. (GrA)

**1119w,s. MATHEMATICS OF INVESTMENT.** (5 cr; prereq 1111 or 1141 or 1201 or 1411 or 1441)

Simple interest and simple discount, compound interest, annuities with simple data, extinction of debts by periodic installments, bonds, depreciation, perpetuities, capitalization, general annuity formulas. (GrA)

**1131f,w,s. FINITE MATHEMATICS.** (5 cr; for students in the social sciences, behavioral sciences and pre-business administration; prereq HS higher alg and math placement score)

Elementary computer programming, logical analysis, probability and stochastic models, Markov chains, linear systems and programming, matrix operations, and applications. (GrA)

**1141f,w,s. ALGEBRA, PROBABILITY, AND PRE-CALCULUS.** (5 cr; §1111, 1201; for students in pre-business administration, pre-pharmacy and others requiring college algebra; prereq HS higher alg and math placement score)

Inequalities, elementary set theory, functions, analytic geometry, linear systems and programming, combinations, permutations and probability. (GrA)

**1142f,w,s. INTRODUCTION TO CALCULUS.** (5 cr; §1211; a short course in calculus for students in pre-business administration, pre-pharmacy and others requiring a minimal amount of calculus; students who plan to take several qtrs of math should register for the sequence 1211/21/31; prereq 1111 or 1131 or 1141 or 1201 or math placement score)

Derivatives, integrals, differential equations, maxima and minima, introduction to partial differentiation, applications. (GrA)

**1201f,w,s. PRE-CALCULUS.** (5 cr; §1111, 1141; for students who intend to take a calculus sequence but lack preparation; prereq HS higher alg, HS trig or 1008, math placement score)

Inequalities, analytical geometry; complex numbers, binomial theorem; mathematical induction; functions and graphs; trigonometric, exponential and logarithmic functions. (GrA)

**1211/21/31f,w,s. ANALYSIS I-II-III.** (5/5/5 cr; prereq 1201 or HS higher alg, geom, trig and math placement score)

Analytical geometry and calculus of functions of one variable, applications. (GrA)

**1311f/21w/31s. COMPUTER CALCULUS I-II-III.** (5/5/5 cr; prereq 4 yrs HS math incl trig)

Content and description essentially the same as 1211/21/31 and 1611/21, plus topics in elementary computer programming. Much of the material is presented from a computer point of view (GrA)

**1511f/21w/31s. HONORS CALCULUS.** (5/5/5 cr; prereq  $\Delta$ )

Calculus of functions of one variable with emphasis on theory. Emphasis on basic concepts and proofs; attention to computational aspects. (GrA)

**1611f/21w. ANALYSIS I-II.** (5/5 cr; prereq 4 yrs HS math incl trig and  $\Delta$ )

Accelerated sequence for high ability students (continued in Math 3611/21). Covers contents of 1211/21/31. (GrA)

**UPPER DIVISION COURSES**

**3057. ACTUARIAL SCIENCE PRINCIPLES.** (4 cr; §Ins 3230; prereq 1142 or #)

How to calculate net premiums, gross premiums, reserves, and nonforfeiture values for major life insurance contracts. The impact of assumed mortality, interest, and expense assumption upon these items. (GrA)

**3061f,w,s. OPERATIONAL METHODS FOR LINEAR SYSTEMS.** (4 cr; primarily for EE students; prereq 3211, 3221)

Fourier series and applications to differential equations. Fourier transform, mathematical properties, amplitude and phase spectra, energy. The Laplace transform, mathematical properties, elementary inversion techniques, applications to differential equations. (GrA)

**3066f,w,s. ELEMENTARY DIFFERENTIAL EQUATIONS.** (4 cr; §3221, 5512, 5521; prereq 1431 or 1231 or equiv)

Elementary techniques of problem solving. First- and second-order equations, linear equations of higher order. (GrA)

**3071f/2w/3s. HISTORY OF MATHEMATICS.** (2/2/2 cr; for students with general knowledge of mathematics and some curiosity about historical development of mankind; prereq for any qtr is 1431 or 1231)

Development of main branches of contemporary mathematics within framework of history of ideas as well as of techniques. Impact of thought of previous generations on modern developments. Term paper each qtr. 3071: Greek mathematics. 3072: Creation of calculus. 3073: Topics in history of mathematics. (GrA)

**3099. SEMINAR: MATHEMATICAL PROBLEMS:** (4 cr; prereq 3211 and 3221 or equiv)

Problems ranging from elementary algebra and geometry through undergraduate mathematics (GrA)

**3142f,w,s. INTRODUCTION TO LINEAR ALGEBRA.** (4 cr; §3221, 3511; prereq 2 qtrs calculus)

Vectors, systems of linear equations, matrices, determinants, eigenvalues, applications. Emphasizes techniques but includes some proofs of theorems. (GrA)

## Course Offerings and Major Sequences

- 3161f,w,s. SYNTHETIC METRIC GEOMETRY.** (4 cr; prereq 1211 or 1421 or equiv)  
Euclidean geometry: ruler and compass constructions and theorems on triangle and circle not studied in high school plane geometry. (GrA)
- 3211f,w,s. ANALYSIS IV.** (5 cr; §3411, 3521; prereq 1231 or equiv)  
Partial differentiation, chain rule, implicit functions, applications. Multiple integrals in two and three dimensions. Infinite series, power series. (GrA)
- 3221f,w,s. INTRODUCTION TO LINEAR ALGEBRA AND LINEAR DIFFERENTIAL EQUATIONS.** (5 cr; §3142, 3511; prereq 1231 or equiv)  
Vectors, systems of linear equations, matrices, determinants, bases, eigenvalues. Linear differential equations and systems with constant coefficients, initial value problem and general solution, variation of parameters for inhomogeneous equations. (GrA)
- 3231f,w,s. VECTOR ANALYSIS.** (4 cr. §5601/2; prereq 3211 or equiv)  
Scalar and vector products, derivatives, geometry of space curves, del operator, line and surface integrals, divergence and Stokes' theorem, transformation of coordinates, dyadics, applications. (GrA)
- 3511f,w,s. ANALYSIS IV.** (4 cr; §3142, 3221; primarily for math majors, and math majors in the College of Education; prereq 1231, 1331, 1531 or 1621)  
Abstract approach to study of finite dimensional vector spaces. Linear independence, linear transformations, matrices and determinants. (GrA)
- 3521f,w,s. ANALYSIS V.** (4 cr; §3211, 3411; primarily for math majors, and math majors in the College of Education; prereq 3511)  
The calculus of several variables relying heavily on linear algebra. Differentiation and integration of functions of several variables, coordinate systems, Jacobian of a map, implicit function theorem.
- 3531f,w,s. ANALYSIS VI.** (4 cr; §3675; primarily for math majors, and math majors in the College of Education; prereq 3521)  
A continuation of 3521, including differential equations, vector analysis. (GrA)
- 3581f. FOUNDATIONS OF ARITHMETIC.** (4 cr; prereq 3411 or 3211)  
Sets, relations, order. Real number system. Continuous functions. (GrA)
- 3582w. FOUNDATIONS OF ALGEBRA.** (4 cr; prereq 3411 or 3211)  
Groups, rings, fields. Applications to number theory and polynomials. (GrA)
- 3583s. FOUNDATIONS OF GEOMETRY.** (4 cr; prereq 3161)  
Axiomatics. Non-Euclidean geometry. Theorems of Desargues and Pappus. (GrA)
- 3611s/21f. ANALYSIS III-IV.** (5/5 cr; prereq 1621 for 3611)  
A unified treatment of multivariable calculus and linear algebra. (GrA)
- 3675f,w,s. INTRODUCTORY MATHEMATICS.** (4 cr; §3531; prereq 1231 or 1431 or equiv)  
Designed to prepare the sophomore mathematics major for the theoretical courses he will encounter during his junior and senior years. (GrA)
- 5151f. ELEMENTARY SET THEORY.** (4 cr; prereq 3211 or 3411)  
Basic properties of operations on sets, cardinal numbers, simply ordered sets, well-ordered sets, ordinal numbers, axiom of choice, axiomatics. (GrA)
- 5152w. ELEMENTARY MATHEMATICAL LOGIC.** (4 cr; §5162; prereq 3211 or 3411)  
Sets and relations; statement calculus; Boolean algebras; predicate calculus, models, validity and truth; examples of first order theories as illustrations of the axiomatic method; the completeness theorem, the incompleteness theorem, and meta-mathematics (discussion only). (GrA)
- 5154s. AN INTRODUCTION TO RECURSIVE FUNCTION THEORY.** (4 cr; prereq 3211 or 3411 or #)  
Alternative definitions of computability (viz., etc.); primitive, partial, and general recursive functions; Church's Thesis; Kleene's normal form theorem and recursive theorem; recursive and recursively enumerable sets; applications to mathematical logic. (GrA)
- 5157f/8w/9s. MATHEMATICS OF SYMBOL MANIPULATION SYSTEMS.** (4/4/4 cr; prereq 1211 or 1411, 3rd yr standing or #)  
5157: Finite automata theory: switching circuits, Boolean algebra, and propositional logic. Kleene's theorem on regular sets. Algebraic aspects of finite automata; minimization, decomposition, synthesis. 5158: Computability of numerical functions; proofs for basic result connecting abstract models of programmed digital computers, Turing machines, and general recursive functions. Normal form theorem. Universal machines. Undecidability of halting problem. 5159: Symbol manipulation systems: formal systems of Herbrand-Gödel and Post. Post's normal form theorem. Formal grammars; introduction of Chomsky theory on context-free and other languages and related automata. Transduction of languages by automata. (GrA)

- 5182f/3w/4s. MATHEMATICAL LOGIC.** (4/4/4 cr; prereq 3211 with 3221 or 3411 with 3142 or Phil 5202 or ‡)  
Propositional and predicate calculi, models for systems of logic, recursive functions, decision and completeness problems. (GrA)
- 5200. TOPICS IN ALGEBRA.** (4 cr; prereq ‡)  
Topics vary from quarter to quarter. With departmental approval this may be repeated for credit. (GrA)
- 5209w,s. THEORY OF NUMBERS.** (4 cr; prereq 3211 or 3411)  
Elementary properties of integers; prime and composite numbers; Euclid's algorithm; congruences; theorems of Fermat and Wilson; primitive roots; indices; Diophantine equations. (GrA)
- 5242f,w/3w,s. LINEAR ALGEBRA WITH APPLICATIONS.** (4/4 cr; §5283/4; prereq 3221 or 3142 or 3511)  
Systems of linear equations, finite dimensional linear spaces, bases, linear transformations, matrices, determinants, eigenvalues, reduction to canonical forms, quadratic and bilinear forms, applications. (GrA)
- 5244s. GROUP THEORY.** (4 cr; prereq 3221 or 3142 or 3511)  
Permutation groups; groups related to geometrical configuration; invariant subgroups, Jordan-Hölder composition theorem, Sylow groups, Abelian groups, elementary divisors, applications. (GrA)
- 5282f,w/3w,s/4f,s. FUNDAMENTAL STRUCTURES OF ALGEBRA.** (4/4/4 cr; §5244 for 5282, §5242/3 for 5283/4; prereq 3675, 3221 or 3142 or 3511)  
A theory oriented course, designed principally for students planning graduate work with math majors. Group theory: normal subgroups, homomorphism, automorphisms, and the Theorems of Lagrange, Cayley, and Sylow. Ring theory: rings, ideals, integral domains, Euclidian rings, polynomial rings, field. Linear algebra: abstract approach to vector spaces, linear transformations, and the theory of canonical forms including the Jordan and rational canonical forms. (GrA)
- 5300. TOPICS IN GEOMETRY.** (4 cr; prereq ‡)  
Topics vary from quarter to quarter. With departmental approval this may be repeated for credit. (GrA)
- 5341f,w/2w,s. INTRODUCTION TO TOPOLOGY.** (4/4 cr; prereq 3675, 3211 or 3411 or 3521)  
Set theory; axiom of choice, Zorn's Lemma. Metric Spaces: completeness, compactness, continuity. Basic Point Set Topology: countability and separation axioms, Urysohn's Lemma, compactness, connectedness, product spaces.
- 5343. INTRODUCTION TO ALGEBRAIC TOPOLOGY.** (4 cr; prereq 5342)  
An introduction to algebraic topology. Classification of 2-manifolds, fundamental group, homology theory.
- 5357. PROJECTIVE GEOMETRY.** (4 cr; prereq 3211 or 3411)  
Geometric properties invariant under projective transformations; theorems of Desargues, Pascal, and Brianchon, and applications. Methods used in some quarters are mainly synthetic, in others mainly analytic. (GrA)
- 5359. NON-EUCLIDEAN GEOMETRY.** (4 cr; prereq 3211 or 3411)  
Foundations of Euclidean geometry. Euclid's fifth postulate and its implications. Hyperbolic plane geometry and trigonometry. Elliptic plane geometry and trigonometry. Consistency of non-Euclidean geometry. (GrA)
- 5366f/7w/8s. GEOMETRY.** (4/4/4 cr; prereq 3211 or 3411 for each qtr)  
Selected chapters of geometry, such as convex bodies, projective geometry, geometry and imagination, elementary algebraic geometry, geometry of transformation groups, axiomatic geometry, geometrical constructions. (GrA)
- 5375f. DIFFERENTIAL GEOMETRY.** (4 cr; prereq 3231 or 5602)  
Plane and space curves. Frenet formulas, elementary theory of surfaces. (GrA)
- 5376w/7s. DIFFERENTIAL GEOMETRY.** (4/4 cr; prereq 5375 and 1 qtr linear algebra)  
Introduction to differential forms. Advanced theory of surfaces, integral geometry, Riemannian geometry. (GrA)
- 5404w. VARIATIONAL PROBLEMS.** (4 cr; prereq 5602 or 5512 or ‡)  
Euler-Lagrange equations, isoperimetric problems, geodesics, Fermat's and Hamilton's principles, methods of Rayleigh-Ritz, eigenvalues and eigenfunctions. ((GrA)
- 5427/8. APPLIED MATHEMATICS FOR SOCIAL AND BIOLOGICAL SCIENCES.** (4/4 cr; not acceptable for math majors [all degrees] as part of their math program; prereq 3211 with 3221 or 3411 with 3142)

## Course Offerings and Major Sequences

- Mathematical tools and concepts other than statistics useful in behavioral sciences. Examples and problems from fields concerned. Matrices, functions of several variables, probability, difference equations, learning models, two-person games. (GrA)
- 5436/7. ANALYTICAL DYNAMICS.** (4/4 cr; prereq 3231 or 5602, 1 qtr linear alg)  
Basic laws and principles. Lagrange's equations. Motion of particles and rigid bodies; e.g., satellites and gyroscopes. Matrix methods for small oscillations. Variational methods, Hamilton's principle, external properties of eigenvalues. Hamilton's equations, transformation theory, separable systems. (GrA)
- 5441w. MATHEMATICAL THEORY OF FLUID FLOW.** (4 cr; prereq 3231 or 5602, and 5568 or 5572)  
General equations of fluid mechanics; thermodynamics. Classical constitutive equations. Specialization to various subfields of fluid mechanics, hydrostatics, barotropic perfect fluids, gas dynamics, and viscous flow theory. Examples of exact solutions. (GrA)
- 5457f/8w/9s. METHODS OF APPLIED MATHEMATICS.** (4/4/4 cr; prereq 5603 or 5614)  
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. (GrA)
- 5472f/3w. INTRODUCTION TO NUMERICAL ANALYSIS.** (4/4 cr; §CICS 5301, 5302; prereq 3211, 3221, CICS 1100)  
**5472:** Finite differences, interpolation, summation of series, numerical integration, Euler-MacLaurin formula and asymptotic expansions. Numerical solutions of systems of algebraic and transcendental equations. Newton's and Graeffe's method. **5473:** Approximation of functions and least squares. Approximate solution of ordinary and partial differential equations. Moulton's, Runge's relaxation and iteration methods. Calculation of eigenvalues of matrices and differential problems, Rayleigh-Ritz method. Integral equations. (GrA)
- 5476s. THEORY OF APPROXIMATION IN NUMERICAL ANALYSIS.** (4 cr; prereq 5473, 5568 or 5573)  
Orthogonal functions, Chebyshev approximations, trigonometric approximations, saturation classes, rational approximations, approximations in several variables, spline interpolation and approximations, use of approximation in computing. (GrA)
- 5512f,w,s. DIFFERENTIAL EQUATIONS.** (4 cr; §5523; prereq 3211 or equiv)  
First- and second-order equations. Power series solutions. Bessel functions. Legendre polynomials. Introduction to boundary value problems. Mostly a technique course. (GrA)
- 5514s. INTEGRAL EQUATIONS.** (4 cr; prereq 3211 and 3221 or equiv)  
Introduction to integral equations; Fredholm formula, Neumann series, Laplace transforms, successive approximations and numerical methods. Relation of integral equations to systems of linear algebraic equations and to differential equations. (GrA)
- 5521f,w,s/2w,s/3s. INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS.** (4/4/4 cr; prereq 3142 or 3221 or 3511, 3211 or 3411 or 3521)  
**5521:** Existence and uniqueness theorems; successive approximations; differential inequalities; linear systems; fundamental matrix solutions; linear systems with constant coefficients; variation of parameters. **5522:** Phase plane analysis; Poincare-Bendixson theory; linear and nonlinear oscillations; stability theory; asymptotic behavior of solutions; control theory. **5523:** Formal and convergent of power series solutions majorant method; regular and irregular singular points; error estimates perturbation methods. (GrA)
- 5541/2/3. SPECIAL FUNCTIONS IN MATHEMATICAL ANALYSIS.** (4/4/4 cr; prereq 5568 or 5573)  
Properties of gamma, hypergeometric, Bessel, and Hermite functions. Applications to mathematical physics. Relationship between symmetry groups and special functions. (GrA)
- 5567f,w. FOURIER SERIES AND BOUNDARY VALUE PROBLEMS.** (4 cr; §5571; prereq 3211, 3221 or equiv)  
Partial differential equations of theoretical physics. Fourier series, proof of convergence, orthogonal systems. Sturm-Liouville systems, solution of boundary value problems by separation of variables, applications. (GrA)
- 5568w,s. ELEMENTARY THEORY OF COMPLEX VARIABLES.** (4 cr; prereq 5602 or equiv)  
Derivative and integral of a function of a complex variable. Cauchy's integral theorem and formula, residues. Application to evaluation of integrals, conformal mapping. (GrA)
- 5569s. OPERATIONAL MATHEMATICS.** (4 cr; prereq 5568)  
Leplace transforms, Fourier transforms, inversion theorems; applications to differential equations. (GrA)

- 5571f/2w/3s. ELEMENTARY PARTIAL DIFFERENTIAL EQUATIONS.** 4/4/4 cr; §5567, 5568; prereq 3211, 3221 or equiv)  
 Partial differential equations of theoretical physics, one-dimensional wave equations, characteristics, classification of second order equations, heat and Laplace equations, uniqueness, maximum principle, orthogonal systems, Fourier series, separation of variables. Complex numbers, derivatives and integrals of analytic functions, elementary functions and their geometry. Cauchy's integral theorem and formula, Laurent expansions, evaluation of contour integrals by residues. Fourier and Laplace transforms and their inversion, method of residues, applications to ordinary and partial differential equations, applications of heat, wave, and Laplace equations. (GrA)
- 5600. TOPICS IN ANALYSIS.** (4 cr; prereq #)  
 Topics vary from quarter to quarter. With departmental approval this may be repeated for credit. (GrA)
- 5601f,w/2w,s/3s. ADVANCED CALCULUS.** (4/4/4 cr; prereq 3211 or 3411)  
**5601:** 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. **5602:** Line and surface integrals; Stokes' theorem; convergence of infinite series; orthogonal functions; uniform convergence; integration and differentiation of series. **5603:** Real numbers; continuous functions; limits; properties of continuous functions; differentiation; the Riemann integral; improper integrals. (GrA)
- 5606w/7s. CRITICAL REASONING IN MATHEMATICAL ANALYSIS.** (4/4 cr; §5612; prereq 3211 or 3411)  
 Subject matter, based on elementary concepts of mathematical analysis, is chosen mainly to serve the principal aim of the course: development of student understanding of mathematical rigor. (GrA)
- 5612f/3w/4s. INTRODUCTION TO ANALYSIS.** (4/4/4 cr; principally for students planning to take graduate work with a major in math, as preparation for graduate courses in analysis; prereq 3675, 3521 or 3211 with 3221 or 3411 with 3142)  
 Theory of real numbers; elements of point set theory; limits; differentiation; multivariable analysis. (GrA)
- 5615s. LEBESGUE INTEGRAL.** (4 cr; prereq 5602 or 5612 or 5607 or #)  
 Basic limit theorems. Comparison with Riemann integral. Lebesgue measure. Absolute continuity. (GrA)
- 5625s. DEVELOPMENT OF NUMBER SYSTEMS.** (4 cr; §5612; prereq 3211 or 3411)  
 Systematic construction of real number system by extension from natural numbers via rational numbers to irrational numbers; negative numbers, properties of the system; operations with numbers and laws governing operations. (GrA)
- 5644/5. FOURIER SERIES AND ORTHOGONAL FUNCTIONS.** (4/4 cr; prereq 5602)  
 General theory of orthonormal functions developed and applied to Fourier, Legendre, Bessel, Hermite and other series. Proof of convergence and summability theorems; Fourier integral. (GrA)
- 5661/2. PROBABILITY WITH TECHNOLOGICAL APPLICATIONS.** (4/4 cr; prereq Stat 5131 and #)  
 Spectral analysis of stationary processes, linear and nonlinear transformations, prediction and smoothing, recurrent events, random walk and diffusion, Markov chains, Poisson processes. (GrA)
- 5679. PROBABILITY.** (4 cr; §5681; prereq 3211 or 3411 or 3521)  
 Elementary principles of probability, total and compound probability, expectation, repeated trials. As time permits, topics chosen from Stirling's formula, the probability integral, geometrical probability, probability of causes, Bayes' theorem, errors of observation, principle of least squares. (GrA)
- 5681f/2w/3s. INTRODUCTION TO PROBABILITY.** (4/4/4 cr; prereq 5602 or Stat 5133 or #)  
 Logical development and various applications of probability. Probability spaces, random variables, central limit theorem; Markov chains. (GrA)
- 5701f/2w/3s. COMBINATORICS.** (4/4/4 cr; prereq 3211 or 3411, 3rd-yr standing...1 qtr linear alg for 5702)  
**5701:** Basic concepts of combinatorics. Enumeration including binomial counting, Stirling's formula, generating functions, inclusion-exclusion principle, recurrence relations, Polya's theorem, analysis of algorithms. Basic concepts of graph theory and matching theory. Introduction to designs. **5702/3:** Further development of some topics in 5701. Graph theory, optimization and designs including planar and dual graphs, coloring problems, flows in networks, linear programming, block designs, latin squares, difference sets. (GrA)

## Course Offerings and Major Sequences

### 5900. TUTORIAL COURSE IN ADVANCED MATHEMATICS. (Cr ar; prereq #)

Qualified students may make arrangements for obtaining content of other graduate courses regularly offered by the department. (GrA)

### 5910. PROBLEMS COURSE. (4 cr; prereq #)

Problem-solving techniques in many areas of mathematics. Topics from elementary to advanced levels, adapted to students of varied backgrounds. With departmental approval, this course may be repeated for credit. (GrA)

### 5920f,w,s. MATHEMATICS ORIENTATION SEMINAR. (1 cr [may be repeated for a maximum of 3 cr]; prereq math major with 3rd-yr standing or #)

A nonstructured seminar to facilitate contact between students and faculty. Primarily a discussion course, providing opportunity to examine topics that do not fit into the standard curriculum. (GrA)

## MICROBIOLOGY (MicB)

College of Medical Sciences

**Staff:** Dennis W. Watson, *chairman*, 1060 Mayo; Dwight L. Anderson, Henry Bauer, Robert Bernlohr, Donna J. Blazevic, K. Gerhard Brand, Peter Chapman, Martin Dworkin, Grace M. Ederer, Arthur Y. Elliott, Beulah H. Gray, V. William Greene, Jane H. Hall, Wendall H. Hall, Alan B. Hooper, Howard M. Jenkin, Russell C. Johnson, Alfred G. Karlson, Yoon Berm Kim, Robert K. Lindorfer, Charles McKhann, John M. Matsen, Gerald M. Needham, David E. Peterson, Peter G. W. Plagemann, James T. Prince, Palmer Rogers, Edward Savard, Edwin L. Schmidt, Lea I. Sekely, Richard Simmons, Henry M. Tsuchiya, Lewis W. Wannamaker, Horace Zinneman, James F. Zissler

Microbiology is the branch of biological science dealing with the nature and activities of microorganisms, the distinctive microscopic life forms that recycle the elements in aquatic, atmospheric, and soil environments. Their potentialities may be directed to the benefit of man in industry, agriculture, and medicine, or to his harm in disease and spoilage. As remarkable useful model systems for research, they play a key role in the development of modern biology.

Elementary Microbiology (MicB 1101) is open to students of occupational therapy, mortuary science, and dental hygiene upon permission of the Microbiology Department.

**Major Sequence for B.A.:** 1. *Required background courses*—Chem 1004,5, 3100,1, 3301,2, 3303 or Biol 3021; Math 1211/21/31 or 1311/21/31 or 1611/21; Phys 1031/2; Biol 1011 and Bot 1001 or Zool 1013. 2. *Major requirements*—MicB 3103 or 5105 or VMic 3103 or Biol 3013; MicB 5321, 5216; additional Upper Division cr in microbiology or acceptable recommended courses to a total of 24 cr.

A major leading to the B.S. is available through the College of Biological Sciences.

**General Education**—A course especially appropriate for nonmajors is Biol 1102.

### LOWER DIVISION COURSE

**Biol 1102w,s. MICROBES AND MAN.** (4 cr; §MicB 3103 or MicB 5150 or Biol 3013; prereq 1002 or 1011) Dagley, Chapman

Microorganisms in relationship to man and his environment; importance in the processing and preservation of food; waste disposal, and environmental factors, bacterial products of industrial and pharmaceutical importance, role of microorganisms in recycling elements of the biosphere, microorganisms, and disease.

### UPPER DIVISION COURSES

**3103f,w,s.\*\* GENERAL MICROBIOLOGY.** (5 cr; prereq soph with C avg in prereq courses to major sequence, or jr with 10 cr in chemistry and 5 cr in biological sciences, or #) Schmidt, Lindorfer

Morphology, physiology, taxonomy, and ecology of bacteria. Practical applications of fundamental principles.

**5105f,w,s.\*\* BIOLOGY OF MICROORGANISMS.** (4 cr; §3103, Biol 3013; prereq 5 cr in biological sciences, Chem 3302, or §) Dworkin, Bernlohr, Sudo

Taxonomy, anatomy, physiology, biochemistry, and ecology of microbes. Molecular structure in relation to bacterial function.

**FScl 5120w. FOOD MICROBIOLOGY.** (3 or 5 cr [3 cr for lect taken separately with #]; prereq MicB 3103)

Relationship of environment to occurrence, growth, and survival of microorganisms in foods; microbiological quality of dairy and food products; bacteria, yeasts, and molds related to food spoilage; utilization of microorganisms in manufacture of dairy and food products; recognition and control of food-borne pathogens and food poisoning.

**FScl 5122s. SANITATION AND PROCESS MICROBIOLOGY.** (4 cr [3 cr for lect taken separately with #]; prereq 5120 or #)

The control and destruction of microorganisms; chemical, physical, and microbiological principles in cleaning and sanitizing dairy and food processing equipment; inactivation of microorganisms and thermal process evaluation; microbiological fermentations and preservation methods; sanitation programs; microbiological standards for dairy and food products.

**PubH 5171f,s. ENVIRONMENTAL MICROBIOLOGY.** (3 cr; prereq 5002, 5151 and MicB 3103 or §) Greene

Survival, dissemination, transportation, and significance of microorganisms in the environment; application of principles to environmental health problems.

**5216w. IMMUNOLOGY.** (4 cr; prereq 3103 or 5105 or Biol 3013) Gray

Nature of antigens and antibodies; chemical basis of serologic specificity; qualitative and quantitative aspects of antigen-antibody reactions; theories of antibody production; cellular antigens and blood grouping; nature of complement and its role in immunologic phenomena; mechanisms of hypersensitivity; hypersensitivity-like states and immunologic diseases; transplantation and tumor immunity; host-parasite interactions. Includes lab.

**5232s.\*\* MEDICAL MICROBIOLOGY.** (4 cr; for other than medical students; prereq 5216) Savard.

Pathogenic bacteria, fungi, and viruses, especially in relationship to disease; principles of infection, pathogenesis, and immunity; microbiological techniques for laboratory diagnosis.

**5233f\*\* MICROORGANISMS AND DISEASE.** (7 cr; 10 cr in chemistry and 5 cr in biological sciences or §; not open to microbiology majors) Johnson

The nature of microorganisms, immunology, medical bacteriology, virology, mycology, parasitology, and principles of disease control.

**FScl 5320f. ADVANCED DAIRY AND FOOD MICROBIOLOGY.** (4 cr; prereq sr, 5122, or §)

Microbiology of food starter cultures; composition of starters, nutrition and metabolism, inhibitors in milk, strain association and compatibility, preservation and mass production; bacteriophage in cheesemaking. Influence and resistance. Natural and microbial toxicants in foods, occurrence, techniques (general and specific) for monitoring their presence; control.

**5321w. PHYSIOLOGY OF BACTERIA.** (3 cr; prereq 3103 or 5105 or Biol 3013; 10 cr in organic chem or biochem; 3 cr in genetics) Rogers

Chemical and physical organization of bacteria as related to function; growth; energy metabolism including oxidations and fermentations; nutritional requirements; antimicrobial agents; autotrophic mechanisms; microbial differentiation.

**5322w. PHYSIOLOGY OF BACTERIA LABORATORY.** (2 cr; prereq 5321 and # and a lab course in basic bacteriology) Staff

Techniques employed in the study of bacterial physiology and metabolism.

**5424s. BIOLOGY OF VIRUSES.** (4 cr; prereq 5321 or Biol 3021) Plagemann

Structure, composition and properties of bacterial, plant and animal viruses; interaction with cells and effects on host cell metabolism; biochemistry of viral replication; techniques used in study of viruses and viral infections; viral tumorigenesis.

**5612s. ECOLOGY OF SOIL MICROORGANISMS.** (4 cr; prereq 3103 or 5105 or Biol 3013 and §; offered 1972-73 and alt yrs) Schmidt

(Same as Soil 5612) Soil as a microhabitat; the nature of the microbial population of soil; interactions among microorganisms in the soil ecosystem; and significant activities of soil microorganism.

**5970f,w,s. DIRECTED READINGS** (Cr ar; prereq #)

\*\* Microscope required. Students may obtain use of microscope by purchasing \$3 microscope cards from bursar.

## MIDDLE EASTERN LANGUAGES

**Staff:** Anwar G. Chejne, *chairman*, 157 Temporary South of Folwell; Iraq Bashiri, Caesar E. Farah, George J. Koury, Jonathan Paradise, Daniel D. Reisman

The Department aims to acquaint the student with Middle Eastern languages, in order to enable him to read and do research in these languages and their literatures; to equip him with a speaking knowledge of at least one Middle Eastern language; and to acquaint him through original texts and through English translations with the culture of the peoples of the Middle East.

The Department offers B.A., M.A., and Ph. D. degrees in Arabic, B.A. in Hebrew, and B.A. in Middle Eastern studies.

**General Education**—Courses recommended for general education purposes are Arab 5501/2/3 and MidE 3201/2, 3501/2, 3531, 3551/2, and 5511/2/3.

### Middle Eastern Studies (MidE)

(No knowledge of a Middle Eastern language is required.)

**Major Sequence for B.A.:** Arabic, Hebrew, or Persian 1101/2/3, 3011/2/3, plus 3 civilization courses centered on the selected language; 5 Upper Division courses chosen with adviser's approval from Department offerings or related courses in other departments.

### UPPER DIVISION COURSES

#### Civilization

- 3101s. ANCIENT NEAR EASTERN TEXTS IN TRANSLATION.** (4 cr; no prereq)  
Representative texts of the Sumerian-Akkadian literary and historical tradition. Relationship, as forerunner, of the Mesopotamian traditions to others, particularly the *Old Testament*. (GrD)
- 3107/8. EMERGENCE OF CLASSICAL JUDAISM.** (4/4 cr; no knowledge of Hebrew req)  
Development of classical Judaism during the formative periods of Christianity and Islam; teaching of the Pharisees, development of Rabbinic thought, Judeo-Islamic symbiosis, medieval Jewish philosophy and mysticism.
- 3115. MIDRASH IN TRANSLATION.** (4 cr; no knowledge of Hebrew req)  
Ancient writings as living texts for future generations. Attention of ancient rabbis to the Bible in their attempt to solve moral, theological, and literary problems. Midrash as revelation of their values and solutions to their contemporary problems.
- 3501/2. ANCIENT ISRAEL.** (4/4 cr; no knowledge of Hebrew req)  
History of Israel and development of its religion. Biblical literature in the cultural, historical and religious milieu of its origin. (GrC)
- 3511/2. INTRODUCTION TO IRANIAN CIVILIZATION.** (4/4 cr)  
**3511:** Modern Iran — recent history and analysis of the chief ethnic, religious, social, and economic groups within present-day Iranian society; problems of modernization.  
**3512:** Two periods of special interest for an understanding of the Iranian cultural heritage: the Achaemenid and the Ghaznavid.
- 3521. THE MIDDLE EAST IN THE 19TH CENTURY: 1798-1914.** (4 cr) Farah  
Structure of society; cultural and political impact of the West; revivalist and nationalist trends; reformist movements; separatist movements.
- 3525. THE MODERN ARAB WORLD: 1915 TO PRESENT.** (4 cr)  
Struggle for independence; rise of independent Arab states in the Near East and North Africa; problems of social, cultural, economic, and literary developments; modernizing trends.
- 3531. INTRODUCTION TO ISLAMIC CULTURE.** (4 cr; no prereq)
- 3531H. HONORS COURSE: INTRODUCTION TO ISLAMIC CULTURE.** (4 cr; no prereq)  
Students will attend lectures in 3531 and meet with lecturer one additional period each week.

- 3541/2/3. HISTORY OF THE ARABS.** (4/4/4 cr)  
3541: From pre-Islamic days to downfall of Umayyads of Damascus. 3542: From Abbasids to fall of Baghdad in 1258. 3543: From Crusades to modern times.
- 3541H/2H/3H. HONORS COURSE: HISTORY OF THE ARABS.** (4/4/4 cr)  
For description, see 3541/2/3. Students will attend 3541/2/3 lectures and meet with lecturer one additional period each week.
- 3545. ISLAMIC MYSTICISM** (4 cr)  
Asceticism and Sufism; the mystics, their literature, theories, observances, and organizations.
- 3551/2. INTELLECTUAL LIFE IN ISLAM.** (4/4 cr)  
3551: Rise of Muslim scholarship during 1st century of Islam. 3552: Various branches of Muslim scholarship in medieval times.
- 3561/2/3. INTRODUCTION TO TURKISH CIVILIZATION.** (4/4/4 cr)  
Historical survey of the Turkish cultural area from the 16th century up to the present; social, literary, and artistic aspects of Turkish civilization.
- 3591/2/3. SURVEY OF ISLAMIC CIVILIZATION.** (5/5/5 cr; no prereq)  
Three major periods of Islamic civilization. 3591: The Golden Age of Islam, Baghdad, Cordova, Cairo, and Bokhara in the 9th and 10th centuries. 3592: Islamic Renaissance in the 15th and 16th centuries; Ottomans, Safavids, and Moghuls. 3593: The 19th and 20th centuries, Western challenge and Islamic response.

### Religion

- 3117. THE DEAD SEA SCROLLS: THE INTERTESTAMENTAL PERIOD.** (4 cr; no knowledge of Hebrew req)  
Jewish Sectarianism in the pre-Christian period and position of the Dead Sea Sect. Qumran texts in English, emphasizing communal organization, modes of worship, theology, and Messiah concept as a precursor to later religious developments.
- 3125. MAIMONIDES' GUIDE FOR THE PERPLEXED.** (4 cr; no knowledge of Hebrew req)  
Schiffman  
The most famous work of medieval Jewish philosophy; problems of creation, providence, revelation, prophecy, and the law against the background of classical and medieval thought.
- 3544. ISLAMIC RELIGION.** (4 cr)  
Islamic beliefs, institutions, theological and political sectarianism.
- 3555s. ZOROASTRIANISM.** (4 cr; no knowledge of Persian req)  
The basic tenets of Zoroastrianism and its offshoots, and its historical development to the 10th century A.D.

### Literature

- 3201/2. SURVEY OF ARABIC LITERATURE IN TRANSLATION.** (4/4 cr; no prereq)  
Arabic literature from earliest times to the present.
- 3351. MODERN ARABIC DRAMA IN TRANSLATION.** (4 cr; no prereq)  
Beginnings in the 19th century to the present.
- 5401. BIBLIOGRAPHY OF MIDDLE EAST STUDIES.** (4 cr; prereq knowledge of at least one European language other than English, familiarity with at least one Middle Eastern language desirable and #)  
Source materials, reference works, and guides to the literature of the Islamic Middle East.
- 5601. CLASSICAL PERSIAN LITERATURE IN TRANSLATION.** (4 cr; no knowledge of Persian req)  
Masterworks of Persian prose and poetry from Rudaki to Jami.
- 5601H. HONORS COURSE: CLASSICAL PERSIAN LITERATURE IN TRANSLATION.** (4 cr; no knowledge of Persian req)  
Students will attend lectures in 5601 and meet with lecturer one additional period each week.
- 5661. MODERN TURKISH LITERATURE IN TRANSLATION.** (4 cr; no knowledge of Turkish req)  
Historical and social background of 20th-century literature. Lyrical and narrative texts, Yasar Kemal, Orhan Kemal, Nazim Hikmet, Aziz Nesin, and others.

## Akkadian (Akka)

- 5011/2/3. **ELEMENTARY AKKADIAN.** (4/4/4 cr; for advanced undergraduates by permission only and graduate students)  
Introduction to cuneiform script. Outline of Akkadian grammar, written drills, selected readings from historical annals, law collections, religious and epic literature.

## Arabic (Arab)

Major Sequence for B.A.: Arab 3011/2/3, 5011/2/3; MidE 3201/2; and 9 cr in courses numbered 3001 or above.

### LOWER DIVISION COURSES

- 1101/2/3. **BEGINNING LITERARY ARABIC.** (5/5/5 cr)  
Fundamentals of the Arabic language, based on an audio-lingual method; aural comprehension, correct pronunciation, and practical reading knowledge. Basic grammar of Arabic.
- 1111/2/3. **BEGINNING SPOKEN ARABIC.** (5/5/5 cr)  
Study of one modern dialect. Students expected to use laboratory for practice.

### UPPER DIVISION COURSES

- 3011/2/3. **INTERMEDIATE ARABIC.** (4/4/4 cr; prereq 1103 or #)  
Intensive review of grammar through the analysis of a variety of cultural and literary texts.
- 5011/2/3. **ADVANCED LITERARY ARABIC AND COMPOSITION.** (5/5/5 cr; prereq 3013 or #)  
Survey of literary styles and genres in classical and modern writings, with compositions based on texts studied.
5014. **STRUCTURE OF ARABIC.** (4 cr; prereq 2 years of Arabic or #)  
Descriptive analysis of main structure of Arabic, classical and colloquial.
5111. **READINGS IN LEGAL TEXTS.** (4 cr; prereq 5013 or #)  
Readings in Islamic theological and philosophical texts.
- 5211/2. **READINGS IN CLASSICAL ARABIC LITERATURE.** (4/4 cr; prereq 5013 or #) (GrC)
5231. **ARABIC LITERATURE IN THE 19TH-20TH CENTURIES.** (4 cr; prereq 5013 or #)
5311. **HISPANO-ARABIC POETRY.** (4 cr; prereq 5503 or #)
5405. **IBN KHALDUN.** (4 cr; prereq 5503 or #)
5406. **IBN HAZM OF CORDOVA.** (4 cr; prereq 5503 or #)
- 5501/2/3. **HISPANO-ARABIC LITERATURE AND CULTURE.** (4/4/4 cr; 5513 and knowledge of Arabic and/or Spanish desirable but not req)
5701. **DIALECT ANALYSIS.** (4 cr; prereq knowledge of Arabic and #)  
Differences and contrasts in various Arabic dialects.
5711. **READINGS IN ARAB GRAMMARIANS.** (4 cr; prereq 5013 or #)
- 5721/2. **SEMINAR: DEVELOPMENT OF ARABIC LANGUAGE AND LITERATURE.** (4/4 cr)  
5721: Arabic language from pre-Islamic times to middle of 8th century. 5722: Development of language in Golden Age of Abbasids.
5970. **DIRECTED READINGS.** (Cr ar; for advanced students wishing to work on special problems; prereq 5013 and #)  
Reading and periodic consultations.
5990. **HONORS COURSE: DIRECTED RESEARCH.** (Cr ar; prereq 5970 or #)  
Individual studies for honors work at advanced level.

## Aramaic

- 5011/2/3. **ARAMAIC.** (4/4/4 cr; for students preparing for Biblical studies, ancient history majors, and students specializing in Semitic languages; recommended for students of Talmud; prereq 1 yr Hebrew or Arabic or #)  
5011: Biblical Aramaic — fundamentals of grammar and fluency in reading Biblical and ancient Aramaic. 5012: Syriac — fundamentals of grammar and fluency of reading Syriac texts. 5013: Aramaic inscriptions — epigraphy, morphology, and syntax of old Aramaic inscriptions from 9th to 5th centuries B. C.

## Hebrew (Heb)

Major Sequence for B.A.: 3015/6/7; 2 qtrs of Bible; 2 qtrs of Rabbincis; 2 qtrs of modern literature; 1 qtr of a civilization course.

*Note for students with advanced standing: Qualifying exams will be given during the first and last weeks of fall quarter and the last week of winter and spring quarters. Consult Department secretary.*

### LOWER DIVISION COURSES

**1101f/2w/3s. BEGINNING HEBREW.** (5/5/5 cr; students with elementary or high school background may be required by instructor to transfer to a course at appropriate level)

Basic proficiency in speaking, reading, and writing modern Hebrew as an introduction to the study of literature and culture. Aural comprehension, correct pronunciation, and basic grammar, including primary features of Biblical syntax.

**1102xw/3xs. BEGINNING INTENSIVE HEBREW.** (5/5 cr; prereq qualifying exam, for which students receive 5 cr)

Beginning Hebrew for students with previous experience in elementary Hebrew. Course covers all of beginning Hebrew.

**1301. SURVEY OF HEBREW GRAMMAR.** (4 cr; for students, who through previous studies, have ability to read simple texts, but desire firm grammatical foundation; prereq at least 3 years study below college level, or #)

Intensive review of gramatical forms and patterns chiefly through systematic analysis of variety of Hebrew texts, oral drills, and written composition.

### UPPER DIVISION COURSES

**3011f/2w/3s. INTERMEDIATE HEBREW.** (4/4/4 cr; prereq 1103; course open to qualified freshmen or #)

Modern short stories, readings emphasizing contemporary idiom, newspaper articles, and selected Biblical narratives. Review and consolidation of the fundamentals of grammar. Course conducted chiefly in Hebrew.

**3015f/6w/7s. ADVANCED MODERN HEBREW.** (4/4/4 cr; prereq 3013 or #)

Continuation of 3013; the basic structure of modern Hebrew, leading to advanced proficiency in understanding fluent native speech, self-expression in speech and composition, comprehension of advanced literature and the Hebrew press. Course conducted entirely in Hebrew.

**3111/2. RABBINICAL TEXTS.** (4/4 cr; prereq 3013, 3017 or 3202 or #)

Selections from Talmud, Midrash, and Codes.

**3121f/2w/3s. MEDIEVAL HEBREW LITERATURE.** (3/3/3 cr; prereq 3013 or #)

Survey of representative writers and thinkers. **3121/2:** Medieval Hebrew Bible commentaries. Representative passages from medieval Jewish Biblical commentators: Rashi, Ibn Ezra, Kimchi, Abrovanel, etc. Sources and methods of each commentator. Recommended for students of Biblical literature. **3123:** Medieval Hebrew poetry. Representative poets from Middle Ages: Yoni, Kalir, Ibn Gabirol, Halevy, etc. (GrD)

**3131w/2s. TALMUDIC TEXTS.** (4/4 cr; prereq 3017 or 3202 or #)

Consecutive study of a tractate of the Babylonian Talmud. Emphasis on linguistic and historical problems. (GrC)

**3201/2. A BOOK OF THE BIBLE.** (4/4 cr; prereq 3013 or #)

Scientific study of a book of the Bible. Modern scholarly trends and medieval exegesis. Intensive analysis of a selected text. (GrD)

**3201H/2H. HONORS COURSE: A BOOK OF THE BIBLE.** (4/4 cr; prereq 3013 or #)

Students will attend lectures in 3201/2 and meet with lecturer one additional period each week.

**3301. MODERN HEBREW ESSAY.** (4 cr; prereq 3017 or #)

Major ideas and issues of the 19th and early 20th centuries through analysis of representative works; selected essays of Ahad Hacam, Krochmal, Berditchevsky, and Frischmann. (GrD)

**3304. MODERN HEBREW SHORT STORY.** (4 cr; prereq 3017 or #)

Prose of 19th and 20th centuries, including selections from Mendele, Peretz, Agnon, and others.

## Course Offerings and Major Sequences

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- 3307. MODERN HEBREW POETRY: 1880 TO THE PRESENT.** (4 cr; prereq 3017 or §)  
Important modern Hebrew poets, such as Bialik, Tchernichovsky, Lamdan, Alterman, Shlonsky, Leah Goldberg, Dalia Ravikovitch.
- 3901. HONORS COURSE.** (Cr ar; prereq candidate for honors in Hebrew)  
Organized around significant theme or problem in Hebrew studies.
- 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 the materials, teaching techniques. Periodic seminars with instructor and other departmental staff on problems of language teaching.
- 5104f/5w. PROBLEMS IN BIBLICAL STUDIES.** (4/4 cr; prereq 3202 or §; for majors and other adequately prepared to read Bible in Hebrew)  
Selected scholarly issues in modern Biblical studies. Scientific methodology and use of research tools.
- 5701. INTRODUCTION TO COMPARATIVE STUDY OF SEMITIC LANGUAGES.** (4 cr; prereq grad or § and 1 year of two Semitic languages)  
Historical survey of linguistic development in Semitic languages. Selected problems in phonology and morphology.
- 5711. NORTHWEST SEMITIC INSCRIPTIONS.** (4 cr; prereq 3013 or §)  
Introduction to Paleo-Hebrew script. Study of morphology, phonology, syntax, and linguistic changes in early Hebrew, Moabite, Phoenician, and Punic inscriptions.
- 5970. DIRECTED READINGS.** (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or §)
- 5990. HONORS COURSE: RESEARCH.** (Cr ar; prereq 5970 or §)  
Independent research on topic of interest to student under guidance of faculty member. *Must be begun fall quarter.*

## Persian (Pers)

### LOWER DIVISION COURSES

- 1101f/2w/3s. BEGINNING MODERN PERSIAN.** (5/5/5 cr)  
Audio-lingual course in spoken and written modern Persian. For students who wish to gain active mastery of the language.

### UPPER DIVISION COURSES

- 3011f/2w/3s. INTERMEDIATE MODERN PERSIAN.** (4/4/4 cr; prereq 1103 or §)  
Grammar drills, reading, and discussion, in Persian, of graded texts in modern Persian.
- 5101f/2w/3s. BEGINNING CLASSICAL PERSIAN.** (4/4/4 cr; prereq Pers 1103, or Arabic 1103, or grad standing, or §)  
Preparation of students for research in medieval Persian history and literature. (GrA)
- 5011f/2w/3s. ADVANCED CLASSICAL PERSIAN.** (4/4/4 cr; prereq 3013 or 5103 or §)  
Reading and analysis of selected texts of classical Persian poetry and prose. **5011:** Medieval art prose. **5012:** Ghazal and Qasidah. **5013:** Epic.
- 5970. DIRECTED READINGS.** (Cr ar; for advanced students wishing to work on special problems; prereq 3013 or §)  
Reading and periodic consultations.
- 5990. DIRECTED RESEARCH: SEMINAR IN LITERARY CRITICISM.** (4 cr; prereq 5013 or §)  
Application of modern techniques of literary criticism to classical Persian poetry. (GrD)

## Turkish (Turk)

### LOWER DIVISION COURSE

- 1101/2/3. INTRODUCTION TO TURKISH GRAMMAR AND READING.** (5/5/5 cr)  
Vocabulary forms and syntax, intensive graded reading and speaking facility.

## MILITARY SCIENCE

See Reserve Officers' Training Corps

## MODERN GREEK

See Classics

## MUSIC (Mus)

**Staff:** Roy A. Schuessler, *chairman*, 104 Scott Hall; Charles Byrne, Arlin Snesrud, *administrative assistants*; Adrian Lauritzen, *coordinator of advising*; Dominick Argento, Frank Bencriscutto, Donna Cardamone, Paul Fetler, Heinrich Fleischer, Paul Freed, C. Lee Humphries, Martha Ivory, Alan Kagan, Thomas Lancaster, Robert Laudon, Duncan McNab, Frederick Nylene, Johannes Riedel, Charles Schwartz, Eric Stokes, Everett Sutton, D. Clifton Ware, Bernhard Weiser

The Department of Music offers B.A. degrees in music with specializations in applied music, history and literature, composition and theory, theory, and piano pedagogy. It also offers a bachelor degree designed for students with marked ability who plan to follow music as a profession.

The Department is a liberal arts college member of the National Association of Schools of Music. The requirements for graduation with degrees carrying credit for courses in music, as set forth in this *Bulletin*, are in accordance with the published regulations of the NASM.

The Department offers courses in applied music, theory, composition, musicology, ethnomusicology, music history and literature, and group performance to students wishing to obtain cultural musical background.

**Music Scholarships**—Scholarships of varying amounts are open to music majors. Musical and scholastic aptitude are important factors in scholarship awards. Tryouts are held in Scott Hall during the spring quarter each year.

**Applied Music Fees**—These fees are reduced for junior and senior majors who have met Lower Division requirements and an Upper Division qualifying examination in applied music.

**Requirements for Music Majors**—Students majoring in music must fulfill the requirements of both Lower and Upper Divisions. A total of 144 credits in courses other than applied music (piano, voice, trumpet, etc.) must be earned to be eligible for the B.A.

Music majors are required to participate in chorus, orchestra, concert band, chamber singers, instrumental ensemble, men's chorus, or women's chorus, or in a combination of these, for a minimum of 6 quarters. They must pass a piano proficiency test before graduation (preferably soon after entry into a music major program).

Transfer students are required to take a theory placement test.

**Major Sequence for B.A. and B.F.A.:** 1. *Required Lower Division courses in freshman year*—1501/2/3, 1511/2/3, 1201 through 1225 or 1301 through 1325, 1603; in sophomore year, 1504/5/6, 1514/5/6. 1201 through 1225 or 1301 through 1325, 1604/5/6. Students electing applied music major sequences are required to play or sing an Upper Division qualifying examination before UD enrollment.

2. **Major requirements**—A. Applied music (instrumental) 36 cr in LD and UD applied music, senior recital, 3541/2/3, 12 additional UD music cr.

B. Applied music (vocal), 36 cr in LD and UD applied music, senior recital, 5741/2/3, 12 additional UD music cr.

C. History and literature, 24 cr in LD and UD applied music, 3541/2/3, 5501/2/3, 18 additional UD music history and literature cr.

D. Composition and theory, 24 cr in LD and UD applied music, 3541/2/3, 5501/2/3, 5551/2/3, 5561/2/3, 6 additional UD music cr.

## Course Offerings and Major Sequences

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E. Theory, 24 cr in LD and UD applied music, 3541/2/3, 5501/2/3, 5561/2/3, 12 additional UD music cr.

F. Piano pedagogy, 30 cr in 1201 or 1301 and 3201 or 3301, a public performance, 3541/2/3; 5351/2/3, 5354/5/6, 6 additional UD music cr.

Modifications of these sequences will be permitted upon petition approved by the major adviser.

**Courses in Applied Music**— Offerings in applied music are classified according to three modes: *elective* (with or without credit), *applied*, and *performance*; and four levels: Lower Division (prefix 1, or 0 for no credit), Upper Division (prefix 3), and two Graduate levels (prefixes 5 and 8). A student may not register for a course in applied music *for credit* until he has passed the required applied entrance examination. The examining committee will determine the mode(s) for which a student may register. Students should consult with the Music Department, 105 Scott Hall, regarding the mode and level of applied music appropriate for fulfillment of specific requirements in each degree program. To register for Upper Division credit in applied music, the student must have completed 12 credits at the Lower Division level on the appropriate instrument and must pass an Upper Division qualifying examination.

Courses in applied music carry either 2 credits (minimum of 10 private half-hour lessons) or 4 credits (minimum of 10 hour lessons) per quarter. A quarterly fee of \$60 for 2 credits, \$120 for 4 credits, is charged for individual lessons for all Lower Division students and non-music majors. Fees are reduced for junior and senior majors who have met the Lower Division requirements, including an Upper Division qualifying examination in applied music.

For graduate courses in applied music for both Arts College and College of Education majors, see the appropriate sections, M.A., M.F.A., and M.Ed., in the *Graduate School Bulletin*.

**Applied Music Entrance Requirements for Major Credits** (applied and applied performance modes)—*Piano*: Play (1) major and minor scales in a moderate tempo; (2) three pieces in different styles, such as (a) Bach Invention or dance from one of the suites, (b) one of the less difficult sonatas by Haydn, Mozart, or Beethoven, and (c) one of the shorter pieces by a 19th- or 20th-century composer.

*Organ*: Same as for piano; sight reading of hymns.

*Voice*: Sing on pitch, with correct phrasing and musical intelligence, standard songs in good English (the simpler classics recommended). Demonstrate ability to read a simple song at sight and knowledge of the rudiments of music. A knowledge of piano is recommended.

*Violin*: Play major and minor scales, arpeggios; the simpler Kreutzer Etudes; a sonata by Handel, Haydn, Mozart, Schubert; a more modern work displaying special technique peculiar to the violin. A knowledge of piano is recommended.

*Other orchestral instruments*: Play, with good tone, phrasing, and style, two solo numbers of good musical quality; satisfactory performance in sight reading as well as in playing scales. A knowledge of piano is recommended.

**Applied Music Entrance Requirements for Elective Credit**—A student who wishes to take applied music as an elective should perform two compositions that reveal his level of performance.

**APPLIED MUSIC COURSES: LOWER AND UPPER DIVISION**

| Instrument  | Applied: |         | Elective |      | Applied |        | Applied:<br>Performance |        |
|-------------|----------|---------|----------|------|---------|--------|-------------------------|--------|
|             | Non-Cr.  | Low Div | Up Div   | Grad | Low Div | Up Div | Low Div                 | Up Div |
| Piano       | 0101     | 1101    | 3101     | 5101 | 1201    | 3201   | 1301                    | 3301   |
| Harpsichord | 0102     | 1102    | 3102     | 5102 | 1202    | 3202   | 1302                    | 3302   |
| Organ       | 0103     | 1103    | 3103     | 5103 | 1203    | 3203   | 1303                    | 3303   |
| Voice       | 0104     | 1104    | 3104     | 5104 | 1204    | 3204   | 1304                    | 3304   |
| Violin      | 0105     | 1105    | 3105     | 5105 | 1205    | 3205   | 1305                    | 3305   |
| Viola       | 0106     | 1106    | 3106     | 5106 | 1206    | 3206   | 1306                    | 3306   |
| Cello       | 0107     | 1107    | 3107     | 5107 | 1207    | 3207   | 1307                    | 3307   |
| Double Bass | 0108     | 1108    | 3108     | 5108 | 1208    | 3208   | 1308                    | 3308   |
| Flute       | 0109     | 1109    | 3109     | 5109 | 1209    | 3209   | 1309                    | 3309   |
| Oboe        | 0111     | 1111    | 3111     | 5111 | 1211    | 3211   | 1311                    | 3311   |
| Clarinet    | 0112     | 1112    | 3112     | 5112 | 1212    | 3212   | 1312                    | 3312   |
| Saxophone   | 0113     | 1113    | 3113     | 5113 | 1213    | 3213   | 1313                    | 3313   |
| Bassoon     | 0114     | 1114    | 3114     | 5114 | 1214    | 3214   | 1314                    | 3314   |
| French Horn | 0115     | 1115    | 3115     | 5115 | 1215    | 3215   | 1315                    | 3315   |
| Trumpet     | 0116     | 1116    | 3116     | 5116 | 1216    | 3216   | 1316                    | 3316   |
| Trombone    | 0117     | 1117    | 3117     | 5117 | 1217    | 3217   | 1317                    | 3317   |
| Baritone    | 0118     | 1118    | 3118     | 5118 | 1218    | 3218   | 1318                    | 3318   |
| Tuba        | 0119     | 1119    | 3119     | 5119 | 1219    | 3219   | 1319                    | 3319   |
| Percussion  | 0121     | 1121    | 3121     | 5121 | 1221    | 3221   | 1321                    | 3321   |
| Harp        | 0122     | 1122    | 3122     | 5122 | 1222    | 3222   | 1322                    | 3322   |
| Guitar      | 0123     | 1123    | 3123     | 5123 | 1223    | 3223   | 1323                    | 3323   |
| Accordion   | 0124     | 1124    | 3124     | 5124 | 1224    | 3224   | 1324                    | 3324   |
| Sitar       | 0125     | 1125    | 3125     | 5125 | 1225    | 3225   | 1325                    | 3325   |

**LOWER DIVISION COURSES**

- 1001f,w.s. FUNDAMENTALS OF MUSIC.** (4 cr; for nonmusic majors) Lauritzen  
Basic musical symbols, vocabulary, rhythm, design, scale structures, intervals, chords. Development of basic piano skills; playing simple accompaniments. (GrD)
- 1021f,w. INTRODUCTION TO MUSIC.** (5 cr; §3021) Sutton  
Music in the repertory of our culture—selected forms and styles from 17th through 20th centuries. Aural analyses, relationships of large units of musical form. (GrD)
- 1151f/2w/3s. PIANO: CLASS LESSONS.** (2/2/2 cr; prereq 1001 for nonmusic majors, # for others for 1151)  
Development of skills at keyboard in harmonization, improvisation, sight reading, accompanying, repertory, technique. Emphasis on group learning. (GrD)
- 1161f/2w/3s. VOICE: CLASS LESSONS.** (2/2/2 cr)  
Fundamentals of vocal production: posture, respiration, phonation, and articulation. (GrD)
- 1410f,w.s. BAND.** (1 cr per qtr; prereq #) Bencriscutto, Nylene  
Concert Band Ensemble; Symphony Band Ensemble; Symphony Bands I and II; Marching Band. Concert and Symphony Bands perform standard and contemporary repertory. Marching Band performs at University functions. (GrD)
- 1420f,w.s. ORCHESTRA.** (1 cr per qtr; prereq #)  
A study of symphonic repertory through performance. A minimum of one concert per quarter. Players from all colleges are invited to participate. Performance schedules include major choral works with the University Chorus, outstanding guest and student soloists, and appearances on tours. (GrD)
- 1430f,w.s. CHORUS: WOMEN'S CHORUS; MEN'S CHORUS; ST. PAUL CAMPUS CHORUS; RESIDENT ORATORIO CHOIR.** (1 cr per qtr except 1 cr for 3 qtr participation in Resident Oratorio Choir; prereq #) Lancaster, Schwartz  
Sec. 1,2,3—University Chorus: Performance of major symphonic works with Minnesota Orchestra, University Symphony Orchestra, and University Concert Band. Sec. 3—Concert Choirs: A select ensemble chosen from eligible members of the University Chorus. Sec. 4—Women's Chorus: Rehearsals and performances of standard women's chorus mate-

## Course Offerings and Major Sequences

- rial. Group appears at on- and off-campus functions. **Sec. 5—Men's Chorus:** Rehearsals and performances of standard men's chorus materials as well as special arrangements. Group appears at on- and off-campus functions. **Sec. 6—St. Paul Campus Chorus:** Prepares for at least one public appearance a quarter as well as for special events connected with St. Paul Campus. **Sec. 7—Resident Oratorio Choir:** Mixed chorus open to all residents of Twin City campuses. Performances each quarter of standard choral literature. (GrD)
- 1440f,w,s. ENSEMBLE.** (1 cr per qtr; prereq #)  
Performance of chamber music of major and minor composers: (sonatas, trios, quartets, quintets, etc). Various combinations of vocal and instrumental chamber ensemble materials. (GrD)
- 1501f/2w/3s. MATERIALS AND STRUCTURE OF MUSIC I.** (2/2/2 cr; primarily for music majors) Humphries  
Tonality, melody, rudiments of counterpoint, texture, harmony, and organization of musical structures. (GrD)
- 1504f/5w/6s. MATERIALS AND STRUCTURE OF MUSIC II.** (2/2/2 cr; prereq 1503) Humphries  
Melodic, harmonic, and rhythmic concepts; contemporary materials and procedures; larger musical structures. (GrD)
- 1507su/8su. SURVEY OF MELODIC AND HARMONIC PROCEDURES.** (3 cr; prereq #) Humphries  
Principles of melodic and harmonic structure. (GrD)
- 1511f/2w/3s. EAR-TRAINING AND SIGHT-SINGING I.** (2/2/2 cr; primarily for music majors) Humphries  
Melodic, harmonic, and rhythmic dictation; sight-singing; clef-reading; musicianship drills. (GrD)
- 1514f/5w/6s. EAR-TRAINING AND SIGHT-SINGING II.** (2/2/2 cr; prereq 1513) Humphries  
Further development of aural skills presented in 1511/2/3. (GrD)
- 1517su/8su. EAR-TRAINING AND SIGHT-SINGING.** (3 cr; prereq #) Humphries  
Development of aural skills with concentration on sight-singing, interval recognition, melodic and harmonic dictation, and vocal improvisation. (GrD)
- 1521f/2w/3s. KEYBOARD TRAINING.** (2/2/2 cr; primarily for piano and organ majors; prereq 1503 and 1513) Humphries  
Practical study of keyboard harmony; realization of figured basses; score reading; transposition, improvisation. (GrD)
- 1603s/4f/5w/6s. HISTORY OF MUSIC.** (4/4/4/4 cr; prereq 1502) Laudon  
Musical styles and forms, 9th through 20th centuries; emphasis on their identification through listening practice. **1603:** Romanesque, Gothic, and Renaissance eras. **1604:** Baroque era. **1605:** Classical-Romantic era. **1606:** 20th Century. (GrD)
- 1804. WORLD MUSIC.** (4 cr) Kagan  
Survey of music in universal perspective. Fundamental traits distinguishing styles and cultural factors that influence musical creativity. Music from different cultures placed in juxtaposition to examine forms and traits, to develop listening abilities and an understanding of man's musical expressions. (GrD)

### UPPER DIVISION COURSES

#### Courses for Non-music Majors

- 3021w,s. INTRODUCTION TO MUSIC.** (5 cr; §1021; open to jr and sr non-music students) Sutton  
Similar to Mus 1021 in organization and basic content but more extensive. (GrD)
- 5027f,8w,9s. HISTORY OF MUSICAL STYLES.** (4,4,4 cr) Cardamone  
Principal stylistic developments in history of Western music, 9th century to present day. **5027:** Middle Ages, Renaissance, Baroque. **5028:** Classical period, Early Romanticism, Nationalism. **5029:** 1850 to present. (GrD)

#### Performance Practice

- 5182f. BAROQUE PERFORMANCE PRACTICE.** (4 cr; prereq sr or grad, 1506, 1606 or #) Laudon  
Ornamentation, phrasing, articulation, and improvisation in music of period 1550-1759. Music instruction books of the period; analysis and performance of Baroque music in Baroque style. (GrD)

**Pedagogy and Conducting**

- 3350su. PIANO TEACHERS SUMMER WORKSHOP.** (4-6 cr; prereq 2 yrs piano, 2 yrs theory)  
The place of music in liberal education of the individual, with implications drawn for setting and approach for piano instruction in private studios. (GrD)
- 5351f/2w/3s. PIANO PEDAGOGY I.** (2/2/2 cr; prereq 12 cr in Mus 1101 or 1201 or 1301 or 1151/2/3 or #; offered 1972-73 and alt yrs) Guhl  
Demonstration and discussion of group piano instruction at the elementary level. Selected literature appropriate to conceptual learning through the discovery approach. (GrD)
- 5354f/5w/6s. PIANO PEDAGOGY II.** (2/2/2 cr; prereq 12 cr in Mus 1101 or 1201 or 1301 or 1151/2/3 or #; offered 1973-74 and alt yrs) Guhl  
Principles of piano pedagogy. Survey of teaching materials and application of applied principles and techniques in a directed teaching setting. (GrD)
- 5357f,8w,9s. GRADUATE PIANO SEMINAR.** (2,2,2 cr; prereq #; offered 1973-74 and alt yrs)  
Weiser, Freed, McNab  
Recognition and discussion of problems in piano study instruction and performance. Terminology, repertory, evolution of piano construction, performance practice from Baroque to contemporary literature. (GrD)
- 5361f/2w/3s. VIOLIN PEDAGOGY I.** (2/2/2 cr; prereq 12 cr in 1205 or 1206 or 1305 or 1306 or #)  
Teaching private violin students at beginning, intermediate, and advanced levels. Discussion and demonstrations of pedagogical techniques. (GrD)
- 5381f,2w,3s. SEMINAR: CHORAL TECHNIQUES, REHEARSAL AND PERFORMANCE PRACTICE.** (2,2,2 cr; prereq #; offered alt yrs) Schwartz, Lancaster  
Score analysis, conducting technique, performance practice, and other aspects of choral technique. Practical application of these studies in rehearsal and performance. (GrD)
- 5384/5. CHORAL CONDUCTING.** (4/4 cr; prereq #; offered 1973-74 and alt yrs) Schwartz  
Advanced study of the art of choral conducting—hand techniques, sound control, articulation, breath control, intonation, etc. (GrD)
- 5387/8. INSTRUMENTAL CONDUCTING.** (4/4 cr; prereq #; offered 1972-73 and alt yrs)  
Advanced study of the art of instrumental conducting—conducting techniques, score analysis, performance practice. (GrD)
- 5399f,w,s. PERFORMANCE IN CONDUCTING.** (2 cr; prereq 5388 or 5385, #)  
Preparation and conducting, with documentation, of an ensemble program. (GrD)

**Ensembles and Miscellany**

- 3401f,2w. INTERDISCIPLINARY HONORS SEMINAR: MUSIC, STUDIO ARTS, THEATRE.**  
(2-4 cr; §ArtS 3401, Th 3401, ArtS 3402, Th 3402; prereq jr, sr honors cand, #)  
Argento (GrD)
- 3440f,w,s. ENSEMBLE.** (1 cr per qtr; prereq #)  
Performance of chamber music of major and minor composers; sonatas, trios, quartets, quintets, etc. Includes various combinations of vocal and instrumental chamber ensemble materials. (GrD)
- 5410f,w,s. BAND.** (1 cr per qtr; prereq #) Bencriscutto, Nyline  
Concert Band Ensemble; Symphony Band Ensemble; Symphony Bands I and II; Marching Band. Concert and Symphony Bands perform standard and contemporary repertory. Marching Band performs at University functions. (GrD)
- 5420f,w,s. ORCHESTRA.** (1 cr per qtr; prereq #)  
Symphonic repertory through performance. Players from all colleges are invited to participate. Performance schedules include major choral works with the University Chorus, guest and student soloist. (GrD)
- 5430f,w,s. CHORUS: WOMEN'S CHORUS; MEN'S CHORUS; ST. PAUL CAMPUS CHORUS; RESIDENT ORATORIO CHOIR.** (1 cr per qtr except 1 cr for 3 qtr participation in Resident Oratorio Choir; prereq #) Schwartz, Lancaster  
Sec. 1,2,3—University Chorus: Performance of major symphonic works with Minnesota Orchestra, University Symphony Orchestra, and University Concert Band. Sec. 3—Concert Choirs: A select ensemble chosen from eligible members of the University Chorus. Sec. 4—Women's Chorus: Rehearsals and performances of standard women's chorus material. Group appears at on- and off-campus functions. Sec. 5—Men's Chorus: Rehearsals and performance of standard men's chorus materials as well as special arrangements. Group appears at on- and off-campus functions. Sec. 6—St. Paul Campus Chorus: Prepares for at least one public appearance a quarter as well as for special events

## Course Offerings and Major Sequences

- connected with St. Paul Campus. Sec. 7—**Resident Oratorio Choir:** Mixed chorus open to all residents of Twin City campuses. Performances each quarter of standard choral literature. (GrD)
- 5440f,w,s. ENSEMBLE.** (1 cr per qtr; prereq #)  
Performance of chamber music of major and minor composers (sonatas, trios, quartets, quintets, etc.). Various combinations of vocal and instrumental chamber ensemble materials. (GrD)
- 5450f,w,s. COLLEGIUM MUSICUM.** (1 cr per qtr; prereq #) Lancaster  
Small ensemble of singers and instrumentalists for the study and performance of early music. (GrD)
- 5460f,w,s. CONTEMPORARY MUSIC ENSEMBLE.** (2 cr per qtr; prereq #) Stokes  
Practice and performance of recent music for various combinations of vocal and instrumental ensembles. (GrD)
- 5467/8/9. STAGE MOVEMENT AND ACTING FOR SINGERS.** (4/4/4 cr; prereq #, audition)  
Basic techniques of stage movement and acting styles; application of these techniques to various forms of music theatre. (GrD)
- 5470f,w,s. OPERA WORKSHOP.** (3 cr per qtr; prereq ability to sing arias satisfactorily; #) Sutton  
Preparation and performance of operatic arias and scenes, exploring the combined problems of musical and dramatic interpretation. The class prepares a fully staged production. (GrD)
- 5480su. OPERA AND OPERETTA PRODUCTION.** (4 cr; prereq singers with #) Sutton  
Singers prepare and perform roles in opera and operetta. Special projects, including stage direction, musical direction, and accompanying coaching, are offered for non-singers. (GrD)
- 5490f,w,s. CHAMBER SINGERS.** (2 cr per qtr; prereq #) Lancaster  
Mixed chorus of 16 to 20 voices. Performances each quarter of works for small chorus. (GrD)

### Music Theory and Composition

- 3541f/2w/3s. COUNTERPOINT.** (2/2/2 cr; prereq 1506) Fetler  
Strict 16th-century and Bach-style counterpoint in two and three parts; writing of canons, motets, inventions, fugues. A creative course. The student learns to write musical examples by means of analysis within prescribed styles. (GrD)
- 3571f,w,s. MUSIC CALLIGRAPHY.** (2 cr; prereq mus or mus ed major) Snesrud  
Techniques and forms of notation; manuscript preparation and layout; duplication methods; and general copyright procedures. (GrD)
- 3584f,5w. MUSIC: ITS MEANING AND STRUCTURE.** (4,4 cr) Fetler  
Discussion, examination of selected works of various periods, including recent developments. Purpose, meaning, continuity, direction in music. Relationship of spontaneity and theoretical principles. (GrD)
- 5501f,2w,3s. ADVANCED MATERIALS AND STRUCTURE OF MUSIC.** (2,2,2 cr; prereq 1506) Argento  
Stylistic study of musical materials and structures. **5501:** Before 1850. **5502:** 1850-1950. **5503:** Since 1950; electronic, aleatoric, mathematical procedures. New attitudes and notational practices. (GrD)
- 5511. ADVANCED EAR TRAINING I.** (3 cr; prereq 1516 or #) Fetler  
Dictation of melodic, harmonic, and rhythmic materials in a variety of styles. Introduction to contemporary sonorities. (GrD)
- 5512. ADVANCED EAR TRAINING II.** (3 cr; prereq 1516 or #) Fetler  
Dictation of melodic, harmonic, rhythmic and contrapuntal materials. Emphasis on 20th-century tone combinations, meters, and rhythms. Tonal, polytonal and atonal exercises. Training in tonal memory. (GrD)
- 5521f,2w,3s. KEYBOARD HARMONY.** (2,2,2 cr; prereq 1506, sr or grad, primarily for piano and organ majors)  
Practical study of diatonic and chromatic harmony at the piano. Realization of figured bass music of the 17th and 18th centuries. Performance of choral, orchestral, and chamber music of Classic and Early Romantic periods from open score, using all clefs. (GrD)
- 5532w. ANALYSIS II.** (3 cr; prereq 1506) Stokes  
Various procedures and techniques of analysis applied to music composed since ca. 1950. (GrD)
- 5533s. ANALYSIS III.** (3 cr; prereq 1506) Fetler  
Representative masterworks of the 20th century. (GrD)

- 5541f,2w/3s. ADVANCED COUNTERPOINT.** (2/2/2 cr; prereq 3543; offered 1972-73 and alt yrs) Fetler  
Practice in technique of writing three- and four-voice fugues; contrapuntal devices and problems; analysis of polyphonic works of periods from *Ars Nova* to the present day. (GrD)
- 5551f,2w,3s. COMPOSITION I.** (2,2,2 cr; prereq 1506) Argento, Fetler, Stokes  
Original work in various forms. Study of a variety of techniques and styles of composition, followed by development of original approaches. (GrD)
- 5554f,5w,6s. COMPOSITION II.** (2,2,2 cr; prereq 3543, 5553) Argento, Fetler, Stokes  
Original works in various forms. (GrD)
- 5560. ELECTRONIC MUSIC LABORATORY.** (2 cr; prereq 3791 or #) Stokes  
Electronic music techniques and compositional methods. Performance in combination with instruments and voices. (GrD)
- 5561f,2w/3s. ORCHESTRATION.** (2/2/2 cr; prereq 1506) Argento  
Scoring instruments of the orchestra for ensemble combinations and full orchestra. (GrD)
- 5564. BAND ARRANGING.** (4 cr; prereq 1506, 5563 or MuEd 3516 or #; offered 1973-74 and alt yrs)  
Current scoring techniques for wind and percussion instruments. Scoring for band. Creative arrangements for marching or concert band. (GrD)

### History and Literature

- 3708. BLACK MUSIC PRIOR TO WORLD WAR I.** (5 cr; §Afro 3105)  
Musical contributions and achievements of Black Americans in the United States during the 19th and early 20th centuries. (GrD)
- 3709. AFRICAN MUSIC IN THE AMERICAN HERITAGE.** (4 cr; §Afro 3301)  
Links between African music and music of Black America, West Indies, South and Central America. The Afro-Cuban style and modern jazz. (GrD)
- 3791. ELECTRONIC MUSIC LITERATURE.** (4 cr; prereq 4 cr in mus or #) Stokes  
Existing musical literature to which electronic materials contribute. Listening to, discussion of, and reading about representative works. (GrD)
- 3807f,8w. MUSIC IN ASIAN AND PACIFIC CULTURES.** (5,4 cr) Kagan  
Living music; ancient traditions of Asia's civilizations. Music and musical instruments: use and function in Australia, New Guinea, Polynesia, South and East Asia, Southeast Asia, island cultures. (GrD)
- 3970f,w,s. DIRECTED STUDIES.** (1-15 cr; prereq #, Δ) Staff  
Independent research and study under faculty guidance. Subjects selected according to strengths and interests of individual students. (GrD)
- 3980f,w,s. DIRECTED TEACHING.** (1-4 cr per qtr; prereq #, Δ) Staff (GrD)
- 5601f,2w/3s. HISTORY OF OPERA.** (3/3/3 cr; prereq 9 cr in history of music or history of art or history of theatre or European history from 1600 or #) Argento  
Origins of opera; its development as a musico-dramatic form through analysis of libretto and music of representative masterpieces of the late Renaissance, baroque, classic, romantic and contemporary periods. (GrD)
- 5604f,5w. HISTORY OF CHURCH MUSIC.** (4,4 cr; prereq 1606 or #; offered 1972-73 and alt yrs) Riedel  
Trends, relationship of music to various theologies and liturgies. (GrD)
- 5607. GREGORIAN CHANT.** (4 cr; prereq 1606 or #) Riedel  
Introduction to Gregorian chant, its forms and style. (GrD)
- 5608. LEITURGIA.** (4 cr; prereq 1606 or #; offered alt yrs) Fleischer, Riedel  
Liturgies ranging from the Roman chant to the 20th century. (GrD)
- 5611. HYMNOLOGY.** (4 cr; prereq 6 cr in 1603/4/5/6 or ArtS 3104/5/6 or Phil 3001,2,3 or Engl 3966/7, or #) Fleischer, 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. History of hymn settings. (GrD)
- 5631f. MUSIC IN MIDDLE AGES.** (4 cr; prereq 1606) Cardamone  
The growth and development of Western musical style from the time of its earliest records to Machaut: Gregorian chant and accretions to the liturgy, chivalric song traditions in Spain, France, and Germany; organum, clausula, and motet. (GrD)

## Course Offerings and Major Sequences

- 5632w/3s. THE MUSIC OF HUMANISM: ARS NOVA AND RENAISSANCE.** (4/4 cr; prereq 5631) Cardamone  
Stylistic achievements in the history of part music, 1350-1600: French, Italian, English, German song forms; Franco-Flemish mass and motet, diffusion of Franco-Flemish style; mannerism and musical depiction of text; rise of instrumental music; stylistic analysis. (GrD)
- 5634t/5w/6s. MUSIC IN BAROQUE ERA.** (3/3/3 cr; prereq 1606; offered 1972-73 and alt yrs) Laudon  
Vocal, instrumental, and sacred styles of baroque era. (GrD)
- 5637t/8w/9s. MUSIC IN GALANT AND CLASSIC PERIODS.** (3/3/3 cr; prereq 1606; offered 1973-74 and alt yrs) Laudon  
The transition from late baroque to galant and classical styles. (GrD)
- 5641.2. MUSIC IN ROMANTIC ERA.** (5,4 cr; prereq 1606 or #; offered 1973-74) Riedel  
Romanticism as a complex of individual styles having elements in common, developed by composers who had to resolve certain basic conflicts between their artistic heritage and their environment. Relationship to literary trends; nationalism. (GrD)
- 5661. GEORGE FRIEDRICH HANDEL: LIFE AND WORKS.** (4 cr; prereq 1606 or #) Riedel  
Musical culture in middle and northern Germany during 17th and 18th centuries. Oratorio in Italy, France, Germany, and England. G. F. Handel's work with emphasis on his oratorios. Handel and England. (GrD)
- 5662. HEINRICH SCHÜTZ: LIFE AND WORKS.** (4 cr; prereq 8 cr in music history or history of art or German literature or political history to 1700 or #) Riedel  
Political events in 17th-century Germany, Europe; Protestant hymn, psalm literature. Their musical elaborations in works of Schütz. Madrigals, monodies, sacred concerti and cantatas, passions. (GrD)
- 5663. LASSO AND PALESTRINA.** (4 cr; prereq 8 cr in music history or Renaissance and Baroque art, or political history to 1700, or general history of Western philosophy or #) Riedel  
Council of Trent, influence on sacred music of 16th century. Lasso's cosmopolitan style, Palestrina's a cappella style. Palestrina style, 17th, 18th centuries. Caecilianism of 19th, 20th centuries. (GrD)
- 5664. CHARLES IVES: LIFE AND WORKS.** (4 cr) Riedel  
Detailed study of Ives' compositions. Ives and American Transcendentalism. Ives and the Progressive party. Ives as a 19th and 20th century composer. (GrD)
- 5665. RABINDRANATH TAGORE: MUSIC AND POETRY.** (4 cr) Kagan  
Life, philosophy, works. Influences: Europe, India's classical and folk traditions. Poetic forms and themes. Influence upon Bengali literature. Songs, operas, with bilingual texts. (GrD)
- 5666. STRAVINSKY.** (4 cr) Cardamone  
Changing styles and esthetic principles of Stravinsky as seen in representative compositions and writings on music; contributions to artistic life in Europe and America (particularly the ballet). (GrD)
- 5701.2. AMERICAN MUSIC.** (4,4 cr; prereq 1606 or 8 cr in American history or American studies or #) Riedel  
From colonial times to present. American Indian music; sacred music in America, Puritan New England to the present time; jazz; music education; the symphony orchestra; contemporary music. (GrD)
- 5704.5. LATIN AMERICAN MUSIC.** (4,4 cr; offered 1973-74 and alt yrs) Riedel  
Pre-Maya and pre-Inca times through colonial period to present. Music of Indians in Brazil, Inca countries. Afro-, Ibero-Latin American music. Folk, popular, contemporary music. (GrD)
- 5707. SCANDINAVIAN MUSIC.** (4 cr; prereq major in music or Scandinavian or humanities or #)  
Music of Norway, Sweden, Finland, Denmark, Iceland; historical backgrounds, folk music, church music; and the music of today. (GrD)
- 5741.2. VOCAL LITERATURE.** (4,4 cr; prereq 12 cr in 1104 or 1204 or 1304 or #; offered 1973-74 and alt yrs) Schuessler, Sutton  
Literature and pedagogy: Performance of representative songs from major and minor composers. Significant vocal techniques from major schools of singing as they relate to song performance. (GrD)

- 5744f,5w,6s. PIANO LITERATURE.** (2,2,2 cr; prereq 12 cr in 1101 or 1201 or 1301 or #; offered 1972-73) Weiser  
The history of keyboard literature suitable for piano performances from end of 16th century to present. Performance illustrations, recordings. (GrD)
- 5747. ORGAN LITERATURE.** (2 cr; prereq grad organ and musicology students or #) Fleischer  
Organ literature and playing from 14th century to the present. Mutual influence of organ construction and composition; various national schools of organ playing. (GrD)
- 5748. INTRODUCTION TO PIPE ORGAN BUILDING.** (2 cr; prereq organ major, other music students with #)  
Construction, scaling, voicing, and tuning of organ pipes; lay-outs of mixtures; evaluation of specifications; construction and evaluation of different types of chests and actions; historical styles of organ building. (GrD)
- 5751f,2w,3s. GERMAN LIEDER.** (2,2,2 cr; prereq 18 cr in 1204 or 3204, Ger 1002, or #; offered 1972-73)  
Selected songs as regards interpretation and style. **5751:** Schubert, Mozart, Beethoven. **5752:** Schumann, Brahms, Franz, Wolf, Strauss. **5753:** Mahler, Hindemith, Berg, Schoenberg, Henze, Schoeck. (GrD)
- 5754. CHORAL LITERATURE: SMALL FORMS.** (4 cr; prereq #; offered 1972-73 and alt yrs) Schwartz  
Selected sacred music and secular choral music (small forms: motets, anthems, madrigals, etc.). (GrD)
- 5755. CHORAL LITERATURE: LARGE FORMS.** (4 cr; prereq sr or grad, 1506 or #; offered 1972-73 and alt yrs) Schwartz  
Selected sacred and secular choral compositions (large forms: mass, oratorio, magnificat, Stabat Mater, Cantata) from 16th century to present. (GrD)
- 5757f. SYMPHONIES OF THE CLASSICAL ERA.** (4 cr; prereq 8 cr in music history or art history or political history since 1750 or English or German literature since 1750, or #)  
Through Haydn and Mozart; evolution of form and style in relation to thought and art through French Revolution. (GrD)
- 5758w. SYMPHONIES OF BEETHOVEN.** (4 cr; prereq 8 cr in music history or art history or political history since 1750 or English or German literature since 1750, or #)  
Evolution of Beethoven's symphonic form and style as reflection of intellectual, political, and artistic currents of the Napoleonic era. (GrD)
- 5759s. SYMPHONIES OF ROMANTIC ERA.** (4 cr; prereq 8 cr in music history or art history or political history since 1750 or English or German literature since 1750, or #)  
Schubert, Schumann, Mendelssohn, Berlioz, Liszt, Brahms, Franck, Dvorak, Tchaikowsky, Bruckner, Richard Strauss; their relation to dominant romantic trends of 19th century. (GrD)
- 5810. ASIAN MUSIC IN PERFORMANCE.** (2 cr; prereq #) Kagan, Staff  
Development of vocal and instrumental skills through applied training and lecture demonstrations. (GrD)
- 5811. TRADITIONAL INDIAN MUSIC: THE SACRED AND THE PROFANE.** (5 cr) Kagan  
Vedic chant and regional folk music. Musical analysis and associations with belief systems, social institutions, history, and esthetic expression. Music theory of India, notational systems, tonal and rhythmic materials, and classifications, musical forms and performance practice. (GrD)
- 5841. MUSIC BIBLIOGRAPHY.** (4 cr; prereq 1606 or #) Riedel  
Music bibliographies, reference materials and monuments of music. (GrD)
- 5844,5. INTRODUCTION TO MUSICOLOGY.** (4,4 cr; prereq 5841 or #; offered 1973-74 and alt yrs) Riedel  
Scope, aims, methods, and resources of research in musicology; acoustics, psychology, sociology, and theory. (GrD)
- 5861. INTRODUCTION TO ETHNOMUSICOLOGY.** (5 cr; prereq #; offered 1973-74 and alt yrs) Kagan  
Scope, aims, methods, and resources of research in ethnomusicology. Transcription and analysis of preliterate, folk, and high-art music of the world. Analysis of style, form, usage, and function. Approaches to musical typology and comparative studies. (GrD)
- 5863. MUSICAL INSTRUMENTS OF THE WORLD.** (4 cr; offered 1973-74 and alt yrs) Kagan  
Organology; classification and comparative study of musical instruments in all cultures; history, distribution, structure, technology, acoustics. Instruments in literature, myths, iconography. (GrD)

## NATURAL SCIENCE AND TECHNOLOGY (NSci)

College of Biological Sciences  
Institute of Technology

The natural sciences are concerned with investigating the biological universe, the physical universe, and the technology human society has developed in its attempts to improve the quality of life.

The CLA Natural Sciences program is undergoing revision and development as this *Bulletin* is printed. For further courses, see departmental sections for Biochemistry, Biology, Botany, Chemistry, Ecology and Behavioral Biology, Genetics and Cell Biology, Geology and Geophysics, Microbiology, Physics and Astronomy, Physiology, and Zoology.

For further information, apply to Norman Kerr, 104 Zoology (biology); Robert Brasted, 209 Smith Hall (chemistry); George Rapp, 104b Pillsbury Hall (geology); Russell Hobbie, 148 Physics (physics); Robert Plunkett, 112 Main Engineering (technology); or departmental faculties.

### Biological Universe—See Biology

### Physical Universe

#### LOWER DIVISION COURSES

**1004f,w. PHYSICAL WORLD: PHYSICS.** (4 cr; §any other physics courses; prereq 1 yr high school algebra)

Topics in physics, selected to illustrate the methods of science and to acquaint the student with the physical universe. (GrB)

**1005w,s. PHYSICAL WORLD: CHEMISTRY.** (4 cr; §any other chemistry courses; prereq 1 yr high school algebra; high school chemistry and NSci 1004 recommended)

Fundamental concepts of chemical bonding, structure of matter and the forces operating in the physical world. Scientific methods and principles developed in lecture, lecture experiments, and laboratory to help students to understand their environment and the problems faced in improving it. (GrB)

**1006s. PHYSICAL WORLD: GEOLOGY.** (4 cr; prereq 1005 or §)

Essential elements of geology. Laboratory-oriented course. Earth science topics that illustrate methods of science and acquaint students with the earth as a physical and chemical system. Field trips. (GrB)

#### UPPER DIVISION COURSE

**3011. CHEMISTRY IN ART.** (4 cr; prereq major in ArtS, ArtH, Design, ArEd, or §; 3 lect plus lab)

Basic chemistry of materials and processes used by artists. Pigments and dyes, vehicles, solvents, plastics, metals, ceramics, photography, print processes, lasers, health hazards.

### Technology and Man

#### UPPER DIVISION COURSES

*Credit in these NSci courses is not available to Institute of Technology students.*

**3101. INTRODUCTION TO ENVIRONMENTAL TECHNOLOGY.** (4 cr; prereq HS physics or chem)

Technological aspects of protecting man and the environment from man's activities. Sources and magnitude of pollution problems in air, water, noise, solid waste. Environmental quality standards, pollution abatement options and technological limitations. (GrB)

**3201. PERSPECTIVES ON COMPUTERS AND SOCIETY.** (4 cr; prereq high school algebra)

The history of automatic computing, the current state of computer technology, the ethics and politics of massive information technologies; speculations on future trends. (GrB)

**3301. ENERGY, POWER, AND SOCIETY.** (4 cr; prereq high school algebra, physics, or chemistry)

The need for energy and its use in society. Concepts of energy and power; problems of pollution and waste disposal. (GrB)

**3401. TRANSPORTATION.** (4 cr; prereq high school physics, chemistry, algebra, and plane geometry)

Physical and technological aspects of local, inter-city, and space transportation. Criteria for evaluating transportation systems. Natural limits in transportation. New concepts. (GrB)

**IT 5311. SEMINAR: ENERGY POLICY.** (4 cr; prereq advanced undergrad or grad; offered f,w,s 1972-73)

Factors of technology, ecology, natural resources, and economics that determine energy policy. The seminar will be led by a consortium of faculty from several colleges.

## NAVAL SCIENCE

See Reserve Officers' Training Corps

## NORTHWEST EUROPEAN LANGUAGE AND AREA STUDIES

Courses in the program of the Center for Northwest European Language and Area Studies are offered by six departments: Art History, Geography, German, History, Philosophy, Political Science, Scandinavian. The courses appear under department headings in this *Bulletin*.

## NORWEGIAN

See Scandinavian

## ORIENTAL

See East Asian Languages

## PERSIAN

See Middle Eastern Languages

## PERSONAL ORIENTATION (PO)

Personal orientation courses are designed to help a student to "know himself"—his abilities, interests, and habits, and their relevance to educational, vocational, and interpersonal relationships.

### LOWER DIVISION COURSES

**1001. HOW TO STUDY.** (2 cr; does not count toward B.A. degree)

Practical assistance in developing efficient methods of study and concentration, organizing material, preparing for examinations, and improving reading ability. Student attitudes and motivation and their relationship to satisfactory performance.

**1011. CHOOSING A VOCATION.** (2 cr; does not count toward B.A. degree)

Application of principles of occupational psychology to help students achieve self understanding as basis for vocational-educational planning. Occupational classification, description, and trends. Individual student projects and small-group discussions of vocational choices of members.

## PHILOLOGY

See Classics

## PHILOSOPHY (Phil)

Staff: H. E. Mason, *chairman*, 399 Ford Hall; Richard Arnaud, May Brodbeck, Norman Dahl, John Dolan, John Earman, Marcia Eaton, Keith Gunderson, William Hanson, Vicki Harper, Herbert Hochberg, Jasper Hopkins, Douglas Lewis, Grover Maxwell, Sandra Peterson, Michael Root, Rolf Sartorius, C. Wade Savage, D. Burnham Terrell, John Wallace

## Course Offerings and Major Sequences

Major Sequence for B.A.: 1. *Required background courses*—1002; 1001 or 3201. 2. *Major requirements*—At least 10 cr in history of philosophy area, one course of which shall be 3003 or 3003H, and other philosophy courses to make a total of at least 35 cr in Upper Division philosophy courses, including at least 15 cr in courses numbered 5xxx or above.

Students intending to enter theological seminaries or other institutions of training in religious work should note the special pretheological curriculum.

### LOWER DIVISION COURSES

- 1001f,w,s. **LOGIC.** (5 cr; open to fr)  
Emphasis upon the application of formal techniques for evaluating arguments. (GrA)
- 1002f,w,s. **INTRODUCTION TO PHILOSOPHY.** (5 cr; open to 3rd-qtr fr)  
Introduction to problems; principal methods and schools of philosophy; historical and contemporary views. (GrC)
- 1003f,w,s. **ETHICS.** (5 cr) Staff  
Examination of problems that arise when human beings attempt to think systematically about conduct and values. (GrC)
1004. **POLITICAL PHILOSOPHY.** (5 cr) Staff  
Under what conditions ought one to obey the law? (GrC)

### UPPER DIVISION COURSES

- 3001f,2w,3s,4f. **GENERAL HISTORY OF WESTERN PHILOSOPHY.** (5,5,5,5 cr)  
Survey of major developments in Western philosophic thought from its beginnings among Greeks to end of 19th century. 3001: Greek philosophy, pre-Socratics, Socrates, Plato, Aristotle. 3002: Stoicism, Epicureanism, and medieval Christian synthesis. 3003: Modern philosophy from Descartes through Hume. 3004: Later modern philosophy from Kant through 19th century. (GrC)
- 3001Hf,2Hw,3Hs,4H. **HONORS COURSE: GENERAL HISTORY OF WESTERN PHILOSOPHY.** (5,5,5,5 cr; prereq #)  
Basic content same as 3001,2,3,4. Students attend an honors recitation section.
3201. **ELEMENTS OF SYMBOLIC LOGIC I.** (5 cr) Arnaud, Dolan  
Development of a formalized language. Syntax and semantics of sentential and first order predicate logic, deductive systems. (GrA)
3202. **ELEMENTS OF SYMBOLIC LOGIC II.** (5 cr; prereq 3201) Arnaud, Dolan  
Continuation of 3201. (GrA)
3302. **MORAL PROBLEMS OF CONTEMPORARY SOCIETY.** (5 cr) Mason, Dahl, Sartorius  
Some of the fundamental moral dilemmas confronting people in the present time. (GrC)
3521. **PHILOSOPHY OF RELIGION.** (5 cr; prereq 10 cr in philosophy) Hopkins  
Discussion of ground and sanctions of religion, according to various philosophies.
3631. **LOGIC OF SCIENTIFIC REASONING.** (5 cr; §5631; prereq 1001 or 3201) Maxwell, Hanson  
Introduction to principles of scientific method, including survey of contemporary approaches to scientific inference.
3900. **HONORS COURSE: UNDERGRADUATE SEMINAR.** (5,5,5 cr; prereq honors regis and 10 cr in Upper Division philosophy courses)  
Topics of contemporary interest taken up in weekly meetings under direction of different faculty members each quarter.
3911. **PHILOSOPHY OF MODERN LITERATURE.** (5 cr; prereq major or minor in philosophy or literature, or #; offered when feasible) Kliger, Terrell, Eaton  
Basic philosophical ideas in modern civilization as expressed in major works of literature.
3970. **DIRECTED STUDIES.** (1-5 cr; prereq #) Staff
3980. **DIRECTED INSTRUCTION.** (1-5 cr; prereq #)
3990. **HONORS COURSE: THESIS.** (5,5 cr; prereq sr, honors regis in philosophy, GPA of 3.5 or better in previous work)  
Individual assignments carried out under direction of faculty member.
5003. **AMERICAN PHILOSOPHY FROM WILLIAM JAMES.** (5 cr; prereq 1002 or 1 qtr history of philosophy or #)  
Among philosophers discussed: Peirce, James, Dewey, Lewis (GrC)

5005. **PLATO.** (5 cr; prereq 3001 or #) Hopkins, Harper, Peterson  
Philosophy of Plato based on analysis of major dialogues. (GrC)
5008. **ARISTOTLE.** (5 cr; prereq 1 qtr history of philosophy or #) Peterson, Harper  
Philosophy of Aristotle based on analysis of selected passages from his works; his relationship to Plato. (GrC)
5012. **PLATO AND ARISTOTLE.** (5 cr; prereq 3001 or #; offered when feasible) Dahl, Harper, Peterson  
Comparative presentation of their metaphysical and epistemological views; special reference to problems of universals.
5021. **MEDIEVAL PHILOSOPHY.** (5 cr; prereq 3001,2 or #) Hopkins  
Selected topics in writings of several medieval philosophers (e.g., Augustine, Anselm, Aquinas, Scotus, and Ockham). (GrC)
5033. **RATIONALISM.** (5 cr; prereq 3003 or #; offered when feasible) Lewis  
Philosophies of Descartes, Spinoza, and Leibniz. (GrC)
5034. **DESCARTES.** (5 cr; prereq 3003 or #) Lewis  
Analyses of philosophical works. (GrC)
5035. **SPINOZA.** (5 cr; prereq 3003 or #; offered when feasible) Lewis  
Philosophy of Spinoza based primarily on analysis of his *Ethics*. (GrC)
5036. **LEIBNIZ.** (5 cr; prereq 3003 or #; offered when feasible) Lewis, Arnaud  
Philosophy of Leibniz based on analysis of selected philosophical writings. (GrC)
5041. **LOCKE.** (5 cr; prereq 3003 or #) Lewis, Terrell, Gunderson  
Detailed study of the *Essay Concerning Human Understanding*. (GrC)
5042. **BERKELEY.** (5 cr; prereq 3003 or #) Lewis, Terrell  
Detailed study of Berkeley's philosophical works. (GrC)
5043. **HUME.** (5 cr; prereq 3003 or #) Terrell  
Detailed study of Hume's *Treatise and Inquiry*. (GrC)
5044. **LATER EMPIRICISM.** (5 cr; prereq 3003 or #; offered when feasible) Terrell  
Major developments in empiricist traditions, principally in Great Britain, from Hume to Russell. (GrC)
5046. **KANT.** (5 cr; prereq 3003 or 3004 or #) Mason, Arnaud  
Philosophy of Kant based on analysis of selected passages from his major works.
5052. **BRENTANO.** (5 cr; prereq 3003 or #; offered when feasible) Terrell  
Philosophy of Franz Brentano, and its significance in background of contemporary philosophy.
5054. **KIERKEGAARD.** (5 cr; prereq 1 qtr history of philosophy or #) Mason  
Detailed examination of major philosophical works. (GrC)
5101. **METAPHYSICS.** (5 cr; prereq 1 qtr history of philosophy or #) Brodbeck, Arnaud, Hochberg, Wallace  
Some recent attempts to discover general principles characteristic of reality. (GrA)
5105. **THEORY OF KNOWLEDGE.** (5 cr; prereq 1001 or 3201 or #) Arnaud, Maxwell, Savage  
Logical structure and experiential roots of knowledge. Meaning, validity, truth, reason, reality. (GrA)
5201. **ELEMENTS OF SYMBOLIC LOGIC I.** (5 cr) Arnaud, Dolan  
Development of a formalized language. Syntax and semantics of sentential and first order predicate logic, deductive systems.
5202. **ELEMENTS OF SYMBOLIC LOGIC II.** (5 cr; prereq 3201 or 5201) Arnaud, Dolan  
Continuation of 3201 or 5201. (GrA)
5203. **INTERMEDIATE SYMBOLIC LOGIC.** (5 cr; prereq 3202 or 5202) Brodbeck, Hanson, Wallace  
Axiomatic development of logic; properties of deductive systems.
5211. **NONCLASSICAL LOGICS.** (5 cr; prereq 3202 or 5202 or Math 5162 or #) Hanson  
Introduction to modal, many-valued, and intuitionistic logics.
5221. **PHILOSOPHY OF LOGIC.** (5 cr; prereq 3202 or 5202 or Math 5162 or #) Brodbeck, Hochberg, Wallace  
Logic and reality; relation of logic to mathematics; theory of descriptions; paradoxes; identity.

## Course Offerings and Major Sequences

- 5231. PHILOSOPHY OF LANGUAGE.** (5 cr; prereq 1001 or 3201 or 10 Upper Division cr in philosophy or §; offered when feasible) Mason, Dolan, Root  
Contemporary attempts to deal with philosophical problems about language. Special attention to concept of meaning. (GrA)
- 5301. HISTORY OF ETHICS; BRITISH MORALISTS.** (5 cr; prereq 3301 or 1 qtr history of philosophy or §) Terrell  
Ethical theory as developed in Great Britain from 17th through 19th centuries. (GrC)
- 5302. HISTORY OF ETHICS: SELECTED CLASSICAL MORALISTS.** (5 cr; prereq 3301 or 1 qtr history of philosophy or §) Dahl  
Moral philosophy outside of British tradition (see 5301). Specific topics announced in *Class Schedule*. (GrC)
- 5311. ETHICAL THEORY.** (5 cr; prereq 3301 or §) Dahl, Mason  
Distinguishing characteristics of a moral judgment; examination of representative theories. (GrC)
- 5414. POLITICAL PHILOSOPHY.** (5 cr; prereq 3414 or §) Staff (GrC) Dolan, Sartorius
- 5415. PHILOSOPHY OF LAW.** (5 cr; prereq 3301, 3302 or 3414 or social science major or §) Sartorius  
Examination of analytical accounts of law and legal obligation.
- 5501. PRINCIPLES OF ESTHETICS.** (5 cr; prereq 5 cr in philosophy or §) Gunderson, Eaton  
Standards of evaluation; esthetic experience; representation, meaning. (GrD)
- 5601. PHILOSOPHY OF SCIENCE.** (5 cr; prereq 1001 or 3201 or §) Maxwell, Earman  
Meaning, methods, implications of modern science. Basic concepts, presuppositions, and procedures.
- 5611. PHILOSOPHY OF SOCIAL SCIENCES I.** (5 cr; prereq 15 cr in philosophy or social sciences or §) Brodbeck  
Criteria for describing and explaining human actions; problems of objectivity, reduction, freedom. (GrC)
- 5612. PHILOSOPHY OF SOCIAL SCIENCES II.** (5 cr; prereq 5611; offered when feasible) Brodbeck (GrC)  
More intensive study of certain topics in 5611, plus analysis of models and measurement.
- 5621. PHILOSOPHY OF HISTORY.** (5 cr; prereq 10 cr in philosophy or 15 cr in history) Mason, Hopkins  
Various philosophical interpretations of history, with particular reference to philosophical aspects of historical methods. (GrC)
- 5631. LOGIC OF SCIENTIFIC REASONING.** (5 cr; §3631; prereq 1001 or 3201) Maxwell, Hanson  
Introduction to principles of scientific method including survey of contemporary approaches to scientific inference.
- 5701. SURVEY OF CONTEMPORARY PHILOSOPHY.** (5 cr; prereq 3003 or §) Staff  
Current systematic and critical philosophies, as represented by their principal exponents.
- 5720,30,40. STUDIES IN CONTEMPORARY PHILOSOPHERS.** (5,5,5 cr; prereq 3003 or §) Staff  
Works of selected individual philosophers. Specific topics announced in *Class Schedule*.
- 5760,70. SELECTED TOPICS IN PHILOSOPHY.** (5,5 cr; prereq 5 Upper Division credits in philosophy or §) Staff  
Selected philosophical problems of contemporary interest. Specific topics announced in *Class Schedule*.
- 5781. CONTEMPORARY EXISTENTIALISM.** (5 cr; prereq 3003 or 3004 or 5054 or §) Mason, Hopkins, Hochberg  
Selected topics in writings of existentialist philosophers since Kierkegaard. (GrC)
- 5970,90. DIRECTED STUDIES AND RESEARCH.** (1-5 cr pre qtr; prereq §) Staff

## PHYSICAL EDUCATION (PE)

College of Education

Arts College students may count up to 6 cr of physical education toward their degrees. Students planning to enter the College of Education may use only 3 cr.

Students register for physical education classes on the Minneapolis Campus at 12 Johnston Hall and on the St. Paul Campus at Coffey Hall. The *Class Schedule* should be checked to make certain the student's activity rating (a physical-fitness

rating provided by the Health Service) is suitable for the class selected for registration.

All classes meet for the first meeting as indicated in the *Class Schedule*. To be assured a place in class a student must attend the first day of class. If a class is closed when a student registers he should report to the first class meeting to take advantage of possible cancellations.

Towels and lockers may be rented for use in physical education facilities. Uniforms for men may be rented at Cooke Hall. Locker and towel cards are issued at bursar's office, 115 Morrill Hall (women); Cooke Hall equipment room (men and women); second floor of Coffey Hall, St. Paul campus, (men and women).

Activity courses are offered on successive levels. Beginning courses require no prerequisite. For courses at more advanced levels, prerequisites are indicated, but *a student with skills or experience may start at one of the more advanced levels*. Advisers in Cooke Hall (men) and Norris Gymnasium (women) will aid students who have questions about levels appropriate to them.

Courses are for 1 cr unless otherwise indicated.

### LOWER DIVISION COURSES

#### Adapted Activities

- 1001. **ACTIVITIES FOR THE HANDICAPPED.** (Men, women; prereq women §; activity rating 4)
- 1101. **ACTIVITIES FOR THE HANDICAPPED.** (Men, women; prereq women §; activity rating 4)
- 1201. **ACTIVITIES FOR THE HANDICAPPED.** (Men, women; prereq women §; activity rating 4)

#### Aquatics

- 1004. **DIVING, SPRINGBOARD.** (Men, women; prereq men 1007, women 1308; activity rating 1)
- 1007. **SWIMMING.** (Men, women; activity rating 1)
- 1104. **DIVING, SPRINGBOARD.** (Men only; prereq 1007 or equiv; activity rating 1)
- 1107. **SWIMMING.** (Men, women; prereq men ability to swim 100 yds, prereq women 1007 or equiv; activity rating 1)
- 1204. **DIVING, SPRINGBOARD.** (Men only; prereq 1007 or equiv; activity rating 1)
- 1205. **SCUBA AND SKIN DIVING.** (Men, women; prereq men 1107 or equiv; women 1207 or equiv; activity rating 1)
- 1207. **SWIMMING.** (Women only; prereq 1107 or equiv; activity rating 1)
- 1306. **SENIOR LIFESAVING.** (Men, women; prereq ability to swim 440 yds; activity rating 1)
- 1307. **SWIMMING.** (Women only; prereq 1207 or equiv; activity rating 1)
- 1308. **SWIMMING AND DIVING.** (Women only; prereq 1207 or equiv; activity rating 1)
- 1309. **SYNCHRONIZED SWIMMING.** (Women only; prereq 1207 or equiv; activity rating 1)
- 1410. **WATER SAFETY INSTRUCTOR.** (2 cr; men, women; prereq current American Red Cross Senior Lifesaving Certificate; activity rating 1)

#### Combatives

- 1034. **JUDO.** (Men, women; activity rating 1,2)
- 1035. **KARATE.** (Men, women; activity rating 1,2)
- 1039. **WRESTLING.** (Men only; activity rating 1,2)
- 1134. **JUDO.** (Men only; prereq 1034 or equiv; activity rating 1, 2)
- 1135. **KARATE.** (Men only; prereq 1035 or equiv; activity rating 1, 2)
- 1139. **WRESTLING.** (Men only; prereq 1039 or equiv; activity rating 1, 2)

## Course Offerings and Major Sequences

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### Conditioning

- 1014. **CONDITIONING.** (Men, women; activity rating 1, 2)
- 1015. **WEIGHT TRAINING.** (Men only; activity rating 1, 2)
- 1016. **POSTURE AND INDIVIDUAL EXERCISE.** (Women only; activity rating 1, 2,3)

### Dance

- 1022. **BALLROOM DANCE.** (Coed; activity rating 1, 2,3)
- 1023. **FOLK AND SQUARE DANCE.** (Coed; activity rating 1, 2)
- 1024. **MODERN DANCE.** (Coed; activity rating 1, 2)
- 1122. **BALLROOM DANCE.** (Coed; prereq 1022 or equiv; activity rating 1, 2, 3)
- 1123. **FOLK AND SQUARE DANCE.** (Coed; prereq 1023 or equiv; activity rating 1,2)
- 1124. **MODERN DANCE.** (Coed; prereq 1024 or equiv; activity rating 1, 2)
- 1224. **MODERN DANCE.** (Coed; prereq 1124 or equiv; activity rating 1, 2)
- 1324. **MODERN DANCE.** (Coed; prereq 1224 or equiv; activity rating 1, 2)
- 1325. **MODERN DANCE, COMPOSITION.** (2 cr; coed; prereq 1224 or equiv; activity rating 1, 2)
- 1425. **MODERN DANCE, COMPOSITION.** (2 cr; coed; prereq 1325 or equiv; activity rating 1, 2)
- 1426. **MODERN DANCE, PRODUCTION.** (3 cr; coed; prereq 1224 or #; activity rating 1, 2)

### Foundations of Physical Activity

- 1055. **FOUNDATIONS OF PHYSICAL ACTIVITY.** (2 cr; coed; activity rating 1, 2)

### Fundamental Movement

- 1020. **FUNDAMENTALS, MOVEMENT.** (Coed; activity rating 1, 2)

### Gymnastics

- 1046. **APPARATUS.** (Men, women; activity rating 1, 2)
- 1060. **TUMBLING, FLOOR EXERCISE, AND TRAMPOLINE.** (Men, women; activity rating 1, 2)
- 1146. **APPARATUS - GYMNASTICS.** (Men, women; prereq 1046 or equiv; activity rating 1, 2)
- 1160. **TUMBLING, FLOOR EXERCISE, AND TRAMPOLINE.** (Men, women; prereq women 1060 or equiv; activity rating 1, 2)
- 1246. **APPARATUS - GYMNASTICS.** (Women only; prereq 1146 or equiv; activity rating 1, 2)
- 1260. **TUMBLING, FLOOR EXERCISE, AND TRAMPOLINE.** (Women only; prereq 1060 or equiv; activity rating 1, 2)

### Individual or Dual Sports and Activities

- 1032. **BADMINTON.** (Men, women, coed; activity rating 1, 2)
- 1033. **FENCING.** (Coed; activity rating 1, 2)
- 1036. **PADDLEBALL - HANDBALL.** (Men only; activity rating 1, 2)
- 1037. **SQUASH RACQUETS.** (Men, women; activity rating 1, 2)
- 1038. **TENNIS.** (Men, women, coed; activity rating 1, 2)
- 1045. **ANGLING.** (Coed; activity rating 1, 2, 3)
- 1047. **ARCHERY.** (Men, women; activity rating 1, 2, 3)
- 1048. **BOWLING.** (Men, women, coed; activity rating 1, 2, 3)
- 1049. **CAMPING.** (Coed, activity rating 1, 2, 3)
- 1050. **GOLF.** (Men, women; activity rating 1, 2, 3)
- 1051. **HUNTING.** (Coed; activity rating 1, 2, 3)

- 1052. RIFLEMARKSMANSHIP. (Women only; activity rating 1, 2, 3)
- 1053. ICE SKATING. (Coed; activity rating 1, 2)
- 1057. SKIING. (Coed; activity rating 1, 2)
- 1058. PHYSICAL EDUCATION FOR FAMILY LIVING. (Coed; activity rating 1, 2, 3)
- 1059. TRACK AND FIELD. (Men, women; activity rating 1, 2)
- 1132. BADMINTON. (Men, women, coed; prereq 1032 or equiv; activity rating 1, 2)
- 1133. FENCING. (Coed; prereq 1033 or equiv; activity rating 1, 2)
- 1138. TENNIS. (Men, women, coed; prereq 1038 or equiv; activity rating 1, 2)
- 1145. ANGLING. (Coed; prereq 1045 or equiv; activity rating 1, 2, 3)
- 1147. ARCHERY. (Women only; prereq 1047 or equiv; activity rating 1, 2, 3)
- 1148. BOWLING. (Men, women, coed; prereq 1048 and 125 average for men, 120 average for women; activity rating 1, 2, 3)
- 1150. GOLF. (Men, women; prereq 1050 or equiv for women; activity rating 1, 2,3)
- 1154. FIGURE SKATING. (Coed; prereq 1053 or equiv; activity rating 1, 2)
- 1157. SKIING. (Coed; prereq 1057 or equiv; activity rating 1, 2)
- 1159. TRACK AND FIELD. (Men, women; prereq 1059 or equiv; activity rating 1, 2)
- 1238. TENNIS. (Men, women, coed; prereq 1138; activity rating 1, 2)
- 1248. BOWLING. (Men, women, coed; prereq 160 average; activity rating 1, 2)
- 1250. GOLF. (Men, women; prereq 1150 for women; activity rating 1, 2, 3)
- 1254. FIGURE SKATING. (Coed; prereq 1154 or equiv; activity rating 1, 2)
- 1256. SKATING, ICE DANCING. (Coed; prereq 1154 or equiv; activity rating 1, 2)

**Team Sports and Activities**

- 1067. BASKETBALL. (Men, women; activity rating 1, 2)
- 1068. CURLING. (Coed; activity rating 1, 2, 3)
- 1069. FIELD HOCKEY. (Men, women; activity rating 1, 2)
- 1070. HOCKEY, ICE. (Men only; prereq 1053 or equiv; activity rating 1, 2)
- 1071. LACROSSE. (Women only; activity rating 1, 2)
- 1072. SOCCER. (Men only; activity rating 1, 2)
- 1073. SOFTBALL. (Men, women; activity rating 1, 2)
- 1074. VOLLEYBALL. (Men, women; activity rating 1, 2)
- 1080. OFFICIATING FOOTBALL-BASKETBALL. (Men only; activity rating 1, 2)
- 1081. OFFICIATING BASKETBALL-VOLLEYBALL. (Women only; prereq 1067 and 1074; activity rating 1, 2)
- 1082. OFFICIATING HOCKEY-BASKETBALL-VOLLEYBALL. (Men only; activity rating 1, 2)
- 1083. OFFICIATING SWIMMING-WRESTLING-SOFTBALL-TRACK. (Men only; activity rating 1, 2)
- 1167. BASKETBALL. (Men, women; prereq 1067; activity rating 1, 2)
- 1172. SOCCER. (Men only; prereq 1072 or equiv; activity rating 1, 2)
- 1173. SOFTBALL. (Men only; prereq 1073 or equiv; activity rating 1, 2)
- 1174. VOLLEYBALL. (Men, women; prereq 1074 or equiv; activity rating 1, 2)

**Freshman and Varsity Sports (men only; prereq #; activity rating 1, 2, for all)**

- 1386. FRESHMAN BASEBALL.
- 1387. FRESHMAN BASKETBALL.
- 1388. FRESHMAN CROSS COUNTRY.
- 1389. FRESHMAN FOOTBALL.

## Course Offerings and Major Sequences

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- 1390. FRESHMAN GOLF.
- 1391. FRESHMAN GYMNASTICS.
- 1392. FRESHMAN HOCKEY.
- 1393. FRESHMAN SWIMMING.
- 1394. FRESHMAN TENNIS.
- 1395. FRESHMAN TRACK AND FIELD.
- 1396. FRESHMAN WRESTLING.
- 1486. VARSITY BASEBALL.
- 1487. VARSITY BASKETBALL.
- 1488. VARSITY CROSS COUNTRY.
- 1489. VARSITY FOOTBALL.
- 1490. VARSITY GOLF.
- 1491. VARSITY GYMNASTICS.
- 1492. VARSITY HOCKEY.
- 1493. VARSITY SWIMMING.
- 1494. VARSITY TENNIS.
- 1495. VARSITY TRACK AND FIELD.
- 1496. VARSITY WRESTLING.

### Independent Study

- 1497. INDEPENDENT STUDY. (1-6 cr; prereq 3 cr in PE and  $\Delta$ )

### UPPER DIVISION COURSES

- 3180. HISTORY AND TRENDS IN DANCE. (3 cr; coed; prereq #)

## PHYSICS AND ASTRONOMY

Institute of Technology

Staff: Morton Hammermesh, *head*, 325 Physics; Ronald E. Brown, *associate head for graduate studies*, 311 Physics; Russell K. Hobbie, *associate head for undergraduate studies*, 148 Physics; David Holets, *administrative officer*, 331 Physics; Benjamin Bayman, J. Morris Blair, John H. Broadhurst, Laurence J. Cahill, Ernest Coleman, Hans W. J. Courant, Dietrich K. Dehnhard, George D. Freier, Phyllis Freier, Stephen G. Gasiorowicz, Donald A. Geffen, Clayton F. Giese, Allen M. Goldman, George W. Greenlees, J. Woods Halley, Norton M. Hintz, Walter H. Johnson, Roger S. Jones, Karlis Kaufmanis, Paul J. Kellogg, John S. Lilley, Homer T. Mantis, Erwin Marquit, Edward P. Ney, Alfred O. C. Nire, Lewis H. Nosanow, Robert O. Pepin, Carl H. Poppe, Peter G. Roll, Jonathan L. Rosner, Keith Ruddick, Philip Solomon, Wayne A. Stein, Roger Stuewer, Hiroshi Suura, Yau Chien Tang, C. J. Waddington, James H. Wertz, Walter V. Weyhmann, John R. Winckler, Neville J. Woolf, William Zimmermann, Jr.

### Physics (Phys)

A bachelor's degree in physics can be obtained in either CLA or IT (for the IT program, see the *Institute of Technology Bulletin*). Each provides preparation for graduate school, work in industry, secondary school teaching, or such professional schools as law, business, or medicine.

**Major Sequence for B.A.:** 1. *Required background courses*—Math 1211/21/31 or 1311/21/31 or 1611/21 (to gain firm background in calculus, more calculus is recommended); Phys 1271/81/91, 1275/85/95. Prerequisites for any physics

course may be waived by  $\Delta$  or  $\#$ . Students with credit in 1014/24, 1031/2, 1041/2, 1051/2, 1104/5/6, 1121/2 or 1271/81/91 will not normally receive credit for corresponding courses in other physics sequences. Credit for nonlaboratory physics courses may be earned by special examination (see page 25). 2. *Major requirements*—Phys 3011/2, 3511/2/3, 5120, 5011/2/3 or 5101/2; additional credits in physics or astronomy 5xxx courses to total 40. Students planning on graduate work in physics are advised to take 5021/2, 5023/4, and 5101/2. Majors are urged to take three additional 5xxx physics or math courses or CICS 3101.

Students preparing for majors in the College of Education in natural science with a physics core or physical science with a physics major concentration are required to include Phys 1271/81/91 and 1275/85/95 or other work prerequisite to 3011, followed by 3011 and other prescribed Upper Division courses. Details for these two majors are described in the *College of Education Bulletin*.

*Note*—All Phys courses are assigned to Distribution Group B.

**LOWER DIVISION COURSES**

**1014/24. INTRODUCTORY PHYSICS: CONCEPTS IN PHYSICS.** (4/4 cr; cannot be used as prereq for physics or biological science majors; prereq high school algebra and plane geometry for 1014, 1014 or 1010 or  $\#$  for 1024; may be taken with or without the accompanying lab, 1015/25; 3 lect hrs and 1 prob hr per wk)

Demonstration lectures on principles of physics. Mechanics, electricity and magnetism, waves, and 20th-century physics (relativity and quantum theory). Primarily for students interested in the ideas of 20th-century physics. (GrB)

**1015/25. INTRODUCTORY PHYSICS LABORATORY.** (1/1 cr; prereq 1014 or ¶1014 for 1015, 1024 or ¶1024 for 1025; 2 lab hrs per wk; offered SN only)

Laboratory experiments offered in conjunction with 1014/24. (GrB)

**1031/2. INTRODUCTORY PHYSICS: MEASUREMENT AND APPLICATIONS.** (5/5 cr; prereq HS algebra and plane geometry; 4 class hrs and 1 two hr lab or prob session per wk)

Demonstration lectures, problem sessions, and laboratory exercises. Applications of physics: mechanics, random processes, gases and fluids, electric circuits, feedback and control, waves, light, optical instruments, atoms and spectra, nuclei, radioactivity. Primarily for students interested in topics useful in technical areas. (GrB)

**1041/2. INTRODUCTORY PHYSICS: PHYSICS AND MANKIND.** (5/5 cr; prereq HS algebra and plane geometry; 4 lect and 1 discussion hr per wk; some experimental investigation in discussion groups. Does not satisfy prereq for any other courses.)

Important concepts and discoveries in physics—their relationship to the humanities, other sciences, and to society. (GrB)

**1051/2. INTRODUCTORY PHYSICS: ENVIRONMENTAL PROBLEMS.** (4/4 cr; prereq high school algebra and plane geometry; §other introductory physics courses; 3 lect and 1 discussion period per wk)

Basic physics for students interested in understanding environmental problems. Energy; entropy; mechanics; optics; applications.

**1104/5/6. GENERAL PHYSICS.** (5/5/5 cr; primarily for premedical students; prereq Math 1142 or ¶Math 1142 or equiv for 1104, 1104 for 1105, 1105 for 1106; 4 lect, 1 quiz, 2 lab hrs per wk)

1104: Mechanics. 1105: Heat and electricity. 1106: Sound and light. Laboratory. (GrB)

**1121/2. PHYSICS FOR ARCHITECTS.** (5/5 cr; prereq Math 1211; 4 lect, 1 prob hr per wk and occasional labs)

Principles of physics useful to prearchitecture students. Mechanics, heat, electric circuits, light, properties of materials. (GrB)

**1201. SELECTED TOPICS IN 20TH-CENTURY PHYSICS.** (2 cr; primarily for freshmen considering a major in physics. Does not serve as prereq for any physics course; prereq HS physics, ¶Math 1211 or  $\#$ ; 2 lect, 1 rec hr per wk; SN only)

Special relativity, charge and particles, waves and interference, particle aspects of light, wave aspects of particles, randomness. Independent reading required.

**1271/81/91. GENERAL PHYSICS.** (4/4/4 cr; prereq completion or concurrent reg in Math 1221, 1321, or 1621 or equiv for 1271; completion or concurrent reg in Math 1231, 1331, or 1631 or equiv for 1281; may be taken with or without lab 1275/85/95; 3 lect, 1 prob, 1 quiz hr per wk)

## Course Offerings and Major Sequences

Calculus-level general physics course. 1271: Mechanics. 1281: Heat, electricity. 1291: Magnetism, optics. (GrB)

**1275/85/95. GENERAL PHYSICS LABORATORY.** (1/1/1 cr; prereq 1271/81/91 or ¶1271/81/91; offered SN only; 2 lab hrs per wk)  
Laboratory exercises in general physics. (GrB)

### UPPER DIVISION COURSES

**3011. OSCILLATIONS.** (4 cr; prereq 1230 or 1290 or 1291, Math 3211 or equiv; 3 lect and 1 prob session per wk)

Physical and mathematical study of the harmonic oscillator. Transient behavior; resonance; impedance; mechanical and electrical examples; coupled systems; travelling and standing waves in one dimension; Fourier Series.

**3012. WAVES AND OPTICS.** (4 cr; prereq 3011; 3 lect and 1 prob session per wk)

Waves in two and three dimensions. Standing waves; interference; diffraction, polarization; radiation. Examples emphasizing electromagnetic radiation.

**3015. LABORATORY IN OSCILLATIONS AND WAVES.** (1 cr; prereq 3011,2 or ¶3012; 3 lab hrs per wk)

Laboratory exercises in oscillations and waves.

**3501. MODERN PHYSICS.** (4 cr; prereq 1230 or 1291 or 1106; §3500, 3511/2/3; 3 lect and 1 prob hr per wk).

Descriptive course in modern physics; quantum mechanics, hydrogen atom, multi-electron atoms, molecular structure, quantum statistics, thermal radiation, solid state physics, nuclear physics.

**3505. PHYSICS LABORATORY.** (1 cr; prereq 3500 or 3501 or ¶3501; 2 lab hrs per wk)

Laboratory experiments in modern physics.

**3511/2/3. MODERN PHYSICS.** (4/4/4 cr; prereq 1230 or 1291 or 1106. Math 1231 for 3511, Math 3211 or equiv for 3512; 3 lect and 1 prob session per wk)

Introductory course in special relativity, quantum mechanics, atomic, molecular, solid state, and nuclear physics. Emphasis on experimental phenomena.

**3515. PHYSICS LABORATORY.** (1 cr; prereq 3513 or ¶3513; 3 lab hrs per wk)

Laboratory experiments in atomic, solid state, and nuclear physics.

**3801. INTRODUCTION TO THE PHYSICS OF PHOTOGRAPHY.** (5 cr; prereq HS algebra, some photographic experience; 3 lect, 1 discussion and 2 lab hrs per wk)

Principles of optics and electricity applied to the photographic processes. Image formation; intensity and color of illumination; exposure of photographic materials. Understanding technical literature as applied to pictorial photography (or tone reproduction); some discussion of line reproduction. (GrB)

**3900. INDUSTRIAL SUMMER EMPLOYMENT.** (1 cr; prereq 3 yrs of academic work plus department approval during previous spring quarter)

Ten weeks employment (contracted by the student) in a professional or semi-professional capacity doing work in the field of physics. Applications must receive prior approval of the Department. A written report approved by the employer and the department.

**3970. DIRECTED STUDIES.** (1-5 cr ar; prereq §, Δ)

Independent, directed study in physics, in areas arranged by the student and a faculty member.

**5011/2/3. MECHANICS, ELECTRICITY, AND MAGNETISM.** (4/4/4 cr; prereq 3011, Math 3211, 3221 or equiv; §5021/2, 5023/4/5; 4 lect hrs per wk)

Theoretical mechanics and electricity and magnetism.

**5021/2. INTRODUCTION TO ANALYTIC MECHANICS.** (4/4 cr; prereq 3011, Math 3231 or equiv; §5011/2/3; 3 lect and 1 prob hr per wk)

Analytic course in Newtonian mechanics. Vectors and vector operators; angular momentum; central force problem; system of particles; tensors; rigid bodies; moving coordinate systems; continuous media; Lagrange's equations. Mathematics beyond the prerequisites developed as required.

**5023/4/5. INTRODUCTION TO ELECTRIC AND MAGNETIC FIELDS.** (4/4/4 cr; prereq 3011, Math 3231 or equiv; §5011/2/3; 3 lect hrs and 1 prob hr per wk)

Classical theory of electric and magnetic fields making free use of vector algebra and vector calculus. Maxwell's equations for free space and material media. Wave solutions. In third quarter special topics selected by the instructor.

**5051/2/3. CLASSICAL PHYSICS.** (4/4/4 cr; prereq 5013 or both 5022 and 5025, or §), advanced calculus or §; 3 lect hrs and 1 prob session per wk)

Classical mechanics, special theory of relativity and classical electrodynamics. Applications of advanced mathematical techniques.

- 5091. PHYSICAL ACOUSTICS OF MUSIC.** (5 cr; prereq 1 yr HS algebra and upper division or grad standing in music or music ed. or equiv background in music theory and practice, as certified by instructor; does not carry grad cr in phys; 3 lect, 1 discussion, 3 lab hrs per wk)  
Principles of physics and acoustics as they relate to musical sounds, musical instruments, and the electronic production and reproduction of musical sounds. Laboratory work an integral part of course.
- 5101/2. INTRODUCTION TO QUANTUM MECHANICS.** (4/4 cr; prereq 3512; 3 lect and 1 prob hr per wk)  
The mathematical techniques of quantum mechanics. Wave packets; Schrodinger equation, angular momentum; radial equation; spin, perturbation theory; collision theory.
- 5120. EXPERIMENTAL PHYSICS.** (4 cr; prereq 3513,  $\Delta$ ; 6 lab hrs per wk; may be taken more than once)  
Techniques and methods used in physics research laboratories. Experiments in high vacuum, mass spectroscopy, solid state, atomic, and nuclear physics.
- 5151/2/3. QUANTUM MECHANICS.** (4/4/4 cr; prereq 5102 or equiv, advanced calculus or  $\ddagger$ ; 3 lect hrs and 1 prob session per wk)  
Development from first principles. Schrodinger equation, angular momentum, scattering, matrix representations, spin, approximation methods, interaction with the electromagnetic field, systems of identical particles, applications to atomic systems.
- 5201/2. THERMODYNAMICS, STATISTICAL MECHANICS.** (4/4 cr; prereq 1290 or 1291 or 1230, Math 3211 or 3411 or equiv; 3 lect and 1 prob hr per wk)  
Formulation of basic laws of thermodynamics concerning temperature, energy, and entropy; application to simple systems. Transport phenomena; principles of statistical mechanics.
- 5203. INTRODUCTION TO SOLID STATE PHYSICS.** (4 cr; prereq 5202, or  $\ddagger$ ; 3 lect and 1 prob session per wk)  
Structure; thermal, magnetic, and dielectric and electronic properties of crystalline solids.
- 5231/2/3. INTRODUCTION TO SOLID STATE PHYSICS.** (4/4/4 cr; 4 lect per wk; intended for grad and advanced undergrad students in physics, science, and engineering)  
**5231:** Crystal structure and binding; diffraction; phonons; thermal and dielectric properties of insulators. **5232:** Free-electron model; band structure; semiconductors; diamagnetism; paramagnetism; ferromagnetism and antiferromagnetism. **5233:** Optical phenomena, lasers; superconductivity; surface properties; ferroelectricity.
- 5301. INTRODUCTION TO NUCLEAR PHYSICS.** (4 cr; prereq 5102 or equiv; 3 lect and 1 prob session per wk)  
Static properties and dynamic processes of atomic nuclei. Survey of field for non-specialist, and first course for those intending to specialize in nuclear physics.
- 5351. EXPERIMENTAL PARTICLE PHYSICS.** (4 cr; prereq 3513; 3 lect hrs per wk and field trips)  
Interactions of particles and photons with matter and radiation. Detectors for particles and photons used in elementary particle, nuclear, and cosmic ray physics.
- 5401. INTRODUCTION TO CONTEMPORARY PROBLEMS IN COSMIC RAY AND SPACE PHYSICS.** (4 cr; prereq  $\ddagger$ ; primarily for students specializing in other branches of physics; offered alt yrs)  
Cosmic rays, their characteristics, their motion in the interplanetary and interstellar medium. X-rays and radio astronomy.
- 5441. INTRODUCTORY METEOROLOGY.** (4 or 5 cr; prereq 3510 and Math 3231 or  $\ddagger$ ; 4 class meetings and one optional lab per wk)  
Physical description of atmospheric phenomena, primarily on a large scale. The theory and practice of meteorological observation, weather prediction, and interpretation of climatological data.
- 5442. DYNAMIC METEOROLOGY.** (4 cr; prereq 5441 or  $\ddagger$ )  
Fluid dynamics of large scale atmospheric flow: Discussion of mathematical models of simple flow processes; modeling for numerical prediction, energetics, planetary boundary flow.
- 5451. CLOUD PHYSICS.** (4 cr; prereq Math 3211 or equiv, one yr general physics; 3 lect and 1 lab hr per wk)  
Composition of the atmosphere, past, present, and future. Thermodynamics of atmosphere with condensable water. Properties and growth of drops and ice crystals. Particles in the atmosphere. Open laboratory.

## Course Offerings and Major Sequences

- 5452. CLOUD SYSTEMS.** (4 cr; prereq Math 3211 or equiv, one yr general physics; 3 lect and 1 lab hr per wk)  
Circulation, energy balance of atmosphere. Radar techniques for analyzing cloud systems. Cloud structure and motion. Open laboratory.
- 5453. ELECTRICAL PROPERTIES OF CLOUDS.** (4 cr; prereq Math 3211 or equiv, one yr general physics; 3 lect and 1 lab hr per wk)  
Structure, thermodynamic and electrical properties of water and ice. Ions in the atmosphere. Generation of charge and its effects on cloud processes. Generation of lightning and properties of lightning discharges. Open laboratory.
- 5804. OPTICS LABORATORY.** (4 cr; prereq 3012 or 5805 or §; 2 3-hr labs per wk)  
Optics experiments: Modern optics, properties of lasers, spatial filters, light modulation, microwaves, Kerr cell, holography, Faraday effect, Zeeman effect, optical pumping, etc.
- 5805. CONTEMPORARY OPTICS.** (4 cr; prereq 3012 or §; 3 lect and 1 prob hr per wk)  
Current developments in optics. Theory of lasers and their applications in holography, nonlinear optics, etc. Nonlinear optics. Optics of anisotropic media. Theory of image formation and spatial filtering. Properties of optical detectors.
- 5851. ELECTRONIC MEASUREMENT.** (5 cr; prereq 3011 or §; 3 lect and 3 lab hrs per wk)  
Measurement of physical properties using electronic techniques. Energy and measurement noise and bandwidth; processing of repetitive and random signals.
- 5852. ELECTRONIC CONTROL.** (5 cr; prereq 3011 or §; 3 lect and 3 lab hrs per wk)  
Digital and analog control: digital logic; pneumatic, electromechanical and semiconductor systems; feedback; servosystems; mixed systems.
- 5853. ELECTRONIC COMPONENTS.** (5 cr; prereq 3011 or §; 3 lect and 3 lab hrs per wk)  
Electronic components, their electrical behavior, and their use in circuit design.
- 5923. HISTORY OF 16TH-18TH-CENTURY PHYSICS.** (4 cr; prereq general physics or §)  
Internal conceptual developments in physics and astronomy from the Scientific Revolution (Copernicus, Gilbert, Galileo, Bacon, Newton, Huygens, etc.) to the end of the 18th century (Euler, Franklin, Coulomb, Laplace, etc.). The relationships of these developments to social, philosophical, and theological influences will be treated as appropriate.
- 5924. HISTORY OF 19TH-CENTURY PHYSICS.** (4 cr; prereq general physics or §)  
Internal conceptual developments in physics in the 19th century (Young, Fresnel, Oersted, Ampere, Faraday, MacCullagh, Maxwell, Hertz, Lorentz; Lavoisier, Rumford, Dalton, Mayer, Joule, Helmholtz, Carnot, Clausius, Kelvin, Boltzmann, Mach, etc.). The relationships of these developments to social, philosophical, and theological influences will be treated as appropriate.
- 5925. HISTORY OF 20TH-CENTURY PHYSICS.** (4 cr; prereq general physics or §)  
Internal conceptual developments in relativity (Michelson, Lorentz, Poincare, Einstein, etc.), quantum mechanics (Planck, Einstein, Rutherford, Bohr, Sommerfeld, Ehrenfest, Pauli, Millikan, Compton, Heisenberg, de Broglie, Schrodinger, Born, etc.), and nuclear physics (Chadwick, Gamow, Fermi, etc.). The relationships of these developments to social, philosophical, and theological influences will be treated as appropriate.
- 5950. SENIOR SEMINAR.** (Cr ar; primarily for senior physics majors,  $\Delta$ )
- 5990. DIRECTED RESEARCH: ELEMENTARY PHYSICAL INVESTIGATION.** (Cr ar; prereq 3rd yr,  $\Delta$ )  
Problems, experimental or theoretical, of special interest to students. Written reports.

## Astronomy (Ast)

Students with special interest in astronomy may major in physics, taking appropriate elective courses in astronomy and physics (no major in astronomy is offered). A bachelor's degree may be earned in either CLA or IT. The Physics Department assigns astronomy advisers to students who wish this kind of program.

Ast 1011 is a descriptive course for the general student; 3051 is a more technical course. Other astronomy courses are more specialized.

## LOWER DIVISION COURSE

- 1011. DESCRIPTIVE ASTRONOMY.** (5 cr; §3051)  
Survey of what is known about the sun, the moon, the planets and their motions; description of the constellations and the stellar universe to which the sun belongs. This course is completely non-mathematical. (GrB)

**UPPER DIVISION COURSES**

- 3051. INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS.** (4 cr; §1011; prereq 1 yr calculus and Phys 1290 or 1106 or 1230 or 1291, or §)  
 Known facts about the solar system, galaxy, and extragalactic universe. How such information is obtained and some of the conclusions that can be inferred. Course is more physical and mathematical than 1011.
- 5161. ASTROPHYSICS OF DIFFUSE MATTER.** (4 cr; prereq 3051 and Phys 3511 or §)  
 Diffuse matter in the solar system, interstellar and extragalactic space; the radiation field in these environments. Gaseous nebulae, radio astronomy and non-thermal radio sources, cosmic rays, some aspects of cosmology.
- 5162. ASTROPHYSICS OF CONDENSED MATTER.** (4 cr; prereq 3051 and Phys 3511 or §)  
 The luminosities, temperatures, masses, and densities of stars; their mechanisms for energy generation. The chemical composition of stars and the probable course of stellar evolution.

**PHYSIOLOGY (PhsI)**

Medical School

Staff: Eugene Grim, *head*, 424 Millard Hall; Marvin Bacaner, James Bloedel, H. Mead Cavert, Irwin J. Fox, Rodney Harvey, John A. Johnson, Gordon Kepner, Charles Knox, Richard Kronenberg, Jui S. Lee, David Levitt, Nathan Lifson, Victor Lorber, John Love, Maurice Meyer, Richard Poppele, Richard Purple, Aldo Rescigno, David Schafer, Richard Stish, Carlo Terzuolo, Maurice Visscher (emeritus), O. Douglas Wangenstein

Major Sequence for B.A.: 3055, 3056; 20 approved Upper Division courses in related fields, generally in science courses and most frequently in mathematics, physics, and chemistry.

**LOWER DIVISION COURSE**

- 1002w. HUMAN PHYSIOLOGY.** (4 cr; will not count for admission to Medical School; prereq 1 qtr biol, 1 qtr chem; 3 hrs lect, 2 hrs dem per wk) Blackshear

**UPPER DIVISION COURSES**

- 3051w. HUMAN PHYSIOLOGY.** (5 cr; primarily for nursing and physical therapy students; prereq 1 yr chem, biol; 4 hrs lect, 2 hrs dem per wk) Love
- 3052f. PRINCIPLES OF PHYSIOLOGY.** (3 cr; prereq Phys 1290 or 1235, Chem 1015; ¶Math 1240) Johnson
- 3053w. PRINCIPLES OF PHYSIOLOGY.** (3 cr; prereq 3052) Johnson
- 3055f. PRINCIPLES OF PHYSIOLOGY.** (5 cr; prereq 1 yr col chem, 1 yr col phys, math through inte calc) Johnson
- 3056w. PRINCIPLES OF PHYSIOLOGY.** (5 cr; prereq 3055) Johnson
- 3070w. HUMAN PHYSIOLOGY.** (7 cr; primarily for pharmacy students; prereq physical chem, human or mammalian anat) Staff
- 3091. HONORS COURSE: READINGS IN PHYSIOLOGY.** (Cr and hrs ar; open to honors candidates in physiology only; may be taken 1 or more qtrs) Staff  
 Topics selected; written or oral reviews prepared and discussed on tutorial basis.
- 3092. HONORS COURSE: PROBLEMS IN PHYSIOLOGY.** (Cr and hrs ar; open to honors candidates in physiology only; may be taken 1 or more qtrs) Staff  
 Lab problems selected; written reports prepared and discussed.
- 5101w. HUMAN PHYSIOLOGY.** (8 cr; primarily for dentistry students; prereq courses in biochem and human or mammalian anat; 5 hrs lect, 2 hrs conf, 3 hrs lab per wk) Staff
- 5102f. HUMAN PHYSIOLOGY.** (5 cr; primarily for medical-surgical nursing; prereq biochem and human or mammalian anat; 5 hrs lect) Staff
- 5103f. GENERAL PHYSIOLOGY.** (3 cr; prereq 5100 or §; even years only) Kepner, Levitt, Schafer  
 Topics on mechanisms of transport and energy transformation in living organisms.

## Course Offerings and Major Sequences

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- 5104w. NEUROPHYSIOLOGY.** (4 cr; prereq 5100 or equiv, neuroanat and §; odd years only)  
Poppele, Purple, Terzuolo
- 5105s. CARDIOVASCULAR PHYSIOLOGY.** (4 cr; prereq 5100 or equiv or §; odd years only)  
Bacaner, Fox, Lorber, Visscher
- 5106f. RESPIRATORY PHYSIOLOGY.** (4 cr; prereq 5100 or equiv or §; odd years only)  
Kronenberg, Wangenstein
- 5107w. ALIMENTARY PHYSIOLOGY.** (3 cr; prereq 5100 or equiv or §; even years only) Grim,  
Lee, Lifson
- 5108s. NEPHROLOGY.** (3 cr; prereq 5100 or equiv or §; even years only) Harvey
- 5109f,w,s. SYSTEMS ANALYSIS FOR BIOLOGISTS.** (3 cr; prereq calculus through introduc-  
tion to differential equations, physical chem or §) Rescigno
- 5110/1†s. HUMAN PHYSIOLOGY.** (6/5† cr; primarily for Phase A3 and Phase A4 med  
students; prereq anat, biochem for 5110 and prereq 5110 for 5111; 4 hrs lect, 6  
hrs lab per wk; course extends 4 wks beyond end of spring qtr) Staff
- 5113s. PROBLEMS IN PHYSIOLOGY.** (Cr and hrs ar; prereq 5100 or §) Staff  
Topics assigned for readings or laboratory study; conferences.
- 5116s. BIOPHYSICAL APPROACHES TO PHYSIOLOGY.** (4 cr; prereq 3055 or §) Kepner

## POLISH

See Slavic and East European Languages

## POLITICAL SCIENCE (Pol)

Staff: Thomas M. Scott, *head*, 1414 Social Sciences; Peter A. Aranson, Joanne A. Arnaud, Charles H. Backstrom, Terence W. Ball, Roger W. Benjamin, Richard N. Blue, Davis B. Bobrow, Harold W. Chase, Robert B. Eyestone, William H. Flanigan, Edwin Fogelman, Robert T. Holt, P. Terrence Hopmann, Sheila R. Koeppen, Samuel Krislov, Robert B. Kvavik, Theodore R. Marmor, Charles H. McLaughlin, August H. Nimtz, Jr., Ellen B. Pirro, Robert E. Riggs, Enid C. B. Schoettle, Suzanne K. Sebert, L. Earl Shaw, Jr., W. Phillips Shively, Mulford Q. Sibley, Frank J. Sorauf, John E. Turner, Charles E. Walcott, Gary W. Wynia

Political science is concerned with authoritative decision-making in political systems and with the processes and activities, particularly governmental, by which a society makes decisions as well as the values by which the decisions are judged.

The required background courses provide the student a general knowledge of the American political system and of the political systems of other areas of the world. They also introduce him to the principal terms and analytical concepts of political science. His major sequence during junior and senior years adds a deeper knowledge of some of the fields within political science.

**Major Sequence for B.A.:** 1. *Required background courses*—1001, 1051. 2. *Major Requirements*—At least 36 cr in Upper Division courses in political science; not more than 16 cr in any one field within political science and not more than 28 in any two fields (the recognized fields are shown by subheads among the course descriptions).

The Major in International Relations is described on page 135.

### Seminars and Satellite Courses

Three-credit seminars in the "99" series (courses whose last two digits are 99) will be available throughout the year. Each 99 seminar experience will include discussion and individual research focused upon a specific topic or problem area. *Enrollment in each "99" seminar will be limited to 15 students.* Topics will be announced by the Department prior to the quarter in which the seminars are

offered. These courses offer opportunity for close involvement with faculty and creative research on the part of the student.

"Satellite" courses (1010), limited to 15 students each, will be offered in conjunction with certain Lower Division courses. In them students may pursue specialized topics related to the more general concerns of the courses to which the "satellites" are attached. Only students already enrolled in the course or courses to which a "satellite" is attached will be admitted. Topics and instructors will be announced at the beginning of the regular courses.

**Note for Graduate Students**—Graduate students who are not graduate majors in political science may take 5xxx courses in political science for credit, subject to the requirement of additional work beyond that assigned to undergraduates. Such courses may be used for graduate minors or "related fields" in political science for M.A. degrees, and in part for Ph.D. minors. See the *Graduate School Bulletin*.

**General Education**—All Lower Division courses offered by this department are suited to the needs of students who wish to include some political science in their study program. Most of the Department's Upper Division courses also are appropriately considered general education courses and many are elected by large numbers of students not majors in political science. All political science courses except those in the 90 series, (those courses whose last two digits range from 90 to 99), are available to non-majors on the SN grading system.

#### LOWER DIVISION COURSES

- 1001. AMERICAN GOVERNMENT AND POLITICS.** (5 cr) Staff  
Analysis of principles, organization, processes, functions of government, and the interplay of political forces in United States — national, state, and local. Attention throughout to current issues. (GrC)
- 1025. WORLD POLITICS.** (4 cr) Blue, Hopmann, staff  
Introduction to contemporary international relations; forms of state interaction; problems of conflict and cooperation. (GrC)
- 1026. AMERICAN FOREIGN POLICY.** (4 cr) Pirro, Riggs, staff  
Introduction to institutions and processes that determine American foreign policy. (GrC)
- 1027. URBAN POLITICS.** (4 cr) Nimtz, Scott, Sebert, staff  
Analysis of urban politics and issues facing American cities; emphasis on political conflicts over economic and social problems. (GrC)
- 1031. AMERICAN PUBLIC POLICY.** (4 cr) Eyestone, Gieske, Schoettle, staff  
Analysis of several major public policy issues such as social welfare policy, education policy, economic policy, national security policy. Emphasis upon forces molding and impact of policy choices. (GrC)
- 1041. CONTEMPORARY POLITICAL IDEOLOGIES.** (4 cr) Arnaud, Fogelman, staff  
Examination of major modern and contemporary ideologies, such as liberalism, democracy, conservatism, socialism, communism, facism, nationalism, imperialism, racism; emphasis on adequacy of alternative ideologies for the analysis and solution of current political and social issues. (GrC)
- 1051. INTRODUCTION TO POLITICAL ANALYSIS.** (5 cr) Benjamin, Fogelman, Holt, staff  
Topics such as formation of political communities, political participation, policy-making, compliance, legitimacy, political development, types of political systems; emphasis on empirical and normative problems; applications to major contemporary systems (GrC)

#### UPPER DIVISION COURSES

##### Special Courses

Most Upper Division courses are listed by their more or less specialized fields. The Department offers in addition a group of "special courses" not assigned to these fields. These courses are listed and briefly described here.

- 3080. INTERNSHIP.** (3 cr per qtr, to maximum of 6) Backstrom, Eyestone, staff  
Internship with government or community organizations, arranged through and supervised by the Department. (GrC)

## Course Offerings and Major Sequences

- 3085. QUANTITATIVE MATERIALS IN POLITICAL SCIENCE.** (4 cr; prereq 1051 or 18 cr in UD political science or #) Flanigan, Shively  
Techniques of data analysis used in major areas in political science. Emphasis on understanding theory construction, measurement problems, and measures of association.
- 3110. HONORS COURSE: WORK IN SELECTED FIELDS.** (Cr ar; prereq 6 cr in political science, consult major adviser) Eyestone, Hopmann, staff
- 3399,499,599,699,799,899. ADVANCED SEMINARS.** (3 cr; prereq jr or sr, and #)  
Advanced analysis with supervised research and writing in selected areas of political theory, comparative government and politics, international relations, politics and behavior, American governmental systems and processes and public law. (GrC)
- 3970. DIRECTED STUDIES.** (1-6 cr per qtr; students may register under this course number to obtain credit for supervised individual reading and research; prereq approval of appropriate instructor and departmental undergraduate committee of student's proposed program of study)

### Political Theory

- 5659. AMERICAN POLITICAL THOUGHT.** (4 cr; prereq 1051 or 9 cr in social science or #) Ball, Shaw, Sibley  
From colonial times to present: Puritanism; Constitution; utopianism; Calhoun; history of anarchist, socialist, populist, and syndicalist thought; social Darwinism; conservatism; political thought in law and literature. (GrC)
- 5661. PROBLEMS OF DEMOCRACY.** (4 cr; prereq 1051 or 9 cr in social science or #) Aranson, Ball, Shaw  
Analysis of postulates and implications; moral foundations; democratic theory and the economic order; liberty and authority; equality; representation; spiritual order, critics of democracy. (GrC)
- 5662. RECENT POLITICAL THOUGHT.** (4 cr; open to jr, sr only; prereq 1051 or 9 cr in social science or #) Arnaud, Ball, Shaw  
Main currents from Marx to present, including socialist, anarchist, liberal, and conservative thought; problems such as alienation and political obligation. (GrC)
- 5663. POLITICAL THEORY AND UTOPIA.** (4 cr; prereq 1051 or 9 cr in social science or #) Sibley  
Selected great utopias from viewpoint of political theorist; idea of planning an ideal state; achievement of utopia; stability and change in great utopias; problem of authority and law; anarchist, socialist, and conservative utopias. (GrC)
- 5664. DEVELOPMENT OF POLITICAL THOUGHT: ANCIENT.** (4 cr; prereq 1051 or 9 cr in social science or #) Ball, Sibley  
Hebrew ideas, Moses to second Isaiah; classical Greek thought; Plato and Aristotle; primitive natural law; cynics and stoics; theory in Roman republic and empire; 1st century Christianity. (GrC)
- 5665. DEVELOPMENT OF POLITICAL THOUGHT: MIDDLE AGES.** (4 cr; prereq 1051 or 9 cr in social science or #) Ball, Sibley  
Early Christianity and the Church fathers; moral theory and political theory; empire and church in ideology; Roman and canon law; theory of persecution; St. Thomas; 14th and 15th century conceptions. (GrC)
- 5666. DEVELOPMENT OF POLITICAL THOUGHT: EARLY MODERN.** (4 cr; prereq 1051 or 9 cr in social science or #) Ball, Sibley  
Machiavelli; idea of sovereignty; Protestant conceptions; English civil war; Hobbes, Spinoza, Locke, idea of progress; Godwin, Burke, Rousseau, rise of romanticism; German idealism. (GrC)
- 5667. RECENT EMPIRICAL THEORY.** (4 cr; prereq 1051 or #; offered alt yrs) Aranson, Fogelman  
Selected empirical theories, such as theories of power, systems theory, game theory, structural functionalism, conflict theory, and others. Emphasis on the usefulness of these formulations in political analysis. (GrC)

### Comparative Government and Politics

- 5441. WESTERN EUROPEAN GOVERNMENT AND POLITICS.** (5 cr; prereq 1051 or 12 cr in social science or #) Arnaud, Holt, Shively, staff  
Political institutions in their social setting; problems of power and responsibility; governmental stability; political decision-making, government, and economic order. (GrC)

- 5443. GOVERNMENT AND POLITICS OF THE SOVIET UNION.** (4 cr; prereq 1051 or 12 cr in social science or #) Turner  
 Analysis that seeks to explain the rise of Bolshevism; sources and nature of Bolshevik ideology; history and institutional character of the Soviet regime; sources of power; role of the Party and functional groups; patterns of change. (GrC)
- 5444. GOVERNMENT AND POLITICS OF SCANDINAVIAN COUNTRIES.** (4 cr; prereq 12 cr in social science) Kvakik  
 Survey of Scandinavian political institutions and behavior; special attention to the Scandinavian pattern of party politics, the functions of interest groups, and legislative behavior. Comparative analysis of voting patterns and voter alignments. (GrC)
- 5446. GOVERNMENT AND POLITICS OF SOUTH ASIA.** (5 cr; prereq 12 cr Upper Division work in social science) Blue  
 Governmental institutions in their historical and social setting. Emphasis on dynamic processes of modernization within a democratic institutional framework. Special attention to implementation of public policies involving social and economic development, including agrarian reform, population control, and industrial growth. (GrC)
- 5448. GOVERNMENT AND POLITICS OF AFRICAN COUNTRIES.** (4 cr; prereq 1051 or 12 cr in social science or #) Nimtz, Pirro  
 Political institutions and behavior in sub-Saharan African countries in their social and cultural settings; influence of class and tribal structure; parties and elections; source and nature of ideologies; economic and social policies. (GrC)
- 5453. JAPANESE GOVERNMENT AND POLITICS.** (4 cr; prereq 1051 or 12 cr in social science or #) Benjamin, Turner  
 Constitutional and political development in Japan; political ideas, government, political parties, and problems. (GrC)
- 5454. CHINESE GOVERNMENT AND POLITICS.** (4 cr; prereq 1051 or 12 cr in social science or #) Benjamin, Turner  
 Analysis of traditional Chinese society; the fragmentation of China and the rise of the Communist power; sources and nature of Communist Chinese ideology; institutional character of the Communist party system; sources of power; role of the Party and functional groups; patterns of change. (GrC)
- 5455. LATIN AMERICAN GOVERNMENT AND POLITICS.** (5 cr; prereq 1001 or #) Wynia  
 General analysis of Latin American political heritage, political processes, and contemporary public policy issues; examination of selected countries with emphasis on their resolution of the problems of social, economic, and political change. (GrC)

International Relations

- 5323. AMERICAN DEFENSE POLICY.** (See American Governmental Systems and Processes)
- 5876. FOREIGN POLICY, DECISION-MAKING.** (4 cr) Bobrow, Hopmann, Pirro  
 Analysis of the processes through which states make and implement foreign policy decisions, with examples from the foreign policies of several states including the United States. (GrC)
- 5877. COMPARATIVE FOREIGN POLICY.** (4 cr) Bobrow, Hopmann  
 Comparative analysis of the foreign policies of major states; national and international determinants of foreign policy behavior. (GrC)
- 5881. INTERNATIONAL LAW I.** (5 cr) McLaughlin  
 Growth and character of international law system; sources, use of legal materials, and evidence; relation to municipal law; subjects (individuals, states, international agencies); treaties and other international agreements; principles and problems of jurisdiction. (GrC)
- 5882. INTERNATIONAL LAW II.** (5 cr) McLaughlin  
 Diplomatic agents and consuls — their functions and jurisdictional immunities; rights of aliens; law developed by international organizations; pacific settlement of disputes; hostile measures short of war; intervention; war and neutrality. (GrC)
- 5884. INTERNATIONAL POLITICS I.** (4 cr) Bobrow, Hopmann, Pirro  
 The structure of the international system: balance of power, bipolar, and other types of international systems; theories of stability, change, conflict, and cooperation. (GrC)
- 5885. INTERNATIONAL POLITICS II.** (4 cr; prereq 5884 strongly recommended) Bobrow, Hopmann, Pirro  
 Interaction in international systems, including integration and disintegration; alliances and other regional systems; methods of analysis in international politics. (GrC)

## Course Offerings and Major Sequences

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- 5887. INTERNATIONAL SECURITY ORGANIZATION I.** (4 cr) Riggs  
The United Nations and its antecedents; decision-making in international organizations; global and regional organization for international security, disarmament and dispute settlement. (GrC)
- 5888. WORLD ORGANIZATION FOR FUNCTIONAL COOPERATION.** (4 cr) Riggs  
Global and regional organization for economic, social, cultural, and humanitarian cooperation; comparison of functional and political organizations; economic and political integration; problems of international administration. (GrC)

### Politics and Behavior

- 3751. FIELD WORK IN POLITICS.** (3 cr; prereq 1001; see also 3352,3 under American Governmental Systems and Processes) Backstrom, Eyestone, Staff  
Field study of political organization, leadership, and campaigns in local communities and state. (GrC)
- 5304. ORGANIZATIONAL BEHAVIOR.** (4 cr; prereq 1001) Jernberg, Walcott  
Operation and significance of complex, formal organizations in the political system, with emphasis on public bureaucracy. Communication and influence processes; decision-making and innovation; relation of organization to environment. (GrC)
- 5737. POLITICAL PARTIES.** (4 cr; prereq 1001 or §) Aranson, Sorauf  
Role and functions of the party in American government; party composition and organization; process of nomination and policy formulation; regulation of party organization and activities. (GrC)
- 5738. POLITICAL CAMPAIGNS AND ELECTIONS.** (4 cr; prereq 1001 or §) Backstrom, Sebert  
Examination of national, state, and local campaigns and elections, including field work in local political parties and election campaigns. (GrC)
- 5739. THE POLITICS OF ETHNIC COMMUNITIES.** (4 cr; prereq 6 cr in social science) Koeppe, Nimitz  
Cross-cultural study of politics of ethnic communities with special emphasis on the politics of Black communities in the United States. Internal community politics and their local and national political systems. (GrC)
- 5767. PUBLIC OPINION AND VOTING BEHAVIOR.** (5 cr; prereq 1001 or §) Flanigan, Koeppe, Shively  
Analysis of major factors influencing electoral decisions; political attitude formation and change. (GrC)
- 5768. POLITICAL CULTURE: SOCIAL BASIS OF POLITICAL BEHAVIOR.** (5 cr; prereq 1001 or §; 5767 recommended) Flanigan, Koeppe, Shively  
Social and environmental influences on political attitudes and political participation; political elites and the politics of mass society. (GrC)
- 5769. POLITICAL LEADERSHIP.** (4 cr; prereq 1051; offered alt yrs) Benjamin, Nimitz, Wynia  
Comparative political leadership that emphasizes political recruitment patterns, executive and legislative behavior, and political power structures in industrial and non-industrial states. (GrC)
- 5771. COMPARATIVE PUBLIC POLICY.** (4 cr; prereq 1051 or §; offered alt yrs) Marmor, Wynia  
Analysis of policy-making and administrative implementation in high and low income countries; emphasis on the content and impact of economic development and social welfare policies. (GrC)
- 5772. COMPARATIVE POLITICAL ORGANIZATION.** (4 cr; prereq 1051 or §; offered alt yrs) Kvavik, Nimitz  
Analysis of political group activity in different polities; emphasis on individual behavior in group systems affecting public policy. (GrC)
- 5773. POLITICAL DEVELOPMENT.** (4 cr; prereq 1051 or §; offered alt yrs) Benjamin, Holt, Wynia  
Analysis of political problems of new nations; particular emphasis on political consequences of breakdown or traditional society and problems of developing new institutional forms and procedures. (GrC)
- 5774. COMPARATIVE POLITICAL PARTICIPATION.** (4 cr; prereq 1051 or §; offered alt yrs) Blue, Nimitz, Shively  
Comparative study of the relationship of mass political behavior to governmental activity. (GrC)

**American Governmental Systems and Processes**

- 3352.3. FIELD WORK IN GOVERNMENT.** (3,3 cr; prereq 1001; 3353 offered when feasible; see also 3751 under Politics and Behavior) Backstrom, Eyestone, Staff  
Field study of politics, leadership, organization, and activities in local and state government. In even-numbered years, deals with local government officials; in odd-numbered years, with state legislators. (GrC)
- 5303. THE AMERICAN DEMOCRACY.** (4 cr; prereq 1001 or 6 cr in social science or #) Koeppen, Sorauf  
An integrated overview of the American political system, its institutions and processes. Political decision-making, influence, and elites in the American society. Evaluation and critical examination of the practice and reality of democracy in the United States. (GrC)
- 5306. THE EXECUTIVE AND THE BUREAUCRACY.** (4 cr; prereq 1001 or #) Schoettle, Walcott  
The executive branch, including the presidency and administrative and regulatory bureaucracies; emphasis on the interaction of formal structures and political actors; recruitment, the development of institutional structures, advisory systems, legislative relations, budgetary and policy control. (GrC)
- 5308. LEGISLATIVE PROCESS.** (4 cr; prereq 1001 or #) Backstrom, Eyestone, Shaw  
The American Congress and state legislatures; internal organization, the committee system, party leadership, relationships with executives and administrative agencies; legislative policy-making; interest group, party, and constituency influences on the legislative process. (GrC)
- 5309. JUDICIAL PROCESS.** (4 cr; prereq 1001 or #) Krislov, Sorauf  
Structure of American judiciary; selection of judges; process of litigation; influences on judicial decisions; impact of and compliance with decisions; role of Supreme Court in American political system. (GrC)
- 5315. STATE GOVERNMENT.** (4 cr; prereq 1001 or #) Backstrom  
Description and analysis of political institutions and behavior in American states; involves interstate comparisons as well as comparisons between state and national political systems. (GrC)
- 5321. AMERICAN ECONOMIC POLICY.** (4 cr; prereq 1001 or #) Eyestone, Schoettle  
Analysis of economic policy-making processes; examination of such major policy issues as fiscal and monetary policy, subsidies, economic regulation, and direct controls; assessment of governmental impact on the private economic sector. (GrC)
- 5322. AMERICAN SOCIAL POLICY.** (4 cr; prereq 1001 or #) Eyestone  
American government actions affecting the distribution of social benefits such as health care, education, and housing; social burdens such as taxation and regulation of social conduct. Relationships between government action and social problems, with attention to the possibilities for change. (GrC)
- 5323. AMERICAN DEFENSE POLICY.** (4 cr; prereq 1001 or #) Bobrow, Schoettle  
Examination of such major substantive policy issues, as American strategic theory and general war capabilities; limited war theory and capabilities; arms control and disarmament. Defense policy-making processes in the executive office, the Congress, the Department of Defense, the military services, and the private sector. Assessments of the implications of American defense policies for foreign and domestic policy. (GrC)
- 5327. LOCAL GOVERNMENT.** (4 cr; prereq 1001 or #) Backstrom, Scott  
Development of local political systems in the U.S.: relationship of government and political structures to the economic and social characteristics of communities; analysis of the role of local government in the federal system; influence on decision-making patterns in various types of communities. (GrC)
- 5328. METROPOLITAN GOVERNMENT AND POLITICS.** (4 cr; prereq 1001 or #) Nimitz, Scott  
Analysis of contemporary metropolitanism; development and definition of major metropolitan problems; governmental-political responses to such problems, including development of federal and state programs; discussion of the politics of metropolitan reform efforts. (GrC)
- 5876. FOREIGN POLICY, DECISION-MAKING.** (See International Relations)

**Public Law**

- 3561.2. INTRODUCTION TO LEGAL SYSTEMS.** (4,4 cr; prereq jr or #; offered in alt yrs) Krislov, McLaughlin  
Elementary survey, primarily for social science students, of principal legal systems of the Western world. Emphasis upon organization, procedures, methods of growth, relation to

## Course Offerings and Major Sequences

political and economic systems, basic juristic conceptions. 3561: Roman law and European derivatives. 3562: Anglo-American law. (GrC)

**5501,2. PRINCIPLES OF AMERICAN CONSTITUTION I, II** (5,5 cr; prereq 1001 or equiv)  
Chase, Krislov

Nature of constitutions, judicial review, organization and powers of national government; national-state and interstate relations; due process; civil rights and civil liberties. (GrC)

## PORTUGUESE

See Spanish and Portuguese

## PSYCHOLOGICAL FOUNDATIONS

See Education

## PSYCHOLOGY (Psy)

**Staff:** John G. Darley, *chairman*, N218A Elliott Hall; Roberta A. Ames, *administrative assistant*, N210A Elliott Hall; Ralph F. Berdie, Ellen Berscheid, Thomas J. Bouchard, Jr., Dwight A. Burkhardt, James N. Butcher, John P. Campbell, René V. Dawis, Vernon T. Devine, Marvin D. Dunnette, Paul W. Fox, Norman Garmezy, Irving I. Gottesman, A. Jack Hafner, Gordon T. Heistad, Vivian H. Hewer, James J. Jenkins, David L. LaBerge, Lloyd H. Lofquist, David T. Lykken, Kenneth MacCorquodale, Carl P. Malmquist, Paul E. Meehl, Gerhard Neubeck, J. Bruce Overmier, Jack N. Peterman, Herbert L. Pick, Jr., Warren W. Roberts, Wallace A. Russell, Sandra W. Scarr, William Schofield, Robert E. Shaw, Mark Snyder, Auke Tellegen, Travis I. Thompson, Neil F. Viemeister, David J. Weiss, William F. Weitzel, Harold L. Williams, Robert D. Wirt

Psychology is concerned with the behavior of organisms in terms of environmental, genetic, physiological, and social determinants and correlates.

All students contemplating a major in psychology must pick up instruction materials in the psychology undergraduate advising office, 105 Elliott Hall.

**Major Sequences for B.A.:** 1. *Required background courses*—1001, 1004/5. 2. *Major Requirements—Honors major sequence* requirements are described in materials obtainable at the Honors office, 115 Johnston Hall, or the Advising office, 105 Elliott Hall.

*General major sequence* requirements (for students with broad interest in psychology but not necessarily plans for work beyond the B.A.—information from the undergraduate advising office, 105 Elliott Hall—2 courses chosen from Psy 3011, 3031, 3051, 5011, 5012/3†, 5014, 5015, 5017, 5018, 5019, 5031, 5041/2†, 5061, 5062, 5071, 5134; 2 courses from Psy 3101, 3124, 3604, 5201, 5703, CPsy 3301, 5303; Psy 3801; 4 to 6 elective courses leading to a minimum of 36 Upper Division psychology cr (CPsy 3301 and 5303 may be included) but not more than 44 Upper Division cr in psychology, child psychology, and educational psychology (PsyF).

*Majors in psychology* are strongly urged to elect courses in the natural sciences and in mathematics through at least 1 quarter of calculus.

Psy 3801 should be taken as early as possible in junior year. Further courses in statistics (such as PubH 5450, 5451, Psy 5861, etc.) are recommended for students planning graduate work in psychology.

Students interested in child psychology courses are encouraged to consider CPsy 3301, 5303, 5331, 5343. Any educational psychology course open to CLA students may also be part of the psychology major. A double major in psychology and child psychology, however, is not permissible.

Students not planning graduate work may, in consultation with an adviser, select as electives the courses most relevant to their needs, including preparation for sub-professional service in related applied occupations such as interviewer, personnel technician, mental health worker, and research technician.

**General Education**—Many of the courses listed here are designed for non-majors as well as majors. The Department particularly recommends Psy 3011, 3031, 3051, 3201, and 3604 as courses contributing to general education.

**LOWER DIVISION COURSES**

- 1001f,w,s. GENERAL PSYCHOLOGY.** (5 cr; prereq soph or 3rd qtr fr with B avg)  
Introduction to study of human behavior. Prerequisite for all advanced courses in psychology. (GrC)
- 1001Hw. HONORS COURSE: GENERAL PSYCHOLOGY.** (5 cr; prereq §; not offered 1972-73)
- 1004f,w/5w,s†/6s. INTRODUCTORY LABORATORY PSYCHOLOGY.** (3/3†/3 cr; prereq soph, 1001 or ¶1001) Staff  
Experiments illustrating contemporary subject matter such as sensory psychology, psychophysics, perception, motivation, verbal behavior, animal and human learning, problem solving, and psychological measurement. (GrC)

**UPPER DIVISION COURSES**

Psychology courses with the prefix 5- are open to sophomores who have C averages.

- 3011f. INTRODUCTION TO PSYCHOLOGY OF LEARNING.** (4 cr; prereq 1001) Overmier  
Basic methods in study of learning. Development of fundamental concepts and principles governing the learning process. (GrC)
- 3031s. SENSATION AND PERCEPTION.** (4 cr; prereq 1001, 1004) Burkhardt  
Roles of stimulus, receptor organ and brain, and learning and motivation in man's perception of his world. Lectures and demonstrations. (GrB)
- 3051s. INTRODUCTION TO COGNITIVE PSYCHOLOGY.** (4 cr; prereq 1001, 1005 or ¶1005) Shaw (GrC)  
Basic research problems and theoretical concepts in the study of cognitive factors in perception and memory.
- 3101f. INTRODUCTION TO PERSONALITY.** (4 cr; prereq 1001, 1005) Tellegen  
An overview of the concepts of personality; personality theory; empirical research in the field of personality; personality assessment. (GrC)
- 3124s. PSYCHOLOGY OF INDIVIDUAL DIFFERENCES.** (4 cr; prereq 3801) Dunnette  
The differential method as a means for studying human behavior. Impact and importance of individual differences in modern society; instruments of measurement and behavior prediction in differential psychology; the major determiners of individuality. (GrC)
- 3201f. INTRODUCTION TO SOCIAL PSYCHOLOGY.** (4 cr; prereq 1001, 1005, 8 cr social science) Snyder  
Survey of theories and research in social psychology. Includes the effects upon the individual's attitudes and behavior of other persons, mass communications, and group membership. (GrC)
- 3604f. INTRODUCTION TO ABNORMAL PSYCHOLOGY.** (4 cr; prereq 1001) Devine  
The field of abnormal psychology. Etiologies of behavioral disorders; discussion of available treatments. (GrC)
- 3801f,w,s. INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS.** (4 cr; §Soc 3801; prereq 1001 or equiv) Weiss  
The data of psychology and their statistical analysis. Univariate and bivariate descriptive statistics, principles of estimation and hypothesis testing. Examples from differential and experimental psychological research. (GrA)
- 3801Hs. HONORS COURSE: INTRODUCTION TO MEASUREMENT AND STATISTICAL METHODS.** (4 cr; §Soc 3801H; prereq 1001 or equiv, honors cand) Weiss  
A problem-oriented approach to analysis of the data of psychology. Univariate and bivariate descriptive statistics, principles of estimation and hypothesis testing. Data collection and computer analysis experiences.
- 3900w. HONORS SEMINAR: PSYCHOLOGY.** (1 cr; SN only; for jr honors students majoring in psychology) Fox  
A selective overview of contemporary issues in psychological research, information con-

## Course Offerings and Major Sequences

- cerning initiation of the psychology 3990H senior research project, discussion of advanced study and career opportunities in psychology, and a general orientation concerning special learning opportunities available to psychology honors majors. (GrC)
- 3970f,w,s. DIRECTED STUDIES.** (1-15 cr; prereq #)  
Independent study or small seminars; designed to permit the student to pursue his interests by special reading and/or study. (GrC)
- 3990f,w,s. PROJECT IN PSYCHOLOGY.** (Cr ar; prereq sr, #)  
Individual library study or empirical investigation. (GrC)
- 3990Hf,w,s. HONORS COURSE: PROJECT IN PSYCHOLOGY.** (Cr ar; prereq sr, #) (GrC)
- 5011f. THEORIES OF LEARNING.** (4 cr; prereq 3011 except for students in Honors sequence and grads) LaBerge  
Major theories of learning and basic issues of learning and performance in man and animals. (GrC)
- 5012w/3s†. PSYCHOLOGY OF LEARNING.** (4/4† cr; prereq 3011 except for students in Honors sequence and grads)  
Experimental literature on classical conditioning and all types of instrumental learning. Critical evaluation of theories relevant to these types of learning. (GrC)
- 5014w. HUMAN LEARNING A.** (4 cr; prereq 3011 except for students in Honors sequence and grads) Fox  
Major processes and variables involved in human learning; emphasis upon verbal and motor learning. Information feedback, skill acquisition, retention and long-term memory, facilitation and interference, abilities and performance prediction. (GrC)
- 5015s. HUMAN LEARNING B.** (4 cr; prereq 3011, except for students in Honors sequence and grads) LaBerge  
Major processes involved in human learning; emphasis upon verbal and perceptual learning. Topics include discrimination learning, choice and probability learning, concept formation, and programmed learning. (GrC)
- 5017f. ANALYSIS OF BEHAVIOR I.** (4 cr; prereq 3011, except for students in Honors sequence and grads) MacCorquodale  
Systematic formulation of topics of psychology based upon a Skinnerian analysis. Scientific method, learning, motivation, and emotion. (GrC)
- 5018w. ANALYSIS OF BEHAVIOR II.** (4 cr; prereq 5017 or #) MacCorquodale  
Account of an individual's verbal behavior in terms of his past history and current circumstances. (GrC)
- 5019s. ANALYSIS OF COMPLEX BEHAVIOR.** (4 cr; prereq 5017 or #) Thompson  
Experimental analysis of complex behavior repertoires based upon systematic formulation presented in 5017. Development of an approximate system of analysis of large, continuous samples of behavior. Social as well as other complex sequences of human and other animal behavior. (GrC)
- 5021w. QUANTITATIVE MODELS FOR LEARNING.** (4 cr; prereq 5861 or #) Viemeister  
Mathematical models for learning, stochastic operator models, stimulus sampling theory, models for stimulus detection and recognition. (GrC)
- 5031w. Perception.** (4 cr; prereq 3031, 3801 or #) Pick  
Critical analysis of methods of investigation and data obtained in study of selected problems of perception: psychophysical methods, form perception, space perception, constancy, spatially coordinated behavior and attention. Emphasis primarily on visual perception. (GrC)
- 5041w/2s†. PSYCHOLOGY OF MOTIVATION.** (4/4† cr; prereq 9 cr; not offered 1972-73)  
Russell  
Classical and contemporary theories of motivation. Elaboration of basic drives into motives, acquisition of new drives and goals; dynamics of elaborated drive structure. Motivation in complex situations involving set, level of aspiration, Zeigarnik effect, frustration, etc. (GrC)
- 5054s. PSYCHOLOGY OF LANGUAGE.** (4 cr; prereq 3011, except for students in Honors sequence and grads) Jenkins  
The theories and experimental evidence involved in past and present conceptions of psychology of language. (GrC)
- 5061f. FUNDAMENTALS OF PHYSIOLOGICAL PSYCHOLOGY.** (4 cr; prereq 1001, 1005 or Biol 1011 or #) Roberts  
Physiological and neuroanatomical mechanisms underlying behavior of higher vertebrates. Sleep, wakefulness, and attention processes. Effects of drugs on behavior.

- 5062s. NEUROPSYCHOLOGY OF MOTIVATION AND LEARNING.** (4 cr; prereq 5061 or #) Roberts  
Brain mechanisms of aggression, fear, pain, hunger, thirst, reproductive behavior, learning, and discrimination processes.
- 5071s. ANIMAL PSYCHOLOGY.** (3 cr; prereq 1001, 1005 or equiv in another science; not offered 1972-73)  
Historical, philosophical, and biological foundations; consciousness; motivation; learning; reasoning; judgment; abnormal behavior; social influences. (GrB)
- 5101w. PERSONALITY.** (4 cr; prereq 5862 or ¶5862, honors cand or grad) Tellegen  
Review of personality theories as alternative orienting viewpoints. Trait-oriented discussion of findings and conceptual and methodological problems of contemporary personality research. (GrC)
- 5125w/6s†. DIFFERENTIAL PSYCHOLOGY.** (4/4† cr; prereq 5862 or #, honors cand or grad) Bouchard, Dunnette  
Introduction to methodology. Quantitative studies of nature of psychological traits and influence of age, sex, heredity, and environment in causation of individual differences in ability and temperament. (GrC)
- 5134f. INTRODUCTION TO BEHAVIORAL GENETICS.** (4 cr; prereq 5126) Gottesman  
Methodology appropriate to analyzing contribution of genetic and environmental factors to variance observed in normal and abnormal traits in man and animals. Emphasis on intelligence, neuroses, and psychoses. For all examples, independent variable will be genotype of an organism. (GrC)
- 5201f. SOCIAL PSYCHOLOGY.** (4 cr; prereq 1001, 1005, and 8 cr in social science, psychology honors majors or grad) Berscheid  
A survey of classical and contemporary theories and research in social psychology. (GrC)
- 5501s. VOCATIONAL PSYCHOLOGY.** (4 cr; prereq 3801 or equiv) Dawis  
Analysis of individuals and work environments with reference to selection of, adjustment to, and behavior in work; history, theories, and current developments in vocational psychology. (GrC)
- 5604w/5s†. ABNORMAL PSYCHOLOGY.** (4/4† cr; prereq honors majors or grad, or #) Devine  
Comprehensive review of behavioral disorders. Etiology and treatment considerations are emphasized. (GrC)
- 5641f. CRIMINAL PSYCHOPATHOLOGY.** (3 cr; §CJS 5301; prereq 5605, sr, or grad, or #) Malmquist  
A survey of psychiatric and psychological aspects of antisocial and criminal behavior. (GrC)
- 5701w. PERSONNEL AND INDUSTRIAL PSYCHOLOGY.** (4 cr; prereq 1001, one course in statistics or #) J. Campbell, Dunnette  
Application of principles of individual differences and psychological measurement to problems of recruiting, selecting, evaluating, and training members of ongoing organizations. Job behavior description, performance measurement, selection and placement strategies, minority group employment, measurement of job satisfaction, strategies for training and development. (GrC)
- 5702s. PSYCHOLOGY OF INDIVIDUAL BEHAVIOR IN ORGANIZATIONS.** (4 cr; prereq 5701 or 9 cr psy or #) J. Campbell, Dunnette  
Application of psychological research and methodology to the study of human behavior in ongoing organizations. Motivation, attitude measurement, problem solving and decision making, effects of organizational structure and climate, problems of leadership, supervision, interpersonal relations. (GrC)
- 5703f. SOCIAL PSYCHOLOGY OF ORGANIZATIONS.** (4 cr; prereq 9 cr in psy or #) Bouchard  
Theoretical and methodological issues in study of dyads and small groups in organizational environments. Social processes as constraints on organizational functioning. Experimental approaches to study of group processes in organizational settings. (GrC)
- 5751f,w. PSYCHOLOGY OF ADVERTISING.** (4 cr; §Jour 5251; prereq 1001 [5 cr]) Peterman  
Psychological principles, research techniques, and applications in advertising and selling. Relevant consumer attitudes and behavior. Psychological mechanisms upon which effectiveness of advertisements and commercials depend. (GrC)
- 5861f. QUANTITATIVE METHODS IN PSYCHOLOGY.** (4 cr; prereq #) Viemeister  
Elementary set theory, probability theory, matrix algebra, difference equations; applications to construction and evaluation of behavior models. (GrA)
- 5862f. PSYCHOLOGICAL MEASUREMENT: THEORY AND METHODS.** (4 cr; honors cand or grad; prereq 3801 or equiv) Weiss

## Course Offerings and Major Sequences

Types of measurement (tests, scales, inventories, Q-sort) and their construction; theory and measurement of reliability and validity. (GrC)

- 5871s. MULTIVARIATE METHODS OF DATA ANALYSIS.** (4 cr; prereq 5862 or #) Weiss  
Multivariate prediction and discrimination (linear and nonlinear models); multivariate co-variation analysis, including cluster and factor analysis. (GrC)
- 5938w. FORENSIC PSYCHOLOGY.** (3 cr; §Law 5846 [Seminar: Psychology, Psychiatry, and the Law]; prereq 1001, sr or grad, #) Livermore, Meehl, Malmquist  
A lawyer, a psychologist, and a psychiatrist consider selected problems of the relation between the behavior sciences and law as a mode of social control. Rules and empirical facts, utilities and disutilities of the criminal sanction, the insanity defense, civil commitment of the mentally ill, law and morals, diagnosis and prediction, the psychologist as expert witness, psychological determinism and responsibility. (GrC)

## PUBLIC HEALTH (PubH)

College of Medical Sciences

Major Sequence for B.A.: See Biometry in this *Bulletin*. Additional details about courses of study in public health may be found in the *School of Public Health Bulletin* or the *Graduate School Bulletin*.

### UPPER DIVISION COURSES

- 3004. BASIC CONCEPTS IN PERSONAL AND COMMUNITY HEALTH.** (4 cr; prereq §old 2, 1001, 1002, 1003, 3002, 3033, old 52) Greene and Schwanke  
Scientific, socio-cultural, and attitudinal aspects of communicable and degenerative diseases, environmental and occupational health hazards, alcohol and drug problems; role of education in health conservation, disease control, and drug abuse.
- 3151. INTRODUCTION TO ENVIRONMENTAL HEALTH.** (3 cr; prereq 3 PubH cr) Vesley  
Principles of environmental health relating to water, food, wastes, housing, accidents, radiation, air, industrial hygiene.
- 3385. PHYSIOLOGICAL HYGIENE.** (4 cr; prereq #, 8 chem cr and 4 anat cr or equiv) Alexander, Taylor, Dawson  
Basic physiological principles and facts.
- 3386. PHYSIOLOGICAL HYGIENE.** (4 cr; prereq 3385 or equiv) Taylor, Alexander, Dawson  
Effects of exercise, nutrition, environment, and age on performance and health.
- 3600. HUMAN NUTRITION.** (3 cr; prereq courses in chemistry and biology or #) Stief  
Nutrition and public health. Nutritional values of foods, food utilization and requirements, food management, nutrition education.
- 5070. COMMUNICATION SKILLS FOR HEALTH PROFESSIONALS.** (3 cr) Craig, Veninga  
Identification of basic skills in interpersonal and interprofessional relationships. Development of skills in one-to-one communication and in small group interaction, and of those necessary to affect change within organizations. Trust within human relationships, communications breakdowns, conflict resolution, and participative leadership.
- 5080. PUBLIC HEALTH EDUCATION.** (2 cr; prereq #) Craig  
Planning educational aspects of community health programs; group procedures; public relations; selection, development, and use of mass media.
- 5152. ENVIRONMENTAL HEALTH.** (2 cr; prereq #) Bond, staff  
Environmental health problems; problems encountered by official health agencies.
- 5342. PUBLIC HEALTH BACTERIOLOGY.** (Cr ar; prereq MicB 5232, 5161 and #) Bauer  
Bacteriologic and serologic diagnosis; public health laboratory administration and methods.
- 5380. APPLIED HUMAN NUTRITION.** (3 cr; prereq #) Anderson, Grande, Stief  
Food composition, nutrient requirements, nutrition surveys, public health programs in nutrition.
- 5385. PHYSIOLOGY OF EXERCISE.** (Cr ar; prereq Phsl 5100 or equiv and #) Taylor  
Muscular efficiency, training, deconditioning, effects of exercise on metabolism and physiological systems.

For other courses in public health, see the *Graduate School Bulletin* or the *School of Public Health Bulletin*.

## RELIGIOUS STUDIES (ReIS)

**Staff:** A. Thomas Kraabel, *director*, 311 Folwell Hall; the Religious Studies Committee

Religious Studies in the College of Liberal Arts is interdisciplinary and interdepartmental, unified by its subject matter rather than by a single methodology; religions and religious phenomena are studied in a number of departments, as listed in the subareas below. Approaches and presuppositions vary: when ancient religions are investigated in the History or Classics Department, or primitive religions discussed in the Anthropology Department, or religious poetry in the English Department, or iconography in the Department of Art History, the methods are those of the department involved.

Because some students wish to major in religious studies, and many others choose religious studies courses as electives, the Religious Studies Committee has identified the courses in various departments devoted wholly, or in significant part, to some aspect of religion, and organized them into eight subareas. A booklet, *Religious Studies at the University of Minnesota*, published annually by the Religious Studies Committee, lists all such courses; it is available in 311 Folwell Hall or 106 Johnston Hall.

### Subareas of Religious Studies

**I. RELIGIONS IN ANTIQUITY**—Courses and faculty in Classics, History, and Middle Eastern Languages.

**II. RELIGIOUS EXPRESSION IN LITERATURE AND THE ARTS**—American Studies, Art History, Classics, East Asian Languages, English, French and Italian, German, Middle Eastern Languages, Music, Scandinavian, Slavic and East European Languages, South Asian Languages, Spanish and Portuguese, Theatre Arts.

**III. RELIGION IN EUROPE**—Art History, Classics, French and Italian, German, History, Humanities, Philosophy, Political Science, Slavic and East European Languages, Spanish and Portuguese.

**IV. 20TH-CENTURY RELIGIONS**—East Asian Languages, French and Italian, History, Humanities, Middle Eastern Languages, Philosophy, Political Science, Sociology.

**V. RELIGION AND SOCIETY**—Anthropology, Political Science, Psychology, Sociology.

**VI. RELIGIONS IN EAST AND SOUTH ASIA**—Anthropology, Art History, East Asian Languages, History, Philosophy, South Asian Languages.

**VII. NEAR EASTERN RELIGIONS**—Anthropology, History, Middle Eastern Languages.

**VIII. RELIGIONS IN AMERICA**—American Studies, Anthropology, Art History, English, History, Humanities, Music, Philosophy, Sociology.

For lists of courses in the subareas, see the booklet *Religious Studies at the University of Minnesota*.

**Major Sequence for B.A.:** Each student's major program must be *approved in advance* by an adviser in Religious Studies. A student considering the major usually consults with the program director who may then refer him to the committee member whose academic responsibilities and concerns are closest to his area of interest. (Those preparing for the ministry frequently take religious studies courses, but would ordinarily be advised not to major in religious studies. See rather the entry Theological Training, page 228.)

## Course Offerings and Major Sequences

**Major Requirements**—Specialization in any two of the subareas above, with at least 18 Upper Division cr in each; cr in other subareas to bring the total Upper Division cr to 60. A major is expected, in freshman and sophomore years, to elect Lower Division courses that are prerequisite to the courses he intends to take for the major. A 3- to 6-cr integrative paper or study project, 3995, is also required; it is usually directed by the student's adviser and completed in the senior year. Cr in 3995 do not count toward the 18 cr minima in his subareas, but are included in 60 Upper Division cr for the major.

For additional information and advice, the director or other members of the Religious Studies Committee should be consulted, particularly since revision and improvement within Religious Studies may be expected during the years this *Bulletin* is in use.

### LOWER DIVISION COURSES

#### 1001. INTRODUCTION TO RELIGIOUS STUDIES. (4 cr)

The thought and behavior of religious man from historical and analytical perspectives; the ways in which man is religious.

#### 1031f,2w,3s. RELIGIONS OF THE 20TH-CENTURY WORLD. (4,4,4 cr)

1031: §Indic 1504. Religions in South Asia. 1032: Religions in East Asia. 1033: Religions of the Mediterranean Area—Judaism, Christianity, Islam. (GrC)

### UPPER DIVISION COURSES

#### 3970. DIRECTED STUDIES. (1-5 cr; prereq §)

Course designed to permit the student to pursue his interests in special reading and/or study. (GrC)

#### 3995. MAJOR PAPER. (3-6 cr; prereq §)

Integrative paper or study project for religious studies majors. (GrC)

## RESERVE OFFICERS' TRAINING CORPS (ROTC) AEROSPACE STUDIES (Air)

**Staff:** Colonel Frederick J. Adelman, *chairman*, 5a Armory; Frederick L. Ayer, *administration officer*, 5c Armory; Howard S. McClellan, *commandant of cadets*, 7 Armory; John E. Rittman, *information officer*, 5b Armory

The Air Force ROTC program enables qualified young men and women to work toward commissions as officers in the U.S. Air Force while they are completing requirements for a University degree. They are commissioned as second lieutenants in the United States Air Force upon graduation. Women cadets are eligible to participate in all phases of the program except those that lead to pilot and navigator occupations.

Emphasis in the Air Force ROTC curriculum is on development of leadership and communicative skills. Students receive a solid foundation on how the Air Force functions in support of national policy. Management theory and its practical application in directing personnel and programs are stressed.

All cadets receive \$100 a month, plus uniform and AFROTC texts, during their last 2 years. Scholarships that cover tuition and fees, a text allowance, AFROTC uniforms, and a \$100 a month stipend for 4-, 3-, or 2-year periods are available to cadets on a competitive basis.

For detailed information concerning the program see the *Army, Navy, and Air Force ROTC Bulletin* of the University or call the Aerospace Studies office, 3 Armory (373-2205).

### LOWER DIVISION COURSES

#### 1101f. U.S. AIR FORCE. (1 cr; prereq Δ)

The doctrine, mission, and organization of the U.S. Air Force, especially of U.S. strategic offensive forces.

- 1102w. U.S. DEFENSE FORCES.** (1 cr; prereq  $\Delta$ )  
The mission and function of the North American defensive systems. Aerospace and missile defense forces and the dangers they are designed to counter.
- 1103s. U.S. SUPPORT FORCES.** (1 cr; prereq  $\Delta$ )  
The structure of U.S. Air Force support forces. The operational and unified commands with the aerospace systems, personnel, research and development, and logistic and auxiliary services.
- 1201f. THE NATIONAL DEFENSE ORGANIZATION.** (1 cr; prereq  $\Delta$ )  
The evolution, organization and function of the Department of Defense; the role of the military in furthering national policies and goals; the elements of national power; nature and causes of war.
- 1202w. U.S., SOVIET AND CHINESE MILITARY POLICIES.** (1 cr; prereq  $\Delta$ )  
Theories of general war; nature and context of limited war and insurgencies; military capabilities, policies and strategies of the Soviet Union and China; the nature and role of alliances in national defense policies.
- 1203s. U.S. DEFENSE POLICIES.** (1 cr; prereq  $\Delta$ )  
The roles of the President, Joint Chiefs of Staff, Congress and the National Security Council in the formation of U.S. defense policies. Elements and process of defense decision-making at the national/Department of Defense level.

#### UPPER DIVISION COURSES

- 3301f. DEVELOPMENT OF AIR POWER.** (3 cr; prereq  $\Delta$ )  
The nature of war and the application of aerospace forces in support of national goals. History of air power. Seminars with oral and written reports. Emphasis on communication skill development.
- 3302w. AEROSPACE POWER TODAY.** (3 cr; prereq  $\Delta$ )  
Analysis of the mission and organization of the Defense Establishment, aerospace concepts, doctrine, and use in relation to a nation's resources. Seminars developing individual skills in research and oral reporting.
- 3303s. ASTRONAUTICS AND SPACE OPERATIONS.** (3 cr; prereq  $\Delta$ )  
Survey of space vehicle systems and ground support equipment; space exploration; orbits and trajectories; spatial environment; future development of astronautics and space operations. Importance of a national space program. Seminars in research skills and communication techniques.
- 3401f. AIR FORCE LEADERSHIP.** (3 cr; prereq  $\Delta$ )  
The philosophy and scope of leadership and the interaction of individuals and groups in large scale organizations. Role playing, conference and discussion, and problem solving methods.
- 3402w. PROFESSIONALISM.** (3 cr; prereq  $\Delta$ )  
The foundations of military professionalism; its ethical characteristics and responsibilities. The meaning and function of military discipline; principles of military law.
- 3403s. MILITARY MANAGEMENT.** (3 cr; prereq  $\Delta$ )  
Study of management and the functions of the military executive: planning, organizing, directing, coordinating, and controlling. Management tools, concepts, practices, controls, and techniques to assure mission achievement.
- 3404f,w,s. FLIGHT INSTRUCTION PROGRAM.** (3 cr; prereq  $\Delta$ )  
Thirty-six and a half hours of flight instruction and practice. Ground School covers federal aviation regulations, flight theory, aircraft instruments, meteorology, radio aids, navigation, and aircraft operation to the FAA private pilot level.

#### MILITARY SCIENCE (Mil)

**Staff:** Colonel William D. Beard, *head*, 108 Armory; Patrick W. Buckingham, Richard W. Goularte, Ellsworth C. Grev, David B. Vann

The program in military science, leading to a commission in the United States Army Reserve, is available to male students in all colleges of the University. Instruction encompasses military fundamentals common to all branches of the Army. Its purpose is to provide a basic military education and, in conjunction with other curricula, to develop individual characteristics and attributes of leadership essential to an officer. For information concerning the requirements and the opportunities of this program, see the *Army, Navy, and Air Force ROTC Bulletin* or call at the Military Science office, 108 Armory.

## Course Offerings and Major Sequences

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### LOWER DIVISION COURSES (Preprofessional Division)

#### Military Science I

- 1011f. **WORLD MILITARY HISTORY.** (2 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) Basic concepts of military history: principles of war, military definitions, relationship of geography, economics, and technology to military history; warfare through the ages—rise of Islam and its military institutions.
- 1012w. **WORLD MILITARY HISTORY.** (2 cr; prereq  $\Delta$ ) Discovery of gunpowder and beginnings of modern armies; limited war of 18th century; great age of sail; nation in arms and Napoleon; armaments race in 19th Century.
- 1013s. **WORLD MILITARY HISTORY.** (2 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) Advent of total war—World War I and World War II; policy of containment and its military implications; Korean War and rearmament; the modern army.

#### Military Science II

- 1021f. **FOUNDATIONS OF NATIONAL POWER.** (2 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) Factors involved in a nation's capacity for developing force; geographical positions, nature of populations, social organization within a nation, a nation's ideology, economic and technological resources of a nation.
- 1022w. **FOUNDATIONS OF NATIONAL POWER.** (2 cr; prereq  $\Delta$ ) Political systems and their influence on national power; force as related to other types of influence; development of various types of influence; presentation of military force as center of the influence concept.
- 1023s. **FOUNDATIONS OF NATIONAL POWER.** (2 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) Discussion of levels of military force to include various types of military force.

### UPPER DIVISION COURSES (Professional Division)

#### Military Science III

- 5131f. **PROBLEMS IN MAP READING AND LEADERSHIP.** (3 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) Tactical use of US and foreign military maps, land navigation, skills used in reading and interpreting military maps and aerial photographs; provides students with knowledge of principles, methods, and techniques of preparing, presenting, and evaluating military instruction. Application of teaching principles and techniques.
- 5132w. **SMALL UNIT TACTICS.** (3 cr; prereq  $\Delta$ , Leadership Laboratory \*\*) Small unit operations in conventional and unconventional battlefield environments; organization and equipment organic to modern army; employment of small units in tactical situations.
- 5133s. **LEADERSHIP, BRANCHES OF THE ARMY.** (3 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) Psychology and problem solving techniques in military environment; individual and small group leadership problems. Orientation on mission, functions, and career opportunities in different branches of the army.

#### Military Science IV

- 5141f. **THEORY AND DYNAMICS OF THE MILITARY TEAM.** (3 cr; prereq  $\Delta$ , Leadership Laboratory \*\*) Explanation of command, staff organization and functions; a commander's estimate of situation, his operations order; importance of military intelligence cycle to military team; principles of training management, its application to successful military operations.
- 5142w. **MILITARY ADMINISTRATION AND LOGISTICS MANAGEMENT.** (3 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) Military logistical supply system and its importance to combat operations; military personnel management procedures, including records, classification and assignment, unit fund accounting, and mess management.
- 5143s. **MILITARY LAW AND SERVICE ORIENTATION.** (3 cr; prereq  $\Delta$ , Leadership Laboratory\*\*) History and basic concepts of military justice; emphasis placed on origin, nature, purpose of *Uniform Code of Military Justice and Manual for Courts-Martial*; relationship between military justice and military discipline, scope and nature of appellate review, service orientation for newly commissioned officers.

\*\* Leadership Laboratory, taught concurrently to all cadets during fall, winter, and spring quarters, is designed so that individual students can demonstrate their progressive ability in individual and group drill. Progressive and extensive practice in voice and command, unit formation, exercise of command, bearing and posture. Assists in identification and development of individual leadership traits and qualities of character.

**NAVAL SCIENCE (Nav)**

Staff: Captain W. T. Broughton, *head*, 203 Armory; L. R. Olson, *associate head*; C. R. Ingebretsen, W. J. Rennie, S. E. Ayres, R. K. Holman, T. M. O'Connor

Naval Science is an academic program designed to give male students a background in naval subjects so that upon graduation they may qualify for commissions in the Navy, Naval Reserve, Marine Corps, or Marine Corps Reserve.

There are three programs under the NROTC: The 4-year Navy-Marine scholarship program, the 4-year Navy-Marine college program, and the 2-year advanced training program.

The scholarship program offers tuition, fees, and books plus \$100 a month as subsistence allowance during 4 years of undergraduate study. You may qualify for this program during your senior year of high school or your freshman year in college if you are enrolled in the Navy-Marine college program.

The college program (non-scholarship) is a 4-year program providing all Navy Science textbooks plus \$100 a month as subsistence allowance during the last 2 years of undergraduate work.

The 2-year advanced training program (non-scholarship) provides naval science textbooks and \$100 subsistence allowance for the last 2 years of undergraduate study. Students who qualify for this program will be sent to a Naval Science Institute (NSI) for 6 weeks prior to junior year. Room, board, and allowance for travel to and from the NSI at the University of North Carolina or UCLA, plus approximately \$430 pay, are provided for this period.

Information concerning the requirement and the opportunities in the NROTC program may be obtained from the *Army, Navy, Air Force ROTC Bulletin* or the Naval Science office, 203 Armory.

The Arts College will accept credits from courses in naval science to fulfill a minor toward the B.A. degree, or for credits outside the major and minor.

**LOWER DIVISION COURSES****1st Year**

- 1103f. **NAVAL ORIENTATION.** (3 cr; #) O'Connor  
Naval customs. Organization for national security. Naval leadership. Forms of modern naval warfare.
- 1104w,5s. **SEA POWER.** (3,3 cr; prereq 1104, #) O'Connor  
Sea power's influence on history from ancient times to present.

**2nd Year**

- 1200f. **SEMINAR: MARITIME AFFAIRS.** (1 cr; prereq #) Ingebretsen  
Conducted in laboratory sessions approximately 1 hour per week.
- 1201w. **SEMINAR: MARITIME AFFAIRS.** (2 cr; #) Ingebretsen, Ayres
- 0202s. **LEADERSHIP LAB.** (No cr; #) Ingebretsen, Ayres

**UPPER DIVISION COURSES****Line Sequence—3rd and 4th Years**

- 3303f. **NAVAL OPERATIONS: INTRODUCTION TO NAVIGATION.** (3 cr; #) Holman  
Piloting and dead reckoning. Rules of the nautical road.
- 3304w. **CELESTIAL NAVIGATION.** (3 cr; prereq trigonometry, #) Holman  
Theory and practical application of navigation using the stars, moon, and planets. Relative motion and naval maneuvering.
- 3305s. **NAVAL OPERATIONS.** (3 cr; #) Holman  
Electronic navigation and operations analysis. Loran, radio, and modern navigation systems. A scientific approach to decision making.

## Course Offerings and Major Sequences

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### Line Sequence—4th Year

- 3400. PRINCIPLES OF NAVAL SYSTEMS I.** (3 cr; #) Rennieke  
Principles of selected phases of the defense control problem: propulsion systems, trajectories, flight paths, and fundamentals of radar, sonar, and computers.
- 3401. PRINCIPLES OF NAVAL SYSTEMS II.** (3 cr; #) Rennieke  
The dynamics of the basic components of defense control systems stated as transfer functions. Design and testing of components including warheads, fuzes, guidance, and control. Procedures for evaluating defense systems effectiveness and hit probability.
- 3402. PRINCIPLES OF NAVAL MANAGEMENT I.** (3 cr; #) Rennieke  
Introduction to naval management: management theory, decision making, planning, operations research, organization theory, organization for national defense, control theory and formal military organization.
- 3403. PRINCIPLES OF NAVAL MANAGEMENT II.** (3 cr; #) Rennieke  
*Uniform Code of Military Justice.* Precepts and practices of naval leadership—management psychology, individual differences, group dynamics.

### Marine Corps Sequence—3rd and 4th Years

- 3350. EVOLUTION OF ART OF WAR I.** (3 cr; #) Ingebretsen  
Evolution of warfare from earliest recorded times through Mexican War.
- 3351. EVOLUTION OF ART OF WAR II.** (3 cr; #) Ingebretsen  
Civil War campaigns, World Wars I and II; U. S. military and foreign policy.
- 3450. AMPHIBIOUS WARFARE I.** (3 cr; #) Ingebretsen  
Evolution of current amphibious warfare techniques and doctrine from Gallipoli to Korean War.
- 3451. AMPHIBIOUS WARFARE II.** (3 cr; #) Ingebretsen  
Doctrinal techniques and present concepts planning, embarkation, rehearsal, support, and logistics.

### Navy or Marine Corps—3rd or 4th Year

- 3500. FLIGHT INSTRUCTION PROGRAM.** (3 cr; prereq  $\Delta$  and Navy flight physical examination)  
50 hours of ground instruction and 35 hours of flight instruction leading to FAA certification as a private pilot. FAA regulations, aircraft instruments, meteorology, radio aids, navigation, flight theory, etc.

## RUSSIAN

See Slavic and East European Languages

## SANSKRIT

See South Asian Languages

## SCANDINAVIAN (Scan)

Staff: Nils Hasselmo, *chairman*, 210 Folwell Hall; Luther Askeland, Kaaren Grimstad, Meri Lehtinen, William Mishler, Allen Simpson, Goran Stockenstrom, Cecil Wood

The Department of Scandinavian teaches and conducts research in the languages and literatures of the Scandinavian countries and Finland, in the context of relevant cultural-historical background and milieu.

**Major Sequences for B.A., Scandinavian Languages and Literature:** 1. *Required background courses*—Dan, Nor, or Swed 1101/2/3, 1104/5. 2. *Major requirements*—Dan, Nor, or Swed 3101, 3102,3,4, and at least 20 cr in Scan courses at 3xxx level or higher (consult director of undergraduate studies about substitution of other departments' courses dealing with Scandinavia).

Major Sequence for B.A., Finnish Language and Literature: 1. *Required background courses*—Fin 1101/2/3, 1104/5. 2. *Major requirements*—Fin 3101, 3102, 3103,4, Scan 3604, 5404 or 5411, 5421, and at least 8 cr in Scandinavian history.

**General Education**—Courses appropriate for nonmajors are Scan 3501, 3504, 3601, 3604, 5421, 5501, 5502, 5503, 5601, 5613, 5615, 5616, 5617, 5631, 5632, 5633, 5704, 5711, 5712.

## Danish (Dan)

### LOWER DIVISION COURSES

1101f/2w/3s. **BEGINNING DANISH.** (5/5/5 cr)

1104f/5w. **INTERMEDIATE DANISH.** (5/4 cr; prereq 1103 or equiv)

### UPPER DIVISION COURSES

3101s. **DANISH PROSE AND POETRY.** (4 cr; prereq 1105 or equiv)

Reading 19th- and 20th-century prose and poetry to develop reading skill; analysis of style.

3102f,3w,4s. **INTRODUCTION TO DANISH LITERATURE.** (4,4,4 cr; prereq 3101 or equiv)

Survey of literary history; reading of significant works. Classes conducted primarily in the language. 3102: Beginnings to the Modern Breakthrough. 3103: From the Modern Breakthrough to the early 20th century. 3104: 20th-century literature.

## Finnish (Fin)

### LOWER DIVISION COURSES

1101f/2w/3s. **BEGINNING FINNISH.** (5/5/5 cr)

1104f/5w. **INTERMEDIATE FINNISH.** (5/4 cr; prereq 1103 or equiv)

### UPPER DIVISION COURSES

3101s. **INTERMEDIATE FINNISH.** (4 cr; prereq 1105 or equiv)

Further development of reading, writing, and speaking skills.

3102f. **FINNISH PROSE AND POETRY.** (4 cr; prereq 3101 or equiv)

Reading 19th- and 20th-century prose and poetry to develop reading skill; analysis of style.

3103w,4s. **INTRODUCTION TO FINNISH LITERATURE.** (4,4 cr; prereq 3102 or equiv)

Survey of literary history; reading of significant works. Classes conducted primarily in the language. 3103: Beginnings to 1900. 3104: 20th-century literature.

## Norwegian (Nor)

### LOWER DIVISION COURSES

1101f/2w/3s. **BEGINNING NORWEGIAN.** (5/5/5 cr)

1104f/5w. **INTERMEDIATE NORWEGIAN.** (5/4 cr; prereq 1103 or equiv)

### UPPER DIVISION COURSES

3101s. **NORWEGIAN PROSE AND POETRY.** (4 cr; prereq 1105 or equiv)

Reading 19th- and 20th-century prose and poetry to develop reading skill; analysis of style.

3102f,3w,4s. **INTRODUCTION TO NORWEGIAN LITERATURE.** (4,4,4 cr; prereq 3101 or equiv)

Survey of literary history; reading of significant works. Classes conducted primarily in the language. 3102: Beginnings to the Modern Breakthrough. 3103: From the Modern Breakthrough to the early 20th century. 3104: 20th-century literature.

## Swedish (Swed)

### LOWER DIVISION COURSES

1101f/2w/3s. **BEGINNING SWEDISH.** (5/5/5 cr)

## Course Offerings and Major Sequences

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1104f/5w. INTERMEDIATE SWEDISH. (5/4 cr; prereq 1103 or equiv)

### UPPER DIVISION COURSES

3101s. SWEDISH PROSE AND POETRY. (4 cr; prereq 1105 or equiv)

Reading 19th- and 20th-century prose and poetry to develop reading skill; analysis of style.

3102f,3w,4s. INTRODUCTION TO SWEDISH LITERATURE. (4,4,4 cr; prereq 3101 or equiv)

Survey of literary history; reading of significant works. Classes conducted primarily in the language. 3102: Beginnings to the Modern Breakthrough. 3103: From the Modern Breakthrough to the early 20th century. 3104: 20th-century literature.

## Scandinavian

### LOWER DIVISION COURSE

1504. SCANDINAVIAN IMMIGRANT CULTURE AND ITS BACKGROUND. (4 cr) Hasselmo

The cultural self-maintenance efforts of Scandinavian immigrants to the U.S.; immigrant literature (all readings in English). (GrC)

### UPPER DIVISION COURSES

3501. INTRODUCTION TO SCANDINAVIA. (4 cr)

Major cultural, social, and political developments; major cultural figures (all readings in English). (GrC)

3601. SCANDINAVIAN LITERATURE IN TRANSLATION. (4 cr; does not count toward Scandinavian major)

Major literary works from the Middle Ages to the present.

3604. FINNISH LITERATURE IN TRANSLATION. (4 cr; offered alt yrs)

Major literary works from the Middle Ages to the present.

3670. TOPICS IN SCANDINAVIAN LITERATURE. (4 cr)

Topic selected by instructor and announced before the first class meeting. Open to majors and nonmajors. Readings in English for nonmajors. Meets with 5670. (GrD)

5201. SCANDINAVIAN LITERATURE FROM THE LATE MIDDLE AGES TO THE ENLIGHTENMENT. (4 cr; prereq reading knowledge of a Scandinavian language; offered alt yrs)

Representative literary works from the 14th century to Bellman and Holberg.

5202. FROM ROMANTICISM TO THE MODERN BREAKTHROUGH. (4 cr; prereq reading knowledge of a Scandinavian language; offered alt yrs) Askeland

Romantic and early realistic authors.

5404. HISTORY OF FINNISH. (4 cr; offered alt yrs)

The history of the Finnish language from a cultural point of view (all readings in English for nonmajors).

5411. STRUCTURE OF FINNISH. (4 cr; offered alt yrs)

Analysis of the phonology and syntax of modern Finnish (all readings in English for nonmajors).

5421. FINNISH FOLKLORE: THE KALEVALA. (4 cr; offered alt yrs)

The Finnish national epos from a folkloristic point of view (all readings in translation).

5501. SCANDINAVIAN MYTHOLOGY. (4 cr)

Study of Scandinavian myths based on the Poetic Edda and the Prose Edda (all readings in translation).

5502. THE ICELANDIC SAGA. (4 cr)

Literary study of the Saga literature, its origins and development (all readings in translation).

5503. SCANDINAVIAN FOLKLORE. (4 cr)

Literary and folkloristic investigation of Scandinavian ballad and folk tale (all readings in English for nonmajors) (GrD)

5511. SKALDIC POETRY, ITS METHOD. (4 cr; prereq reading knowledge of Old Icelandic; offered alt yrs)

Analysis of a representative selection of Skaldic poetry and its forms and method.

5512. THE POETIC EDDA. (4 cr; prereq reading knowledge of Old Icelandic) Wood

Reading and analysis of poems from the Poetic Edda (all texts in Old Icelandic). (GrD)

- 5601. INGMAR BERGMAN IN THE CONTEXT OF MODERN SCANDINAVIAN LITERATURE.** (4 cr)  
The literary and cultural environment in which Bergman has developed. Readings in Strindberg, Lagerkvist, expressionism, Bergman's own plays and film scripts (all readings in English for nonmajors). (GrD)
- 5613. CONTEMPORARY SCANDINAVIAN LITERATURE.** (4 cr) Mishler  
The works of authors representing major trends after 1945 (all readings in English for nonmajors).
- 5615. IBSEN AND THE BEGINNINGS OF THE MODERN DRAMA.** (4 cr) Askeland  
The plays of Ibsen and his role as "founder" of modern European drama (all readings in English for nonmajors)
- 5616. STRINDBERG AND THE DRAMA IN REVOLT AND TRANSITION.** (4 cr) Stockenström  
Strindberg as master of the naturalistic drama and as "the father of modernity" in European and American theater (all readings in English for nonmajors).
- 5617. 20TH-CENTURY SCANDINAVIAN THEATER.** (4 cr; offered alt yrs)  
"Experimental" trends in dramatic composition and staging (all readings in English for nonmajors).
- 5619. SCANDINAVIAN POETRY SINCE 1890.** (4 cr; prereq reading knowledge of a Scandinavian language; offered alt yrs)  
The work of representative poets since 1890.
- 5631. THE SCANDINAVIAN NOVEL, 1800-1890.** (4 cr) Simpson  
The course concentrates on the "Modern Breakthrough" of the 1870s and 80s, but includes representative works from preceding periods (all readings in English for nonmajors). (GrD)
- 5632. THE SCANDINAVIAN NOVEL, 1890-WORLD WAR I.** (4 cr) Simpson  
Representative novels chosen from the work of Hamsun, Strindberg, Söderberg, Jensen, others (all readings in English for nonmajors). (GrD)
- 5633. THE SCANDINAVIAN NOVEL FROM WORLD WAR I TO 1950.** (4 cr) Simpson  
Trends in the Scandinavian novel since World War I (all readings in English for nonmajors). (GrD)
- 5670. TOPICS IN SCANDINAVIAN LITERATURE.** (4 cr)  
Topic selected by instructor and announced in advance of the first class period. Open to majors and nonmajors (readings in English for nonmajors). (GrD)
- 5701,2. OLD NORSE LANGUAGE AND LITERATURE.** (4,4 cr) Hasselmo  
Acquisition of a reading knowledge of Old Icelandic; introduction to the linguistic, philological, and literary study of Old Norse language and literature.
- 5704. HISTORY OF THE SCANDINAVIAN LANGUAGES.** (4 cr) Hasselmo  
Development of the Scandinavian languages from the early Middle Ages to the present; emphasis on cultural history (all readings in English for nonmajors).
- 5711. STRUCTURE OF THE SCANDINAVIAN LANGUAGES.** (4 cr; prereq introductory course in linguistics or #; offered alt yrs) Hasselmo  
The syntax and phonology of standard Danish, Norwegian, and Swedish (all readings in English for nonmajors)
- 5712. SCANDINAVIAN HISTORICAL LINGUISTICS.** (4 cr; prereq introductory course in linguistics or #; offered alt yrs) Hasselmo  
Internal history of Danish, Norwegian, and Swedish (all readings in English for nonmajors)
- 5721,2. MODERN ICELANDIC.** (1,1 cr; prereq knowledge of Old Icelandic or ¶5701,2)  
Modern Icelandic phonology and grammar; reading of texts.
- 5970. DIRECTED STUDIES.** (1-15 cr)  
Study of topics not covered by regular courses; readings in Scandinavian literature in the original.

**SERBO-CROATIAN**

See Slavic and East European Languages

## SLAVIC AND EAST EUROPEAN LANGUAGES

Staff: Adele K. Donchenko, *chairman*, 101 Temporary South of Folwell; Wassilij Alexeev, Keith Armes, Arthur Hudgins, Eugene Kleiner, Walter Kondy, Catherine Kulesov, Leonard Polakiewicz, Tatiana Prokopov, Marilyn Sjoberg

**General Education**—Courses recommended for general education purposes are Russ 3201, 3202, 3501, 3502, 3503, 3601, 3602, 5201, 5202; Slav 3701.

### Polish (Plsh)

#### LOWER DIVISION COURSES

1101f/2w/3s. **BEGINNING POLISH.** (5/5/5 cr)

Essentials for speaking, understanding, and reading basic Polish.

1104f/5w/6s. **INTERMEDIATE POLISH.** (5/5/5 cr; prereq 1103 or #)

Grammar review, reading of advanced texts, and practice in speaking Polish.

#### UPPER DIVISION COURSES

3201f/2w. **READINGS IN POLISH LITERATURE.** (4/4 cr; prereq 1106 or #; offered when feasible)

Reading and discussion of selected classics and contemporary texts.

3601f/2w. **SURVEY OF POLISH LITERATURE IN TRANSLATION.** (4/4 cr)

5301. **CONTEMPORARY POLISH DRAMA.** (4 cr)

Polish playwrights from late 19th century to present; experimental trends in composition and performances; theatre of the absurd.

5970. **DIRECTED READINGS.** (1-4 cr per qtr; prereq #)

### Russian (Russ)

**Major Sequence for B.A.:** 40 Upper Division cr including Russ 3101/2/3 and 3104/5/6, and 10 cr from other courses offered in the Department.

*Requirements for a teacher's certificate*—For a specialized curriculum, see *College of Education Bulletin*.

#### LOWER DIVISION COURSES

1101f/2w/3s. **BEGINNING RUSSIAN.** (5/5/5 cr; five class meetings a wk)

Speaking, reading, and understanding Russian through acquisition of basic patterns of speech.

1104f/5w/6s. **INTERMEDIATE RUSSIAN.** (5/5/5 cr; prereq 1103)

Expansion of experience in speaking and understanding Russian and reading of contemporary texts.

1112w/3s. **HONORS COURSE: BEGINNING RUSSIAN.** (5/5 cr; for students who have demonstrated high ability and achievement during 1st qtr; prereq  $\Delta$ )

1114f/5w/6s. **HONORS COURSE: INTERMEDIATE RUSSIAN.** (5/5/5 cr; prereq 1113 or #)

1201f/2w/3s. **BEGINNING READING RUSSIAN.** (5/5/5 cr)

Beginning course in Russian with particular attention to reading. Credit for any quarter of the sequence completed.

#### UPPER DIVISION COURSES

3001f/2w/3s. **READING RUSSIAN.** (5/5/5 cr; prereq 1203 or 1106)

Reading modern Russian prose varied in style, subject matter, and degree of difficulty. Uses of derivational affixes.

3101f/2w/3s. **THIRD-YEAR RUSSIAN.** (5/5/5 cr; prereq 1106 or equiv)

Integrated sequence involving conversation, composition, grammar review, and readings in the appropriate literature.

- 3104f/5w/6s. FOURTH-YEAR RUSSIAN.** (5/5/5 cr; prereq 3103 or equiv)  
Advanced course involving all language skills centering around topics in Russian literature, literary analysis, and culture.
- 3116. HONORS COURSE: PROSEMINAR IN RUSSIAN LITERATURE.** (4 cr; prereq 3106 and  $\Delta$ )  
Selected significant themes in Russian literature.
- 3501f/2w/3s. RUSSIAN CIVILIZATION AND CULTURE.** (4/4/4 cr; no prereq for section in English, prereq 1106 or # for section taught in Russian)  
Aspects of Russian culture — land, peoples, languages, institution, intellectual and artistic trends, and achievements. (GrC)
- 3601f/2w. 19TH-CENTURY RUSSIAN LITERATURE IN TRANSLATION.** (4/4 cr)  
**3601:** Pushkin, Lermontov, Gogol, Turgenev, and others. **3602:** Tolstoy, Dostoevsky, and others. No knowledge of Russian required. (GrD)
- 5021. SOVIET UNION STUDY TOUR.** (6-18 cr)
- 5201f/2w/3s. SOVIET RUSSIAN LITERATURE IN TRANSLATION.** (4/4/4 cr) . .  
Course conducted in English.
- 5204. 19TH-CENTURY RUSSIAN CRITICISM.** (4 cr; prereq sr or #)  
Works of major Russian literary critics of period, in their literary, political, and social implications.
- 5301. RUSSIAN POETRY: 19TH CENTURY.** (4 cr; offered when feasible)
- 5401. DOSTOEVSKY.** (4 cr)  
Analytic approach to study of novels of Dostoevsky.
- 5403. GOGOL.** (4 cr)  
Study of earlier and major works of N. V. Gogol. (GrD)
- 5404. TOLSTOY.** (4 cr)  
Tolstoy's novels, stories, and dramas.
- 5406. PUSHKIN.** (4 cr)  
Selected works of Pushkin and their place in development of Russian literature.
- 5407. PLAYS OF ANTON CHEKHOV.** (4 cr)  
Early short works and major plays.
- 5409. THE 19TH-CENTURY RUSSIAN NOVEL.** (4 cr)  
The Russian realistic novel from its origin to its decline; the social, political, and intellectual circumstances that led to its emergence as the dominant genre of the "Age of Realism" in Russia. (GrD)
- 5501. INTELLECTUAL TRENDS IN 19TH-CENTURY RUSSIA.** (4 cr)  
Intellectual and social movements in the 19th century in their relation to literary developments of the period.
- 5701f2w. STRUCTURE OF MODERN RUSSIAN.** (4/4 cr; prereq 1106 or #)
- 5704f/5w. HISTORY OF RUSSIAN LANGUAGE.** (4/4 cr; prereq 1106 or equiv; offered when feasible)  
Linguistic analysis of historical development of Russian language.
- 5970. DIRECTED READINGS.** (1-3 cr per qtr; prereq #)

## Serbo-Croatian (Serb)

### LOWER DIVISION COURSES

- 1101f/2w/3s. BEGINNING SERBO-CROATIAN.** (5/5/5 cr)
- 1104f/5w/6s. INTERMEDIATE SERBO-CROATIAN.** (5/5/5 cr; prereq 1103 or #)

### UPPER DIVISION COURSE

- 5970. DIRECTED STUDIES.** (1-4 cr per qtr; prereq #)

## Slavic (Slav)

### LOWER DIVISION COURSE

- 1501. THE SLAVIC HERITAGE.** (4 cr)  
The traditions and culture of the Slavic world and of Slavic ethnic groups in America.

## Course Offerings and Major Sequences

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### UPPER DIVISION COURSES

**3201f/2w. SOUTH SLAVIC LITERATURE.** (4/4 cr; offered when feasible)

**3501f/2w/3s. SOUTH SLAVIC CIVILIZATION AND CULTURE.** (4/4/4 cr)

The cultural achievements of the South Slavs as reflected primarily in the arts and social thought. **3501:** From appearance of the Slavs in the Balkans to 1389. **3502:** From fall of Kossovo to World War I. **3503:** From World War I to present.

**3701. INTRODUCTORY SURVEY OF THE SLAVIC LANGUAGES.** (4 cr)

The Slavic languages in most salient aspects of their evolution from unity to diversity. Aspects of contemporary diversity.

**5701/2. OLD CHURCH SLAVIC.** (4/4 cr; prereq Ling 3005 or equiv; offered when feasible)  
Introduction to Slavic linguistics.

## SOCIAL SCIENCE (SSci)

These courses draw on a wide variety of research findings and theories from the social sciences, arranged to present a coherent interpretation of broad aspects of human behavior. Each course focuses on a significant segment of human action; the general aim is to provide an understanding of how such behavior may be explained. Most of the courses are experimental, seeking to focus attention on key human and social problem areas from a variety of disciplinary approaches.

These courses are now under the administrative supervision of the School of Cross-Disciplinary Studies.

### LOWER DIVISION COURSES

Lower Division courses in this program are open to Upper Division students only by special permission of the instructor.

**1905. MATHEMATICS AND THE STUDY OF MAN.** (2 cr; §Math 1905; prereq Math 1441, 1142, or 1442) (GrC)

Foundation of mathematics, with emphasis on its axiomatic character. Mathematical models in the social sciences; examination of the axiomatic base of social science theories and problems of association between axioms in mathematics and axioms in social science theory.

**1984. INTRODUCTION TO COMMUNITY DEVELOPMENT.** (4 cr) Wattenberg

Community development in the context of low-income citizen participation and the trend toward neighborhood decentralization and community control. (GrC)

### UPPER DIVISION COURSES

**3011,2. SOCIAL SCIENCE COMPUTING.** (4,4 cr; prereq 3011 for 3012 or §, college algebra rec)

Computer application for the social sciences. **3011:** Elementary computing, introduction to FORTRAN and FOCAL and social science statistical analysis system. **3012:** Computer uses in the social sciences — data management and computer application. (GrC)

**3111. POLITICS OF LABOR.** (4 cr) Starr

The political role of the labor movement in the United States on national and local levels as a lobbying force and as a force in the election process. (GrC)

**3203. STRUCTURE AND DYNAMICS OF POVERTY.** (4 cr; prereq 9 cr in related social science)

Structural characteristics of poverty as described by social, legal, and economic criteria. Specific problems of poverty: unemployment, immobility, illiteracy, crime, others. Private and public programs designed to alleviate poverty. (GrC)

**3205. POVERTY, INSECURITY, AND INEQUALITY OF OPPORTUNITY.** (4 cr; prereq Econ 1001 and 1002 or §) Zaidi

Concepts of income distribution; dimensions of poverty; discussion of measures adopted or proposed for the purpose of ameliorating poverty, assuring security, and providing equality of opportunity. (GrC)

**3208. HUMAN GENETICS AND SOCIAL AFFAIRS.** (See GCB 3002.)

- 3304. THE STUDENT MOVEMENT IN HISTORICAL PERSPECTIVE.** (4 cr; open only to Upper Division students) Ross  
 Proseminar: development of the student movement from medieval to modern times. Focus on how students attempt to act in their own behalf in the university setting. (GrC)
- 3321. CROSS-CULTURAL ORIENTATION.** (4 cr) Howell  
 Seminar for students contemplating participation in foreign exchange programs. Focus upon comparative aspects of contemporary U. S. culture and society. (GrC)
- 3401. COMPARATIVE STUDIES IN FEUDALISM.** (4 cr; prereq #) Bachrach  
 Seminar to investigate "feudal" phenomena. Institutions in Western Europe, Eastern Europe, the Near East, Africa, and Asia will be studied. (GrC)
- 3402. ECOLOGY, TECHNOLOGY, AND SOCIETY.** (4 cr) Griffin  
 The impact of technology on society as seen by engineers, scientists, and social scientists. The social problems associated with economic growth such as environmental consequences, the arms race, food and fertilizers, and population growth. Alternative strategies for meeting the problems. (GrC)
- 3500. CULTURAL BACKGROUND OF SELECTED CIVILIZATIONS.** (2-5 cr)  
 An in-depth study of a civilization or of one facet of the culture of a country, by a sequential course of study and travel. Content will vary from year to year and from area to area. (GrC)
- 3503. URBAN CRISIS.** (6 cr; prereq Δ) Glover  
 The effects of white racism, projections of the image of white supremacy on the socio-economic and political life chances of Black people in America; examination of the nature of and basis for social unrest in Minneapolis. Classroom work and field experiences. Resource persons from the Black community and visits to agencies providing services to it and to selected Black families. (GrC)
- 3507. SLAVERY IN THE AMERICAS.** (4 cr) Spear, Isaacman, McCrary, Schwartz  
 This course has a substantive and a methodological objective. The origins and development of the institutions of slavery in the New World and the impact of slavery on life and culture in the Americas; an introduction to the comparative method of historical inquiry. (GrC)
- 3508/9. PROBLEMS OF URBAN SOCIETY.** (4/4 cr)  
 Systematic analysis of critical current urban problems such as poverty, pollution, discrimination, rising crime and violence, the exercise of dissent and other freedoms, transportation, housing, city planning, and the relations among federal, state, and local governments. Application of social science in the development of public policy. (GrC)
- 3511. HISTORICAL BIOGRAPHY AND PSYCHOHISTORY.** (4 cr; prereq #) Carroll  
 Uses of psychology and psychoanalysis in historical analysis; emphasis on the individual as historical mover and the idea of modal personality. (GrC)
- 3521. INTRODUCTION TO PSYCHICAL PHENOMENA.** (4 cr; prereq Δ) Sibley  
 The history, methods of investigation, and implications of "paranormal" or "psychical" phenomena. (GrC)
- 3601. LAW AND SOCIETY.** (5 cr; prereq soph) Samaha  
 The nature and functions of legal institutions. (GrC)
- 3981. SOCIETIES OF THE FUTURE.** (4 cr) Harkins  
 Application of disciplinary analysis to the problems of specialization and generalization of human understanding; the future of formal and informal social systems. Aspects of the anticipated impacts of long-range social trends (such as computer-controlled education systems, political, economic, social, and moral structural changes). Interaction of the social sciences, business, and humanities and arts with long-range social development. (GrC)
- 5101,2. STEADY STATE EARTH: GOALS AND CONSTRAINTS.** (2-3 cr per qtr) Blackshear  
 Examination by an interdisciplinary group of faculty of the goals and constraints necessary for a unified society to evolve. (A steady state society is one of zero population growth and zero gross national product increase without exploitation of the remaining natural resources.) (GrC)
- 5601. SEMINAR IN LAW AND SOCIETY.** (5 cr; prereq #)  
 Selected topics in law and society. (GrC)
- 5991,2,3. SEMINAR IN ALTERNATIVE FUTURES.** (4,4,4 cr) Harkins  
 Interdisciplinary examination of probable and possible human futures, including the following areas of concentration: "pure" social imaging; applied social imagination; social technology. The development of usable cross- and trans-disciplinary concepts and terminology. (GrC)

## SOCIAL WORK (SW)

**Staff:** Alan D. Wade, *director*, 909 Social Sciences; James Brusseau, Peter Chommie, Miriam Cohn, Beulah Compton, Burton Galaway, Richard Guilford, Frances Guminga, John C. Kidneigh, Gisela Konopka, Mayo K. Newhouse, H. Etta Saloshin, Richard Sterne, Dorothy Whitmore, James Wiebler, Helen Yesner

The B.A. major in social welfare is a liberal education program designed to prepare students for graduate professional education in social work; it also qualifies them for employment in social service areas in which the bachelor's degree is the qualifying educational requirement.

Professional study in the School of Social Work is at the graduate level. The social welfare B.A. is recommended as preparation for it, but admission is not limited to those with this degree. For entrance requirements, see the *Graduate School Bulletin* and the *School of Social Work Bulletin*.

**Major Sequence for B.A.:** 1. *Required background courses*—1 course chosen from Hum 1004, 1005, 3004, 3005, Phil 1002, SSci 3101,2,3; 1 course from Econ 1001, 1014, 3001; 1 course from Pol 1001, 1027, 1031, 1041, 1051; Psy 1001; Soc 1001. A course in statistics is strongly recommended. 2. *Major requirements* (open to juniors and seniors only and must be taken in the order listed)—SW 3001, 3002, 3005, 3010; 3 courses from Anth 5141, CPsy 3301, 5303, 5331, FSoS 5001, Psy 5101, 5604/5†; 1 from Afro 3061/2, Anth 5112, CPsy 5339, Hist 5021, Soc 5501, 5505, 5511, 5515; 1 from AmSt 3111,2,3, Anth 3131, 5116, 5151, Eng 3411,2,3, 5452, Hist 3864, 5344,5,6, Mus 5701, Soc 5301, 5305, 5705, SSci 3201,2.

Majors must take at least 1 course from 2 of the following areas (specific courses will be suggested by a student's adviser at his request): Studies of social welfare, pluralism and ethnicity, logical thinking (research or symbolic), communications, law and social institutions, corrections.

All courses taken to meet the above requirements must be on the ABCDN basis.

### UPPER DIVISION COURSES

**3001f,w,s. AMERICAN SOCIAL WELFARE.** (5 cr; prereq must be jr or sr) Guilford, Wiebler  
American social welfare as a basic social institution in American society. (GrC)

**3002f,w,s. GOVERNMENT AND SOCIAL WELFARE.** (5 cr; prereq 3001, 3005 or #) Guilford, Newhouse  
Philosophy, policy development, and administration through government of social welfare programs; social insurance, public assistance, housing, welfare services, and similar public programs. (GrC)

**3005f,w,s. INTRODUCTION TO SOCIAL WORK PROCESSES.** (5 cr; prereq 3001 or #) Compton, Galaway  
The nature of social work helping processes in service to individuals, groups or communities. (GrC)

**3010f,w,s. FIELD EXPERIENCE.** (1-6 cr; prereq sr, 3005; majors only and #) Brusseau

**3010H. HONORS FIELD EXPERIENCE SEMINAR.** (1-6 cr; prereq sr, 3005 or #3005; selected majors only and #)

**3020f,w,s. HONORS SEMINAR.** (1-6 cr; majors only selected by adviser) Staff

**3970f,w,s. DIRECTED STUDIES.** (1-9 cr; prereq #; majors only) Staff

**3990f,w,s. DIRECTED RESEARCH.** (1-6 cr; prereq Δ, #; majors only) Staff

**5010f,w,s. SPECIAL TOPICS.** (1-6 cr; prereq consent of adviser or #, sr or grad) Oren  
Study in depth of selected special topics of concern to the field of social work.

## SOCIOLOGY (Soc)

**Staff:** George W. Bohrnstedt, *chairman*, 1114a Social Sciences; David Cooperman, *associate chairman*, 1178 Social Sciences; Joan Aldous, Brian C. Aldrich, Ronald E. Anderson, Theodore R. Anderson, Sue B. Bobrow, Martha R. Burt, Roy E. Carter, Jr., John P. Clark, George A. Donohue, Bert L. Ellenbogen, Harold Finestone, Robert Fulton, Richard H. Hall, Reuben L. Hill, Arthur L. Johnson, Robert E. Kennedy, Jr., Neil J. MacKinnon, Don A. Martindale, Donald G. McTavish, Dario Menanteau, Joel I. Nelson, Charles E. Ramsey, Ira L. Reiss, Paul D. Reynolds, Caroline B. Rose, Roberta G. Simmons, Barry R. Skura, Stephan P. Spitzer, Gregory P. Stone, Richard E. Sykes, Irving Tallman, David A. Ward

Sociology is a research-oriented social science concerned with empirical investigation of human behavior for the purpose of discovering fundamental knowledge about social life. A sociology major would ordinarily lead to a career in teaching, research, or the application of sociological knowledge in action programs.

**Major Sequence for B.A.:** 1. *Required background courses*—1505, 1506 (1002 is suggested). 2. *Major requirements*—3801,2,3 (methods); one selected from 5305, 5701, 5705, 5711 (theory); 16 additional Upper Division soc cr. These may include any of the theory courses listed above that have not been taken as requirements, or any other Upper Division sociology courses. Suggested: 3101, 3905, 5141, 5151, 5205, 5405, 5411, 5501, 5551, 5601, 5651, 5755, 5855, 5951, 5952.

Directed Studies and Directed Instruction courses do not satisfy the elective requirements. Information regarding sociology requirements can be obtained from the undergraduate major adviser, 80 Wilson Library.

Soc 3801,2,3 should be taken during the sophomore year in conjunction with 1505 and 1506. Theory requirements should be taken during junior year.

*Criminal Justice Studies*—Students may take a specialization in criminal justice with a major in sociology. Requirements for this specialization are specified by the Criminal Justice Studies Department.

*Note*—All Sociology courses are assigned to Distribution Group C except 3801, 3802, 3803, 5561, and 5801.

### LOWER DIVISION COURSES

#### Generic Courses

#### 1001f,w,s. INTRODUCTION TO SOCIOLOGY. (4 cr)

Survey of the main substantive fields of sociology for nonprospective sociology majors. Current social problems.

#### 1001H. HONORS COURSE: INTRODUCTION TO SOCIOLOGY. (4 cr)

Survey of the main substantive fields of sociology for honors students. Illustrative material drawn from current social problem areas.

#### 1002f,w. AMERICAN COMMUNITY. (4 cr) Kennedy, Martindale

Sociological analysis of modern American society. Distribution of population, urban-rural differences, social factors in business systems, occupational groups, determination of social status, minority group adjustment.

#### 1505f,w. PRINCIPLES OF SOCIOLOGY I. (5 cr; prereq soph and prospective major or major in soc; 1001 and †3801 recommended)

Course required of majors, to be taken in sophomore year. Integrated with 1506. Focuses upon basic concepts and variables used in analysis of individual-to-group relationships and the organization and structure of social groups. Three lectures, 1 lab a week.

#### 1505Hf,w. HONORS COURSE: PRINCIPLES OF SOCIOLOGY I. (5 cr; prereq soph honors student, prospective soc major; †3801 recommended) Aldrich

Students attend 1505 lectures and special honors labs each week.

## Course Offerings and Major Sequences

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**1506w,s. PRINCIPLES OF SOCIOLOGY II.** (5 cr; prereq 1505; ¶3802 recommended)  
Continuation of 1505.

**1506Hw,s. HONORS COURSE: PRINCIPLES OF SOCIOLOGY II.** (5 cr; prereq 1505H; ¶3802 recommended) Reynold  
Continuation of 1505H.

### UPPER DIVISION COURSES

#### Criminology and Deviance

**3101f,w,s. ELEMENTS OF CRIMINOLOGY.** (4 cr; prereq 1001 or 1505,6 or #) Clark, Finestone, Ward  
General survey of field of criminology.

**5105. CONTEMPORARY PENOLOGY.** (4 cr; prereq 3101 or #) Murton, Ward  
Prisons as social organizations; current treatment programs for adult offenders.

**5111. SOCIOLOGY OF DEVIANT BEHAVIOR.** (4 cr; prereq 3101 or #) Finestone  
Sociological conceptions of the nature of deviant behavior, the social processes associated with the careers of deviants, and the relationship of deviancy to the problems of social control.

**5115. ADULT PAROLE AND PROBATION.** (4 cr; prereq 3101 or #) Finestone  
Critical examination of problems and practices in supervision of adult criminals.

**5121. LAW AND LEGAL SYSTEM FOR CORRECTIONAL AND SOCIAL WORKERS.** (4 cr)  
Law and judicial process for social workers, particularly those engaged in correctional field.

**5125. POLICE PROBLEMS AND PRACTICES IN THE UNITED STATES.** (4 cr; prereq 3101 or #) Clark  
Personnel, organization, and public relations of police forces; successful techniques of integrating police work with other community agencies.

**5131. INSTITUTIONAL TREATMENT OF JUVENILE DELINQUENTS: PROBLEMS AND PRACTICES.** (4 cr)  
Current problems of institutional treatment of juvenile offenders and contributions of different professions to treatment.

**5135. WHITE COLLAR CRIME.** (4 cr)  
Various types of white collar crime, broadly construed; their roots in American society, and responses offered to them by theoreticians and amateur and professional politicians.

**5138. ISSUES IN THE ADMINISTRATION OF CRIMINAL JUSTICE.** (4 cr; prereq 3101)  
Ward  
Analysis of a number of issues facing the police, prosecutors, defense attorneys, courts and correctional agencies; focus upon the process of the administration of criminal justice.

**5141. DELINQUENT BEHAVIOR.** (4 cr; prereq 3101) Clark  
The nature of delinquent behavior and its "causes"; consideration of help that understanding of causes can give to its modification and its prevention.

**5145. MODERN AGENCIES FOR CONTROL OF JUVENILE DELINQUENCY.** (4 cr; prereq 3101 and 5141) Clark  
Functions of school, of welfare, casework, and groupwork agencies, of juvenile bureaus in police departments, juvenile court, detention home, probation services, clinics, and integrated state agencies like Minnesota Youth Conservation Commission in prevention and modification of delinquent behavior.

#### Sociology of Religion

**5151. RELIGION AS A SOCIAL INSTITUTION.** (4 cr; prereq 1001 or 1505,6 or #) Johnson  
Structure and function of religious organizations in various types of societies; nature of religious leadership, type of religious participation; relationship of religion to other social institutions.

#### Social Psychology

**5201f,w,s. INTRODUCTION TO SOCIAL PSYCHOLOGY.** (4 cr; prereq 1001 or 1505,6 or #)  
Bobrow, Burt, Spitzer  
Research and theory regarding relation of individual social groups. Socialization processes; effects of social interaction and isolation; individual behavior under conditions of social organization and disorganization; cultural influence and its limits.

- 5201H. HONORS COURSE: INTRODUCTION TO SOCIAL PSYCHOLOGY.** (4 cr; prereq #)  
For description, see 5201.
- 5205. SYMBOLIC INTERACTION.** (4 cr; prereq 5201 or #) Stone, Spitzer  
Methods of acquiring knowledge in social psychology; analysis of outstanding examples of research. Social psychology of small groups, mass behavior, and making of political and economic choices. Current thinking and research in symbolic interaction in light of concepts and theories presented in introductory course in social psychology.
- 5211. SOCIAL PROCESSES IN SMALL GROUP SETTINGS.** (4 cr; prereq 5201 or #)  
Reynolds  
Small group research and theory focusing on laboratory and nonlaboratory investigation of interpersonal exchange, communication structures, status and power relations, coalition formation, reference groups, role differentiation, group uniformity, social influence, and problem solving behavior. Laboratory to be arranged.

### Social Change and Social Movements

- 5301. SOCIAL MOVEMENTS IN A CHANGING SOCIETY.** (4 cr; prereq 1001 or 1505,6 or #)  
Factors underlying social change in modern mass society. Recent research on social movements, reform and revolution, culture contact, impact of rapid technological change. Individual and social structures under conditions of rapid social change.
- 5305w. SOCIAL LIFE AND CULTURAL CHANGE.** (4 cr; prereq 1001 or 1505,6 or #)  
Martindale  
Theories of social change; their methodological problems. Comparative social thought and structure of antiquity utilized as basic data for analysis.
- 5311. SOCIOLOGY OF CONFLICT.** (4 cr; prereq 1001 or 1505,6 or #) Cooperman  
Manifest forms of antagonism among groups; causes of conflict; methods of resolution through accommodations; role of conflict and social change.
- 5315. LATIN AMERICAN SOCIETIES IN TRANSITION.** (4 cr; prereq 10 cr in sociology, economics, or political science or #) Ellenbogen, Menanteau  
Relationship of population, technology and organizational structure to levels of modernization among Latin American nation states. Differentiation, diffusion, innovation, and social conflict as precipitants of social change.

### Popular Culture and Public Opinion

- 5351. SOCIOLOGY OF POPULAR CULTURE.** (4 cr; prereq 15 cr in sociology)  
Social preconditions and social effects of popular culture. Popular vs. nonpopular culture; analysis of selected popular arts.
- 5355. OPINION AND COMMUNICATION: SOCIAL FACTORS.** (4 cr; prereq sr, 1001 or 1505,6 or 5201 or Psy 5201 or #) Carter  
Processes of opinion formation and change in relation to personality and social structure as groundwork for analysis of flow of public communications through society; impact of selected types of mass communication on particular audiences.

### Social Organization and Social Structure

- 3405. INEQUALITY: INTRODUCTION TO STRATIFICATION.** (4 cr; prereq 1001) Nelson  
Inequality, causes and consequences. Special attention to inequality in American society. Related concepts of class, class cultures, status, aggregates; understanding the social forms inequality takes, and their consequences for life chances and life styles.
- 5401f,w,s. SOCIAL ORGANIZATION.** (4 cr; prereq 1001 or 1505,6 or #)  
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.
- 5401H. HONORS COURSE: SOCIAL ORGANIZATION.** (4 cr; prereq #) Hall  
For description, see 5401.
- 5405f,w,s. SOCIAL STRATIFICATION AND MOBILITY.** (4 cr; prereq 1001 or 1505,6 or #)  
Fulton, Nelson  
Form and content of hierarchical arrangements. Relationship of hierarchical arrangements to problems of social order and individual behavior.
- 5405H. HONORS COURSE: SOCIAL STRATIFICATION AND MOBILITY.** (4 cr; prereq #)  
For description, see 5405.
- 5411. FORMAL ORGANIZATIONS.** (4 cr; prereq 1001 or 1005,6 and 15 cr in sociology, psychology, political science or economics) Aldrich, Reynolds

## Course Offerings and Major Sequences

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Sources, types, and consequences of variations in organizational structures and functions. Varying organizational arrangements as they affect and are affected by changes in input and output. Bureaucracy and its impact, seen in comparative perspective.

**5411H. HONORS COURSE: FORMAL ORGANIZATIONS.** (4 cr; prereq #) Hall  
For description, see 5411.

**5415. COMPARATIVE SOCIAL ORGANIZATIONS.** (4 cr; prereq 20 cr in sociology, economics, or political science or #)  
Consideration of demographic and ecological characteristics, stratification system, institutional organization, and forms of association in several modern nations other than United States.

**5421s. OCCUPATIONAL SOCIOLOGY.** (4 cr; prereq 6 cr in sociology or #) Hall  
Individual motivations and reactions to work; nature of professions and other occupational types; relations between occupational and organizational norms and values, relationships between occupations and social structure—stratification system, family, political system, technological change; changes in composition of labor force.

### Family Sociology

**5501f,w,s. THE FAMILY.** (4 cr; prereq 1001 or 1505,6 or #) Johnson, Reiss  
Evolution of family, development of unity or disunity, roles of the several members of family, methods of investigation of family.

**5501H. HONORS COURSE: THE FAMILY.** (4 cr; prereq #)  
For description, see 5501.

**5505f,w,s. FAMILY DEVELOPMENT.** (4 cr; prereq 1001 or 1505,6, 5201, CPsy 3301 or #)  
Aldous, Hey, Hill  
The natural history of families — how they form, function, and achieve distinctive identities. Developmental growth of children and parents in interaction in seven stages of the family life cycle, from engagement planning to family dissolution.

**5506. NEW FORMS OF THE FAMILY.** (4 cr; prereq 1001 or 1505,6) Reiss  
Evolving courtship, marital and family forms. New concepts of sexuality, masculinity-femininity, familial roles, legitimacy, communal living, examined to afford perspective on the developing family system.

**5511. COMPARATIVE FAMILY ORGANIZATION.** (4 cr; prereq 1001 or 1505,6, Psy 1001)  
Aldous  
Family organization and modes of functioning in selected major world civilizations. Interrelations of family with economic system and urbanization; family influences on personality formation.

**5515. SOCIOLOGY OF FAMILY FORMATION.** (4 cr; prereq 1001 or 1505,6) Reiss  
Courtship structure in American society by class, ethnicity, religion, and history. Courtship and other institutions.

### Demography

**5511f,w. WORLD POPULATION PROBLEMS.** (4 cr; prereq 1001 or 1505,6 or #) Kennedy  
Population policy, historical and present day, in Europe, Asia, and other areas; emphasis on United States. Population and power politics.

**5555s. POPULATION THEORY.** (4 cr; prereq 5551 or #) Kennedy  
Cultural and social phases of population change; birth rates, death rates, and migration. Implications of population change.

**5555H. HONORS COURSE: POPULATION THEORY.** (4 cr; prereq #) Kennedy  
For description, see 5555.

**5561. INTRODUCTION TO MATHEMATICAL DEMOGRAPHY.** (4 cr; §PubH 5411; prereq 5551 or #) Das Gupta  
Basic demographic measures and concepts of fertility, mortality, and migration. Introduction to stable population methods and to demographic estimates from incomplete data.

### Urban Sociology

**5601. URBAN SOCIOLOGY.** (4 cr; prereq 1001 or 1505,6 or #) Stone, T. Anderson, Skura  
The study of cities, urban ecology; urban institutions and urban way of life.

**5605. URBANIZATION AND SOCIAL POLICY.** (4 cr; prereq 5601 or #) Cooperman  
Contemporary changes in urban processes that are considered problematic; the responses and policies of public groups. Interrelationships of social, cultural, economic, political factors in development of urban problems. Models of urban systems and social policy formation. Social cost analysis and formation of policy alternatives.

- 5611. PLANNING.** (4 cr; §Arch 5132; prereq sr) Stone  
Social, economic, political, geographic, and technical phases of modern city planning.

### Rural Sociology

- 1651. RURAL SOCIOLOGY.** (Lower Division Course) (4 cr) Menanteau  
Factual data necessary to an understanding of problems of rural social life.
- 5651f,w. RURAL SOCIAL INSTITUTIONS.** (4 cr; prereq 1001 or 1505/6 or §) Donohue  
Factors in the rural environment that condition the functioning of rural social institutions, including family, school, church, local government, health, and welfare.
- 5661s. RURAL COMMUNITY ANALYSIS.** (4 cr; especially for all persons interested in rural community organization, rural teaching, extension work, and related fields; prereq 1001 or 1505/6, sr or §) Donohue  
Emphasis on tools, techniques, and methods of making community field studies.
- 5671. COMPARATIVE RURAL SOCIETIES: LATIN AMERICA.** (4 cr; prereq 10 cr in sociology, economics or political science or §) Ellenbogen, Menanteau  
Social and cultural change in Latin America. Demographic and ecological characteristics, institutional structure and its accompanying associations; linkages with "outside" and "world-view."
- 5675s. WORLD FOOD SUPPLY PROBLEMS.** (4 cr; §AgEc 5790, HE 5381, PIPa 5220, VM 5790; prereq maj in agriculture, veterinary medicine, nutritional sciences, social science field or §... grad students by Δ only) Ellenbogen  
Multidisciplinary approach to the social, economic, and technical problems of feeding the world's growing population. Principles from the social and economic sciences, the plant sciences, the animal sciences, and the nutritional sciences and their application to food problems.

### Social Theory

- 5701f. ANALYTICAL SOCIAL THEORY.** (4 cr; prereq 1001 or 1505/6 or §) Martindale  
Major problems of sociological theory; main types of sociological theory (positivistic, rationalistic, idealistic); major theoretical concepts.
- 5705s. BACKGROUNDS OF MODERN SOCIAL THOUGHT.** (4 cr; prereq 1001 or 1505/6 or §) Martindale, Cooperman  
Major trends of social thought from Renaissance to 19th century; factors contributing to origin of sociology.
- 5711. ELEMENTS OF SOCIOLOGICAL ANALYSIS.** (4 cr; prereq 9 cr in sociology) Reynolds  
The premises upon which social theories are developed. The construction of social theory.

### Sociology of Political and Legal Institutions

- 5755. SOCIAL STRUCTURE AND POLITICAL BEHAVIOR.** (4 cr; prereq 1001 or 1505/6) Tallman  
Structural and ideological conditions influencing the legitimation of political institutions; relationships of this process to political participation, political apathy, and the rise of mass movements.

### Methodology

- 3801f,w,s. SOCIOLOGICAL METHODS I: DESCRIPTIVE STATISTICS.** (4 cr, §old 45; prereq some beginning algebra recommended; 2 hrs lect, two 1-hr labs)  
Descriptive statistics as utilized in analysis of sociological data, measures of central tendency, deviation, correlation and regression graphs, simple treatment of three and four variables, probability. (GrA)
- 3801Hf,w,s. HONORS COURSE: SOCIOLOGICAL METHODS I: DESCRIPTIVE STATISTICS.** (4 cr; §old 45; prereq §; some beginning algebra recommended) McTavish  
Honors students will attend regular 3801 lecture sections, and two 1-hour honors labs per week.
- 3802f,w,s. SOCIOLOGICAL METHODS II: STATISTICAL INFERENCE.** (4 cr, §old 45; prereq 3801 or equiv; 2 hrs lect, two 1-hr labs)  
Statistical inferences, probability, hypothesis tests, use of statistical reasoning in analysis of sociological data. (GrA)
- 3802Hf,w,s. HONORS COURSE: SOCIOLOGICAL METHODS II: STATISTICAL INFERENCE.** (4 cr, §old 45; prereq 3801H or equiv)  
Honors students will attend 3802 lecture sections and two 1-hour honors labs per week.

## Course Offerings and Major Sequences

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- 3803f,w,s. SOCIOLOGICAL METHODS III: RESEARCH METHODS.** (4 cr; prereq 3801 and 3802 or equiv or #)  
Survey of data collection methods, including advantages of major methods and limitations when applied to specific types of problems. (GrA)
- 3811. COMPUTER PROGRAMMING FOR SOCIAL STATISTICS.** (1 cr; SN only; prereq 3801 or #3801)  
Elementary computer programming for social statistics applications. Use of a statistical program package for analysis of sociological data.
- 5801. COMPUTER USAGE IN SOCIAL RESEARCH.** (4 cr; prereq 3801, 3802, 3803 or equiv recommended; 3 hrs lect, 2 hrs lab) R. Anderson  
Basic concepts of information processing for social science research; elementary computer programming; practice in the use of computers for data analysis in social science; selected problems of computer usage in sociology. (GrA)

### Sociology of Health and Health Care

- 5855f,s. SOCIOLOGY OF MEDICINE AND MEDICAL INSTITUTIONS.** (4 cr; prereq 1001 or 1505/6 or #) Litman  
Social factors associated with incidence of physical and mental illness and its treatment. Social organization of medical institutions. Public needs and medical services. Sociology of aging and social problems of aged.

### Other Courses

- 3916H. JUNIOR HONORS SEMINAR.** (1 cr; SN only; prereq jr honors students majoring in soc)  
Overview of contemporary issues in sociological research. Information about initiation of the sociology honors thesis; discussion of advanced study and career opportunities in sociology; orientation in special learning opportunities for honors majors.
- 3970f,w,s. DIRECTED STUDY OF HONORS WORK IN SELECTED FIELDS.** (1-15 cr; prereq #)
- 3980f,w,s. DIRECTED INSTRUCTION.** (1-5 cr; prereq #)  
Students, in consultation with selected faculty members, will gain teaching experience by leading discussion and/or project groups in classes they have already taken for credit.
- 5951. MINORITY GROUP RELATIONS.** (4 cr; prereq 1001 or 1505/6 or #) Finestone, Rose, Sykes  
Systems of ethnic stratification, with focus upon race relations in American society.
- 5952. YOUTH IN MODERN SOCIETY.** (4 cr; prereq 1001 or 1505/6 or #) Clark  
The role of youth in advanced societies; youth as a social entity; functions of youth in industrial societies, their roles in family, education, politics and government, economy and work world, welfare and religion; youth organizations, social movements and subcultures; empirical research and cross-cultural perspective.
- 5953. SOCIOLOGY OF EDUCATION.** (3 cr; #Hed 5190; prereq 1001 or 1505/6 or #) S. Clark, Harkins  
Advanced studies in social aspects of education including school as socialization process, social structure of education, role of school in social change, and others. Emphasis on theory and empirical research.
- 5954. WOMEN AND MEN IN THE UNITED STATES TODAY.** (4 cr; prereq 1001 or 1505/6 or equiv) Rose  
Sociological analysis of position of women *vis a vis* men in United States today; changes that have led to present situation; how other portions of society are changing and can be changed to adjust to sex role changes.
- 5956. SOCIOLOGY OF DEATH.** (4 cr; prereq jr or sr and 6 cr in sociology or #) Fulton  
Issues and problems that mortality presents in contemporary society.
- 5960. TOPICS IN SOCIOLOGY.** (4 cr; prereq  $\Delta$ )  
Various aspects of sociology. Topics will be listed in the *Class Schedule*.
- 5961H/2H. SENIOR HONORS SEMINAR.** (4/4 cr; prereq sr honors sociology major)  
Preparation and discussion of honors papers in selected topics.
- 5970. DIRECTED STUDIES.** (1-15 cr; prereq #)

## SOUTH ASIAN STUDIES

Staff: M. A. R. Barker, *chairman*, 192 Klaeber Court; Usharbudh Arya, Supriya Bari, Indira Junghare, Pramod Kale, Ram Dayal Munda, Brian Silver, Robert B. Tapp, Paul W. Staneslow

South Asian Languages programs focus on the languages, literatures, and cultural traditions of India, Bangladesh, Pakistan, and Ceylon. Two types of B.A. programs are available: one with concentration in one of five South Asian languages (Bengali, Hindi, Marathi, Sanskrit, Urdu); the other emphasizing the Indian civilization.

**Major Sequences for B.A.:** 1. *Required background courses*—Study of one language to the advanced level. 2. *Major concentration in a language*—Indc 1201/2/3 or 5201/2/3; 3 courses on South Asia in the Department or in Anthropology, Art History, Economics, Geography, History, Linguistics, Middle Eastern Languages, Music, or Political Science. *Requirements for Indian civilization major*—Indc 1501/2 or equivalent; 3 courses in South Asian literature in translation (usually Indc 5201/2/3); 3 courses in religions of India (usually Indc 5511/2 and 5520); 3 electives chosen in consultation with adviser. Further information about degree requirements may be obtained in the Department office.

**General Education**—Courses under the heading "Indic," given in English translation, are suitable for nonmajors.

### Bengali (Ben)

Bengali, spoken by more than 100,000,000 South Asians, is the national language of Bangladesh. The literature of Bengal and Bangladesh is particularly rich.

#### LOWER DIVISION COURSE

1101f/2w/3s. BEGINNING BENGALI. (5/5/5 cr) Bari

#### UPPER DIVISION COURSES

3031f/2w/3s. INTERMEDIATE BENGALI. (5/5/5 cr; prereq 1103 or #) Bari

5101f/2w/3s. BEGINNING BENGALI. (5/5/5 cr; §1101/2/3) Bari

5131f/2w/3s. INTERMEDIATE BENGALI. (5/5/5 cr; prereq 1103 or 5103 or #; §3031/2/3) Bari

5161f/2w/3s. ADVANCED BENGALI. (4/4/4 cr; prereq 3033 or 5133 or #) Bari

5201f/2w/3s. BENGALI LITERARY TEXTS. (4/4/4 cr; prereq 5163) Bari  
Selected works of major Bengali poets and novelists.

5970. DIRECTED STUDIES. (Cr ar; prereq #) Bari

5990. DIRECTED RESEARCH. (Cr ar; prereq #) Bari

### Hindi (Hndi)

Hindi, the language of 180,000,000 people in South Asia, is considered of pan-Indian significance.

#### LOWER DIVISION COURSE

1101f/2w/3s. BEGINNING HINDI. (5/5/5 cr) Staneslow

#### UPPER DIVISION COURSES

3031f/2w/3s. INTERMEDIATE HINDI. (5/5/5 cr; prereq 1103 or #) Staneslow

5101f/2w/3s. BEGINNING HINDI. (5/5/5 cr; §1101/2/3) Staneslow

5131f/2w/3s. INTERMEDIATE HINDI. (5/5/5 cr; prereq 1103 or 5103 or #; §3031/2/3) Staneslow

## Course Offerings and Major Sequences

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5161f/2w/3s. **ADVANCED HINDI.** (4/4/4 cr; prereq 3033 or 5133 or #) Munda

5201f/2w/3s. **HINDI LITERARY TEXTS.** (4/4/4 cr; prereq 5163) Munda  
Selected works of major Hindi writers.

5701w/2s. **STRUCTURE OF HINDI.** (4/4 cr; prereq 3031 or 5131 or #) Staneslow  
The history and structure of Hindi; syntactic and semantic structures.

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

5990. **DIRECTED RESEARCH.** (Cr ar; prereq #) Staff

### Indic (Indc)

These courses deal in English translation with various aspects of the Indian civilization.

#### LOWER DIVISION COURSES

1001. **INTRODUCTION TO SOUTH ASIAN LANGUAGES.** (4 cr; offered 1972-73 and alt yrs)  
Junghare

The languages and language families in South Asia, their distribution, literatures, and special features. Historical and structural relationships. Required of majors. (GrA)

1201f/2w/3s. **SURVEY OF INDIAN LITERATURE IN TRANSLATION.** (4/4/4 cr) Munda,  
staff

The literary achievement of the Indian civilization from the ancient period to the present. All readings in English.

1501f/2w. **SURVEY OF INDIAN CIVILIZATION.** (4/4 cr)

An introduction to India. Contemporary civilization in light of its development. Social, cultural, economic, and political life. Hindu, Muslim, and Buddhist contributions. (GrC)

1504f. **INTRODUCTION TO THE RELIGIONS OF SOUTH AND SOUTHEAST ASIA.** (4 cr;  
§RelS 1031) Arya, staff (GrC)

#### UPPER DIVISION COURSES

3533. **HISTORY OF HINDUSTANI CULTURE.** (4 cr) Lelyveld, Silver

The cultural system of urban North India since the 16th century. Styles, symbols, and ideologies of Hindustan (India's Hindi-Urdu region). Social structure, religion, languages and literature, music and art. (GrC)

5001. **INTRODUCTION TO SOUTH ASIAN LANGUAGES.** (4 cr; §1001; offered 1972-73  
and alt yrs) Junghare (GrA)

5201f/2w/3s. **SURVEY OF INDIAN LITERATURE.** (4/4/4 cr; §1201/2/3) Munda

5301. **ART OF THE FILM — INDIA.** (4 cr; prereq #; §ArH 5920) Kale (GrD)

5302. **THEATRE AND DRAMA IN ANCIENT INDIA.** (4 cr; prereq 5201 or #) Kale (GrD)

5401. **THE NATYASASTRA.** (4 cr; prereq #) Kale (GrD)

5510. **PROBLEMS IN INDIAN CIVILIZATION.** (4 cr; prereq 1502 or #) Dale

Intensive examination of a major topic in the Indian civilization. Course may be repeated with change of topic. Topic in 1972-73: Hindu-Muslim relations.

5511w/2s. **THE RELIGIONS OF INDIA.** (4/4 cr; prereq 1504 or #) Arya

The major religious traditions of India. Historical development of schools and sects. Contemporary situations. (GrC)

5520. **STUDIES IN THE RELIGIONS OF INDIA.** (Cr ar; prereq 5512 or #)

Selected topics in India's religious history. Topic in 1972-73: the Bhagavad Gita. (GrC)

5531f/2w. **CULTURAL HISTORY OF NORTH INDIA, 1000-1707.** (4/4 cr; prereq 1502 or #)

India in the Muslim period. Developments in Indian Islam. Analysis of such syncretic movements as Sikhism. (GrC)

5533. **HISTORY OF HINDUSTANI CULTURE.** (4 cr; §3533) Lelyveld, Silver (GrC)

5710. **SEMINAR IN SOUTH ASIAN LANGUAGES AND LITERATURES.** (Cr ar; prereq #)  
Staff

5801. **INTRODUCTION TO SANSKRIT POETICS.** (4 cr; prereq 5202 or #) Kale

5802. **WESTERN APPROACHES TO EASTERN THEATRE.** (4 cr; prereq #; offered alt yrs)  
Kale (GrD)

5970. DIRECTED STUDIES. (Cr ar; prereq #) Staff  
5990. DIRECTED RESEARCH. (Cr ar; prereq #) Staff

## Marathi (Mar)

Marathi is spoken by 50,000,000 people in India, and its literature is one of the richest in the world.

### LOWER DIVISION COURSE

1101f/2w/3s. BEGINNING MARATHI. (5/5/5 cr) Junghare

### UPPER DIVISION COURSES

- 3031f/2w/3s. INTERMEDIATE MARATHI. (5/5/5 cr; prereq 1103 or #) Junghare  
5101f/2w/3s. BEGINNING MARATHI. (5/5/5 cr; §1101/2/3) Junghare  
5131f/2w/3s. INTERMEDIATE MARATHI. (5/5/5 cr; prereq 1103 or 5103 or #; §3031/2/3) Junghare  
5161f/2w/3s. ADVANCED MARATHI. (4/4/4 cr; prereq 3033 or 5133 or #) Junghare, Kale  
5201f/2w/3s. MARATHI LITERARY TEXTS. (4/4/4 cr; prereq 5163) Junghare, Kale  
Selected works of major Marathi writers.  
5970. DIRECTED STUDIES. (Cr ar; prereq #) Staff  
5990. DIRECTED RESEARCH. (Cr ar; prereq #) Staff

## Sanskrit (Skt)

Sanskrit, one of the world's major classical languages, is the linguistic source of modern North Indian languages; its influence over the South Indian languages has been enormous. Its cultural importance cannot be overemphasized.

### LOWER DIVISION COURSE

1201f/2w/3s. BEGINNING SANSKRIT. (5/5/5 cr) Staff

### UPPER DIVISION COURSES

- 5201f/2w/3s. BEGINNING SANSKRIT. (5/5/5 cr; §1201/2/3) Staff  
5011. SANSKRIT SYNTAX. (4 cr; prereq #) Arya  
5204f/5w/6s. INTERMEDIATE SANSKRIT. (5/5/5 cr; prereq 1203 or 5203) Staff  
5320. READINGS IN PHILOSOPHICAL TEXTS. (4 cr; prereq 5206) Staff  
5401f/2w/3s. ADVANCED READINGS IN SANSKRIT. (4/4/4 cr; prereq 5206) Staff  
5490. STUDIES IN SANSKRIT LITERATURE. (4 cr; prereq 5403 or #) Staff  
5701. INTRODUCTION TO VEDIC GRAMMAR. (4 cr; prereq 5206 or #) Arya  
5970. DIRECTED STUDIES. (Cr ar; prereq #) Staff  
5990. DIRECTED RESEARCH. (Cr ar; prereq #) Staff

## Urdu

The Urdu language, spoken by some 60,000,000, is the form of Hindi that emerged primarily among the Muslims in India. It has a literature of unique cultural and historical significance.

### UPPER DIVISION COURSES

- 3031f/2w/3s. INTERMEDIATE URDU. (5/5/5 cr; prereq Hindi 1103 or #) Silver  
5131f/2w/3s. INTERMEDIATE URDU. (5/5/5 cr; prereq Hindi 1103, 5103 or #; §3031/2/3) Silver (GrA)  
5161f/2w/3s. ADVANCED URDU. (4/4/4 cr; prereq 3033 or 5133 or #) (GrA)  
5970. DIRECTED STUDIES. (Cr ar; prereq #) Silver

## SPAN

See Foreign Studies

## SPANISH AND PORTUGUESE

### Spanish (Span)

Staff: Robert F. Estelle, Rodolfo O. Floripe, Russell C. Hamilton, Ruth E. Jones, Lawrence C. Mantini, Ricardo A. Narvaez, Peter J. Schoenbach, Nicholas Spadaccini, Constance A. Sullivan, Andres Suris, William W. Woodhouse. Department office: 318 Folwell Hall.

**Major Sequences for B.A.:** Two major programs are available, Sequence A in Spanish literature and Sequence B in Spanish-American literature (each requiring prerequisites as indicated in course descriptions). *Sequence A:* 3014; 3501, 3502, 3512; 3211, 3212, 3213 or 3211H, 3212H, 3213H; 3252, 3253 or 3252H, 3253H; 3721. *Sequence B:* 3014; 3501, 3502, 3512; 3251, 3252, 3253 or 3251H, 3252H, 3253H; 3211, 3212 or 3211H, 3212H; 3721.

*Note*—All Spanish and Portuguese courses are assigned to Distribution Group D.

### LOWER DIVISION COURSES

**1101f,w/2f,w,s/3f,w,s. BEGINNING SPANISH.** (5/5/5 cr; students submitting 1 yr high school Spanish for entrance must take 1102 and those offering 2 yrs must take 1103)

Beginning course: pronunciation, aural comprehension, basic grammar, practical reading knowledge.

**1102H,3H. HONORS COURSE: BEGINNING SPANISH.** (5.5 cr; open to superior students on basis of performance in previous qtr or by #)

**1104f,w,s. INTERMEDIATE SPANISH.** (4 cr; prereq 1103 or 1103H or 3 yrs high school Spanish)

Intensive review of grammar; continued development of reading, comprehension, speaking, and writing skills; active use of readings to build vocabulary and to model compositions.

**1104H. HONORS COURSE: INTERMEDIATE SPANISH.** (4 cr; prereq 1103 or 1103H or 3 yrs high school Spanish; open to superior students on basis of performance in previous qtr or by #)

**1105. INTERMEDIATE SPANISH.** (4 cr; prereq 1104 or 1104H or 4 yrs high school Spanish)  
Continuation of 1104.

**1105H. HONORS COURSE: INTERMEDIATE SPANISH.** (4 cr; prereq 1104 or 1104H or 4 yrs high school Spanish; open to superior students on basis of performance in previous qtr or by #)  
Continuation of 1104H.

**1501. CULTURE, CIVILIZATION OF SPAIN AND PORTUGAL.** (4 cr; no prereq; not to be used for Span or Port major)  
The culture and civilization of Spain and Portugal: art, architecture, and music.

**1502. CULTURE, CIVILIZATION OF MIDDLE AMERICA, THE CARIBBEAN.** (4 cr; no prereq; not to be used for Span or Port major)  
The culture and civilization of Mexico, Central America, and the Spanish islands of the Caribbean. The influences and fusing of the Spanish with the Indian or the African cultures.

**1503. CULTURE, CIVILIZATION OF SOUTH AMERICA.** (4 cr; no prereq; not to be used for Span or Port major)  
The culture and civilization of the South American nations. The influences and fusing of the Spanish and Portuguese with the Indian or the African cultures.

### UPPER DIVISION COURSES

**3001. SPANISH PRONUNCIATION.** (2 cr; prereq 1105 or #) Narvaez

**3014. SPANISH CONVERSATION AND COMPOSITION.** (5 cr; prereq 1105 or #) Narvaez

3021. **ADVANCED SPANISH COMPOSITION AND CONVERSATION.** (5 cr; prereq 3014 or #) Narvaez
3104. **INTRODUCTION TO SPANISH AND SPANISH-AMERICAN LITERARY TEXTS.** (4 cr; prereq 1105 or #)  
Stylistic analysis and literary explications of the principal genres. Critical terminology; literary problems and techniques.
- 3104H. **HONORS COURSE: INTRODUCTION TO SPANISH AND SPANISH-AMERICAN LITERARY TEXTS.** (4 cr; prereq 1105H or # or exam)
- 3211f. **SURVEY OF SPANISH LITERATURE: POEMA DEL CID TO CELESTINA.** (4 cr; prereq 3104) Spadaccini
- 3211Hf. **HONORS COURSE: SURVEY OF SPANISH LITERATURE: POEMA DEL CID TO CELESTINA.** (4 cr; prereq A in 3104, #)
- 3212w. **SURVEY OF SPANISH LITERATURE: GOLDEN AGE.** (4 cr; prereq 3104) Spadaccini
- 3212Hw. **HONORS COURSE: SURVEY OF SPANISH LITERATURE: GOLDEN AGE.** (4 cr; prereq A in 3104 or 3211H, and #)
- 3213s. **SURVEY OF SPANISH LITERATURE: NEOCLASSICISM TO EARLY 20TH CENTURY.** (4 cr; prereq 3104) Spadaccini
- 3213Hs. **HONORS COURSE: SURVEY OF SPANISH LITERATURE: NEOCLASSICISM TO EARLY 20TH CENTURY.** (4 cr; prereq A in 3104 or 3212H and #)
- 3251f,2w,3s. **SURVEY OF LITERATURE OF SPANISH AMERICA.** (4,4,4 cr; prereq 3104) Floripe
- 3251Hf,2Hw,3Hs. **HONORS PROSEMINARS: SURVEY OF LITERATURE OF SPANISH AMERICA.** (4,4,4 cr; prereq 3104H or A in 3104, #)
- 3501f. **HISPANIC CIVILIZATION.** (5 cr; prereq 3014)  
Spain and Latin America up to 1808.
- 3502w. **CULTURE AND CIVILIZATION OF MODERN SPAIN.** (5 cr; prereq 3014)  
Spain from 1808 to the present.
- 3512a. **LATIN-AMERICAN CIVILIZATION AND CULTURE.** (5 cr; prereq 3014)
3721. **ORIGINS AND HISTORY OF SPANISH AND PORTUGUESE.** (4 cr; prereq 3014 or Port 3014) Mantini  
The factors that influenced the growth and structure of the Spanish and Portuguese languages.
5011. **SPANISH STYLISTICS.** (4 cr; prereq 3021 or equiv) Narvaez
- 5211f. **SPANISH LITERATURE OF 16TH CENTURY: NOVEL.** (4 cr; prereq 3211,2,3; offered 1972-73 and alt yrs) Jones
- 5212w. **SPANISH LITERATURE OF 16TH CENTURY: THE DRAMA.** (4 cr; prereq 3211,2,3; offered 1972-73 and alt yrs) Jones
- 5213s. **SPANISH LITERATURE OF 16TH CENTURY: POETRY.** (4 cr; prereq 3211,2,3; offered 1972-73 and alt yrs) Jones
5214. **INTRODUCTION TO SPANISH MYSTIC LITERATURE OF 16TH AND 17TH CENTURIES.** (4 cr; prereq 3211,2,3) Spadaccini  
Juan de Avila, Santa Teresa, P. Ribadeneira, Fr. Luis de Leon.
- 5221f. **SPANISH LITERATURE OF 17TH CENTURY: DRAMA.** (4 cr; prereq 3211,2,3; offered 1973-74 and alt yrs) Jones
- 5222w. **SPANISH LITERATURE OF 17TH CENTURY: NOVEL.** (4 cr; prereq 3211,2,3; offered 1973-74 and alt yrs) Jones
- 5223s. **SPANISH LITERATURE OF 17TH CENTURY: POETRY.** (4 cr; prereq 3211,2,3; offered 1973-74 and alt yrs) Jones
5232. **DEVELOPMENT AND METAMORPHOSIS OF "DON JUAN" THEME.** (4 cr; prereq 3211,2,3 or #)
5241. **THE 18TH CENTURY: STUDIES IN THE PRINCIPAL WRITERS: FEIJOO, JOVELLANOS, CADALSO, MORATIN, AND OTHERS.** (4 cr; prereq 3211,2,3 or #)
- 5251f,2w,3s. **SPANISH LITERATURE: 19TH CENTURY.** (4,4,4 cr; prereq 3211,2,3; offered 1972-73 and alt yrs) Sullivan

## Course Offerings and Major Sequences

- 5271f. 20TH-CENTURY SPANISH LITERATURE: DRAMA.** (4 cr; prereq 3211,2,3; offered 1973-74 and alt yrs)
- 5272w. 20TH-CENTURY SPANISH LITERATURE: PROSE.** (4 cr; prereq 3211,2,3; offered 1973-74 and alt yrs)  
Unamuno, Azorin, Baroja, Valle Inclan, Ortega y Gasset, Perez de Ayala, Gomez de la Serna.
- 5273s. 20TH-CENTURY SPANISH LITERATURE: POETRY.** (4 cr; prereq 3211,2,3; offered 1973-74 and alt yrs)  
Juan Ramon Jimenez, Unamuno, Antonio and Manuel Machado, Valle Inclan, Garcia Lorca, Alberti, Moreno Villa, Aleixandre, Leon Felipe, Guillen, and Salinas.
- 5311. BALLAD.** (4 cr; prereq 3211,2,3; offered when feasible)
- 5312. CELESTINA.** (4 cr; prereq 3211,2,3) Jones
- 5315f,6w,7s. THE GOLDEN AGE NOVEL.** (4,4,4 cr; prereq one Upper Division literature course or #) Spadaccini
- 5351. SPANISH NOVEL FROM VALERA TO PALACIO VALDEZ.** (4 cr; prereq 3211,2,3)
- 5371. MODERN SPANISH NOVEL (1900-1936).** (4 cr; prereq 3211,2,3 or #; offered when feasible) Sullivan
- 5373. CONTEMPORARY SPANISH NOVEL SINCE THE CIVIL WAR.** (4 cr; prereq one Upper Division literature course or #) Sullivan
- 5381. CONTEMPORARY SPANISH THEATRE: 1939-1968.** (4 cr; prereq one Upper Division literature course or #; offered when feasible) Sullivan
- 5392. CONTEMPORARY SPANISH POETRY: FROM 1936.** (4 cr; prereq 3211,2,3 or #)
- 5411. CERVANTES: DON QUIJOTE.** (4 cr; prereq 3211,2,3) Jones
- 5412. CERVANTES: NOVELAS EJEMPLARES AND ENTREMESSES.** (4 cr; prereq 3211,2,3 or #) Jones
- 5416. LOPE DE VEGA AND CALDERON.** (4 cr; prereq one Upper Division literature course) Jones
- Arab 5501f. HISPANO-ARABIC LITERATURE AND CULTURE: HISTORY OF ISLAMIC SPAIN.** (4 cr; prereq #) Chejne
- Arab 5502w. HISPANO-ARABIC LITERATURE AND CULTURE: ARAB PHILOSOPHY IN SPAIN.** (4 cr; prereq #) Chejne
- Arab 5503s. HISPANO-ARABIC LITERATURE AND CULTURE: HISPANO-ARABIC LITERATURE.** (4 cr; prereq #) Chejne
- 5521f,2w,3s. COLONIAL AND 19TH CENTURY LATIN-AMERICAN LITERATURE.** (4,4,4 cr; prereq 3211,2,3 or 3253; offered 1973-74 and alt yrs)
- 5551f. LATIN-AMERICAN LITERATURE: POETRY.** (4 cr; prereq 3211,2,3 or 3253; offered 1972-73 and alt yrs) Floripe  
Silva, Dario, Nervo, Chocano, Herrera y Reissig, Lugones, Agustini, Mistral, Ibarbourou, Storni, Lopez Velarde, and Neruda.
- 5552w. LATIN-AMERICAN LITERATURE: ESSAY, SHORT STORY, DRAMA.** (4 cr; prereq 3211,2,3 or 3253; offered 1972-73 and alt yrs) Floripe  
Rodo, Gonzales Prada, Ricardo Rojas, Blanco Fombona, Ugarte, Vasconcelos, Alfonso Reyes, Quiroga, Gallegos, Florencio Sanchez.
- 5553s. LATIN-AMERICAN LITERATURE: NOVEL.** (4 cr; prereq 3211,2,3 or 3253; offered 1972-73 and alt yrs) Floripe  
Gallegos, Azuela, Rivera, Guiraldes, Barrios, Galvez, Lynch, Ciro Alegria.
- 5581f,2w,3s. SPANISH-AMERICAN NOVEL AND SHORT STORY.** (4,4,4 cr; prereq 3211,2,3 or 3253; offered 1973-74 and alt yrs) Floripe
- 5584. CONTEMPORARY LATIN-AMERICAN NOVEL.** (4 cr; prereq 3253 or #) Floripe
- 5711f,2w,3s. STRUCTURE OF MODERN SPANISH: PHONOLOGY, MORPHOLOGY, SYNTAX.** (4,4,4 cr; prereq 3021 or #3021 or #) Narvaez  
Scientific approach to structure of present-day Spanish; syntax, phonology, word-formation, and dialectal differences.
- 5721. INTRODUCTION TO ROMANCE PHILOLOGY.** (4 cr; prereq 3721 or Port 3721 or #) Mantini
- 5970. DIRECTED READINGS.** (1-5 cr per qtr; prereq # and consent of dept chairman)

## Portuguese (Port)

**Major Sequences for B.A.:** Two combined Portuguese-Spanish major sequences are available: *Sequence A* includes Span 3014; 3211, 3212, 3213; 3501; Port 3014; 3211, 3212, 3213; 3501, 3502; 3721. *Sequence B* includes Span 3014; 3251, 3252, 3253; 3512; Port 3014; 3211, 3212, 3213; 3501, 3502; 3721. (*Sequence B* puts special emphasis on Latin-American culture and language).

### LOWER DIVISION COURSES

- 1101f/2w/3s. BEGINNING PORTUGUESE.** (5/5/5 cr) Hamilton  
Aural comprehension, pronunciation, basic grammar, and practical reading knowledge. Brazilian speech is stressed but Lusitanian forms are also studied.
- 1104f. INTERMEDIATE PORTUGUESE GRAMMAR AND COMPOSITION.** (4 cr; prereq 1103 or #) Hamilton  
Intensive review of grammar; careful reading and analysis of selected cultural and literary texts.
- 1105. INTERMEDIATE PORTUGUESE.** (4 cr; prereq 1104)  
Intensive review of grammar; continued development of reading, comprehension, speaking, and writing skills; emphasis on active use of readings to build vocabulary and to model compositions.

### UPPER DIVISION COURSES

- 3014. CONVERSATION AND COMPOSITION.** (5 cr; prereq 1105 or equiv) Hamilton  
Brazilian speech; continental Portuguese forms also stressed.
- 3211. READINGS IN RENAISSANCE QUINHENTISMO AND MODERN PORTUGUESE LITERATURE.** (4 cr; prereq 1105 or Span 3104 or #)
- 3212. READINGS IN BRAZILIAN LITERATURE OF THE 19TH AND 20TH CENTURIES.** (4 cr; prereq 1105 or Span 3104 or #)
- 3213. READINGS IN MODERN AND CONTEMPORARY BRAZILIAN LITERATURE.** (4 cr; prereq 1105 or Span 3104 or #)
- 3501. LUSO-BRAZILIAN CIVILIZATION I.** (5 cr; prereq 1105)  
Portugal and Brazil to 1808.
- 3502. LUSO-BRAZILIAN CIVILIZATION II.** (5 cr; prereq 1105)  
Portugal and Brazil from 1808 to the present.
- 3721. ORIGINS AND HISTORY OF SPANISH AND PORTUGUESE.** (4 cr; prereq 3014 or Span 3014) Mantini  
Factors that influenced the growth and structure of the Spanish and Portuguese languages.
- 5112,3,4. TOPICS IN PORTUGUESE LITERATURE.** (4,4,4 cr; prereq 3213; offered 1973-74 and alt yrs) Hamilton
- 5210,20,30. TOPICS IN BRAZILIAN LITERATURE.** (4,4,4 cr; prereq 3213 or ¶3213 for Span-Port majors or equiv)  
Students with a knowledge of Portuguese will read in the original. Others will read translations. Lectures will be in English with sessions every two weeks for those reading the original to discuss stylistics, etc. in Portuguese.
- 5212,3,4. TOPICS IN BRAZILIAN LITERATURE.** (4,4,4 cr; prereq 3213; offered 1972-73 and alt yrs) Hamilton
- 5225. PROSEMINAR: CONTEMPORARY BRAZILIAN LITERATURE.** (4 cr; prereq 3211 or 3212 or 3213 or ¶3211 or ¶3213)
- 5721. INTRODUCTION TO ROMANCE PHILOLOGY.** (4 cr; prereq 3721 or Span 3721 or #) Mantini
- 5970. INDEPENDENT READINGS.** (1-5 cr per qtr; prereq # and consent of dept chairman) Hamilton

## SPEECH-COMMUNICATION (Spch)

Staff: Robert L. Scott, *chairman*, 317 Folwell Hall; Leonard D. Bart, Ernest G. Bormann, Bernard L. Brock, Donald R. Browne, John Geier, Sheldon

## Course Offerings and Major Sequences

Goldstein, William S. Howell, J. Vernon Jensen, Harold Miller, Gene Piche, David L. Rarick, George L. Shapiro

Speech-communication is concerned with the study of the communicative dimensions of human experience, focusing particularly on the interpersonal, rhetorical, and broadcast perspectives.

**Major Sequence for B.A.:** 1. *Required background course*—1101, 1102 and 1104 recommended. 2. *Major requirements*—A minimum of 36 Upper Division cr, including 3401, 5211, and 3615 or 5615.

The speech-communication major may select a program that fits his own needs and interests, but it must be selected in conference with and approved by a departmental major adviser.

**Cocurricular Activities**—Any University student may participate in the forensic program offered by the Speech-Communication Department and in the operation of student radio station WMMR. Forensic activities include debate, the Freshman-Sophomore Oratorical Contest, and the Pillsbury Oratorical Contest.

**General Education**—The Department recommends as courses for nonmajors 1101, 1102, 1104, 3605, 3641, 3401, 3211, 5431, 5451, 5615, 5617.

### LOWER DIVISION COURSES

**1101f,w,s. FUNDAMENTALS OF SPEECH.** (5 cr)

Basic understanding of speech processes. Nature of speech and speech skills; opportunities for individual speaking and evaluation. (GrA)

**1102f,w. COMMUNICATION IN THE MODERN WORLD: INTERPERSONAL COMMUNICATION.** (4 cr) Shapiro

Structure of acts of communication and of factors influencing the occurrence, form, and effects of such acts. Analysis of the relationship of communication forms to social structure. (GrA)

**1103w. COMMUNICATION IN THE MODERN WORLD: MASS MEDIA.** (4 cr; §Jour 1003)

The mass media and their social and cultural effects. Interaction between the audience and the media. The popular arts. Related areas of communication; advertising, public relations, propaganda. The future of mass media and "mass culture." (GrC)

**1104s. COMMUNICATION IN THE MODERN WORLD: THE PERFORMING ARTS.** (4 cr)

Browne  
Application of the principles of communication to the arts of film, theatre, television and other media.

**1105. HONORS COURSE: FUNDAMENTALS OF SPEECH.** (5 cr; prereq 3rd qtr fr with B avg)

Basic understanding of speech processes. Nature of speech and speech skills; opportunities for individual speaking and evaluation. (GrA)

**1110f,w,s. FRESHMAN DISCUSSION AND DEBATE.** (2 cr; open to freshmen who qualify for freshman debate squad; prereq fr with C avg) (GrA)

### UPPER DIVISION COURSES

**3191f,2w,3s. HONORS COURSE: TUTORIAL SEMINAR IN SPEECH.** (4,4,4 cr; prereq honors cand in spch, Δ, §)

**3201f,w,s. INTRODUCTION TO BROADCASTING PRODUCTION.** (5 cr; prereq 1101)

Fundamentals of practice and theory. Projects and exercises in performance and scripting; studio equipment and procedures. (GrD)

**3202. LABORATORY SECTION: BROADCASTING PRODUCTION.** (1-4 cr; prereq 3201 or §3201)

Arts and techniques of television. Cameras, lighting, floor direction; planning and construction of television visuals and setting in on-the-air professional production environment. (GrD)

**3203f,w,s. RADIO PRODUCTION.** (4 cr; prereq 3201)

Equipment and staff organization; program design and presentation. Directed experience in organization, writing, production, direction, and performance of radio news, music, dramatic, and documentary programs. (GrD)

- 3204f,w,s. TELEVISION PRODUCTION.** (4 cr; prereq 3201) Bart  
Equipment and staff organization; interrelationships with program design. Exercises in production. (GrD)
- 3211. DETERMINANTS OF BROADCAST PROGRAMMING.** (4 cr) Browne, Rarick  
Historical development and contemporary aspects of broadcast programming. Roles of governmental, industrial, and public organizations in influencing programming decisions. "Problem areas" in programming.
- 3401f,w. THE PROCESS OF INTERPERSONAL COMMUNICATION.** (4 cr; prereq 1101 or 1105 or #, Psy 1001)  
The place of speech and language in human behavior; nature and function of the communication process. (GrC)
- 3605f,w,s. PUBLIC SPEAKING.** (4 cr; prereq 1101)  
The principles of preparing and presenting public speeches; directed practice in public speaking; the function of public speaking in contemporary life. (GrA)
- 3615. ARGUMENTATION.** (4 cr; prereq 1101 or 1105 or #) Brock  
The role of reasoned discourse in social and governmental affairs. Logical methods of persuasion. (GrA)
- 3620. INTERCOLLEGIATE DEBATE AND ORATORY.** (2 cr)  
Open to students interested in intercollegiate speech competition. Performance in speech activities will be emphasized. (GrA)
- 3621. TEACHING FORENSICS IN HIGH SCHOOL.** (4 cr; prereq 1101 or 1105)  
Open to speech-education students interested in interscholastic speech competition. Performance in speech activities will be emphasized. (GrA)
- 3641. DISCUSSION AND CONFERENCE METHODS.** (4 cr; prereq 1101 or 1105 or #)  
Cooperative thinking in task-oriented groups. Planning, preparing for, participating in, and leading private and public meetings. (GrA)
- 3970. DIRECTED STUDIES.** (Cr ar; prereq #)  
Individual study projects in speech communication. Consultation with an instructor who agrees to supervise the project is required.
- 3980. DIRECTED INSTRUCTION.** (1-4 cr; may be repeated once; prereq #)  
Directed study through teaching others. Students work with an instructor in planning and teaching an undergraduate course.
- 5201. TELEVISION PRODUCTION: DRAMA** (4 cr; prereq 3204)  
Specialized area of television production of drama. Esthetics and techniques of the use of television as a dramatic medium. (GrD)
- 5202. ADVANCED TELEVISION PRODUCTION.** (4 cr; limited to 14 students; prereq 3204 and #) Bart  
Creative problems in television production and direction. Advanced program design; lighting, audio, camera, and electronic techniques.
- 5204. WRITING RADIO AND TELEVISION DRAMA.** (4 cr; prereq 3201, #)  
Physical, psychological, and sociological aspects of radio and television and their influence on the writer. Script-writing in various forms from dramatic commercials to dramas and documentaries. (GrD)
- 5221. EDUCATIONAL TELEVISION PRODUCTION.** (4 cr; prereq 3204 or #) Goldstein  
The uses of television for instructional purposes, review of research literature as it applies to the production of televised educational materials; experimentation in the preparation of such materials.
- 5222. EDUCATIONAL TELEVISION PROGRAMMING AND ADMINISTRATION.** (4 cr; prereq 3211, 5221 or #) 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. (GrC)
- 5231. COMPARATIVE BROADCAST SYSTEMS.** (4 cr; prereq 3211 or #) Browne  
Historical, sociological, and political aspects of various systems of broadcasting throughout the world. Examination of American, Canadian, British, French, German, Soviet, and other broadcast institutions; their regulation; their impact on political, social, and economic development. (GrC)
- 5232. INTERNATIONAL BROADCASTING.** (4 cr; prereq 12 cr political science or #) Browne  
Broadcasting as an international medium of communication in the U.S., Great Britain, USSR, Japan, others. Theories of informing and persuading through direct broadcast and

## Course Offerings and Major Sequences

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- regional and international exchange of programs; international and regional regulatory agreements; current problems in spectrum control; social and legal implications of broadcasting via satellite. (GrC)
- 5233. BROADCASTING AND NATIONAL DEVELOPMENT.** (4 cr; prereq 5231 or #) Browne  
Purposeful use of radio and television to effect changes in the social, political, economic, and cultural life of peoples and nations. Use of broadcasting by the developing nations to improve agricultural practices, hygienic standards, literacy, and an awareness of civic responsibility. (GrC)
- 5402. BREAKDOWN IN INTERPERSONAL COMMUNICATION.** (4 cr; prereq 3401 or #; offered alt yrs) Shapiro  
Factors contributing to misunderstanding, not understanding, disagreement, and cessation of contact in dyads. (GrC)
- 5403. THEORIES OF COMMUNICATION.** (4 cr; prereq 3401 or #) Rarick  
Theories of human communication. Analysis of their usefulness for particular purposes. Problems in the development of communication theories. (GrC)
- 5404. SPEECH AND LANGUAGE IN HUMAN BEHAVIOR.** (4 cr; §SeEd 5404; prereq 1102, 3401 or grad) Piche  
The place of speech and language in human behavior. Individual projects and collateral reading. (GrA)
- 5411f,w,s. SMALL GROUP COMMUNICATION.** (5 cr; prereq 3641 or #; SN regis only) Bormann, Howell  
Communication and dynamics within the small, task-oriented group. Group cohesiveness, leadership, role structure, information processing, and decision making.
- 5412. PUBLIC SPEAKING AND CONFERENCE LEADERSHIP.** (4 cr; hospital administration majors only)
- 5421. QUANTITATIVE RESEARCH IN COMMUNICATION.** (4 cr; prereq 3401 or 5403, 8101 or #)  
Experimental and descriptive research; research design and procedures; individual research projects. (GrC)
- 5431. THE PROCESS OF PERSUASION.** (4 cr; prereq 1101 or 1105, Psy 1001, 10 cr in social science or #) Howell  
Theories of modern motivational communication. Analysis of the process of social control through persuasive speech. (GrC)
- 5441. COMMUNICATION IN HUMAN ORGANIZATIONS.** (4 cr; prereq 1102 or 3401, 3641 or 5411, or grad) Shapiro  
Functions of communication in organizational settings. Organizational structure and dynamics and their effect upon communication process. Collateral readings and individual projects. (GrC)
- 5451. INTERCULTURAL SPEECH-COMMUNICATION.** (4 cr; prereq 3401, Anth 1002, or other course in cultural anthropology, or #) Howell  
Factors important to successful interpersonal communication across cultures. Linguistic and non-verbal variables. North Americans abroad, and their communication with host nationals. (GrA,C)
- 5602. CONTEMPORARY POLITICAL PERSUASION.** (4 cr; prereq 1101 or 1105, 5431 or #) Brock  
Contemporary political speaking. Analysis of ideologies in political persuasion. (GrC)
- 5611. CLASSICAL RHETORIC.** (4 cr; prereq 1101 or 1105) Scott  
Greek and Roman theories of speech making; historical and philosophic context and influence on education. (GrA)
- 5615. INTRODUCTION TO RHETORICAL CRITICISM.** (4 cr; prereq 1101 or 1105; 3615 recommended) Brock, Scott  
Traditional and contemporary rhetorical theory and its application to contemporary public address. (GrA)
- 5616. HISTORY AND CRITICISM OF BRITISH PUBLIC ADDRESS.** (4 cr; prereq 1101 or 1105 or #) Jensen  
British orators, their works, the historical setting. British rhetorical theory. (GrA)
- 5617. HISTORY AND CRITICISM OF AMERICAN PUBLIC ADDRESS.** (4 cr; prereq 1101 or 1105, Psy 1001) Bormann  
History and criticism of religious and reform speaking in the United States from 1620 to 1920. (GrA)

- 5618. HISTORY AND CRITICISM OF AMERICAN PUBLIC ADDRESS.** (4 cr; prereq 1101 or 1105, Psy 1001) Bormann  
 History and criticism of political speaking in the United States from the time of the revolution to the present. (GrA)
- 5970f,w,s. DIRECTED READINGS.** (Cr ar; prereq 9 cr in Upper Division speech and #)  
 Directed reading and preparation of reports on selected subjects.

## STATISTICS (Stat)

**Staff:** Seymour Geisser, *director*, School of Statistics, 270 Vincent Hall; Bernard Lindgren, *chairman*, Department of Theoretical Statistics; Stephen Fienberg, *chairman*, Department of Applied Statistics; Donald Berry, Christopher Bingham, Robert Buehler, Dennis Cook, Somesh Das Gupta, Morris Eaton, Clifford Hildreth, Kinley Larntz, Frank Martin, Michael Perlman, Milton Sobel, William Sudderth, Sanford Weisberg

Statistics deals with the collection, analysis, and interpretation of data and provides a logical framework for using data to draw inferences in scientific studies and to make decisions in industrial, business, and governmental enterprises.

**Major Sequence for B.A.:** 1. *Required background courses*—Calculus through Math 1231 or 1331 or 1621; (Stat 3091 or 1051 recommended). 2. *Major requirements*—Math 3211 or 3611; Math 3142 or 3511 or Stat 5071; Stat 5131/2/3 or 5121, 5101; at least 16 cr chosen from the following courses: Stat 5021/2, 5201, 5211, 5301, 5302, 5401, 5601; IE 5030, 5040, 5550/1, 5531; QA 5171, 5181, PubH 5450, 5455; CICS 3101, 5101/2; Math 5681/2/3.

### LOWER DIVISION COURSE

- 1051. INTRODUCTION TO IDEAS OF STATISTICS.** (4 cr; prereq Math 1111 or #)  
 Presentation and analysis of data. Probabilistic models for inference. Types of inference and decision procedures. Emphasis on concepts rather than computation. (GrA)

### UPPER DIVISION COURSES

- 3091. INTRODUCTION TO PROBABILITY AND STATISTICS.** (4 cr; no cr if taken after 5121 or 5131; prereq differential and integral calculus)  
 Elementary probability and probability distributions, sampling and elements of statistical inference. More mathematical treatment than 1051. (GrA)
- 5071. STATISTICAL APPLICATION OF MATRIX ALGEBRA.** (3 cr; prereq 5021 or #; ¶Math 3142 or #)  
 Specific matrix operations with vector realizations, presuming no prior knowledge. Uses in analysis of variance and multivariate methods. Correlation structures, characteristic vectors, quadratic forms.
- 5101. INTRODUCTION TO DECISION THEORY.** (4 cr; no cr if taken after 5132; prereq Econ 5111 or Math 1142 or Math 1211 or #)  
 Elements of probability; basic concepts in statistical decision theory; relationship to game theory and other types of decision problems; prediction and inference. (GrA)
- 5121/2. THEORY OF STATISTICS.** (4/4 cr; §5131/2/3; prereq Math 1231 or 1331 or 1621)  
 Univariate and multivariate distributions, law of large numbers, sampling, likelihood methods, estimation and hypothesis testing, regression and analysis of variance and covariance confidence intervals, distribution-free methods. (GrA)
- 5131/2/3. THEORY OF STATISTICS.** (4/4/4 cr; §5121/2; prereq ¶Math 3411 or 3211)  
 5131: Probability models, univariate and bivariate distributions, independence, basic limit theorems. 5132/3: Statistical decision theory, sampling, estimation, testing hypotheses, parametric and nonparametric procedures for one-sample and two-sample problems, regression, analysis of variance. More mathematical treatment than 5121/2. (GrA)
- 5201. SAMPLING METHODOLOGY IN FINITE POPULATIONS.** (4 cr; prereq 5021 or 5121 or 3091)  
 Simple random, systematic, stratified and unequal probability sampling. Ratio and regression estimation. Multistage and cluster sampling. (GrA)

## Course Offerings and Major Sequences

- 5211. THEORY OF SAMPLE SURVEYS.** (4 cr; prereq 5122 or 5133)  
Mathematical treatment of survey sampling, including stratified and multistage sampling, models for nonsampling errors. (GrA)
- 5301. DESIGNING EXPERIMENTS.** (4 cr; prereq 5022 or 5122 or 5133)  
Control of variation, construction and analysis of complete and incomplete block, split plot, factorial, and groups of similar experiments. Confounding, crossover, and optimum seeking designs.
- 5302. APPLIED REGRESSION ANALYSIS.** (4 cr; prereq 5022 or 5071 or 5122 or #)  
Simple, multiple, and polynomial regression. Estimation, testing, and prediction, Step-wise and other numerical methods; examination of residuals; harmonic analysis; weighted least squares; nonlinear models; response surface; simultaneous regression equations. Emphasis on experimental research and economic applications. (GrA)
- 5401. INTRODUCTION TO MULTIVARIATE METHODS.** (4 cr; prereq 5071, 5022 or 5122)  
Bivariate and multivariate distributions. Inference on multivariate normal distributions. Discrimination and classification. Multivariate analysis of variance. Partial, canonical correlation and independence. Principal component analysis, factor analysis, analysis of repeated measurements, cluster analysis, profile analysis, categorical data. (GrA)
- 5601. NONPARAMETRIC METHODS.** (4 cr; prereq 5022 or 5122 or #)  
Survey of necessary discrete and continuous probability distributions. Goodness of fit, sign tests, order statistics, rank tests for location and for scale, two-sample and k-sample comparisons, association. Emphasis on methods and application.
- 5900. TUTORIAL COURSE.** (Cr ar; prereq #)  
Students whose needs are not met by current offerings may obtain content of regular courses or special areas by directed study. (GrA)
- 5911/2/3. TOPICS IN STATISTICS.** (3/3/3 cr; prereq 5122 or 5133 and #)  
Topics vary according to needs and available staff; may be repeated for credit. (GrA)

## STUDIO ARTS

See Arts, Studio

## SWEDISH

See Scandinavian

## THEATRE ARTS (Th)

**Staff:** Kenneth L. Graham, *chairman*, 4 Folwell Hall; Wendell Josal, *director of graduate study*, 3 Folwell Hall; H. Lee Adey, H. Wesley Balk, Arthur H. Ballet, George E. Bogusch, Jean G. Congdon, Mary K. Corrigan, Louis J. Dezseran, Virginia Fredricks, Warren L. Frost, Dale D. Huffington, John D. Hurrell, Merle W. Loppnow, Jean A. Montgomery, Robert D. Moulton, Charles M. Nolte, Julien L. Phillips, Rose D. Smith, Richard V. Seifert, Robert P. Sonkowsky, David W. Thompson, Frank M. Whiting, Mary Elin Wright

Theatre arts, the study of the theory and practice of producing plays, incorporates the skills of writing, acting, directing, and designing, and the history and theory of each aspect. Emphasis in any of these areas can be incorporated in a major program in consultation with a student's adviser.

**Major Sequence for B.A.:** 1. *Required background courses*—1101, 1504, 1321. 2. *Major requirements*—3513, 3515, 3711 or 5711, 3801; 12 cr in other Upper Division theatre courses (chosen in consultation with adviser) plus 6 qtrs of 0100. *Recommended courses outside the major*—Courses in psychology, the other arts (music, art history, studio art), dramatic literature courses in the language departments (English, Scandinavian, Classics, German, etc.), chosen in consultation with adviser.

The B.F.A. degree in Theatre Arts—Further information on this special theatre arts degree is available from the Theatre Arts Department office.

*Cocurricular Activities*—All University students are invited to participate in the activities of the University Theatre.

Since many elementary and secondary school teachers are expected to direct theatre activities, students preparing to enter teaching are urged to participate in such activities sponsored by the Department.

**LOWER DIVISION COURSES**

- 0100f,w,s. **THEATRE HOUR.** (No cr; required each quarter for Upper Division and grad theatre arts majors in residence) Staff (GrD)
- 1101. **INTRODUCTION TO THE THEATRE ARTS.** (4 cr) Ballet  
History and theory of plays and playwrights. (GrD)
- 1321. **BEGINNING ACTING: CREATIVE APPROACH.** (4 cr; prereq 1504 or ¶1504 and soph or 3rd qtr freshman) Dezseran, staff  
Creation and presentation of original scenes and skits. Response to imaginative situations with individuality and effectiveness. (GrD)
- 1326. **BEGINNING ACTING: TECHNIQUE.** (4 cr; prereq 1321) Moulton, staff  
Fundamentals of body movement, rhythms, and acting technique. Individual and group performances. (GrD)
- 1328. **MIME AND THE ACTOR.** (2 cr; prereq 1321) Dezseran  
Basic techniques and the domain of mime explored through class participation. (GrD)
- 1405. **HONORS COURSE: INTRODUCTION TO THE THEATRE.** (2 cr; prereq 1101 and §)  
Enrichment honors course for students who have completed 1101 with outstanding class work. (GrD)
- 1502. **MAKE-UP FOR THE ACTOR.** (2 cr; prereq 1504 or ¶1504)  
Theory and practice in the art of stage make-up. (GrD)
- 1504. **ELEMENTS OF TECHNICAL THEATRE.** (4 cr; prereq 1101 or ¶1101) Seifert  
The arts and crafts of the theatre; scenery construction and painting, stage operation, theatre lighting, costuming, make-up. (GrD)
- 1800. **ORAL INTERPRETATION READING HOUR.** (1 cr, may be repeated, maximum 3 cr)  
Rehearsal and public performance of group readings of literature. (GrD)

**UPPER DIVISION COURSES**

**General**

- 3401. **INTERDISCIPLINARY HONORS SEMINAR: MUSIC, STUDIO ARTS, THEATRE.** (2-4 cr; §ArtS 3401H, Mus 3401H; prereq jr, sr honors cand, §; offered when feasible)  
To acquaint students majoring in one of the three fine arts areas with activities and techniques of the other two; to develop understanding and esthetic judgment in all three areas. (GrD)
- 3402. **INTERDISCIPLINARY HONORS SEMINAR: MUSIC, STUDIO ARTS, THEATRE.** (2-4 cr; §ArtS 3402H, Mus 3402H; prereq jr, sr honors and, §; offered when feasible)  
For description, see 3401. (GrD)
- 3412. **HONORS COURSE: TUTORIAL SEMINAR IN THEATRE ARTS.** (3-6 cr; prereq cand for honors in theatre arts and Δ; limited to 3 cr for cum laude, magna cum laude; 6 cr for summa cum laude)  
Independent reading and research in selected fields in preparing honor thesis or creative project.
- 3980. **DIRECTED INSTRUCTION.** (1-3 cr, may be repeated once, 5 cr maximum; prereq completion of course in which teaching will be done and Δ) (GrD)
- 5100. **THEATRE PRACTICUM.** (2-6 cr; prereq §, Δ) Josal, staff  
Individual creative projects in production of plays approved by a faculty committee in one or more of these areas: playwriting, directing, acting, design.
- 5970. **DIRECTED READINGS.** (2-6 cr; prereq 9 cr in theatre, §, Δ)  
Directed reading and preparation of reports on selected subjects. (GrD)  
*Subfields 1 to 7 relate to major requirements for undergraduate and graduate degrees.*

## Course Offerings and Major Sequences

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### 1. History and Theory

- 3171. CULTURAL FOUNDATIONS OF THEATRE.** (4 cr; prereq 1101)  
An investigation of the major periods of Western cultural development in which the theatre has flourished by use of visual, aural, and tactile representations of the culture and society of each age. Films, tapes, and commentary. (GrD)
- 5171,2,3. HISTORY OF THEATRE.** (4,4,4 cr; prereq sr or grad theatre major or #) Nolte  
Plays, arts, and crafts of the theatre from their beginnings to present. Reports and projects. 5171: Ancient and medieval. 5172: Renaissance through mid-19th century. 5173: Late 19th and 20th century. (GrD)
- 5177,8. THEATRE BACKGROUNDS.** (4,4 cr; prereq sr with \$, grad, 1101 or equiv, 9 Upper Division cr in English, speech, classics, or modern language; offered when feasible) Bogusch  
Selective examination of plays as part of the living theatre. Chronological and comparative study of development of theatrical elements in the drama from its origins through the present time. 5177: Origins through 18th century. 5178: 19th, 20th century. (GrD)
- 5180. THEATRE SYMPOSIUM.** (6 cr)  
Intensive study of the art of the theatre with emphasis on productions and production methods of the Tyrone Guthrie Theatre. Conducted by professional critics, actors, directors, and designers as well as University faculty. (GrD)
- 5186. AMERICAN THEATRE.** (4 cr; prereq sr or grad theatre major or #) Nolte  
The theatre as an aspect of American culture, from 1752 to present. (GrD)

### 2. Oral Interpretation

- 3801. ORAL INTERPRETATION OF FICTION.** (4 cr; prereq 1101 or Spch 1101, jr)  
Study of selected short stories. Solo and group readings. (GrD)
- 5802. ORAL INTERPRETATION OF POETRY.** (4 cr; prereq 3801 or grad)  
Study of selected lyric poems. Solo and group readings. (GrD)
- 5803. ORAL INTERPRETATION OF DRAMA.** (4 cr; prereq 3801 or grad)  
Study of selected plays. Solo and group readings. (GrD)
- 5811. HISTORY OF ORAL INTERPRETATION.** (4 cr; prereq 3801 or #)  
Study of selected oral and literary traditions from ancient times to the present. (GrD)
- 5813. THEORY OF READING AND ACTING.** (4 cr; prereq 5802 or 5803 or grad)  
Esthetic and literary theories as they relate to oral interpretation and acting. (GrD)
- 5821. GROUP READING.** (4 cr; prereq 5802, 5803, or grad)  
Advanced course in oral interpretation of imaginative literature. Problems in esthetic analysis and ensemble performance. Readers theatre presentations. (GrD)
- 5831. ORAL INTERPRETATION OF CLASSICAL LATIN LITERATURE.** (4 cr; §Lat 5038; prereq 2 yrs Lat or equiv and 3801 or 3321 or #) Sonkowsky  
Phonetics, prosody, and oral performance of selected texts in classical Latin. (GrD)

### 3. Playwriting

- 5115/6/7. PLAYWRITING.** (4/4/4 cr; prereq 1321 or #) Nolte, others  
After thorough groundwork in established techniques of the well-made play, the student is encouraged to use more experimental forms. 5115: One-act play. 5116/7: Full-length play. (GrD)

### 4. Acting

- 3311/2/3. VOICE PRODUCTION FOR THE THEATRE.** (2/2/2 cr; prereq 1321 or ¶1321) Corrigan, others  
Physical exercises designed to free the human voice from inhibitions and tensions. Work on prose, poetry, and drama. Vocal exercises with piano. (GrD)
- 3314,5. STAGE FENCING AND COMBAT: HISTORY AND EXECUTION.** (2,2 cr; prereq 1504 or ¶1504)  
History of weapons through the ages; fighting and fencing; use of weapons in stage combat. (GrD)
- 3321,2. ADVANCED ACTING.** (4 cr; prereq 1321 or 1326) Dezseran, Corrigan  
Scenes from great plays with emphasis on characterization. (GrD)
- 3323. ACTING FOR THE CAMERA.** (4 cr; prereq 3321 or #) Frost  
Historical development of radio and television drama, including production, direction and acting techniques. (GrD)

- 3326. THEATRE DANCE.** (2 cr; prereq 1326 or #) Moulton  
Specific dance techniques and the practice and performance of dances in the theatre. (GrD)
- 5330. DIRECTED PROJECTS IN ACTING.** (1-3 cr; prereq jr, sr, 3321 or grad th major; correlates with, and may not be taken in concurrent registration with, 8711,2,3)  
Students will prepare roles in scenes directed by students in Direction Seminar as laboratory demonstration of direction techniques. (GrD)
- 5334/5/6. ACTING FOR MUSIC-THEATRE.** (4/4/4 cr; prereq Mus 5470 or #) Balk  
Acting and staging problems in music-theatre. (GrD)
- 5501. SHOWBOAT LABORATORY.** (2-6 cr; prereq Δ, #) Whiting  
Arranged voice and movement sessions open to members of current Showboat Company.

## 5. Creative Drama and Children's Theatre

- 5131. CREATIVE DRAMA.** (4 cr; prereq 1101 or ¶1101 or elem ed maj or #, 1321 rec) Graham, Wright  
Principles and methods of developing original dramatizations with children. Observation of children's classes in creative dramatics. Readings, projects, term papers. (GrD)
- 5132. THEATRE FOR CHILDREN.** (4 cr; prereq 3708, 3711 or 5711 or #) Graham  
Selection, direction, and production of plays for children's audiences, coordinated with current productions of the Young People's University Theatre. (GrD)
- 5133. PRODUCING THEATRE FOR CHILDREN.** (2-4 cr; prereq 1101 or ¶1101, #) Graham, staff  
The techniques and practice of performing for audiences of children. (GrD)
- 5134. ADVANCED CREATIVE DRAMA.** (4 cr; prereq 5131, teaching experience and #, limited to 15 students) Graham  
In-depth study of philosophy, techniques, and materials; experience in creating, leading, and criticizing beginning and advanced sessions with classmates and children. (GrD)

## 6. Design and Technical

- 3513. TECHNICAL THEATRE PRODUCTION I.** (4 cr; prereq 1504) Josal, Miller  
Theory and practice of design and execution of stage scenery and properties. (GrD)
- 3515. TECHNICAL THEATRE PRODUCTION II.** (4 cr; prereq 1504) Montgomery, Phillips  
Theory and practice of design and execution of stage costuming and stage lighting. (GrD)
- 5512. ADVANCED PROBLEMS IN COSTUMING.** (4 cr; prereq 3515, 3711 or #) Phillips  
Theory and design of costumes; special projects. (GrD)
- 5514. ADVANCED PROBLEMS IN SCENE DESIGN.** (4 cr; prereq 3513, 3711 or #) Josal, Miller  
Theory and design of stage scenery; special reports and projects. (GrD)
- 5516. ADVANCED PROBLEMS IN STAGE LIGHTING.** (4 cr; prereq 3515, 3711 or #) Montgomery  
Theory of stage lighting. Special projects and reports. (GrD)
- 5518. ADVANCED PROBLEMS IN STAGE PROPERTIES.** (4 cr; prereq 3513, 3711 or #) Josal  
Theory and design of stage properties. Special projects and reports. (GrD)
- 5519. SOUND FOR THE THEATRE.** (2 cr; prereq #) Seifert  
Theory and technique of producing and amplifying sound for the theatre. (GrD)
- 5520. COSTUMING CRAFTS AND TECHNIQUES.** (4 cr; prereq 3515, 5512 or #) Garceau  
Guthrie Theatre Costume Shop. Theory and practice in costuming in professional and repertory theatres. (GrD)

## 7. Directing

- 3708. PLAY PRODUCTION IN THE SECONDARY SCHOOL.** (4 cr; prereq 1504; §3711, 5711) Adey  
Fundamentals; analysis and production of selected scenes. (GrD)
- 3709. PLAY PRODUCTION IN THE SECONDARY SCHOOL.** (4 cr; prereq 3708 or 3711 or 5711 and #; §5712) Adey  
Administration of dramatics program in high school. Direction of one-act plays. (GrD)
- 3711. STAGE DIRECTION.** (4 cr; prereq 1321; §3708, 5711) Huffington  
Theory of direction: Concept and analysis. Exercises in blocking and production of short scenes. (GrD)

## Course Offerings and Major Sequences

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- 5711. STAGE DIRECTION.** (4 cr; prereq 1321; §3708, 3711)  
Theory of direction: concept and analysis. Exercises in blocking and production of short scenes. (GrD)
- 5712. STAGE DIRECTION.** (4 cr; prereq 3708 or 3711 or 5711; §3709)  
Theory of rehearsal and production problems and direction of two one-act plays. (GrD)
- 5716. STAGE MANAGEMENT FOR THE THEATRE.** (4 cr; prereq 3711 or 5711 and Δ)  
Montgomery  
Stage management as a specialized area of theatre. The theory and technique of rehearsal and performance; organization and management in educational, repertory, and regional theatre. (GrD)
- 5718. THEATRE MANAGEMENT AND PROMOTION.** (4 cr; prereq 1504 or ¶1504 or §)  
Loppnow  
Theory and practice in ticket office procedures, house management, publicity, and promotion; special problems in college, community, children's, and professional theatre. (GrD)
- 5721.2. PRODUCTION OF TELEVISION DRAMA.** (4,4 cr; prereq 3711 or equiv) Frost  
Televised drama produced and analyzed with reference to adaptation of techniques and theory from stage production. Primarily for theatre majors. (GrD)

## THEOLOGICAL TRAINING

The pre-theology interdepartmental major is administered by the director of the Religious Studies Program, 311 Folwell Hall.

The pre-theology major is one of a number of preparations for study at a seminary; departmental majors (e.g., history, sociology, classics, Hebrew, philosophy) are approved by nearly all seminaries (see the *Statement on Pre-Seminary Studies*, published by the American Association of Theological Schools, available at 311 Folwell). Students interested in religious studies, but not in entering a seminary, should not elect this program, but should consult the statement on Religious Studies (page 193). Students planning to enter seminary training, whether or not they elect the pre-theology major, are urged to consult with one of the advisers on preparation for theological training, as well as with their major advisers.

Students preparing to enter a particular seminary (or graduate department of theology) should contact such seminary or department (or the theological education office of their own denomination) to learn specific requirements or recommendations that apply to them, and to request the seminary catalog. Visits to nearby seminary campuses or interviews with visiting seminary representatives can be arranged through the Religious Studies office.

**Major Sequence for B.A.:** 1. *Required background courses*—Greek (or Hebrew) is strongly recommended, particularly if a student is beginning language study; Phil 1001 or 1002; Psy 1001; Hist 1051,2,3, or 3051,2,3; Greek or Hebrew recommended. 2. *Major requirements*—Upper Division cr chosen as follows: 8 cr minimum from art, art history, music, or theatre arts; 12 cr minimum in medieval and modern history (at least 9 in modern history); 8 cr minimum in English (above English composition); 10 cr minimum in Greek, Hebrew, Latin, or a modern foreign language, or in a foreign literature in translation, or in humanities courses involving literature; 15 to 20 cr in philosophy, including history of philosophy (Phil 3002,3,4; 12 cr minimum in anthropology, economics, geography, political science, sociology, speech, or psychology).

## TURKISH

See Middle Eastern Languages

## URBAN STUDIES

**Program Advisory Staff:** John Adams, Geography; Brian Aldrich, Sociology; Hyman Berman, History; John Borchert, Geography; Roger Clemence, Architecture, and director, Urban Education Center; David Cooperman, Sociology; Daniel Gerlough, Civil Engineering (Urban Transportation); Hosni Iskander, Architecture (Urban Planning); John Modell, History; Herbert Mohring, Economics; Arthur Naftalin, Public Affairs; William Rowe, Anthropology; Thomas Scott, Political Science; John Webb, Geography.

The cross-disciplinary major in urban studies is appropriate for those who prefer credited field-work experiences, integrative urban studies courses, and a modest contact with the offerings of a number of urban-oriented disciplines to the more concentrated and deeper penetration of a disciplinary major. Three degree programs are available: (1) a general B.A. program that may also prepare the qualified student for graduate work in urban studies; (2) a job-oriented B.S. program; and (3) a B.A. degree preparatory to graduate work in one of the disciplines contributory to urban studies. Some students may choose to extend the third program to a double major combining the integrative materials, the course breadth, and the field-work of an urban studies major with the depth requirements of a correlated disciplinary major.

**Goals, Purposes, and Operational Objectives**—These degree programs are designed to aid students in coping creatively with complex urban problems. The program's purposes are the development of broad cross-disciplinary foundations for students who expect to enter positions in the urban professions in which many specialized skills will best be learned on the job; provision of a basis on which students can build courses of graduate study in urban planning, law, the social welfare professions, or the social and environment sciences; and the opportunity to test at the undergraduate level the feasibility of a variety of social change and social service strategies in the context of field work, independent research, and community service. For further information see the *Urban Studies Bulletin* or consult with the program adviser, Susan M. Christopherson, 235 Social Sciences (373-4613), or the program assistant, Alice B. Kingsley, 232 Social Sciences (373-3507).

**Advising**—The central advisory office for Urban studies (106 Johnston Hall) maintains a supply of the *Urban Studies Bulletin*, provides an updated list of appropriate courses, and supplies information on satisfying field experience requirements. At least one faculty member from each contributing discipline has been designated as an urban studies adviser.

Seniors (and some juniors) in the program assist in advising and in updating evaluations of courses and field experiences as an aid to other students in the program.

**Curricular Components**—Certain experiences are required as part of all urban studies majors. Other experiences are either strongly recommended but not required, or required only in certain programs.

**Required components** include participation in the introductory urban studies colloquium and in at least two quarters of the cross-disciplinary advanced seminars in urban studies; demonstration of acceptable proficiency in at least one area of communication skills (i.e., speech, writing, audio-visual communication, group dynamics, or others); demonstration of acceptable proficiency in such areas as demography, statistics, systems analysis, simulation gaming, market analysis, linear programming, cartography (normally at least two such areas); and completion of at least 75 Upper Division cr., at least 36 of them from courses listed in the *Urban Studies Bulletin* or from appropriate field experience credits.

*Recommended components* include completion of at least one experience with directed study (alone or collaboratively) on an acceptable topic; involvement during at least two quarters (summer placements are acceptable) in a field experience which contributes to the student's educational objectives; demonstrated familiarity with the urban policy-making process coupled with indication of a capacity to criticize and improve this process creatively; participation in an internship experience designed to aid in the accomplishment of other curricular components that enlarge the student's "real world;" and completion of at least one advanced-level experience demonstrating the student's capabilities as an integrator (i.e., capacity to articulate the multi-faceted implications of a proposed solution to a complex problem).

## ZOOLOGY (Zool)

College of Biological Sciences

**Staff:** Magnus Olson, *head*, 108 Zoology; Franklin Barnwell, Donald Gilbertson, Stuart Goldstein, William Herman, Ross Johnson, Norman Kerr, Robert McKinnell, David Merrell, Philip Regal, William Schmid, Judson Sheridan, Nelson Spratt, Jr., James Underhill, Franklin Wallace, Dwain Warner

Zoologists study animals: their form, function, development, systematics, and evolution.

A departmental major leading to the B.S. is available through the College of Biological Sciences.

**General Education**—Courses especially appropriate for nonmajors include 3096, Biol 1106.

### LOWER DIVISION COURSE

**Biol 1106f,w,s. GENERAL ZOOLOGY.** (4 cr; §Biol 3011, Zool 1013; prereq Biol 1011)

Lectures and laboratory. Survey of animal phyla; considerations of structure, function, behavior, adaptation, and evolutionary relationships.

### UPPER DIVISION COURSES

**3096f. ORGANIC EVOLUTION.** (4 cr; prereq 1013 or Biol 1106, 1002, or 3011) Merrell

Survey of evidence for and causes of evolution.

**3980f,w,s. UNDERGRADUATE SEMINAR.** (1 cr per qtr; prereq sr, major in biological sciences, §) Staff

Discussion of biological topics of current interest.

**3990f,w,s. INDIVIDUAL WORK IN SOME SPECIAL DISCIPLINE.** (Cr ar; prereq 1013 or Biol 1106, 1002, or 3011 and §) Staff

**5052f. GENERAL AND COMPARATIVE EMBRYOLOGY.** (5 cr; prereq 1013 or Biol 1106, 1002, or 3011) Spratt

Embryological development of vertebrate and invertebrate forms.

**5066f,s. HISTOLOGY.** (5 cr; not open to regular 3-yr premed or predent students; prereq 1013 or Biol 1106, 1002, or 3011) Olson

Microscopic structure of tissues and organs.

**5071s. INVERTEBRATE BIOLOGY.** (5 cr; prereq 1013 or Biol 1106, 1002, or 3011 or §) Barnwell

The morphology, physiology, behavior, ecology, and evolution of the invertebrate groups. In the laboratory: study of living marine, freshwater, and terrestrial representatives.

**5077s. INTRODUCTORY ORNITHOLOGY.** (5 cr; prereq 1013 or Biol 1106, 1002, or 3011) Warner

Laboratory and field course in structure, classification, distribution, migration, habits, habitats, and identification of birds.

**5093f. INTRODUCTION TO ANIMAL PARASITOLOGY.** (5 cr; prereq 1013 or Biol 1106, 1002, or 3011) Wallace

Elementary course dealing with parasitic protozoa, worms, and arthropods, and their relation to diseases of man and animals.

- 5104f. COMPARATIVE ANIMAL PHYSIOLOGY.** (5 cr; prereq 1013 or Biol 1106, 1002, or 3011, Chem 3302 or #) Schmid  
An introduction to animal physiology, emphasizing functional aspects of organ systems from a comparative viewpoint.
- 5107f. PROTOZOOLOGY.** (4 cr; prereq #; offered 1973-74 and alt yrs) Kerr  
Introduction to taxonomy, morphology, physiology, development, and genetics of free-living protozoa.
- 5113f. PHYSIOLOGY OF EXCITABLE CELLS.** (4 cr; prereq 5104 or Biol 5052 and #) Sheridan  
In-depth study of basic electrical and chemical properties of nerve, muscle, and sensory receptor cells.
- 5121s. ICHTHYOLOGY.** (4 cr; prereq 15 cr incl 1013 or Biol 1106, 1002, or 3011) Underhill  
Taxonomy and habits of North American fishes, especially those in the Upper Mississippi drainage area.
- 5124f. VERTEBRATE BIOLOGY.** (4 cr; prereq 1013 or Biol 1106, 1002, or 3011 and #) Underhill  
The vertebrates: their biology, taxonomy, and distribution.
- 5125f. VERTEBRATE FAUNA LABORATORY.** (2 cr; prereq 5124 or ¶5124 and #) Underhill  
Deals with the vertebrate groups native to Minnesota and neighboring states.
- 5128s. HERPETOLOGY.** (5 cr; prereq 5124) Regal  
The distribution, classification, and evolution of amphibians and reptiles of the world. Physiological, morphological, and behavioral aspects of adaptive trends. Laboratory and lectures.
- 5129s. ADVANCED MAMMALOLOGY.** (5 cr; prereq 5124 or #; offered 1973-74 and alt yrs) Birney  
Recent families and orders of mammals of the world and of genera and species of mammals of North America; emphasis on morphology, evolution, and zoogeographic history.
- 5134w. GENERAL AND COMPARATIVE ENDOCRINOLOGY.** (3 cr; prereq Biol 3011, 3021, Chem 3302 or #; offered 1973-74 and alt yrs) Herman  
Survey of structure and function of invertebrate and vertebrate endocrine systems.
- 5135s. GENERAL AND COMPARATIVE ENDOCRINOLOGY LABORATORY.** (2 cr; prereq 5134, #; offered 1973-74 and alt yrs) Herman  
Individual laboratory investigations of selected problems of endocrinology. Topics arranged in consultation with instructor.
- 5136w. ADVANCED GENERAL AND COMPARATIVE ENDOCRINOLOGY.** (2 cr; prereq 5135 or #; offered 1972-73 and alt yrs) Herman  
Lectures on specific areas of current endocrinologic interest.
- 5144w. PARASITIC PROTOZOA.** (4 cr; prereq 15 cr incl 1013 or Biol 1106, 1002, or 3011, #) Wallace  
Structure, life histories, and economic relations of protozoal parasites of man and animals; laboratory diagnosis.
- 5146s. EXPERIMENTAL PARASITOLOGY.** (4 cr; prereq 5093 or #) Gilbertson  
Discussion sessions and laboratory investigations designed to illustrate the relationships between metazoan parasites and their hosts.
- 5164s. FINE STRUCTURE OF ANIMAL CELLS.** (4 cr; prereq Biol 5601, #) Johnson  
Cell structure and function are approached on an organelle basis, emphasizing ultra-structural research. Topics will include macromolecular synthesis, bioenergetics, cell movement, and cell division.
- 5165s. ADVANCED CYTOLOGY LABORATORY.** (2 cr; prereq 5164 or ¶5164, #) Johnson  
Emphasis on individual projects. These may include autoradiography, cell culture, cell fractionation, or electron microscopy.
- 5169s. PHYSIOLOGICAL ECOLOGY.** (4 cr; prereq 5104, Biol 3041 or 5052, #, statistics recommended) Schmid  
Functional adaptations of organisms to various physical and biotic factors of the natural environment.
- 5171w. GENETICS AND SPECIATION.** (4 cr; prereq 15 cr biology incl genetics, #) Merrell  
Application of genetic principles to problems of speciation and evolution.
- 5814su. NATURAL HISTORY OF INVERTEBRATES.** (5 cr; prereq 1013 or Biol 1106 or 1002; offered at Itasca)  
Taxonomic and ecological survey of local fauna, detailed and independent ecological study of several taxonomic groups.

## Course Offerings and Major Sequences

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- 5819su. NATURAL HISTORY OF THE VERTEBRATES.** (5 cr; prereq 1013 or Biol 1106 or 1002; offered at Itasca)  
Taxonomic and biological survey of the local fauna; detailed and independent study of the vertebrate classes (exclusive of the birds).
- 5834su. FIELD ORNITHOLOGY.** (5 cr; prereq 1013 or Biol 1106 or 1002; offered at Itasca)  
Field and laboratory studies of ecology and life histories of the birds in the Itasca Park region.
- 5843su. ANIMAL PARASITES.** (5 cr; prereq 1013 or Biol 1106 or 1002; offered at Itasca)  
Parasites of local fauna with special attention to helminths.
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## FORMER CLA DEGREE REQUIREMENTS

In some cases CLA bachelor's degree requirements may differ from those shown on pages 7 to 15. The alternate requirements are optional for students who were registered in CLA Upper Division before Fall 1972 and those in Lower Division at any time within the 2 years from Summer 1970 through Spring 1972.

The different requirements (described in detail in the 1970-1972 *CLA Bulletin*, pages 8 to 16) offer these choices to such students:

1. Freshman English — Engl 1001/2/3 or 1311/2/3 or Comm 1001/2/3.
2. Foreign language — 5 qtrs of one foreign language, or equiv in high school work or credit by examination (never fewer than 23 credits)
3. Group distribution — 9 or more credits in Group A  
9 or more credits in Group B  
18 or more credits in Group C  
9 or more credits in Group D

Quantity (number of credits in different categories) and quality (GPA) requirements remain the same.

(Graduation requirements for students who entered CLA before Summer 1967, or transfer students with 39 or more cr who entered the College before Summer 1969, are described on page 259-261 of the 1970-1972 *Bulletin*.)

**Former A. L. A. Requirements**—Changes in requirements for the Associate in Liberal Arts degree follow the patterns indicated above. Questions should be addressed to your College office.

# CLA PREPARATION FOR DEGREE WORK IN PROFESSIONAL COLLEGES

## Section III

**All-University Requirement**—Every student who earns a University of Minnesota bachelor's degree must have satisfied the University Senate's stipulations for minimum work in each of four fields of general knowledge: Communication, Language, Symbolic Systems (*Group A*); Physical and Biological Sciences (*Group B*); Man and Society (*Group C*); Artistic Expression (*Group D*). Since each degree-granting unit of the University defines these requirements in its own way, they differ somewhat from college to college (for CLA requirements, to which the others are often similar, see pages 7 to 15). In general, a student who completes 90 credits in CLA—most professional schools require or prefer 2 years of liberal education as prerequisite to admission—is likely to have met most of the "group distribution" requirements. For specific information about the unit in which your interest lies, as well as for other necessary information, you should consult its office or obtain its bulletin from the Office of Admissions and Records.

**Other Common Requirements**—It is usually expected that English composition (formerly called freshman English) or exemption from it will be part of your pre-professional preparation. You must have maintained a GPA of at least 2.0—often higher—for consideration. Most units give credit only for required courses taken on the A-F system (in some units electives may be taken under SN, within University limitations).

The sections that follow describe *briefly* admission and achievement policies of University of Minnesota units that require CLA work as preparation for professional or specialized work. But consultation with department advisers and bulletins, which are at times more up-to-date than a biennial *Bulletin*, is constantly necessary.

## SCHOOL OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE

The School of Architecture and Landscape Architecture offers two professional degrees: Master of Architecture (M. Arch.) and Bachelor of Landscape Architecture (B.L.A.). The M. Arch. degree requires 4 years of undergraduate study and 2 or more at the graduate level. (For a limited period, the School will continue to offer the professional degree Bachelor of Architecture (B. Arch.), a 5-year undergraduate course.)

Attainment of the B.L.A. requires 5 to 6 years of undergraduate study. Undergraduate work for both the M. Arch. and the B.L.A. may be accomplished through the 4-year bachelor of environmental design program offered in the Institute of Technology; the 4-year B.A. (with a major in architecture or landscape architecture) in CLA; or similar programs offered by other institutions.

Applicants for admission should consult an adviser in architecture or landscape architecture, 110 Architecture Building, as early as possible. See also Section II of this Bulletin and pages 55-65 of the *Institute of Technology Bulletin for 1971-73*.

## COLLEGE OF BIOLOGICAL SCIENCES

The College of Biological Sciences offers the bachelor of science degree with majors in biology, biochemistry, botany, microbiology, or zoology. (One may also work toward a major in CLA in biology or microbiology. See Section II.) What-

## Preprofessional Curricula

ever the major, each student must complete the core sequence of courses in biology, the physical sciences, and mathematics.

The core sequence recognizes these facts: That there is an underlying similarity in the functioning of all biological systems when viewed at the molecular and cellular levels; that in training students for careers as biological scientists great emphasis must be given to training in the physical sciences and mathematics; and that core courses, to maintain student interest, must emphasize physical science methodologies in the solution of biological problems.

**Admission Requirements**—Students normally apply for admission to the College of Biological Sciences during their third sophomore quarters, for entry in the succeeding fall.

*Specific requirements* are: Equivalent of 90 qtr cr with at least 2.0 GPA; completion of an introductory biology course (usually Biol 1011) with a 2.5-or-better grade, or exemption; Chem 1004/5; Math 1211/21/31.

Students who wish to major in this area should seek assistance in program planning, as soon as they are fairly certain of such intent, in 104 Zoology or 123 Snyder Hall, CBS offices.

## COLLEGE OF BUSINESS ADMINISTRATION

The prebusiness curriculum combines liberal education with preliminary basic courses in business administration and economics. To advance his recognition of the widening social responsibilities of business management, the student is urged to elect courses in several fields outside business administration and economics in addition to fulfilling the requirements stated below.

To be eligible for admission to the College of Business Administration, the student must present approximately 90 credits, earned in a recognized college or university, with a GPA of 2.0 or better.

The College offers courses leading to the degree bachelor of science in business (regular or accounting program). Students interested in preparation for business careers should obtain as soon as possible prebusiness program planning folders from the College Counseling office, 206 Business Administration.

CLA students preparing to enter the College must meet these prebusiness requirements:

English composition requirement, 8-12 cr; mathematics, 10 or more cr (Math 1141 or 1131 or 1201, 1142 or 1211 and 1221); Psy 1001; Soc 1001. Students with inadequate preparation may be required to take Math 0009 before taking 1141 or 1131; high school trigonometry or Math 1008 is prerequisite for 1201. Students who plan to go beyond elementary calculus should take 1211 and 1221 rather than 1142.

Groups B (9-10 cr) — courses including laboratory chosen from biological or physical science. Among courses that may be used to meet this requirement are Anat 1004; Ast 1008, 1009, 1011; Biol 1001/2†, 1009, 1011, 1012, 1101, 1102, 1103, 1104, 1106, 3001, 3003, 3022, 3109, 5103, 5105; Chem 1004/5†, 1006, 1031/2/3, 1301, 3100 with 3101; Geo 1001, 1002, 1007, 1008, 1111, 1112, 1601, 3101, 3401, 5004; Geog 1425; NSci 1004/5†, 1006; Phys 1014/24 with labs 1015/25, 1031/2, 1041/2, 1104/5/6, 1121/2, 1271/81/91 with labs 1275/85/95, 3801; IT 3101, 3201, 3301, 3401. The *Pre-Business Program Planning Folder*, available in CLA offices or the Business College office, lists others.

Group C (6-7 cr) — Econ 1001, 1002.

Group D (8 cr) — Afro (all courses), AmIn (all courses), AmSt 1101 through 3970, Arch 1021, 5051, 5052, 5053, 5054, 5055, 5056, ArtH (all courses), Arts (all courses) Clas 1001 through 1046, English Literature (all courses), foreign literature (all courses), humanities (all courses), music (all courses), Spch 1104, 3201, 3202, 3203, 3204, 5201, Theatre (all courses).

Business courses (12-13 cr)—Acct 1024/5/6 or 1050/1, QA 1050.

Electives to complete the approximately 90 cr required for admission. Students planning to enter the accounting program must complete Comp 1027.

## SCHOOL OF DENTISTRY

The dentistry program consists of at least 2 years—usually more—of liberal arts work, during which the students are registered in the Arts College, plus 4 years in the School of Dentistry, from which they may earn the degree of Doctor of Dental Surgery (D.D.S.). At the end of the second year in dentistry, students in good standing are eligible for the bachelor of science (B.S.) degree if they have met the liberal arts distribution requirements described in the *School of Dentistry Bulletin*.

**Requirements for Admission: General**—minimum of 90 credits (60 semester hours) from an accredited liberal arts college is acceptable, but 3 or more years of liberal arts study are preferred. The minimum scholastic average for consideration is 2.0; admission is on a competitive basis, however, and an average well above 2.0 is usually necessary.

**Required Courses and Credits** (the science courses must include laboratory instruction):

*English* — 12 cr. The requirement may be met by basic English courses plus work in composition, literature, etymology, speech, or humanities.

*General Biology and General Zoology* — 10 cr in Biol 1011/Zool 1013. For students with the necessary chemistry prerequisites, Biol 3011 is an alternative to Zool 1013.

*Physics* — 10-15 cr (full sequence). Phys 1104/5/6 or 1031/2. (1014/24 and 1015/25 sometimes may be substituted.)

*Chemistry and Organic Chemistry* — ——— cr, Chem 1004/5/6, 3301/2; or 1004/5, 3100/1, 3301/2.

*Mathematics* — Background at least through college algebra as demonstrated by college validation or credit: Math 1111 or 1141 or 1201. Students anticipating graduate work beyond the D.D.S. may elect additional credits in higher mathematics and the sciences. For example: Math 1141,2, 1211,21,31.

Only under unusual circumstances will 5 credits (SN basis) be accepted for required courses. It is expected that 2-year applicants will not have exceeded 5 percent of total credits on SN in elective courses, 3-year students 10 percent, and 4-year students 15 percent.

Elective credits should be selected to give the student as broad and liberal an education as feasible. Electives in psychology, speech, and foreign language are preferred. Others can be chosen from anthropology, basic drawing, classics, economics, etymology, genetics, history, humanities, logic, political science, and sociology.

No more than 5 credits in ROTC courses are accepted; credits in physical education, human anatomy, physiology, histology, and microbiology are not counted as part of the 90-credit minimum.

Information as to Minnesota courses that meet the requirements described above may be obtained from the School of Dentistry or the pre-dentistry adviser in 30 Johnston Hall.

**Dental Admission Test**—The Dental Admission Test required of all applicants is given three times a year, usually in October, January, and April. A spring date is discouraged for candidates desiring admission the same year. The first quarter of sophomore year is a good time to take the test; another is soon after courses in biology and general chemistry have been completed. Although the test generally measures aptitudes rather than special knowledge, some questions are specific and detailed and review in those areas is advisable. The DAT battery includes tests of manual dexterity (chalk carving examination), reading comprehension, space relations, verbal and quantitative ability, and biology and chemistry.

Application forms for the DAT may be obtained from the Office of Admissions and Records, 6 Morrill Hall.

## **Preprofessional Curricula**

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**Residence Requirements**—First preference is given to Minnesota residents, second to residents of neighboring states without dental schools, and third to other nonresidents who have compelling reasons for attending the University school. Nonresidents are accepted only if they offer outstanding scholarship records and unusual promise for the study of dentistry and careers in science.

Preference in admissions will go to applicants who have high scholastic records in college; who make satisfactory scores on the DAT; who will have completed preliminary requirements by the end of the academic year previous to the desired date of admission; who, after provisional acceptance, maintain their former academic records; and who in all respects give promise of becoming successful students and dentists of high standing.

**Application Procedures**—Application blanks may be obtained from the Office of Admissions and Records, 6 Morrill Hall. Applications should be filed between October 1 and April 15 of the academic year prior to the fall quarter in which the applicant desires to enter the School of Dentistry. Late application in this period may be to the student's disadvantage. Applicants may be asked to appear for interviews at the discretion of the Committee on Admissions. The committee readily grants interviews to applicants who request them.

**Seven-Year Program in Arts and Dentistry Leading to Degrees of Bachelor of Arts (CLA) and Doctor of Dental Surgery (School of Dentistry)**—Students in this combined course must complete degree requirements of CLA and must earn 135 credits including the usual predoctoral requirements. Of the 135 credits, 45 must be earned in residence in the CLA Upper Division and at least 30 in Upper Division courses.

Since the major area is pre-dentistry with an emphasis in the human biological sciences, a minimum of 15 of the Upper Division elective credits must be in the humanities and social sciences. An average of 2.0 must be maintained in all University of Minnesota courses, in all transfer credits appropriate to the B.A. degree, and in all Upper Division courses.

During his first year in dentistry, the student elects work in Upper Division, subject to the approval of the Scholastic Committee. The course work of the first two years in dentistry, when completed according to the standards of the school, is accepted in lieu of the major for the B.A. degree. The D.D.S. degree is earned by two more years of work.

## **COLLEGE OF EDUCATION**

Students who wish to receive teacher's certificates from the State of Minnesota upon graduation from the University (Minneapolis and St. Paul campuses) must complete the B.S. degree programs in the College of Education. Students usually begin as freshmen in the College of Liberal Arts and transfer to the College of Education after 1 or 2 years of preprofessional general education.

**Controlled Growth**—In keeping with the University policy of controlled growth, the number of applicants that can be accepted in many of the college programs on the Minneapolis campus is limited. Students who have completed the preparatory curricula and meet the minimum requirements will be considered for admission on a competitive basis, with overall and major grade averages among the factors to be considered. Information about the Education controlled programs is available at the Student Personnel Office, 206 Burton Hall.

**Special Requirements in Drug Education and Physical Education**—State law requires that all candidates for teaching certificates complete course work in drug education and physical education. Students in the College of Education must complete these requirements before graduation; they may do so before making applica-

tion for transfer to the College. The drug education requirement is met by completing PubH 3004. The physical education requirement (3 cr) may be met by completing appropriate activity courses in physical education.

**Curricula in Which Students Normally Spend at Least One Year in CLA—**Art Education, Business Education, Distributive Education, Music Education, Physical Education, Recreation and Park Administration.

**Requirements for Transfer to College of Education in Majors Listed Above:**

1. Students planning to transfer to these majors are expected to complete 45 credits with a 2.0 overall average, and a 2.5 in courses taken in the major. During freshman year, they take CLA courses from appropriate curricula described in the *College of Education Bulletin*.
2. Art education students are asked to include in their freshman work 12 cr of art, with one course in at least three of five areas: art history, design theory, drawing and painting, sculpture, design in materials.
3. Industrial education students should include mathematics, physical science, and English in the freshman year.
4. Music education students should elect in freshman year courses in the materials and structure of music (6 cr), sight-singing and ear-training (6 cr), individual applied music or major instruments (6 credits), and University chorus, band, or orchestra (3 cr).
5. Physical education majors must have completed at least one quarter of the science requirement, the youth experience form, and three physical education activity courses, and meet the required health rating. See *College of Education Bulletin* for details.
6. The English composition requirement must be met in the freshman year.
7. Courses in the major should be taken on the ABCDN basis.

**Application Procedures for Students Who May Transfer as Sophomores**

1. A student should apply for transfer *early* in the quarter in which he will meet the requirements listed above (usually the spring quarter of freshman year). The deadline for application for programs which limit enrollment is the end of the first week of the applicant's final quarter in the College of Liberal Arts.
2. Students make application at Transfer window, 6 Morrill Hall, and complete clearances as outlined on clearance form issued at time of application for transfer.

**Curricula in Which Students Normally Spend 2 Years in CLA Before Transfer —**

Anthropology, Biological Science, Chemistry, Earth Science, Economics, Elementary Education, English, French, Geography, German, History, Language Arts, Latin, Mathematics, Physics, Political Science, School Health, Sociology, Spanish, Speech.

**Requirements for Consideration for Transfer to an Academic Major in the College of Education**

Students must complete 15 cr in the major with a 2.5 average, and in many majors (not all) a 10-cr minor with 2.0, all on the ABCDN basis. They must earn 48 cr that include: *Group A* (8 cr)—English, foreign language, communication skills; linguistics, rhetoric, logic, philosophic analysis; mathematics (English composition may not be counted); *Group B* (12 cr); *Group C* (16 cr, including Psy 1001); *Group D* (12 cr)—literature, humanities, art, music (English composition may not be counted). In addition, the requirements listed on page 8, all on the ABCDN basis.

Students should plan carefully the Lower Division courses in intended majors that can be included in pre-education work in the Arts College. They should review specific requirements in the *College of Education Bulletin* for courses to include in major or minor.

## **Requirements for Consideration for Transfer to Elementary Education Curriculum**

Students who complete 2 years of a liberal education with a C (2.0) average, who have Psy 1001, and who lack not more than 12 credits of the freshman and sophomore requirements listed below are eligible to be considered for admission.

Although other factors will be considered, preference will be given to applicants who have GPAs of 2.50 and above. Students are admitted to the program only in the fall and winter quarters.

**Freshman-sophomore requirements**, all A-D with the exception of electives: Group A (9 cr)—Math 1005/6, and either Spch 1101, 1102, or 1106; Group B (15 cr), chosen from astronomy, biochemistry, biology, botany, chemistry, ecology, geology, genetics, natural science, physics, zoology; Group C (17 cr), including Psy 1001 and courses chosen from anthropology, economics, geography, history, political science, social sciences, sociology; Group D (12 cr)—Mus 1001, Art Education 3001, and courses chosen from art, English, humanities, literature, music, theatre; electives to complete 90-cr total toward an academic minor.

## **Application Procedures for Elementary and Secondary Academic Majors**

1. Apply for admission to the College of Education at 6 Morrill Hall not later than the first week of spring quarter for consideration for fall admission; and not later than the first week of fall quarter for winter admission. This allows sufficient time to schedule psychological tests and speech and health examinations prior to registration for next quarter.

2. Complete clearances as outlined on form issued when application for transfer is made.

Students may talk at any time with a staff member in the Student Personnel office, 206 Burton Hall, about entrance requirements, arrangements for transfer, educational and vocational information, or choice of careers in teaching.

## **Combined CLA-Education Programs**

Students who qualify may combine CLA and College of Education programs and earn both B.A. and B.S. degrees. Such students transfer to Education at the appropriate time, and file statements of intent to receive B.A. degrees with the appropriate CLA Upper Division office.

## **LAW SCHOOL**

**Requirements for Admission and for Degree in Law**—The Law School offers the professional degree juris doctor (J.D.) which qualifies one who earns it for bar examinations and admission to practice. The course of study in the Law School requires academic years.

Admission to the Law School requires the B.A. or its equivalent. The degrees B.S. and B.B.A. with well-balanced programs will be accepted as the equivalent of the B.A.

Applications for admission to the Law School must be submitted by March 1 for the class entering Law School the following September. Late applications will be considered only if space remains in the entering class.

Details of admission requirements and the Law School program may be found in the *Law School Bulletin*. A student's prelaw scholastic record and the results of the Law School Admission Test given by the Educational Testing Service, will be considered in determining his admissibility. This test is given in February, April,

July, October, and December of each year at the University as well as at many other test centers throughout the world. Students should plan to take the test in October, December, or February of the year in which they make application to the Law School. Information pamphlets and application blanks for the test are obtainable from the office of the Law School, 105 Fraser Hall; from the Student Counseling Bureau, 101 Eddy Hall; or from the Educational Testing Service, Princeton, NJ.

The Law School urges prelaw students to complete Comp 3095 in junior year.

## LIBRARY SCHOOL

Basic minimum preparation for a professional career in librarianship is provided by an M.A. degree. The prerequisite for admission to the M.A. program is a B.A. with a broad liberal arts background in the humanities, social sciences, and sciences and a strong concentration in at least one subject field. Inquire at the Library School office, 3 Walter Library, about preprofessional planning during junior and senior years.

## MEDICAL SCHOOL

Most students admitted to Medical School will complete 4-year degrees before they begin medical study. Prospective students are strongly urged to plan such programs.

**Premedical Advising**—Students become eligible for Medical School admission upon completion of required premedical courses (see below) as part of at least 135 credits of college work. But students who hope for careers in the health care areas are strongly urged to consult premedical advisers in the Health Science advising office, 30 Johnston Hall, early in their college experience. There such a student will be assigned to a premedical adviser for aid in program planning, information about college requirements and about specific courses, premedical planning, and guidance in applications to medical schools.

The advising office is staffed by advisers for (1) freshman premedical students, (2) sophomore and Upper Division premedical and pre dental students, and (3) those specializing in other health science fields. The Health Science Library in the office provides career information about medical and paramedical fields; bulletins with admission information for all U.S. and Canadian medical schools; and information about tests required of applicants to the Minnesota school.

**Premedical Requirements**—There is no prescribed premedical major—any required collegiate-level major is acceptable. Natural science majors, contrary to common belief, have no advantage at admission over liberal arts majors; indeed the Medical School believes that liberal arts studies contribute greatly to rounded professional accomplishment.

The Admissions Committee has approved the following courses as fulfilling premedical requirements: English composition or Communication (12 cr), or—if exempt—a year of literature or humanities; Math 1211, 1221 (10 cr) (higher algebra and/or trigonometry if needed as prerequisites); Chem 1004/5, 3100, 3101, 3301, 3302 (25 cr); Biol 1011 plus 5 cr of biology, zoology, or genetics (5 cr); Phys 1104/5/6 (15 cr) or 1271/81/91 (12 cr); at least 27 cr in humanities, social science, foreign language, and other liberal arts courses (humanities and literature recommended).

A premedical student with an outstanding academic record in science and mathematics, especially if he contemplates a career in research or academic medicine, will be strongly advised to elect work in these fields beyond the requirements level. Though a reading knowledge of a foreign language is not a requirement for admission, it is especially recommended for students interested in medical research or graduate medical training.

**Application Procedures and Admission**—Application forms for the American Medical College Application Service (AMCAS) may be obtained in 6 Morrill Hall or the Health Science Advising Office in Johnston Hall. They must be filed before the November 15 that precedes the fall quarter in which entry is desired.

Before his AMCAS application is filed, however, an applicant must take the Medical College Admission Test (MCAT). This test is administered each May and October through the Student Counseling Bureau, 101 Eddy Hall. Registration forms and information about dates may be procured from 101 Eddy or the Health Science Advising Office.

Each applicant must also complete the Strong Vocational Interest Blank and the Minnesota Multiphasic Personality Inventory (MMPI), which are administered in a group session two weeks after the May MCAT. Registration is in 101 Eddy. Students who miss this session will be notified by the Medical School of a later test date.

Recommendation forms in the AMCAS packet are to be filled out, upon the request of the applicant, by individuals with direct knowledge of his personal attributes and qualifications for a career in professional medicine. The Medical School may request further information from the applicant's college faculty advisers and his high school counselors. The Medical School gives strong preference to residents of Minnesota and of neighboring states that do not have 4-year medical schools.

**Combined Degree Option Plans**—Under either of two plans, students who have demonstrated superior ability may enter Medical School after three undergraduate years and, usually in three years more, earn both an M.D. and a bachelor's degree. The Medical School approves these programs only in exceptional cases, since it places heavy emphasis on breadth of education and maturity.

1. CLA students may apply at the beginning of their junior years for admission to Medical School a year later in lieu of the senior CLA year. If they complete 45 credits (30 in UD courses and 14 outside the medicine major field) while in Upper Division, meet other CLA degree requirements, and complete the first year of Medical School, they will be awarded B.A. degrees (two years more study is necessary for the M.D.). Transfer students who enter Upper Division for the junior year may follow this plan.

2. Students who have completed three years of college work but who have not completed CLA degree requirements, if accepted by the Medical School, can earn a B.S. degree after two years in the School.

## MEDICAL TECHNOLOGY

The 4-year program in medical technology leads to the degree bachelor of science.

The first 2 years are spent in the Arts College. After completing 90 credits, including required courses, with a C average, the student is eligible to apply for admission to the program.

The following courses or their equivalents are prerequisites for admission to the junior year. Comp 1001/2 or Comm 1001/2 or exemption; Chem 1004,5,6, 3100,1, 3301,2; Biol 1011; Zool 1013; Anat 1004; Math 1111; Phys 1031,2; MedT 1010, 1030,1,2; electives limited to subjects that satisfy group requirements.

The *Division of Medical Technology Bulletin*, which may be obtained at the Office of Admissions and Records, contains a suggested program for the first 2 years. For further information the student may consult special advisers in the Medical Technology office, 5307 Powell Hall (373-9670). Registration each quarter must be reviewed by an adviser.

## MORTUARY SCIENCE

The Department of Mortuary Science offers a 4-year curriculum leading to a bachelor of science degree with a major in mortuary science. Students preparing to apply for licences in states requiring less than a 4-year degree may receive verification of their attendance and indication of satisfactory completion of certain courses, supported by official transcripts, if they are in good standing and have completed minimum requirements set forth by the American Board of Funeral Service Education and the requirements of the state in which they wish to practice.

To be considered for entrance to the Department of Mortuary Science the student must have completed 90 quarter credits with a 2.0 average in the College of Liberal Arts of the University or any other accredited university, college, or junior college. Because of the timing of courses, students should plan to enter in the Summer Session or fall quarter.

Freshman and sophomore students in the College of Liberal Arts at the University of Minnesota will be assigned advisers from the Department to assist them with course selection, registration, and academic decisions. Registration must be approved by a mortuary science adviser each quarter.

While in Lower Division, students should determine a core area of interest and select prerequisite courses in preparation for Upper Division courses in the core area to satisfy the Department's requirement of 15 Upper Division credits outside the major area.

The *Department of Mortuary Science Bulletin* may be obtained at the Office of Admissions and Records. Further information is available from Department advisers in the Mortuary Science office, 114 Vincent Hall (373-3870).

The 90 credits required for admission must meet group distribution requirements (see page 10) with the following courses or their equivalents: Satisfaction of English composition requirement; speech, accounting (3 or more cr), electives in foreign language, philosophy, mathematics, statistics, journalism (at least 15 cr total); biology, chemistry, human anatomy, microbiology, public health (23 cr), electives in physics, physiology, astronomy, geology; psychology, sociology, social science, anthropology (16 of 20 cr in area), electives in history, political science, economics, geography, management; art, music, literature, theatre arts, humanities, (9 cr).

Students who plan to seek licenses in states other than Minnesota should request information concerning specific state preprofessional requirements.

## NURSING

The curriculum in professional nursing leading to the degree of bachelor of science is a 4-year program, 1 year of which may be taken in the College of Liberal Arts of the University or any other accredited university, college, or junior college. This program, open to both men and women, prepares for first-level positions in all fields of professional nursing.

To be eligible for admission, students must have satisfactorily completed certain requirements in general education, and must give evidence that they are able to pursue advanced study. Students interested in qualifying for admission may obtain current information by mail or telephone from the School of Nursing, 3313 Powell Hall (373-3462) or by discussing their programs with faculty members of the School.

A CLA adviser in the Health Sciences advising office, 30 Johnston Hall, is assigned to freshman pre-nursing students to assist them with course selection, registration, and academic planning.

The 45-credit requirement for the pre-nursing first-year must include courses in English composition or exemption from requirement, general chemistry (8-10

## Preprofessional Curricula

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cr), general biology (4-5 cr), and cultural anthropology (3-5 cr). The remaining credits are fulfilled by selecting at least 1 course from the social sciences (3-5 cr) and two from the humanities (8-10 cr). Further information regarding first-year requirements is presented on page 20 of the *School of Nursing Bulletin*.

Because of the sequential integration of the School of Nursing program, students may enter only in fall quarter. After admission (as sophomores) students continue general education courses and start courses in the nursing major. An approximate balance exists between general education courses and courses in nursing or related areas. For further information about this portion of the program and for information about graduate programs, see the *School of Nursing Bulletin*.

## OCCUPATIONAL THERAPY

The course in occupational therapy requires 4¼ years. The degree bachelor of science is awarded upon its completion.

A student prepares for occupational therapy training by taking 90 credits in a college of liberal arts in courses selected to meet the group distribution requirements outlined in the *Occupational and Physical Therapy Bulletin*. Students who complete these courses with a high C average in the sciences are eligible to apply for admission to the course in occupational therapy.

During junior and senior years hospital practice is coordinated with theoretical courses. In the senior year, six months of full-time individual clinical education is scheduled in hospitals, institutions, and community centers.

Freshmen students should see advisers in the CLA Health Sciences advising office, 30 Johnston Hall. Sophomores should follow the registration procedure outlined in the *Occupational and Physical Therapy Bulletin*.

For detailed information regarding the course, see that *Bulletin* or call 373-9024, the school's office, 282 Children's Rehabilitation Center, for an appointment with a faculty member.

## COLLEGE OF PHARMACY

The College of Pharmacy offers the professional degree bachelor of science (B.S.) in pharmacy, one of the qualifications for license as a registered pharmacist. The more advanced doctor of pharmacy degree (Pharm.D.) prepares those who earn it to serve as therapeutic consultants in patient or clinical settings where extra expertise in drug use is necessary.

A 2-year prepharmacy program comprising 90 credits is offered to students in the Arts College as a prerequisite for admission to the 3-year professional program leading to the B.S. This program is expected to include Chem 1004/5, 1006, 3301/2/3; Biol 1011; Bool 1013; Math 1008, 1141 (higher level courses recommended for qualified students); Phys 1014/5, 1024/5 (higher level courses recommended for qualified students); Econ 1001/2; Comm 1001/2; Comp 1001/2; electives in the distribution areas (not fewer than 15 cr).

Selection of candidates for the doctor of pharmacy program is made in the third year of the professional year in such areas as patient orientation in a variety of clinical settings. Candidates will perform such health services as are required of them in the modern system of team approach to the delivery of health care.

Application for admission to the College of Pharmacy is made through the Office of Admission and Records, 6 Morrill Hall, or at 115 Appleby Hall. Applications, accompanied by two official transcripts, should be filed between October 15 and June 15 of the academic year before the fall quarter in which the applicants desire to enroll. The admissions committee considers such criteria as honesty, industry, leadership ability, maturity, motivation, and moral character among other personal attributes in making judgments on the admissibility of students, in addi-

tion to scholastic records in preprofessional programs. (See *College of Pharmacy Bulletin*.)

## PHYSICAL THERAPY

The course in physical therapy, a 4-year curriculum, leads to a bachelor of science degree in physical therapy. The first 2 years are spent in the College of Liberal Arts. To be considered for entrance to the professional program in his junior year, a student must complete 90 quarter credits, including specified required courses or their equivalents, with a C+ average in basic sciences. The last 2 years are spent in the Department of Physical Medicine and Rehabilitation. The student must complete a minimum of 600 hours of supervised clinical practice in physical therapy departments of affiliated hospitals.

For information about admission and the physical therapy program, prospective students should consult advisers in the Physical Therapy office, 282 Children's Rehabilitation Center, or in the CLA Health Sciences advising office, 30 Johnston Hall. Detailed information is available in the *Occupational and Physical Therapy Bulletin*.

## PUBLIC AFFAIRS

Professional study in the School of Public Affairs, which is part of the Arts College, is at the graduate level. It is designed to prepare public policy analysts, decision makers, and administrators for high level positions in public service. Its study program consists of required courses in the policy process, program analysis, and quantitative methods, two substantive concentrations, and an arranged internship in the student's area of interest. The program normally covers 2 academic years and 1 summer. Further information is contained in the *Graduate School Bulletin*.

## SOCIAL WORK

Professional study in the School of Social Work, which is a part of the Arts College, is at the graduate level. The recommended preprofessional program is described on page 206 of this *Bulletin*. Admission is not limited to those who complete the recommended B.A. in social work; a B.A. with a major in any social science field will also be considered. For entrance requirements see the *Graduate School Bulletin* and the *School of Social Work Bulletin*.

## UNIVERSITY COLLEGE

University College has for many years been the University's mechanism to provide University-wide flexibility in degree planning to undergraduates whose needs cannot be met under standard curricular patterns of departments or colleges. An undergraduate may transfer from any college or major division of the University to University College upon designing a degree program that meets his educational desires and receives the approval of appropriate departmental advisers and of the University College office, 105 Walter Library (373-4638). A bulletin describing the College and its procedures is available.  
*Section IV*

# 1972-74

## TENTATIVE ORDER OF REGISTRATION, CLA REGISTRATION OFFICE

To help students to make program plans over a long term, a *tentative* rotating registration order at the CLA Class Reservations office (12 Johnston Hall) has been established. Hour-by-hour-breakdowns will be necessary for Winter and Spring quarters. *Note:* This schedule does not apply to new students, freshman or advanced standing, participating in orientation-registration programs.

| Day  | °Fall, 1972    | °°Winter, 1973  | °°Spring, 1973  | °Fall, 1973 | °°Winter, 1974        | °°Spring, 1974 |
|------|----------------|-----------------|-----------------|-------------|-----------------------|----------------|
| 1st  | Coo-Godz       | McE-Norn        | Xa-Bid          | Joh-Lx      | Shf-Thompson M.       | Ff-Hamj        |
| 2nd  | Goe-Johnson H. | Noro-Pq         | Bie-Cog         | Ly-Olm      | Thompson N.-Wilson L. | Hank-Jens      |
| 3rd  | Johnson I.-Li  | Pr-Schj         | Coh-Erickson D. | Oln-Ruz     | Wilson M.-Barl        | Jent-Kri       |
| 4th  | Lm-Nei         | Schk-Stas       | Erickson E.-Gom | Rv-Sv       | Barm-Brox             | Krj-Malj       |
| 5th  | Nej-Ps         | Stat-Tuq        | Gon-Heri        | Sw-Wp       | Broy-Cuo              | Malk-More      |
| 6th  | Pt-Sil         | Tur-Wiq         | Herj-Johnson L. | Wq-Bok      | Cup-Erickson M.       | Morf-Ols       |
| 7th  | Sim-Ur         | Wir-Bach        | Johnson M.-Krel | Bol-Daw     | Erickson N. Gillb     | Olt-Quin       |
| 8th  | Us-Alh         | Baci-Bouj       | Krem-Lorb       | Dax-Frem    | Gille-Haru            | Quio-Sat       |
| 9th  | Ali-Bn         | Bouk-Ch         | Lorc-Mel        | Fren-Hap    | Harv-Iu               | Sau-Smi        |
| 10th | Boa-Con        | Ci-Dol          | Mem-Net         | Haq-Jog     | Iv-Kei                | Smj-Ter        |
| 11th |                | Dom-Finl        | Neu-Pat         |             | Kej-Land              | Tes-Warq       |
| 12th |                | Finn-Glar       | Pau-Rau         |             | Lane-Lunde            | Warr-Zid       |
| 13th |                | Glas-Hanson J.  | Rav-Sandl       |             | Lundf-Meil            | Zie-Bai        |
| 14th |                | Hanson K.-Hopj  | Sandm-Sil       |             | Meim-Nat              | Baj-Boeg       |
| 15th |                | Hopk-Johnson K. | Sim-Sto         |             | Nau-Olson D.          | Boeh-Carlo     |
| 16th |                | Johnson L. Kh   | Stp-Tra         |             | Olson E.-Peterse      | Carlp-Cul      |
| 17th |                | Ki-Ku           | Trb-Wein        |             | Petersf-Rar           | Cum-Du         |
| 18th |                | Kv-Lew          | Weio-Wz         |             | Ras-Rosea             | Dv-Fe          |
| 19th |                | Lex-Mai         |                 |             | Roseb-Schmid          |                |
| 20th |                | Maj-McD         |                 |             | Schmie-She            |                |

°Registration continues for six weeks

°°Registration continues for two weeks

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**The supply of this Bulletin is limited.**

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Name \_\_\_\_\_

MJ

*Account: CLA  
11/15/72*

College of Liberal Arts

# SUPPLEMENT

TO 1972-1974 BULLETIN

November, 1972

This is the first of three Supplements to the 1972-1974 CLA Bulletin to be issued this year with new information about College procedures, course changes and additions, and the like. The publications will coincide with the opening of registration periods for Winter, Spring, and Fall quarters.

The Supplement is as complete as available information permits. Since some changes are not reported promptly to College offices, there may be a few omissions. Department and other officers of the College should send to the Supplement editor (202 Johnston Hall) information on matters that may be of extra-departmental interest. We have checked such sources as A-96 forms, All-College and Divisional Council actions affecting curricula, Student Scholastic Committee policy and procedure changes, and so on. (Courses marked by asterisks in Part II below have been submitted to Divisional Councils by their Curriculum Committees, but are subject to Council action at early-November meetings. The CLA office will provide a memorandum reporting Council actions.)

Information for future Supplements should reach the editor four weeks before a quarterly registration period begins — about January 15 and July 20, 1973.

## I – Bulletin Modifications

The following notations may be entered in 1972-1974 CLA Bulletins (in addition to those in the special Supplement of August 25, 1972):

### Pages

- 8–9 Change Engl 1011/2 to Comp 1006/7/8 (four instances).
- 9 Next-to-last paragraph: Repetition in college of language study at a level completed in high school may now be taken on the AN as well as the SN grade system.
- 10 Add Clas 5005 to listings under both Greek and Latin.
- 12 Change Ecol 1004, 1005 to Biol 1104, 1105; change Bot 1001 to Biol 1103; change GCB 1101 to Biol 1101.
- 12 Credits in Engl Comp in excess of 8 are assigned to Group A.
- 12–13–14 Add the following courses (courses with no or few prerequisites that may be used to meet distribution requirements) to the appropriate groups in the Group Distribution Course List:  
*Group A* – AmIn 1031/2/3/4/5. *Group B* – Biol 3051; Phsl 1002 (special section for CLA students). *Group C* – Clas 1061, 5061; IT 1811, 1812, 1813. *Group D* – Spch 1104.
- Students may consult the complete list of course assignments to distribution groups in each of the Upper Division offices.
- 14 *Outside-of-Major Requirement* – Students with double majors do not need to meet the “30-credits-outside-of-major” requirement.
- 20 Any cancellation after the first two weeks, if permissible, is recorded as W, regardless of grade status and regardless of timing. Cancellations in the first two weeks are not recorded.
- 20 Adult special students may earn credits by special examination, under the procedures described on page 25 of the 1972-1974 Bulletin.
- 22–23–24 Elaboration of relative grade values under the new grading system, as well as of other matters described on pages 22, 23, 24, is contained in a memorandum, *Faculty Notes on Instruction*, that may be obtained from Miss Hongo, 202 Johnston Hall (3-2834).
- 26 Credits by special examinations administered by University faculty will be counted in the A–C total if taken for grade, in the S total if taken without grade. Credits earned through CLEP or other nationally-standardized examinations will be counted as transfer (not residence) credits.

- 52 Change ArtS 3310, 3320, 3330 to 3301, 3302, 3303, each 4 cr maximum.
- 52 Change prereq for ArtS 5310 to 3301, for 5320 to 3302, for 5330 to 3303 (omitting "12 cr" from each.)
- 52 Add: 3304. SCULPTURE III. (4 cr; prereq 1302)  
Direct metal problems of sculptural expression and organization.
- 53 Change ArtS 5340 prereq to 4 cr per qtr to maximum of 8; prereq 3304.
- 87 *Major Sequence for B. S.* – Add Math 1411/21/31 and Stat 5021,2 as options under required background courses.
- 99 Remove the (GrA) indicator from Comp 0001, 1001/2, and 1006/7/8. (See note above, page 12.)
- 181 A special section of Phsl 1002, offered for CLA students, will meet Group B requirements.
- 193 Last paragraph: A student considering a religious studies major should consult with the religious studies adviser, 114 Johnston Hall (rather than the program director).

## II – New Courses

(Department abbreviations are those used in the CLA Bulletin. New abbreviations are LFA, Literature and Fine Arts, and US, Urban Studies.)

- AmSt 3801,2. CONTEMPORARY AMERICAN FEMINISM: IS IT ALTERING ACADEMIC CULTURE? (4,4 cr; prereq 3801 for 3802, #)  
Coordinated readings, lectures, and discussions examining ways in which participants in the 20th-century American women's liberation movement have affected (and not affected) perspectives on and the collection of information in many disciplines: history, humanities, psychology, anthropology, law, medical science, and others. (GrC)
- \*Chic 1105. INTRODUCTION TO CHICANO STUDIES: THE MEXICAN-AMERICAN IN TRANSITION. (5 cr)  
An historical perspective as it appears in literature, concerned with sociological, political, psychological, cultural, and economic factors. (GrC)
- \*Chic 1112. CHICANO FIELD STUDIES. (4 cr; prereq #)  
Clinical field instruction in a service learning program in conjunction

with tutorial programs for Chicano children in the public schools of Minnesota. (GrC)

\*Chic 3505. SPANISH FOR CHICANOS. (3 cr; prereq #)

A practical application of principles of grammar with special emphasis on problems of orthography and composition to enhance and develop the natural Chicano patrimony of the language and to develop writing skills, reading skills, and composition and oral expression.

CHS 1360f,w,s. DISCUSSION LEADERSHIP – THEORY AND PRACTICE. (1 cr per qtr; SN only; prereq cons honors div)

\*Geog 1973. GEOGRAPHY OF THE TWIN CITIES. (4 cr; §3973) Staff  
Major social and physical characteristics of the Twin Cities and their place within the urban network of the United States. (GrC)

\*Geog 3431. PLANT AND ANIMAL GEOGRAPHY. (4 cr) Squires

An analysis of the major distributional patterns of plant and animals on the earth. Emphasis will be placed on the operation of geographical factors (climate, land and sea distribution, soil) as well as biological factors (dispersal, evolution, competition) in time which have resulted in the distribution of trees and mammals. (GrC)

\*Geog 3973. GEOGRAPHY OF THE TWIN CITIES. (4 cr; §1973) Staff  
Lectures in common with 1973; additional readings and papers.

\*Geog 5385. GEOGRAPHY OF COMMUNICATION SYSTEMS. (4 cr;  
prereq 12 cr social or behavioral sciences) Abler

Evolution, diffusion, and spatial structure of communication systems. Impact of communications media on settlement patterns and spatial behavior in advanced and developing nations. Emphasis on interpersonal media. (GrA)

Hist 1421,2. THE WORLD AND THE WEST. (4,4 cr; §3421,2) Kopf,  
Marshall, Munholland, Rudolph

An integrated survey of the political, economic, and cultural interaction between the peoples of Europe, Africa, America, and Asia. 1421: The era of European expansion, 1500-1850. 1422: The modern period of anti-Western nationalism, 1850-1970. (GrC)

Hist 3421,2. THE WORLD AND THE WEST. (4,4 cr; §1421,2) Kopf,  
Marshall, Munholland, Rudolph

Lectures in common with 1421,2; additional readings and papers.

Hist 3807. POLITICAL VIOLENCE IN 18TH-CENTURY ANGLO-AMERICA. (4 cr; prereq #) Howe

Study of attitudes toward and uses of group violence in the political systems of England and her North American colonies, particularly as they relate to the coming of the American Revolution. (GrC)

LFA 3770. HONORS READING PROGRAM. (2 cr; SN only; prereq honors cand)

Integrated readings and seminars centered on a topic within the humanities which is of current interest to students.

NSci 3770. HONORS READING PROGRAM. (2 cr; SN only; prereq honors cand)

Integrated readings and seminars centered around a topic within the natural sciences which is of current interest to students.

SSci 3770. HONORS READING PROGRAM. (2 cr; SN only; prereq honors cand)

Integrated readings and seminars centered on a social science topic of current interest to students.

SW 3005Hf,w,s. SOCIAL WORK PROCESSES. (Cr ar; prereq 3001 or #, honors student) Compton, Galaway

Analysis of the nature of social work helping processes in service to individuals, groups, or communities. Each student selects, with instructor's approval, a particular service to study in depth. (GrC)

Spch 1102H. HONORS COURSE: COMMUNICATION IN THE MODERN WORLD – INTERPERSONAL COMMUNICATION. (4 cr)

For description, see 1102.

Spch 3401H. HONORS COURSE: THE PROCESS OF INTERPERSONAL COMMUNICATION. (4 cr; prereq 1101 or 1105H or #, Psy 1001)

For description, see 3401.

\*Th 5181. CONTEMPORARY BLACK DRAMA. (4 cr; prereq 1101 or Afro 1045 or Afro 3055 or AmSt 1101 or Engl 5175, or #)

A contemplation of the extraordinary revolution of Black consciousness manifesting itself on the American stage. A study of contemporary Black plays, playwrights, and the forces that brought them into being. (GrD)

\*US 3101f. COLLOQUIUM: INTRODUCTION TO URBAN STUDIES. (2 cr; prereq Arch 5137 or ¶5137 and Δ)

Examination and discussion of disciplinary perspectives on the urban environment. Particularly directed toward urban studies majors.

\*Courses designated with asterisks have been presented to Divisional Councils but not officially approved. Students interested in these courses should consult the departments offering them.

### III – Changes in Course Listings

(Changes only – not complete listings)

Chin 5602. ADVANCED CONVERSATION AND COMPOSITION.  
(Formerly listed as 5020.)

Chin 5603. CHINESE DOCUMENTS. (Formerly listed as 5604.)

Fren 5201,2,3. FRENCH LITERARY DOCTRINES FROM PLEIADE TO  
THE PRESENT.

Fren 5204,5,6. MOUVEMENT DES IDEES.

Fren 5531. THE BAROQUE IN EUROPEAN LITERATURE: FRANCE.  
(Formerly listed as Fren 5531/2/3. This three-sequence course is now  
divided into three separate courses – 5531 in the Department of  
French, 5532 in the Department of German, and 5533 in the Depart-  
ment of Spanish.)

Ger 5532. THE BAROQUE IN EUROPEAN LITERATURE: GERMANY.  
(Formerly listed as Fren 5532. See Fren 5531 for explanation.)

Heb 1012/3. BEGINNING INTENSIVE HEBREW. (Formerly listed as  
1102x/3x.)

Hist 1451,2,3. ASIAN CIVILIZATIONS. (4,4,4 cr; §3451,2,3)

Hist 3451,2,3. ASIAN CIVILIZATIONS. (4,4,4 cr; §1451,2,3)

Hist 5207,8. SOCIAL AND ECONOMIC HISTORY OF MODERN  
EUROPE. (4,4 cr) Rudolph  
Problems of European economy and society, 1750 to the present.  
Economic and social structure and change; industrialization and its  
impact; social movements and social change; interrelationships between  
the economy and social-political structures. (GrC) (Formerly listed as  
5291,2.)

Hist 5951,2†. HISTORY OF HISTORICAL THOUGHT. (4,4† cr)

Plsh 3201,2. READINGS IN POLISH LITERATURE.

Plsh 3601,2. SURVEY OF POLISH LITERATURE IN TRANSLATION.

Russ 3501,2,3. RUSSIAN CIVILIZATION AND CULTURE.

Russ 3601,2. 19TH-CENTURY RUSSIAN LITERATURE IN TRANSLA-  
TION.

Russ 5201,2,3. SOVIET LITERATURE IN TRANSLATION.

Russ 5701,2. STRUCTURE OF MODERN RUSSIAN.

Russ 5704,5. HISTORY OF RUSSIAN LANGUAGE.

Slav 3201,2. SOUTH SLAVIC LITERATURE.

Slav 3501,2,3. SOUTH SLAVIC CIVILIZATION AND CULTURE. (4,4,4 cr)

The cultural achievements of the South Slavs as reflected primarily in the arts and social thought. Fall: From appearance of the Slavs in the Balkans to 1389. Winter: From fall of Kossovo to World War I. Spring: From World War I to present. (GrC)

Span 5533. THE BAROQUE IN EUROPEAN LITERATURE: SPAIN. (Formerly listed as Fren 5533. See Fren 5531 for explanation.)

Th 1504. ELEMENTS OF TECHNICAL THEATRE. (4 cr; prereq 1101 or ¶1101; lab arranged)

Th 3513. TECHNICAL THEATRE PRODUCTION I. (4 cr; prereq 1504; lab arranged)

Th 3515. TECHNICAL THEATRE PRODUCTION II. (4 cr; prereq 1504; lab arranged)

Th 3801. ORAL INTERPRETATION OF FICTION. (4 cr; prereq 1101 or Spch 1101 or #, jr)

Th 5334/5/6. ACTING FOR MUSIC-THEATRE. (4/4/4 cr; prereq Mus 5470 and #)

Th 5512. ADVANCED PROBLEMS IN COSTUMING. (4 cr; prereq 3515, 3711 or #; lab arranged)

Th 5514. ADVANCED PROBLEMS IN SCENE DESIGN. (4 cr; prereq 3513, 3711 or #; lab arranged)

Th 5516. ADVANCED PROBLEMS IN STAGE LIGHTING. (4 cr; prereq 3515, 3711 or #; lab arranged)

Th 5518. ADVANCED PROBLEMS IN STAGE PROPERTIES. (4 cr; prereq 3513, 3711 or #; lab arranged)

Th 5519. SOUND FOR THE THEATRE. (2 cr; prereq ; lab arranged)

Th 5831. ORAL INTERPRETATION OF CLASSICAL LATIN LITERATURE. (4 cr; § Clas 5308; prereq #)