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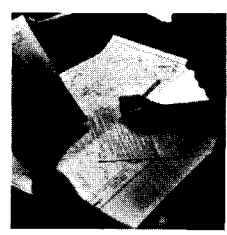
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COLLEGE OF LIBERAL ARTS



1964-1966



UNIVERSITY OF MINNESOTA BULLETIN

About This Bulletin . . . and Others Needed for the 1964-66 School Years

This bulletin—the *Bulletin of the College of Liberal Arts*—provides year-round information about the Arts College. For the convenience of its users it is divided into three sections:

Page

- 3 I. *General Information*—College purposes . . . organization . . . principal regulations . . . degree and other requirements.
- 20 II. *Courses and Major Requirements*—courses . . . instructors . . . departmental degree and other requirements.
- 178 III. *Preprofessional Curriculums in the Arts College*—1- to 4-year preparatory programs for later transfer to the professional schools.

Study this bulletin carefully—keep it handy; you will refer to it constantly. It provides you the basic information you need for planning 1964-1966 work in the Arts College. You will need two other bulletins, however, to provide other kinds of facts:

Class Schedule, issued each quarter to list course hours, days, room numbers, and final examination schedules, as well as last-minute changes. For long-range planning, save the fall *Class Schedule* (which also contains winter and spring listings).

Bulletin of General Information—costs, registration, information, University organization and services to students, and other information.

Since bulletins cannot be kept entirely current, you are held responsible for changes in course hours and rooms, revised regulations, and other such information, provided to you through the Official Daily Bulletin in the *Minnesota Daily*. Be sure to check this in every issue.

Extensive descriptions of freshman-sophomore courses are available in the *Descriptions of Courses in the Lower Division*, a booklet you will find in advisers' and Arts College offices, in Walter and Johnston Libraries, and in most dormitories. The *Moccasin*, a handbook for new students, offers additional information about campus activities and services.

Copies of all bulletins may be obtained at the information window in Morrill Hall.

**See page 20 for explanation of course numbers
and symbols**

UNIVERSITY OF MINNESOTA

Board of Regents

The Honorable Charles W. Mayo, M.D., Rochester, First Vice President and Chairman; The Honorable Marjorie J. Howard (Mrs. C. Edward), Excelsior, Second Vice President; The Honorable Daniel C. Gainey, Owatonna; The Honorable Bjarne E. Grottum, Jackson; The Honorable Gerald W. Heaney, Duluth; The Honorable Robert E. Hess, White Bear Lake; The Honorable Fred J. Hughes, St. Cloud; The Honorable A. I. Johnson, Benson; The Honorable Lester A. Malkerson, Minneapolis; The Honorable William K. Montague, Duluth; The Honorable Otto A. Silha, Minneapolis; The Honorable Herman F. Skyberg, Fisher.

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Stanley J. Wenberg, M.A., Vice President for Educational Relationships and Development
Robert Edward Summers, M.S., M.E., Dean of Admissions and Records
Edmund G. Williamson, Ph.D., Dean of Students

College of Liberal Arts

Administration

E. W. Ziebarth, Dean (215 Johnston Hall)
J. Dennis Hurrell, Associate Dean for Humanities (205½ Folwell Hall)
John G. Turnbull, Associate Dean for Social Sciences (223 Social Science Building)
Roger B. Page, Assistant Dean for Student Personnel (208 Johnston Hall)
Mabel K. Powers, Director of Upper Division Offices (225 Johnston Hall)
James B. Preus, Director of Lower Division Offices (214 Johnston Hall)

College Offices

Honors Program - - - - - 225 Johnston Hall

Lower Division

Central Office - - - - - 214 Johnston Hall

Division Offices - - - - - 201, 214, 220 Johnston Hall

(Each student, upon entering Lower Division, is assigned to one of these offices. It remains his college office as long as he is in Lower Division.)

Upper Division

Central Office - - - - - 223 Johnston Hall

Humanities - - - - - 206 Folwell Hall

Sciences and Mathematics - - - - - 223 Johnston Hall

Social Sciences - - - - - 214 Social Science Building

Placement - - - - - 125 Johnston Hall

Class Reservations Office - - - - - 205 Johnston Hall

The Committee on Student Scholastic Standing is represented in each of the division offices.

Directory of Departments

Majors leading to the B.A. degree in the College of Liberal Arts are offered by the following schools, departments, and programs. Heads, directors, and departmental offices are listed.

- American Studies**—Bernard Bowron (10 Vincent Hall)
Anthropology—E. Adamson Hoebel (200 Ford Hall)
Architecture (Institute of Technology)—Ralph Rapson (110 Architecture Building)
Art—Carl D. Sheppard, Jr. (108 Jones Hall)
Astronomy (Institute of Technology)—Willem J. Luyten (359 Physics Building)
Botany—Ernst C. Abbe (8 Botany Building)
Chemistry (Institute of Technology)—Stuart W. Fenton (139A Chemistry Building)
Child Development (College of Education)—Harold W. Stevenson (140 Child Development Building)
Classics—Norman J. DeWitt (309 Folwell Hall)
Economics—O. H. Brownlee (1035 Business Administration Building, West Bank)
English—John W. Clark (127 Vincent Hall)
Geography—Fred E. Lukermann, Jr. (414 Social Science Building, West Bank)
Geology and Geophysics (Institute of Technology)—Tibor Zoltai (108 Pillsbury Hall)
German—Edwin F. Menze (219 Folwell Hall)
History—Harold C. Deutsch (614 Social Science Building, West Bank)
Humanities (Interdisciplinary Programs)—Ralph G. Ross (286 Ford Hall)
International Relations and Area Studies—Charles H. McLaughlin (348 Social Science Building, West Bank)
Journalism—Robert L. Jones (111 Murphy Hall)
Linguistics—(310 Folwell Hall)
Mathematics (Institute of Technology)—James B. Serrin (400 Ford Hall)
Microbiology (College of Medical Sciences)—John Spizizen (1060 Mayo Memorial Building)
Music—Paul M. Oberg (107 Scott Hall)
Philosophy—Karl H. Potter (314 Ford Hall)
Physics (Institute of Technology)—Alfred O. C. Nier (56 Physics Building)
Physiology (College of Medical Sciences)—Maurice B. Visscher (424 Millard Hall)
Political Science—Charles H. McLaughlin (1414 Social Science Building, West Bank)
Psychology—John G. Darley (112 Psychology Building)
Public Health—Biostatistics (College of Medical Sciences)—Gaylord W. Anderson (1325 Mayo Memorial Building)
Romance Languages—Armand A. Renaud (200 Folwell Hall)
Scandinavian—Alrik Gustafson (210A-210B Folwell Hall)
Slavic and Oriental Languages—Richard B. Mather (322 Folwell Hall)
Sociology—Elio D. Monachesi (1114 Social Science Building, West Bank)
Speech and Theatre Arts—Kenneth L. Graham (317 Folwell Hall)
Statistics—Bernard W. Lindgren (395 Ford Hall)
Zoology—(108 Zoology Building)

The following College of Liberal Arts units do not offer undergraduate majors:

- Comparative Literature**—Roy A. Swanson (309 Folwell Hall)
Family Studies Center—Reuben L. Hill; Gerhard Neubeck, assistant director (1014 Social Science Building, West Bank)
Interdisciplinary Programs
 Communication—Daniel V. Bryan (210 Temporary North of Mines Building)
 Natural Science—Mark Graubard (209 Temporary South Court of Engineering Building); James H. Wertz, Jr. (148 Physics Building)
 Social Science—David Cooperman (515 Social Science Building, West Bank)
Laboratory for Research in Social Relations—John G. Darley (486 Ford Hall)
Library School—David K. Berninghausen (3 Walter Library)
Philosophy of Science—Herbert Feigl (315 Ford Hall)
Public Administration Center—George A. Warp (314 Social Science Building, West Bank)
Social Work—John C. Kidneigh (909 Social Science Building, West Bank)

College of Liberal Arts

Section I

GENERAL INFORMATION

THE College of Liberal Arts (often called the Arts College) has planned its programs to offer University students both liberal and special education, looking toward the development of satisfying and useful lives.

The goal of the Arts College is to aid students toward becoming the upright and humane men and women who are the ideal of our civilization. Among the characteristics of such men and women are a vigorous and humble curiosity about the world and its peoples; a seeking mind, open to ideas attractive or repugnant, and trained in the means of gaining more knowledge about them; the power to discriminate between what is honest and good, and what is fraudulent and mean; compelling interest in the arts and concepts through which men have caught order and beauty from the world; and a sense of personal responsibility for the advancement of learning and the improvement of the human condition.

Toward these ends the Arts College provides the ablest and most stimulating faculty it can obtain and programs that permit each student to develop an educational plan that will serve him, as an individual, most effectively.

No two Arts College students move toward their goals by routes precisely alike. But all work toward liberal education through educational experiences that will acquaint them with the principal fields of general knowledge—literature, the arts, and other humanistic subjects; the social sciences such as politics, economics, and history; the physical and biological sciences. And as they explore a variety of fields to increase understanding of their cultural heritage and the surrounding world, they select particular areas in which they find it worth while to explore more deeply.

In these particular areas students achieve several educational goals: they acquire specialized knowledge leading toward professional and vocational objectives; they may equip themselves for advanced study in fields in which they find themselves well suited; they learn to understand and respect the integrity of the searching scholarly investigation on which the advancement of knowledge and the widening of man's perspective are based.

But pervading all such special education is the broad context of liberal education—the opportunity to gain thorough and penetrating understanding of today's world as an outgrowth of yesterday's and a forerunner of tomorrow's, and to develop an informed and constructively critical approach to the life and problems of the day.

The Arts College provides many guides toward the planning of educational programs to achieve these goals, both the procedural guides outlined in this bulletin and the counsel of skilled advisers. Students are urged to use such help freely. They are urged also to take advantage of noncurricular educational opportunities such as lectures, concerts, and the theatre, many types of campus community activity, and libraries and museums.

Certain fundamental aspects of liberal education that should be the common possession of all cultivated men and women are called general education. More

specifically, as its objectives, the curriculum for general education ideally should contribute to the ability to:

1. Understand and evaluate ideas through reading and listening and, in turn, express one's own ideas effectively.
2. Understand and participate intelligently in the solution of social, economic, and political problems.
3. Understand familiar phenomena of the universe in which we live; understand the fundamental ideas and discoveries of science and mathematics and their influence on human welfare and the development of thought and institutions; understand the basic attitudes and methods of scientists and use them in the solution of concrete problems.
4. Enjoy and appreciate literature, art, music, and other cultural activities with taste and judgment.
5. Understand human behavior and the structure of social relationships.
6. Maintain personal physical and mental health and that of the community.
7. Choose a useful and personally satisfying field of specialization through experience with typical courses in various fields.
8. Think critically and constructively, collect and weigh pertinent facts, analyze problems and situations, and approach solutions with integrity and a sound sense of values.

Organization of the College

Upper and Lower Divisions—The Arts College is divided into a Lower and an Upper Division, each with several offices (listed on page 1). Each student is assigned to one of the Lower Division offices; upon transfer to the Upper Division he is reassigned to the office appropriate to his major. In the Lower Division, which includes the freshman and sophomore classes, he will be encouraged to distribute his work in a number of fields so as to gain breadth of education, at the same time taking necessary preprofessional courses. If he plans to earn a B.A. degree, he will spend his second 2 years in the Upper Division, specializing in a field of interest while continuing his liberal education. The opportunities and requirements of the two divisions are explained more fully in the following pages.

Departments—The Arts College is organized in departments covering specific areas of the natural sciences, the social sciences, and the humanities. Courses, requirements, and instructors of these departments are listed in Section II of this bulletin.

Student Intermediary Board—Students play a part in the college organization through the Student Intermediary Board—a representative group chosen by fellow students to speak for them in student-faculty discussions of educational and other problems. Through the board the students may offer proposals about new courses, regulations, services, and other matters affecting their welfare. The board sponsors many faculty-student projects, such as Liberal Arts Week each fall; it organizes an Arts Freshman Council which meets regularly with college deans and other faculty members to examine freshman problems, and a Transfer Student Council for similar effort on behalf of advanced-standing students. The board nominates the student members of most student-faculty committees.

The board's five standing committees deal with problems of student personnel, instruction, curriculum, board administration, and general relations. Information about membership on committees and the board's functions and opportunities is available at its office, 101 Johnston Hall.

A number of departments organize student clubs to foster programs and projects related to their fields. Consult department offices or the Student Intermediary Board office for details.

Admission Requirements

You will find the requirements for admission listed in the University's *Bulletin of General Information*. They apply to students seeking admission on the basis of a high school diploma, by special examination without diploma, or through transfer from another college.

Lower Division Programs for Entering the Upper Division

While your general education should continue into the Upper Division, and indeed throughout life, this phase of development is especially emphasized in the Lower Division. Together with any preprofessional work this will require at least 2 years of study.

Distribution Requirements—To assure you a reasonably broad, general education adapted to your particular background and needs, the following distribution requirements have been established. You will note that these requirements contribute to the essential objectives of general education listed above, just prior to Organization of the College. It is your job, in consultation with a faculty adviser, to determine which specific courses within these requirements will most effectively round out your education. You have a special responsibility to attempt to integrate your college work with your high school background, avoiding overlap in areas of strength and seeking courses in areas yet untried.

Insofar as possible, you should complete these distribution requirements during the 2 years in Lower Division; the Upper Division years may then be devoted to fulfilling a major sequence and achieving a still stronger general and liberal education. Requirements for entering professional colleges are listed in Part III of this bulletin.

Lower Division Distribution Requirements for the B.A. Degree

A. Freshman English

Engl A-B-C (Freshman Literature and Composition, composition portion, 6 cr) or Engl 1A-2A-3A (Freshman English, composition portion, 6 cr) or Engl 1B-2B-3B (Freshman English, composition portion, 9 cr) or Comm 1-2-3 (Communication, 12 cr) or exemption from the requirement. All students are required to have an English Classification Card (see page 63) before registration for one of these courses.

B. Foreign Language. From 0 to 15 credits according to the following schedule:

<i>Amount Presented from High School**</i>	<i>Additional Amount Required in College</i>
None	15 credits in one language
1 year	(a) 10 college credits at a higher level in the same language, <i>or</i> (b) 15 college credits in a different language
2 years in one language	(a) 5 college credits at a higher level in the same language, <i>or</i> (b) 10 college credits in a different language
3 or more years in one language	No college requirement if the high school work is validated by the appropriate college department
2 years in each of two languages	No college requirement if one language is validated at the 2-year level by the appropriate college department

** While experience shows these equivalents to be reasonable for most students, anyone who believes his preparation fits him for entering language courses at either higher or lower level may petition the Committee on Student Scholastic Standing (usually called the Scholastic Committee) for permission to change assignment.

A student may include foreign language in his freshman program only if (a) he has studied foreign language in high school, or (b) he is in the upper half of the freshman class, or (c) he is given special permission by the Scholastic Committee.

C. Social Science

At least 15 credits from two or more of the following departments. At least 5 credits must be completed in a department before work in that department may be used to meet distribution requirements.

- | | |
|--|--|
| 1. Anthropology | 5. Political Science |
| 2. Economics and Business Administration** | 6. Psychology |
| 3. Geography | 7. Sociology |
| 4. History | 8. Social Science (Interdisciplinary Programs) |

D. Natural Science

At least 15 credits (of which a minimum of 8 must be in courses that include laboratory)†† from two or more of the following four groups. At least 5 credits must be completed in any one department to count.

1. Biological sciences: botany, psychology, zoology, General Biology (Biol 1-2 or 1A-2A)
2. Physical sciences: astronomy, chemistry, geology, geophysics, physics, Physical World (NSci 4-5, or old NSci 4-5-6)
3. Mathematics (except Math 5A, 20, 21)
4. Orientation in the Natural Sciences (NSci 1-2-3)
(A student presenting credit in NSci 1-2 only must take his additional work in a group other than D2)

E. Humanities

At least 15 credits from two or more of the following categories. At least 5 credits must be offered in any one department to count.

- | | |
|---|--|
| 1. Art | 6. Humanities |
| 2. English literature (including literature portions of freshman English courses) | 7. Mathematics (except Math 5A, T, 20, 21) |
| 3. Classics | 8. Music |
| 4. Foreign literature | 9. Philosophy |
| 5. History | 10. Speech and theatre arts (except Spch 6, 6A, 9, and 39) |

F. Health

PubH 3 (Personal Health, 2 cr) or PubH 50 (Personal and Community Health, 3 cr) or equivalent.

Notes

1. If courses from the Departments of History or Psychology or the School of Mathematics are used to satisfy the requirements in one area, courses from the same department may not be used to satisfy the requirement in a second area.

2. Courses of an interdepartmental character (humanities, natural science, social science) may be used to satisfy distribution requirements in only two of the three areas, C, D, and E.

3. A student may gain exemption from any requirement or part of a requirement by examination and thereby move more quickly into advanced and more specialized

** Acct 24, 25, 26, OMgt 32, 33, 34, 36, 37-38-39, 43, 79A-B and Econ 40 may not be used to satisfy the social science requirement.

†† Introductory natural science courses which count toward the laboratory portion of the requirement are: GeCh 4-5, 24-25; Biol 1-2; Geo 1-2 beginning fall 1963 (1 with A and 2 with B before fall 1963), 11, 22; NSci 4-5-6; Phys 1-2-3 with 1A-2A-3A, 4-5-6, 7-8-9, 12-13; Psy 1-2 with 4-5. Nonlaboratory courses include Ast 11; Biol 1A-2A; Bot 10, 12, 14; Geo 1-2 before fall 1963; Math T, 1-2-3, 10, 40; NSci 1-2-3; Phys 1-2-3, 11; Psy 1-2.

courses or begin more quickly to concentrate in areas of his choice. Students with outstanding high school records should be able to gain exemption from one or more requirements.

4. Students transferring 4½ quarter credits in a department thereby satisfy the "5 credits in a department to count" criterion, but they must have the minimum of 15 earned credits.

5. Students transferring into Upper Division from another college who can demonstrate to the Scholastic Committee special hardship in satisfying requirement B as stated may use the 50-51-52 sequence to meet this requirement (credits so used may not be used toward a minor or the 15 credits outside the major and minor). Any student may meet the 10-credit second language requirement with the 50-51-52 sequence.

Prerequisites for Major—In planning your program, you must take note of the Lower Division courses prerequisite for an Upper Division departmental or inter-departmental major. The requirements for the various majors in the Upper Division are described in Section II of this bulletin. If you have several possible majors in mind, plan your program to cover all the possibilities.

Credits and Quality Required—For entrance into the Upper Division, you must earn at least 84 credits (most students have 90) with an average of C or better. Some of these credits may be "quality credits" if applicable as explained on page 16. Admission on probation may be approved in special cases when scholarship average is slightly less than C.

Application for Entrance into Upper Division—It is important that you enter the Upper Division as soon as you are eligible in order that you may plan your further work with a major adviser and may fulfill properly the residence and other requirements of the Upper Division. To encourage this transfer at the proper time, you may be permitted to complete in Upper Division any distribution requirements not yet fulfilled. Probably you will not be permitted to continue in Lower Division after earning 95 credits.

Between the third and seventh weeks of the quarter in which you complete 84 credits, you should apply to the Upper Division office appropriate to your proposed major (see page 1) for entrance to the Upper Division. No application forms will be issued after the seventh week, or during Summer Session. You must present a copy of your previous Arts College record as well as any advanced standing records that do not appear on your transcript.

Advanced Standing Students—If you are entering the Arts College with advanced standing from some other institution, you must complete the same credit and distribution requirements expected of other students. You must earn a C average on all work taken at the University and a C average on all work counted toward the degree, whether earned in the Arts College or elsewhere. Grades earned at other institutions are entered on your University transcript.

The grades earned in other colleges of this University, except General College, will carry the appropriate grade points, provided the courses are accepted by the Arts College. If you have any failures in acceptable courses taken in other colleges, these also will be entered on your record. General College credits are transferred without grades attached, except that grades of D are not accepted.

Two-Year Program for Associate in Liberal Arts Degree

If you are not sure whether you will complete the 4-year Bachelor's degree you may wish to plan for the 2-year A.L.A. degree. It indicates the successful com-

pletion of a program devoted largely to general education. Students find this degree desirable as an evidence of liberal arts achievement if they are transferring to a professional school or if forced to drop out for a time.

The requirements for the degree are as follows:

1. You must earn at least 90 credits. While the grade point average is not a factor in this degree, you must maintain satisfactory progress while in the Arts College.
2. You must earn the degree in not more than 7 quarters of University residence. If you enter the Arts College with advanced standing, you must spend the last 3 quarters before graduation in residence and must earn at least 45 of the required credits in residence.
3. You must meet the requirement in English (A) and at least three of the other four distribution requirements; Foreign Language (B); Social Science (C); Natural Science (D); Humanities (E) as outlined in Distribution Requirements, page 5.

If you meet these requirements you are eligible for the degree even though you should continue in the Upper Division or a professional school. To make application, inquire at the Office of Admissions and Records.

Upper Division Programs Leading to Bachelor of Arts Degree

Approval of Your Program—At the time of your admission to the Upper Division you will receive a statement of your status. You will also receive the Upper Division program folder on which you will be expected to list your proposed program of courses fulfilling the requirements for a B.A. degree. All University of Minnesota students in residence must complete the program folder before registration in the Upper Division; the period for preparation and approval is from the third to the seventh week of the appropriate quarter. Students entering Upper Division in a fall quarter must complete the above procedure in the preceding spring quarter. Advisers are not available during the summer.

When approved by your adviser and accepted by the Upper Division, the program becomes an agreement that you can change only by filing with the Upper Division an official amendment form approved by your adviser.

In working out your Upper Division program you will have wide freedom to choose courses particularly adapted to your purposes, though basic requirements must be observed. These are listed below. Be sure that your program will fulfill them.

Before the beginning of your next to final quarter you should check your record with the Upper Division office and make application for graduation at the Office of Admissions and Records.

Credits in Residence—Whether transferring from the Lower Division or from any other college you must earn a minimum of 45 credits in Upper Division and spend 2 quarters (30 credits) of the senior year in residence in the Upper Division. An average of C must be obtained on all courses taken while in Upper Division. If you have only 1 year of residence, it must be your senior year.

Major Sequence—While in the Upper Division, you will be expected to concentrate a portion of your efforts in some field of special interest. Your purpose may be vocational or avocational; the field may be departmental or interdepartmental.

This field of concentration, known as a major sequence, must be composed of Upper Division courses. Of the three types of sequences listed below, you should choose the one that best suits your purpose.

1. Departmental Major and Minor Sequence

- a. A major (minimum of 27 cr or more) is offered in more than 30 departments of the University. The description of each major and its specific requirements are published for each department in Section II of this bulletin. You must maintain a C average.

- b. A minor sequence (15 cr) or 2 half-minors (9 cr each) must be taken in some department or departments other than that which you have chosen for your major. These minor credits must be in Upper Division courses listed in this bulletin.
- c. Fifteen credit hours in Upper Division courses must be taken outside the major and minor departments, and they also must be in Upper Division courses listed in this bulletin.

2. Interdepartmental Major

- a. If you believe your special interest cannot be satisfied in a single department you may have a major tailor-made for your particular needs. In applying for a major of this type you must submit a statement of your reasons for choosing this major, and a plan of courses, to 225 Johnston Hall. An interdepartmental program must include 75 or more Upper Division credits. The courses must be planned to meet a central purpose, usually through a concentration in four or more departments. An unsystematic and aimless scattering of courses will not be approved. You must maintain a C average in Upper Division courses.
- b. A number of interdepartmental programs have become standard. Among these are those in International Relations and Area Studies, Preprofessional Curriculum for Social Work, Preparation for Theological Training, American Studies, and Humanities, described in Section II of this bulletin. A minimum of 60 Upper Division credits, with a C average, is required.
- c. If you wish a program requiring a substantial number of courses outside the Arts College, you may wish to apply for a degree program in the University College (see page 11).

3. *Major in a Combined Course*—A third type of concentration may be worked out in co-operation with a professional school. In medicine and dentistry, part of your work in the professional school may be used to satisfy major requirements for the B.A.; in law, for the minor. Details of these courses are listed with the respective college professional programs in Section III of this bulletin. At least 1 year (45 credits) must be earned in residence in the Upper Division, and the C average must be maintained. The combinations are:

Arts and Medicine—7-year course leading to B.A. and M.D. degrees

Arts and Dentistry—7-year course leading to B.A. and D.D.S. degrees

Arts and Law—6½-year course leading to B.A. and LL.B. degrees

For the joint program leading to B.A. and B.S. degrees in Arts and Education, see page 186.

English Proficiency—Every candidate for the B.A. must demonstrate ability to write English satisfactorily. Demonstration consists in passing the English Proficiency Test, an impromptu essay test offered each quarter. Students take the test during junior year; those who fail may repeat it as often as necessary to pass (the first repetition no sooner than 6 months after the failure). Students are responsible for taking remedial measures to assure their meeting test requirements.

Summary of Graduation Requirements—Briefly, the requirements for a Bachelor's degree, as discussed in the preceding paragraphs, are as follows:

1. **Minimum Credits**—180.
2. **Residence in Upper Division**—All students must earn 45 credits after admission to Upper Division, 30 of them in the senior year.
3. **Lower Division Distribution**—All students must complete the distribution requirements, preferably before entering the Upper Division.
4. **Major (field of concentration) and Minors**—Students must complete a departmental major and minor (or two half-minors) or an interdepartmental major or a combination course with a professional school.
5. **Upper Division Credits Outside Major and Minor**—For those with a departmental major, 15 credits in Upper Division courses are required outside the major and minor departments. These must be in Upper Division courses listed in this bulletin.

6. **Quality of Work**—Students must earn a C average in all work presented from the University and *in toto*, a C average while in Upper Division, and a C average in the major (Upper Division courses). In calculating the over-all grade point average, the Scholastic Committee may, in rare cases, approve the omission of certain quarters of work done in the Lower Division.
7. **English Proficiency Test**—Students must also meet the Upper Division English proficiency requirement.

Honors Programs

The Arts College is developing an extensive program of "honors opportunities" designed to afford outstanding students challenging educational experiences in keeping with superior abilities. These opportunities, which call on the cultural resources of the entire University and of the community of which it is a part, are available to both Upper Division and Lower Division students.

Departmental Honors Programs Leading to Graduation with Honors—Graduation *cum laude*, *magna cum laude*, or *summa cum laude* is achieved in most cases by participation in honors programs established by the departments offering majors for the B.A. degree. Students are normally accepted as candidates for honors degrees in these programs at or soon after the beginning of their junior year. In order to be accepted for candidacy, a student must have at least a 3.00 grade point average in all work and in his major, and must meet any additional requirements that his major department specifies. Departmental programs may require honors sections, seminars, intensified individual research, tutorial work, special courses, and other appropriate activities. Honors candidates are also encouraged—by some departments, required—to take part in selected All-College Honors Seminars. These seminars, in contrast to the departmental honors courses which emphasize depth of learning in major fields, deal with problems of general interest and are open to majors from all departments in the Arts College with the approval of the Honors Council and the faculty members leading them.

In the few departments which do not yet have honors programs, students may earn honors under the regulations in force before the establishment of departmental programs. These "old rules," plus the rules governing the present college and departmental honors programs, are described in a brochure which may be obtained at 225 Johnston Hall. All students hoping to graduate with honors, whether under the old or the new rules, must officially apply for candidacy at 225 Johnston Hall.

Lower Division Honors Opportunities—Outstanding Lower Division students, though not yet eligible for formal candidacy for graduation with honors, also have wide opportunity for specially rewarding learning experiences. The top 1 or 2 per cent of each freshman class meet weekly with the deans of the college and distinguished members of the faculty for informal discussions. The top 5 to 8 per cent are assigned to special advisers, usually senior faculty members in the departments of the students' intended majors. These advisers may approve extra credit loads or advanced courses, add audited courses, and make other exceptions justified by high ability and achievement. Many departments have also instituted honors sections in Lower Division courses which bring together the strongest students for more intensive study, additional reading and other extra work. (Grade distributions in all honors sections and courses take into account the quality of the students—"regular distribution" of grades is not employed.)

Outstanding students in both divisions of the Arts College are encouraged to seek credit by examination (see page 18) and to avail themselves of other opportunities for independent study.

University College

An administrative unit known as the University College has been created under a committee which may register students who find they must cross college lines to obtain programs fulfilling their needs. Any student who finds that his specific objectives cannot be satisfied by the program in any one college of the University should call at 321 Johnston Hall to make an appointment to see the chairman of the committee, Professor Francis M. Boddy, who also serves as associate dean for the Graduate School.

Admission to University College is based on the student's previous record and the program he proposes. The program may contain courses in any college or school of the University but must show definite evidence of contributing to the objectives of the student and be deemed worthy of a degree by faculty members consulted by the chairman of the committee. The *Bulletin of University College* provides full information about the program.

The degree of bachelor of arts or bachelor of science is granted by this unit of the University.

Registration Procedures

Registration is the procedure of enrolling in the particular courses you will take for the coming quarter. It encourages you to re-examine your educational goals in light of your activities both in and outside the classroom.

A new student must obtain his admission certificate from the Office of Admissions and Records in Morrill Hall before seeking to register. Registration-orientation involves a speech examination and certain tests to assist in later educational planning.

Both new and old students receive printed instructions with their registration materials. Careful compliance with the instructions will help you avoid difficulties and inconveniences.

Registration Dates—Registration for students on campus begins several weeks before the opening of the quarter and is announced in the Official Daily Bulletin of the *Minnesota Daily*. Registration is not complete until registration material has been turned into the Office of Admissions and Records. The expiration date is listed in the University Calendar which is included in the *Class Schedule* and the University's *Bulletin of General Information*. Only in exceptional circumstances may you register after that date; you must procure approval of the Scholastic Committee and pay a special privilege fee.

New students entering in the fall come to the University in small groups for 2 days of orientation and registration throughout August and early September. Those unable to come then and those entering the winter or spring quarters are given a modified 2-day program shortly before classes begin. New students transferring with advanced standing are also given orientation programs. Students are notified of dates by mail.

Change of Registration—Course registration changes may be made in accord with the following procedures:

1. **Lower Division Cancellation**—Obtain Change of Registration ("cancel-add") form in college office, seek approval of adviser, clear at Class Reservations office (if course is reserved), and turn in form at window 14 in 105 Morrill Hall. Usually it is wise to discuss the proposed cancellation with your instructor; after 6 weeks of the quarter a notation from him (on the form) of your standing in the course is required.
2. **Upper Division Cancellation**—As above, except adviser approval is not required and, after 6 weeks of the quarter, Scholastic Committee review is required.
3. **Limitation on Cancellation** (Scholastic Committee approval required)—Cancellation in the last week of classes is seldom approved; by that time the student has essentially completed the course and must stand for a grade.

Cancellation below 12 credits is seldom approved. The standards of the college are defined in part by the number of credits a student must take; only under the most pressing extenuating circumstances can the standard be temporarily waived.

Cancellation (other than in the first 5 days of the quarter, when certain readjustments may be necessary because of failed prerequisites, etc.) is *permitted only once in each academic year*. Students are expected to plan their programs carefully, take into account necessary outside obligations, and stay with the programs for which they register. Only in the most unusual cases will a student be permitted more than one cancellation a year.

4. *Attendance in Class Until Cancellation Officially Approved*—Until final official approval of cancellation is obtained, the student is responsible for the work of the course. Informal approval by adviser and instructor is *not* sufficient.
5. *Addition*—Permission of Scholastic Committee and instructor is required after 3 days of the quarter. Permission is seldom granted after 5 days.
6. *Change of Registration Fee*—A service fee of \$2 is charged for a change of registration (after the first 5 days) to cover, in part, the expense of changing records, notifying offices, etc.

Maximum and Minimum Credits per Quarter—Most students take about 15 credits of work each quarter. To take less than 12 you must secure permission from the Scholastic Committee. Students holding jobs requiring over 20 hours of work a week are advised to take no more than 12 credits, and if they *must* work 30 hours or more they should take less. In general it is unwise to work more than 15 to 20 hours a week while going to college.

The maximum number of credits for which you may register is ordinarily 17. After 1 quarter of residence you may register for 18 credits provided you have a scholarship average of 2.50 for the quarter before registration, and no failure for the quarter immediately preceding registration. Registration for credits in excess of these limits must be approved by the Scholastic Committee.

Registration for Courses in Other Colleges of the University—All courses offered in other colleges that are regularly open to Arts College students are listed in Section II of this bulletin. Other courses in those colleges may be taken only with the approval of the college concerned and of the Arts College Scholastic Committee. Such credits may not be used to satisfy B.A. requirement of 15 Upper Division credits outside the major and minor.

Courses in the General Extension Division—Appropriate courses in the General Extension Division may be transferred to the Arts College. Registration in the Extension Division while registered in the Arts College requires Scholastic Committee approval. For further details, see page 19.

Credits in the Graduate School—If you are lacking not more than 9 credits for graduation you may, upon petition, get graduate credit for a limited amount of work taken as an undergraduate. No graduate credit will be given unless you have made previous arrangements with the Graduate School. Courses taken for graduate credit will not carry credit toward the Bachelor's degree.

With the permission of the Scholastic Committee, an undergraduate lacking not more than 6 credits for graduation may be registered in the Graduate School while completing requirements for the Bachelor's degree.

Honors Sections—In some departments, special sections of introductory courses, indicated by H in course numbers, are provided for students of outstanding scholarship. If you think you are eligible, you should inquire about them at the appropriate departmental office.

Courses Without Credit—Under certain circumstances you may register for a course without credit with the permission of the Scholastic Committee. This will entitle you to participate in class activities to an extent agreed upon in advance with the instructor. The usual arrangement, when permission is granted, is for full par-

ticipation with a final grade recorded on the permanent record, but the credits and grade points do not count in computing grade point averages in the Arts College. The procedure is particularly useful for returning students who may wish to repeat a course for review.

Audited Courses—Auditing a course differs from taking it without credit in that the student may not normally participate in the activities of the class or take the final examination, and no grade is recorded. Moreover, you may not later take for credit a course which you have audited. If you wish to audit you must obtain the approval of the Scholastic Committee. The course will count as part of the academic load for fee purposes but not for determining credit load.

Repeating a Course—You may, without special permission, repeat a course which you have failed and both the old and new grades will then stand on the record. You need not repeat a failed course, however, unless it is a prerequisite to other courses you wish to take or is required for graduation.

You may not, without permission of the Scholastic Committee, repeat a course for which you have already received credit. When permission is given, the Scholastic Committee will determine how the second grade shall be counted in the grade point average. Usually it does not count.

Repeating a High School Course—Ordinarily you should register in the college course in mathematics or language for which your high school units in these subjects make you eligible. If for any reason you believe that you are not equipped to take that level of college language course, you should consult with the Scholastic Committee about the possibility of being assigned to a college course which repeats what you had in high school. If this repetition is approved by the Scholastic Committee, the amount of credit, if any, will be determined; full credit is seldom permitted. No approval is necessary if you have to repeat high school trigonometry.

Credit for Courses Prerequisite to Courses Accredited—If, by some mistake, you should take a course without fulfilling a prerequisite, you may not later take this prerequisite course for credit, except by permission of the Scholastic Committee.

Canceling Out of College—If you should need to cancel out of college during a quarter or plan not to return in the succeeding quarter, you should report to the Arts College window (window 14) in 105 Morrill Hall to check on your financial status, cancel courses for the current or succeeding quarter, and generally clarify your relationship with the University. This always involves referral to the Arts College office, since members of the Arts College staff are interested in being of any assistance possible. You probably will want to discuss your academic standing and possibilities of return or transfer, grades to be awarded, wisdom of the decision to cancel, financial needs, job placement, or other topics.

Student Personnel Services

Faculty Advisers—As you go through college you may need help with such matters as getting registered, selecting courses, choosing your vocation, arranging finances, participating in campus community affairs, or solving personal problems. Much of this assistance is provided by the Arts College staff, though for some problems you may wish to take advantage also of the all-University personnel services. You will be given the services of a faculty adviser as follows:

1. When you enter Arts College as a freshman or sophomore, a special adviser will discuss your objectives and plans with you, and assist in planning a program of courses. If you are a freshman without previous college work, the person you see will usually be your adviser for the remainder of the year. Feel free to go to him with any problem that arises. You may reach him through the Lower Division Offices, 201, 214, or 220 Johnston Hall.

If at any time you decide to enter one of the following programs, you should report to 214 Johnston Hall for referral to a special adviser: medical technology, music, nursing, occupational therapy, and physical therapy.

If you have had previous college work, you will be assigned to a faculty adviser chosen on the basis of your major. You will receive a card in the mail with his name.

2. Before registering for the fall quarter of your second year, you will have the opportunity to express a preference for your new faculty adviser. His name will be sent to you by mail soon after.
3. When you are a third-quarter sophomore and almost ready to enter the Upper Division or a professional school, you should seek counsel from the appropriate Upper Division office or the professional school.
4. Upon admission to Upper Division you will be assigned a major adviser to help plan your work for the junior and senior years. This assignment is usually made in the departmental office of your major.

Approximately 300 faculty members participate in the Arts College advisory program. Of these, about 120 Upper Division advisers of major students are listed under appropriate departmental headings in Section II of this bulletin. The remaining advisers, for Lower Division students, are assigned to advisees on a basis of major interest or student preference. To find the offices of these advisers, see the *Staff Directory* or inquire at the appropriate college or departmental office.

Before seeing your adviser, you should study the bulletin carefully and present a tentative program and any specific questions you have in mind. You should bring any records from the Office of Admissions and Records indicating credit already earned at this University or elsewhere. If you should ever wish to change your adviser, this can usually be arranged if you apply at 214 Johnston Hall or, if in the Upper Division, at the departmental office of your major.

Scholastic Committee—From time to time almost every student needs to consult the Committee on Student Scholastic Standing (usually called the Scholastic Committee).

This committee is a group of administrative officers of the college charged with interpreting and enforcing faculty regulations. It is empowered to make exceptions to faculty regulations when those regulations work to the educational disadvantage of a student, provided the basic spirit of the regulation is maintained.

Often a student is in doubt about his obligations or about a rule that seems to stand in the way of his legitimate educational objective. The Scholastic Committee seeks to help resolve such problems. Its special counselors available for consultation often can help to work out adjustments.

When a student needs help, he should go to his college office. A representative of the committee will be glad to talk with him. To seek exemption from a regulation, he must prepare a written petition and turn it in at the college office. Review of the petition usually takes a few days. Return to the office for a reply.

Other faculty members and students on the committee serve in an advisory capacity.

Conduct Committee—The Committee on Student Scholastic Conduct is charged with investigating allegations of academic dishonesty and taking appropriate action on problems referred to it by the faculty. Actions taken by the committee are based on its responsibility for aiding students in maintaining the college's standards of integrity. The committee has authority to place students on disciplinary probation, fail them in courses, suspend them from the college, or take such other actions as the behavior seems to justify.

A faculty member may take appropriate action in a given instance if the student is in Arts College and if his action is limited to modification of the grade in the course. A report must be filed with the committee, and the student will be informed of his right to request a hearing before the committee.

The committee is composed of student and faculty members, a chairman (Associate Professor David Cooperman), and an executive secretary.

Disciplinary matters of a nonacademic nature or those involving two or more colleges are handled by the All-University Committee on Student Behavior.

Orientation Programs—The Arts College joins with other divisions of the University in helping new students, both freshmen and those with advanced standing, to learn about the college program. Usually this involves 2 days of testing, counseling, and group activities.

The Upper Division provides an hour's group discussion of the college requirements and procedures for students transferring from Lower Division. For questions that arise later, you should consult your faculty adviser or the appropriate Arts College office.

College Placement Services—Assistance to graduates in finding appropriate employment is provided both by students' major departments and by the College Placement Service, 125 Johnston Hall, directed by Assistant Professor Maxwell E. Alvord. You should check with your departmental office and also register with the Placement Service early in your senior year.

The College Placement Service will aid you in finding job opportunities that fit with your wishes and your capacities. Many recruiters from business, industry, and governmental agencies visit the campus each year for interviews with students close to graduation.

All-University Personnel Services—You are invited to use the several specialized personnel services provided by the University for all students. For example:

If you want professional help on a personal problem or vocational choice, go to the Student Counseling Bureau, 101 Eddy Hall.

To learn about student activities, visit the Student Activities Bureau at 4 TNM or the Coffman Union Program office in 229 Coffman Memorial Union.

If you need financial help apply at the Bureau of Student Loans and Scholarships, 104 Wesbrook Hall.

For a part-time job on or off campus, apply at the Student Employment Bureau, 30 Wulling Hall.

For help in improving your reading or other study skills, use the Reading and Study Skills Clinic, 101 Eddy Hall.

For aid with speech difficulties, consult the Speech and Hearing Clinic, 225 Shevlin Hall.

For questions concerning veterans' benefits, go to 102 Morrill Hall.

For help in finding a room or apartment, see the Student Housing Bureau, 209 Eddy Hall; for married students, 100 Wesbrook Hall.

If you are a foreign student, by all means keep in contact with the Foreign Student Adviser, 302 Eddy Hall.

If you have any health problems, go to the University Health Service building.

If you have legal problems, consult the Legal Aid Clinic, 133 Fraser Hall.

If you have any doubts concerning what service would be most appropriate, consult your faculty adviser or college office.

Arts College Regulations

Petition for Exemption from College Regulations—The faculty has set up certain regulations to help students achieve a good education and to facilitate the operations of the Arts College. These rules are believed wise for most students most of the time, but occasionally they may work to the educational disadvantage of a particular person. In this event, he may ask for exemption through a petition to the Scholastic Committee.

Regular petition blanks are available in the Scholastic Committee offices of the Lower and Upper Divisions. An endorsement from the faculty adviser or instructor

should be secured if appropriate. If the student desires, he will be given an opportunity to discuss his situation with a committee representative. When the committee has taken action, the reply should be picked up in the college office.

Registration Regulations—Special rules pertaining to registration procedures are discussed in a preceding part of this section.

Classification of Students—A student with less than 39 credits (including quality credits) is a freshman. A student with 39 or more credits is a sophomore until admitted to the Upper Division. A student in Upper Division who has less than 135 credits is a junior; one with 135 or more credits is a senior.

Credits—Amount of work is expressed in *credits*. Each credit demands, on the average, 3 hours a week of a student's time; that is, 1 class hour with 2 hours of preparation, or 3 hours of laboratory work.

Grades—There are four permanent passing grades, A (highest), B, C, and D (lowest), showing the quality of work in a course. Though D is a passing grade, any D must be balanced by a grade of B or better in order to maintain the C average required for graduation. A grade of F (failure) indicates that the student did not successfully complete the course.

A temporary grade of I (incomplete) is assigned when the instructor has insufficient information to permit a permanent grade. It indicates that some required work is unfinished or that the student, though officially registered, did not appear or left without officially canceling. (If the student drops out or cancels after the sixth week while failing, an F is assigned.) A student receiving an instructor's permission to make up an I must do so by the end of the sixth week in the next quarter of his residence (unless, upon petition, the Scholastic Committee should permit an extension of time). An I that is not made up becomes an F. (A degree will not be granted on any record that contains an I.) Instructors or departments may schedule examination make-ups at any time during the 6-week period; students are responsible for learning of make-up dates. An I may be made up while a student is not in residence.

A registration symbol W (withdrawal) indicates that a student has been permitted to cancel officially without grade. It is assigned during the first 6 weeks irrespective of the student's class standing. After that time an F is recorded unless he is doing passing work.

There is a symbol X which may be reported in continuation courses for which a grade cannot be determined until the sequence is completed. When the sequence is completed the X is changed to a permanent grade.

A registration symbol V (visitor) indicates registration as an auditor or visitor.

Grade Points—Quality of work is indicated by *grade points*. Grade points are assigned to course grades as follows: to each credit with a grade of A, 4 grade points; to each credit with grade of B, 3 grade points; to each credit with grade of C, 2 grade points; to each credit with grade of D, 1 grade point. An F carries no grade points. Thus for a 3-credit course completed with a grade of B a student would be assigned 9 grade points.

Grade Point Average—Grade point average is defined as the number of grade points earned divided by the total number of credits for which grades (including Fs) have been recorded. A grade point ratio of 2.00 (C average) is the minimum standard required for satisfactory progress toward the B.A. degree.

Quality Credits—Students who entered the Lower Division before first term of Summer Session, 1961, may earn "quality credits" to apply toward graduation. These are granted on the basis of grade points beyond those necessary for a C average (2 per credit) through the end of the quarter in which such students accumulate

84 credits (course and quality); 1 quality credit is granted for every 5 extra grade points. Quality credits may not be used to fulfill group requirements or major, minor, or resident requirements, or to substitute for specified courses. They are granted only for excess grade points earned at this University, exclusive of General College.

Quality credits are not available to students who entered the Arts College after spring quarter, 1961.

Satisfactory Progress—A student in the Arts College is expected to make "satisfactory progress"—a C average. The cases of students who are not reaching this standard are considered by the Scholastic Committee. A student who believes he is in difficulty should see his class instructor or his adviser immediately rather than wait until he has received a poor grade.

Scholastic Probation—Whenever a student's record indicates that he is in serious academic difficulty, he is placed on probation. This is to alert him to the urgent need to improve his grades and to afford him special assistance in analyzing his problems. If a student on probation does not demonstrate the likelihood of going ahead successfully in the college by showing significant improvement, he will be dropped. A student who believes that heavy outside work, extracurricular participation, or other competing activities may be interfering with his academic achievement should make immediate adjustments; such factors will not be acceptable as excuses for failure to improve.

Students will be placed on probation because of frequent cancellations and incompletes as well as below average (D and F) grades. In the Lower Division, a student is placed on probation if he is 15 grade points below a C average. After 70 attempted credits, he is eligible for probation if he is 10 grade points deficient. If a student is *admitted* to either Lower or Upper Division with less than a C average, his admission is probationary. A student already in Upper Division is placed on probation if he falls 9 grade points below a C average, over all, in his major, or in all courses taken while registered in Upper Division, or if *any* deficiency continues beyond 1 quarter, or if he has been on probation previously and falls below a C average in any category.

A student is removed from probation when he has a C average; in Upper Division this rule applies to all three areas noted above.

Exclusion from Arts College—Students may be excluded from the Arts College under one of the following headings:

1. *Dropped for low scholarship*—A student who fails to meet the terms of his probation may expect to be dropped.
2. *Hold for committee clearance*—Sometimes a student's scholastic difficulty indicates that he should not continue for the time being even though the record hardly requires official drop action. In such cases his later return must be approved by the Scholastic Committee.
3. *Discontinued*—If a student is pursuing an appropriate course but is handicapped by conditions he cannot control (ill health, family emergencies, etc.), he may be required to discontinue his registration until these conditions have improved. When discontinuance takes place at any time other than the end of the quarter, the courses for which he is registered may by action of the Scholastic Committee be recorded as canceled without grade.

Readmission to Arts College—Students excluded from the Arts College are allowed to return only with the permission of the Scholastic Committee.

Students classified as discontinued must present evidence that the conditions which hindered their work have been remedied.

Petitions for readmission are normally considered only after an interval of 1 year. Such petitions must present specific evidence that the student is likely to succeed with college work.

Extension courses or work in another college, taken while a student is excluded from the Arts College, will not be recognized for eventual credit in the Arts College unless approved by the Scholastic Committee.

Students who return under the provision of the preceding paragraphs will be registered on strict probation. They may be dropped at any time that their work is unsatisfactory.

Class Attendance—Every student in the Arts College has a responsibility for class attendance. All departments hold students responsible for work in a course but differ somewhat in their treatment of absences. The student must, therefore, learn the policy of his particular instructor and (if he has a legitimate excuse such as illness) arrange with him for making up the work. Either the instructor or student may consult with the Scholastic Committee concerning the validity of the excuse. In some departments students who miss opening classes lose their places in the courses.

Final Examinations—The all-University final examination schedule is published each quarter in the *Class Schedule*. Students are required to take examinations at the scheduled time. However, if any student has a conflict in examinations or if he has three examinations in a 16-hour period, he should report that fact to his college divisional office for possible adjustment on or before the date indicated in the examination announcement of the current *Class Schedule*.

If a student misses a final examination, an I (incomplete) is assigned if he was doing passing work and a failing grade if he was not. An I not made up will be changed to an F (fail).

Examination for Credit—Credit for material mastered outside of class (exclusive of high school work) may be obtained by special examination. A student who believes that he is as well informed in a particular subject as the students successfully completing the course should apply to the Scholastic Committee for a special examination. If the application is approved, the committee will appoint a special faculty committee to administer the examination. The fee for such examination is \$5. Usually no grade is assigned.

Examinations to Demonstrate Proficiency in Prerequisite Courses—If a student wishes to carry a course for which he does not have the prerequisite he may apply to the Scholastic Committee for permission to take an examination to demonstrate his proficiency in the prerequisite. A satisfactory showing in the examination will admit the student to the course but will not entitle him to credit in the prerequisite course. There is no fee for this examination.

Adult Special Students—Special facilities are available for students who wish a special and limited program in Arts College courses and who are not candidates for a degree. If you seek admission as an adult special student you should ask for an application blank from the Office of Admissions and Records. The application must receive the approval of the dean of that office and of the Scholastic Committee.

Ordinarily, to be accepted you must be 24 years of age or have a Bachelor's degree, and you must be seeking a special and limited course of study in Arts College courses.

As an adult special student, you will proceed under the following regulations:

1. You may take any course listed in this bulletin for which you have the necessary prerequisites.
2. You may not become a candidate for an undergraduate degree without the approval of the Arts College. After completing 1 full year of work (45 cr) with a C average, you may apply to the dean of admissions and records for regular classification.
3. Credit obtained by work in other institutions or by special examination will not be recorded while you remain in adult special status.
4. You may audit courses according to the procedure described on page 13.

5. Your registration each quarter must be approved by a representative of the Scholastic Committee. Undergraduates go to 214 Johnston Hall and graduates to 225 Johnston Hall. Registration dates are the same as for undergraduates.
6. Adult specials wishing to make later application for admission to the Graduate School may petition to transfer to their graduate records only their first term's work as adult specials.

General Extension Division—The General Extension Division offers courses through the Department of Evening and Special Classes and the Correspondence Study Department. A student who takes such classes in St. Paul, Minneapolis, or Duluth and wishes to count them toward a Bachelor's degree given by the Arts College must meet admission requirements and be admitted to the college; degree requirements for such students are the same as for regular students.

Correspondence courses may be applied toward a degree and may be used in the major with the consent of the major department. Credits earned in correspondence are not regarded as credits in residence.

A student who has been admitted and is planning to qualify for the B.A. degree should observe these procedures:

1. Apply for admission to Upper Division in person or by mail. Majors in social sciences (except psychology) apply to 214 Social Science Building, West Bank; others to 223 Johnston Hall.
2. Attend one of the evening Arts College orientation meetings scheduled each term by the General Extension Division to get program folders and instructions for their use.
3. Complete the program folder according to directions received with it. (Major advisers usually, though not always, are available during Extension Division class hours.)
4. Register in regular day courses for required work not offered through extension or correspondence classes.
5. Complete 45 credits in residence *after* admission to Upper Division. Extension courses in St. Paul, Minneapolis, and Duluth are "in residence"; correspondence work is not.

A student dropped from the Arts College may register for work in the General Extension Division only with explicit approval of the Scholastic Committee. Any credits thereafter earned through the General Extension Division are applicable toward a B.A. only if accepted by the committee.

A student who believes adjustments should be made for him in any of the regulations or procedures should consult the Scholastic Committee, 225 Johnston Hall or 214 Social Science Building, West Bank.

Fees and Expenses

For information concerning fees and expenses, see the *Bulletin of General Information*.

Scholarships and Awards

In addition to the all-University aids available through the Bureau of Student Loans and Scholarships, 104 Wesbrook Hall, there are a number of scholarships and awards given by the following departments: Art, Classics, English, German, History, Journalism, Library School, Music, Political Science, Scandinavian Area Studies, Sociology, and Speech and Theatre Arts, as well as the Arts College offices. Students seeking further information concerning these awards should apply directly to the department office concerned.

Official Daily Bulletin

Students are held responsible for announcements affecting them published in the Official Daily Bulletin in the *Minnesota Daily*.

Section II

COURSE OFFERINGS AND MAJOR REQUIREMENTS

Explanations

Course Numbering—A course is designated by an abbreviated prefix of the department name and a number or a letter. It has the same number in whatever quarter it is offered. The quarter is indicated by a lower case letter following the number (f, fall; w, winter; s, spring; su, summer).

Examples:

- 1f-2w, a 2-quarter course given in the fall and winter.
- 1w-2s, the same course given in the winter and spring.
- 3f,w,s, a 1-quarter course given each quarter.

A course sequence punctuated by commas may be entered any quarter, subject to listed prerequisites; one punctuated by hyphens must be taken in the order listed. Thus: NSci 171, 172, 173 may be entered any quarter; Jour 140-141 may be entered only in 140; a sequence numbered 1, 2-3 might be entered in either 1 or 2.

Lower Division and Upper Division Courses—The Arts College distinguishes between Lower Division courses (numbered 1 through 49), intended primarily for freshmen and sophomores, and Upper Division courses (numbered 50 or above), intended primarily for juniors and seniors.

Upper Division courses numbered between 50-99 are open to juniors and seniors while those numbered between 100-199 are open to juniors, seniors, and graduates unless otherwise indicated.

Most Upper Division courses numbered between 50-99 are open to sophomores who have averages of C or better in prerequisite courses and in all work. They are listed beneath the heading "Upper Division Courses" in departmental statements in this bulletin. When a course is offered at both levels, a student should take the section appropriate for him. Upper Division courses numbered 100-199 are open to third-quarter sophomores by special permission of the Scholastic Committee. The committee will usually grant such permission to students who have an average grade of at least C in all their work and in the prerequisite courses, provided they have completed requirements for entering Upper Division or a professional school. Requests for special permission should be presented to the appropriate Lower Division office.

Symbols—The following symbols are used throughout the course descriptions and will not carry any page footnotes:

- † To receive credit, all courses listed before the single dagger must be completed.
- § No credit is granted if credit was received for equivalent course listed after this section mark.
- ¶ Concurrent registration is allowed with the course listed after paragraph mark.
- ‡ Consent of instructor is required.
- △ Consent of department or school offering course is required.

Accounting

See Business Administration

Air Science (Air)

(Air Force ROTC)

FACULTY—Lieutenant Colonel James Suttie, *chairman*; Captains John J. Denice, Donley D. Eyolfson, Dewey E. Johnson.

The program in air science, leading to a commission in the Air Force Reserve, is available for students in the Arts College as well as for those in other colleges of the University. For information concerning the requirements and the opportunities in this program, see the *Bulletin of the Army-Navy-Air Force ROTC*. The Arts College will accept credits from basic and advanced courses in air science to fulfill a minor toward the B.A. degree. Noncredit air science courses 31f, 32w, and 36s meet 1 hour each week. Substitute courses as elected by the student from natural and physical science, humanities, language, and social science fulfill the air science academic requirement for these quarters.

BASIC COURSES

- 31f. Leadership Laboratory. (No cr)
- 32w. Leadership Laboratory. (No cr)
- 33s. Foundations of Aerospace Power. (2 cr)
- 34f. World Military Systems I. (2 cr)
- 35w. World Military Systems II. (2 cr)
- 36s. Leadership Laboratory. (No cr)

ADVANCED COURSES

- 131f. Growth and Development of Aerospace Power. (3 cr)
- 132w. Growth and Development of Aerospace Power. (3 cr)
- 133s. Growth and Development of Aerospace Power. (3 cr)
- 134f. Aerial Navigation and Meteorology. (3 cr)
- 135w. Military Aspects of World Political Geography. (3 cr)
- 136s. International Relations and the Air Force Officer. (3 cr)

American Studies (AmSt)

FACULTY—Bernard Bowron, *chairman*; Robert Beck, Robert Berkhofer, Hyman Berman, Clarke A. Chambers, David Cooperman, Charles H. Foster, George Hage, Joseph J. Kwiat, Jacob C. Levenson, Paul Murphy, David W. Noble, Johannes Riedel, Arnold M. Rose, Ralph G. Ross, Mulford Q. Sibley, Timothy Smith, Frank Sorauf, Robert F. Spencer, Gregory Stone, Donald R. Torbert, Dimitri T. Tselos, Mary C. Turpie.

Major Advisers in Arts College—Professor Bowron (candidates for the Ph.D.); Associate Professor Turpie (candidates for the M.A. and B.A.).

A major in American Studies for the B.A. is offered to students under the general provisions of an interdepartmental major. (See page 9.) The Upper Division courses which constitute this major will include 15 credits in courses dealing with foreign civilization and 51 credits in courses concerned with civilization in the United States as follows:

- A. 42 credits in approved courses in the following four fields, including at least 9 credits in each field: American history; American literature; American art and philosophy; social sciences in the United States.

B. 9 credits in AmSt 90-91-92.

Prerequisite: Hum 21, 22, 23, American Life, or Hum 71, 72, 73, Humanities in the United States.

Special Provision for Nonmajors—Although 9 credits in the humanities courses listed below are prerequisite for a major program in American Studies, there is no such fixed prerequisite for the American Studies Proseminar. Seniors who have a basic knowledge of such fields as American history and literature to build on may enroll in AmSt 90-91-92 on consultation with the instructor.

LOWER DIVISION COURSES

Hum 21f, 22w, 23s. American Life.** Each quarter is organized around a topic, such as individualism in American life and thought, religious and philosophic attitudes in relation to American ideas, or the rise of American nationalism and its place in the modern world. (3 cr per qtr) Hage, Murphy, Turpie

UPPER DIVISION COURSES

Hum 71f, 72w, 73s. Humanities in the United States.** Introduction to American cultural history. Each quarter is organized around topics which 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. Such figures as Jefferson, Hamilton, Thoreau, Mark Twain, Frank Lloyd Wright, and William Faulkner are studied. (3 cr per qtr) Cooperman, Levenson

90f-91w-92s. Proseminar: American Studies. Proseminar and individual conferences. Each quarter is organized around a problem presented by some representative theme, figure, or period (for example, the city and American thought, Frank Lloyd Wright, the 1920's). A variety of subjects will be offered from year to year. (3 cr per qtr; prereq sr and #) Turpie

FOR GRADUATE STUDENTS ONLY

200-201-202. Introduction to American Studies

210. Seminar: American Studies: Bibliography and Orientation

211-212-213. Seminar: American Studies: Problems and Methods

240-241-242. Materials for the Study of American Civilization

250, 251, 252. Readings in American Civilization

For courses in the participating departments (history, English, philosophy, sociology, etc.) which are accepted for the B.A., the M.A., or the Ph.D. degree in American Studies, see the publication entitled *Program in American Studies* and the annually revised lists of approved courses.

Anatomy (Anat)

(College of Medical Sciences)

Head—Arnold Lazarov

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

Students in the Arts College may elect courses in human anatomy other than Anat 3 or 4 only by arrangement with the head of the Department of Anatomy and the Arts College Scholastic Committee.

3f. Elementary Anatomy. (4 cr; prereq 3-yr nurses in Extension Division, dental hygienist; others take Anat 4 unless granted Δ)

4s. Elementary Anatomy. (5 cr; primarily for 5-yr nurses and med techs; prereq Biol 2A)

** A student may take any combination of Hum 21, 22, 23, 71, 72, 73 up to a maximum of 9 credits. Upper Division students are urged to take the Hum 71, 72, 73 sequence if possible.

Anthropology (Anth)

FACULTY—E. Adamson Hoebel, *chairman*; Richard Adams, Milton Altschuler, Luther Gerlach, James L. Gibbs, Jr., Elden Johnson, Frank Miller, Rupert Murrill, Ladislav Novak, Pertti Peltto, Robert F. Spencer.

Major Advisers in Arts College—Professors Hoebel, Spencer; Associate Professors Gibbs, Johnson, Murrill; Assistant Professors Adams, Gerlach, Novak, Peltto; Instructor Altschuler.

Major Sequence in Arts College—Prerequisites: Anth 1A and 2A or 100. Anth 80, 90, 164, 169, 173 (or 170 and 171), and 85; a minimum of 6 additional credits in Ethnology (Group I), 3 credits of which must be in Old World Ethnology (i.e., courses numbered 120-129); a minimum of 3 additional credits in Cultural Anthropology (Group III); 6 additional elective credits to make a total minimum of 33 credits of Upper Division courses in anthropology. (Anth 100 cannot be counted toward credits for a major.)

Students planning to take graduate work in anthropology should immediately consult with Professor Robert F. Spencer for assignment to a major adviser for detailed planning of major program.

The fact that anthropology concerns itself with man and his cultures in all times and places lends to it a uniquely appropriate quality for general and liberal education. The two introductory courses (1A, 2A) are recommended for general educational background.

Honors Program—Consult departmental major adviser.

LOWER DIVISION COURSES

- 1Af,w.s. **Introduction to Anthropology: Prehistoric Man and Culture.** Origins of man and development of modern races. Growth and differentiation of the cultures of man from the Dawn Stone Age of early glacial times through the Old and New Stone Ages to the dawn of civilization in the Bronze and Iron Ages. (5 cr) Adams, Johnson, Murrill, Novak
- 2Af,w.s. **Introduction to Anthropology: Cultural Anthropology.** The varieties and range of human behavior as revealed through the study of primitive societies in all parts of the world. A scientific analysis of the ways in which primitive men organize their lives, directed toward a deeper and broader understanding of human capacities and purposes. (5 cr) Gibbs, Hoebel, Peltto, Spencer
- 42s. **Introduction to World Ethnography.** Survey of the major tribal and folk cultures of the world. (4 cr; prereq 2A) Spencer

UPPER DIVISION COURSES

100. **Principles of Cultural Anthropology.** Intensive introduction to the elements of cultural anthropology. Analysis of primitive societies with respect to range and variability of human behavior. Principles of culture dynamics. (3 cr, §1A or 2A; may be taken in lieu of 1A-2A) Gerlach
- 190f-191w-192s. **Directed Research.** (Cr ar; prereq sr, Δ) Staff
196. **Proseminar: East and South Asia.** (Same as Geog 196, Pol 196, Ortl 196, and Hist 196) Integrating course for students majoring in the East and South Asia Area Studies program. (3 cr; prereq sr) Interdepartmental staff

Anth 80, 85, and 90 are open to sophomores who have a grade of at least C in 2A. Other Upper Division courses are open also to sophomores under conditions explained at the beginning of Section II.

Attention of students is called to Ortl 75-76-77, Asian Civilizations (see Slavic and Oriental Languages).

Group I—Ethnology

80. **The American Indian.** The peopling of North and South America. Physical and cultural characteristics of the tribes of the major culture areas. (3 cr; prereq 2A or 100) Johnson
115. **Indians of the Great Plains.** Prehistoric origins of the tribes of the Plains area. Cultures of the Missouri River tribes and the nomads of the Plains. (3 cr; prereq 2A or 100 or Δ; not offered 1984-85) Hoebel
116. **Indians of the Southwest.** Prehistoric origins of Southwestern (New Mexico, Arizona, southern Utah and California, and northern Mexico) Indians. Cultures of the Pueblo, Navajo, Apache, and Yuman tribes. (3 cr; prereq 2A, 100 or Δ; offered alt yrs) Hoebel
117. **Indians of South America.** Ethnographic survey of South American Indians. Prehistory of the various areas. Spanish and Portuguese contact and the adjustment of the various tribes to modern conditions. (3 cr; prereq 2A or 100) Altschuler
119. **Contemporary Middle-American Communities.** Mexican and Guatemalan village communities, particularly those composed entirely or in part of Indian-speaking peoples. Application of anthropological concepts and methods to the study of folk cultures. (3 cr; prereq 2A or 100 [waived for majors in Latin-American Area Studies]) Miller
120. **Peoples and Cultures of Africa.** A survey of the races, languages, and cultures of Africa south of the Sahara. Peoples representative of each culture area will be studied with special attention to social organization, economic and political systems, and adjustment to modern conditions. (3 cr; prereq 1A and 2A or 100) Gibbs, Gerlach
121. **Peoples and Cultures of the South Seas.** Survey of the races and cultures of the Pacific Islands (Oceania, Polynesia, Micronesia, and Melanesia). (3 cr; prereq 1A and 2A or 100) Murrill
124. **The Culture Sphere of China.** Development of Chinese institutions and other cultural manifestations. Their influences in the development of the cultures of Vietnam, Korea, and Japan. (3 cr; prereq 2A or 100 or Δ; offered 1964-65 and alt yrs) Gerlach
125. **Peoples and Cultures of India.** Survey of the primitive tribes, Hindu caste society, and the modern communities of India. (3 cr; prereq 2A or 100 or Δ) Spencer
126. **Peoples and Cultures of Southeast Asia and Indonesia.** Cultures of the peoples of Burma, Siam, French Indochina, and the Malaysian archipelago. Influences from India on the area. Islamic influences in Indonesia. Modern ethnic and national problems. (3 cr; prereq 2A or 100 or Δ) Spencer
127. **The Islamic Culture Sphere.** Mohammed and the founding of Islam. Islamic culture as an intermediary between (a) classical and the ancient oriental civilizations, and (b) medieval Europe. Legal, political, social, and theological developments in Islam. (3 cr; prereq 1A and 2A or 100, or Δ) Gerlach
128. **Islam in Africa.** Influence of Islam upon African people south of the Sahara. How Islam has spread through East and West Africa; why and how it has changed indigenous African cultures. Relationship between Islamization and Westernization. (3 cr; prereq 2A or 100 or Δ) Gerlach

Group II—Archaeology

90. **Archaeology of North America.** A survey of the prehistoric archaeology of North America north of Mexico. Emphasis will be placed on analysis of the techniques, methods, and goals of prehistoric archaeology. (3 cr; prereq 1A or 100) Adams
130. **Archaeological Methods and Techniques.** Lectures and laboratory exercises in the techniques of excavations, recordation, and methodological interpretations of archaeological data. (3 cr; prereq sr, 90 and Δ; 4 hrs per wk) Johnson
132. **Archaeology of the Mississippi Drainage.** Archaeological record of prehistoric cultures of the Mississippi River area from Minnesota to the Gulf of Mexico. (3 cr; prereq 90) Johnson
133. **Archaeology of the Southwest.** Archaeological record of prehistoric cultures of the southwest area of the United States. Paleo-Indian, Basket Maker, and Pueblo prehistory. (3 cr; prereq 90) Johnson
134. **Pre-Columbian Civilizations of the New World.** The archaeological record of the prehistoric civilizations of Middle America and Peru. Emphasis on developmental cultural sequences leading to the Maya, Aztec, and Inca. (3 cr; prereq 90 or Δ) Adams
136. **Prehistoric Archaeology of the Old World.** Archaeological record of cultural evolution in Europe, Africa, and Asia. (3 cr; prereq 90) Johnson
- 140su. **Field Research in Archaeology.** Archaeological field excavation, survey, and research in prehistoric sites in the state of Minnesota. Intensive training in excavation techniques, recordation, analysis, and interpretation of archaeological materials. (6-12 cr [may be taken for cr only once]; prereq 90 and Δ) Johnson

Group III—Cultural Anthropology

150. **The Contact of Cultures.** Processes of acculturation. Impact of civilization on native cultures. (3 cr; prereq 1A and 2A or 100) Altschuler
151. **Applied Anthropology.** Application of the methods and techniques of anthropology to current problems of government, industry, education, and social welfare planning. The role of anthropology in UNESCO and technical aid, public health, and other administrative activities for native peoples in the modern world. (3 cr; prereq sr, 150 or Δ ; offered when feasible) Altschuler
154. **Ethnological Field Techniques.** Introduction to techniques of field observation, interviewing, and recording; training in field methods, the presentation of data, and the interpretation of results provided by laboratory exercises with informants and participation in a field project in ethnic communities in the Twin Cities. (6 cr; prereq sr, grad, Δ) Miller
160. **Law-Ways of Primitive Man.** Social control, law, and government in primitive societies. Theory and method of comparative legal dynamics. Relation of law to whole cultures. Functions and evolution of law revealed in study of type primitive societies ranging from the simplest to the most complex. (3 cr; prereq 2A or 100 [waived for majors in other social sciences]) Hoebel, Gibbs, Gerlach
161. **Primitive Religion.** Beliefs and practices in primitive religious systems, the roles of sacred, the supernatural, and beliefs in continuance of life after death, and the role of the dead in the life-ways of primitive peoples. (3 cr; prereq 2A or 100) Spencer, Miller
162. **Primitive Technology.** Analysis of the material culture of primitive peoples; historical development and distribution; techniques and methods of manufacture; use and function within a society. The role of the craftsman in primitive societies. (3 cr; prereq 1A and 2A or 100) Adams
163. **Economic Activities in Primitive Cultures.** Varied systems of making a living in preliterate groups. Economy of hunting and fishing tribes, primitive agriculturists, and simple herders. Relations between habitat, technology, social organization, and goals and attitudes as focused in the area of economic life. (3 cr; prereq 2A or 100 [waived for majors in economics and business administration]; offered when feasible)
164. **Social Anthropology.** The structure of nonliterate and folk societies with special attention to systems of kinship and marriage and their relationship to economic, religious, and political institutions; an examination of the functional and structural approaches in cultural anthropology. (3 cr; prereq 1A and 2A or 100) Gibbs, Peltó
- 165f,w.s. **Culture and Personality.** Role of culture in the formation of personality. Problems of individual adjustments to the demands of culture. Psychological approach to culture. (3 cr; prereq sr, 2A or 100 or Δ [waived for majors in public health, nursing, psychology, sociology, and social work]) Gibbs, Hoebel, Peltó, Spencer
166. **Primitive Art.** Technique, style, and symbolism in the arts of primitive peoples. Art and the artist in relation to primitive culture and society. (3 cr; prereq 2A or 100 or Δ ; waived for art majors)
169. **Comprehensive Survey.** Integrated review of major anthropological concepts, methodologies, and theorists. (3 cr; prereq sr, Δ) Gerlach

Group IV—Physical Anthropology

170. **Primate and Human Evolution.** Origins and relationships of extinct forms of nonhuman primates and man. (3 cr; prereq 1A or 100 and Δ) Murrill
171. **Human Races.** Evolution of races, present living races, the mechanism of differentiation of the major and ethnic groups of man, physiological differences between races. (3 cr; prereq 170 or Δ) Novak
173. **Human Biology.** Evolutionary processes in the differential development of races. Physical characteristics, distribution, and relationships of living races of mankind. Human genetics, particularly of blood types in racial analysis. Influence of various environments on man. (3 cr; prereq 1A or Δ) Murrill
175. **Human Physical Growth and Development.** Period 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. (3 cr; prereq 1A or waived for majors in child development) Murrill
176. **Growth and Development in Adolescents.** Physical growth at adolescence, sex differences in physique, concept of physiological changes, endocrinology of adolescence, changes in mentality and behavior at adolescence. (3 cr; prereq 175 or \S) Novak

177-178-179. Physical Anthropology. Comparative osteology of man and the anthropoid apes. Variations related to sex, age, and race. Observations and measurements on the skeleton. Anthropometry—measurement of the living. Body size, proportions, and statistical analysis. Age, sex, and racial differences in body composition. Anthropometrical, roentgenographic, biophysical, and biochemical estimations of body compartments. (4 cr per qtr; 2 lect and 4 lab hrs per wk) Murrill, Novak

Group V—Linguistics

85. Language and Culture. The relation of language to behavior; languages as systems of thought, logic, and orientation and their impact on cultures. Semantics and symbols in linguistic structures across the world; analysis of selected linguistic and cultural systems. Glottochronology. (3 cr; prereq 2A, or 100, or Δ) Spencer

180-181.† Descriptive Linguistics. 180: Phonetics and phonemics. Analysis of speech sounds and practice in phonetic recording and phonemic analysis. 181: Morphology and syntax. Problems in phonologic, morphologic, morphologic, and syntactic structures of selected languages outside the Indo-European speech family. (3 cr per qtr; prereq Δ) Spencer

FOR GRADUATE STUDENTS ONLY

200-201. Anthropology and Scientific Method

202. Proseminar: Research Methods

204, 205, 206. Seminar: Anthropology

220, 221, 222. Seminar: Ethnology

230, 231, 232. Seminar: Archaeology

240. Ethnological Field Session

250. Advanced Social Anthropology

251, 252, 253. Seminar: Culture and Personality

264. Seminar: Social Anthropology

270, 271, 272. Seminar: Physical Anthropology

Arabic

See Slavic and Oriental Languages

Architecture (Arch)

(Institute of Technology)

FACULTY—Ralph Rapson, *head*; Bruce Abrahamson, Brooks Cavin, Robert Cerny, Robert Einsweiler, Carl Graffunder, Alonzo Hauser, Kay M. Lockhart, Valerius Michelson, John S. Myers, Norman Nagle, Leonard Parker, Hugh Peacock, Richard Peterson, John Rauma, James Stageberg, Walter K. Vivrett.

Major Adviser in Architecture in Arts College—Professor Myers.

Major Sequence in Arts College—Arch 51-52-53, 81-82-83, 91-92-93.

Prerequisites: High school or college equivalent of Math Z, preparatory mathematics, and solid geometry; Phys 1-2-3 and 1A-2A-3A; Art 23A-24A-25A; and approval by the School of Architecture after formal application has been made. Application forms will be furnished by the School of Architecture or the Office of Admissions and Records. They must be submitted not later than June 1 preceding the beginning of the academic year for which admission is sought.

This sequence is intended for:

1. Students who for cultural or vocational reasons may want a certain degree of specialization in architecture.

2. Students preparing for further training in such fields as architecture, urban planning, landscape architecture, and interior or industrial design.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

A special modification of this sequence is available for students taking the 6-year combined course in arts and architecture leading to both the liberal arts and professional architectural degrees, B.A. and B.Arch. Such students should include, in addition to the courses listed above, Math T, 15, 42, 43; MM 92-93; Art 60A-61A-62A. Also CE 38-39-41 or Arch 71-72-73 is desirable although neither carries credit toward the B.A. degree. For further information concerning the 6-year combined course, see page 178.

Note—See the *Bulletin of the Institute of Technology* for additional courses.

LOWER DIVISION COURSES

- 1s. **Introduction to Architecture.** Philosophy and principles of architecture as an art, a science, and a profession. (1 cr; 1 lect hr per wk)

UPPER DIVISION COURSES

- 51f-52w-53s. **History of Architecture.** The development of architecture in ancient Egypt, Greece, and Rome through Renaissance and baroque architecture from the 15th to the mid-18th century. (3 cr per qtr; prereq soph; 3 lect hrs per wk)
- 54f, 55w, 56s. **History of Architecture.** The development of architecture from the mid-18th century through current day. (3 cr per qtr; prereq 53 or #; 3 lect hrs per wk)
- 81-82-83.† **Architectural Design.** Basic exercises in composition of line, form, proportion, color, and texture. Elements of architectural design. (6 cr per qtr; prereq jr and Δ; 18 lab hrs per wk; entrance fall qtr only) Myers
- 91-92-93.† **Architectural Design.** Continuation of design principles with emphasis on development of structures as an integral part of design. Research techniques. (6 cr per qtr; prereq 83; 18 lab hrs per wk) Stageberg
- 101-102-103. **Tutorial Work in History of Architecture.** Reading and written reports on special historical problems. (2 cr per qtr; prereq 53; 1 conf and 5 research hrs per wk)
- 131f. **Planning.** History and theory of planning. (3 cr; prereq 4th yr or #; 3 lect hrs per wk) Vivrett, Einsweiler, Warp
- 132w. **Planning.** Conceptualization of the role of individual disciplines in the planning process: architecture, economics, engineering, geography, public administration, law, public health, and sociology. (3 cr, §104; prereq 131 or #; 3 lect hrs per wk) Vivrett, Einsweiler
- 133s. **Planning.** Community facilities and housing. (3 cr; prereq 4th yr) Vivrett
134. **Planning.** Tutorial work in community facilities and housing. (3 cr; prereq 133 or 131) Vivrett

Art (Art)

FACULTY—Carl D. Sheppard, *chairman*; Peter Busa, Norman Canedy, Allen Downs, Jerome Liebling, Warren D. MacKenzie, Freddy Munoz, Malcolm H. Myers, Walter W. Quirt, Richard Randell, Josephine L. Rollins, John Rood, Herman Rowan, Sidney Simon, Hylton A. Thomas, Donald Torbert, Dimitri T. Tselos, Melvin Waldfogel, Robert Wilcox.

Major Advisers for All Art Courses in Arts College—Professors Downs, Liebling, Myers, Quirt, Rollins, Rood, Sheppard, Thomas, Torbert, Tselos; Associate Professors Busa, MacKenzie, Simon, Waldfogel.

The principal objective of the Department of Art is to contribute to the general education of all students at the University of Minnesota. With this end in view, all courses in both history and practice lay particular stress on the problems and needs

of the student interested in acquiring some knowledge of the theory and practice of art within the framework of a liberal education.

For those students interested in acquiring a liberal education and then proceeding to advanced work in history or studio, the Department of Art offers professionally oriented courses at the Upper Division level and graduate courses leading to the degrees of the M.A. and Ph.D. in history and criticism, the M.A. in museology, and the M.F.A. in the practice of art.

Note—Superior students in art may be required to leave permanently with the department one or two examples of their work. These examples will be used for exhibition purposes and as a continuing record. Such students will be compensated for materials used.

Major Sequences in Arts College—In the Department of Art it is possible to major in the history and criticism or the practice of art, or in various combinations of these. The student intending to major in art should consult one of the departmental advisers as soon after entrance to college as is practicable.

A. History and Criticism of Art. Prerequisites: Art 1, Introduction to Art; Art 20, Basic Drawing, and one 3-credit course chosen from among the following studio offerings: Art 10, Photography; Art 23, Drawing and Painting; Art 24, Design; Art 32, Printmaking; Art 40, Sculpture; Art 45, Ceramics. Requirements: the following 27 credits in History of Art.

Art 56X, 57X, 58X—Ancient and Medieval Art

Art 66X, 67X, 68X—Renaissance and Baroque Art

Art 76X, 77X, 78X—Rococo and Modern Art

Variance from this program is permitted only by petition to the Department of Art. The courses will normally be taken in the sequence indicated above. The following areas are recommended minors for students majoring in the history and criticism of art: humanities, history, literature, anthropology, philosophy, or languages.

B. Studio Course Major. Prerequisites: Art 1, Introduction to Art; Art 20, Basic Drawing; Art 40, Basic Sculpture; and 9 credits selected from among the following: Art 10, Photography; Art 23, Drawing and Painting; Art 24, Design; Art 32, Printmaking; Art 41, Sculpture; Art 45, Ceramics. Requirements: 27 credits in studio courses numbered 50 or above, and 9 Upper Division credits in art history.

Minor Sequences in Arts College—In the Department of Art it is possible to minor in the history and criticism or the practice of art or in various combinations of these.

The student wishing to minor in studio art should note that Upper Division sequences in studio work sometimes have one or more prerequisites at the Lower Division level.

Students wishing to minor in art history may register for a wide variety of Upper Division courses with consent of department.

The student intending to minor in art is invited to consult one of the departmental advisers. To facilitate reference to the several art sequences, the following index will be helpful:

Lower Division Courses

Art History—1, 2, 3

Photography—10, 11

Drawing and Painting—20, 23

Design—24

Printmaking—32, 33

Sculpture—40, 41

Ceramics—45

Upper Division Courses

Art History—50, 52X, 53X, 56X, 57X, 58X, 66X, 67X, 68X, 76X, 77X, 78X, 86, 87, 88, 96X, 97X, 100, 101, 102, 110, 111, 112, 116, 117, 118, 126, 127, 128, 129, 130, 136, 137, 138, 140, 141, 142, 147, 148, 156, 157, 158, 168, 176, 177, 178, 186, 196, 197, 198

Photography and Film—83, 84, 85, 123, 124, 125

Drawing and Painting—51X, 54, 55, 60B, 61B, 62B, 70, 71, 72, 70B, 71B, 72B, 120, 121, 122, 150, 151, 152

Design—65, 73, 74, 75, 193, 194, 195

Printmaking—90, 91, 92, 190, 191, 192

Sculpture—80, 81, 82, 80A, 81A, 82A, 180, 181, 182, 180A, 181A, 182A

Ceramics—94, 95

For Graduate Students Only

Art History—206 through 238

Studio 200 through 262

Courses especially recommended for general education purposes are 1, 2, 3, 50, 52X, 53X, 56X, 57X, 58X, 66X, 67X, 68X, 76X, 77X, 78X.

Art History and Criticism

LOWER DIVISION COURSES

1-2-3. Introduction to Art

- 1f,w,s. **Principles of Art.** Lecture and laboratory course introducing the student to basic problems of art. Examples from the painting, sculpture, and architecture of various periods will be used to illustrate general cultural factors that influence the production of art as well as basic problems of design and of technique. The laboratory-discussion sessions will introduce the student to practical problems arising from the nature of the materials of the visual arts. (3 cr, \$50; prereq fr and soph only [Upper Division students see Art 50 for equiv]) Torbert, Canedy
- 2w. **Masterworks of Ancient and Medieval Art.** Based on selected monuments; broad critical analysis of Egyptian, Mesopotamian, Greek, Hellenistic, Roman, and Medieval art as separate but related expressions of the culture in the periods indicated. (3 cr, \$52X; prereq 1, fr and soph only [Upper Division students see Art 52X for equiv]) Waldfoegel, Thomas
- 3s. **Masterworks of Renaissance and Modern Art.** Second course of series, selected monuments of Renaissance, baroque, rococo, and modern art and culture. (3 cr, \$53X; prereq 1, fr and soph only [Upper Division students see Art 53X for equiv]) Thomas, Waldfoegel

UPPER DIVISION COURSES

- 50f,w,s. **Introduction to the Visual Arts.** Similar to Art 1 in organization and basic content. An expanded program of reading and more extensive contact with works of art. (3 cr, \$1) Torbert
- 52Xw. **Masterworks of Ancient and Medieval Art.** Similar to Art 2 in organization and basic content. Expanded program of reading and contact with works of art. (3 cr, \$2; prereq 1 or 50) Waldfoegel, Thomas
- 53Xs. **Masterworks of Renaissance and Modern Art.** Similar to Art 3 in organization and basic content. Expanded program of reading and contact with works of art. (3 cr, \$2; prereq 1 or 50) Waldfoegel, Thomas
- 56Xf. **Art in Ancient Egypt, Mesopotamia, and Greece.** Architecture, sculpture, and painting of the pre-Hellenic civilizations in Egypt, Mesopotamia, and the Aegean. Development of Greek art from its beginning to the Periclean age. (3 cr; prereq 1 or 50 or Δ; required for art history majors) Tselos
- 57Xw. **Hellenistic Through Early Christian Art.** Art of the Hellenistic kingdoms, Hellenic and Etruscan art in Italy, art of the Roman Empire. Transformation of classical styles under the influence of oriental traditions and of Christian religion. Development of Christian art. Art of the Byzantine Empire. Survivals of classical forms in early medieval art. (3 cr; prereq 1 or 50 or Δ; required for art history majors) Tselos

- 58Xs. Romanesque and Gothic Art.** Development of architecture, sculpture, and painting in western Europe and Italy from the 10th until the 15th century. The art of the cathedrals. Romanesque and Gothic monumental and manuscript painting. Development of Gothic art as manifestation of currents in medieval culture. (3 cr; prereq 1 or 50 or Δ ; required for art history majors) Tselos
- 59su. Summer Travel Course in European Art.** Course conducted by Department of Art under auspices of Summer Session. Covers main phases of ancient, medieval, Renaissance, baroque, and modern art. Lectures, guided visits, and discussions at important cultural centers, museums, and cathedrals. Among important cities usually visited are Lisbon, Madrid, Toledo, Athens, Delphi, Corinth, Mycenae, Rome, Assisi, Siena, Florence, Ravenna, Venice, Salzburg, Innsbruck, Munich, Frankfurt, Copenhagen, London, Paris, Chartres. (5 cr; prereq Δ ; about June 28-August 12, approx 6 wks in Europe) Torbert
- 66Xf. Early Renaissance Art.** Fifteenth-century architecture in Italy (Brunelleschi, Alberti); sculpture (Ghiberti, Donatello); painting (Masaccio, Piero della Francesca, Botticelli, Giovanni Bellini, Leonardo). Northern late Gothic architecture and sculpture (Sluter). Flemish painting (van Eyck, van der Weijden, Bosch). (3 cr; prereq 1 or 50 or Δ ; required for art history majors) Thomas, Canedy
- 67Xw. High Renaissance and Mannerist Art.** Sixteenth-century architecture, sculpture, and painting in Italy (Bramante, Palladio); Michelangelo, Giovanni da Bologna; Raphael, Correggio, Titian, Tintoretto). Spanish painting (El Greco). Northern Renaissance architecture. Flemish and German painting (Brueghel; Dürer, Holbein, Altdorfer, Cranach). (3 cr; prereq 1 or 50 or Δ ; required for art history majors) Thomas, Canedy
- 68Xs. Baroque Art.** Seventeenth-century architecture, sculpture, and painting in Italy (Bernini; Caravaggio, the Carracci). French art (Versailles; Poussin, Lorrain). Flemish and Dutch painting (Rubens, Van Dyck; Rembrandt, Hals, Vermeer, Ruisdael). Spanish painting (Velasquez). (3 cr; prereq 1 or 50 or Δ ; required for art history majors) Thomas, Canedy
- 76Xf. Modern Art—The Eighteenth Century.** Rococo, neoclassical, and early romantic art in England, France, Spain, Germany, and Italy: Watteau, Boucher, David, Houdon, Soufflot, Hogarth, Reynolds, Kent, Soane, Goya, Tiepolo, Guarini, Schluter, Neumann. (3 cr; prereq 1 or 50 or Δ ; required for art history majors) Waldfoegel
- 77Xw. Modern Art—The Nineteenth Century.** Romantic, realist, impressionist, and postimpressionist painting in England, France, Germany: Delacroix and Constable, Courbet and Manet, Monet and Renoir, Cezanne and Van Gogh. Architectural revivals and reforms; sculpture in France. (3 cr; prereq 1 or 50 or Δ ; required for art history majors) Waldfoegel
- 78Xs. Modern Art—The Twentieth Century.** Abstract and expressive painting in Europe and the United States: Matisse, Picasso, Mondrian, Munch, Kokoschka, Miro, Pollock, DeKooning. Comparable developments in sculpture and architecture: Lipchitz, Brancusi, Gropius, Wright. (3 cr; prereq 1 or 50 or Δ ; required for art history majors) Waldfoegel
- 86f-87w-88s. The Art of the Film.** Critical study and analysis of the motion picture as an art form. Emphasis on the finished product, demonstrated in a select program of films of exceptional merit or specific interest. Lectures, demonstrations, and discussions. Analysis of films of various categories, such as narrative, poetic, documentary, experimental, etc. (3 cr per qtr; prereq 9 cr in art or 9 cr in speech incl Spch 11) Amberg
- 96X. Art of Latin America.** Painting, sculpture, and architecture in Latin America, treating the pre-Columbian traditions, the development of the various colonial styles and the most significant of the national schools in the periods prior to the 20th century. (3 cr; prereq 1 or 50 or Δ ...67X or 117 recommended; offered when feasible)
- 97X. Art of Latin America.** Latin-American arts in the 20th century with particular emphasis on painting and architecture in Mexico and South America. (3 cr; prereq 1 or 50 or Δ ...96X recommended; offered when feasible)
- 100f. Ancient and Medieval Art I.** Art of prehistoric Europe, ancient Near East, Aegean proto-Greek and classical Greek art. (3 cr; prereq sr, grad or Δ) Tselos
- 101w. Ancient and Medieval Art II.** Arts of Hellenistic Greece and the Near East; Etruscan and Roman; Early Christian and Byzantine. (3 cr; prereq sr, grad or Δ) Tselos
- 102s. Ancient and Medieval Art III.** The arts of the Merovingian, Anglo-Celtic, Frankish, and Germanic peoples; Carolingian, Ottonian, Romanesque, and Gothic styles in western Europe. (3 cr; prereq sr, grad or Δ) Tselos
- 110. Art of India.** Development of architecture, painting, sculpture, and the minor arts. (3 cr; prereq sr, grad or Δ)
- 111. Art of China.** Development of painting, sculpture, and the minor arts in China from earliest times to the present. (3 cr; prereq sr, grad or Δ) Mather
- 112. Art of Japan.** Development of painting, sculpture, and minor arts in Japan from earliest times to the present. (3 cr; prereq sr, grad or Δ) Copeland

- 116f. **Fifteenth-Century Painting in Europe.** Major trends and artists. Renaissance in Florence (Masaccio and followers; Fra Angelico and Fra F. Lippi; leading later 15th-century masters—Pollaiuolo, Ghirlandaio, Botticelli), in Umbria (Piero della Francesca, Perugino, Signorelli), in Padua (Mantegna), and in Venice (Antonello da Messina, the Bellini family). Early Renaissance in France, Flanders, Germany. (3 cr; prereq **; offered 1965-66 and alt yrs) Thomas
- 117w. **Sixteenth-Century Painting in Europe.** Masters of High Renaissance in Florence (Da Vinci, Fra Bartolommeo, Sarto), Rome (Raphael, Michelangelo), Parma (Correggio), and Venice (Giorgione, Titian, Tintoretto, Veronese). Mannerism in Italy and the North. French, Flemish (Bosch, Brueghel), and German masters (Dürer, Grunewald, Holbein, the Danube School). (3 cr; prereq **; offered 1965-66 and alt yrs) Thomas
- 118s. **Seventeenth-Century Painting in Europe.** Baroque beginnings in Italy (Caravaggio, the Carracci, and their schools). Roman, Neapolitan, and North Italian high baroque. Seventeenth-century landscape painting in Italy (Rosa), France (Poussin, Lorrain), and Holland. French baroque painting; Dutch baroque masters (Rembrandt; the portraitists; genre painters); Spanish baroque masters (Velasquez, Ribera, Zurbaran). (3 cr; prereq **; offered 1965-66 and alt yrs) Thomas
- 126f. **Eighteenth-Century Art in Italy.** Late baroque and classicizing trends in architecture. Neoclassic architecture. Roman, Neapolitan, and North Italian sculpture. Canova. Painting in Rome, Naples, Bologna, Genoa, and Venice. Prints. (3 cr; prereq sr, grad or Δ) Thomas
- 127w. **Eighteenth-Century Art in France.** Urban architecture; the town house. Provincial centers. Neoclassic architecture. Rococo and neoclassic sculpture. French painting: Watteau, Boucher, Fragonard, Chardin, David; the lesser masters. Prints. (3 cr; prereq sr, grad or Δ) Thomas
- 128s. **Eighteenth-Century Art in England and Germany.** The Palladian Revival in architecture. Robert Adam. The English portrait: Reynolds, Gainsborough. Hogarth. English landscape painting. German and Austrian late baroque and rococo architecture, sculpture, and painting. (3 cr; prereq sr, grad or Δ) Thomas
129. **History of the Graphic Arts.** Origins of the woodcut and of engraving. Renaissance and baroque master etchers and engravers. Mantegna, Raimondi, Schongauer, Dürer, Holbein, Lucas van Leyden, Callot, Rembrandt. Reproductive and portrait engraving of the 17th and 18th centuries. Lithography, Géricault, Delacroix, Daumier. Twentieth-century print-making. (3 cr; prereq sr, grad or Δ) Thomas
130. **Master Drawings.** Historical survey of great drawings from Gothic period to present, covering work of such artists as Pisanello, Leonardo da Vinci, Dürer, Holbein, Raphael, Rembrandt, Rubens, Watteau, Tiepolo, Goya, Géricault, Daumier, Van Gogh, Matisse, Picasso. Stylistic analysis of master drawings and school copies. (3 cr; prereq sr, grad or Δ) Thomas
- 136f. **Art in the United States.** Origins of painting, sculpture, and architecture through the Revolution. Relations with England and the European continent. Copley, Stuart, West, and their followers; Jefferson and his influence. Early weeks of the quarter are devoted to analysis of the means of visual expression common to architecture, sculpture, and painting. (3 cr; prereq sr, grad or Δ) Torbert
- 137w. **Art in the United States.** The architectural revivals. Rise of a national style in landscape and realistic genre. Homer, Eakins, Ryder, and their influence. Impressionism and relations with Europe after the Civil War. Beginnings of modern architecture. (3 cr; prereq sr, grad or Δ) Torbert
- 138s. **Art in the United States.** Contemporary movements. The Armory Show and development of modern realism, expressionism, and abstraction. Frank Lloyd Wright and later manifestations of modern American architecture. (3 cr; prereq sr, grad or Δ) Torbert
- 140f. **Scandinavian Architecture.** Main emphasis will be on the development of the native tradition in architecture from the medieval stave churches, through folk architecture, to the modern style. There will also be a survey of important architectural monuments in Scandinavia which are less native in character, but which have contributed to the local development. (3 cr; prereq sr, grad or Δ) Nelson
- 141w. **Scandinavian Painting.** The course will have three areas of concentration: medieval wall and panel painting; folk painting and tapestry weaving in the 17th, 18th, and 19th centuries; and modern painting. In the last section special attention will be given to Edvard Munch and Norwegian mural painting. (3 cr; prereq sr, grad or Δ) Nelson
- 142s. **Scandinavian Sculpture and the Minor Arts.** The major part of the course will be devoted to the decorative wood carving from the Viking period to the 19th century, and to the wood sculpture of the Middle Ages. The modern period will be represented chiefly by Carl Milles, Gustav Vigeland, and Kai Nielsen. The section on jewelry and metal will have its

** Prerequisite is 9 credits in history of art, or 9 credits in literature or history with consent of department.

- concentration in the pre-Christian era, while the present day will be given the most emphasis in the discussion of ceramics and glass. (3 cr; prereq sr, grad or Δ) Nelson
147. **Modern European and American Architecture: 1860-1920.** Revivalist and progressive directions; the founders of modern architecture: William Morris and Queen Anne style; the Chicago School and its chief exponents: Richardson, Jenney, Sullivan, and early Wright; their European counterparts: Berlage, Behrens, Wagner; middle Wright and the beginnings of modern architecture: Gropius, Mies, LeCorbusier, Oud, etc. (3 cr; prereq sr, grad or Δ) Tselos, Torbert
148. **Modern European, American, and International Architecture: 1920-1960.** Development of modern architecture in Europe, North and South American continents, Asia, and Africa; later work of the modern pioneers: Wright, LeCorbusier, Gropius, Mies; modern experiments in concrete: Mendelsohn, Nowicki, Saarinen, Nervi, etc.; Japanese, Mexican, and Brazilian architecture; the modern panel style and the new skyscraper; city planning and housing. (3 cr; prereq sr, grad or Δ) Tselos, Torbert
- 156f. **Modern European Painting: 1775-1830.** Late rococo and the beginnings of naturalism; the early romantic neoclassicism of David and Ingres; their contemporaries in France, Germany, Spain, and England; the early romantic neobaroque, exoticism, and naturalism of Géricault, Delacroix, and their German contemporaries. (3 cr; prereq sr, grad or Δ) Tselos, Waldfogel
- 157w. **Modern European Painting: 1830-1860.** The later careers of Ingres, Delacroix and their European contemporaries; the development of romantic and realistic landscape: Constable and Turner; Corot and the Barbizon school; Courbet and German contemporaries; Millet and Daumier. (3 cr; prereq sr, grad or Δ) Tselos, Waldfogel
- 158s. **Modern European Painting: 1860-1900.** Rise and development of impressionism: Boudin, Monet, Pissarro, and their analogues in Germany; Manet, Degas, and Renoir; Cezanne and the problem of form; expressionistic impressionism in Toulouse-Lautrec and Van Gogh; anti-impressionist tendencies in the school of Pont-Aven and Gauguin; expressionistic symbolism of Ensor and Munch. (3 cr; prereq sr, grad or Δ) Tselos, Waldfogel
168. **Modern Sculpture from Rodin to Roszak: 1875-1960.** The rise and development of modern sculpture; romantic and revivalist currents; modeling and direct carving; cubist, neoplastic, expressionist, surrealist and neo-Dada tendencies. (3 cr; prereq sr, grad or Δ) Tselos, Torbert
- 176Xf. **Twentieth-Century Painting.** (Germany, Austria) Worpswede, The Bridge, Vienna Secession, The Blue Rider, The New Objectivity. Modersohn-Becker, Nolde, Kirchner, Kandinsky, Kokoschka, Klimt, Grosz, Beckmann, Hartung, etc. (3 cr; prereq sr, grad or Δ) Waldfogel, Simon
- 177Xw. **Twentieth-Century Painting.** (France, Italy, Holland, Belgium, Russia, and Spain) Fauvism, cubism, futurism, Dada, surrealism, abstract art, School of Paris. Matisse, Picasso, Braque, Chagall, Leger, Boccioni, Duchamp, Dali, Mondrian, de Stael, etc. (3 cr; prereq sr, grad or Δ) Simon, Waldfogel
- 178Xs. **Twentieth-Century Painting.** (United States, Latin America, and England) Fauvist and representational expressionism, purism-realism and cubism-realism; nostalgic and regional romanticism; social criticism; fantastic and surrealist trends; American variations on cubism and puristic abstraction; abstract expressionism and action painting; expressionist and primitivizing mythmakers; Mexican, Brazilian, and English contemporary painting. (3 cr; prereq sr, grad or Δ) Tselos, Simon
- 186s. **The Art of the Film.** Aesthetics of the film medium. Evaluation and analysis of the motion picture as an art form. Discussions of editing, montage, sound, and the use of the camera, etc. Course will be illustrated with feature-length films and short subjects. (3 cr; prereq 87 or Δ) Amberg
- 196f-197w-198s. **Readings in Art History and Criticism.** (3 cr per qtr; prereq sr, #) Simon, Thomas, Torbert, Tselos, Waldfogel, Canedy

FOR GRADUATE STUDENTS ONLY

- 206-207-208. Seminar: European and American Architecture
- 216-217-218. Seminar: European and American Painting
- 236-237-238. Seminar: Problems in Art History and Criticism

Studio

LOWER DIVISION COURSES

- 10f,w,s. **Photography.** Introduction to the photographic medium, its background and meaning today. Lectures in contemporary and historical use of photography. Problems in the use of the camera, printing, and enlarging. (3 cr) Downs, Liebling, Wilcox

- 11w,s. Photography.** For students who have had previous instruction in photography or have worked in photography and know the principles of developing and printing. Develops a personal photographic perception in the student through lectures on photographic history and contemporary trends in photography. Intensive field work. (3 cr; enrollment limited; prereq 10 or practical experience and Δ) Downs, Liebling, Wilcox
- 20. Basic Drawing.** An introduction to studio work; exploration of contemporary and traditional methods. Work from nature, various drawing mediums. (3 cr; prereq 1 or ¶1)
- 23. Drawing and Painting.** Work from life and nature, introduction to color and pictorial structure. (3 cr; prereq 20)
- 24. Two- and Three-Dimensional Design.** Introduction to principles of visual perception, graphic design, and presentation technique projects. (3 cr; prereq 20)
- 25. Drawing and Color.** Introduction to color and pictorial organization. This will permit students to have more adequate training (Art 20, 23, 25) in basic techniques preparatory to Upper Division painting and printmaking. (3 cr; prereq 23)
- 23Af. Drawing and Painting I.** (2 cr; for architects only)
- 24Aw. Drawing and Painting I.** (2 cr; for architects only; prereq 23A)
- 25As. Drawing and Painting I.** (2 cr; for architects only; prereq 24A)
- 32f,w,s. Elements of Printmaking.** Foundation course designed to familiarize the student with the mediums of printmaking in general. Problems in engraving, etching, and other techniques employed in working on metal plate, as well as lithography, woodcuts, and combined processes. (3 cr) Myers
- 33f,w,s. Printmaking.** A beginning course introducing the various techniques of etching, engraving employed in working on metal plate. Woodcuts and lithography are included, and lectures and demonstrations are given. (3 cr; prereq 32) Myers
- 40. Basic Sculpture I.** Study of structure in nature. Direct construction, casting, and carving in various mediums. (3 cr; prereq 1, ¶41) Rood, Randell
- 41. Basic Sculpture II.** Integrates basic principles examined in Art 40. Natural form is studied for sculptural possibilities. A more imaginative approach to the study of nature is encouraged. In addition to clay, direct plaster construction is the principal medium. Drawing from life precedes each problem. (3 cr; prereq 40) Rood, Randell
- 45f,w,s. Ceramic Processes.** Introduction to building pottery by hand and forming on the potter's wheel. Experiments with decorative techniques on wet clay and on bisque fired pottery. Primarily concerned with pottery as a creative expression but includes technical considerations of clays, glazes, and kilns. (3 cr) MacKenzie

UPPER DIVISION COURSES

- 51f,w,s. Drawing.** From the model, still life, and nature. Principles of anatomy. (3 cr; prereq 23) Busa
- 54f,w,s. Drawing.** From the model, still life, and nature. Principles of anatomy. (3 cr; prereq 51) Busa
- 55f,w,s. Drawing.** From the model, still life, and nature. Principles of anatomy. (3 cr; prereq 54) Busa
- 60A-61A-62Af,w,s. Drawing and Painting II.** (2 cr per qtr; for architects; prereq 25A)
- 60B-61B-62Bf,w,s. Water Color.** Introduction to transparent water color, gouache, casein, and tempera. General course introducing the student to a variety of drawing and painting mediums. Figure, still life, landscape, and abstract design. (2 cr per qtr; prereq 20, or equiv, with Δ) Rollins
- 65. Commercial Design.** Commercial art, offered as part of minor in art. Commercial art problems in design and drawing emphasizing the application of design principles. (3 cr; not open to art majors)
- 70-71-72f,w,s. Oil Painting.** Introduction to medium of oil; individual projects and instruction. (3 cr per qtr; prereq 55 or Δ) Quirt, Rollins, Busa
- 70B-71B-72Bf,w,s. Oil Painting.** For general students. (2 cr per qtr, §70-71-72 [no cr for art majors]; prereq 20 or 23 or equiv, with Δ) Quirt
- 73f-74w-75s. Presentation Techniques.** The visual means of communicating ideas in the fields of exhibition techniques, illustration, and advertising. Investigation of the characteristics and the creative use of various mediums. (3 cr per qtr; prereq 24 [no prereq for architects]) Downs

- 80-81-82f,w,s. Sculpture II.** Direct carving in stone and wood with attention given to possibilities of materials and sculptural design. Experimental work in metal, plastics, and combinations of sculptural materials. Some direct modeling in plaster. (3 cr per qtr; prereq 41) Rood
- 80Af-81Aw-82As. Metal Sculpture**
- 80Af. Direct Metal Sculpture and Constructions.** Work with direct metal sculpture, constructions, and mobiles, with attention given to sculptural form. (3 cr; prereq 41) Rood
- 81Aw. Metal Sculpture in Relief and Repoussé.** Construction and repoussé methods of sculpture. Problems of sculptural expression and space organization in relation to interiors and architecture. (3 cr; prereq 80) Rood
- 82As. Bronze Casting and Wax Modeling.** Aesthetic and technical problems of modeling in clay and wax with reference to bronze metal forms and the technical problems of lost-wax casting are introduced. (3 cr; prereq 81) Rood
- 83f-84w-85s. Photography II.** Gives advanced students an opportunity to carry out creative problems in color development and printing. Experiments in photographic controls to illustrate limitations and capacities. Use of photography to interpret the visual environment, and the photographer's responsibilities in this use. (3 cr per qtr; prereq 11 or Jour 6 or Δ; offered when feasible) Downs, Liebling
- 90-91-92f,w,s. Printmaking II.** Problems in engraving, etching, and the other techniques employed in working on metal plate, as well as lithography, woodcuts, and combined processes. (3 cr per qtr; prereq 32 or Δ) Myers
- 94-95f,w,s. Ceramic Design.** (Continuation of 45) Greater emphasis on wheel throwing. Advanced design problems and an introduction to glaze and clay experimentation. Emphasis on the development of personal expression in ceramic medium. (3 cr per qtr; prereq 45 or Δ) MacKenzie
- 113f,w,s. Design in Jewelry.** Introduction to the problems of design as applied to jewelry. Basic techniques of soldering, forming, forging are taught. Lectures correlate the contemporary craft movement with modern art. (3 cr; prereq 24 and Δ)
- 114f,w,s. Advanced Design in Jewelry.** More complex problems of three-dimensional design are introduced and additional metal techniques are utilized; engraving, chasing, and repoussé. Exercises in drawing and rendering form the basis for experimental work in metal. (3 cr; prereq 113)
- 115f,w,s. Special Problems in Jewelry Design.** Special projects in jewelry and metal are assigned to students as means of developing skill in design. A wide range of problems gives art education students a background for setting up or carrying on an adequate high school teaching program. (3 cr; prereq 114)
- 120-121-122f,w,s. Advanced Drawing.** (Primarily for painting majors) Drawing in all mediums from life and from imagination. Studies of the history of drawing. (3 cr per qtr; prereq 55 or equiv, ¶70-71-72) Staff
- 123f-124w-125s. Film Workshop.** Practical study of the motion picture as an art form. Studio problems in script preparation, camera technique, and editing, with an emphasis on the visual aspects of film making. Analysis of selected professional films and visits to local studios. In winter and spring quarters, a concentration on production, editing, and technical problems through the making of a short film. Production will be limited to descriptive and experimental work. (3 cr per qtr; prereq art or humanities or music or theatre major and Δ) Downs
- 150-151-152f,w,s. Problems in Painting.** (3 cr per qtr; prereq 72 and Δ) Quirt, Busa
- 180-181-182f,w,s. Problems in Sculpture.** Advanced work in wood, stone, plaster, metal, and other materials of sculpture. Students work individually on projects. (3 cr per qtr; prereq 82, 82A or Δ) Rood
- 190-191-192f,w,s. Problems in Printmaking.** Includes work in black and white and color in metal, lithographs, and wood blocks. (3 cr per qtr; for advanced students; prereq 92 or Δ) Myers
- 193f,w,s-194f,w,s-195f,w,s. Advanced Problems in Design.** Creative problems in design with guidance in practice and research methods. Discussions of common denominators of art in ceramics, film, and photography. Aesthetic, economic, and social implications of design. (3 cr per qtr; prereq 9 Upper Division cr in design and ¶) Graduate staff

FOR GRADUATE STUDENTS ONLY

200-201-202f,w,s. Advanced Problems in Painting

210-211-212f,w,s. Advanced Problems in Sculpture

220-221-222f,w,s. Advanced Problems in Printmaking

240-241-242f,w,s. Advanced Problems in Ceramics

250-251-252.† Thesis Seminar

260-261-262f,w,s. Advanced Problems in Film or Photography

Astronomy (Ast)

(Institute of Technology)

FACULTY—Willem J. Luyten, *chairman*; Karlis Kaufmanis.

Major Adviser in Arts College—Professor Luyten.

Major Sequence in Arts College—Ast 51-52-53, 104-105-106, and Math 42, 43, 44, 55, and 106.

Prerequisites: Math T and at least 5 credits in chemistry, geology, or physics.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

For those who do not intend to pursue further studies in astronomy, either as a major or as a minor, the following two courses are recommended: Ast 11 for those who merely wish to become acquainted with the field, and who do not intend to go on in any other science; Ast 51 for those who, while not continuing in astronomy, are intending to take up some other field of science.

LOWER DIVISION COURSES

11f,w,s. **Descriptive Astronomy.** Brief survey of what is known about the sun, the moon, the planets, and their motions, followed by a description of the constellations and a summary of our knowledge of the stellar universe to which the sun belongs. This course is completely non-mathematical. (5 cr, §51) Luyten, Kaufmanis

UPPER DIVISION COURSES

Upper Division courses in this department are open to Lower Division students only by special permission of the Scholastic Committee. See statement at beginning of Section II.

51w. **General Astronomy.** An outline of our knowledge of the planetary system and its motions, including those of the earth and the moon. (3 cr, §11; prereq Math T)

52w. **Astrophysics.** (4 cr; prereq Math 42 and Phys 50 [or Phys 9 with #])

53s. **Stellar Astronomy.** (3 cr; prereq Math 42 and Ast 11 or Phys 9)

104f-105w-106s. **Celestial Mechanics.** 104: The two-body problem. Computation of an ephemeris. Determination of an orbit from observations. 105: Numerical methods for the computation of perturbations. Lagrange solutions to the three-body problem. External potential of the earth. Precession and nutation. Libration of the moon. 106: Hamilton-Jacobi theory. General perturbations. Motion of a satellite in the field of an oblate planet. Theory of the motion of the moon. (3 cr per qtr; prereq Math 106)

Biology

See Botany or Zoology

Biostatistics

See Public Health

Botany (Bot)

FACULTY—Ernst C. Abbe, *chairman*; Alan J. Brook, A. Orville Dahl, Albert W. Frenkel, Eville Gorham, John W. Hall, Donald B. Lawrence, Thomas Morley, Gerald B. Ownbey, Kenneth R. Skjegstad, Thomas K. Soulen.

Major Adviser in Arts College—Professor Abbe.

Major Sequence in Arts College—

1. Prerequisites: Biol 1-2 or equivalent.
2. One course from each of five of the following six groups:
 - Group A (ecology)—Bot 50 or 130 or 135su
 - Group B (physiology)—Bot 51, 61, or 140
 - Group C (taxonomy)—Bot 52 or 116su
 - Group D (anatomy or cytology)—Bot 53 or 118 or 121
 - Group E (plant kingdom)—Bot 54 or 104
 - Group F (genetics)—Agro 30 or Zool 66 and 67
3. Two quarters of general chemistry, e.g., GeCh 4, 5; 2 quarters of organic chemistry (OrCh 61-62); Math 40; German through Ger 3.
4. One course in biological science (or equivalent field experience) at the Lake Itasca Forestry and Biological Station, or similar field biological station.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

Recommended electives: Bot 10, 12; PlPa 56; MicB 112; Phys 1, 2, 3, and 1A, 2A, 3A or 4, 5, 6 or 7, 8, 9; French through Fren 3; PubH 110, 111; Zool 96; MicB 53; Geo 11, 22.

Honors Program: Botany Majors—Information may be obtained in the botany office.

Major Adviser in College of Education—Professor Morley.

For the specialized curriculum in natural science see the *Bulletin of the College of Education*.

General Education—The following courses in biology and botany, recommended for their broad educational values, are available to nonmajor students: Biol 1-2, and 1A-2A; Bot 10, 12.

LOWER DIVISION COURSES

Biol 1f,w,s-2f,w,s.† **General Biology.** Introduction to living things both plant and animal, and to the major biological concepts. Structure, function, classification, and evolution of organisms. (5 cr per qtr)

Biol 2Hf,w,s. **General Biology.** Honors section. (5 cr; prereq grade of A or B in 1)

Biol 1Af,w,s-2Af,w,s.†** **General Biology.** Introduction to living things and the major biological concepts. A terminal course primarily for nonmajors and students not pursuing a preprofessional program related to the biological sciences. (3 cr for 1A, 4 cr for 2A)

10s.** **Minnesota Plant Life.** Nontechnical survey of all the groups of plants native to Minnesota with special reference to identification and distribution. (3 cr; suitable for nonmajors) Morley

** This course does not satisfy any part of the laboratory science requirement of the Arts College.

12w.** Plants Useful to Man. Survey of the world's useful plants and plant products, their sources, characteristics, and uses. Demonstration of material. Plants and man: the origin and history of cultivated plants. (4 cr; suitable for nonmajors)

UPPER DIVISION COURSES

Bot 50, 51, 52, 53, 54, 55, 61 are open to sophomores who have an average grade of at least C in Biol 1-2. Other Upper Division courses in this department are open to Lower Division students only by special permission of the Scholastic Committee. See statement at beginning of Section II.

- 50f.s. **General Plant Ecology.** Introduction to interrelations of organisms, especially plants and environment, and to provide a foundation for understanding the relationships of man to biotic resources. (3 cr, §130; prereq Biol 2) Ar
- 50Af.s. **General Plant Ecology.** Field trips and laboratory. Supplementary to Bot 50. (2 cr, §130A; prereq 10 cr in botany or biology or §) Ar
- 51s. **General Plant Physiology.** Introduction to plant physiology. Emphasis on fundamental principles requisite to understanding physiological phenomena encountered in higher land plants. Cellular physiology, enzymes, respiration, fermentation, photosynthesis, mineral nutrition, water and solute metabolism, hormones, tropisms. (5 cr; prereq introductory course in botany or biology, GeCh 5 or 25 or §) Frenkel
- 52f.s. **Elementary Taxonomy.** Introduction to taxonomy of ferns and flowering plants, with 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; 2 or 3 field trips. (3 cr; prereq Biol 2) Morley
- 53w. **Plant Anatomy.** Structure and development of plants with especial reference to vascular plants. (5 cr; prereq Biol 2) Hall
- 54f. **Survey of the Plant Kingdom.** Brief consideration of evolutionary relationships throughout the plant kingdom, especially as illustrated by life histories. (5 cr, §104; prereq Biol 2) Abbe
- 55f. **Morphological Methods.** Introduction to techniques basic to anatomy, morphology, and cytology. (3 or 5 cr; prereq Biol 2 or equiv, Bot 53, and §) Abbe
- PIPa 56f. **Introduction to the Study of Fungi.** Structure, development, and identification of fungi, especially those of economic importance. (3 cr; prereq 9 cr in botany or §)
- 61f. **Introductory Plant Physiology.** A study of the physiological principles underlying the processes occurring in living plants with emphasis on higher plants important in agriculture and forestry. (4 cr; designed for students majoring in agricultural sciences; prereq Biol 2, GeCh 5 or 25, or §) Frenkel
- 103f. **Plant Embryology.** Early stages of somatic development with emphasis on vascular plants. (3 cr; prereq 54 or 104 or §; offered when feasible) Abbe
- 104f. **Survey of the Plant Kingdom.** A brief consideration of evolutionary relationships throughout the plant kingdom, especially as illustrated by life histories. (5 cr, §54; prereq Biol 2) Abbe
- 106w. **A Survey of Angiosperm Families.** Detailed study of the characteristics of the orders and families of flowering plants on a world-wide basis. (5 cr; prereq 52 or §; offered 1964-65 and alt yrs) Morley
- 108f. **Pteridophytes.** Classification of living ferns and fern allies with special attention to temperate North America; terminology; keys; geographic distribution; distinguishing characters of families, genera, and species. (3 cr; prereq 52 or §; offered 1965-66 and alt yrs) Ownbey
- 110f. **Gymnosperms.** Survey of the taxonomy and phylogeny of the gymnosperms with special emphasis on living representatives. (3 cr; prereq 52 or §; offered 1964-65 and alt yrs) Ownbey
- MicB 112w. **General Mycology.** (3 cr; prereq MicB 53 or §) Bradley
- 112su. **Aquatic Flowering Plants.** (6 cr; prereq 10 cr in botany, zoology, or §; offered only at Itasca Forestry and Biological Station)
- 114w. **Principles of Angiosperm Phylogeny.** Evolutionary relationships and the various means of judging them within the angiosperms. Laboratory investigation of representative and critical groups. (3 cr; prereq 52 or §; offered 1965-66 and alt yrs) Morley

** This course does not satisfy any part of the laboratory science requirement of the Arts College.

- 115s. **Flora of Minnesota.** The vascular plants of the state; taxonomic and floristic relationships; geographical distribution and variation; speciation; collecting and identification; field trips. (4 cr; prereq 52 or §) Ownbey
- 116su. **Summer Flora of Minnesota.** Offered only at Itasca Forestry and Biological Station. (6 cr; prereq 10 cr in botany or zoology or §)
- 118f. **General Cytology.** Introductory analysis of structure and related functions of intact cells and protoplasmic systems. The nature of cytoplasm, nuclei, and cell walls. Relationship of cytological data to life cycles, cytogenetics, cytotoxicology, and cytochemistry. (5 cr; prereq 10 cr in biology, botany or zoology, elementary genetics or §) Ar
- 119w. **Experimental Cytology.** Experimental analysis of selected phases of cytological materials. Application of specialized methods to analyses of cells *in vivo* and *in vitro*. The use of culture methods in cytology. (5 cr; prereq 118 or Zool 161; offered 1964-65 and alt yrs) Ar
- 120s. **Research Methods in Cytology.** Principles and practice in preparing materials for cytological investigation; methods of investigating such preparations and presenting the results. (3-5 cr; prereq Biol 2, 118 or 119, and §; offered 1964-65 and alt yrs) Ar
- 121w. **Developmental Plant Anatomy.** Microscopic structure of vascular plants with particular attention to development in the root, stem, and leaf. (5 cr; prereq Biol 2 or equiv and 5 cr in plant sciences) Abbe
- 125f. **Morphogenesis.** Development of form and structure in ontogeny and phylogeny; phenomena and genetical factors involved. (5 cr; prereq 10 cr in botany or biology; offered when feasible) Abbe
- 126f. **Pre-Pleistocene Palynology.** A survey of pollen and spores primarily from Mesozoic and Tertiary deposits. Techniques of sample preparation; nomenclature and identification of fossil pollen and spores; their use in stratigraphy. (3 cr; prereq 165; offered 1965-66 and alt yrs) Hall
- 127f. **Morphology of Vascular Plants.** Vegetative and reproductive structure of living and fossil vascular plants. Their evolutionary relationships based on phylogenetic principles. (5 cr; prereq 54 or 104 or §; offered when feasible) Abbe, Hall
- 128s. **Phyletic Paleobotany.** The morphology, anatomy, and evolution of fossil plants, especially those occurring in the late Paleozoic. (3 cr; prereq §) Hall
- 129f. **Floristic Paleobotany.** A study of fossil floras from the late Paleozoic to the present; emphasis on macrofossil remains, especially leaves, and their use in stratigraphy, paleoclimatic and paleoecologic interpretations. (3 cr; prereq §; offered 1966-67 and alt yrs) Hall
- 130f. **General Plant Ecology.** Introduction to interrelations of plants and environment, to provide a foundation for further ecological work in pure or applied fields, and to provide a basis for understanding the relationships of man to biotic resources. (3 cr, §50; prereq sr, 10 cr in botany or biology) Gorham
- 130Af. **General Plant Ecology Field Trips and Laboratory.** Supplementary to Bot 130. (2 cr, §50A; prereq 10 cr in botany or biology or §) Gorham
- 133w. **Phytogeography.** Ecological principles of plant distribution and landscape analysis, vegetation regions of North America, historical interpretation of regional vegetation patterns. (3 or 5 cr; prereq 50 or 130 or §; offered when feasible)
- 135su. **Ecology of the Itasca Region.** (6 cr; prereq 10 cr in biology or §; offered only at Itasca Forestry and Biological Station)
- 136su. **Organisms, Microclimate, and Weather.** (6 cr; prereq 10 cr in biology, botany, or zoology... physics recommended; offered when feasible, only at Itasca Forestry and Biological Station)
- 137s. **Advanced Ecology.** Ecological life history studies; influence of environmental factors on each developmental stage of life cycle under natural conditions. Individual species assigned for study at Cedar Creek Natural History Area. Weekly half-day field trips. (5 cr; prereq 50 and 50A or 130 and 130A, and §) Ar
- 138w. **Freshwater and Wetland Ecology.** Nature, origin, and development of lake, marsh, swamp, and bog ecosystems, with reference to environmental control and to productivity. (3 cr; prereq 15 cr in biological subjects, introductory chemistry, or §; Bot 50 or Zool 65 recommended) Gorham
- 140s. **Advanced Survey of Plant Physiology.** Advanced study of major topics in plant physiology. Cell physiology including membrane phenomena, enzyme catalysis, respiration, fermentation, and photosynthesis; mineral nutrition; water metabolism; translocation of solutes; growth; hormones; tropisms. (3 cr, §51; prereq elementary course in botany, zoology, or biology or §, and a course in organic chemistry or biochemistry) Frenkel
- 140As. **Advanced Plant Physiology Laboratory.** (2 cr; prereq 140 or §140) Frenkel

- 150f. Phycology I.** Reproduction, anatomy, and phylogeny of the algae including the green algae, Euglenophyta, Chrysophyta, and Dinoflagellates. (5 cr; prereq 10 cr in botany or biology or #; offered when feasible) Brook
- 151f. Phycology II.** Reproduction, anatomy, and phylogeny of the algae including the brown algae, red algae, and blue-green algae. (5 cr; prereq 10 cr in botany or biology or #; offered when feasible) Brook
- 155s,su. Freshwater Algae.** Morphology and taxonomy of freshwater algae; collection and identification of local algae. (6 cr; prereq 10 cr in biology or #; in summer offered only at Itasca Forestry and Biological Station)
- 157su. Bryophytes and Pteridophytes.** (6 cr; prereq 10 cr in biology or #; offered only at Itasca Forestry and Biological Station)
- 159s. Lichens.** Taxonomy, ecology, and floristics of the lichens of northern Minnesota; identification, sampling methods, microchemistry as a taxonomic tool. (6 cr; prereq 10 cr in botany or zoology; offered only at Itasca Forestry and Biological Station)
- 165w. Introduction to Pollen Analysis.** Ontogeny, comparative morphology, and identification of pollen grains; preparation of reference collections, applications of pollen analysis to allergology, ecology, and phylogeny; practice in atmospheric analysis. (3 cr; prereq 10 cr in botany or biology and #; offered 1965-66 and alt yrs) Dahl
- 166s. Introduction to Palynological Analysis.** The application of techniques of pollen-spore investigations to research analyses of atmosphere, recent and ancient deposits, systematic materials, allergology, etc. (5 cr; prereq 165 or Zool 272 or #; offered 1965-66 and alt yrs) Dahl
- 170f. Water Relations of Plants.** Colloidal phenomena. Diffusion, osmosis, and characteristics of living membranes. Cell water relations. Phenomena of absorption, transport, and transpiration of water and translocation of solutes in higher plants. (3 cr; prereq 51 or 140, 20 cr in chemistry or biochemistry; offered 1965-66 and alt yrs)
- 171w. Mineral Nutrition of Plants.** Chemical elements necessary for plant nutrition and their role in normal metabolism. Relationship of nutritional factors to other physiological processes. Deficiency and toxicity of mineral elements. (3 cr; prereq 51 or 140, 20 cr in chemistry or biochemistry; offered 1965-66 and alt yrs)
- 172s. Plant Growth.** Changes in physiological and biochemical activities during plant growth and development. An analysis of changes in enzyme and respiratory activities from germination to seed production. Biochemistry of hormone production and destruction; relation of hormones to metabolic activities. Biochemical and physiological aspects of the genetic control of plant growth and development. (3 cr; prereq 51 or 140, 20 cr in chemistry or biochemistry; offered 1965-66 and alt yrs)
- 176f. Plant Respiration.** Biochemical mechanism of carbohydrate degradation in plants. Nature of biochemical pathways, electron transport, phosphorylation. Utilization of metabolic energy in synthetic processes. Respiratory control mechanisms. (3 cr; prereq 51 or 140, 20 cr in chemistry or biochemistry; offered 1964-65 and alt yrs)
- 177w. Photosynthesis.** Detailed survey of the present state of knowledge of photosynthesis. (3 cr; prereq #; offered 1964-65 and alt yrs)
- 178s. Nitrogen Metabolism of Plants.** Conversion of inorganic to organic forms of nitrogen. Nitrogen fixation. Interrelation with other metabolic processes of plants. Protein and nucleic acid synthesis in plants. Control mechanism in protein, enzyme, and nucleoprotein synthesis. (3 cr; prereq 51 or 140, 20 cr in chemistry or biochemistry; offered 1964-65 and alt yrs)
- 182f. Advanced Topics in Plant Physiology.** A detailed consideration of special areas of research interest. (3 cr; prereq 51 or 140 or #)
- 185w. Physiology of Photosynthetic Microorganisms.** Primarily a laboratory course dealing with the application of spectrophotometry, manometry, and other techniques used in the elucidation of the physiological behavior, chemical makeup, and intermediary metabolism of algae and photosynthetic bacteria. Suitable as a laboratory course accompanying 177. (3-5 cr; prereq #; offered 1964-65 and alt yrs) Frenkel
- 197f, 198w, 199s. Problems.** Advanced work in a specialized field. (1-5 cr per qtr; prereq 20 cr in natural science and #)

FOR GRADUATE STUDENTS ONLY

- 201f, 202w, 203s. Research Problems in the Morphology of Vascular Plants**
- 205f, 206w, 207s. Research Problems in Taxonomy and Floristic Plant Geography**
- 209f, 210w, 211s. Research Problems in Paleobotany**
- 221f, 222w, 223s. Research Problems in Ecology**

- 225f, 226w, 227s. **Research Problems in Plant Physiology**
 229f, 230w, 231s. **Research Problems in Cytology**
 233f, 234w, 235s. **Research Problems in Phycology**
 240f, 241w, 242s. **Seminar: Morphology**
 243f, 244w, 245s. **Seminar: Taxonomy**
 246f, 247w, 248s. **Seminar: Paleobotany**
 249f, 250w, 251s. **Seminar: Ecology**
 252f, 253w, 254s. **Seminar: Plant Physiology**
 Agro 252. **Cytogenetics**
 255f, 256w, 257s. **Seminar: Cytology**
 258f, 259w, 260s. **Seminar: Cryptogamic Plants**

Business Administration

(School of Business Administration)

Department Chairmen—R. G. Berryman, Robert S. Hancock, Herbert G. Heneman, Jr., John Neter

The following courses in business administration are open to students in the Arts College as electives without special petition. There is no provision for a major in business administration in the Arts College although a few of the following courses may count toward a major in the Department of Economics (see Economics, page 53).

Students electing a minor in business administration are urged to include course work in accounting and statistics in their program.

LOWER DIVISION COURSES

- Mgmt 1. Business and the American Economy.** Survey of the American economy with emphasis on the business segment. Functions formed by any economic system and within typical businesses; kinds of decisions to be made and examples of information needed for making selected decisions. (3 cr; open to students having no appreciable orientation to the areas of business administration and economics or to the business community who wish more information; not open to students who have had such orientation through their homes, or related social studies courses in high school; prereq no previous business administration or economics courses)
- QA 5f,w,s. Elements of Statistics.** Sources and collection of data; tabular and graphic presentation; frequency distribution; probability; sampling; introduction to statistical estimation and decision-making. (4 cr, §151, §Soc 45, §Psy 70; prereq Math 10 or equiv)
- Acct 24f,w,s-25f,w,s-26f,w,s. Principles of Accounting.** Recording, reporting, and interpreting business events. Use of accounting as a tool of business management. (3 cr per qtr, §55A-B; prereq 3rd qtr fr)
- OMgt 32f,w,s. Beginning Typewriting.** Correct typewriting techniques; arrangement of typewritten material in basic letter forms, manuscripts, and simple tabulations. (1 cr)
- OMgt 33w,s. Intermediate Typewriting.** Knowledge and skills in letter arrangement; envelopes; carbons; tabulations; manuscripts; speed building. (1 cr; prereq 32 or 1 year high school typewriting with speed of 30 words per min)
- OMgt 34f,s. Typewriting Procedures.** Machine transcription; operation of electric typewriters and duplicating machines; footnotes, bibliographies, proofreading, manuscripts; legal documents and office forms; tabulations. (2 cr; prereq soph, 33 or 2 yrs high school typewriting with speed of 45 words per min)
- OMgt 36f. Office Procedures.** Editing and revising correspondence; communications; basic indexing and filing problems; intra-office relationships. (3 cr; prereq soph)
- OMgt 37f-38w-39s. Shorthand.** Elementary course in Gregg Shorthand Simplified. A large vocabulary of high-frequency words is developed. Emphasis is placed on transcription of mailable letters. (3 cr per qtr; prereq soph, 33 for 37, 34 or ¶34 for 39; students who have 1 yr high school shorthand are admitted to 38; students who have 2 yrs high school shorthand are admitted to 39)

OMgt 43w. Shorthand Theory. Gregg shorthand principles. Techniques of dictating and black-board writing. For majors in business education. (2 cr; prereq soph, 34, 39 and 4)

UPPER DIVISION COURSES

Prod 50f,w,s. Production Management. The techniques, the managerial problems, and the decision-making processes in planning and controlling the production activity. Production as a function of the enterprise rather than as a strictly manufacturing activity. Research and development, the role of standards, physical facilities, systems and procedures analysis, work measurement, materials control, quality control, and production planning and control. (3 cr, §150; prereq Econ 2 or equiv)

QA 51f,w,s. Business Statistics. Basic concepts of regression and correlation; statistical estimation and decision-making, applications to survey sampling, acceptance sampling and statistical quality control; time series analysis and index numbers. (3 cr; prereq soph with Δ , 5 or equiv)

IR 52f,w,s. Systems of Industrial Relations: Labor Marketing. Introduction to current employment relationships; an economic approach and analysis. The application and conservation of human resources in employment, related social and economic problems. Labor marketing, collective bargaining, unions and employer associations, industrial unrest and conflict, employment and unemployment, wage problems. (3 cr, §Econ 62, §IR 152; prereq Econ 2 or equiv)

Ins 53f,w,s. Risk Management and Insurance. Recognition, measurement, and evaluation of insurable personnel, property, and liability risks of firms and families. Tools of risk management; assumption, loss prevention, transfer, and others with emphasis on insurance. Design and implementation of the optimum risk management program. Government regulation of insurance. (3 cr, §153; prereq Econ 2 or equiv)

Tran 54. Fundamentals of Transportation. Organization and economic aspects of the transportation system of the United States including rail, highway, air, pipeline, and water transportation. Nature of the transportation function in business. Regulatory problems. Current developments and problems. (3 cr, §154; prereq Econ 2 or equiv)

BFin 56f,w,s. Corporation Finance. Principles governing the planning, raising, and control of short- and long-term funds for a business enterprise. Cash-flow, valuation, capital structures, investment banking, dividend policy, mergers, and reorganization. (3 cr, §156; prereq Acct 26)

Mktg 57f,w,s. Principles of Marketing. Marketing functions and institutions. Channels of distribution. Retail and wholesale trade. Pricing policies and practices. Marketing policies and methods for consumers' goods, producers' goods, and raw materials. (3 cr, §157; prereq Econ 2 or equiv)

BLaw 58f,w,s. Business Law: Contracts. Law of contracts. Case method. (3 cr, §158; prereq Econ 2 or equiv)

OMgt 79Af-Bw. Administrative Secretarial Studies. Office situations and problems in the work of an administrative assistant to an executive. Office procedures and secretarial dictation and transcription. (3 cr per qtr; prereq 34, 39)

IR 142w. Settlement of Industrial Relations Disputes. The nature of industrial conflict in employment relations; stresses contributing to conflict and dispute situations; public and private approaches to the prevention, reduction, and resolution of conflicts. (3 cr; prereq 52 or 152)

Mktg 187. Price Policy. Managerial problems concerning pricing and price policy. Methods used and factors considered in pricing goods and services in industrial and consumer markets. Topics include administered pricing, price behavior, non-price competition, governmental intervention, pricing objectives, organization for pricing, price leadership. (3 cr [not available for graduate credit]; prereq 57)

Chemistry

(Institute of Technology)

Chairman—Stuart W. Fenton

Major Advisers in Arts College—Chemistry staff.

Major Sequence in Arts College—OrCh 61, 62, 63 and 64; AnCh 100, 101, 102; PCh 101-102-103 with appropriate amount of laboratory in PCh 104-105-106.

Prerequisites: GeCh 24, 25, 26 or their equivalent; Phys 7-8-9 or their equivalent; mathematics through integral calculus (Math 25B or 44).

In addition to the courses required for the major sequence, Arts College students majoring in chemistry are advised to take 8 credits in advanced courses in chemistry, 2 credits of which are to be in laboratory work. These additional courses will enable the student to meet the minimum requirements set for the Bachelor's degree by the American Chemical Society. Two full years of chemistry are required for admission to these courses.

Students majoring in chemistry are advised to arrange their work so that they can take physical chemistry in the junior year and they must take sufficient courses in German to give a reading knowledge of the chemical literature.

A 4-year professional course in chemistry is available in both the Arts College and IT. As many students find programming a professional course somewhat easier in IT, those interested in chemistry as a major field are advised to consult both Arts College and IT bulletins.

Special training, adequate for a career as a technical librarian, is possible in the Arts College. The program includes a major in chemistry and a minor taken in the Library School.

Major Adviser in College of Education—Professor C. H. Boeck.

For the specialized curriculums in natural science and physical science see the *Bulletin of the College of Education*.

Analytical Chemistry (AnCh)

UPPER DIVISION COURSES

- 57f,s. Quantitative Analysis.** Introductory course covering the general principles and methods of gravimetric and volumetric analysis. Typical problems are assigned and attention is given to proper laboratory practice. (4 cr; primarily for premed students; prereq GeCh 6 or 26) Swofford
- 96f, 97w, 98s. Senior Thesis.** (Cr ar; prereq 4th yr) Bruckenstein, Meehan, Sandell, Swofford
- 100f-101w. Quantitative Analysis.** Introductory lecture courses covering the general principles and theoretical foundations of quantitative analysis. 100: Gravimetric analysis. 101: Volumetric analysis. (2 cr for 100, 3 cr for 101; prereq GeCh 26) Meehan
- 102s. Laboratory in Gravimetric and Volumetric Analysis.** (4 cr; prereq 101) Meehan
- 103s. Quantitative Inorganic Microanalysis.** Representative methods of micro- and semimicro analysis, gravimetric, volumetric, and colorimetric. (3 cr; limited to 16; prereq 100, 101, and 102 or 102A) Sandell
- 104f. Qualitative Inorganic Microanalysis.** Use of microscope. Technique of handling small amounts of materials. Inorganic qualitative analysis by means of crystal reactions and modern spot reactions. (3 cr; prereq 100, 101, and 102 or 102A) Sandell
- 105w. Polarizing Microscope.** Its use and application to chemistry. Identification of substances. (3 cr; limited to 16; prereq PCh 101) Sandell
- 106f, 107w, 108s. General Technical Analysis.** Analysis of commercially important materials such as iron, steel, nonferrous alloys, ores, and glass; use of microscope in technical problems, quantitative analysis of heterogeneous mixtures, particle size determinations. (2 or 3 cr per qtr; prereq 100, 101, 102) Sandell
- 111f. Physicochemical Methods of Analysis.** Lecture. Optical and electrochemical methods and methods of separation. (3 cr; prereq 102, PCh 103) Swofford
- 112w. Physicochemical Methods of Analysis.** Laboratory course. Quantitative application of electrochemical, optical, and other physical techniques. (2 cr; prereq 111) Bruckenstein, Swofford
- 113w. Physicochemical Methods of Analysis.** Laboratory. A more advanced treatment of the material covered in AnCh 112. (3 cr; prereq 111) Swofford
- 115f. Advanced Analytical Chemistry.** Condensed review of fundamentals of gravimetric and volumetric analysis. (2 cr; prereq 100, 101, 102 or 102A) Bruckenstein
- 116s. Solution Equilibria.** Lecture. Systematic treatment of aqueous and nonaqueous equilibria and the principles underlying volumetric endpoint detection techniques. (3 cr; prereq 115 and PCh 103) Bruckenstein

- 117w. **Electrochemical Methods of Analysis.** Lecture. Potentiometric, coulometric, polarographic, and other electrical methods. (4 cr; prereq 111) Bruckenstein
- 118s. **Electrochemical Methods of Analysis.** Laboratory course. (3 cr; prereq 117) Bruckenstein, Swofford
- 123f. **Analysis of Complex Materials.** Literature study, critical selection and application of fundamentals of analysis to complex materials. (1-3 cr; prereq 112) Meehan
- 127s. **Optical Methods of Analysis.** Lecture. (2 cr; prereq PCh 103; offered 1965-66 and alt yrs) Meehan
- 138s. **Advanced Volumetric Analysis.** (3 cr; prereq 116)
- 140w. **Water Analysis.** Analysis of potable water with interpretation of results. (2 cr; prereq 100, 101, 102) Sandell
- 141f, 142w, 143s. **Seminar: Modern Problems in Analytical Chemistry.** (1 cr per qtr; prereq 100, 101, 102 or 102A and PCh 103) Bruckenstein

FOR GRADUATE STUDENTS ONLY

- 201, 202, 203. **Selected Topics in Analytical Chemistry**
- 211-212. **Physicochemical Methods of Analysis**
- 235, 236, 237. **Research Seminar: Analytical Chemistry**
262. **General Survey of Analytical Chemistry**
- 301, 302, 303. **Research in Quantitative Analysis**

General Chemistry (GeCh)

LOWER DIVISION COURSES

- 4f,w-5w,s. **General Principles of Chemistry.** An introduction to chemistry from the standpoint of atomic structure; periodic properties of the elements and compounds derivable from structural considerations; a study of the laws governing the behavior of matter, theories of solutions, acids, bases, and equilibrium. (5 cr per qtr, §24-25; prereq a first course in high school algebra...advanced algebra and trigonometry strongly recommended; 3 lect, 1 quiz, 1 rec, and 3 lab hrs per wk) Brasted and staff
- 6f,s. **Principles of Solution Chemistry.** Lecture and laboratory work related to the chemistry of selected cations and anions. The detection and behavior of these ions are included in the study as well as heterogeneous and homogeneous equilibria systems. Attention is given to oxidation-reduction systematics, complex ion formation as it relates to aqueous solution chemistry, and general chemical phenomena interrelated with structure. (4 cr, §26; prereq 5 or 15 or 25; 3 lect and 4 lab hrs per wk) Brasted and staff
- 24f,w-25w,s†-26f,s. **General Principles of Chemistry.** The lecture material deals primarily with the basic theories of chemistry: atomic structure, kinetic theory, chemical stoichiometry, the chemical bond, oxidation-reduction, solution theory, chemical equilibrium. Examples are drawn from all fields of chemistry. A considerable portion of the laboratory program involves qualitative analysis, including cation and anion analysis. (5 cr per qtr, §4-5-6; for students whose major is chemistry or chemical engineering; 3 lect, 1 quiz, 1 rec, and 5 lab hrs per wk) O'Connor and staff
- 25Hw-26Hs. **Honors Course: General Principles of Chemistry.** (5 cr per qtr; prereq 24 for 25H, 25 or 25H for 26H) Tobias

Inorganic Chemistry (InCh)

UPPER DIVISION COURSES

- 96f, 97w, 98s. **Senior Thesis.** (Cr ar; prereq sr) Staff
- 103f. **Atomic Structure and the Properties of Elements Based Thereon.** Systematic treatment of the nature of atomic and molecular electronic systems and the properties of various elements, including the transition elements. (3 cr; prereq PCh 103; 3 lect hrs per wk) Conroy
- 104w. **Chemistry of the More Representative Elements.** Detailed discussion of the preparation, reactions, and chemical properties of the regular group elements and their compounds. (3 cr; prereq 103 or §; 3 lect hrs per wk) Reynolds

- 106f. Oxidation-Reduction Systematics.** Discussion of the application of tabulated thermodynamic data, including potential diagrams, to the prediction of chemical reactions. (3 cr; prereq PCh 101 and #; 3 lect hrs per wk) Hugas
- 111w. Silicon and Related Elements.** Review of current studies of silicon, germanium, tin and lead, with emphasis on recent silicon chemistry. (3 cr; prereq OrCh 62; 3 lect hrs per wk; offered 1964-65 and alt yrs) Johnson
- 112s. Radioactivity and Nuclear Chemistry.** Properties of nuclei, disintegration, properties of radiation; natural and artificial radioactivity; modern views of nuclear structure. (3 cr; prereq PCh 103; 3 lect hrs per wk; offered 1965-66 and alt yrs) O'Connor
- 113w. Mechanisms of Inorganic Reactions.** A discussion of the prevalent ideas concerning the mechanisms of inorganic oxidation-reduction and substitution reactions. (3 cr; prereq PCh 103; 3 lect hrs per wk; offered 1965-66 and alt yrs) Reynolds
- 122s. Advanced Inorganic Chemistry Laboratory.** Measurements of the equilibria and kinetics of selected inorganic reactions, and advanced synthetic methods. (2 cr; prereq AnCh 100, 101, and 102 or 102A and PCh 103) Staff
- 134f, 135w, 136s. Seminar: Modern Problems in Inorganic Chemistry.** (1 cr per qtr; prereq PCh 103, #) Staff

FOR GRADUATE STUDENTS ONLY

- 203. Atomic Structure and the Chemical Bond**
- 204, 205. Advanced Inorganic Chemistry**
- 206. Advanced Inorganic Chemistry**
- 211, 212, 213. Selected Topics in Inorganic Chemistry**
- 220, 221, 222. Advanced Inorganic Chemistry Laboratory Methods**
- 260. General Survey of Inorganic Chemistry**
- 301, 302, 303. Research in Inorganic Chemistry**

Organic Chemistry (OrCh)

UPPER DIVISION COURSES

- 61f,w-62w,s.† Elementary Organic Chemistry.** (Chem, ChemE, Premed, Predent, Pharm) Discussion of important classes of organic compounds, both aliphatic and aromatic. Laboratory work includes the preparation of typical substances. (4 cr per qtr; prereq 12-15 cr in chemistry; 3 lect, 1 lab conf, 1 quiz, and 4 lab hrs per wk) Dodson, Koelsch, Kreevoy, Garbisch
- 63f,s. Elementary Organic Chemistry.** (Continuation of 61-62) Lecture course. (3 cr; prereq 62; 3 lect and 1 quiz hr per wk; 63 is prerequisite to all other advanced courses in organic chemistry) Noland, Parham
- 64f,s. Elementary Organic Chemistry Laboratory.** (3 cr; prereq 63 or ¶63; 6 lab hrs and 1 conf hr per wk) Leete, Parham
- 96f, 97w, 98s. Senior Thesis.** (Cr ar; prereq 4th yr) Any staff member of Division of Organic Chemistry
- 102f. Organic Qualitative Analysis.** Elementary course. Reactions of typical functional groups and introduction to methods of organic qualitative analysis. (4 cr; prereq 63, 64 or equiv) Koelsch, Garbisch
- 139w. Advanced Organic Chemistry Laboratory Work.** Selected laboratory synthetic problems, which may include original work. Includes considerable individual instruction. (2-5 cr; prereq 64 or equiv; 6-15 hrs lab work ar) Noland
- 142w. Chemistry of Natural Products.** Including acetogenins, terpenes, alkaloids, biogenesis. (3 cr; prereq 63; offered 1965-66 and alt yrs) Leete
- 143s. Chemistry of Natural Products.** The steroidal hormones, their isolation, proof of structure, synthesis, and action. (3 cr; prereq 63; offered 1964-65 and alt yrs) Dodson
- 144w. Heterocyclic Compounds.** Typical classes of heterocyclic compounds, their chemical and physical properties and uses, synthesis. (3 cr; prereq 63 and 64; offered 1964-65 and alt yrs) Leete

FOR GRADUATE STUDENTS ONLY

- 201, 202, 203. Organic Chemistry Seminar
- 220. Graduate Survey
- 221. Graduate Survey
- 222. Graduate Survey
- 223. Stereochemistry
- 224. Theoretical Organic Chemistry
- 238. Introduction to Research
- 239-240. Introduction to Research
- 246. Organic Instrumental Analysis
- 250. Theoretical Organic Chemistry
- 261. General Survey of Organic Chemistry
- 301, 302, 303. Research in Organic Chemistry

Physical Chemistry (PCh)**UPPER DIVISION COURSES**

- 96f, 97w, 98s. Senior Thesis. (Cr ar; prereq 4th yr)
- 100A-Bsu. Elementary Physical Chemistry. Primarily for premedical students and for students of biology. (3 cr per term; prereq 1 yr college chemistry, 1 yr college physics, Math 40)
- 101f-102w-103s. Physical Chemistry. General survey of the subject. (4 cr per qtr; prereq 1 yr college chemistry, Phys 9 or ¶Phys 9 with Δ , Math 25B or 44) Lipsky
- 101Hf-102Hw-103Hs. Physical Chemistry. (Honors Course) General survey of the subject. (4 cr per qtr; for students with GPA greater than 2.75 in mathematics, physics, and chemistry; prereq 1 yr college chemistry, Phys 9, Math 25B or 44) Prager, Lipsky
- 104f-105w-106s. Physical Chemistry Laboratory. (1 or 2 cr per qtr; prereq 101 or ¶101 for 104... 102 or ¶102 for 105...103 or ¶103 or 108 for 106) Overend, Bolton
- 107f-108w.† Physical Chemistry. A brief general survey of the subject. (3 cr per qtr; prereq 1 yr college chemistry, Phys 9 or Phys 6 with Δ , Math 25B or 44) Wertz
- 109f. Physical Chemistry. Elementary atomic and molecular structure, wave mechanics, nuclear chemistry, photochemistry. (4 cr; prereq 103 or 103H) Lumry
- 110f. Thermodynamics and Chemistry. Principles of classical thermodynamics; their application to physical and chemical phenomena. (4 cr; prereq 103 or 103H and calculus) Livingston
- 112w. Atomic and Molecular Structure. An experimental viewpoint. (3 cr; prereq 103 or 103H) Wertz
- 113s. Quantum Mechanics. Applications to molecular structure. Theory of the chemical bond. (3 cr; prereq 112 or equiv) Wertz
- 117s. Fundamentals of Reaction Kinetics. Empirical analysis of rate measurements, collision theory, transition state theory, chain reactions. (3 cr; prereq 103 or 103H) Livingston
- 118f. Introduction to Quantum Theory. Fundamentals of quantum mechanics and their application to simple physical and chemical problems. (3 cr; prereq 103 or 103H and calculus) Lumry
- 119w. Introduction to Molecular Structure. Methods of determining molecular structure with simple applications. Chemical and physical properties in terms of nature of chemical bonds. (3 cr; prereq 118) Lumry

FOR GRADUATE STUDENTS ONLY

- 204-205-206. Atomistics
- 211. Introduction to Statistical Mechanics
- 212. Statistical Mechanics and Kinetic Theory
- 214. Kinetics and Mechanism of Enzymic Reactions
- 215. Physical Chemistry of Proteins

216. Physical Chemistry of Polymers
 221, 222, 223. Seminar: Radiation Chemistry
 250, 251, 252. Seminar: Physical Chemistry
 253, 254, 255. Seminar: Molecular Spectroscopy
 256, 257, 258. Seminar: Theoretical Chemistry
 259, 260, 261. Seminar: Photochemistry
 263. General Survey of Physical Chemistry
 265, 266, 267. Seminar: Magnetochemistry
 268, 269, 270. Seminar: Statistical Mechanics
 271, 272, 273. Seminar: Physical Chemistry of Biological Systems
 274, 275, 276. Seminar: Quantum Mechanics
 290, 291, 292. Selected Topics in Physical Chemistry
 301, 302, 303. Research in Physical Chemistry

Biochemistry

(College of Agriculture, Forestry, and Home Economics)

Students in the Arts College may elect courses in biochemistry by arrangement with the department and the Arts College Scholastic Committee. See the *Bulletin of the College of Agriculture, Forestry, and Home Economics*.

Child Psychology (CPsy)

FACULTY—Harold W. Stevenson, *director*; William R. Charlesworth, Rosalind Gold, Frank B. W. Harper, Willard W. Hartup, John P. Hill, Sally J. Kilmer, Nancy Mann, Shirley G. Moore, Herbert L. Pick, Jr., Merrill F. Roff, Britton K. Ruebush, Mildred C. Templin, John C. Wright.

Major Advisers in Arts College—Professor Templin; Associate Professors Hartup, Moore, Pick, Ruebush, Wright; Assistant Professors Charlesworth, Harper, Hill.

Major Sequence in Arts College—Prerequisites: Psy 1-2, 4-5; and Upper Division standing. Required courses (Upper Division): CPsy 80, 81, 85, and Psy 70. A minimum of 24 and a maximum of 30 credits in child psychology courses are required. In addition, as part of the major, students are required to take 9 Upper Division credits in one of the following fields, as approved by the major adviser: anthropology, linguistics, psychology, sociology, speech, or zoology. The total number of credits that may be counted for the major may thus range from 33 to 39. The minor field must be selected from an area other than that chosen to fulfill requirements for the major.

The major in child psychology is designed for students who wish to acquaint themselves in a general way with the scientific literature concerning child psychology and child development. Students who wish to do graduate work in child psychology or child development should plan to take Math 10 and 40, as well as a broad background in biological and social sciences.

Honors Program—Undergraduates majoring in child psychology who wish to become candidates for the B.A. degree with honors may apply for admission to the Honors Program.

For a specialized curriculum in nursery school and kindergarten education, see the *Bulletin of the College of Education*.

UPPER DIVISION COURSES

CPsy 80 is open to sophomores who have an average of at least C in Psy 1-2. Other Upper Division courses are open also to sophomores under conditions explained at the beginning of Section II.

- 80f,w,s. **Child Psychology.** Introduction to the science of child behavior. Emphasis is placed upon a critical review of theories and research in child psychology. (3 cr; prereq Psy 2) Charlesworth, Harper, Pick, Wright
- 81f,w,s. **Adolescent Psychology.** Social, physical, mental, emotional, and personality development during adolescence. (3 cr; prereq Psy 2) Harper, Hill
- 83w. **Guidance of Children's Activities.** Techniques for providing creative activities and guiding children's interests with emphasis on purpose and meaning of play. Description of play and group activities from preschool through high school. (3 cr; prereq 80) Kilmer
- 85w. **Psychological Appraisal of Child Behavior.** Observation, interview, testing, and other means of appraising children's behavior. (3 cr; prereq 80) Harper, Wright
- 88s. **Children in Society.** Consideration of historical, socio-economic, cross-cultural influences, and social changes on child development. (3 cr; prereq 80) Templin
- 89w. **Psychology of Parent-Child Relationships.** Discussion of parent-child relationships and family situations. Evaluation of relevant research literature. (3 cr; prereq 80) Hill
- 125f. **Experimental Research with Children.** Supervised research experience. Design and conduct of experiments on child behavior in controlled laboratory situations. (3 cr; prereq 80, and #) Pick, Wright, Charlesworth
- 126s. **Case Study of Children.** Supervised intensive study of the intellectual, personality, and social development and functioning of individual normal children. (3 cr; prereq 85 and #) Ruebush
- 127f,w. **Social Behavior of Nursery School Children.** Social ecology of young children; supervised observation and experience in the nursery school. (3 cr; prereq 80 and #) Gold, Kilmer, Moore
- 132f. **Adolescent Development.** Growth, mental, social, emotional, and personality development. (3 cr, primarily for students in the College of Education; prereq sr, 12 cr in psychology, educational psychology) Roff
- 140s. **Behavior Problems.** Types, origin, development, and treatment of behavior difficulties in normal children. (3 cr; prereq 80 or equiv)
- 142w. **The Psychology of Handicapped Children.** Research related to sensory, speech, language, physical disabilities of children. (3 cr; prereq 80 or equiv) Templin
- 143f. **Problems of Mental Deficiency.** Diagnosis, care, training; social and vocational problems. (3 cr; prereq 80 or equiv) Pick
- 144s. **Psychology of the Gifted Child.** Psychology and development of high intellectual ability and of special talents. (3 cr; prereq 80 or equiv) Charlesworth
- 179f,s. **Clinical Procedures with Children.** Survey of methods of clinical psychology emphasizing basic concepts and research problems in clinical work with children. (3 cr; primarily for students not majoring in clinical psychology; prereq 12 cr in child psychology, psychology, educational psychology, or sociology)
- 180f. **Personality Development.** Development of personality in children. Emphasis on psychoanalytic and behavior theory formulations and related research literature. (3 cr; prereq 80) Hartup
- 181w. **Social Development.** Family and peer influences; social interaction and social relations; developmental changes. (3 cr; prereq 80) Moore
- 182s. **Learning in Children.** Discussion of theory and experimental literature in children's learning. (3 cr; prereq 80) Wright
- 183f. **Language Development.** Development of the structure and function of language, methodological problems, speech and language development; language scales; theories of language development. (3 cr; prereq 80) Templin
- 184f. **Sensory and Motor Development.** Development of sensory and perceptual processes; simple and complex motor skills. (3 cr; prereq 80) Roff
- 190f,w,s. **Topics in Child Psychology.** Independent reading or research. (Cr ar; prereq #) Staff

FOR GRADUATE STUDENTS ONLY

- 210-211. **Advanced Child Psychology**
212. **Research Design in Child Psychology**

- 214. Learning in Children
- 215. Perception in Children
- 216. Cognitive Development
- 217. Advanced Personality Development
- 218. Abnormal Child Psychology
- 219. Advanced Social Development
- 220, 221, 222. Seminar: Current Issues in Child Psychology I
- 223, 224, 225. Seminar: Developmental Psychology
- 227. Multiple Factor Analysis
- 230, 231, 232. Seminar: Recent Literature
- 233, 234, 235. Seminar: Current Issues in Child Psychology II
- 248. Clinical Child Psychology
- 249. Treatment of Disturbed Children
- 250, 251. Practicum in Clinical Child Psychology
- 285-286. Theory and Practices in the Preschool
- 287. Behavior of Preschool Children
- 291. Psychological Evaluation of Infants and Preschool Children
- 292. Practicum in Psychological Appraisal of Children
- 295. Seminar: Projective Methods with Children and Adolescents

Chinese

See Slavic and Oriental Languages

Classics

FACULTY—Norman J. DeWitt, *chairman*; Margaret M. Forbes, William A. McDonald, Michael V. Molitor, Robert P. Sonkowsky, Donald C. Swanson (on leave 1964-65), Roy A. Swanson.

Major Advisers in Arts College—Professorial staff.

Honors Program—The Department of Classics offers special independent reading courses for honors work in Greek, Latin, and Classics (numbered 95, 96, 97, see below). The student must complete independent work for a total of 9 credits, either in three separate quarter courses or in an organized sequence, under the guidance of members of the departmental staff, beyond the scope of regular departmental courses.

Honors work will involve, in addition, a comprehensive written examination or the completion of a special project relating to the course work.

A Greek or Latin major (the department does not offer a classics major) may include one honors reading course (3 cr) in classics (entirely in English) or one honors reading course in the other language for honors in either language.

For admission to all honors courses, including Clas 95H, 96H, 97H, offered by the department, the student must have demonstrated his capacity for outstanding work in 1 quarter (3 cr) of Greek or Latin work with the instructor who will direct the honors reading.

Application should be made at the Upper Division office, 225 Johnston Hall. The application will then be referred to the chairman of the department for approval.

The honors reading courses in the department (Latin, Greek, or entirely in English) are open to honors students in other departments on the same terms as for Latin and Greek majors (i.e., outstanding work in 1 quarter of Grk 171, 172, 173 or Lat 171, 172, 173 and recommendation by the instructor).

Greek (Grk)

Major Sequences in Arts College—Twenty-seven credits in Greek courses numbered 60 and above, or 18 credits in such courses with (a) 9 credits in Latin courses numbered 60 and above, or (b) 6 credits from classics courses numbered 50 and above and 6 credits in courses pertinent to classical studies offered in other departments or programs (e.g., anthropology, art, comparative literature, English, history, interdisciplinary studies, philosophy, political science, speech and theatre arts), to be chosen in consultation with the major adviser.

Suggested Minor Sequences—Eighteen credits in Greek courses numbered 60 and above, or 12 credits in such courses with 9 credits from classics courses or from courses pertinent to classical studies offered in other departments or programs (see examples above).

LOWER DIVISION COURSES

- 1f-2w.† **Beginning Greek.** Planned to acquaint students with the "real" language from the start. The structure of the language is demonstrated in the context of graded reading materials. Before the end of the second quarter, students are reading selections from the *New Testament*, Aesop, Xenophon, and Plato. Considerable stress is placed on audio-lingual techniques and on composition. (5 cr per qtr; prereq 1 or equiv for 2) McDonald
- 3s. **Selections from Greek Prose.** Readings mainly in Plato, Xenophon, and Herodotus. (5 cr; prereq 2 or equiv) Sonkowsky

UPPER DIVISION COURSES

- 50f-51w.† **Reading Greek.** An intensive reading course for juniors, seniors, and graduate students, designed to develop reading knowledge. Previous experience in foreign language is highly desirable. (3 cr per qtr, §1-2; prereq jr; offered when feasible) Molitor
- 61f. **Plato: Selections.** (3 cr; prereq 3 or equiv) Sonkowsky
- 62w. **Greek Tragic Drama.** (3 cr; prereq 3 or equiv) McDonald, Sonkowsky
- 63s. **Homer.** (3 cr; prereq 3 or equiv) McDonald
- 73s. **Hellenistic Greek.** The Koinè language used in the *New Testament*, the papyri, and other documents from the third century B.C. to the second century A.D. (3 cr; prereq Δ) R A Swanson
- 95Hf, 96Hw, 97Hs. **Independent Honors Reading.** (3 cr per qtr; prereq see Honors Program above) Staff
101. **The Structure of Greek.** Application of descriptive linguistic principles to the Greek language, with emphasis on contrast (viz., to English) morpheme identification, structuralization of data, linguistic and statistical patterns. (3 cr; prereq 2 yrs Greek and Clas 56; offered 1965-66) D Swanson
- 111w.s. **Advanced Prose Composition.** (3 cr; prereq 24 cr in Greek or §; offered when feasible) Staff
- 161f. **Plato: Selections.** Meets with Grk 61, but students will do additional work for advanced credit. (3 cr; prereq Δ) Sonkowsky
- 162w. **Greek Tragic Drama.** Meets with Grk 62, but students will do additional work for advanced credit. (3 cr; prereq Δ) McDonald, Sonkowsky
- 163s. **Homer.** Meets with Grk 63, but students will do additional work for advanced credit. (3 cr; prereq Δ) McDonald
- 171f, 172w, 173s. **Advanced Reading.** Since the authors to be read vary from quarter to quarter and from year to year, the course may be repeated for credit. (3 cr per qtr; prereq 63 or Δ) Staff

FOR GRADUATE STUDENTS ONLY

- 211f-212w-213s. **Seminar: Greek Epic**

Latin (Lat)

Major Sequences in Arts College—Twenty-seven credits in Latin courses numbered 60 and above, or 18 credits in such courses with (a) 9 credits in Greek courses numbered 60 and above, or (b) 6 credits from classics courses numbered 50 and above and 6 credits in courses pertinent to classical studies offered in other departments or programs (e.g., anthropology, art, comparative literature, English, history, interdisciplinary studies, philosophy, speech and theatre arts), to be chosen in consultation with the major adviser.

Suggested Minor Sequence—Eighteen credits in Latin courses numbered 60 and above, or 12 credits in such courses with 9 credits from classics courses or from courses pertinent to classical studies offered in other departments or programs (see examples above).

Major Adviser in College of Education—Professor Forbes.

Requirements for a Teacher's Certificate in Latin (applicable only to students in the College of Education)—*Major recommendations*: Lat 61, 62, 63, 73, 6 credits from 171, 172, 173, Clas 56, and 9 credits in classics courses or in courses pertinent to classical studies offered in other departments or programs (see examples above). *Minor recommendations*: Lat 61, 62, 63, 73, Clas 56, and 6 additional credits in classics or in courses pertinent to classical studies offered in other departments or programs (see examples above).

LOWER DIVISION COURSES

- 1f-2w-3s.† **Beginning Latin.** Based on the structural approach to language, especially the development of reading knowledge through laboratory techniques. (5 cr per qtr; prereq 2 or equiv for 3, or Δ) Forbes
- 4f, 5w. **Intermediate Reading.** A continuation course based on selections from Caesar, Cicero, and Vergil. (5 cr per qtr; prereq 3, or Δ) Staff

UPPER DIVISION COURSES

- 50f-51w.† **Reading Latin.** An intensive reading course for juniors, seniors, and graduate students, designed to develop reading knowledge. Previous experience in foreign language is highly desirable. (3 cr per qtr, §1-2-3; prereq jr; offered when feasible) Forbes
- 61f, 62w, 63s. **Survey of Latin Literature.** A reading course in selections from the more important Latin authors, representing such literary forms as epic, lyric, satire, drama, history, rhetoric, biography. (3 cr per qtr, §corresponding qtrs of 161, 162, 163; prereq 5, or 3 or 4 yrs high school Latin, or Δ) Staff
- 73s. **Prose Composition.** (3 cr; prereq 3 yrs high school Latin or Δ) Staff
- 95Hf, 96Hw, 97Hs. **Independent Honors Reading.** (3 cr per qtr; prereq see Honors Program above) Staff
101. **The Structure of Latin.** Application of descriptive linguistic principles to the Latin language, with emphasis on contrast (viz. to English), morpheme identification, structuralization of data, linguistic patterns. (3 cr; prereq 3 cr Latin above 60 and Clas 56; offered 1965-66) Forbes
- 111w,s. **Advanced Prose Composition.** (3 cr; prereq 73 or Δ; offered when feasible) Staff
- 133s. **Vulgar Latin.** Lectures on the development of Latin into Romance languages; reading of documents which reveal the lexical, phonological, and syntactic system of colloquial Latin. (3 cr; prereq adv students of Latin, or a Romance language and §; offered 1965-66 and alt yrs) D Swanson
- 135s. **Medieval Latin.** Survey of Latin literature from the 5th through the 12th century; special attention to Carolingian and 12th-century Renaissance movements. (3 cr; prereq adv students of Latin or §; offered 1966-67 and alt yrs) R Swanson
- 161f, 162w, 163s. **Survey of Latin Literature.** Meets with Lat 61-62-63, but students will do additional work for advanced credit. (3 cr per qtr, §corresponding qtrs of 61, 62, 63; prereq Δ) Staff

171f, 172w, 173s. Advanced Reading. Since the authors to be read vary from quarter to quarter and from year to year, the course may be repeated for credit. (3 cr per qtr; prereq 63 or Δ) Staff

FOR GRADUATE STUDENTS ONLY

221f-222w-223s. Seminar: Lyric Poetry

Classics (Clas)

(Courses for which no knowledge of Greek or Latin is required)

Clas 1f, 2w, 3s. Introduction to Classical Civilization: Greece. (3 cr per qtr)

Clas 1f. The 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 the archaic age. Cultural dynamism and contact with the Near East.

Clas 2w. The 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 the city-state.

Clas 3s. The Age of Alexander: Cosmopolitanism and Cultural Fusion. Hellenistic "big government" and rise of individualism. Spread of Greek culture to the Near East. New emphases in literature, philosophy, art and especially in science and religion.

LOWER DIVISION COURSES

42f,w,s. Greek and Roman Mythology. Classical myths; acquaints the student with the stories of gods, demigods, and heroes which are a basic component of the European cultural heritage, with attention to their artistic, religious, psychological, and anthropological implications. (2 cr; prereq soph) Forbes, R Swanson, Molitor

46. Ancient Literary Criticism. Aristotle's *Poetics*, Horace's *Ars Poetica*, and Longinus' *On the Sublime* (in translation), with special attention to Alexandrianism; application of ancient principles of criticism and modern writers (e.g., Sophocles, Catullus, Horace, Racine, Robinson Jeffers), comparison of some ancient and modern literary standards and critical tenets; study of the ancient and modern *ars poetica* (e.g. Horace, Vida, Boileau, Pope, MacLeish). (3 cr; prereq soph; offered 1965-66) R Swanson

48f,w,s. Technical Terms of Science, Medicine, and the Humanities. Presentation in English contexts of Greek and Latin prefixes, suffixes, and roots basic in modern technical vocabularies. (3 cr; prereq soph) Molitor

UPPER DIVISION COURSES

56f. Elementary Linguistics. Introduction to current language science, involving brief history of the field and its methods, summary of the chief language families, basic phonetics of the European languages, how words are made and how they are analyzed, principles of language change, reconstruction of earlier stages in a language from extant dialects, and applications of linguistic science to language teaching and learning. (3 cr; prereq 1 yr foreign language study on college level or equiv, or \S) Schmalstieg

68f,w,s. Technical Terms of Science, Medicine, and the Humanities. Meets with Clas 48, but students will do additional work for Upper Division credit. (3 cr, \S 48; prereq jr) Molitor

80f. Classical Epic in Translation. Reading of Homer's *Iliad*, *Odyssey*, Vergil's *Aeneid*, with attention to the cultural context of epic, the heroic character, epic formulas, and poetic techniques. (3 cr, \S 180; prereq 9 cr in English literature beyond C or in foreign literature, or Δ ; offered 1964-65 and alt yrs) DeWitt

81w. Greek Tragedy in Translation (Aeschylus, Sophocles, Euripides). Introductory lectures on the origin of European drama as a distinct literary form, on the characteristics of Greek tragedy, and the ancient theaters and theatrical conventions. Careful discussion of a dozen of the tragedies. Major emphasis on understanding the problems posed in relation to cultural patterns of the time. (3 cr, \S 181; prereq 9 cr in English literature, English beyond C, or foreign literature, or Δ ; offered 1964-65 and alt yrs) Sonkowsky

82s. Aristophanes and Roman Drama in Translation (Aristophanes, Menander, Plautus, Terence, Seneca). Introductory material organized as in Clas 81, but with emphasis on the tradition of comedy. Reading of about a dozen comedies and three Senecan tragedies. (3 cr, \S 182; prereq same as 81; offered 1964-65 and alt yrs) DeWitt

91f, 92w, 93s. Classical Literary Traditions. Readings from classical literature, with lectures on the origin of literary forms and their traditions in European literature. Topics include:

- (*fall*) epic, drama, and dramatic prose (dialogue), the rhetorical tradition; (*winter*) pastoral, didactic, choral, and personal lyric poetry; (*spring*) expository and narrative prose including history, romantic fiction, literary criticism. (3 cr per qtr, §191-192-193; prereq 9 cr in English literature, English beyond C, or in foreign literature; offered 1965-66 and alt yrs) Staff
- 95Hf, 96Hw, 97Hs. **Independent Honors Reading.** (3 cr per qtr; prereq see Honors Program above) Staff
- 106w-107s. **Introduction to the Study of Language.** 106: Deals with general and descriptive linguistics, with special attention to phonology and morphemic analysis. 107: Deals with historical and comparative linguistics. (3 cr per qtr; prereq 56 or Δ) Schmalstieg
- Spch 109. **Classical Rhetoric.** Greek and Roman theories of speech making; historical and philosophical context and influence on education. (3 cr; prereq 5, and Δ) Scott
- 122w. **Introduction to Greek Archaeology.** Methods and techniques of modern field archaeology; chronological development and regional peculiarities of architecture, sculpture, painting, ceramics, and other special fields, from the neolithic period to the Roman conquest of the eastern Mediterranean; concentration on the major Bronze Age civilizations. Illustrated lectures, readings, and student reports. (3 cr; prereq jr or #) McDonald
- 123s. **Introduction to Roman Archaeology.** (Continuation of 122) The archaeological background of the civilizations of pre-Roman Italy, the Roman republic, and the Empire throughout the Mediterranean and adjacent areas. Illustrated lectures, reading, student reports. (3 cr; prereq jr or #) McDonald
146. **Ancient Literary Criticism.** Same class work as Clas 46, but with special independent reading and research assignments. (3 cr, §46; prereq jr; offered 1965-66) R Swanson
- 180f. **Classical Epic in Translation.** Meets with Clas 80 but students will do additional work for advanced credit. (3 cr, §80; prereq grad; offered 1964-65 and alt yrs) DeWitt
- 181w. **Greek Tragedy in Translation.** Meets with Clas 81 but students will do additional work for advanced credit. (3 cr, §81; prereq grad; offered 1964-65 and alt yrs) Sonkowsky
- 182s. **Aristophanes and Roman Drama in Translation.** Meets with Clas 82 but students will do additional work for advanced credit. (3 cr, §82; prereq grad; offered 1964-65 and alt yrs) DeWitt
- 190s. **Proseminar: Classical Archaeology.** Intensive study of a special problem or period within one of the major archaeological subdivisions such as topography and monuments, epigraphy, sculpture, ceramics, architecture. Since the content varies from year to year, the course may be repeated for credit. (3 cr; prereq 122, 123 or #; offered when feasible) McDonald
- 191f-192w-193s. **Classical Literary Traditions.** Meets with 91, 92, 93 but students will do additional work for advanced credit. (3 cr per qtr, §corresponding qtrs of 91, 92, 93; prereq grad; offered 1965-66 and alt yrs) DeWitt, staff
- 194f. **Proseminar: Introduction to Classical Studies.** A survey of the fields of research in classical scholarship, methods, bibliography, textual history, and criticism. (3 cr; prereq grad major or #) Sonkowsky
- Spch 275f, 276w, 277s. **Seminar: Rhetoric.** History and critical study of rhetorical theory. Examination of research in rhetoric. (3 cr; prereq 109 or #) Sonkowsky, Smith, Scott

Sanskrit (Skt)

- 128f-129w-130s. **Readings in Sanskrit.** (3 cr per qtr; prereq sr and #, at least 2 Upper Division courses in early Indo-European languages; offered 1965-66) D Swanson

Communication

See Interdisciplinary Programs

Comparative Literature (CLit)

Chairman—Roy A. Swanson

For complete description of the Graduate Program in Comparative Literature, see *Bulletin of the Graduate School*. The department does not offer an undergraduate major.

UPPER DIVISION COURSES

Courses especially helpful in developing a knowledge of comparative literature include the following:

Clas 146, 191, 192, 193; Engl 127, 129, 134, 180, 184, 185, 186; Ger 190, 191, 192, 190A, 191A, 192A; Rom 114; Scan 161, 171, 172; Span 161-162-163

FOR GRADUATE STUDENTS ONLY

221-222-223. Seminar: Comparative Literature

Composition

See English

Economics (Econ)

FACULTY—O. H. Brownlee, *chairman*; Francis M. Boddy, Arthur M. Borak, John A. Buttrick, John S. Chipman, Edward Coen, Edward Foster, Peter Gregory, John C. Hause, Walter W. Heller, James M. Henderson, Clifford Hildreth, Ralph Hofmeister, Leonid Hurwicz, John H. Kareken, Anne O. Krueger, E. Scott Maynes, Herbert Mohring, George L. Perry, Marcel K. Richter, Jacob Schmookler, Norman J. Simler, Harlan M. Smith, John G. Turnbull, Neil Wallace.

Courses offered by this department are intended to serve two purposes: (1) to provide an understanding of how an economy functions and of the problems faced by decision makers in business, government, and other organizations; (2) to train men and women for the increasingly varied careers open to economists in business, government, colleges, and universities both in this country and abroad.

The department's programs of instruction in the college and in the School of Business Administration are designed not only for students seeking a degree in economics but also for students who wish to supplement their training in other fields. A pamphlet, *Undergraduate Programs in Economics of the University of Minnesota* is available in the departmental office. Potential majors or minors should consult an adviser while freshmen or sophomores.

Major Advisers in Arts College—Advisers selected from among the faculty listed above are assigned in the departmental office. See the director of undergraduate studies or the departmental secretary.

Prelaw Economics Adviser—Professor Turnbull.

Major Sequence in Arts College—*Lower Division requirements*: Econ 1-2 or equivalent (6 cr). In exceptional cases part of this requirement may be waived. Students who think they might wish to enter graduate school are urged to begin the calculus while in Lower Division. In any event, some mathematics or statistics is desirable.

Upper Division requirements: One of the following sequences in economic theory: Econ 65, 66, 75 or 65T-66T or 165-166. This requirement should be completed before the senior year.

At least 24 credits in other economics courses labeled Group 2 and Group 3 in this bulletin. Up to 6 credits of Upper Division business administration courses may be used to satisfy part of this requirement with adviser's consent. At least 9 credits, however, must be taken from Group 3 courses listed below.

Honors in Economics—Departmental approval and a grade point average of at least 3.0 in all courses, and in all economics courses, are mandatory. Successful

completion of a comprehensive oral examination and a short thesis are required of all honors candidates, and ordinarily an honors candidate will take Econ 90H.

Major Adviser in College of Education—Associate Professor Harlan Smith.

For specialized curriculums in economics and social studies, see the *Bulletin of the College of Education*.

GROUP 1 COURSES

- Bw. The Scope, Methods, and Application of Economics.** An overview of economics. Different members of the economics profession explain the type of work done in their special fields. Types of problems for which a study of economics is useful. (3 cr, no credit if taken after 1, 2 or equiv)
- Cs. Introduction to Economic Analysis.** Economic principles, omitting much of the descriptive and institutional background provided in other courses. May substitute for Econ 1-2 as prerequisite for advanced courses in economics, except for majors in business administration. (3 cr, §1-2, §1T-2T; prereq B or 50A)
- 1f,w,s-2f,w,s.† Principles of Economics.** Principles underlying economic activity and the way these principles work out through economic institutions. 1: Demand and supply, competition and monopoly, and the distribution of income. 2: National income, money and banking, business cycles, and international trade. Econ 1-2 or equivalent is prerequisite for most advanced courses in business administration and economics. (3 cr per qtr, §1T-2T, §C, §50A-B; prereq 3rd qtr fr)
- 1Hf,w,s-2Hf,w,s.† Honors Course: Principles of Economics.** Honors section of 1-2.
- 1Tf,w,2Tw,s.† Principles of Economics.** A substitute for Econ 1-2 for students with some background in mathematics. (3 cr per qtr; prereq Math 40 or 13A or equiv)
- 20s. Consumer Economics.** Application of economic principles to major decisions of consumers. How to use income most effectively. The use of credit. Saving; insurance principles; the decision to purchase a house. Sources of consumer information; product testing agencies; government efforts to protect consumers. (3 cr)
- 40s. Decision-Making and Scientific Inference.** Problems of decision-making under uncertainty, with applications to economics, statistical inference, and games of strategy. (3 cr; prereq Math 10 or ‡)
- 50Af-Bw. Economic Problems of the American Economy.** Supplies the need for general education in economics for the average citizen. (3 cr per qtr, §1-2, §1T-2T, §B-C; offered 1964-65 and alt yrs)

GROUP 2 AND 3 COURSES

(Classified by Area)

Note—Courses in the Group 2 level are: Econ 62, 63, 65-66, 65T-66T, 67, 68, 69, 75, 80, 101A, 103, 104, 111, 154, 160, 164, 170, 174, 184 (Honors sections are sometimes offered in the following: Econ 65, 66, 67, 68, 69, 75, 104). Other courses described below are in Group 3.

General

- 80f. Survey of Economic Ideas.** Economic thinking from Adam Smith to J. M. Keynes, with emphasis on impact of industrial revolution and business cycle on the formation of theory. (3 cr; prereq 2 or equiv; offered 1965-66 and alt yrs)
- 90Hs. Honors Course: Undergraduate Seminar in Economics.** Helps students integrate and apply the material learned during their economics training. (3 cr; prereq economics major or minor and Δ)
- 101Af. Foundations of Mathematics for Social Scientists.** Sets. Relations. Partially ordered systems. Functional relations. Elements of logical calculus. Groups. Matrices. Applications mostly in economics, decision and game theory, some in statistics. (3 cr; prereq Math 10 or equiv or ‡)
- 101Bw. Introduction to Decision Theory.** Elements of probability. Basic concepts in statistical decision theory. Relationship to game theory and other types of decision problems. Prediction and inference. Models underlying statistical analysis in economics and certain other fields. (3 cr; prereq 101A or ‡)

- 120f. Economics of Consumption.** Theories and research relating to saving and consumption; concept of saving; consumption function literature; forecasting of consumer spending; role of buying plans. (3 cr; prereq 65, 66 or #; offered 1965-66 and alt yrs)
- 140f. Economics of Location.** Analysis of the location of economic activity in relation to resources and markets. Effects of changes in transport costs. Problems associated with urban growth. (3 cr; prereq 165, 166 or #; offered 1965-66 and alt yrs)
- 150A-B. Current Economic Issues.** Current controversies over economic policy and problems that underlie controversies. Selected topics. (3 cr per qtr [with # course may be taken more than once]; prereq 65, 66 or equiv; offered when feasible, summer only)
- 160w. Comparative Economic Systems.** Functions of all economic systems; theories of alternative economic systems—the market economy, liberal socialism, the centrally planned economy. Analysis of American and Soviet economies. (3 cr; prereq 2 or equiv)
- 170s. Economics, Ethics, and Economic Philosophy.** The literature and the issues it raises; relation of ethics to economic organization, practice, and policy. Different economic philosophies; elements involved in formulation of an economic philosophy. (3 cr; prereq 2 or equiv; offered when feasible)
- 190f,w,s. Readings in Economics.** Areas useful to individual programs and objectives not available in regular course offerings. (Cr ar; prereq consent of adviser and #)

Economic Theory

- 65f,w,s, 66f,w,s. Intermediate Economic Analysis I and II.** 65: Behavior of firms and industries under competitive and monopolistic conditions; factors influencing production, price, and advertising decisions. 66: Determinants of national income, employment and price level; attention given to aggregate consumption and investment. (3 cr per qtr; prereq 2 or #)
- 65Tf,w-66Tw,s. Intermediate Economic Analysis.** A substitute for 65, 66 and 75 for students with some background in mathematics. (3 cr per qtr; prereq ¶Math 43 or #)
- 75f,w,s. Intermediate Economic Analysis III.** Introduction to household and welfare theory. Applications of evaluative techniques to various market phenomena and government policies. (3 cr; prereq 65 or equiv)
- 135Af-Bw-Cs. Foundations of Economic Analysis.** Essentially a substitute for 176A-B, 185A-B, 215A for students with mathematics. (3 cr per qtr; prereq 165, 166, Math 43 or equiv; offered 1965-66 and alt yrs)
- 165f,w,s. Elements of Economic Analysis: Firm and Household.** Individual decision-making by households and by firms under conditions of monopoly, competition, and monopolistic competition. (3 cr, §65; prereq grad or #)
- 166f,w,s. Elements of Economic Analysis: Income and Employment.** Determinants of national income, employment, and price level; aggregate consumption, investment, and asset holding. (3 cr, §66; prereq grad or #)
- 175s. Economic Analysis III: Welfare Theory and Policy.** Decision problems faced by the household and development of elementary welfare economics; evaluation of various allocative mechanisms and government policies. (3 cr; prereq 185A)
- 176Aw. Economic Analysis II: Income Theory.** General equilibrium models from which may be determined the real output, employment, price level, and rate of interest. Effects of government fiscal and monetary policies on these equilibrium values. (3 cr; prereq 166 or equiv or #)
- 176Bs. Dynamic Macroeconomics.** Theories of the pattern of movements over time of employment, incomes, and prices. Effects of various economic policies upon the magnitude of fluctuations; stability of the economy. (3 cr; prereq 176A or equiv or #)
- 180A, B. History of Economic Thought.** Principal economic writings of the past. Particular theories are related to problems and policies of the times and to contemporary theories. A: Classical economists, Marx, and beginnings of neoclassical economics. B: Development of neoclassical economics through the 1930's. Origins of macro-theory. (3 cr per qtr; prereq 176A, 175 or #; offered 1964-65 and alt yrs)
- 185Aw. Economic Analysis I: Price Theory.** Theories of choice as applied to consumers, firms, and resource owners, economic behavior in competitive and monopoly market situations. (3 cr; prereq 165 or equiv)
- 185Bs. Advanced Microeconomics.** Price and output policies under conditions of imperfect competition. Problems of choice under conditions of uncertainty. (3 cr; prereq 185A or #)
- 186s. Income Distribution.** Statistics of personal and functional income distribution. Wages, rent, interest, and profit under pure and imperfect competition. Aggregative theories of distribution as a whole. "Exploitation" and "maldistribution" problems. (3 cr; prereq 165, 166 or equiv)

195A-B-C. Decision-Making and Operations Analysis. Applications of various mathematical techniques of maximization and minimization to business problems. Calculus, linear programming, nonlinear programming, and dynamic programming methods are applied to production, inventory, transportation, selling, and financial problems. Electronic computer programs used where feasible. (3 cr per qtr; prereq 165, Math 43 or equiv or #)

Econometrics and Statistics

111. Elements of Statistics. Acquaints the nonspecialist with some basic concepts and methods of classical statistics. Problems of hypothesis testing and estimation. (3 cr; prereq Math 10 or #; offered when feasible, summer only)

121A-f-Bw-Cs. Theory of Statistics. Normal and related univariate and multivariate distributions. Some large sample theory; law of large numbers. Likelihood methods in hypothesis testing and estimation; applications to regression and analysis of variance and covariance. Confidence intervals. Distribution-free methods. (3 cr per qtr; prereq Math 42 or # [Math 42 for 121A, Math 43 or # for 121B])

131. Elements of Econometrics. Statistical inference in models arising in economics and certain other fields. Least squares method, regression theory; relationship to simultaneous equation and factor analysis problems. Specification error. Identification. Time series. Problems of aggregation. Examples: production functions, demand functions, factor analysis. (3 cr; prereq 121C or # [121C or #; offered 1964-65 and alt yrs])

181A, B, C. Topics in Statistics. (Same as Stat 181A-B-C)

Labor Economics

62f,w,s. Labor Economics. An introductory course dealing with the role of labor in the 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; current wage and employment practices; public policy. (3 cr, §IR 52; prereq 2 or equiv)

102s. Contemporary Labor Issues. Analysis of important labor problem areas. Current issues will be examined in light of their broader economic, legal, political, and social implications. (3 cr; prereq 62 or equiv or #)

152s. Economic History of Labor. Historical analysis of role of labor in industrial society; origin and growth of labor organizations and other labor market institutions. Economic and social consequences of these developments. Labor's progress and problems. (3 cr; prereq 62 or equiv or #)

172f. Labor Market Behavior and Regulation. Public and private rules and 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 economics of control, rather than upon the legal or administrative aspects of policy. (3 cr; prereq 62 or equiv or #)

182f. Economic Security. Public and private approaches to problems of economic insecurity. Nature and causes of economic insecurity. Details of and economic and social implications of private and public programs. Emphasis on economics of income and employment maintenance and stabilization rather than upon legal or administrative aspects of policy. (3 cr; prereq 62 or equiv or #)

192w. Economics of Collective Bargaining. Economic analysis of labor markets and their operation under conditions of both 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 impacts of the union. (3 cr; prereq 62, 65, 66, or equiv)

Economic Development and Area Studies

63. Economics of Science and Technology. Relation of economic progress and growth of science and technology. Topics include the effect of invention, discovery, and education on economic growth; effect of demand, market structure, and size of firm on the rate of invention and adoption of new products and processes; private and social returns from research and education; associated problems of public policy. (3 cr; prereq 2 or equiv)

103f,w. Economic Development. Conditions necessary for increasing income; capital formation, measurement of economic growth, and problems of "underdeveloped" areas. (3 cr; prereq 2 or equiv)

154. The Economy of Europe. Current internal and external economic problems and policies. Recent developments in production, public finance, income levels, and income distribution.

Will emphasize one country of Europe, not necessarily the same from year to year. (3 cr; prereq 2 or equiv; offered when feasible)

- 164w. **Economy of the U.S.S.R.** Development of economic organization of the state, planning and control of use of resources, and distribution of product. Performance of the economy in agriculture and industry under 5-year plans. Internal and external economic policy. Public finance, income distribution, and economic incentives under Soviet system. (3 cr; prereq 2 or equiv)
- 174f. **The Economy of Latin America.** Analysis of current economics problems: exchange controls, land reform, inflation, and fluctuation in prices of basic commodities. Evaluation of foreign aid proposals. (3 cr; prereq 2 or equiv)
- 184s. **Economics of Asia.** Economic development of Asia following contact with Western civilization. Some present problems; population, growth, capital formation, international economic relations, choice between types of economic organization. (3 cr; prereq 2 or equiv)

International Economics

- 104f,w,s. **International Economics.** Significance of foreign trade and investment. International payments and foreign exchange. Gold standard. International Monetary Fund and Bank. Arguments over tariffs and foreign aid policies. (3 cr, §114A; prereq 2 or equiv)
- 114Af, Bw-C. **International Trade and Payments Theory.** A: Gains from trade, tariffs, customs unions, impact of trade on wages. B: Balance of payments disequilibrium, exchange rates, capital movements. C: Relation of trade theory to growth and development, general equilibrium analysis. (3 cr per qtr, §104 for 114A; prereq 65 for 114A...86, 67 for 114B)
- 134s. **U.S. Foreign Economic Policy.** Development of U.S. foreign economic policy in 20th century and current issues of U.S. foreign economic policy. (3 cr; prereq 104 or equiv; offered 1964-65 and alt yrs)

Monetary Economics and Public Finance

- 67f,w,s. **Money and Banking.** Historical development, present pattern, and economic role of financial institutions, with special emphasis on commercial banks, the money supply, and the Federal Reserve System. (3 cr; prereq 66 or equiv)
- 68f,w,s. **Elements of Public Finance.** Survey of government expenditures, budgeting, fiscal policy, debts, and taxes in terms of fiscal institutions, impact on business and the economy, and policy issues. (3 cr; prereq 66 or equiv)
- 157s. **Business Cycles.** Ups and downs of business: explanations of causes, statistical data on such fluctuations. Relationship of cycles to economic growth. Methods of forecasting. Examination of proposals for economic stabilization. (3 cr; prereq 66, 67 or equiv)
- 177Af-Bw. **Intermediate Monetary Economics.** A: Monetary theory: determinants of value of money. B: Principal problems of monetary policy. (3 cr per qtr; prereq 66 or equiv)
- 178Af-Bw. **Public Finance.** Economic effects of various kinds and amounts of taxes, public debt, and public expenditures; resource allocation, employment, and income distribution. (3 cr per qtr; prereq 65, 66, or equiv or §)
188. **State and Local Taxation.** Main problems of state and local finance and proposed solutions; interstate comparisons and co-ordination of practices and policies. (3 cr; prereq 68 or equiv; offered 1964-65 and alt yrs)

Industrial Organization

- 69f,w,s. **Government Regulation of Business.** Economic aspects of public policy affecting the market process. Relations between market structure and economic efficiency and welfare; economic origins of monopoly and other business limitations on free competition; purposes and effect of antitrust laws and laws relating to "unfair business practices." (3 cr, §189A; prereq 65 or equiv for business or economics majors, suitable background in law or political science for others, or §)
- 179Af-Bw. **Industrial Organization.** Structure of American industry, past and present; factors influencing industry structure. Theories of the firm and competition; their quantitative implications, scale economies, and barriers to entry. Relation of industry structure to industry behavior; the firm and its rivals, the firm and its customers and suppliers. (3 cr per qtr; prereq 165 or equiv or §; offered 1964-65 and alt yrs)
- 189Aw-Bs. **Government Regulation of Market Behavior.** General restraints of trade, monopoly, standards of fair competition and regulation of entry into trades and professions. Regulation of public utility rates and services. Economic and legal analysis of federal regulations; state

and local regulation. (3 cr per qtr, \$69 for 189A; prereq 165 or equiv or #; offered 1965-66 and alt yrs)

FOR GRADUATE STUDENTS ONLY

- 200. Advanced Topics in Economics
- 201A-B-C. Econometrics
- 213A-B. Economic Growth and National Planning
- 215A-B. Welfare Economics
- 224A-B. Advanced International Trade Theory
- 245A-B-C. Mathematical Economics
- 268A-B. Advanced Public Finance and Fiscal Policy
- 277A-B. Development of Monetary Theory and Policy
- 290. Individual Graduate Research
- 300. Seminar: Economics
- 301. Seminar: Statistical Inference and Econometrics

Educational Psychology (EPsy)

(College of Education)

The following courses in educational psychology, offered by the College of Education, are regularly open to Arts College students:

- 117w.s. **Basic Principles of Measurement.** Role of measurement in educational work; developments in educational and psychological measurement; measurement theory and practice as related to appropriate statistical methods; types and uses of derived scores, and factors influencing reliability and validity of educational measurements. (3 cr; prereq 116 or 216 or Psy 70 or equiv)
- 140s. **Instruments and Techniques of Measurement.** Intensive study of selected instruments for measuring intelligence, achievement, interests, attitudes, and personality traits with emphasis upon their use in educational guidance, personnel work, administration, and supervision. (3 cr; prereq sr, 110 or 117 or equiv) Edson

English (Engl)

(For courses in freshman English and composition, see page 63)

FACULTY—John W. Clark, *chairman*; Harold B. Allen, Bernard Bowron, Huntington Brown, David L. Eggenschwiler, Avrom H. Fleishman, Charles H. Foster, Richard J. Foster, Ledru Guthrie, Clifford Haga, David B. Haley, J. Dennis Hurrell, David Jones, Joseph Kwiat, J. C. Levenson, Charles S. Levy, Archibald I. Leyasmeyer, A. Raymond McClure, Toni A. McNaron, Samuel H. Monk, Franz Montgomery, Robert E. Moore, John A. Nadeau, Gordon W. O'Brien, Lee A. Pederson, Arthur W. Plumstead, James L. Scoggins, G. Robert Stange, Martin Steinmann, Margery Stricker, Allen Tate, Mary Turpie, Leonard Unger, Sarah H. Youngblood.

Major Advisers in Arts College—Professors Allen, Brown, Clark, Kwiat, Levenson, Monk, Montgomery, Moore, O'Brien, Stange, Unger; Associate Professor Youngblood (joint program); Assistant Professors Fleishman, Levy, Scoggins.

Major Sequence in Arts College—A total of at least 31 credits in literature and language for the entire sequence, comprising the following:

- A. Engl 75, Chaucer; 55-56, Shakespeare; 162, Milton.
- B. Eighteen additional credits in Upper Division courses, of which at least 12 must be from courses numbered 100 or above.

Note—For students who entered the Upper Division on or after June 1, 1964, the requirement in section B (above) is rescinded, and the requirement in section C (below) is substituted:

C. Eighteen additional credits in Upper Division courses, of which at least 9 must be selected from this list: 109, 110 (Romantic poets); 126 (Drama, 1660-1800); 137, 138, 139 (19th century); 147-148-149 (Medieval literature); 170 (Shakespeare's Later Contemporaries); 187, 188, 189 (18th century); 194, 195, 196 (Elizabethan literature), and 197, 198, 199 (17th century). Complete sequences, taken in order, are recommended.

Modification of this requirement will be permitted upon petition approved by the major adviser and the co-ordinator of advising in Upper Division.

Prerequisites: Engl 21, 22 or 22, 23, or 21, 23.

Information about honors degrees in English may be obtained at the Upper Division office or at the department office.

The Department of English regards the knowledge of foreign languages, and especially of Latin, French, Greek, Italian, and German, as of particularly high value to students of the English language and English literature, and especially urges students planning to major in English to include as much foreign language study in their programs as possible and to begin such study as early as possible. Students who look forward to graduate study should consider this especially and should take into account the need for Latin in connection with English studies in certain fields.

Major Adviser in College of Education—Professor Kegler.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation:* Engl 21, 22, 23 (15 cr); 55-56 (6 cr); 72-73-74 (9 cr); 165 (3 cr); Comp 27-28 (6 cr); 9 additional credits in English courses numbered 100 or above (6 of these 9 additional credits may be in Upper Division humanities courses). *Minor recommendation:* Engl 22, 23 (10 cr); 55-56 (6 cr); 73-74 (6 cr); Comp 27-28 (6 cr).

Students interested in taking English as a major or minor subject in the College of Education should see also the bulletin of that college for the requirements for the language arts curriculum.

Education students who major in English are required to take EdCI 122, Literature for Adolescents.

General Education—The Department of English believes that most of its courses numbered below 100 are properly regarded as courses in general education and are suitable for nonmajor students—especially 19, 20, 37, 38, 39, and 52, 53, 54, but also 21, 22, 23, 55-56, 66-67, and 72-73-74.

LOWER DIVISION COURSES

(For courses in freshman English, see page 63)

19f, 20w. Great English Writers. Chronological study of some of the classics of English literature for students not majoring in English and not taking 21, 22, 23. 19: Such writers as Marlowe, Donne, Milton, Pope, Swift, Johnson, Boswell, and Goldsmith. 20: Such writers as Wordsworth, Byron, Shelley, Keats, Tennyson, Browning, and Arnold. (3 cr per qtr, \$21 or \$22 or \$23; prereq**; offered when feasible)

21f,w, 22w,s, 23f,s. Introduction to Literature. Chronological study of English literature with its historical background. Introduction to types of literature and literary ideas. 21: Chaucer to Milton. Marlowe, Spenser, Bacon, Browne, and Bunyan. 22: The Restoration and the 18th century. Pope, Swift, Addison and Steele, Johnson, Boswell, Fielding, and Sheridan. 23: The Romantic Movement and the Victorians. Wordsworth, Byron, Shelley, Keats, Carlyle, Tennyson, Browning, and Arnold. (5 cr per qtr, \$19, \$20; prereq **)

** Completion of, or exemption from, freshman English requirement.

37f, 38w, 39s. **Modern Literature.** Intended for students in all departments and colleges, not particularly for English majors. Readings in 20th-century British and American fiction, drama, and poetry. Selected, arranged, and discussed—not to give a full historical survey, but to enhance the student's pleasure in, and understanding of, imaginative literature generally. Short critical papers are required and count in determining grades. 37: Short fiction. 38: Poetry and drama. 39: The novel since Thomas Hardy. (3 cr per qtr; prereq soph, **)

Clas 42f,w,s. **Greek Mythology.** (2 cr; prereq soph)

Clas 48f,w,s. **Technical Terms of Science, Medicine, and the Humanities.** (3 cr; prereq soph)

Attention of students is called to Hum 1-2-3; 11, 12, 13; and 21, 22, 23 (see Interdisciplinary Programs).

UPPER DIVISION COURSES

Engl 52, 53, 54; 55-56; 66-67; 72-73-74, and 75 are open to Lower Division students who have a C average in the prerequisite courses. Other Upper Division courses are open to sophomores under the conditions explained at the beginning of Section II.

52f, 53w, 54s. **The English Novel.** 52: Reading of novels by such writers as Defoe, Fielding, Sterne, Smollett, and Richardson. 53: Reading of novels by such writers as Jane Austen, Scott, the Brontës, Thackeray, and Dickens. 54: Reading of novels by such writers as Trollope, George Eliot, Meredith, Hardy, Conrad, and Butler. (3 cr per qtr [for 53, §52 or §53 before 1959f...for 54, §53 before 1959f]; prereq ††)

55f,w,s, 56f,w,s. **Shakespeare.** 55: The reading of plays from Shakespeare's early and middle periods. All sections will read *Richard II*, *A Midsummer Night's Dream*, *The Merchant of Venice*, *Julius Caesar*, and two or three other plays selected by the instructor, such as *Much Ado About Nothing*, *Henry IV* (1 and 2) *Henry V*, *As You Like It*. 56: Reading of plays from middle and late periods. All sections will read *Twelfth Night*, *Hamlet*, *Macbeth*, *The Tempest*; *Troilus and Cressida* or *Measure for Measure*, and *Othello* or *Antony and Cleopatra* or *King Lear*. (3 cr per qtr; prereq ††; students may not start with 56 except by Δ)

60s) **Introduction to the English Language.** How English exemplifies basic concepts of language with respect to inner structure, outer form, time, situation, and user. (3 cr; may not be counted toward a major in English in the Arts College except by students taking 34 or more Upper Division cr in English; prereq ††) Allen

66f-67w.) **The Literature of the Bible.** Readings in the Old and New Testaments from the literary point of view. Selections from the historical narratives, the prophets, psalms, tales, wisdom literature, apocalypse. (3 cr per qtr; prereq ††) O'Brien

72f,w-73w,s-74f,s) **American Literature.** 72: The beginnings through Melville. 73: Whitman through Stephen Crane. 74: Dreiser to the present. (3 cr per qtr [for 72, §73 before 1958f...for 73, §74 before 1958f]; prereq ††...72 for either 73 or 74, except for Ed minors...or §)

75f,w,s) **Chaucer.** Reading of selections from *The Canterbury Tales* with introduction dealing with grammar and literary forms of 14th-century English. (4 cr; prereq ††)

80f) **Classical Epic in Translation.** Critical reading of Homer's *Iliad*, *Odyssey*, Vergil's *Aeneid*, with attention to the cultural context of epic, the heroic character, epic formulas and poetic techniques. (3 cr, §Clas 180; prereq 9 cr in English literature beyond C or in foreign literature, or Δ)

81w) **Greek Tragedy in Translation.** (Aeschylus, Sophocles, Euripides). (3 cr, §Clas 181; prereq same as 80)

82s) **Aristophanes and Roman Drama in Translation.** (Aristophanes, Menander, Plautus, Terence, Seneca). (3 cr, §182; prereq same as 80)

90Hf,w,s) **Honors Course: Magna Honors Thesis.** (3 cr; prereq candidacy for magna cum laude in English, Δ)

91Hf,w,s-92Hf,w,s) **Honors Course: Summa Honors Thesis.** (3 cr per qtr; prereq candidacy for summa cum laude in English, Δ)

** Completion of, or exemption from, freshman English requirement.

†† Engl 1A-2A-3A or 1B-2B-3B or Comm 1-2-3, and 5 additional credits; or Engl A-B-C; or 5 credits in 21, 22, 23.

60 on 7th ed. (2010 edition)

- 100f.s. Old English (Anglo-Saxon). Introduction to sounds and grammar with some prose reading. Relation to Modern English stressed. (4 cr; prereq ††) Pederson
- 102w. Readings in Old English Prose and Verse. Critical reading of texts, and introduction to versification. (3 cr; prereq 100) Brown
- 103s. Beowulf. Introduction to the Old English poem, with reading of considerable portions of the text. (3 cr; prereq 100) Brown
- 104w. Emerson and Thoreau. (3 cr; prereq ††)
- 105f. Hawthorne and Melville. (3 cr; prereq ††)
- 106s. Whitman and Mark Twain. (3 cr; prereq ††)
- 109w, 110s. Romantic Poets of the Early Nineteenth Century. 109: Wordsworth, Coleridge, Scott, etc. 110: Byron, Shelley, Keats, etc. (3 cr per qtr; prereq ††) Scoggins
- 111w. Henry Adams and Theodore Dreiser. (3 cr; prereq ††) Levenson
- 113s. American Short Story. Historical examination of American short story from 18th century to the present. (3 cr; prereq ††) Turpie
- 114f. The Midwest in Literature. (3 cr; prereq ††; offered when feasible)
- 115s. The Development of English Prose Style I. Definition of six broad types of prose style on historical principles. (3 cr; prereq ††; offered when feasible)
116. The Development of English Prose Style II. Styles of selected writers since 1700. (3 cr; prereq ††; offered when feasible)
- 120f-121w. The Interpretation of Poetry. Certain technical aspects of poetry in relation to poetic meaning. 120: Analysis of a number of short poems. 121: Emphasis on Coleridge, Housman, Frost, and Eliot. (3 cr per qtr; prereq ††) Tate
- 123f, 124w. The Technique of the Novel. Special studies in novels of the late 19th and 20th centuries, with particular regard to structure. See also Comp 101-102-103 for the writing of fiction. (3 cr per qtr; prereq for undergrad, English major with B avg, or ‡; offered when feasible) Unger
- 126f, 127w. Drama, 1660-1900. 126: Restoration and 18th century. The heroic play, tragedy, comedy of manners, sentimental comedy. 127: Drama: The beginnings of modern realism. (3 cr per qtr; prereq ††) Jones, Moore
- 129s. Modern Drama. Survey of the chief dramatists, English, American, and Continental. (3 cr; prereq 55-56 or 126, 127)
130. Victorian Poetry I. Early and mid-Victorians: Tennyson, the Brownings, Clough, FitzGerald, Arnold, and others. (3 cr; prereq ††; offered when feasible)
131. Victorian Poetry II. Pre-Raphaelites and after: the Rossettis, Swinburne, Morris, Wilde, and the poets of the 1890's. (3 cr; prereq ††; offered when feasible)
- 134s. The Origins of American Naturalism. (3 cr; prereq ††; offered when feasible) Bowron
- 136f. Advanced Shakespeare. The work of the poet's maturity. Special attention to *Othello*, *King Lear*, *Antony and Cleopatra*, *Cymbeline*, *The Winter's Tale*. (4 cr; prereq 56) Brown
- 137f, 138w, 139s. Nineteenth-Century Literature. Prose, poetry, and selected fiction—particularly of the period 1830-1890. Emphasis on the critical study of particular works of major authors and their relation to the recurrent themes and literary interests of the period. (3 cr per qtr; prereq ††) Stange, Fleishman
- 140w-141s. Advanced Chaucer. The longer poems apart from *The Canterbury Tales*. Treatment primarily literary and historical. (3 cr per qtr; prereq 75 or equiv) Nadeau
- 142w, 143s, 144. Twentieth-Century British and American Literature. A critical survey of major figures, with emphasis on basic trends and the interrelations of the two literatures. (3 cr per qtr; prereq ††) Youngblood
- 147f-148w-149s. The Literature of England in the Middle Ages Exclusive of Chaucer. Reading includes Latin documents in translation. (3 cr per qtr; prereq 75 or 175, and 100; offered when feasible)
- 154w, 155s. American Novel. History of the American novel from the beginning to the present. (3 cr per qtr; prereq ††) Bowron
- 156s. American Drama. Critical survey of American drama; primary emphasis upon American drama from 1914 to the present, with some attention to historical and cultural background;

†† Five credits in literature, English or American, exclusive of freshman English.

- some representative American plays of the 18th, 19th, and early 20th centuries. (3 cr; prereq ††) Kwiat
- 157f, 158w. **American Poetry.** Critical survey of American poetry from Anne Bradstreet to the present, with some attention to historical and intellectual backgrounds; emphasis upon major figures. (3 cr per qtr; prereq ††) Levenson, Tate
- 159w, 160s. **Early American Literature.** Critical survey with emphasis upon principal writers such as Taylor, Edwards, Franklin; attention given to historical and cultural backgrounds such as puritanism, neoclassicism, early romanticism, and the revolution. (3 cr per qtr; prereq ††)
- 162f,w,s. **Milton.** The minor poems, *Arcopagitica*, *Paradise Lost*, and *Samson Agonistes*. (3 cr; prereq 21 or 56)
- 165f,w. **The Structure of Modern English.** An introductory study of English phonemics, morphemics, and syntax. (3 cr; prereq ††) Allen, Pederson
- 166s. **History of the English Language.** Historical influences upon, and changes within, the language as both a popular and a literary medium of communication. (3 cr; prereq ††) Pederson
- 170f. **Shakespeare's Later Contemporaries.** Selected plays of Chapman, Jonson, Dekker, Marston, Webster, Heywood, Beaumont and Fletcher, Middleton, Ford, and Shirley. (3 cr; prereq 56) O'Brien
- 173s. **Dr. Johnson and His Circle.** Boswell; Johnson's influence on his contemporaries. (3 cr; prereq †† and Δ; offered when feasible) Moore
- 174s. **American English.** The developing distinctiveness of the English language in America; its relationships to American cultural patterns; significant regional variations in vocabulary, pronunciation, and grammar; introduction to field methods of American dialect geography; access to unpublished collections of the Linguistic Atlas of the Upper Midwest. (3 cr) Allen
- 175s. **Chaucer.** Reading of *The Canterbury Tales* with introduction dealing with grammar and literary forms of 14th-century English. (4 cr, \$75 or equiv; prereq 100; offered when feasible)
- 176s. **The Structure of Verse.** Technical devices, with emphasis on tropes, rhythmic patterns, stanzaic forms. Primarily descriptive, but with some attention to history and theory of various techniques. (3 cr; prereq ††; offered when feasible) Youngblood
178. **The South in Literature.** (3 cr; prereq ††; offered when feasible) Tate
180. **The Influence of Poe.** The French "Symboliste" school; influence of this school on modern literature, chiefly poetry, in English. (3 cr; prereq ††; offered when feasible) Tate
181. **Modern Literary Criticism.** Major texts and movements in modern literary criticism; examination of a few of the more important historical documents from earlier centuries. (3 cr; prereq ††; offered when feasible)
182. **The Far West in Literature.** Expansion beyond the Mississippi as a force in American thought and letters; literature of exploration and travel; Pacific Coast regional movement; Mark Twain. (3 cr; prereq ††; offered when feasible)
- 183f. **The Poetry of T. S. Eliot.** (3 cr; prereq ††) Unger
- 184f, 185w, 186s. **Form and Idea in Dramatic Literature.** Dramatic types, in chronological sequence; analytical reading of selected representative plays. 184: Tragic and religious drama (classical, medieval, Renaissance, and modern); theories of tragedy. 185: Comedy (classical, Renaissance, and modern); theories of comedy. 186: Experimental and nonrealistic drama. (3 cr per qtr; prereq ††...55-56 recommended) Hurrell
- 187f, 188w, 189s. **Eighteenth-Century Literature.** Survey of English literature from 1700 to 1790. Parallel readings and critical essays. Graduate students will submit a term paper each quarter. (3 cr per qtr; prereq ††) Monk, Leyasmeyer
- 193s. **The Poetry of W. B. Yeats.** (3 cr; prereq ††; not offered 1964-65) Unger
- 194f, 195w, 196s. **Elizabethan Literature: Prose, Poetry, Drama.** 194: From beginning of Tudor period to about 1580; Medieval origins of the drama. 195: From early work of Spenser and Sidney to the mid-nineties. 196: The decade centering in the last year or two of the Queen's reign. (3 cr per qtr; prereq ††) Brown, O'Brien
- 197f, 198w, 199s. **Seventeenth-Century Literature.** 197-198: Prose and nondramatic poetry of the century down to 1660. 199: Dryden and his contemporaries. (3 cr per qtr; prereq ††) Unger, Monk

†† Five credits in literature, English or American, exclusive of freshman English.

The foreign language departments and the humanities program offer many courses in foreign literatures which are pertinent to English studies. Students of English are urged to consult relevant sections of this bulletin for descriptions of such courses.

FOR GRADUATE STUDENTS ONLY

- 204. Studies in the English Language
- 205. Studies in the English Language
- 206. Studies in the English Language
- 210-211-212. Studies in Seventeenth-Century Literature
- 213. Bibliography and Methods of Literary Research
- 222-223-224. Studies in the Origins and Early Development of the American Literary Tradition
- 225-226-227. Elizabethan Drama
- 228-229. Studies in Eighteenth-Century Literature and Culture
- 231-232-233. Shakespeare's Tragic and Comic Art
- 234-235-236. Studies in Medieval English Culture
- 240-241-242. The Canterbury Tales
- 243-244-245. Nondramatic Literature of the Sixteenth Century
- 246-247. English Literary Criticism
- 250-251. Studies in Modern Literature
- 253-254-255. American Renaissance I: Emerson, Whitman, Emily Dickinson
- 256-257-258. Spenser and Milton
- 261-262-263. Studies in Renaissance Culture
- 265-266-267. American Renaissance II: Hawthorne, Thoreau, Melville
- 268-269. Studies in Aesthetics
- 271-272. The Rise and Development of the English Novel
- 274-275-276. Studies in Early Eighteenth-Century Literature
- 277-278-279. American Realism
- 281-282-283. Studies in the English Romantic Movement
- 284-285-286. Dryden and His Age
- 287-288-289. Studies in Victorian Literature
- 290-291-292. Studies in Critical Theory
- 297-298-299. Independent Reading

Freshman English; Composition

Major and Minor Sequences—There is no major or minor sequence in composition. A half-minor (9 credits in Comp 101-102-103) is permissible under the usual Arts College rules (see Section I, Upper Division Programs), and may be taken along with a major in English.

Concurrent Registration in Freshman English and in Composition Courses—Students may not register for more than one of these courses at a time.

Important Note—No student may register for any freshman course in composition or communication without presenting an "English Classification Card (Part II)" as evidence of his assignment. On the basis of various factors, including examinations, the student is assigned to one of six categories. If he is assigned to Category 1, he

is not required to take any course in composition or communication (though he may, if he wishes to, take Engl A-B-C, 1A-2A-3A, 1B-2B-3B, or Comm 1-2-3); he is eligible to take Engl 10H-11H-12H and any course for which Engl A-B-C is the sole prerequisite; and he is given 6 credits of advanced standing in composition. If assigned to Category 2, he must take Engl A-B-C, 1A-2A-3A, 1B-2B-3B, or Comm 1-2-3. If assigned to Category 3, he must take Engl 1B-2B-3B or Comm 1-2-3. If assigned to Category 4, he must take Comp X; and he must, after passing it, take Engl 1B-2B-3B or Comm 1-2-3. The other two categories—Categories 1A and 4A—need not be explained here.

Engl A-B-C is a 15-credit course consisting of 6 credits of composition and 9 of literature; Engl 1A-2A-3A, a 12-credit course consisting of 6 credits of composition and 6 credits of literature; Engl 1B-2B-3B, a 12-credit course consisting of 9 credits of composition and 3 of literature; Comm 1-2-3 (offered in one of the interdisciplinary programs), a 12-credit course in composition and speech. The student may satisfy the Group A requirement for graduation, and for admission to the Upper Division, by passing any of these courses or by being assigned to Category 1 or 1A. Comp X is a no-credit course in composition. Any student who has already completed 1 or more quarters of composition in another college or university must consult the Committee on Scholastic Standing of his college before registering for any freshman course in composition or communication.

Any student who receives a grade of A in composition in Engl A, B, 1A, 2A, 1B, or 2B may, upon his instructor's recommendation, be exempted from further requirement in freshman English. Any student who receives a grade of A or B in both composition and literature in Engl 1B or 2B may, upon his instructor's recommendation, take the next quarter of Engl A-B-C or 1A-2A-3A. Any student who receives a grade of D in either composition or literature in Engl A, B, 1A, or 2A may not, unless his instructor recommends otherwise, take the next quarter of either sequence but must take the next quarter of Engl 1B-2B-3B.

LOWER DIVISION COURSES

Comp Xf,w,s. Preparatory Composition.** A remedial course in composition. (No cr; prereq assignment to Category 4 or 4A [see "Important Note" above])

Af,w-Bw,s-Cf,s. Freshman Literature and Composition.** A combined course in composition (6 cr) and literature (9 cr) identical with 1A-2A-3A, except that it puts even greater emphasis upon literature. It satisfies the Group A requirement for graduation. (5 cr per qtr; prereq assignment to Category 1, 1A, or 2 [see "Important Note" above])

1Af,w-2Aw,s-3Af,s. Freshman English.** A combined course in composition (6 cr) and literature (6 cr) identical with 1B-2B-3B, except that it puts greater emphasis upon literature and that much of the literature is fiction, drama, and poetry. It satisfies the Group A requirement for graduation. (4 cr per qtr; prereq assignment to Category 1, 1A, or 2 [see "Important Note" above])

1Bf,w-2Bw,s-3Bf,s. Freshman English.** A combined course in composition (9 cr) and literature (3 cr). It concentrates upon developing the student's skill in writing exposition, with an introduction to expository literature as one means of providing subject matter for the writing. It satisfies the Group A requirement for graduation. (4 cr per qtr; prereq assignment to Category 1, 1A, 2, or 3 [see "Important Note" above])

10Hf-11Hw-12Hs. Honors Course: Freshman Literature and Composition.** A combined course in composition (6 cr) and literature (9 cr) for the exceptionally able student. (5 cr per qtr; prereq assignment to Category 1 [see "Important Note" above])

Comp 27f,w,s-28f,w,s. Advanced Writing.** 27: (a) Expository prose; (b) argumentation. 28: (a) Advanced expository prose; (b) description; (c) prose style. (3 cr per qtr; prereq Engl C, 3A, or 3B, or Comm 3; after first of classes students must have Δ to attend class)

** Any student absent the first day will lose his place in class. Any student absent from the final examination will be given a grade of F, whatever the reason for his absence, unless he satisfactorily explains his absence to his instructor beforehand or as soon as possible afterwards.

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

Comp 58s. Business Reports and Letters. Style, forms, and methods in business writing. (3 cr; open to students in business administration, and with # to others; prereq Engl C, 3A, 3B, or Comm 3, or exemption) Haga

Comp 101f-102w-103s. The Writing of Fiction and Poetry. Principles of composition in these arts. Class meetings are devoted to analysis of examples drawn from standard sources; meetings in the first 2 quarters to fiction, those in the third to poetry; but the student's compositions may be in either form in any quarter. (3 cr per qtr; prereq for undergrad 6 cr above 50 in English literature or #; offered when feasible)

Note—Attention is called to engineering English (Technical Writing for Engineers), offered in the Institute of Technology by members of the English staff and open to Arts College students by Δ.

FOR GRADUATE STUDENTS ONLY

Comp 200-201-202. Graduate Seminar: Writing

Family Studies (FamS)

FACULTY—Gerhard Neubeck, *chairman*; Reuben Hill, *director of Family Study Center*; Joan Aldous, Maurine Hansen, Robert Lewis, Helen Ludwig, Nathan Mandel, E. Scott Maynes, Karol Ostrin, Vera Schletzer, David Torbett.

The Family Study Center administers an interdisciplinary program in education for marriage and parenthood for the Arts College. The several roles involved in effective family living are the subject of analysis; e.g., marital, parental, planning, and decision-making roles as consumers and as participants in the labor force. The courses are designed for students who will specialize in other subjects.

LOWER DIVISION COURSES

1f,w,s. Dynamics of Dating, Courtship, and Marriage. Application of principles from the behavioral sciences to dating, courtship, mate selection, engagement, mixed marriages, roles of men and women, interaction on marital spouses, and marital stability. (3 cr) Hansen, Mandel, Lewis, Ostrin, Neubeck, Torbett, staff

1Af,w,s. Dynamics of Dating, Courtship, and Marriage. (See FamS 1) Designed for Upper Division engaged or married students. (3 cr, §1) Neubeck, staff

15f,w,s. The Home and Its Furnishing. Present-day housing problems; choice of location; house plans as they affect family living; exterior and interior design; choice of appropriate furnishings and accessories; building furnishing costs. (3 cr [cr does not count toward BA degree]) Ludwig

Econ 20s. Consumer Economics. For course description, see Econ 20 under Department of Economics. (3 cr) Maynes

25f,w,s. Parenthood. Examination of 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. (3 cr, §CPsy 80) Aldous

UPPER DIVISION COURSES

50s. The Educated Woman in the United States. Biological and psychological differences between men and women; legal and economic status of women; educational needs and problems of women; parental roles; occupational choice. (2 cr [cr do not count toward BA degree]; limited to 25, with preference given to jr and sr women with 3.00 GPA or above; prereq #) Schletzer and guest lecturers

Fine Arts

See Art

French

See Romance Languages

Geography (Geog)

FACULTY—Fred E. Lukermann, *chairman*; Russell B. Adams, Ward J. Barrett, John R. Borchert, Jan O. M. Broek, Mei-Ling Hsu, Robert C. Lucas, Philip W. Porter, John W. Webb, John A. Wolter.

Major Advisers in Arts College—Professors Borchert, Broek, Mather; Associate Professor Lukermann; Assistant Professors Adams, Barrett, Porter, Webb; Research Associate Hsu.

Major Sequence in Arts College—30 credits in Upper Division courses in geography, including at least one field course (Geog 114A, 169, or 170); two technique courses (70, 73, 138, 139, 140, or 165); one course in geographic thought (160); two topical courses (60, 78, 100, 114, 130, 133, 134, 135, 143, 150, 152, 153, 167, 168), and two regional courses (67, 101, 102, 105, 107, 109, 110, 111, 112, 113, 117, 118, 120, 121, 122, 126, 196).

Prerequisites: Geog 1, 4, 41.

Modification of this sequence will be permitted upon petition approved by the major adviser and the co-ordinator of advising in Upper Division. Students who plan to pursue graduate study in geography should refer to the section on Language Requirements in the *Bulletin of the Graduate School*.

Major Adviser in College of Education—Professor Barrett.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major requirement*: 1, Physical Geography (5 cr); 4, Human Geography (5 cr); 41, Geography of Primary Production (5 cr). Elective courses in geography—at least 24 credits, including 1 course in each of the following areas: (a) Anglo-America, (b) Europe, (c) Soviet Union, (d) Southeast Asia, (e) Africa and the Middle East, (f) Latin America. A total of 39 credits in geography.

Because of the geography teacher's need for a broad social studies background, geography majors must complete a substantial number of courses in other social science fields. For further details the student should see the *Bulletin of the College of Education*.

Minor requirement: 28 credits of geography, including 1, 4, and 41, plus one course in each of three of the six areas listed for geography major.

General Education—In the Lower Division, Geog 1, 4, and 41 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 nonspecialist.

LOWER DIVISION COURSES

1f,w,s. **Physical Geography**. Major features of distribution patterns of climate, relief, vegetation, and soils; regional differences in the problems of physical development. (5 cr) Barrett, Borchert

1Hf,w,s. **Honors Course: Physical Geography**. Students attend lectures in Geog 1 and meet with the lecturer 2 hours per week in the honors discussion section. (5 cr; prereq #) Barrett

- 4f,w,s. **Human Geography.** Geography of population and principal ways of life; capacity of the earth for future population. (5 cr) Broek (f,s), Lukermann (w,s), Webb (f,w)
- 4Hf,w,s. **Honors Course: Human Geography.** Students attend lectures in Geog 4 and meet with the lecturer 2 hours per week in the honors discussion section. (5 cr; prereq #) Webb
- 41f,w,s. **Geography of Primary Production.** Introductory economic geography with special emphasis on commodities of commercial significance. Particular attention is given to world patterns of raw material occurrence and production, and to associated centers of industrial fabrication. (5 cr) Adams, Lukermann
- 41Hf,w,s. **Honors Course: Geography of Primary Production.** Students attend lectures in Geog. 41 and meet with the lecturer 1 hour per week in the honors discussion section. (5 cr; prereq #) Adams, Lukermann

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 60f. **Maps and Map Interpretation.** Uses and abuses of maps. Interpretation of topographic and statistical maps. Survey of map sources, and air photo as a map. Emphasis on map analysis with minimum of drafting. (3 cr; prereq soph, 5 cr or #) Porter
- 67s. **Geography of Minnesota.** Geographical survey of physical resources, population, and commercial production of Minnesota. Field trips in eastern Minnesota. (3 cr) Borchert
- 70f,w. **Introduction to Cartography.** Principles of map design, compilation, specification, and drafting. Map symbols. History of cartography. Projections—analysis of construction, properties, and uses. (3 cr; prereq 5 cr or #) Porter, Hsu
- 73w. **Quantitative Methods in Geography.** Applications of quantitative techniques to problems of classification and measurement, areal association and sampling, and comparative regional analysis. Case examples primarily from the geographical literature with assigned problems employing statistical sources commonly used by geographers. (3 cr; prereq QA 5, or equiv or #) Adams, Porter, Hsu
- 78w. **Geography of Industrialization.** Historical and comparative geography of the changing landscape, socio-economic structure and trade relations of selected areas in the world undergoing industrialization in the 18th, 19th, and 20th centuries. (3 cr; prereq 41 or #) Lukermann
- 100s. **Geographical Exploration and Discovery.** Extension of the geographic horizons of Western society, by the discovery of the basic land-sea relationships of the earth, from Portuguese explorations along the coast of Africa down to modern times. (3 cr; prereq 5 cr or #) Webb
- 101w. **Western Europe.** The physical and human geography of western Europe considered as a whole followed by a more intensive discussion of selected topics on the British Isles, France, the Low Countries, the Rhine basin, Norway, and Denmark. (3 cr; prereq 5 cr or #) Webb
- 102s. **Central Europe.** The physical and human geography of Central Europe followed by a more intensive discussion of population patterns, resources, and industries in the individual countries. (3 cr; prereq 5 cr or #)
- 105f. **Mediterranean Region.** Physical and human geography of lands adjacent to the Mediterranean Sea: Greece, Italy, Spain, Portugal and Southern France. (3 cr; prereq 5 cr or #) Webb
- 107w. **Soviet Union.** Character of and bases for the regional diversity of physical resources, population, agriculture, manufacturing, and transportation in the U.S.S.R. (3 cr) Borchert, Adams
- 109s. **Middle America.** Physical and human geography of the West Indies and the mainland from Mexico to Colombia. (3 cr; offered 1965-66 and alt yrs) Barrett
- 110w. **South America.** Regional survey of the physical resources, population, agriculture, manufacturing, and transportation in the countries of South America. (3 cr; offered 1964-65 and alt yrs) Mather
- 111s. **Canada and Alaska.** Regional analysis of the physical and human geography, with an examination of both internal and external areal relationships. (3 cr; prereq 10 cr or #) Mather
- 112w. **Western United States.** Regional analysis of the physical and human resources of western United States. (3 cr) Mather
- 113f. **Eastern United States.** Regional analysis of the physical and human resources east of the Great Plains. (3 cr) Mather
- 114f. **Historical Geography of North America.** Sequential analysis of settlement and economy in the changing environment and resource patterns of North America. (3 cr) Lukermann

- 114Af. **Historical Geography of North America—Field Course.** Sequential analysis of settlement and economy in the changing environment and resource patterns of Minnesota and contiguous states. (2 cr; prereq ¶114 or #) Lukermann
- 117w. **The Middle East.** A historical-geographical description of land and people in the changing environment of the Afro-Eurasian bridgelands with an analysis of the location and pattern of its present cultural and physical resources. (3 cr) Lukermann
- 118w. **Africa.** Regional differentiation of human groups and environments in Africa with special emphasis on culture contact and problems of underdeveloped countries south of the Sahara. (3 cr; prereq 5 cr or #) Porter
120. **South Asia.** Physical and human geography of India, Pakistan, and Ceylon; geographic aspects of population pressure, development of resources, and international relations. (3 cr; prereq 10 cr or #; offered when feasible) Broek
- 121s. **Southeast Asia.** Physical and human geography of Burma, Thailand, Indochina, Malaya, Indonesia, and the Philippines; geographic aspects of population pressure, development of resources, and international relations. (3 cr; prereq 10 cr or #; offered 1964-65) Broek
- 122w. **East Asia.** Physical and human geography of China, Korea, and Japan; geographic aspects of population pressure, development of resources, and international relations. (3 cr; prereq 5 cr or #) Hsu
- 126s. **Australia—New Zealand—Oceania.** 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 the environment by Europeans. (3 cr; offered 1964-65 and alt yrs) Barrett
- 130s. **Geography of Outdoor Recreation.** Changing perception, use, and management of the amenities of landscape, particularly the rural landscape of North America since European settlement. (3 cr; prereq #) Lucas
- 133f. **Climatology.** World distribution of climatic elements; methods of arranging climatic data; climatic classifications, and the world distributions of climatic types; the general circulation; climatic change and climatic fluctuations. (3 cr; prereq 1 or #) Barrett
- 134w. **Advanced Climatology.** Detailed consideration of methods and results of study of the heat and moisture balance of the earth; the reception and disposal of precipitation and energy in the local environment; the qualities of vegetation and soil cover and terrain that influence local and regional climates; characteristics of ground and surface waters that reflect and influence local climate. (3 cr; prereq 133 or #) Barrett
- 135s. **Advanced Physical Geography.** Laboratory work and field observations in the quantitative description and analysis of terrain and climate. Particular emphasis on the North Central United States. (3 cr; prereq 134 or #) Barrett
- 138w. **Statistical Cartography.** Principles of and practice in representing quantitative data on maps. Analysis of dot, line, isogram, chorogram, and central tendency techniques. Representation of terrain. (3 cr; prereq 70 or #) Porter, Hsu
- 139s. **Air Photo Interpretation.** Extraction of quantitative and qualitative information from air photos. Analysis and interpretation of physical and cultural phenomena. Air photo scale control, stereoscopy, and sources. (3 cr; prereq 70 or #) Porter
- 140f. **Advanced Cartography.** Advanced statistical mapping techniques, with emphasis on the mapping of population and settlement. Measures of distribution. History of cartography. (3 cr; prereq 138) Porter
- 143w. **Political Geography.** Scope and methods of political geography as exemplified by various writers; analysis of selected areas. (3 cr; prereq 4 or #) Broek
- 150f. **Rural Geography.** Geographic components and assemblages of rural settlement. World regional occupancy and production patterns and the geographic problems of rural settlement and agricultural production on the American scene. (3 cr) Mather
- 152s. **Geography of Economic Localization.** An analysis of the localization of economic activity, the circulation of resources, and the process of industrial regionalization in the economies of the world. (3 cr; prereq 41 or #) Adams, Lukermann
- 153f. **Urban Geography.** Discussion of character and distribution of cities in present-day world, including analysis of their development. Emphasis placed on internal character of cities, their associations with rural areas, and their functional differentiation. (3 cr; prereq 4 or #) Webb
- 160f. **Development of Geographic Thought.** Objectives, subdivisions, concepts, and methods of geography, with special reference to different schools of geographic thought as expressed in literature of the last century. (3 cr; prereq sr, 15 cr) Broek
165. **Source Materials for Geographic Research.** Bibliographic aids and archival sources of geographic material at international, national, and local levels. Particular attention will be given

to methods of handling data and to preparation of written reports. (3 cr; prereq sr, 15 cr) Wolter

- 167w-168s. **American Cities—Location and Geographic Design.** Changing regional and local patterns of urban growth in the United States; methods and results of projection of future geographic patterns, and their relation to urban planning. (3 cr per qtr; prereq # for 167, 167 and # for 168) Borchert
- 169s. **Urban Field Study.** Directed field study of urban land use problem in the Twin Cities and vicinity. Excursion to another selected Midwestern metropolitan area. (3 cr; prereq 168 or ¶168) Borchert
- 170s. **Field Course.** Concepts and techniques of field work. Saturdays devoted to field study in eastern Minnesota and neighboring areas. (3 cr; prereq sr, 15 cr) Webb
- 190f,w,s. **Directed Readings.** (1-3 cr; prereq sr) Staff
- 196s. **Proseminar: East and South Asia.** (Same as Anth 196, Pol 196, Ortl 196, and Hist 196) Integrating course for students majoring in the East and South Asia Area Studies program. (3 cr; prereq sr) Interdepartmental staff

FOR GRADUATE STUDENTS ONLY

214. **Seminar: Historical Field**
- 251-252-253. **Seminar: Physical Geography**
- 256-257-258. **Seminar: Land Use Planning**
- 261-262-263. **Seminar: Development of Geographic Thought—Cultural Geography**
- 266-267-268. **Seminar: Eastern Europe**
- 271-272-273. **Seminar: Historical Economic Geography**
- 276-277-278. **Seminar: Agricultural Geography**
- 281-282-283. **Seminar: Cartography, Africa**
- 286-287-288. **Seminar: Settlement and Population Geography, Western Europe**
- 291-292-293. **Seminar: Readings in Ancient and Medieval Geography**
- 296-297-298. **Seminar**
301. **Research Problems in Geography**

Geology and Geophysics (Geo)

(School of Earth Sciences, Institute of Technology)

FACULTY—Tibor Zoltai, *chairman*; Preston E. Cloud, Jr., J. Campbell Craddock, Kenneth S. Deffeyes, Paul W. Gast, Harold L. James, Harold M. Mooney, William C. Phinney, James C. Savage, Joseph Shapiro, Robert E. Sloan, Frederick M. Swain, Herbert E. Wright.

Major Advisers in Arts College—Faculty listed above.

Major Sequence in Arts College—The following courses are required of all majors: (a) GeCh 24, 25, 26, or 4, 5, 11; (b) Math 15, 42, 43, 44, 55; (c) Phys 7, 8, 9; (d) Biol 1, 2 or Phys 50, 51; (e) Geo 11, 22, 62, 110, 120, 140; (f) an accredited field course; (g) Geo 115, 141, or Geo 170, 171.

More complete preparation for graduate work and some degree of specialization may be achieved by electing additional courses in biological or physical sciences. Some recommended sequences are: (1) Bot 52, 121, OrCh 61, 62, Geo 105; (2) Zool 82, 83, 84, OrCh 61, 62, Geo 105; (3) PCh 101, 102, 103, Geo 142; (4) Math 106, 131A, 131B, Phys 100, 102, 104.

It is strongly recommended that the sequences in mathematics and chemistry be started in the freshman year and that physics and the earth sciences sequence be started in the sophomore year.

Geo 1, 2, 62 and 115 are designed for general education and are recommended for nonmajors who are interested in an understanding of the construction and history

of the earth and its landscapes. Open to students from any college. Recommended for high school general science teachers.

LOWER DIVISION COURSES

Laboratory science credit can be gained for all courses listed.

- 1f,w,s. **Physical Geology.** A first course in geology for science majors and an introduction to the scientific method and the nature of the earth for others. Survey of the main features of the physical world and of the processes that have evoked them. (4 cr; 3 lect hrs and one 2-hr lab per wk; prereq high school physics and chemistry recommended) Deffeyes, Craddock, and staff
- 2f,w,s. **Historical Geology.** Evolution of the earth from its origin to the present, with special attention to the succession of physical and biological events of the past 600 million years. (4 cr; prereq 1 or 11; 3 lect hrs, one 2-hr lab per wk) Sloan and staff
- 11f. **Introductory Physical Geology.** Intensive sequence. (5 cr; for prospective majors and others desiring a more intensive course; prereq high school or college chemistry or #; 3 lect hrs, 1 rec hr and two 2-hr labs per wk) Deffeyes
- 22w. **Introductory Historical Geology.** Intensive sequence. (5 cr; for prospective majors and others desiring a more intensive course; prereq 11 or #; 3 lect hrs, 1 rec hr and two 2-hr labs per wk) Sloan

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 62s. **Mineralogy and Lithology.** Introduction to crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Classification of rocks. Textural, structural, and mineralogical variations of rocks and some ores. (5 cr, §old Geol 23-24; prereq 1 or 11 or #, 1 term college chem; 3 lect, 6 lab hrs per wk) Zoltai, Phinney
99. **Senior Research.** Research on a geological or geophysical problem selected on the basis of individual interests and background, leading to a written report. Emphasis on independent data collecting (field, laboratory, or both), and analysis of results. (3 cr; prereq α in geology or geophysics, #) Staff
- 100-101. **Field Geology.** Measurement of stratigraphic sections; study of fossils and igneous, sedimentary, and metamorphic rocks. Geological surveying on aerial photographs and topographic maps and by the plane table method. Preparation of geologic maps and cross-sections. Study of structural and geomorphic features and geologic setting of mineral deposits. (Cr ar by special or co-operative arrangement; prereq 120 or #)
103. **Problems in Geology or Geophysics.** Individual research in laboratory or field problems at Upper Division or graduate levels. (1-6 cr; prereq #) Staff
- 104f. **Advanced General Geology.** Considers central problems in modern and classical geology through seminar-type discussion, evaluation of professional publications, and special projects. (3 cr; open to science majors in any field with supplemental reading by nongeologist; prereq #; offered 1964-65 and alt yrs) Cloud, staff
- 105s. **Introduction to Paleontology.** Introduction to morphology and classification of major fossil groups. (5 cr; prereq 2 or 22 or #) Sloan
- 106f. **Invertebrate Paleontology.** Detailed studies of morphology, classification, and ecology of selected groups of invertebrate fossils. (5 cr; 3 lect and 4 lab hrs per wk; prereq 105) Sloan
- 107w. **Vertebrate Paleontology.** Morphologic and stratigraphic aspects of fossil vertebrates. (5 cr; prereq 105 or Zool 56 or #) Sloan
- 110w. **Sedimentology and Stratigraphy.** Sedimentary processes and products with particular reference to modern sedimentary environments; principles of physical stratigraphy, correlation, facies, tectonic control, classification of stratigraphic units. (4 cr; 3 lect, 2 lab hrs per wk; prereq 62) Deffeyes, Swain
- 111s. **Stratigraphy.** Analysis of stratigraphy of typical and unique sequences of (a) Precambrian and Paleozoic rocks or (b) Mesozoic and Cenozoic rocks; methods of presentation of stratigraphic data; term paper required. (3 cr; prereq 110) Swain
- 112f. **Micropaleontology.** Biology and paleontology of microorganisms of geologic importance including Foraminifera, Radiolaria, flagellate Protista, Diatomaceae, Characea, Ostracoda, and conodonts. (3 cr; prereq 105) Swain

- 115s. Geomorphology.** Origin and evolution of landforms in temperate, arctic, desert, and tropical regions in different geologic settings. Effects of structural history and climatic change on landform development. Relations of geomorphic processes to soil formation and engineering problems. Field trips; term paper or field project. (4 cr; prereq 2 or 22; 3 lect, 2 lab hrs per wk) Wright
- 116f. Glacial Geology.** Physics of modern glaciers. Glacial erosion and deposition. Stratigraphy and chronology of the Pleistocene in glaciated and nonglaciated areas. (3 cr; prereq 2 or 22) Wright
- 117w. Pleistocene Geology.** Problems in Pleistocene history of glaciated and nonglaciated areas, particularly North America, Europe, and the Mediterranean. Relation of Pleistocene climatic changes to soils, biogeography, and archaeology. Pollen analysis. (3 cr; prereq 116; offered 1965-66 and alt yrs) Wright
- 118w. Advanced Geomorphology.** Detailed study of selected geomorphic processes, especially those of arctic and desert regions. (3 cr; prereq 115; offered 1964-65 and alt yrs)
- 120f. Structural Geology.** Primary and secondary structures of rocks, mechanics and modes of deformation, and structural techniques. Laboratory exercises in three-dimensional representation and solution of selected structural problems. (4 cr; prereq 62 or 162 or #; 3 lect, 2 lab hrs per wk) Craddock
- 121w. Advanced Structural Geology.** Fundamental problems and genesis of secondary structural features; detailed analysis of typical examples. Comprehensive term paper required for graduate credit. (3 cr; prereq 120) Craddock
- 125w. Principles of Sedimentology.** Sedimentary processes and environment, the tectonic framework, and the resultant rock types. (3 cr, prereq 62 or #; 2 lect, 2 lab hrs per wk) Deffeyes
- 126s. Diagenesis in Sediments.** Processes by which sediments are altered and converted into rocks. (3 cr; prereq 125, PCh 108 or #; 2 lect, 2 lab hrs per wk) Deffeyes
- 140f. Mineral Systems I.** Basic and compound symmetry elements. Derivation and study of point groups, co-ordinate systems, crystal forms, lattices, plane groups, and space groups. Introduction to X-ray diffraction. Introduction to crystal chemistry and crystal structures. (4 cr; prereq 62 or #, trigonometry, a year of college physics and chemistry; 3 lect, 4 lab hrs per wk) Zoltai
- 141w. Mineral Systems II.** Survey of mineral structures and crystal growth. Optical mineralogy; the behavior of light and of isotropic and anisotropic media in polarized light. Correlation of geometric and electromagnetic theories of optical mineralogy. Laboratory includes the study of structure models, thin and polished sections; immersion techniques. (4 cr; prereq 140; 3 lect, 4 lab hrs per wk) Phinney, Zoltai
- 141Aw. Mineral Systems IIA.** Optical mineralogy portion of Geo 140. (3 cr; prereq 140; 2 lect, 4 lab hrs per wk) Phinney
- 142s. Mineral Systems III.** Application of basic physical sciences to geologic problems. Discussion of rocks as chemical systems. Laboratory consists of macroscopic and microscopic study of rocks and minerals. (4 cr, §145 or §150; prereq 141, PCh 102 or 108, Math 26; 3 lect, 4 lab hrs per wk) Phinney, Gast
- 144f. Principles of Petrology.** Igneous and metamorphic mineral assemblages and textures discussed with reference to phase diagrams and physical processes. Summary of important petrologic problems. (3 cr; prereq 62; offered 1965-66) Phinney
- 145f. Phase Equilibrium in Mineral Systems.** Graphical and mathematical treatment of 1-, 2-, 3-, and 4-component systems. Includes the phase rule, open vs. closed systems, and effects of disequilibrium. (3 cr; prereq 141, PCh 108 or 103; offered 1964-65 and alt yrs) Phinney
- 146w. Igneous Petrology.** Fractional crystallization, disequilibrium, nucleation, assimilation, volatiles, granites, serpentines, and other problems in the light of modern experimental data and theory. (3 cr; prereq 145; offered 1964-65 and alt yrs) Phinney
- 147s. Metamorphic Petrology.** Solid state phase equilibrium, reaction rates, partial fusion, metasomatism, methods of graphical projection for several component systems, geologic thermometers, and the effect of nonhydrostatic stress. (3 cr; prereq 146; offered 1964-65 and alt yrs) Phinney
- 150f. Principles of Geochemistry.** Application of principles of thermodynamics to systems of geologic interest, with emphasis on aqueous solutions. (3 cr; prereq PCh 102 or 108 or #) Gast
- 151w. Isotopic and Nuclear Processes in Geology.** Measurement of geologic time using isotopic methods. Variations in isotopic compositions due to radioactivity and to natural isotope fractionation processes. (3 cr; prereq 142, PCh 103 or #; offered 1965-66 and alt yrs) Gast
- 152w. Problems in Geochemistry.** Selected topics in geochemistry. (2 cr; prereq 151 or #; offered 1964-65 and alt yrs) Gast

- 155w-156s. Mineral Deposits.** Nature and distribution of mineral deposits, and analysis of the processes by which elements are concentrated in magmatic, hydrothermal, sedimentary, and surface environments. (3 cr per qtr; prereq 120, 142 or ‡)
- 157f. Mineral Fuel Deposits.** Origin and distribution of petroleum and coal deposits; source materials, reservoir rocks and structures, stratigraphic distribution of important deposits. (3 cr; prereq 110, 120 or ‡) Swain
- 160w. X-ray Mineralogy.** Physics of X rays. Diffraction of X rays by crystalline material. Description of X-ray powder instruments. The use of powder pattern for mineral identification and for mineralogical and crystallographical research. (3 cr; prereq 140 or ‡) Zoltai
- 161s. Single Crystal X-ray Diffraction.** Introduction to the principles and practice of single crystal X-ray diffraction. Lattice and space group determination. Introduction to crystal structure determination. (2 cr; prereq 160 or ‡) Zoltai
- 162s. Soil Mineralogy.** Introduction to crystallography, crystal chemistry, and mineralogy. Descriptive and determinative mineralogy. Classification of rocks. Textural, structural, and mineralogical variations of rocks and some ores. (4 cr; not open to geology, mining and metallurgy majors; prereq 1 or 11 or ‡, a term of college chemistry; 3 lect, 6 lab hrs per wk; term paper) Zoltai, Phinney
- 170f. Introduction to Earth Physics.** Physics of the solid earth; evidence and data on origin, age, size and shape, internal constitution, thermal history, gravity, and magnetic fields. (3 cr; prereq 2 or 22, Phys 9 or 14)
- 171w. Introduction to Earthquake Seismology.** Physics and geology of earthquakes; causes, effects, distribution, seismic waves. (3 cr; prereq 120 or ‡)
- 172s. Introduction to Exploration Geophysics.** Principles of exploration by gravity, magnetic, seismic, and electrical measurements. (3 cr; prereq 2 or 22, Phys 9 or 14)
- 175f. Principles of Gravity and Magnetic Exploration.** Instrumentation, surveying techniques, reduction of data, interpretation, case histories. (3 cr; prereq 1 or 11, Phys 9 or 14, Math 25B)
- 176w. Principles of Seismic Exploration.** Reflection and refraction seismology; theory, interpretation, instruments. (3 cr; prereq 2 or 22, Phys 9 or 14, Math 25B)
- 177s. Principles of Electrical Exploration.** Resistivity, electromagnetic, and other methods; theory, interpretation, instruments. (2 cr; prereq 2 or 22, Phys 9 or 14, Math 25B)

FOR GRADUATE STUDENTS ONLY

- 200. Seminar: Palaeoecology**
- 201. Research in Biological, Sedimentary, and Oceanographic Aspects of Geology**
- 202. Seminar: Marine Geology**
- 203. Advanced Invertebrate Paleontology**
- 205. Research in Paleontology**
- 206. Seminar: Paleontology**
- 210. Research in Stratigraphy**
- 211. Seminar: Stratigraphy**
- 215. Research in Geomorphology or Pleistocene Geology**
- 216. Seminar: Geomorphology of Pleistocene Geology**
- 220. Geotectonics**
- 221. Research in Structural Geology**
- 222. Seminar: Structural Geology**
- 225. Research in Sedimentology**
- 226. Seminar: Sedimentology**
- 245. Research in Petrology**
- 246. Seminar: Petrology**
- 250. Research in Geochemistry**
- 251. Seminar: Geochemistry**
- 255. Advanced Mineral Deposits I**

256. Advanced Mineral Deposits II
 257. Research in Mineral Deposits
 258. Seminar: Mineral Deposits
 260. X-ray Crystallography
 261. Research in Mineralogy or Crystallography
 262. Seminar: Mineralogy or Crystallography
 270-271. Theory of Elastic Wave Propagation
 275-276-277. Seminar: Geophysics

German (Ger)

FACULTY—Edwin F. Menze, *chairman*; William Brust, Frank Hirschbach, Donald Nelson, Herman Ramras, David Sanford, Donald Steinmetz, Wolfgang Taraba, Andrew Torok, Gerhard Weiss, John Whiton, Cecil Wood, Frank Wood, Philip Zoldester.

Major Advisers in Arts College—Professors Menze, Ramras, Taraba.

Major Sequence in Arts College—35 credits in courses numbered 56 or above, including 97, 98, 99 and at least 9 other credits in literary courses.

Suggested Courses for a Minor—15 credits in courses numbered 56 or above, of which at least 9 should be in literary courses.

Major Adviser in College of Education—Professor C. Wood.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation*: Ger 57-58-59; 60; 61-62-63; 91, 92, 93, or 94, 95, 96; 80, or Clas 56, Elementary Linguistics; and 9 additional credits in literary courses numbered 56 or above. *Minor recommendation*: Ger 57-58-59, 60, 61-62-63, and 9 additional credits in literary courses numbered 56 or above.

LOWER DIVISION COURSES

Note—There are two course sequences in first-year German, 1A-2A-3A, and 1B-2B-3B, each of which prepares the student for 4, the second-year course. The student should study the description of each sequence and choose the one most suited to his interests and needs. Credit cannot be earned for more than one of these sequences.

- 1Af,w,s-2Af,w,s-3Af,w,s. **Beginning German: "Active" Approach.** Five class meetings a week. Provides basic experience in speaking, reading, and understanding the German language and its structure through the acquisition of basic patterns of speech and later through the reading and analysis of texts. (5 cr per qtr)
- 1Bf-2Bw-3Bs. **Beginning German: Language and Culture.** Five class meetings a week. Provides a foundation for a reading knowledge adequate for cultural and professional purposes; experience in understanding spoken German; an introduction to representative German figures such as Goethe, Heine, Thomas Mann, through a variety of German and English texts; an elementary introduction to the nature of linguistic change through comparisons of the common Germanic features of English and German. (5 cr per qtr)
- 2Hf,w,s-3Hf,w,s. **Honors Course: Beginning German for A and B Sequences.** Five class meetings a week. A course for students who have demonstrated high ability and achievement during the first quarter. (5 cr per qtr; prereq Δ)
- 4f,w,s. **Intermediate German.** Selected readings from literature. (3 cr; prereq 3 qtrs of beginning German, or 3 yrs high school German)
- 5f,w,s. **Intermediate German.** Elementary composition and conversation. May be taken concurrently with Ger 4. (2 cr; prereq 3 qtrs of beginning German, or 3 yrs high school German)

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 50f-51w-52s. Reading German: A Beginning Course for Juniors and Seniors.** Develops reading proficiency by concentrating from the outset on vocabulary building and reading techniques and reduces presentation of formal grammar to a minimum. Intensive study of a variety of texts in class; individual projects in extensive reading. (3 cr per qtr, §1A-2A-3A, §1B-2B-3B, §1H-2H-3H or §high school German)
- 53f, 54w, 55s. German Masterpieces in English Translation.** Requires no knowledge of the German language. German literature from medieval to modern times in its relation to other literatures; representative works are read in translation. Topics include *Parzival*, *Tristan and Isolde*, *Nibelungenlied*, *Minnesinger* and *Meistersinger*; humanism, Reformation and Counter Reformation; Goethe, Schiller, and the new humanism; romanticism; Heine, Wagner, Nietzsche, Hauptmann, Mann, Rilke, Werfel. (2 cr per qtr) Wood
- 56f,w,s. Reading and Analysis of Literary Texts.** Short stories are read to develop reading fluency and appreciation of literary values. (3 cr; not open to students who have had 70 or above; prereq 4, or 4 yrs high school German) Taraba, Weiss, Zoldester
- 57f-58w-59s. Composition.** Review of German grammar, with emphasis upon colloquial usage, and original composition. (2 cr per qtr; prereq 4 and 5)
- 60f. Analysis of Modern German Structure for Teachers.** For undergraduate German majors. Experience in the methods of linguistic analysis of German language structure into categories: syntactic analysis; morphemic analysis; phonemic analysis. (2 cr; prereq 56 or 4 and Δ) C Wood
- 61f-62w-63s. Conversation.** Systematic development of vocabulary in areas relating to everyday life and practice in the use of spoken German. (2 cr per qtr; prereq 4 and 5)
- 64f-65w-66s. Advanced Conversation and Essay Writing.** (2 cr per qtr; prereq 59 and 63)
- 68s. Contemporary Germany.** An introduction to the culture and civilization of present day Germany. (3 cr; prereq 56 or 4 and Δ) Weiss
- 69w,s. German Play.** Practice in the use of standard German through participation in dramatic productions. (1 or 2 cr; prereq 3)
- 70f, 71w, 72s. Lyric Poetry from Goethe to Rilke.** 70: Goethe period. 71: Heine to the end of the 19th century. 72: Twentieth century. (2-3 cr per qtr; prereq 56, or 4 and Δ) F Wood
- 73f, 74w, 75s. German Drama from Lessing to the Present.** Reading and discussion of outstanding dramatic works. 73: Classical period. Lessing, Goethe, Schiller. 74: Nineteenth century. Kleist, Hebbel, Grillparzer. 75: Modern drama. Plays representing the more recent movements in German literature, naturalism, impressionism, expressionism. (3 cr per qtr; prereq 56, or 4 and Δ) Menze
- 76f, 77w, 78s. German Prose of the Nineteenth and Twentieth Centuries.** 76: Nineteenth century. Selected *Novellen* by renowned mid-century prose writers, such as Keller, Meyer, Ludwig, Fontane. 77 and 78: Modern writers. Writers and literary movements of the 20th century are represented in selected works of Thomas and Heinrich Mann, Schnitzler, Kafka, and others. (2-3 cr per qtr; prereq 56, or 4 and Δ) Hirschbach, Taraba
- 80w. History of the German Language.** (3 cr; prereq 6 cr in courses 70 or above) C Wood
- 81f-82w. Die Deutsche Komödie.** (2 cr per qtr; offered 1964-65 only) Schrimpf
- 89Hw-90Hs. Honors Course: Proseminar in German.** In the winter quarter the course will be organized around a significant theme in German literature (e.g., view of the role of the artist from the 18th to the 20th century) with different members of the staff lecturing and conducting discussions on assigned reading within the area of their special competence. In the spring, students will be writing honors papers under the guidance of those professors whose areas they have chosen. (3 cr per qtr; prereq candidacy for honors in German) Taraba and/or staff
- 91f, 92w, 93s. German Civilization and Culture.** Survey of important movements and leading personalities in art, music, science, religion, and education against a general historical and geographical background. Class discussions and lectures supplemented with demonstration materials. (3 cr per qtr; prereq 3 cr in courses 70 or above) Weiss
- 94f, 95w, 96s. Survey of Literature.** Recommended for all undergraduate majors. Reading of some of the more significant works, supplemented by lectures on the history and development of German literature. 94: From the beginnings to the 18th century. 95: From the 18th century to the end of the Goethe period. 96: From romanticism to the 20th century. (3 cr per qtr; prereq 3 cr in courses 70 or above) Zoldester
- 97f, 98w, 99s. Goethe.** Required of all Arts College German majors. 97: Storm and Stress. 98: Classical period. 99: Faust I. (3 cr per qtr; prereq 3 cr in courses 70 or above) Ramras

Courses numbered 100 to 199 are open to seniors upon recommendation of advisers. The prerequisites are 14 credits in courses 70 and above or equivalent (except for specific course prerequisites).

Composition and Bibliography

- 103f, 104w, 105s. **German Syntax and Composition.** Required of all graduate majors. (1 cr per qtr; prereq 66 or equiv; offered 1964-65)
- 133f. **Bibliography and Research Methods.** Required of all graduate majors. (3 cr)

Literature

- 116f-117w. **The Middle High German Epic.** (3 cr per qtr; prereq 111, or Δ) C Wood
- 118s. **The Minnesang.** (3 cr; prereq 111 or Δ) C Wood
- 140f, 141w, 142s. **Drama in Translation.** (3 cr per qtr; prereq 9 cr in theater arts or literature above 50; no knowledge of German language required; cannot be used for German major or minor; offered 1965-66) Menze
- 143f, 144w, 145s. **The German Novelle: From Goethe to Kafka.** (3 cr per qtr; offered 1964-65) Taraba
- 146, 147, 148. **Literature of the Nineteenth Century.** Literature, literary movements and influences represented in drama, lyric, and shorter prose forms. (3 cr per qtr) Taraba
149. **Directed Reading.** (2-3 cr; offered 1964-65)
- 150f, 151w, 152s. **The Age of Luther.** (3 cr per qtr; 152 offered 1964-65) Weiss
- 153-154. **German Literature of the Seventeenth Century.** (3 cr per qtr) Weiss
- 160f-161w-162s. **Klopstock, Wieland, Herder.** (3 cr per qtr) Ramras
- 162Aw-Bs. **Lessing.** (3 cr per qtr) Hirschbach
- 163f, 164w, 165s. **Goethe.** (3 cr per qtr) Ramras
- 166f, 167w, 168s. **Schiller.** (3 cr per qtr; offered 1964-65) Ramras
- 170f, 171w, 172s. **Romanticism.** (3 cr per qtr) Menze
- 173f, 174w, 175s. **The Nineteenth-Century Novel.** (3 cr per qtr) Menze
- 176f, 177w, 178s. **The Nineteenth-Century Drama.** (3 cr per qtr) Menze
- 179A, B, C. **German Drama from Naturalism to the Present.** 179A: 1880-1910. 179B-C: 1910 to present. (3 cr per qtr) Hirschbach, Weiss
- 180f, 181w, 182s. **The Twentieth-Century Novel.** (3 cr per qtr) Ramras, F Wood, Hirschbach
- 183f, 184w, 185s. **Studies in the Literature of the Twentieth Century.** Literary movements represented in drama, lyric, and shorter prose forms. (3 cr per qtr; offered 1964-65) F Wood
- 186f, 187w, 188s. **Lyric Poetry.** 186: Renaissance through *Sturm und Drang*. 187: Goethe through romanticism. 188: Heine to Rilke. (3 cr per qtr) F Wood
189. **Expressionism in German Literature.** (3 cr) Hirschbach
- 190f, 191w, 192s. **English-German Literary Relations.** (3 cr per qtr) F Wood
- 190A, 191A, 192A. **French-German Literary Relations.** (3 cr per qtr) F Wood
- 193f, 194w, 195s. **Studies in Literary Theory and Criticism.** (3 cr per qtr) Ramras

Germanic Philology

- 110f-111w. **Middle High German Language.** (3 cr per qtr; prereq 94 and 11 cr in courses 70 and above or equiv; offered 1964-65) Steinmetz
- 112s. **History of the German Language.** (3 cr; prereq 111; offered 1964-65) C Wood
- 157f-158w-159s. **Old Norse Language and Literature.** (3 cr per qtr; prereq knowledge of one Germanic language other than modern English) C Wood

Germanic Linguistics

- 107f-108w-109s.† **The Structure of Modern German.** The linguistic approach to the study of the structure of present-day German. (3 cr per qtr; prereq sr with \$, grad; offered 1964-65) C Wood

- 113f. Gothic. (3 cr; prereq 80 and 11 cr in courses 70 and above or equiv; offered 1964-65) C Wood
- 114w-115s.† Methods of Comparative Germanic Linguistics. (3 cr per qtr; prereq 113; offered 1964-65) C Wood
- 119f. Old High German. (3 cr; prereq 112 or 115) C Wood
- 120w. Old Saxon. (3 cr; prereq 119) C Wood
- 121s. The Hildebrandslied. (3 cr, prereq 119 and 120) C Wood

FOR GRADUATE STUDENTS ONLY

253. Seminar: Eighteenth Century
254. Seminar: Nineteenth Century
255. Seminar: Twentieth Century

Greek

See Classics

History (Hist)

FACULTY—Harold C. Deutsch, *chairman*; W. Donald Beatty, *assistant chairman*; Josef L. Altholz, Paul W. Bamford, Robert F. Berkhofer, Jr., Hyman Berman, Clarke A. Chambers, Ralph E. Giesey, Robert S. Hoyt, Tom B. Jones, Philip D. Jordan, Erle V. Leichty, Rodney C. Loehr, James D. Muhly, John K. Munholland, Paul L. Murphy, David W. Noble, Otto P. Pflanze, Darrett B. Rutman, Timothy L. Smith, Allan H. Spear, Theofanis G. Stavrou, Burton Stein, Romeyn Taylor, Benjamin P. Uroff, David H. Willson, John B. Wolf, William E. Wright.

Major Advisers in Arts College—Professors Beatty, Chambers, Deutsch, Hoyt, Jones, Jordan, Loehr, Pflanze, Smith, Willson, Wolf; Associate Professors Altholz, Bamford, Berman, Giesey, Murphy, Noble, Rutman, Stein, Taylor, Wright; Assistant Professors Berkhofer, Munholland, Stavrou; Instructors Muhly, Uroff.

Major Sequence in Arts College—Students majoring in history will be expected to take Hist 1, 2, 3 or 4, 5, 6 or 11, 12, 13 or 14, 15, 16 or 17, 18, 19 in the freshman year, Hist 20, 21, 22 in the sophomore year, and 27 hours in history courses numbered 65 or above in their last 2 years. Of these Upper Division courses, at least 18 hours must be in 6-hour or 9-hour sequence courses.

In special cases students will be allowed to substitute sequence courses numbered 65 or above in lieu of the courses normally taken in the first 2 years. (Courses numbered 50-64 may not be used for Upper Division credit in satisfying the major requirements.)

In one of the Upper Division 6-hour or 9-hour sequence courses, the student majoring in history will be expected to write a paper, or papers, satisfactory to the professor, and these papers must be filed with the secretary of the department as a prerequisite for graduation.

Students planning to do advanced work in history should acquire a reading knowledge of French, German, or other appropriate languages in their early undergraduate years.

Requirements for Honors in History—Students majoring in history who have a University average of 3.00 and an average of 3.25 in history courses may try for honors in history.

In the junior year the candidate for honors in history will be expected to take one 9-hour Upper Division sequence course and Honors Course: History (82H-83H-84H). If for one reason or another it is not possible to take the honors course in

the junior year, another 9-hour Upper Division course may be substituted and the honors course would then be taken in the senior year. The department strongly urges that "Honors Course: History" should be taken in the junior year. In the senior year the honors candidate will take a 9-hour sequence course and one of the proseminars (numbered 170 or above) in which he will prepare a research paper.

Upon completion of the program a committee composed of the chairman of the department, the professor in charge of the honors course, and the professor under whom the research paper was written, will pass upon the award of honors, high honors, or highest honors in history.

Major Advisers in College of Education—Professors Berkhofer, Giesey, and Smith.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation*: a minimum of 48 credits; at least 30 credits must be in Upper Division courses numbered 65 or above. See the *Bulletin of the College of Education* for details. *Minor recommendation*: a minimum of 30 credits of which at least 12 credits must be in courses numbered 65 or above.

No major recommendation to teach history will be given unless the candidate has taken the general course in American history, Hist 20, 21, 22, or equivalent. For other history courses the same provisions apply as for Arts College majors in history, noted above.

For a specialized minor curriculum in social studies see the *Bulletin of the College of Education*.

General Education—The offerings of the Department of History numbered below 170 attract and are designed to serve the needs of students from all areas of the University. Lower Division students will find that any of the courses numbered between 1 and 22 fit the category of general education and provide the basis for more advanced work. For Upper Division students who have had no previous work in history, the department particularly recommends the courses numbered between 50 and 65.

LOWER DIVISION COURSES

- 1f,w, 2w,s, 3f,s. **Civilization of the Modern World. 1:** Rise of the European state system as framework within which Western civilization developed, and economic, cultural, political, intellectual, and religious implications to the emerging system. **2:** Struggle for control over the Western states system, and emergence of liberal democracy in the modern world. **3:** Impact of industrialism upon Western and world civilization in the 20th century. (3 cr per qtr) Bamford, Munholland, Uroff, Wolf, Wright
- 1Hf,w, 2Hw,s, 3Hf,s. **Honors Course: Civilization of the Modern World.** Students attend lectures in Hist 1, 2, 3 and meet with the lecturer 1 hour per week to discuss readings, problems in historiography, and research methods relative to the civilization of the modern world. (3 cr per qtr; prereq #) Bamford, Munholland, Uroff, Wolf, Wright
- 4f, 5w, 6s. **English History. 4:** Conquest and settlement, feudal age, foreshadowings of limited monarchy and popular government. **5:** Tudors, Stuarts, and Hanoverians, parliament versus king, colonization and American Revolution. **6:** Coming of democracy, Britain and Europe, Empire and Commonwealth. (3 cr per qtr) Willson
- 11f, 12w, 13s. **Medieval and Renaissance History. 11:** The early Middle Ages, decline of Rome, the barbarian kingdoms, Carolingian empire. **12:** The high Middle Ages, feudal Europe, medieval culture. **13:** The later Middle Ages and early Renaissance, rise of national monarchies, art, learning, and literature. (3 cr per qtr) Hoyt
- 14f, 15w, 16s. **Ancient Civilization.** Survey of rise and fall of ancient civilization. **14:** Near East to 500 B.C. **15:** Greek civilization, 750-323 B.C. **16:** Roman civilization to A.D. 305. (3 cr per qtr) Leichty
- 14Af, 15Aw, 16As. **Ancient Civilization with Basic Readings.** Students attend lectures in Hist 14, 15, 16 and meet 2 additional hours per week to discuss assigned readings in the literature of the Near East, Greece, and Rome. (5 cr per qtr) Jones, Leichty

- 17f, 18w, 19s. **History of Asia.** A survey of the history of China, Japan, India, and Southeast Asia from ancient times to the present. 17: History and culture of China, Japan, and India to A.D. 1200. 18: Asia, A.D. 1200-1800 (Chinese late imperial period; India: Muslim domination; Japanese feudalism; the beginning of Western influence). 19: Modern Asia: The impact of Europe, nationalism. (3 cr per qtr) Stein, Taylor
- 20f,w, 21w,s, 22f,s. **American History.** Survey of political, economic, and social history of the United States with emphasis on factors that resulted in emergence of modern America. 20: Colonial and early national period. 21: Sectionalism and national development. 22: Modern America. (3 cr per qtr; prereq soph) Berkhofer, Berman, Chambers, Murphy, Rutman
- 20Hf,w, 21Hw,s, 22Hf,s. **Honors Course: American History.** Students attend lectures in Hist 20, 21, 22 and meet with the lecturer 1 hour per week to discuss readings, problems in historiography, and research methods in American history. (3 cr per qtr; prereq soph and #) Berkhofer, Berman, Chambers, Murphy, Rutman
- Mill 45w. **American Military History.** United States Army operations from the American Revolution to the Korean War. A comprehensive survey of the history of land warfare as applied to the significant political, economic, social, and technical growth of the United States. (3 cr; may not be used to satisfy Lower Division distribution requirements or the requirements for history)

UPPER DIVISION COURSES

Except where otherwise stated, there are no prerequisites for the courses numbered 50 to 169. Most of these courses are announced for f-w-s or w-s, but students may enter any quarter.

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

The first four courses listed below are survey courses designed for students who do not intend to major in history and may not be used to fulfill the major requirement in Upper Division. Upper Division students, however, may use them as substitutes for their Lower Division equivalents.

- 50f, 51w, 52s. **Ancient Civilization.** (3 cr per qtr, §14, §15, §16) Leichty
- 53f, 54w, 55s. **Civilization of the Modern World.** (3 cr per qtr, §1, §2, §3) Altholz
- 56f, 57w, 58s. **History of England.** (3 cr per qtr, §4, §5, §6) Willson
- 59f, 60w, 61s. **History of Asia.** (3 cr per qtr, §17, §18, §19) Stein, Taylor
- 62Af, 63Aw. **Cultural History of Japan.** 62A: Prehistoric times to A.D. 1600. 63A: A.D. 1600 to present. (3 cr per qtr; offered when feasible)
- 79f, 80w, 81s. **The United States in the Twentieth Century.** Political, economic, diplomatic, and social history of United States from Spanish-American War to present. 79: 1898-1914. 80: 1914-1932. 81: 1932 to present. (3 cr per qtr) Chambers
- 82Hf-83Hw-84Hs.† **Honors Course: History.** (3 cr per qtr; prereq candidacy for honors in history, #) Staff
- 86f, 87w, 88s. **American Colonies.** 86: In the 17th century. 87: In the 18th century. 88: In the empire and the revolutionary crisis. (3 cr per qtr) Rutman
- 89s. **Economic History of Modern War.** Economic aspects of the French Revolution and Napoleonic Wars, and of World War I and World War II. (3 cr; offered when feasible)
- 90f-91w-92s. **The American West.** Interpretation of the American frontier from its establishment in the colonies to its disappearance as a factor in American life. 90: Colonial frontier. 91: Mid-America. 92: Beyond the hundredth meridian. (3 cr per qtr; prereq 91 or # for 92) Berkhofer
- 93f, 94w, 95s. **American Diplomatic History.** 93: American diplomacy, 1776-1848. 94: Period of national development. 95: United States as a world power. (3 cr per qtr) Beatty
- 97f, 98w. **Minnesota and the Northwest.** (3 cr per qtr) Jordan

Special Courses

- 100Bf-101Bw-102Bs. **Directed Study.** Qualified senior and graduate students may register for 1 or more quarters with *consent of instructor* for work and training on a tutorial basis. (3 cr per qtr; prereq #) Staff

UPPER DIVISION AND GRADUATE COURSES

- 103Af, 104Aw, 105As. **The Ancient Near East.** (3 cr per qtr) Leichty
- 103Bf, 104Bw, 105Bs. **Greece to 200 B.C.** (3 cr per qtr; offered 1965-66 and alt yrs) Jones
- 103Cf, 104Cw, 105Cs. **History of Rome.** (3 cr per qtr; offered 1964-65 and alt yrs) Jones
- 106Af, 107Aw, 108As. **Europe in the Early Middle Ages.** 106A: Reforms of Diocletian to first sack of Rome (410). 107A: Age of the Fathers to Carolingian Empire. 108A: Germanic Empire to end of Investiture Controversy. (3 cr per qtr)
- 106Bf, 107Bw, 108Bs. **Europe in the High Middle Ages.** 106B: Twelfth-century revival. 107B: Medieval civilization. 108B: Rise of western monarchies, decline of papacy and empire. (3 cr per qtr) Hoyt
- 106Cf, 107Cw, 108Cs. **Europe in the Late Middle Ages, Renaissance, and Reformation.** 106C: Later Middle Ages and early Italian Renaissance (1300-1450). 107C: High Renaissance (1450-1515). 108C: Reformation (1515-1560). (3 cr per qtr) Giesey
- 109Af, 110Aw, 111As. **Byzantine History.** 109A: Later Roman Empire from accession of Diocletian to death of Justinian in A.D. 565. 110A: Rise of Byzantium to its zenith at the accession of Basil II in 976. 111A: From reign of Basil II to fall of Constantinople in 1453. (3 cr per qtr; offered when feasible)
- 112Af, 113Aw, 114As. **English Constitutional History to 1485.** 112A: Anglo-Saxon and Anglo-Norman England. 113A: From Henry II to Edward I. 114A: England in the later Middle Ages. (3 cr per qtr) Hoyt
- 115Af, 116Aw. **Early Modern Europe.** 115A: The 17th century. 116A: The 18th century. (3 cr per qtr) Wolf
- 115Bf, 116Bw, 117Bs. **French Revolution and Napoleon.** 115B: Background and emergence of the Revolution. 116B: The Revolution and revolutionary wars, and the emergence of the Napoleonic Empire (1789-1806). 117B: Struggle to stabilize the Empire and its disintegration under nationalist assaults. (3 cr per qtr; offered when feasible) Bamford
- 115Cw, 116Cs. **Europe in the Nineteenth Century.** 115C: Reaction and revolution (1815-1852). 116C: National unification, industrialization, and imperialism (1852-1900). (3 cr per qtr) Pflanze
- 115Df, 116Dw, 117Ds. **Europe in the Twentieth Century.** 115D: 1890-1918. 116D: 1918-1938. 117D: 1938 to the 1950's. (3 cr per qtr) Munholland
- 115Ef, 116Ew, 117Es. **World War II.** 115E: Origins and background. 116E: War period, 1939-1942. 117E: Period 1943-1945. (3 cr per qtr) Deutsch
- 118Af, 119Aw. **Modern France.** 118A: Political, social, and economic history of France from Vienna settlement to establishment of Third Republic. 119A: Struggle of Third and Fourth Republics to meet challenge of 20th century. (3 cr per qtr; prereq 9 cr, or 15 cr in social science, or major in French; offered when feasible)
- 118Bf, 119Bw, 120Bs. **Modern History of Spain.** Spain and Portugal in the modern period: politics, diplomacy, social, economic, and cultural problems. 118B: 1400-1700. 119B: 1700-1898. 120B: The 20th century. (3 cr per qtr; offered when feasible)
- 118Cf, 119Cw, 120Cs. **History of Germany.** 118C: From 911 to 1648. 119C: 1648-1871. 120C: Since 1871. (3 cr per qtr) Pflanze
- 118Df, 119Dw, 120Ds. **Central Europe.** Poland, Hungary, Czechoslovakia. 118D: Bohemia, Poland, and Hungary to the 18th century. 119D: The 18th century to 1867. 120D: From 1867 to the present. (3 cr per qtr; prereq 3) Wright
- 118Ef, 119Ew, 120Es. **Russia.** 118E: Origins of the Slavs, the eastward movement, and the rise of Russia through the death of Peter the Great. 119E: The Empire after Peter the Great to the 19th century. 120E: 19th century to the end of the Empire. (3 cr per qtr) Uroff
- 118Ff, 119Fw, 120Fs. **Modern Russia.** 118F: The 19th-century background, reign of Nicholas II to 1914. 119F: 1914-1929, World War I, revolutions, civil war, new economic policy. 120F: The Soviet regime from 1929 to the present. (3 cr per qtr) Stavrou
- 118Gf, 119Gw, 120Gs. **The Modern Near East: The Balkans and the Arab World.** 118G: From the fall of Constantinople (1453) to the Treaty of Jassy (1792). 119G: From the Treaty of Jassy to the Congress of Berlin (1878). 120G: From the Congress of Berlin to the present. (3 cr per qtr) Stavrou
- 121Af, 122Aw, 123As. **Economic History of Europe.** 121A: Economic life in medieval times. 122A: Economic developments in the early modern world. 123A: Economic development since 1850. (3 cr per qtr) Bamford

- 121Bf, 122Bw, 123Bs. European Overseas Expansion.** 121B: Voyages of discovery and overseas expansion, 1400-1600. 122B: Colonial development, 1600-1815. 123B: Imperialism since 1850. (3 cr per qtr; offered when feasible) Stein
- 121Cf, 122Cw, 123Cs. Intellectual and Cultural History of Modern Europe.** 121C: The 18th century and its background. 122C: The early 19th century, romanticism and liberalism. 123C: The late 19th and early 20th centuries, the breakdown of the intellectual unity of Europe. (3 cr per qtr; offered 1964-65 and alt yrs) Altholz
- 124Af, 125Aw, 126As. Modern England: Tudor and Stuart Periods.** 124A: 1485-1588, from Henry VII to defeat of Spanish Armada. 125A: 1588-1642, from Spanish Armada to English civil wars. 126A: 1642-1714, from civil wars to death of Queen Anne. (3 cr per qtr; offered 1964-65 and alt yrs) Willson
- 124Cf, 125Cw, 126Cs. Modern England: 1783 to the Present.** 124C: 1783-1846, the triumph of the middle class. 125C: 1846-1901, the Victorian era. 126C: 1901-1951, war and social change. (3 cr per qtr; offered 1965-66 and alt yrs) Altholz
- 127Af, 128Aw, 129As. Modern England: Social History.** 127A: The age of Queen Elizabeth I. 128A: The 18th century. 129A: The age of Queen Victoria. (3 cr per qtr; offered 1965-66 and alt yrs) Willson
- 130Af, 131Aw, 132As. History of the British Empire and Commonwealth.** 130A: First empire to 1783. 131A: Second empire, 1783-1914. 132A: Development of the Commonwealth. (3 cr per qtr; offered when feasible) Stein
- 133Cf, 134Cw, 135Cs. The Early National Period in United States History.** 133C: 1783-1815. 134C: 1815-1835. 135C: 1835-1850. (3 cr per qtr) Jordan
- 133Ef, 134Ew, 135Es. American History, 1850-1900.** 133E: Compromise of 1850 to Appomattox. 134E: 1865-1880. 135E: 1880-1900. (3 cr per qtr) Loehr
- 136Af, 137Aw, 138As. History of the South.** 136A: 1607-1840. 137A: 1840-1890. 138A: Since 1890. (3 cr per qtr) Noble
- 139Af. Current Interpretation and the Problem of Synthesis in American History.** Designed to acquaint students with current scholarship in the field and its implications for the general interpretation of American history. (3 cr; prereq #: offered when feasible) Berkhofer
- 139Cf, 140Cw, 141Cs. Intellectual History of the United States.** (3 cr per qtr) Noble
- 139Df, 140Dw, 141Ds. Social History of American Religion.** Role of religion, both as a sanction to developments determined by other forces and as itself a factor in social change. 139D: Colonial period. 140D: The 19th century. 141D: The 20th century. (3 cr per qtr; prereq 20, 21, 22, or #) T Smith
- 139Ef, 140Ew, 141Es. Social History of American Education.** (See HED 149-150-151) Impact of education on social and institutional developments, colonial period to present. "Education" is defined to include not only work of schools but family, community, and popular press. (3 cr per qtr; prereq 20, 21, 22, or #) T Smith
- 139Ff, 140Fw, 141Fs. American Constitutional History.** 139F: English and colonial background through the Age of Jefferson. 140F: Slavery controversy, sectionalism, Civil War and Reconstruction. 141F: Constitutional developments in an industrial age. (3 cr per qtr) Murphy
- 139Gf, 140Gw, 141Gs. History of Civil Liberties and Civil Rights in the United States.** 139G: From Magna Charta through the colonial and national experience. 140G: Civil liberties and the challenge of industrialism, 1865-1918. 141G: The civil liberties and civil rights issues in modern context. (3 cr per qtr) Murphy
- 139Jf, 140Jw, 141Js. Race and Nationality in American History.** Historical role of ethnic minorities in American society. Changing attitudes of white Anglo-Americans toward Negroes, Orientals, and European immigrants and the varying responses of these groups to their minority status. 139J: 1619-1865. 140J: 1865-1920. 141J: 1920 to the present. (3 cr per qtr) Spear
- 142Af, 143Aw, 144As. American Economic History.** 142A: Colonial life. 143A: From American Revolution to 1860. 144A: Developments since 1860. (3 cr per qtr) Loehr
- 142Bs. American Agricultural History.** Colonial times to present. (3 cr) Loehr
- 142Cf, 143Cw, 144Cs. History of American Labor.** Role in development of United States from colonial period to present. 142C: 1607-1873. 143C: 1873-1917. 144C: 1917 to present. (3 cr per qtr) Berman
- 145Af, 146Aw, 147As. Survey of Latin-American History.** 145A: Colonial period. 146A: Latin-American republics. 147A: Recent Latin-American history. (3 cr per qtr) Beatty
- 148Af, 149Aw, 150As. History of South Asia, Especially India.** 148A: Ancient India to A.D. 1000. 149A: Medieval India, A.D. 1000-1757. 150A: Modern India, 1757-1947. (3 cr per qtr) Stein

- 148Bs. **History of Southeast Asia.** A survey of the development of the societies and states in the Asian region bordered by the culture and political spheres of China and India from the period of early influence of these two civilizations through the period of European colonialism. (3 cr) Stein
- 148Df, 149Dw, 150Ds. **History of China, Prehistoric Times to Present.** 148D: To 221 B.C. 149D: 221 B.C. to A.D. 1279. 150D: A.D. 1279-1949. (3 cr per qtr) Taylor
- 148Ef, 149Ew, 150Es. **The Chinese Revolution, 1851-1949.** A survey of modern Chinese history focused on transition from imperial bureaucracy to communist bureaucracy in a context of broad cultural adjustment under Western influence. 148E: 1851-1911. 149E: 1911-1927. 150E: 1927-1949. (3 cr per qtr; offered when feasible) Taylor
- 151Af, 152Aw. **Cultural History of China.** 151A: Prehistoric times to A.D. 600. 152A: A.D. 600 to the present. (3 cr per qtr; prereq ¶Art 111 recommended; offered when feasible)

Proseminars in Ancient and European History

- 160Af-161Aw-162As.† **Ancient History.** (3 cr per qtr) Jones
- 160Bf-161Bw-162Bs.† **Ancient History.** (3 cr per qtr) Leichty
- 163Af-164Aw-165As.† **Medieval History.** (3 cr per qtr) Hoyt
- 163Cf-164Cw-165Cs.† **Renaissance History.** (3 cr per qtr) Giesey
- 166Af-167Aw-168As.† **Medieval English History.** (3 cr per qtr) Hoyt
- 169Cf-170Cw-171Cs.† **Europe in the Eighteenth Century.** (3 cr per qtr) Wright
- 169Ef-170Ew-171Es.† **Recent European History.** (3 cr per qtr; prereq lect course in 20th-century Europe or World War II, or #) Deutsch
- 172Af-173Aw-174As.† **Seventeenth-Century France.** (3 cr per qtr; prereq reading knowledge of French) Wolf
- 172Cf-173Cw-174Cs.† **French Revolution and Napoleon.** (3 cr per qtr) Bamford
- 172Df-173Dw-174Ds.† **Nineteenth-Century Germany.** (3 cr per qtr; prereq reading knowledge of German, #) Pflanze
- 172Ff-173Fw-174Fs.† **Russian History.** (3 cr per qtr; prereq 120E and reading knowledge of Russian, German, or French, or #) Stavrou
- 175Af-176Aw-177As.† **European Economic History Since 1500.** (3 cr per qtr) Bamford
- 175Bf-176Bw-177Bs.† **History of European Commerce.** (3 cr per qtr) Bamford
- 175Ff-176Fw-177Fs.† **Religious History of Modern Europe.** (3 cr per qtr; offered 1965-66 and alt yrs) Altholz
- 178Af-179Aw-180As.† **English History: Tudor and Stuart Periods** (3 cr per qtr) Willson
- 178Cf-179Cw-180Cs.† **Modern England: 1783 to the Present.** (3 cr per qtr; offered 1964-65 and alt yrs) Altholz

Proseminars in the History of the Americas

- 181Af-182Aw-183As.† **Seventeenth- and Eighteenth-Century American History.** (3 cr per qtr) Rutman
- 181Df-182Dw-183Ds.† **Nineteenth-Century American History.** (3 cr per qtr) Jordan
- 181Ff-182Fw-183Fs.† **American History, 1850-1900.** (3 cr per qtr; offered 1965-66 and alt yrs) Loehr
- 181Jf-182Jw-183Js.† **Twentieth-Century American History.** (3 cr per qtr) Chambers
- 184Af-185Aw-186As.† **The West in American History.** (3 cr per qtr; offered 1965-66 and alt yrs) Berkhofer
- 187Af, 188Aw, 189As. **American Political and Constitutional History.** (3 cr per qtr; prereq 139F, 140F, 141F or #) Murphy
- 187Bf-188Bw-189Bs.† **American Diplomatic History.** (3 cr per qtr; offered 1965-66 and alt yrs) Beatty
- 187Df-188Dw-189Ds.† **Intellectual History of United States in Nineteenth, Twentieth Centuries.** (3 cr per qtr) Noble
- 187Ff-188Fw-189Fs.† **American Labor History.** (3 cr per qtr) Berman

- 187Gf-188Gw-189Gs.† American Economic History. (3 cr per qtr; offered 1964-65 and alt yrs) Loehr
 190Af-191Aw-192As.† Latin-American History. (3 cr per qtr; prereq reading knowledge of Spanish; offered when feasible) Beatty

Proseminars in Asian History

- 193Bf-194Bw-195Bs.† History of India. (3 cr per qtr) Stein
 193Cf-194Cw-195Cs.† Chinese History. (3 cr per qtr; prereq 2 yrs literary Chinese or equiv preparation) Taylor
 196s. East and South Asia. (Same as Anth 196, Geog 196, Ortl 196, and Pol 196) Integrating course for students majoring in East and South Asia Area Studies program. (3 cr) Inter-departmental staff

Seminars

- 200f. Historical Bibliography and Criticism. Required of Master's Plan B candidates unless excused by adviser. (3 cr) Staff
 203f, 204w, 205s. Readings in the Works of Great Historians. (2 cr per qtr) Giesey, Rutman, staff
 210Af-211Aw-212As.† Ancient History
 213Af-214Aw-215As.† Medieval History
 213Cf-214Cw-215Cs.† Renaissance History
 216Af-217Aw-218As.† Medieval English History
 219Ef-220Ew-221Es.† Recent European History
 222Af-223Aw-224As.† Seventeenth-Century France
 222Df-223Dw-224Ds.† Nineteenth-Century Germany
 222Ff-223Fw-224Fs.† Russian History
 225Af-226Aw-227As.† European Economic History
 228Af-229Aw-230As.† English History, Tudor-Stuart Period
 231Af-232Aw-233As.† Seventeenth-Century American History
 231Df-232Dw-233Ds.† Nineteenth-Century American History
 231Ff-232Fw-233Fs.† American History, 1850-1900
 231Jf-232Jw-233Js.† Twentieth-Century American History
 234Af-235Aw-236As.† The West in American History
 237Af-238Aw-239As.† American Political and Constitutional History
 237Bf-238Bw-239Bs.† American Diplomatic History
 237Df-238Dw-239Ds.† Intellectual History of the United States in the Nineteenth and Twentieth Centuries
 237Ef-238Ew-239Es.† American Social and Educational History (See HED 296-297-298)
 237Ff-238Fw-239Fs.† American Economic History
 237Gf-238Gw-239Gs.† American Labor History
 240Af-241Aw-242As.† Latin-American History
 243Bf-244Bw-245Bs.† History of India

Home Economics (HE)

(College of Agriculture, Forestry, and Home Economics)

Director—Louise A. Stedman

Arts College students who wish to take courses not listed on the following pages must have the approval of the director of the School of Home Economics and the Arts College Scholastic Committee.

Arts College students may take any related art courses that have no prerequisites. Following are some suggested sequences of courses: HE 20, 24, 123; 20 (or any studio art course), 22, 125; FamS 15; HE 120, 123. Many classes in the School of Home Economics are controlled in size. Students wishing to register in such classes should secure a tally card from 220 Coffey Hall or by telephone to the Office of Admissions and Records, St. Paul Campus. A limited number of tally cards is available in 205 Johnston Hall.

LOWER DIVISION COURSES

- 11f,w,s. Choice and Care of Clothing.** Principles of planning, selecting, and caring for the wardrobe. Design and color as they relate to dress and personal appearance. Some textile knowledge of help to consumer. (3 cr, §GC 3C; not open to srs) Williams
- 20f,w,s. Introduction to Related Art.** Development of an appreciation of art involved in the everyday life of the student; cultivation of taste in varied fields such as home furnishings and architecture. Arts and crafts of various countries studied briefly for their contribution to student's breadth of view, enjoyment, and understanding of other cultures. (3 cr) Myren
- 22f,w,s. Costume Design.** Problems in color, texture, design for individual. Introduction to fashion illustration. Study of folk and regional costume. (3 cr; prereq 1, 20 [21 recommended] or #) Esteros
- 24f,w,s. Problems in Home Planning and Furnishing.** Exteriors and interiors of houses studied for their design and suitability to family and locality. Problems in planning and furnishing a home worked out on a basis of family living. Class work in combining fabrics, furniture, and accessories in rooms. Field trips. (5 cr, §GC 3D, §FamS 15; prereq soph, 20...21 and 40 recommended) Myren
- 31f,w,s. Introduction to Nutrition.** Application of nutrition principles to food selection of college students. Includes information on relation of food to promotion and maintenance of health. (3 cr, §GC 3B; not open to home economics sr; offered Mpls Campus spring qtr) Morse, Doyle, North
- 40f,w,s. Food Preparation.** Development of technique and application of fundamental science principles to cookery processes and preservation. Establishment of good standards for food products. (5 cr; no prereq for Arts College students) Marten

UPPER DIVISION COURSES

- 50f,w,s. Textiles.** Consumer textile problems; characteristics of fibers, fabrics, and finishes; selection, maintenance, and serviceability of fabrics for clothing and home furnishing; laboratory study of selected fabrics. (4 cr; prereq 3rd qtr soph, GeCh 5 or NSci 2, or #) Gorham
- 70f,w. Advanced Food Preparation.** (Continuation of 40) Emphasizes scientific principles that underlie cookery processes and food preservation. (3 cr; prereq 40, Biol A) Trammell
- 72f. Nutrition.** Discussion of the application of the principles of nutrition to the selection of food. (2 cr, §GC 3B, §PNur 14, or §HE 31; intended for students majoring in fields other than home economics [open to HE students only by #]; prereq jr; offered Mpls Campus) North
- 76f,s. Nutrition of the Family.** Principles of nutrition and the problems of food selection most commonly met in everyday living. (4 cr, §170, §171; prereq 30 or 31, and 40, physiology or human biology) Doyle
- 85f,w,s. Home Management Principles.** Managerial aspects of homemaking; work simplification of household activities; financial records and budget making for individual and family. (3 cr; prereq AgEc 2, 40...41 recommended) Jeary
- 120f,w,s. Art History.** Art from the Egyptian period to present. Painting, sculpture, and architecture of the past studied for influences on contemporary period. Field trips. (3 cr) Esteros
- 121w. Textile Design.** Original designs applied to textiles by means of silk screen, batik, and block print techniques. (3 cr; prereq 23, 50 or #) Abell
- 123w. History of Home Furnishings.** Historic styles in home furnishings with their corresponding styles in exteriors; effect of historic styles on contemporary design in home furnishings. (2 cr; prereq 120 recommended) Ludwig
- 125s. Advanced Costume Design.** Problems in draping and sketching clothing designs. Pencil, crayon, and watercolor techniques, studies and reports on selected topics. (3 cr; prereq 3, 22 or #) Esteros

How to Study

See Interdisciplinary Programs

Humanities

See Interdisciplinary Programs

Indian

See Slavic and Oriental Languages

Interdisciplinary Programs

The Arts College offers both departmental and interdepartmental courses for the purpose of general education. Such courses are designed in the main for students who will not specialize in the academic areas with which these courses are concerned. Introductory courses in most departments help serve this purpose, and many departments offer courses beyond the introductory level also suitable to the interests of the nonspecialist. The student will find brief guides to such courses in the introductions to a number of department listings.

Interdepartmental courses or divisional courses devised especially for the purposes of general education are also offered by the Arts College. These courses draw subject matter and materials from several disciplines. They are designed in the main for students who will specialize in other subjects and thus will not be able to elect several courses in the field.

The courses have been arranged in six programs. In registering for these courses, write the program heading (abbreviated prefix) in the column labeled "department" as indicated in the listings that follow.

Communication (Comm)

FACULTY—Daniel V. Bryan, *program chairman*; William Agee, Wesley Franzmeier, Orley Holtan, J. Vernon Jensen, Raymond Milowski, Don Norton, Lee Pederson, James Tintner, Jean Ward.

1f,w,s-2f,w,s-3f,w,s. Communication. The English language and its uses, with constant practice in speaking and writing, in listening and reading. 1: Language in its social context; meaning, structure, and appropriateness in exposition. 2: Language and reasoning; processes and responsibilities of investigation, deliberation, and persuasion. 3: Language and public discourse; the structure, content, and social implications of utterances through the mass media of communication. Instruction individualized through conferences; staff consultant on speech available. Meets the Group A requirement in Freshman English. (4 cr per qtr, §Engl A-B-C, §Engl 1A-2A-3A, §Engl 1B-2B-3B, or §Engl 10H-11H-12H; prereq assignment to Category 1, 1A, 2 or 3 [see "Important Note" page 63])

1Hf-2Hw-3Hs. Honors Course: Communication. (Parallel to Comm 1-2-3) More extensive study of major works on language, rhetoric, and public discourse, greater individual participation in classwork. (4 cr per qtr, §Engl A-B-C, §Engl 1A-2A-3A, §Engl 1B-2B-3B, or §Engl 10H-11H-12H; prereq assignment to Category 1, 1A, or 2 [see "Important Note" page 63], and Δ)

Foreign Study (FS)

161su-162su. Seminar for Foreign Study. 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 the year preceding

the summer abroad, and writes a comprehensive report upon returning. (6 cr each; prereq approval before December by a faculty selection committee [grad students must also have adviser's approval])

Humanities (Hum)

FACULTY—Ralph G. Ross, *program chairman*; Robert J. Ames, *associate program chairman*; George Amberg, John Berryman, Daniel Bryan, Oya Kaynar, Joseph Kwiat, Donald Lambert, Charles Levy, Ray Livingston, Lynn Loudon, John Munholland, Mischa Penn, Clement Ramsland, James ReVeal, James Scoggins, Robert Scott, Philip Siegelman, Roy Swanson, Wolfgang Taraba, Benjamin Uroff, Frank Wood.

Major Advisers in Arts College—Professors Amberg, Berryman, Kwiat, Ross, Wood; Associate Professors Ames, Bryan, Ramsland, R. Swanson; Assistant Professor Siegelman; Instructor Loudon.

The subject of the humanities is man. The courses listed below attempt to reveal something about the values, the aspirations, and the limitations of the human spirit through a carefully integrated study of literature, philosophy, history, and the arts. While it is a distinctive field of study, humanities is related to the social sciences, which deal with relations between men, and to the natural sciences to the extent that they shed light on human behavior. The works studied in Humanities in the Modern World and in The European Heritage are selected for their capacity to express man's perennial effort to identify the nature of the human condition. The other courses listed below are for students who wish to pursue the subject into more specialized areas.

Major Sequence in Arts College—This is an interdepartmental major. Requirements include courses in the Humanities Program along with several groups of electives in certain departments of the Humanities Division. Specific requirements are as follows:

1. A minimum of 24 credits in the combined Modern World and European Heritage sequence, of which at least 15 credits must be taken in the Upper Division
2. 9 Upper Division credits in social science (history included)
3. 9 Upper Division credits in the history of art or history of music
4. 9 Upper Division credits in philosophy
5. 18 Upper Division credits in literature (English or foreign)
6. 9 Upper Division credits in the Humanities Proseminar

For courses labeled "Humanities," see the listings below. For all other courses in the program, see the separate departments mentioned in the above list of requirements.

LOWER DIVISION COURSES

- 1f,w,s. **Humanities in the Modern World I.** Old Regime, French Revolution and Napoleonic Era, neoclassicism and romanticism. Authors: Pope, Voltaire, Rousseau, Burke, Goethe, and Tolstoy. (5 cr, §1A or §51) Bryan, Ellingston, Kaynar, Kwiat, Lambert, Loudon, Munholland, Penn, Ramsland, Scoggins, Siegelman, Uroff, Wood
- 2f,w,s. **Humanities in the Modern World II.** Industrial Revolution, liberalism and socialism, individualism. Authors: Smith, Malthus, Carlyle, Marx, Ibsen, Mill, Zola, Flaubert, Tolstoy, and Dostoevski. (5 cr, §2A or §52; prereq 1 or 1A) Bryan, Kaynar, Kwiat, Loudon, Ramsland, Siegelman, Wood
- 3f,w,s. **Humanities in the Modern World III.** Impact of science and the theory of evolution; religion and morals in a changing world. Authors: Darwin and the evolutionists, Nietzsche, Kierkegaard, Chekhov, Turgenev, Mann. (5 cr, §3A or §53; prereq 2, 2A or 52) Bryan, Kwiat, Lambert, Loudon, Siegelman, Taraba, Wood
- 1Af-2Aw-3As. **Humanities in the Modern World.** A 3-credit per quarter sequence, each quarter corresponding to the respective quarter of Hum 1-2-3, but with a reduced reading list.

(3 cr per qtr, §corresponding qtr of 1-2-3 or of 51-52-53; prereq 1A or 1 for 2A, 2A or 2 for 3A) Scott

- 1Hf, 2Hw, 3Hs, 4Hf, w.s. Honors Course: Humanities in the Modern World. (Same as Hum 1, 2, 3, 4) Limited to 20 students of high ability as demonstrated in other Humanities classes or in grade point average or high school achievement. (5 cr per qtr, §corresponding qtr of 1, 2, 3, 4 or 1A, 2A, 3A; prereq § or Δ) Ar
- 4f, w.s. Humanities in the Modern World IV. Introduction to humanities since World War I. Communism, fascism, Freudianism, modern art and philosophy, existentialism. Authors: Lenin, Freud, Joyce, T. S. Eliot, Kafka, and others. (5 cr, §54; prereq 1 or 1A, 2 or 2A, 3 or 3A) Amberg, Berryman, Bryan, Loudon, Penn, Siegelman, R Swanson
- 11f, 12w, 13s. The European Heritage. Masterpieces of European civilization from Homer to Cervantes. Literature, philosophy, theology, the arts of Greece, Rome, the Middle Ages, and the Renaissance. Attention will be paid to ideals and forces of continuing importance to the modern world.
- 11f. The Greek Heritage. Greece through the Peloponnesian War. Emphasizes the Golden Age of Athens: tragic visions of the dramatists, classical art and architecture, Athenian democracy, concepts of reason and justice. Authors: Homer, Hesiod, the dramatists, Plato, Aristotle, Thucydides, and, for purposes of comparison, *The Book of Job* and other readings from the *Old Testament*. Greek art and architecture. (5 cr, §61) Ar
- 12w. Roman and Medieval Heritage. Hellenistic and Roman civilization. Epicureanism and stoicism, Neoplatonism, Hebrew background and setting for Christianity, Christian doctrine. Medieval society, faith, theocracy. Romanesque and Gothic art and architecture. Authors: Lucretius, Marcus Aurelius, *New Testament*, Augustine, church documents, Dante. (5 cr, §62) Ar
- 13w. The Renaissance and Reformation. The 15th-17th centuries. Rise of the Italian communes, commercial life, banking; age of Lorenzo the Magnificent in Florence; ideal of beauty in art, politics, and morals; universal man. High Renaissance and the power of Rome, the Reformation in Germany, the Counter Reformation in Spain and France. Authors: Pico della Mirandola, Machiavelli, Castiglione, Luther, Calvin, Loyola, Montaigne, Pascal, Cervantes, Marlowe. Renaissance and baroque art and architecture. (5 cr, §63) Ar
- 21f, 22w, 23s. American Life. Each quarter is organized around a topic such as individualism in American life and thought, religious and philosophic attitudes in relation to American ideas, the rise of American nationalism and its place in the modern world. (3 cr per qtr) Hage, Murphy, Turpie

Attention is called to the following courses: Art 1-2-3; CLit 45-46-47; Clas 42-43; Mus 1, 31, 32, 33; Spch 31, Arab 161-162-163, Chin 110-111, Jpn 110-111-112, Ortl 75-76-77, Russ 75-76-77, 110-111-112.

UPPER DIVISION COURSES

Upper Division courses in this program are not open to Lower Division students except by special permission of the Scholastic Committee.

- 51f, w, 52w, s, 53f, s. Humanities in the Modern World. Similar to 1-2-3; more reading, papers. Confined to juniors and seniors. (5 cr per qtr, §corresponding qtr of 1-2-3 or 1A-2A-3A) Same staff as for 1-2-3
- 51Hf, 52Hw, 53Hs, 54Hf, w, s. (Same as 51, 52, 53, 54) Limited to 20 students of high ability as demonstrated by grades in humanities courses or grade point average. (5 cr per qtr, §corresponding qtr of 1, 2, 3, 4 or 1A, 2A, 3A; prereq § or Δ)
- 54f, w, s. Humanities in the Modern World. Similar to 4; more reading, papers. Confined to juniors and seniors. (5 cr, §4) Amberg, Berryman, Bryan, Loudon, Penn, Siegelman, Swanson
- 61f, w, 62w, s, 63f, s. The European Heritage. Similar to 11, 12, 13; more reading, papers. Confined to juniors and seniors. (5 cr per qtr, §corresponding qtr of 11, 12, 13) Ames, Berryman, Levy, Loudon, Ross, Swanson
- 71f, 72w, 73s. American Life. Introduction to American cultural history. Each quarter is organized around topics which disclose a major conflict of ideals—for example,

* * A student may take any combination of 21, 22, 23, and 71, 72, 73 up to a maximum of 9 credits. Upper Division students are advised to take the 71, 72, 73 sequence if possible.

liberty and property in the early Republic, individualism and majority rule in the pre-Civil War era, materialism and idealism in the present industrial age. Such figures as Jefferson, Hamilton, Thoreau, Mark Twain, Frank Lloyd Wright, and William Faulkner are studied. (3 cr per qtr) Cooperman, Levenson

- 131f, 132w, 133s. **Humanities Proseminar.** Topics selected provide an integrated review of humanities materials: the arts, the sciences, and civilization. (3 cr per qtr; prereq sr) Amberg, Ames, Berryman, Bryan, Ross, Swanson
- 131Hf, 132Hw, 133Hs. For honors candidates in humanities and for others with an over-all grade average of B or better. Topics same as for 131, 132, 133. (3 cr per qtr; prereq sr and Δ)
- 163s. **Political Theory and Utopia.** (Same as Pol 163) (3 cr; prereq Pol B or 9 cr in social science or $\#$; offered 1964-65 and alt yrs) Sibley, Swanson

Natural Science (NSci)

Program Chairmen—Mark Graubard, James H. Wertz, Jr.

Two general education courses in natural science are listed below, each serving a distinctive purpose. NSci 1-2-3 is intended for students desiring an introduction to the total field of science, 4-5 for those desiring an acquaintance with the physical universe. (Biol 1-2 and 1A-2A are offered by the Departments of Botany and Zoology for those wishing to explore the world of life.)

Students taking NSci 1-2-3 may not receive credit for NSci 4-5. Students who have taken the elementary course of any science department may not register for the corresponding portion of these courses.

LOWER DIVISION COURSES

- 1f-2w†-3s. **Orientation in the Natural Sciences.** Integrated survey course in which the student is introduced to basic principles and subject matter of science and the meaning of the scientific method in physical and biological sciences. 1: Astronomy and physics. 2: Chemistry and geology. 3: Foundations of modern biology with stress on function, development, heredity, and evolution. (5 cr per qtr, $\#$ equiv courses in science departments) Graubard
- 4f,w-5w,s.† **The Physical World.** Essential elements of astronomy, physics, chemistry, and geology, selected to illustrate methods of science and to acquaint student with the physical universe around him. (3 cr per qtr, $\#$ equiv courses in science departments; prereq 1 yr high school algebra)

Attention is called to Biol 1-2 and 1A-2A (General Biology) listed under the Departments of Botany and Zoology.

UPPER DIVISION COURSES

- 171f, 172w, 173s. **The Development of the Sciences.** Provides first-hand acquaintance with the manner in which man forged science, as we know it today, through a study of his past approaches, errors, and achievements. Stress laid on original works (in English translation) rather than summaries; on roles of culture, values, techniques, goals, and social and emotional intrusions. 171: Deals with science of antiquity and Middle Ages. 172: Period from 1543 to 1800. 173: Selected high spots in modern science of 19th and 20th centuries. (3 cr per qtr; prereq 1 yr biological and 1 yr physical science in high school or college or $\#$) Graubard

Personal Orientation (PO)

Program Chairman—John G. Darley.

The successful person cannot be content with a knowledge of only such fields as humanities and natural and social science. He must also know himself—his abilities, interests, habits, and their relation to educational and vocational requirements.

The following courses seek to provide such understanding and to promote personal competence.

- 1f,w,s. **How to Study.** Practical assistance to the student in developing efficient methods of study and concentration, organizing material, preparing for examinations, and improving reading ability. Attention to the orientation of students in their attitudes and motivation, and the relation of these to satisfactory performance. (2 cr [cr do not count toward BA degree])
- 11f,w,s. **Choosing a Vocation.** Application of the principles of occupational psychology to help students achieve self-understanding as a basis for vocational-educational planning. Consideration of occupational classification, description, and trends. Active student participation in individual projects and in small group discussions of vocational choices of members. (2 cr [cr do not count toward BA degree]) Hewer

Social Science (SSci)

FACULTY—David Cooperman, *program chairman*; Hyman Berman, Martin Dolan, Donald Drobac, Fred E. Lukermann, David W. Noble, Mordecai Roshwald, Israel Rubin.

These courses draw on a wide variety of research findings and theories from the social sciences, arranged so as to present a coherent interpretation of several broad aspects of human behavior. Each course focuses on a significant segment of human action and the general aim is to provide the student with an understanding of how such behavior may be explained.

LOWER DIVISION COURSES

- 1f,w,s. **Personality.** An investigation of the factors that influence individual human action. Among the topics that may be studied are personality in nature, culture, and society; personality as a shaper of culture and historical events; the American character; the validation of theories of personality. (3 cr) Staff
- 2f,w,s. **Work.** Division of labor and economic organization studied within a general social context. The social functions of economic systems. An analysis of work ideals from a historical and social point of view. Power and status in industrial societies. A comparison of division of labor systems. (3 cr) Staff
- 3f,w,s. **Community.** The web of human relations in traditional and modern societies. Types of group behavior. Caste and class in the United States. The government of societies: democracy and totalitarianism. Proposed explanations for social action. (3 cr) Staff

UPPER DIVISION COURSES

Upper Division courses in this program are open to Lower Division students only by special permission of the Scholastic Committee.

- 51f, 52w, 53s. **Personality, Work, and Community.** Similar to SSci 1-2-3 except that it is conducted on a more advanced level, with particular attention paid to social scientific methods. (4 cr, §corresponding qtr of 1-2-3) Cooperman
- 72w. **Individual Freedom in American Theory and Practice.** An analysis of concept of freedom as found in American writings in 19th and 20th centuries; assessment of implementation of concept in changing areas. (3 cr; prereq 15 Upper Division credits in two or more social sciences, §) Murphy

International Relations and Area Studies

Chairman—Harold C. Deutsch; *director*—Charles H. McLaughlin

Major Advisers in Arts College—

(a) GENERAL INTERNATIONAL RELATIONS MAJOR—Professors Jan O. M. Broek, Roy E. Carter, Harold C. Deutsch, Roy E. Francis, Charles H. McLaughlin, Raymond

B. Nixon, and John E. Turner; Associate Professors W. Donald Beatty, Edward Coen, Robert T. Holt, Harlan M. Smith; Assistant Professor Walter Klein.

(b) **AREA STUDIES**—*Northwest Europe*: Scandinavia—Professor Alrik Gustafson; British Isles—Professor Samuel H. Monk; France—Professor John B. Wolf; Germany—Professor Otto Pflanze. *Russia*—Assistant Professor Theofanis G. Stavrou. *East and South Asia*—Professor John E. Turner. *Latin America*—Professor W. Donald Beatty.

In addition to these advisers, students may consult other advisers who are listed in the special bulletin, *Programs in International Relations and Area Studies*, or inquire in the Center for International Relations and Area Studies, 1246 Social Science Building.

(c) **PREPARATION FOR FOREIGN SERVICE**—Professor Charles H. McLaughlin.

Purpose of the Programs—In response to increasing student interest in world affairs, several programs in international relations and area studies have been developed which permit students to cross departmental lines. These include:

1. A general international relations major without particular area emphasis, for students who wish to specialize in the governmental and legal as well as the more general aspects of international relations study.

2. A group of area study majors designed to develop a comprehensive understanding and appreciation of the civilization of the peoples of given areas. Areas are demarcated on the basis of the culture or civilization of their peoples rather than upon a political basis. Programs may now be arranged for the following areas: Northwest Europe (with concentration in a subarea, either Scandinavia, British Isles, France, or Germany); Russia; East and South Asia (with concentration in a subarea, either East Asia, Southeast Asia, or South Asia); Latin America. In each case the major program is an integrated study of the social, political, economic, and aesthetic ideas and institutions of the area, comprising courses drawn from the social sciences, language and literature, fine arts, humanities, and philosophy.

3. A program of training in preparation for careers in the Foreign Service or in agencies having related functions. This ordinarily combines some elements of the general international relations major, or one of the area study majors, and courses in diplomatic history and administration, with the emphasis determined by the student's interests.

4. Most of the courses included in these programs can be elected for purposes of general education by nonmajor students. At the Lower Division level Pol 25, 26, and at the Upper Division level the courses prescribed hereafter as a core curriculum for the general international relations major will be found especially suitable for this purpose.

Graduate training is also available in both international relations (M.A., Ph.D.) and area studies (M.A.), and training in intelligence research is offered at the M.A. level for students with basic training in area programs. Upper Division students who expect to proceed to this advanced training are advised to acquaint themselves early with the prerequisites.

Courses in Lower Division—Students must satisfy the distribution requirements for entrance into the Upper Division but should complete at least 4 quarters, or the equivalent, of a foreign language in the Lower Division. This will enable them to complete without delay the special foreign language requirements for majors in international relations and area studies in the Upper Division, i.e., the first Upper Division sequence in conversation or composition. In the case of area study majors,

preparation should be in a foreign language appropriate to the area to be studied. Foreign Service candidates should choose either French, German, Spanish, or Russian.

Since the Upper Division majors include courses selected from several social sciences, care should be exercised to complete any Lower Division courses which are prerequisite to the advanced courses in these departments. Selection can ordinarily be made from the following list, but advisers should be consulted as to variations and special recommendations peculiar to the several majors. In the case of the general international relations major, Econ 1-2 and Geog 4 are prerequisites of required courses in the major, and Pol 25 and 27 are strongly recommended as an introduction to the field.

(Credits shown in parentheses)

Anth 1A—Introduction to Anthropology: Pre-historic Man and Culture (5)	Pol A-B-C—The State in the Modern World (9)
Anth 2A—Introduction to Anthropology: Cultural Anthropology (5)	Pol 25—World Politics (3)
Econ C—Introduction to Economic Analysis (3)	Pol 26—American Foreign Policy (3)
Econ 1-2—Principles of Economics (6)	Pol 27—Analysis of International Relations (3)
Geog 1—Geography of Natural Resources (5)	SSci 1-2-3—Introduction to Social Science (12)
Geog 4—Human Geography (5)	Soc 1—Introduction to Sociology: Man in Modern Society (3)
Geog 41—Geography of Primary Production (5)	Soc 3—Introduction to Sociology: Social Problems (3)
Hist 1-2-3—Civilization in the Modern World (9)	

The Lower Division curriculum may be completed with courses which satisfy special interests or needs of the student. He should devote some time whenever possible to basic cultural training in the fine arts, humanities, literature, and philosophy, for which the following courses may be considered:

(Credits shown in parentheses)

Art 1-2-3—Introduction to Art (11)	Hum 1-2-3-4—Humanities in the Modern World (20)
CLit 45-46-47—The Nature of Literature (9)	Hum 11, 12, 13—The European Heritage (15)
Engl 19, 20—Great English Writers (6)	Hum 21, 22, 23—American Life (9)
(or) Engl 21, 22, 23—Introduction to Literature (15)	Mus 31-32-33—Music Literature (6)
Engl 37, 38, 39—Modern Literature (9)	Phil 1—Problems of Philosophy (5)
	Phil 11—World Religions (5)

Students planning to elect an international relations or area study major should consult a major adviser as early as possible, preferably upon entrance into the University.

Courses in Upper Division—In consultation with a major adviser, the student will select courses totaling 45 credits, equivalent to a major and a minor. A minimum of 60 credits in Upper Division courses must be earned for graduation.

For the general international relations major the 45 credits in major courses must include a prescribed core curriculum of 30 or 33 credits comprising the following courses:

(Credits shown in parentheses)

Jour 124—International Communications and Foreign Affairs (3)	Pol 184—International Politics I (3)
(or) Jour 130-131—Public Opinion and Propaganda (6)	(or) Pol 187—International Organization I (3)
Pol 175—Diplomacy (3)	Econ 104—International Economics (3)
Pol 180-181—International Law: Peace (6)	Geog 143—Political Geography (3)
	Hist 109, 110, 111—Europe in the 20th Century (9)
	(or) Hist 115E-116E-117E—World War II (3)

Additional courses may be selected from approved courses to form an integrated plan of study relevant to the student's interests and vocational objectives. Foreign language study is to be continued through at least the basic composition and conversation courses in one language at the Upper Division level; this is in addition to

major courses. Additional courses contributing to the international relations program, or courses suited to other cultural interests of the student, may be elected.

The area study majors must include at least 18 credits in the social sciences and, whenever available, 6 credits in an honors or reading course or proseminar designed to integrate the program. Courses acceptable for this purpose are listed in the special bulletin, *Programs in International Relations and Area Studies*. The remainder of the 45 credits will be distributed among courses in foreign language and literature and in fine arts, humanities, and philosophy. The rest of the 60 or more Upper Division credits may be elected by the student to complete his program in accordance with his cultural or vocational interests.

Detailed requirements and listing of courses for each major appear in the special bulletin, *Programs in International Relations and Area Studies*.

Italian

See Romance Languages

Japanese

See Slavic and Oriental Languages

Journalism (Jour)

FACULTY—Robert L. Jones, *director*; Roy E. Carter, Jr., Mitchell V. Charnley, Michael Corcoran, Edwin Emery, J. Edward Gerald, George S. Hage, Fred L. Kildow, Sam Kuczun, Robert G. Lindsay, William A. Mindak, Raymond B. Nixon, R. Smith Schuneman, John C. Sim, Willard L. Thompson, Harold W. Wilson.

Major Advisers in Arts College—Professors Carter, Charnley, Emery, Gerald, Jones, Kildow, Nixon; Associate Professors Hage, Mindak, Sim, Wilson; Lecturer Corcoran; Instructors Lindsay, Schuneman.

Adviser in College of Education—Professor Kildow.

Adviser for Students in Other Colleges—Professor Charnley.

Young men and women planning on careers in the various fields of mass communications enter the School of Journalism to earn a B.A. in journalism degree. Those showing superior performance and desiring superior preparation in journalism and supporting social sciences will be recommended during the third quarter of their fourth year for Graduate School admission and may then earn both the M.A. and B.A. degrees in 5 years. The fifth year will permit such students to meet the M.A. requirements, Plan A or Plan B, on pages 9 and 12 of the *Bulletin of the Graduate School*.

The school offers instruction in all the principal fields of journalism. Some require substantially similar preparation. There are five course sequence listings which meet the requirements for a major in the Arts College. These sequences and the areas of professional work to which they relate are:

1. *News-Editorial Major Sequence*—Daily and weekly newspaper reporting, editing, and editorial direction; radio and television news and editorial writing and presentation, script and continuity writing; photojournalism; press association work; magazine writing, editing, and administration; science and technical writing; industrial editing; graphic arts processes;

public relations and public opinion; mass communications research; journalism teaching.

2. *Advertising Major Sequence*—Advertising for print and broadcast media; advertising agencies; manufacturer's and retail advertising departments; related services; creative advertising; copywriting and layout; print and broadcast production; media, market, and consumer analysis; public relations; sales and promotion; mass communications research; journalism teaching.
3. *Newspaper Management Major Sequence*—Daily and weekly newspaper business management; circulation and promotion; weekly editorial administration and publishing.
4. *Agricultural Journalism Major Sequence*—Daily and weekly newspaper work in rural areas; farm and technical journals; agricultural information work.
5. *Home Economics Journalism Major Sequence*—Work on daily and weekly newspapers and in public information and technical writing related to the home economics field.

Preparation for journalism rests on a searching liberal education, a knowledge of the social and professional responsibilities of the journalist, and a basic acquaintance with journalistic techniques. The journalism major student meets Arts College Lower Division requirements and plans an Upper Division program, in conference with his adviser, so as to gain both general and professional education. About three-fourths of the student's University work is in the social studies, the humanities, and liberal education areas; about one-fourth in professional courses.

The journalism major begins his journalism course work in his sophomore year. Freshmen who are interested in journalism and communications and who plan to enter the School of Journalism at a later time are urged to discuss their course programs and vocational desires with members of the journalism staff. Students who plan the 5-year program should consult a journalism adviser in their sophomore year.

All prejournalism students must meet the Arts College freshman English and public health requirements. All must include Jour 13, Comp 27 or 28, Econ B-C or 1-2, and Pol 1-2 or 5 in their Lower Division programs. All must include either 6 credits in American history (Hist 20, 21, 22) in their Lower Division programs, or 6 credits in their Upper Division programs for which Hist 79, 80, 81 is recommended. All except those planning to enter the journalism major for students specializing in advertising must include also Jour 14-15. Preadvertising students must include Jour 18, 41.

It is recommended that the prejournalism student meet Lower Division requirements so as to include substantial basic work in the following fields:

Social Science—The required history, economics, and political science courses may be supplemented by sociology, geography, anthropology, and SSci 1-2-3.

Natural Science—NSci 1-2-3 or 4-5 or either psychology, chemistry, physics, biology, or a combination of courses in these fields.

Humanities—French, Spanish, or German; humanities; philosophy; speech; English or American literature.

Electives to make the required Lower Division total of 84 to 90 credits should include courses from the areas listed above, or other areas chosen in consultation with the journalism adviser. Recommended as providing, in most cases, a sound foundation for major work in journalism are: Pol A-B, 25; Soc 1, 2; Psy 1-2; Hist 1-2-3; 2 or more quarters of humanities; Geog 1, 4, 41; Engl 37, 38, 39.

No student whose average is lower than C will be permitted to enroll in any journalism course, either Lower Division or Upper Division.

The fourth hour Tuesday is free of journalism classes (except Jour 13) so that vocational and professional meetings may be scheduled. Journalism majors are urged to keep this hour open for such meetings.

Major Sequence Co-ordinating Work for the Degree of Bachelor of Arts in Arts College, and of Master of Arts in Graduate School—Students in the news-editorial major sequence will present Jour 51, 55, 56, 73, 101, 109, 113, 121, 122 or an approved substitute, 130, 140-141, 200 and one additional seminar in the 200 series. A co-ordinated program also may be worked out for students in the advertising major sequence. Credit for the M.A. must be earned while registered in the Graduate School. See the *Bulletin of the Graduate School*. Students using the co-ordinated plan are urged to make a 5-year program with a journalism adviser early in the junior year. For the M.A., specialization is possible in one of the social sciences or humanities related to journalism and in a journalism field centering about one of the following graduate seminars: Jour 209, 213, 215, 221, 224, 230, 264, or 277. Modifications of the 5-year program requirements may be approved in terms of a student's special professional interests.

News-Editorial Major Sequence—Jour 51, 55, 56, 73, 101, 109, 140-141, and 12 additional credits in journalism. Six of the additional credits must be numbered above 90, and 3 of them must be chosen from among Jour 113, 121, and 130. Students of superior scholarship may substitute outside courses for 6 of the additional credits with adviser approval. In some cases other modifications of the sequence may be approved by the adviser.

Advertising Major Sequence—Jour 57, 60, 71, 79, 161, 162, 163, 164, Psy 156, Mktg 57, and 6 additional credits in journalism or other adviser-approved areas. Three of the additional credits must be chosen from among Jour 109, 113, 121, and 130. Psy 1-2 is a required Lower Division course for such students.

Students in this sequence may, with adviser approval, substitute for the usual type of minor work the following special marketing minor: 15 credits chosen from among Mktg 97, 97C, 107, 177, 187, 197; Econ 69, 120, and either QA 51, or Psy 70. The minor requires adviser approval.

Students wishing special training in commercial design are advised to elect work in art. A student may prepare for a general minor in art by electing Art 23, 24, 25.

Newspaper Management Major Sequence—Jour 51, 57, 60, 73, 79, 93, 95, 101, 161, and 9 additional credits chosen from among Jour 78, 109, 113, 115, 121, 122, 130, 131, 140, 141, 149, 163, and 177.

A special minor sequence for students in this specialization may be elected from among Mktg 57, 107; Prod 50; Mgmt 60, 70; Psy 140, 156, and Art 65.

Agricultural and Home Economics Journalism Major Sequences—These programs, offered jointly by the Arts College and the College of Agriculture, Forestry, and Home Economics, combine courses so as to offer students either editorial or advertising sequences in journalism with extensive specialized work in fields of agriculture or home economics. Students register in the Arts College, but have advisers in both colleges. Full details of the various programs and of Upper and Lower Division requirements may be obtained from major advisers in journalism and in agriculture or home economics.

Professional Emphasis in Specialized Fields—Students with professional interest in special fields of journalism may design programs in conference with advisers to prepare for work in these areas. Such programs usually can be developed within either the news-editorial or the advertising major sequence. Combinations or modifications are possible in some cases. For all of these specializations a 5-year program is recommended. Students should arrange programs in specialized fields in early

conferences with Upper Division advisers. The principal fields of specialization, and elective courses recommended for them, are:

Radio-Television Journalism—Jour 6, 53, 84, 85, 111, 113, 130, 142, 162; Spch 65, 69, 170
Magazine Journalism—Jour 74; 53, 58, 66, 103, 106, 113, 115, 121; Engl 72-73-74, 113, 142, 143, 151, 174; Comp 101-102-103; Psy 118, 140

Creative Graphic Arts—Jour 58, 59, 60; 53; Art 50, 63, 64, 65, 69 (this specialization is for students interested in advertising layout or in production, typography, and make-up of periodicals and promotional matter)

Photojournalism—Jour 6, 7, 53, 66, 85, 113, 121, 130 (a minor in art including 50, 83, 84, 85 is strongly recommended)

Public Relations—Jour 78, 149; 18, 113, 115, 130, 163. Recommended Lower Division courses: Psy 1-2, Soc 1, Spch 5

Students expecting to specialize at the graduate level in advertising or mass communication research should elect during their senior years Jour 113, 115, and a course in statistics chosen in consultation with their graduate advisers.

Journalism Minor for Non-Arts College Students—For students in the College of Agriculture, Forestry, and Home Economics, the Institute of Technology, and the School of Business Administration—Jour 11, 41, 71, and 6 additional credits in Upper Division journalism courses, to be chosen in conference with the adviser. Jour 57, 78, 90 or 121, 109, 124, and 130 are recommended. Students in the School of Business Administration specializing in marketing or advertising may set up a minor including Jour 79, 161, 162, 163, 164. For students in the College of Education—Jour 11, 41, 71, 82, and 9 additional credits chosen from among Jour 57, 90 or 121, 103, 109, 120, 124, and 130. EdT 74 (see *Bulletin of the College of Education*), offered by the School of Journalism, is a required education course for students in this sequence.

Nonprofessional Minor in Journalism—A group of courses dealing primarily with the social aspects of mass communications is open to students majoring in other Arts College departments and may be used for a nonprofessional minor by undergraduates or graduates: Jour 90 or 121, 103, 106, 109, 110, 113, 115, 120, 124, 125, 126, 130, 131, 177. Arts College students interested in taking an undergraduate minor in journalism with view toward professional specialization in a fifth year of journalism work should consult a journalism adviser.

LOWER DIVISION COURSES

6f,w. Beginning Photojournalism I. Photography as a creative means of communication. Fundamentals of photography; use of news cameras; basic darkroom processes. Lectures and laboratory. (3 cr; prereq soph) Schuneman

7w,s. Beginning Photojournalism II. Picture content for visual reporting. Problems of organization, selection, and tonal values. The miniature camera as a reporting tool. Photographic projects for communications media. Light and lighting. Lectures and laboratory. (3 cr; prereq 6 and 13 or ¶13 or #) Schuneman

11f,w. Reporting for Nonmajors. (For journalism minors in the College of Agriculture, Forestry, and Home Economics, College of Education, Institute of Technology, and the School of Business Administration) Newspaper fact-gathering and newswriting; specialized reporting; fundamentals of press law. (3 cr; prereq soph, C avg, Engl C, 3A, 3B, or Comm 3 or Rhet 3 or exemption from English requirement) Kildow, Sim, Schuneman

13f,w,s. Introduction to Journalistic Writing. (For majors) Lectures and laboratory in journalistic media and audiences; fundamentals of fact-gathering and fact-writing for newspapers, periodicals, broadcasting, and advertising. (4 cr; prereq soph, C avg, completion of freshman English or exemption, type 35 words per min or OMgt 33 or 32) Charnley, Hage, Kildow, Emery, Sim, Lindsay

14w,s-15f,s. Newspaper Reporting. (For majors) Lectures and laboratory in problems of reporting, feature writing, and interpretative reporting; laws of libel, access to information, property right in news, etc. (3 cr per qtr; prereq soph, 13, C avg in journalism courses and in all work, or #, ¶Comp 27 or ¶28 and type 35 words per min) Charnley, Hage, Lindsay, Gerald

- 18f,w,s. Principles of Advertising.** Theory, principles, and functions of advertising; its role in economic, social, and marketing structure. Newspapers, magazines, and radio and television as advertising media. (3 cr; prereq soph, 13, C avg, and ¶Comp 27 or 28...13 or ¶13 for Upper Division students) Mindak, Corcoran
- 41w,s. Publications Editing.** Lectures and laboratory in basic problems of copy editing for newspapers and magazines. For journalism majors planning to specialize in advertising, and for journalism minors. (3 cr; prereq soph, 11 or 13) Kildow, Sim

UPPER DIVISION COURSES

Upper Division courses in the School of Journalism are open to Lower Division students only by special permission of the Scholastic Committee as explained at the beginning of Section II.

- 51f,s. News Editing.** Lectures and laboratory in basic copy editing problems and techniques. (3 cr; prereq 15, or B avg in 13, 14) Sim, Carter
- 53s. Picture Editing.** Criteria for picture selection. Analysis of work of Cartier-Bresson, Bourke-White, Capa, Eisenstaedt, Riis, Salomon, and others. Combining word and picture in communication; editing; layouts; editing television news film. Lectures and laboratory. (3 cr; prereq 14 or 18 or #) Schuneman
- 55w. Newspaper Editing.** Lectures and laboratory in news and picture selection and editing. Newspaper make-up. Press association teletype service. (3 cr; prereq 51 and ¶56 or #) Sim
- 56w. Design and Typography: Editorial.** Principles of design in newspaper and periodical make-up. Type display. Relation of headlines to display and text. Typography for film presentation. (3 cr; prereq journalism major, 51 and ¶55 or #) Wilson
- 57f,s. Design and Typography: Advertising.** Principles of design and layout. Preparation of layouts for print and film. Photo-type techniques. Appropriate use of type faces and color. (3 cr; prereq journalism-advertising major, or journalism minor in the College of Education, School of Business Administration, and College of Agriculture, Forestry, and Home Economics, or #) Wilson
- 58s. Newspaper and Periodical Design and Typography.** Analysis of major trends in format, make-up, and typography of newspapers and magazines. Experiments in make-up. Individual laboratory projects. (3 cr; prereq 56 and #) Wilson
- 59w. Advanced Advertising Typography and Layout.** Practice and experimentation with display typography; individual laboratory projects in retail advertising display, point of purchase display, posters, direct mail brochures, labels, etc. (3 cr; prereq 57) Wilson
- 60f,s. Graphic Arts: Processes.** Letterpress, offset lithography, and gravure printing processes; engravings and copy preparation; significant graphic arts developments. (3 cr; prereq jr) Wilson
- 66s. Advanced Photojournalism.** Visual presentation of information and ideas. Magazine photography; production of series and sequences. Principles of advertising illustration. Photojournalism markets. (3 cr; prereq 7 or #) Schuneman
- 71s. Business News and Feature Writing.** For journalism majors or minors planning to specialize in advertising. Gathering material and writing of news stories, feature articles, and other types of copy in the business-advertising field. Audiences in this field; media. (3 cr; prereq 41) Kildow, Corcoran, Schuneman
- 73f,w. Magazine Writing.** Planning and writing feature articles for general, class, and trade publications; marketing; problems of magazine editing; employee publication and industrial journal problems. (3 cr; prereq 15, or 41 and #) Charnley, Hage, Kildow
- 74w. Magazine Editing.** Planning and editing consumer and specialized magazines; problems of magazine layout, design, and make-up; book publishing procedures. Individual projects in magazine editing and advanced magazine writing. (3 cr; prereq 73, ¶56 and #) Charnley
- 78f. Public Relations Methods.** Publicity, external and internal communication, use of media; techniques and application of institutional promotion and communication, including use of company publications, institutional advertising, and trade journals. Projects and campaigns. (3 cr; prereq 51 or 56, and 73...or 41, 57, and 71) Lindsay
- 79f,w,s. Advertising Copy Writing.** Advertising appeals; techniques of writing advertising copy for newspapers, magazines, radio-tv, direct mail, outdoor, brochures; planning advertising campaigns. (3 cr; prereq 41 or 51, and 57 and 60) Wilson, Corcoran
- 82s. Supervision of School Publications.** For those who plan to become advisers of high school or college newspapers, yearbooks, magazines. Emphasis is upon editorial content, staff organi-

- zation, editing, typography, make-up, and business management of such publications. (3 cr; prereq 41 or 51) Kildow
- 84f. **Radio News and Public Affairs.** Radio as a medium of journalistic communication. The radio newsroom; radio news gathering, writing, editing, preparation. Uses of research in radio journalism. Basic preparation for television news. (3 cr; prereq 15) Lindsay
- 85w. **Television News and Public Affairs.** Television as a medium of journalistic communication. The television newsroom; television news writing and visualization. Use of news film camera; editing, scripting news film. Uses of research in television journalism. (3 cr; prereq 84) Lindsay
- 86s. **Radio and Television Script Writing.** (3 cr; prereq 51 and § for journalism majors, 13 and § for speech-radio majors; not offered 1964-66)
- 88w. **Radio and Television Station Administration.** (3 cr; prereq 111 or Δ; not offered 1964-66)
90. **Mass Communications and the News.** How the news gets to and affects the public, in print, on the air, by film. Evaluation of news gathering and presentation methods. Contemporary influences on communication media. Individual news media and news commentators. (3 cr; not open to journalism majors) Charnley, Emery
- 93f. **The Community Newspaper.** The local newspaper and its editor—their place in American life. Problems of news and editorial direction, organization, and responsibility. (3 cr; prereq 41 or 51 or ¶41 or ¶51) Sim
- 95s. **Newspaper Management.** Analysis of management problems, including advertising, circulation, and commercial printing as sources of income; records and cost systems; plant layout and inventories; operating expenses; business policies. (3 cr; prereq 41 or 51) Sim
- 101w,s. **The Reporting of Public Affairs.** Reporting court trials, city, county, state, federal, administrative, and legislative agencies; politics, business, and labor. Students attend and report trials, hearings, legislative sessions, and news conferences. (3 cr; prereq sr, 51) Hage
- 103f. **Literary Aspects of Journalism.** Survey of the literary aspects of journalism as exemplified in, and influenced by, the works of English and American writers, past and present. Lectures, discussions, and weekly papers. (3 cr; prereq §) Hage
- 106s. **Critical Writing.** Theory and practice of writing book, theater, and motion picture reviews. Analysis of work of leading critics and critical periodicals. Reviews are written weekly. (3 cr; prereq an Upper Division writing course and §) Charnley, Hage
- 109f. **History of Journalism.** Development of American newspapers and periodicals, from early beginnings in Europe to the present day; the rise of radio and television; the relation of communications developments to political, economic, and social trends in America. (3 cr) Emery
- 110w. **Topics in the History of Journalism.** Intensive study of significant individuals, newspapers, and periodicals in the history of American journalism; comparative study of present-day leading newspapers; examination of major periods of change and of developing trends. Individual projects and readings. (3 cr; prereq 109) Emery
- 111f. **Development of American Broadcasting.** Historical and economic development of radio and television in the United States; government regulation, industry self-regulation, forms of social control; issues in contemporary broadcasting; the journalist as broadcaster. (3 cr, \$120) Charnley, Lindsay
- 113f,s. **Mass Communication Theory.** Nature of the communication process; contributions of other disciplines to knowledge about this process; similarities and differences between interpersonal and mediated communication; use of research concepts and findings in determining policy; comparative roles of the printed and electronic media. (3 cr; prereq sr, 15 cr in social sciences) Nixon
- 115s. **Communications Analysis: Content, Audiences, Effects.** Analysis of the content and audiences of newspapers, magazines, radio, television, and motion pictures. Procedures for study of mass media effects. (3 cr; prereq introductory course in statistics and §...Psy 167 recommended) Jones, Carter
- 118f,w,s. **Advanced Projects in Journalism.** (1-3 cr per qtr, but course may be repeated for more than 1 qtr until a total of 6 cr is reached; prereq sr, journalism major, B avg, §) Staff
- 118H. (See 118)
- 121w. **Mass Media in a Dynamic Society.** Economic, political, and social determinants of the character and content of mass communications. Patterns of operations, their effect on content, and their relative social utility. Government and mass communications. (3 cr; prereq 15 or 18 for journalism majors, § for others) Gerald
- 122s. **Current Communications Problems.** Individual project method is used for analyses of communications problems of current importance in the light of their social, economic, and technological environment. Conducted in small seminar-like groups. (3 cr; prereq sr, 51) Gerald

122H. (See 122)

- 124f. **International Communications and Foreign Affairs.** Channels of international communication and news gathering agencies. Factors affecting flow of news throughout the world. Role of foreign correspondent. Relation of communications to foreign affairs and international understanding. (3 cr, §old 111; prereq 15 cr in social sciences, with inclusion of an Upper Division course in history or political science...course in international relations recommended) Nixon
- 125w. **Communication Systems of the Western World.** Communications in other democracies as compared with the United States and with totalitarian systems. The British Commonwealth, the Netherlands, the Scandinavian countries, Switzerland, France, and Latin America emphasized; problems of constructing a free press in Germany, Italy, and Japan following World War II; prospects for newly developing areas. (3 cr; prereq 15 cr in social sciences with an Upper Division course in international relations recommended) Nixon
- 126s. **Communications in Authoritarian Society.** Operational relationships between government and communication media in authoritarian nations. Rise of totalitarian regimes; their impact upon structure and operations of mass communication media. Case studies of communications in selected communist states and other dictatorships. (3 cr; prereq 15 cr in social sciences with an Upper Division course in international relations or comparative government recommended) Nixon
- 130f-131w. **Public Opinion and Propaganda.** Functions of the press and other communication agencies in the formation of public opinion. Studies of persuasion and attitude change. Problems in the interpretation of opinion and attitude research in the mass media field. Pressure-group activities and political and international propaganda. (3 cr per qtr; prereq 15 cr in social sciences for 130, 130 for 131) Carter
- 140f-141w. **Interpretation of Contemporary Affairs.** Analysis of major political, economic, and social developments and their interpretation in the editorial, interpretative article, and commentary. (3 cr per qtr; prereq sr, 51 and 15 cr in social sciences for 140, 140 for 141) Gerald, Emery, Nixon
- 142s. **News Interpretation for Radio and Television.** Preparation, writing, scripting of news analyses, commentaries, editorials, documentaries, interpretative material for electronic media. Emphasis on editorial investigation and content, style and techniques, audience and effects, in the presentation of such programs. (3 cr; prereq 85, 140) Lindsay
- 149w. **Public Relations Principles.** Principles of the public relations function; their application in industry, government, education, social agencies, and other institutions; pertinence of social science research and journalistic implications in the public relations process. Case studies and analyses. (3 cr; prereq sr, 78, 113 or 130, or 15 cr in social sciences and §) Emery, Lindsay
- 150s. **Institutional Public Relations.** Principles and practices of public relations in public health, social work, education, and other community institutional service fields. Use of the mass media and journalistic implications of the public relations process. (2 or 3 cr; not open to journalism majors; prereq sr, §) Emery, Lindsay
- 161f,w. **Advertising: Print Media.** Characteristics of the print media. Newspapers, their role in advertising; relations with retail advertisers, national representatives, agencies; organizations of the advertising departments. Rate structures, rate economics. Magazines, their role in advertising; types, functions, rates. Supplementary media. (3 cr; prereq 18, 57, and 79 or §...or 41, 57 and §) Mindak, Wilson
- 162f,w. **Advertising: Radio and Television Media.** Contrasts and similarities of radio and television characteristics; interaction of sponsor, agency, station, network, and station representative; program and market selection; rate structure; audience analysis; creating and measuring impact of commercials; current and future developments. (3 cr; prereq 18, 79, or §) Corcoran
- 163f,s. **Advertising: Media Strategy and Analysis.** Relation of advertising media to advertising task; media characteristics; evaluation and use of media and market measurements and data; comparison of rates and relative economy of media; mechanics of media purchasing, scheduling, and appropriations; cases and problems. (3 cr; prereq sr, 18, 161, 162 and §...or 161, 162, Mktg 77 or §) Mindak
- 164w,s. **Current Advertising Developments and Problems.** Creative, management, research, media, and technical developments in advertising. Discussion and analysis of specific problems and case studies to aid in the advertising-marketing process. Contributions of related fields of behavioral sciences and communications. (3 cr; prereq sr, 163 or §) Mindak
- 177f,s. **Contemporary Problems in Freedom of Speech and Press.** Anglo-American concept of freedom and responsibility, constitutional development in the United States, areas of present tension. The Bill of Rights and journalism today. (3 cr; prereq 15 cr in social sciences) Gerald
- 190s. **Advanced Problems in Journalistic Writing.** Investigation and analysis of problems of advanced professional accomplishment in the fields of journalistic writing. The uses of literary and journalistic forms. Development of individual effectiveness in journalistic presentation. (3 cr; prereq grad, demonstration of acceptable writing achievement and §) Charnley, Hage

FOR GRADUATE STUDENTS ONLY

- 200-201. Scope and Methods of Communications Research
 209-210. Seminar: History of Communications
 213. Seminar: Mass Communication Theory
 215-216. Seminar: Communications Analysis
 221-222. Communication Agencies as Social Institutions
 224-225. Seminar: International News Communication and Comparative Journalism
 230. Seminar: Public Opinion and Propaganda
 264. Seminar: Advertising Research
 277. Freedom of Press and Communications Law
 278-279. Government and Mass Communications
 290-291-292. Special Problems in Mass Communications

Latin

See Classics

Library School (Lib)

FACULTY—David K. Berninghausen, *director*; Nancy Freeman, Lowell Olson, Errett McDiarmid, John Parker, Raymond H. Shove, Wesley Simonton, Frederick Wezeman.

Major Advisers—Professors Berninghausen, McDiarmid; Associate Professors Shove, Simonton, Wezeman; Instructors Freeman, Olson.

The Library School is a graduate, professional school. It offers five undergraduate courses in library science as electives or as a minor for an Arts College undergraduate. Lib 50 and 62 have special general education values. Lib 153 also requires no prerequisite and is suggested.

The only terminal course of study designed to prepare students for career service in the field of librarianship is the Master's degree program offered by the Library School through the Graduate School. Admission prerequisites and requirements for the degree may be found in the *Bulletin of the Library School* and the *Bulletin of the Graduate School*.

A special 24-credit program leading to certification for school library work is also offered. Undergraduates in the College of Education may take this program as a minor.

Arts College undergraduates who wish to prepare for school librarianship should register in the College of Education, since a teacher's certificate is required in addition to library science certification courses. Postgraduates who hold teachers' certificates are also eligible for this certification program.

The Arts College offers undergraduate library science courses prerequisite to admission to the graduate program. Students planning to enter librarianship should take a 9- or 15-credit minor in library science. With the approval of a Library School faculty adviser, Arts College students may register for these prerequisite courses as electives.

UPPER DIVISION COURSES

50. **History of Libraries and Librarianship.** Social trends affecting libraries and their functions in modern society; librarianship as a profession. (3 cr) Shove
 53. **School Library Management.** Primarily for students without previous experience in a school library. (3 cr; for College of Education students only) Olson

55. **Library Administration.** Introduction to principles of library administration, organization, and management. (3 cr) Berninghausen
62. **Reference I.** General reference tools and other sources of information. Theory and practice of reference work. (3 cr) Wezeman
70. **Selection of Library Materials.** Techniques, standards for selection of books, magazines, pamphlets, phonograph records, films, etc. (3 cr) Freeman, Wezeman
74. **Library Materials in the Classroom.** (3 cr; for College of Education students only) Olson
83. **Cataloguing and Classification.** (3 cr) Simonton
131. **Public Library Extension and Development.** Larger units of service, laws, finance, promotion; the state library agency. (3 cr; prereq 55) Wezeman
140. **Introduction to Information Retrieval.** Theory, characteristics, systems, techniques, data processing, applications to libraries, other uses. (3 cr; prereq 83, #) Simonton
153. **History of Books and Printing.** The alphabet; manuscript books; the printed book from earliest times to present. (3 cr) Shove
154. **The Public Library.** Theories and principles of administration. (3 cr; prereq 55) Wezeman
155. **The College and University Library.** Educational functions of the college and university library and the administrative organization to perform these functions. (3 cr; prereq 55) McDiarmid
156. **Special Libraries.** Procedures of newspaper, insurance, medical, technical, and other special libraries. (3 cr; prereq 55) Simonton
157. **School Library Problems.** Service in large units, relationships with public libraries, planning library quarters, budgets, training for school librarianship. (3 cr; prereq 55) Olson
160. **Literature of the Social Sciences.** (3 cr; prereq 62) Shove, Olson
161. **Literature of the Humanities.** (3 cr; prereq 62) Shove
162. **Literature of the Natural Sciences.** (3 cr; prereq 62) Shove
165. **Advanced Bibliography.** National and trade bibliographies, domestic and foreign, with attention to use of dealers' catalogues in book buying. (3 cr; prereq 62) Shove
166. **Advanced Reference.** Special reference tools and government publications. (3 cr; prereq 62) Wezeman
167. **Descriptive Bibliography.** Bibliographical problems encountered in the acquisition, cataloguing, and description of antiquarian books. (3 cr; prereq 83, 165, Δ) Parker
168. **Research Methods in Librarianship.** (3 cr; prereq #) McDiarmid, Olson
171. **Reading Guidance for Children.** (3 cr; prereq 70)
172. **Reading Guidance for Adolescents.** (3 cr; prereq 70) Olson
173. **Reading Guidance for Adults.** (3 cr; prereq 70) Wezeman
175. **Publishers and Publishing.** The book trade, including methods of distribution. (3 cr) Shove
176. **Communication Media and the Library.** (3 cr) Berninghausen
177. **History of Children's Literature.** (3 cr)
181. **Advanced Subject Cataloguing.** History, theory, and practice of classification and subject headings; the Library of Congress classification. (3 cr; prereq 83) Simonton
182. **Advanced Descriptive Cataloguing.** Intensive study of rules of entry, including foreign cataloguing codes. The cataloguing and classification of nonbook materials, such as serials, maps, and music. Administrative problems in cataloguing. (3 cr; prereq 83) Simonton
185. **Special Problems.** Individual study on library problems for advanced students in library science. (1-3 cr; prereq approval of director of Library School) Staff

Linguistics and Comparative Philology

Major Sequence in Arts College—Clas 106-107 or Anth 180-181, and at least 21 additional credits in the following courses chosen after consultation with adviser. All candidates are expected to have a fair knowledge of Latin.

General Courses

For details, see listing under each department involved

- Clas 56f. **Elementary Linguistics.** (3 cr; prereq 1 yr foreign language study on college level or equiv or §) Schmalstieg
- Engl 60s. **Introduction to the English Language.** (3 cr; no prereq) Allen
- Spch 67. **Phonetics.** (3 cr) Wendahl
- Clas 106w-107s. **Introduction to the Study of Language.** (3 cr per qtr; prereq 56 or §) Schmalstieg
- Ling 151f, 152w, 153s. **Readings Course.** (1-3 cr per qtr; for majors only) Staff
- Anth 180-181.† **Descriptive Linguistics.** (3 cr; prereq §; 3 lect and 2 lab hrs per wk) Spencer
- Anth 185. **Language and Culture.** (3 cr; prereq 2A or 100 or Δ) Spencer
- Anth 285. **Anthropological Linguistics.** (§) Spencer

Classics

For details, see Classics departmental listing

- Grk 73. **Hellenistic Greek.** (3 cr; prereq Δ; offered 1964-65) D Swanson
- Grk 101. **Structure of Greek.** (3 cr; prereq 2 yrs Greek and Clas 56; offered 1964-65) D Swanson
- Skt 128-129-130. **Readings in Sanskrit.** (3 cr per qtr; offered 1964-65) D Swanson
- Lat 133. **Vulgar Latin.** (3 cr; open to advanced students of Latin or a Romance language with §; offered 1964-65) D Swanson

English (Engl)

For details, see English departmental listing

- 60s. **Introduction to the English Language.** (3 cr)
- 100f. **Old English.** (4 cr; prereq 5 cr in literature in English Department, exclusive of classics and A-B-C) Pederson
- 102w. **Readings in Old English Prose and Verse.** (3 cr; prereq 100)
- 103s. **Beowulf.** (3 cr; prereq 100)
- 165f,w. **Introduction to Modern English.** (3 cr; prereq 5 cr in literature in English Department, exclusive of classics and A-B-C) Allen, Pederson
- 166s. **Historical Backgrounds of Modern English.** (3 cr; prereq 5 cr in literature in English Department, exclusive of classics and A-B-C; offered when feasible) Allen, Pederson
- 174s. **American English.** (3 cr; prereq 6 cr in English literature, including language above A-B-C, or §) Allen

FOR GRADUATE STUDENTS ONLY

204. **History of the English Language**
205. **Structure of Modern English**
206. **Studies in the English Language**

Germanic Languages (Ger)

For details, see German departmental listing

60. **Analysis of Modern German Structure for Teachers.** (2 cr) C Wood
- 107-108-109.† **Structure of Modern German.** The linguistic approach to the study of the structure of present-day German. (3 cr per qtr; offered 1964-65) C Wood

- 110-111. Middle High German Language. (3 cr per qtr) Steinmetz
112s. History of the German Language. (3 cr) C Wood
113f. Gothic. (3 cr) C Wood
114-115. Methods of Comparative Germanic Linguistics. (3 cr per qtr) C Wood
119-120-121. Old High German; Old Saxon; The Hildebrandslied. (3 cr per qtr) C Wood
157-158-159. Old Norse Language and Literature. (3 cr per qtr) C Wood

Romance Languages

For details, see Romance Languages departmental listing

- Fren 107-108-109. Structure of French. (3 cr per qtr) Mantini
Span 107-108-109. Structure of Modern Spanish. (3 cr per qtr) Narvaez
Rom 114s. Introduction to Romance Philology. (3 cr) Williams

FOR GRADUATE STUDENTS ONLY

- Fren 207-208-209. Old Provençal
Fren 241-242-243. Old French Philology
Fren 244-245-246. Readings in Old French Literature
Span 241-242-243. Old Spanish Philology
Span 244-245-246. Readings in Old Spanish

Slavic and Oriental Languages

For details, see Slavic and Oriental Languages departmental listing

Arabic (Arab)

- 51-52-53. Arabic Dialect Analysis. (3 cr per qtr) Irving
105. Structure of Arabic. (2-3 cr) Irving

Lithuanian (Lith)

- 105-106-107. Structure and History of Lithuanian. (3 cr per qtr) Schmalstieg

Russian (Russ)

- 125-126-127. Structure and History of the Russian Language. (3 cr per qtr) Schmalstieg

Slavic (Slav)

- 113-114-115. Old Church Slavic (Old Bulgarian). (3 cr per qtr) Schmalstieg
161-162-163. Comparative Balto-Slavic Grammar. (2 cr per qtr) Schmalstieg

Indian (Indn)

105. Structure of Hindi. (3 cr) Staneslow

Marriage

See Family Studies

Mathematics (Math)

(Institute of Technology)

FACULTY—James B. Serrin, *chairman*; Bernard R. Gelbaum and Hugh L. Turriffin, *associate chairmen*; Alfred Aepli, Donald G. Aronson, Melvin Berger, George U. Brauer, Robert Brooks, Robert H. Cameron, Elizabeth Carlson, Erwin Engeler, Paul C. Fife, E. Gebhard Fuhrken, Harry Furstenberg, Steven A. Gál, Jesus Gil de Lamadrid, Leon W. Green, Heinrich Guggenheimer, Laurence R. Harper, Jr., William A. Harris, Jr., Jack Indritz, Benton N. Jamison, Howard B. Jenkins, James T. Joichi, Bjarni Jonsson, Richard K. Juberg, Donald W. Kahn, Gerhard K. Kalisch, Gopinath Kallianpur, Fulton Koehler, Bernard W. Lindgren, Walter Littman, Warren S. Loud, Edward S. Loye, Albert Marden, Lawrence Markus, Charles A. McCarthy, Norman G. Meyers, Richard Miller, Chester L. Miracle, William D. Munro, Johannes C. Nitsche, Steven Orey, William F. Pohl, Frank Polansky, Marian B. Pour-El, William E. Pruitt, Edgar Reich, J. Ian Richards, Paul C. Rosenbloom, George R. Sell, Yasutaka Sibuya, Robert C. Sine, John M. Slye, Marvin L. Stein, Warren B. Stenberg, David A. Storvick, James E. Thompson, Hans F. Weinberger.

Major Advisers in Arts College—Professors Cameron, Carlson, Gelbaum, Guggenheimer, Jonsson, Kalisch, Loud, Orey; Associate Professors Engeler, Gil de Lamadrid, Miracle, Slye, Storvick; Assistant Professors Harper, Jamison, Joichi.

Major Sequence in Arts College—Math 55, 106, 107-108 or 125A-125B or 130A-130B, and at least 21 additional credits in Upper Division mathematics, including at least one two-course sequence outside analysis in courses numbered 100 and above. (Prerequisites are Math 42, 43, 44)

Students majoring in mathematics are urged to study at least one of these languages: French, German, Russian. Students who plan to pursue graduate study in mathematics should refer to the section on Language Requirements in the *Bulletin of the Graduate School*.

Major Advisers in College of Education—Professors Carlson, Guggenheimer, Kalisch, Loud; Associate Professor Storvick.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation*: Entrance credit in solid geometry or equivalent; Math 42, 43, 44, 60 and 15 additional Upper Division credits. For specific requirements see *Bulletin of the College of Education*. *Minor recommendation*: Entrance credit in solid geometry or its equivalent; Math 42, 43, 44, 60.

Math 20 and Phil 2 are recommended as electives, to be taken preferably in the freshman or sophomore year, in connection with either a major or minor recommendation.

Students interested in a major in the College of Education should consider the opportunity of obtaining simultaneously both the B.A. degree from the Arts College and the B.S. in Ed. degree from the College of Education. See page 183.

Prospective teachers who wish a combination program in mathematics and physical science should see the *Bulletin of the College of Education*.

Placement of Students—Every freshman entering the Arts College should have taken the ACT test. Results determine whether a student can register for Math T or 10 or 15, or must first take remedial work in algebra.

Many students entering from high school have taken work at the level of College Algebra. A student who feels that he knows the material of Math 15 (College Algebra) is encouraged to take a proficiency examination in Math 15 (see page 18 for the procedure). If he is successful, he may take Math 42 on entrance. Students who have had work in analytic geometry and calculus in high school should consult the departmental office with regard to their proper registration in mathematics.

Honors Courses—There will be offered each quarter four 2-credit companion courses to Math 15, 42, 43, 44, designated as Math 15H, 42H, 43H, and 44H. These courses are designed for students with a special interest in mathematics, and will

cover extra material not in the regular courses. A student completing the four-course honors sequence will have covered materials from the sequence Math 125A-B. A student who enters the University and begins his regular mathematics program with Math 42 is still eligible to take Math 15H.

Graduation with Honors—The Department of Mathematics has a departmental program for honors in mathematics. Application for admission to the program may be made by any well-qualified Arts College major in mathematics, preferably early in his junior year. More detailed information is available at the departmental office, 400 Ford Hall.

General Education—For the student whose major interests are nonmathematical but who wishes some mathematics for purposes of general education, this department particularly recommends Math 15 and 42. The student with more adequate background might be interested in such courses as Math 60, 109, and 127-128-129.

Mathematics Courses in Institute of Technology—Certain mathematics courses are specially set up for students in the Institute of Technology. These courses are listed below without descriptions. For description see the *Bulletin of the Institute of Technology*. Some revisions in the offering will occur in the future, but at present students should proceed as follows: Students who begin the sequence 21, 22, 23, 26B, 27 should remain with the sequence at least through 26B. Students who begin the sequence 15, 42, 43, 44, 55, 106 should remain with the sequence at least through 55. Students who have completed 26B or 55 can be considered to have completed either one. Students who have completed 106 or 27 can be considered to have completed either one.

LOWER DIVISION COURSES

- Zf, w, s. Preparatory Mathematics.** Designed to supplement the background in algebra for those students whose background is insufficient. Covers most of the material of the high school elementary and higher algebra courses, with emphasis on the latter. (5 hrs per wk, no cr, no prereq, special fee)
- Tf, w, s. Trigonometry.** Analytic trigonometry emphasizing identities, equations, and properties of the functions; right and oblique triangles without logarithmic computation. (3 cr [open for cr if taken before 43, even to students with high school trigonometry]; prereq plane geometry and high school higher algebra and qualifying score on ACT mathematics test, ¶10 allowed)
- 1f-2w-3s. Mathematics.** Some important aspects: genesis of mathematics in applied problems and in the imagination; currently important areas of research and application; aesthetic, cultural, humanistic qualities. Emphasizes illustrative material. (3 cr per qtr, \$40, \$42 or above for 1...\$43 or above for 2-3; for students not planning to register for courses in the usual mathematics curriculum; prereq high school geometry and high school higher algebra or ‡; will not satisfy prereq for any other mathematics course; 3 lect per wk, 2 optional rec per wk [stressing individual work on problems])
- 5Af, w, s. Foundations of Arithmetic.** Includes a logical and axiomatic basis of the rules for arithmetical operations with integers, rational numbers, and real irrational numbers as necessary background for teaching arithmetic in elementary school, with some attention to the history of the subject and its role in our culture and civilization. (3 cr; prereq 1 yr elementary algebra and 1 yr high school geometry or equiv, and enrollment as elementary education student, or Δ; not available for Arts College credit)
- 8. Solid Geometry.** (See *Bulletin of Institute of Technology*)
- 10f, w, s. College Algebra and Analytic Geometry.** For students requiring only some analytic geometry and college algebra without trigonometry, or whose background does not include logarithms. Students who plan to take several quarters of mathematics should take Math 15 if they qualify. Functions and graphs, quadratic equations, progressions, inequalities, complex numbers, theory of equations, permutations and combinations, probability, systems of equations, determinants, graphing of linear and quadratic equations, conics and standard position, logarithms. (5 cr, \$15; prereq high school higher algebra and qualifying score on ACT mathematics test)
- 11. Intermediate Algebra.** (See *Bulletin of Evening and Special Classes*)

12. **College Algebra and Trigonometry.** (See *Bulletin of Institute of Technology*)
14. **Laboratory.** History of mathematics, foundations and mathematical logic, simple computing devices, library facilities, employment opportunities. (1 cr; prereq 2nd yr; 2 hrs per wk)
- 15f,w,s. **College Algebra.** A standard college algebra course for students planning to take the sequence in analytic geometry and calculus. Functions and graphs, quadratic equations in one and two variables, progressions, complex numbers, inequalities, theory of equations, permutations and combinations, binomial theorem, probability, mathematical induction, determinants. (5 cr, §10; prereq high school higher algebra and T or high school trigonometry and qualifying score on ACT mathematics test)
- 20w,s. **Mathematics of Investment.** Simple interest and simple discount, compound interest, annuities with simple data, extinction of debts by periodic installments, bonds, depreciation, perpetuities, capitalization, general annuity formulas. (5 cr; prereq 10 or 15)
- 21-22-23. **Calculus and Analytic Geometry.** (See *Bulletin of Institute of Technology*)
- 24A. **Calculus II: Analytic Geometry and Calculus.** (See *Bulletin of Institute of Technology*)
- 25A. **Calculus III: Analytic Geometry and Calculus.** (See *Bulletin of Institute of Technology*)
- 25B. **Calculus III: Analytic Geometry and Calculus.** (See *Bulletin of Institute of Technology*)
- 26A. **Calculus IV: Differential Equations and Calculus.** (See *Bulletin of Institute of Technology*)
- 26B. **Calculus IV: Series and Calculus of Functions of Several Variables.** (See *Bulletin of Institute of Technology*)
27. **Differential Equations and Elements of Matrix Theory.** (See *Bulletin of Institute of Technology*)
- 40f,w,s. **Introduction to Calculus.** For those wishing a brief introduction to calculus, including some integration. Students planning further work should take Math 42. Functions and limits, differentiation of algebraic, trigonometric, exponential and logarithmic functions with applications to velocity and acceleration, maxima and minima, approximations by differentials. Integration with standard forms with applications to area, volume, simple differential equations. (5 cr, §42; prereq 15 or 10 and T or high school trigonometry)
- 42f,w,s-43f,w,s-44f,w,s. **Analytic Geometry and Calculus I-II-III.** A full-year course in the elements of analytic geometry and calculus. Plane analytic geometry including straight line, conic sections, parametric representations, polar co-ordinates, translation and rotation of axes. Introduction to solid analytic geometry, functions and limits, differentiation of algebraic, trigonometric, inverse trigonometric, exponential and logarithmic functions with applications to velocity and acceleration, rates, maxima and minima, curve tracing, indeterminate forms, approximations by differentials. Introduction to partial differentiation. Integration by standard forms with applications to area, volume, work, moments. Improper integrals. Infinite series. Taylor's theorem. Multiple integrals in two and three dimensions. Course 43 is available for Upper Division credit to all except mathematics majors. Course 44 is available for Upper Division credit to all except mathematics and physics majors. (5 cr per qtr, §40; prereq 15 or 10 and either T or high school trigonometry; may enter 43 from 40 if grade in 40 is A or B)
- 15Hf,w,s-42Hf,w,s-43Hf,w,s-44Hf,w,s. **Honors Courses.** These courses are designed for students with a special interest in mathematics, and will cover material not in the regular courses. (2 cr per qtr; entering students who begin their college mathematics program with 42 or beyond are eligible to enter 15H; prereq 15 or ¶15 for 15H...42 or ¶42, 15H or § for 42H...43 or ¶43, 42H for 43H...44 or ¶44, 43H for 44H)

UPPER DIVISION COURSES

Math 55, 60, 62, 107, 108 are open to Lower Division students who have an average grade of at least C in the prerequisite courses. Other Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 55f,w,s. **Intermediate Calculus.** Advanced topics in partial differentiation, total differentials, directional derivatives, maxima and minima of functions of several variables, applications of multiple integrals, Taylor's theorem for functions of several variables, elements of differential equations. (3 cr; prereq 44)
- 60f,s. **Synthetic Metric Geometry.** Euclidean geometry including ruler and compass constructions and theorems on the triangle and circle not studied in a high school course in plane geometry. (3 cr; prereq 13 or 42)

- 62f.s. Introduction to the Theory of Equations.** Complex numbers, solution of algebraic equations, properties of polynomials; isolation of the real zeros of a real polynomial; determinants, matrices, and linear equations. (3 cr; prereq 24, 43, or ¶43)
- 63. Linear Algebra.** Vectors, system of linear equations, matrices, determinants. Groups of transformations, conics, normal forms of matrices. (3 cr, §149; prereq 43)
- 65. Introduction to Programming Modern Digital Computers.** Number systems. Computer organization. Elementary coding techniques. Scaling. Introduction to problem-oriented language. Program organization. Informal laboratory. (3 cr, §164-165-166; prereq 44 or 25A or 26B or ‡)
- 70f, 71w, 72s. History of Mathematics.** Development of main branches of contemporary mathematics within framework of a history of ideas as well as of techniques. Impact of thought of previous generations on modern developments. Term paper each quarter. 70: Greek Mathematics. 71: Creation of Calculus. 72: Topics in History of Mathematics. (2 cr per qtr; for the student with a general knowledge of mathematics and some curiosity about the historical development of mankind; prereq for any qtr 43 or 24A)
- 80A. Foundations of Arithmetic.** Sets, relations, order. Real number system. Continuous functions. (3 cr; prereq 44)
- 80B. Foundations of Algebra.** Groups, rings, fields. Applications to number theory and polynomials. (3 cr; prereq 44)
- 80C. Foundations of Geometry.** Axiomatics. Non-Euclidean geometry. Theorems of Desargues and Pappus. (3 cr; prereq 60)
- 99. Mathematical Problem Seminar.** Problems ranging from elementary algebra and geometry through undergraduate mathematics will be assigned and discussed weekly. (3 cr; prereq 44 or 25A or 26B)
- 99A. Mathematical Problem Seminar.** (Continuation of 99) For special students interested in developing insight and originality in mathematics through problem solving. (1-3 cr; prereq 99)
- 100A-B-C. Foundations of Arithmetic, Algebra, and Geometry.** Development of the real number system from the natural numbers. Special attention is given to related algebraic structures and interrelations with set theory. Classical number theory is treated to some extent. Synthetic and analytic projective geometry, role of the theorems of Desargues and Pappus. Treatment of affine, Euclidean and non-Euclidean geometrics according to the Erlanger program, axiomatics. (3 cr per qtr; prereq 44 or 25A or 25B or ‡)
- 102-103. Advanced Analytical Geometry.** Conic sections, diameters, poles and polars, polar reciprocity, inversion, asymptotes, singular points, line co-ordinates and duality, homogeneous co-ordinates. (3 cr; prereq 44)
- 104. Variational Problems.** Euler-Lagrange equations, isoperimetric problems, geodesics, Fermat's and Hamilton's principles, vibration and stresses in elastic bodies, methods of Rayleigh-Ritz, Galerkin, Kantorovich, etc., eigenvalues and eigenfunctions. (3 cr; prereq 153 or 148 or 150 or ‡)
- 106f,w,s. Differential Equations.** Problem course, methods for solving ordinary differential equations of various types with the necessary theory for developing these methods. (3 cr; prereq 55)
- 107f,w-108w,s. Advanced Calculus.** Introduction to analytic theory of limits and continuity, uniform convergence; partial derivatives; differentials; Taylor's theorem for several variables, relative and absolute extrema, Lagrange multipliers; transformations for 2-space and 3-space; basic theory of Riemann single and multiple integrals; line and surface integrals; introduction to vector analysis; theorems of Green and Stokes, divergence theorem; improper integrals; beta and gamma functions. (3 cr per qtr; prereq 26A or 26B or 55)
- 109s. Theory of Numbers.** Elementary properties of integers; prime and composite numbers; Euclid's algorithm; congruences; the theorems of Fermat and Wilson; primitive roots; indices; Diophantine equations. (3 cr; prereq 25A or 25B or 44)
- 110f,w,s. Tutorial Course in Advanced Mathematics.** Qualified students whose needs are not met by courses offered may make special arrangements for obtaining the content of other graduate courses regularly offered by the department. (Cr ar; prereq 25A or 25B or 44)
- 111Aw-Bs. The Development of the Number System.** Systematic construction of the real number system by extension from the natural numbers via rational numbers to irrational numbers; negative numbers; properties of the system; operations with numbers and laws governing the operations. (3 cr per qtr; prereq 25A or 25B or 44)
- 112f. Elementary Set Theory.** Basic properties of operations on sets, cardinal numbers, simply ordered sets, well-ordered sets, ordinal numbers, axiom of choice, axiomatics. (3 cr; prereq 25A or 25B or 44)

- 112Af-Bw-Cs. Mathematical Logic.** Propositional and predicate calculi, models for systems of logic, recursive functions, decision and completeness problems. (3 cr per qtr; prereq 26A or 26B or 55 or Phil 155 or #)
- 115Af-Bw-Cs. Differential Geometry.** Curves in the plane and in space; Frenet formulas, foundations of calculus of variations. Theory of surfaces; fundamental forms; curves on surfaces. Surfaces of constant curvature, non-Euclidean geometry and trigonometry. Minimal surfaces. Deformations; introduction to the theory of continuous transformation groups. Differential geometry of n -dimensions; parallelism, affine connection, curvature. (3 cr per qtr; prereq 26A or 26B or 55 and 131A or ¶131A)
- 116Af-Bw. Modern Geometry.** Geometric transformations; similarities, affinities, collineation, inversion. The notion of a transformation group. Projective geometry as a study of the invariants of the general linear group (Erlanger Program). Problems in geometry of transformation groups, mathematical analysis of the space problem. (3 cr per qtr; prereq 131A or ¶131A for 116B)
- 117Af, Bw, Cs. Geometry.** Selected chapters of geometry, such as convex bodies, projective geometry, geometry and imagination, elementary algebraic geometry, geometry of transformation groups, axiomatic geometry, geometrical constructions. (3 cr per qtr; prereq for each qtr 25A or 25B or 44)
- 120. Group Representations.** Elementary theory of finite groups and of infinite abelian groups with some application to permutation and crystallographic groups; representation by matrices, characters. (3 cr; prereq 131A; offered when feasible)
- 125. Theory of Geometrical Constructions.** Constructions with and without classical restrictions to rulers and compasses; famous geometrical problems of antiquity, with ancient and modern solutions; constructions by graded rulers, parallel rulers, squares, compasses alone, etc. (3 cr; prereq 13A or 42)
- 125Aw-Bs. Critical Reasoning in Mathematical Analysis.** Notions of limit, sequence, series, function, derivative and integral. Gives more mature understanding of these concepts. Technique of developing accurate proofs; intuition and logic in connection with these techniques. (3 cr per qtr; prereq 25A or 25B or 44)
- 127-128-129. Applied Mathematics for Social and Biological Sciences.** Mathematical tools and concepts other than statistics useful in the behavioral sciences. Examples and problems taken from the fields concerned. Topics include matrices, functions of several variables, probability, difference equations, learning models, two-person games. (3 cr per qtr; not acceptable for mathematics majors (all degrees) as part of their mathematics programs; prereq 26A or 26B or 55)
- 130Af-Bw-Cs. Introduction to Analysis.** Theory of real numbers; elements of point set theory; limits; continuity; infinite sequences and series; integration and differentiation; vector analysis. (3 cr per qtr; principally designed for students planning to take graduate work with a major in mathematics, as preparation for graduate courses in analysis; prereq 26A or 26B or 55)
- 131Af-Bw-Cs. Linear Algebra and Group Theory.** Finite dimensional vector spaces; linear transformations and matrices over the real or complex fields; linear equations; determinants; characteristic values; canonical forms; bilinear and quadratic forms; applications; introduction to abstract concepts of modern algebra; more detailed study of finite groups, including Jordan-Hölder theorem and basis theorem for Abelian groups. (3 cr per qtr, §149; prereq 25A or 25B or 44)
- Stat 131-132-133. Theory of Statistics.** 131: Probability models, univariate and bivariate distributions, independence, basic limit theorems. 132-133: Statistical decision theory, sampling, estimation, testing hypotheses, parametric and nonparametric procedures for one-sample and two-sample problems, regression, analysis of variance. (3 cr per qtr; prereq ¶intermediate calculus for 131, ¶advanced calculus for 132)
- 133A-134A. Mathematical Methods in Operations Analysis.** Linear programming, simplex technique, network flows, finite games, birth-death processes; applications to allocation, scheduling, transportation, waiting lines, inventory, reliability. (3 cr per qtr; prereq Stat 90 or 131 or #)
- 133B-134B. Probability with Technological Applications.** Spectral analysis of stationary processes, linear and nonlinear transformations, prediction and smoothing, recurrent events, random walk and diffusion, Markov chains, Poisson processes. (3 cr per qtr; prereq Stat 131 and #)
- 136. Solid Analytic Geometry.** Algebraic treatment of planes and lines; direction cosines; systems of planes. Cylinders; surfaces of revolution. Quadratic surfaces; tangent planes, ruled surfaces. Co-ordinate transformations, invariants. General equation of the second degree. (3 cr; prereq 24A or 43 or ¶24A or ¶43)
- 140. Projective Geometry.** Geometric properties invariant under projective transformations; theorems of Desargues, Pascal, and Brianchon, and applications. Methods used in some quarters are mainly synthetic; in other quarters they are mainly analytic. (3 cr; prereq 25A or 25B or 44)

- 144-145-146. **Fourier Series and Orthogonal Functions.** General theory of orthonormal functions developed and applied to Fourier, Legendre, Bessel, Hermite, and other series. Convergence and summability theorems are provided, and Fourier integral is considered. (3 cr per qtr; prereq 25A or 25B or 44)
147. **Calculus V: Vector Analysis.** Scalar and vector products, derivatives, geometry of space curves, del operator, line and surface integrals, divergence and Stokes's theorem, transformation of co-ordinates, dyadics, applications. (3 cr; prereq 26A or 27 or 55)
148. **Differential Equations.** Linear differential and difference equations with constant coefficients, isoclines, phase plane, reduction in order, Picard's method, uniform convergence, series solutions, Bessel functions, Legendre polynomials, introduction to boundary value problems. (3 cr, §150; prereq 26A or 27 or 106)
149. **Determinants and Matrices.** Determinants, matrices, linear equations, vector spaces, quadratic and bilinear forms, characteristic roots, applications to systems of ordinary differential equations. (3 cr, §131A; prereq 25A or 26B or 44)
150. **Ordinary Differential Equations.** Linear equations of second order, successive approximations. Existence theorems, systems of ordinary differential equations. Numerical integration and solution by series. (3 cr, §148; prereq 26A or 27 or 106)
151. **Calculus VI: Advanced Calculus.** Limits, properties of continuous functions of one and several variables, partial differentiation, implicit functions, maxima and minima, Taylor's theorem, transformations and mappings, integrals containing a parameter or variable limits, Stieltjes integral. (3 cr; prereq 25A or 26B or 55)
153. **Calculus VII: Advanced Calculus.** Infinite series, computation with series, series with variable terms, uniform convergence, power series. Improper integrals. Fourier series and orthogonal functions. Fourier integrals. Special functions. (3 cr; prereq 108 or 151)
- 155-156. **Tensor Analysis with Applications.** (3 cr per qtr; prereq 147, 149...or 131A, 147...or #)
- 157-158-159. **Methods of Applied Mathematics.** Integrated study of analytic tools used in applications of mathematics; emphasis on technique. Real and complex variables, matrices, ordinary and partial differential equations, calculus of variations, asymptotic expansions, etc. (3 cr per qtr; prereq 108 or 151 or #)
- 161-162-163. **Analytical Dynamics.** 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, extremal properties of eigenvalues. Hamilton's equations, transformation theory, separable systems. (3 cr per qtr; prereq 147, 149...or 131A, 147...or #)
- 164-165-166. **Theory and Programming of Modern Digital Computers.** Number systems. Analysis of arithmetic algorithms. Logical organization. Storage, control, and input-output units. Basic and advanced machine language and compiler programming. Libraries, advanced assembly techniques, interpretive systems, compilers. Application to mathematical and physical problems. Informal laboratory. (3 cr per qtr, §65 or §165A; prereq 26A or 27 or 55 or #)
- 168A. **Elementary Complex Variables.** (3 cr, §174; prereq 151, 153 or 147, 148, 149 or 108 or #)
- 168B. **Applications of Complex Variables.** Conformal mapping. Poisson integral, potential flow, applications to electrostatics, Schwarz-Christoffel transformations, reflection principle, roots of polynomials, Nyquist and Hurwitz criteria, other applications. (3 cr; prereq 174 or #)
169. **Mathematical Theory of Fluid Flow.** The general equations of fluid mechanics. Concepts from thermodynamics. The classical constitutive equations. Specialization to various subfields of fluid mechanics, including hydrostatics, barotropic perfect fluids, gas dynamics, and viscous flow theory. Examples of exact solutions. (3 cr; prereq 147 and 174, or #)
- 173-174-175. **Elementary Partial Differential Equations.** Partial differential equations of theoretical physics, one-dimensional wave equation, characteristics, classification of second order equations, heat and Laplace equations, uniqueness, maximum principle, orthogonal systems, Fourier series, separation of variables. **Elementary Theory of Complex 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. **Integral Transforms:** Fourier and Laplace transforms and their inversion, method of residues, applications to ordinary and partial differential equations, applications to the heat, wave, and Laplace equations. (3 cr per qtr; prereq 26A or 27 or 55 or #)
- 178A-B-C. **Introduction to Probability.** Largely based on W. Feller, *An Introduction to Probability Theory and Its Applications*, with emphasis on logical development and varied applications. Random walks, Markov chains, and discrete stochastic processes. (3 cr per qtr; prereq 108 or 151 or Stat 133 or #)
- 181-182-183. **Selected Topics in the Theory of Numbers.** (3 cr per qtr; prereq 153 or #)

- 181A-B. **Topology of the Cartesian Plane.** Limit points, coverings, compactness, connectedness, arcs, simple closed curves, mappings, Peano continua, Jordan curve theorem. (3 cr per qtr; prereq 26A or 26B or 55)
184. **Elementary Numerical Analysis in Engineering.** 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. (3 cr; prereq 26A or 27 or 106)
- 185-186. **Numerical Analysis in Engineering.** 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. Programming of computers. (3 cr per qtr; prereq 184 or #)
187. **Non-Euclidean Geometry.** 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. (3 cr; prereq 25A or 25B or 44)
- 190A-B-C. **General and Algebraic Topology.** General topological and metric spaces. Function spaces. Fundamental group and covering spaces. Singular and simplicial homology theory. Betti and torsion groups. Fixed point theorems and applications to analysis. Classification of surfaces. (3 cr per qtr; prereq 131A or ¶131A)
192. **Theory of Approximation in Numerical Analysis.** Orthogonal functions, Chebyshev approximations, rational approximations, approximations in several variables, use of approximation in computing. (3 cr; prereq 174, 185, or #)
- 193A. **Axiomatic Geometry.** Axiomatic presentations of Euclidean and non-Euclidean geometries. Vector spaces and metric spaces. (3 cr; prereq 153 or #)
- 193B. **Elementary Projective Geometry.** Projective space as a global manifold. Homogeneous co-ordinates and classical projective spaces. Lattice description of projective space. Theorems of Desargue, Pappus, and Pascal. Quadratic surfaces. (3 cr; prereq 153 or #)
- 193C. **Elementary Differential Geometry.** Curves and surfaces in Euclidean 3-space. Frenet-Serret formulas for a curve. First and second fundamental forms for a surface, Gauss curvature. Meusnier, Euler, Dupin theorems. (3 cr; prereq 153 or #)
- 196-197-198. **Special Functions in Mathematical Analysis.** Asymptotic expansions. Gamma and beta functions. Hypergeometric functions as solutions of differential equations. Bessel functions using Sommerfeld's contour integrals. Legendre functions. (3 cr per qtr; prereq 174 or #)
- 199A, B, C. **Problem Course.** Develops problem-solving techniques in many areas of mathematics. Topics range from elementary to advanced levels, adapted to students of varied backgrounds. (3 cr per qtr; prereq #)

FOR GRADUATE STUDENTS ONLY

Note—There has been a complete renumbering of 200-level courses in mathematics. Interested students are referred to the latest *Bulletin of the Graduate School*. Some of the courses listed in the *Bulletin of the Graduate School* are open to properly qualified juniors and seniors. For further information consult the associate chairmen of the School of Mathematics.

Microbiology (MicB)

(College of Medical Sciences)

Chairman—John Spizizen

Major Advisers in Arts College—Drs. Bernlohr, Bradley, Brand, Church, Dworkin, Rogers, Schmidt, Verna.

Major Sequence in Arts College—MicB 53, 116, 121, and 16 additional Upper Division credits in microbiology or approved related subjects.

Prerequisites: Math 10 and 40; 12 credits of college physics (these subjects may be taken concurrently with microbiology courses); 10 credits in biological science; 15 credits in inorganic chemistry and analytical chemistry, and 8 credits in organic chemistry; a foreign language is strongly recommended.

Modification of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

Note—MicB 1, Elementary Microbiology (General Extension Division, winter qtr), is open to students of occupational therapy and dental hygiene who obtain permission from the Department of Microbiology.

UPPER DIVISION COURSES

MicB 53 is open to Lower Division students who have a grade of at least C in the prerequisite courses. Other Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 53w,s.** General Microbiology.** Lectures, demonstrations, and laboratory instruction in the morphology, physiology, taxonomy, and ecology of bacteria. The practical applications of fundamental principles are emphasized. (5 cr; prereq soph with C avg in prereq courses, or jr, 10 cr in chemistry and 5 cr in biological sciences or ‡) Schmidt, Spizizen, Church
- 102s.** Medical Microbiology.** Pathogenic bacteria, fungi and viruses, especially in their relationship to disease; principles of infection, pathogenesis and immunity; microbiological techniques for laboratory diagnosis and antibiotic determination. (4 cr; for other than medical students; prereq 116) Brand
- 103s. Soil Microbiology.** Methods for enumeration and study of microflora and microfauna. Biochemical activities of soil population. (4 cr; prereq 53, 8 cr in organic chemistry and ‡) Schmidt
- 110w. Microbial Genetics.** Genetic mechanisms in the bacteria, bacteriophages, fungi, protozoa, and algae. Mutagenesis; selection; adaptation; cytoplasmic inheritance; patterns of genic recombination; fine structure of genetic material. (3 cr; prereq 53 or ‡; offered 1964-65 and and alt yrs) Bradley
- 111s. Experimental Microbiology.** An advanced laboratory study in comparative morphology, taxonomy, and physiology of bacteria. For students majoring in microbiology and others interested chiefly in the biological and chemical aspects of microbes. Stresses enrichment, isolation, identification, cultivation, structure, and function of microorganisms. (5 cr; prereq 53, 121 and ‡) Church
- 112w. General Mycology.** Physiology; genetics; development; ecology; evolution; taxonomy; economic importance of the yeasts, molds, actinomycetes, and other fungi. (3 cr; prereq 53 or ‡; offered 1965-66 and alt yrs) Bradley
- 116w. Immunology.** Host-parasite interactions; 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; homotransplantation and tumor immunity; mechanisms of natural and acquired immunity. (3 cr; prereq 53) Watson
- 116Aw. Immunology Laboratory.** (2 cr; prereq ¶116) Watson
- 121f. Physiology of Bacteria.** Chemical and physical structure; staining, growth; influence of environment on growth; nutrition; enzymes; metabolism. (3 cr; required of all grad students in microbiology and open to others by ‡; prereq 53 [minimal grade of C] and 8 cr in organic chemistry or biochemistry) Rogers
- 122. Physiology of Bacteria Laboratory.** Techniques employed in the study of bacterial physiology and metabolism. (3 cr; required of all grad students in microbiology and open to others by ‡; prereq 121; offered 1st term Summer Session only) Bernlohr, Rogers
- 124f. Principles of Virology and Animal Cell Culture.** Lectures on biology of animal cell cultures; nature of viruses and rickettsia; etiology, epidemiology, and laboratory diagnosis of viral and rickettsial infections. (3 cr; prereq 102 or 105 and 116) Verna
- 152f,w,s. Special Problems.** (Cr ar; prereq ‡) Staff
- 153f.** Biology of Microorganisms.** Lectures, demonstrations, and laboratory exercises in taxonomy, anatomy, physiology, biochemistry, and ecology of microbes. Emphasis is on the fundamental properties of bacteria. (4 cr, §53; prereq 5 cr in biological sciences, organic chemistry 61, 62 or ‡) Dworkin

** Microscope required. Students may obtain use of microscope by purchasing \$3 microscope cards from the bursar.

Military Science (Mil)

Chairman—Lieutenant Colonel Robert J. Elliott

The program in military science, leading to a commission in the United States Army Reserve, is available for Arts College students as well as for those in other colleges of the University. Instruction encompasses military fundamentals common to all branches of the Army. The aim is to provide a basic military education and, in conjunction with other college curriculums, 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 *Bulletin of Army, Navy, and Air Force ROTC* of the University of Minnesota, or call at the Military Science office, 108 Armory.

The Arts College will accept credits from the Lower and Upper Division courses in military science to fulfill a minor toward the B.A. degree.

LOWER DIVISION COURSES

Military Science I

- 41f.w. **Employment of Firepower.** To provide the student with an understanding of organization of the Army for modern tactical and strategic environments. Modern units and techniques of the individual soldier. (1 cr; Leadership Laboratory **)
- 42f.w. **School of the Soldier.** United States Army customs and courtesies. Practical exercises in leadership, command, and individual and unit drill formation. Includes requirement of satisfactory completion of a concurrent course in communications, psychology, science, or political science as approved by PMS. IT students must also have the approval of their departmental adviser for the concurrent courses. (No cr; prereq 41 and Δ)
- 43s. **United States Army and National Security.** Survey of the problems of national defense as pertains to the United States Army in general war, limited and cold war, joint operations, and the impact of modern technology on warfare techniques with emphasis on the individual's personal responsibilities as a citizen and a leader. (1 cr; Leadership Laboratory **)

Military Science II

- 44f. **Military Maps and Aerial Photography.** Tactical and strategic use of United States and foreign military maps, elementary cartography, and land navigation. Use of aerial photographs and modern surveillance systems in military mapping and tactical operations. (1 cr; Leadership Laboratory **)
- 45w. **American Military History.** United States Army operations from the American Revolution to the Korean War. A comprehensive survey of the history of land warfare as applied to the significant political, economic, social, and technical growth of the United States. (3 cr, §Hist 45)
- 46s. **Introduction to Basic Tactics.** Small unit operations in conventional and unconventional battlefield environments. The training of the combat soldier to include physical and psychological conditioning, technical proficiency, and motivation through leadership. (1 cr; Leadership Laboratory **)

UPPER DIVISION COURSES

Military Science III

- 151f.w. **Problems of Special Warfare.** Problems of the law of war, guerrilla warfare, psychological warfare, and counterinsurgency/counterguerrilla operations as applied in modern military operations. (1 cr; Leadership Laboratory ** and concurrent academic course ††)

** Leadership laboratory is taught concurrently to all cadets during the fall and spring quarters. This laboratory 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 formations, exercise of command, bearing, and posture. Assists in identification and development of individual leadership traits, and qualities of character.

†† Includes requirement of satisfactory completion of a concurrent Upper Division course, 3 or more credits in communications, psychology, science, or political science as approved by PMS. IT students must also have the approval of their departmental adviser for the concurrent course.

- 152w. Advanced Tactics and Training.** Small unit leadership and psychology of small groups in identification of personality characteristics, study of individual needs, values, and capabilities. Emphasis is placed on the solving of leadership problems. Conduct of military training and development of Army instructor. Includes practice teaching by the student. Advanced small unit operations in conventional and unconventional battlefield environments. (5 cr; prereq 151 and Δ)
- 153s. Functional Organization of the United States Army.** A survey of the history, training, equipment, and developmental trends of all combat arms and services of the Army. Tactical operations in all phases of land warfare. A field exercise encompassing all material studied in Mil 152 and 153 stressing the practical application of techniques and principles under simulated tactical conditions. (3 cr; Leadership Laboratory **)

Military Science IV

- 154f. Command and Staff Operations.** Comprehensive study of combat operations and logistics as related fields. Principles of command management, staff organization and staff procedures, supervision, and co-ordination by the commander. (4 cr; Leadership Laboratory **)
- 155w. Role of United States in World Affairs.** Analysis of the United States geographical position, economic potential, and military potential, as compared with other world powers. (1 cr; concurrent academic course ††)
- 156s. Army Administration.** Study of military personnel management procedures to include records, classification and assignment, unit fund accounting, and legal and military justice matters. Conduct of a field exercise stressing practical application of material studied in 152-156. Service orientation for the newly commissioned officer. (4 cr; Leadership Laboratory **)

Music (Mus)

FACULTY—Paul M. Oberg, *chairman*; Rhadames Angelucci, Dominick Argento, Martin Beckerman, Albert Bellson, Frank Bencrisutto, Rudolph Berryman, Paul Binstock, Edouard Blitz, Anita Brander, Norman Carol, Stephen Chenette, Johannes Dahle, Marvin Dahlgren, Paul Fetler, Ray Fitch, Heinrich Fleischer, Paul Freed, Anthony Gilombardo, Ivar Glemming, Earl Handlon, Carl Hane, Paul Ivory, Robert Jamieson, Paul Knowles, Robert Laudon, Mary Malcolm, Lawrence Malmberg, Duncan McNab, Frances Miller, Emil Niosi, Marcella Oja, Emil Opava, Gerald Prescott, Johannes Riedel, William Santucci, Roy Schuessler, Stanislaw Skrowaczewski, Daniel Tetzlaff, Paul Walton, Lawrence Weinman, Bernhard Weiser, J. Cloyde Williams, Steven Zellmer.

Major Advisers in Arts College—Professors Fetler, Malcolm, Oberg, Riedel, Schuessler; Associate Professors Argento, Fleischer, Weiser; Assistant Professor Knowles.

The Department of Music 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 N.A.S.M.

The department offers courses in applied music, theory, composition, and music history and literature to students wishing to obtain a broad cultural background as well as to those majoring in music.

Music Scholarships—Scholarships in varying amounts are available to students majoring in music. Musical and scholastic aptitude are important factors in making these grants. Tryouts are held in Scott Hall during the spring quarter each year.

Requirements for Music Majors—Students majoring in music must fulfill the requirements of both the Lower and Upper Divisions. A total of 144 credits in

** Leadership laboratory is taught concurrently to all cadets during the fall and spring quarters. This laboratory 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 formations, exercise of command, bearing, and posture. Assists in identification and development of individual leadership traits, and qualities of character.

†† Includes requirement of satisfactory completion of a concurrent Upper Division course, 3 or more credits in communications, psychology, science, or political science as approved by PMS. IT students must also have the approval of their departmental adviser for the concurrent course.

courses other than applied music (piano, voice, trumpet, etc., Mus 11 through 30) must be obtained to be eligible for the bachelor of arts degree.

Music majors are required to participate either in Chorus or Orchestra or Concert Band or Chamber Singers or Instrumental Ensemble or Men's Glee Club or Women's Glee Club, or in a combination of any of these, for a minimum of 6 quarters.

Students electing Upper Division sequences A and B are required to play or sing an *Upper Division Qualifying Examination* before enrolling in Upper Division.

Lower Division

Freshman Year

Music Theory: Mus 1T-2T-3T (3 cr per qtr)

Applied Music: Mus 11 through 30 (2 or 4 cr per qtr)

Sophomore Year

Music Theory: Mus 4T-5T-6T (4 cr per qtr)

Applied Music: (Mus 11 through 30 (2 or 4 cr per qtr)

History of Music: Mus 34-35-36 (3 cr per qtr)

Upper Division

During junior and senior years a student must complete an academic minor (see page 8) and one of the following major sequences:

A. Applied Music (Instrumental)—Total of 36 credits in applied music (Lower and Upper Division credit), including a minimum of 6 credits in Mus 11, Piano, or 11A-B-C, Class Piano (functional knowledge of the instrument or exemption by demonstrated ability). Senior recital required.

(Credits shown in parentheses)

Mus 76—Form and Analysis (3)

15 additional Upper Division credits in music

Mus 97-98-99—Counterpoint (6)

B. Applied Music (Vocal)—Total of 36 credits in applied music (Lower and Upper Division credit), including a minimum of 12 credits in Mus 11, Piano, or 11A-B-C, Class Piano, or demonstrated ability to play simple accompaniments. Senior recital required.

(Credits shown in parentheses)

Mus 76—Form and Analysis (3)

15 additional Upper Division credits in music

Mus 115, 116, 117—Vocal Literature (6)

C. History and Literature—Total of 24 credits in applied music (Lower and Upper Division credit), including a minimum of 12 credits in Mus 11, Piano, or 11A-B-C, Class Piano (functional knowledge of the instrument or exemption by demonstrated ability).

(Credits shown in parentheses)

Mus 76—Form and Analysis (3)

A minimum of 21 credits from: Mus 104-105-

Mus 97-98-99—Counterpoint (6)

106, 107, 108, 109, 110, 124-125-126, 130,

Mus 121-122-123—Advanced Harmony (6)

130A, 131, 131A, 132, 132A, 133, 134-135-

136, 144-145-146, 151-152, 154-155-156,

164-165-166

D. Theory and/or Composition—Total of 24 credits in applied music (Lower and Upper Division credit), including a minimum of 12 credits in Mus 11, Piano, or 11A-B-C, Class Piano (functional knowledge of the instrument or exemption by demonstrated ability).

(Credits shown in parentheses)

Mus 76—Form and Analysis (3)

Theory major: 15 elective Upper Division cred-

Mus 97-98-99—Counterpoint (6)

its in music

Mus 121-122-123—Advanced Harmony
(6)
Mus 141-142-143—Orchestration (6)

Composition major: Mus 127-128-129—Com-
position (6) plus 9 elective Upper Division
credits in music

E. Piano Pedagogy—Total of 30 credits in Mus 11, Piano (Lower and Upper Division credit). A public performance required.

(Credits shown in parentheses)

Mus 76—Form and Analysis (3)
Mus 97-98-99—Counterpoint (6)

Mus 170-171-172—Piano Pedagogy I (6)
Mus 180-181-182—Piano Pedagogy II (6)
9 additional Upper Division credits in music

Modification of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

For a special curriculum in music education see the *Bulletin of the College of Education*. For courses in music education which are open to Arts College students, see page 118.

Music Minors—A departmental minor consists of 15 Upper Division credits in music worked out in consultation with the chairman of the department.

For an appreciation of and cultural background in music, Mus 1 (or 50), 51, 52, 31, 32, 33 are recommended. For those interested in performance (glee clubs, orchestra, chorus, band) elective credits granted for Mus 39 through 49 (open to students in all colleges; consent of instructor required). Students with some performing ability may receive credit in voice, piano, organ, all instruments, Mus 11 through 30; private instruction without credit for beginners.

LOWER DIVISION COURSES

- 1f,w,s. **Introduction to Music.** Basic elements of music, such as notation and characteristics of musical tone, fundamental musical concepts of rhythm, melody, harmony, polyphony, form; demonstrated by recordings and performance of music of all types in Western civilization. (5 cr) Laudon
- 1Tf,w-2Tw,s-3Tf,s. **Music Theory.** Development of musicianship through both auditory and visual perception; participation in ear training, sight singing, keyboard drills. (3 cr per qtr; primarily for music majors and minors)
- 2f, 3w. **Minneapolis Symphony Demonstration Rehearsals.** Practical guide to intelligent listening and better understanding of symphonic music through specially arranged rehearsals of the Minneapolis Symphony Orchestra. (1 cr per qtr)
- 4f,w,s. **Fundamentals of Music.** Knowledge of the piano keyboard, major and minor scales, triads, elementary ear training, rhythmic dictation. (2 cr; prereq nonmusic major)
- 4Tf,w-5Tw,s-6Tf,s. **Music Theory.** (Continuation of 3T) Greater emphasis on harmonic analysis, part writing, and clef reading. (4 cr per qtr; prereq 3T) Malcolm
- 7Af-Bw-Cs. **Ear Training.** Résumé of aural work included in Mus 1T-6T. (2 cr per qtr; primarily for music majors, transfer students deficient in aural aspects of theory) Malcolm
- 31f, 32w, 33s. **Music Literature.** Various styles, forms, types of music, including symphony, opera, chamber music, solo pieces. 31: Baroque and classical periods. 32: Romantic period. 33: Romantic and modern. (2 cr per qtr; primarily for those not majoring in music) Ivory
- 34f-35w-36s. **History of Music.** Musical styles and forms from the 9th to 20th centuries with emphasis on their identification through listening practice. (3 cr per qtr; prereq 3T) Laudon
- 39f,w,s.** **Women's Glee Club.** (1 cr per qtr; prereq #)
- 40f, 41w, 42s. **Orchestra.** Performance of orchestral literature; three concerts annually; players from all colleges are invited to participate. (1 cr per qtr [music majors may earn total of 12 cr]; prereq #)
- 43f,w,s.** **Chorus.** Performances of major symphonic-choral works with the Minneapolis Symphony Orchestra, University Symphony Orchestra, and University Concert Band. Entrance by audition only. (3 cr upon completion of 3 qtrs; prereq #)

** Students may receive credit for 2 years or 6 quarters of work.

- 43Sf, 44Sw, 45Ss.** St. Paul Campus Chorus. Prepares for at least one public appearance each quarter as well as for special events connected with St. Paul Campus. (1 cr per qtr; prereq #) Dahle
- 46f, 47w, 48s.** Concert Band. Rehearsals and appearances cover standard band literature; several appearances each quarter. (1 cr per qtr; open to men and women of all colleges; prereq #) Bencriscutto (Concert Band Ensembles); Bencriscutto (Symphony Bands I and II)
- 49f,w,s.** Men's Glee Club. Rehearsals and performances cover standard men's glee club material as well as special arrangements. Group appears for on- and off-campus functions. (1 cr; open to students on both campuses; prereq #) Dahle

Note—A special fee of \$35 for 2 credits, or \$70 for 4 credits, per quarter is charged for individual lessons.

COURSES IN APPLIED MUSIC

A student may not register for a course in applied music *for credit* (11 through 30) until he has passed the required entrance examination. (Students may not take special examinations in applied music for work done elsewhere while in residence at the University.)

Courses numbered from 11 through 30 carry either 2 credits (maximum of 10 private half-hour lessons) or 4 credits (maximum of 10 private hour lessons) per quarter. The first 12 credits in one of these courses count as Lower Division, additional credits in the same course count as Upper Division. A maximum of 36 credits in applied music may count toward a baccalaureate degree.

All students taking applied music *for credit* are required to attend Music Hour, held weekly in Scott Hall Auditorium.

Applied Music Entrance Requirements for Music and Music Education Majors and Minors—

Piano: A student should be able to 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 20-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 have a knowledge of the rudiments of music. A knowledge of piano is also recommended.

Violin: 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 also recommended.

Other orchestral instruments: A student should be able to play, with good tone, phrasing, and style, two solo numbers of good musical quality. He will be examined in sight reading as well as in the playing of scales. A knowledge of piano is also recommended.

Applied Music Entrance Requirements for Nonmusic Majors—Students who wish to take applied music as an elective should be able to play or sing at least two pieces of medium difficulty.

Af,w,s. Piano. (No cr) Weiser, Freed, McNab
Df,w,s. Voice. (No cr) Schuessler, Knowles, Oja

** Students may receive credit for 2 years or 6 quarters of work.

Note—Applied music courses 11 through 30 are offered as electives for nonmusic majors and as part of degree programs for Lower Division and Upper Division music majors. The student should make sure to register in the appropriate category by placing E (for elective), L (for Lower Division major), or U (for Upper Division major) after the course number on his registration blank. Prerequisite for elective and Lower Division courses is an entrance examination; prerequisite for Upper Division courses is a placement test. Elective courses carry 2 credits; Lower and Upper Division courses carry 2 or 4 credits.

- 11f,w,s. Piano. (2 or 4 cr; prereq entr exam or placement test) Weiser, Freed, McNab
- 11Af-Bw-Cs. Piano: Class Lessons.** Development of skills at the keyboard in harmonization, improvisation, sight reading, accompanying, repertoire, technique. (2 cr per qtr; prereq 4 [nonmusic majors], § [others] for 11A...11A for 11B...11B for 11C)
- 12f,w,s. Voice. (2 or 4 cr; prereq entr exam or placement test) Schuessler, Knowles, Oja
- 12Af-Bw-Cs. Voice: Class Lessons.** (2 cr per qtr) Knowles
- 13f,w,s. Violin. (2 or 4 cr; prereq entr exam or placement test) Carol, Gilombardo
- 14f,w,s. Viola. (2 or 4 cr; prereq entr exam or placement test) Gilombardo
- 15f,w,s. Cello. (2 or 4 cr; prereq entr exam or placement test) Jamieson
- 16f,w,s. Double Bass. (2 or 4 cr; prereq entr exam or placement test) Fitch
- 17f,w,s. Flute. (2 or 4 cr; prereq entr exam or placement test) Opava, Niosi
- 18f,w,s. Oboe. (2 or 4 cr; prereq entr exam or placement test) Angelucci
- 19f,w,s. Clarinet or Saxophone. (2 or 4 cr; prereq entr exam or placement test) Fitch, Williams
- 20f,w,s. Bassoon. (2 or 4 cr; prereq entr exam or placement test) Santucci, Beckerman
- 21f,w,s. Trumpet. (2 or 4 cr; prereq entr exam or placement test) Chenette, Tetzlaff
- 22f,w,s. French Horn. (2 or 4 cr; prereq entr exam or placement test) Binstock
- 23f,w,s. Trombone. (2 or 4 cr; prereq entr exam or placement test) Weinman, Zellmer
- 24f,w,s. Tuba. (2 or 4 cr; prereq entr exam or placement test) Walton
- 25f,w,s. Percussion. (2 or 4 cr; prereq entr exam or placement test) Dahlgren
- 26f,w,s. Harp. (2 or 4 cr; prereq entr exam or placement test) Miller
- 27f,w,s. Organ. (2 or 4 cr; prereq entr exam or placement test) Fleischer
- 27Af-Bw-Cs. Organ: Class Lessons.** Elementary organ technique, hymn playing, simple organ literature. (2 cr per qtr; prereq §) Fleischer
- 28f,w,s. Harpsichord. (2 or 4 cr; prereq entr exam or placement test)
- 29f,w,s. Guitar (classical). (2 or 4 cr; prereq entr exam or placement test) Bellson
- 30f,w,s. Accordion (classical). (2 or 4 cr; prereq entr exam or placement test) Malmberg, Hane

For courses in Graduate Applied Music for both Arts College and College of Education majors, see the appropriate sections, M.A. and M.Ed. in the *Bulletin of the Graduate School*.

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 50f,w,s. Introduction to Music. Introduction to the music in the repertory of our culture, exploring selected forms and styles from the 16th through 20th centuries. Listening abilities are developed through aural analyses of musical textures, recognition of the articulation of phrases, periods, and sections leading to an understanding of the relationship of large units of musical

** Arts College major students must take individual rather than class lessons in their major instrument. Music education majors will take individual lessons in their major but may take class lessons in their minor instruments. No student may take class lessons for more than 6 credits in 12A-B-C and 27A-B-C.

- form. These listening techniques, along with a discussion of aesthetic principles, are used to define musical styles. (5 cr, §1; open to jr and sr nonmusic students) Laudon
- 51w. **History of Musical Styles I. Romanesque, Gothic, Renaissance, mannerists, and baroque.** (2 cr; for nonmusic majors; prereq 1 or 50) Laudon
- 52s. **History of Musical Styles II. Classic, romantic, and modern.** (2 cr; for nonmusic majors; prereq 1 or 50) Laudon
- 60f, 61w, 62s. **Instrumental Ensemble.** Performance of chamber music of great composers; sonatas, trios, quartets, quintets, etc. (2 cr per qtr) Oberg
- 66f, 67w, 68s. **Chamber Singers.** A small mixed vocal ensemble of select voices. Sacred and secular music from 16th-century to contemporary composers prepared for concert presentation. (2 cr per qtr [may receive cr for 2 yrs or 6 qtrs work]; prereq §)
- 76f,w,s. **Form and Analysis.** Key, harmonic, and form analyses of important contrapuntal and homophonic music. (3 cr; prereq 6T) Argentó
- 83su. **Piano Teachers Summer Workshop.** Discusses the place of music in the liberal education of the individual, with implications drawn for the setting and approach for piano instruction in the private studio. If the teacher registers for 4 credits, he attends a 2-hour period of lectures and demonstrations for each day of the 5-week summer term. If the teacher registers for 6 credits, he is given the opportunity to teach, with the guidance of the instructor, a group of 4 children for a 1-hour group lesson twice a week. The lectures and demonstrations may be taken without credit. Credit is not available for both 83 and the 170-180 sequence. (4-6 cr; prereq 2 yrs piano, 2 yrs theory)
- 90f, 91w, 92s. **Advanced Instrumental Ensemble.** Performance of more difficult chamber music looking toward public presentation. (2 cr per qtr; prereq sr, 62) Oberg
- 96Hf,w,s. **Honors Course: Independent Study.** Primarily for departmental honor students; culminating in a senior thesis in music history and literature, or music theory, or normal piano, or an original composition, or a special outstanding recital. (2-6 cr; prereq 3.00 grade point avg)
- 97f-98w-99s. **Counterpoint.** Strict, 16th-century and Bach-style counterpoint in two and three parts; writing of canons, motets, inventions, fugues. (2 cr per qtr; prereq 6T) Fetler
- 100f,w,s. **Advanced Applied Music.** Advanced literature in piano, voice, organ, and orchestral instruments. (2 or 4 cr; prereq entr exam) Staff
- 104f-105w-106s. **American Music.** From early colonial times to the present through reading and record listening. American Indian music, European folk music on this continent, origin and development of jazz and contemporary American music. (3 cr per qtr; prereq 36, or 9 cr in American history or American studies, §) Riedel
- 107f. **Georg Friedrich Handel: Life and Works.** Musical culture in middle and northern Germany during the 17th and 18th centuries. The oratorio in Italy, France, Germany, and England. G. F. Handel's work with emphasis on his oratorios. Handel and England. (3 cr; prereq 36 or §, sr and grad in music or music education; offered 1964-65 and alt yrs) Riedel
- 108f. **Heinrich Schütz: Life and Works.** Influenced by political events; Protestant hymn and psalm literature, his musical elaborations in his works; his importance in fields of madrigal and monody, sacred concerto and cantata, and passion; Schütz compared to Bach. (3 cr; prereq 6 cr in music history or history of art or German literature or political history to 1700, or §; offered 1964-65 and alt yrs) Riedel
- 109w. **Lasso and Palestrina.** The Council of Trent, its influence on writing and performance of sacred music of 16th century. Madrigal, mass, and motet writing as exemplified in their works; Lasso's cosmopolitan and Palestrina's *a cappella* styles of writing; *Palestrina Style* of 17th and 18th centuries; *Caecilianism* of 19th and 20th centuries. (3 cr; for majors in music, arts, history; prereq 6 cr in music history or Renaissance and baroque art, or political history to 1700, or general history of Western philosophy, or §; offered 1964-65 and alt yrs) Riedel
- 110f. **Music Bibliography.** General reference sources. Music bibliographical materials in English and other languages; bibliographical drills in music history, theory and composition, music education, applied music. (3 cr; prereq one of the following: 36, 62, 72, 99, or §) Riedel
- 112f, 113w, 114s. **History of Vocal Art.** Significant schools of singing from 1600 to the present. (2 cr per qtr; prereq 18 cr in 12, or §) Schuessler
- 115f, 116w, 117s. **Vocal Literature.** Preparation and performance of representative solo vocal works from major and minor composers. (2 cr per qtr; prereq 12 cr in 12, or §) Schuessler
- 118f, 119w, 120s. **Piano Literature.** Keyboard literature suitable for piano performance from end of 16th century to present; its background and development. Performance illustrations by instructor, recordings. (2 cr per qtr; prereq 12 cr in 11, or §; offered 1964-65 and alt yrs) Weiser

- 121f-122w-123s. Advanced Harmony.** Chromatic harmony through analysis of representative 19th- and 20th-century works. (2 cr per qtr; prereq 6T) Argento
- 124f-125w-126s. History of Opera.** Opera as music and drama: production, styles, cultural background, from late 16th century to present—modern repertoire, broadcast by the Metropolitan Opera Company. (3 cr per qtr; prereq 9 cr in history of music or history of art or history of theater or European history from 1600, or #; offered 1964-65 and alt yrs) Argento
- 127f-128w-129s. Composition.** Original work in various forms. (2 cr per qtr; prereq 99 and 123) Fetler
- 130f. Symphonies of the Classical Era.** Through Mozart and Haydn; evolution of form and style in relation to contemporary thought and art through the French Revolution. (3 cr; prereq 6 cr in music history or art history or political history since 1750 or English or German literature since 1750, or #; offered when feasible)
- 130Af. Early Romantic Music.** 1800-1848 literary and musical influences; form and subjects of Beethoven; orchestral, chamber, piano music; opera; Lied, choral music. (3 cr; prereq 36 or #; offered 1964-65 and alt yrs) Riedel
- 131w. Symphonies of Beethoven.** Evolution of Beethoven's symphonic form and style as a reflection of intellectual, political, and artistic currents of the Napoleonic era. (3 cr; prereq same as 130; offered when feasible)
- 131Aw. Late Romantic Music.** 1848-1885. Neoclassicism, Brahms; Wagnerian music drama; nationalism in music of Russia, Bohemia, Scandinavia, Spain; mid-19th century French music. (3 cr; prereq 36 or #; offered 1964-65 and alt yrs) Riedel
- 132s. Symphonies of the Romantic Era.** Schubert, Schumann, Mendelssohn, Berlioz, Liszt, Brahms, Franck, Dvorak, Tchaikowsky, Bruckner, Richard Strauss; their relation to the dominant romantic trends of the 19th century. (3 cr; prereq same as 130; offered when feasible)
- 132As. Neoromantic Music.** 1885-1917. Music of Bruckner, Mahler, Sibelius, Strauss, Schönberg, Reger, Elgar, Puccini, Leoncavallo, Charpentier, Franz, Cornelius, Wolf; impressionism. (3 cr; prereq 36 or #; offered 1964-65 and alt yrs) Riedel
- 133s. Baroque Performance Practices.** Ornamentation, phrasing, articulation, and improvisation in the music of the period 1550-1759. A study of music instruction books of this era leading to analysis and performance of baroque music in baroque style. (3 cr; prereq sr and grad, 6T, 36, or #, and ability to perform with some facility; offered when feasible) Laudon
- 134f-135w-136s. History of Church Music.** Trends. Relationship of music to various theologies and liturgies. (3 cr per qtr; prereq 36 or #) Riedel
- 137f-138w-139s. Keyboard Harmony.** Practical ear training as applied to the piano; chorales are transposed into all keys in four parts and expanded chords by melodic and harmonic analysis; modulation. (1 cr per qtr; prereq 6T) Argento
- 140w. Interpretation of Choral Masterpieces.** Musical and vocal techniques necessary for presentation of great choral composition from the Renaissance to the 20th century. (3 cr; prereq sr and grad, 6T or #; offered when feasible)
- 140E. Interpretation of Choral Masterpieces.** A short-term modification of 140. (3 cr; offered when feasible)
- 141f-142w-143s. Orchestration.** Scoring instruments of the orchestra for ensemble combinations and full orchestra. (2 cr per qtr; prereq 6T) Argento
- 144f-145w-146s. Bach Through Beethoven.** Forms, techniques, styles of the late baroque and classical periods: Bach, Handel, Gluck, Mozart, Haydn, Beethoven. (3 cr per qtr; prereq 36; offered when feasible) Laudon
- 147f, 148w, 149s. Opera Workshop.** The student is given the opportunity to prepare and perform operatic roles both standard and contemporary. A union of musical and dramatic interpretation is emphasized and the student, in addition to his ensemble work, is given scheduled private instruction. All projects and roles will be sung in the English language. (2 cr per qtr; prereq ability to satisfactory sing an aria) Knowles
- 150. Organ Literature.** Development of organ literature and playing from 14th century to present. The mutual influence of organ construction and organ composition will be emphasized, as well as the various national schools of organ playing. Demonstration on the organ. (2 cr; prereq grad organ and musicology students, sr with #) Fleischer
- 151w-152s. Introduction to Musicology.** Scope, aims, methods, and resources of research in musicology, including fields of acoustics, psychology, sociology, and theory. (3 cr per qtr; prereq 110, or #; offered 1965-66 and alt yrs) Riedel
- 154f-155w-156s. Music in the Middle Ages and Renaissance.** Monophonic music from the period of Gregorian chant to English madrigal school. (3 cr per qtr; prereq 36; offered 1965-66 and alt yrs) Riedel

- 157f, 158w, 159s. **German Lieder.** Selected songs with regard to interpretation and style. 157: Schubert, Mozart, Beethoven. 158: Schumann, Brahms, Franz. 159: Wold, Strauss, Mahler. (2 cr per qtr; prereq 18 cr in 12 or 11, Ger 2, or #)
- 161w-162s. **Band Arranging.** Scoring for band instruments; creative arrangements for marching or concert bands. (3 cr per qtr; prereq 6T, 143 or MuEd 65 or #; offered 1965-66 and alt yrs) Benrciscutto
- 164f-165w-166s. **Music in the Baroque Era.** In Italy, Netherlands, Germany, Austria, France, Spain. (3 cr per qtr; prereq 36; offered 1964-65 and alt yrs) Laudon
- 170f-171w-172s. **Piano Pedagogy I.** Concerned primarily with the group teaching of children both at the beginning and advanced levels of piano in the following situations: the studio piano teacher; the pre-piano classes or keyboard experience; piano in the public schools. In addition to demonstration and lecture classes there will be a required laboratory set-up whereby the student teacher gains practical, on-the-spot experience and training in teaching children. (2 cr per qtr; prereq 2 yrs piano, 2 yrs theory, or #)
- 175w. **Training in Advanced Musicianship.** Dictation of melodic, harmonic, rhythmic, 2- and 3-part contrapuntal materials; score reading, both vocal and instrumental; training in tonal memory. (3 cr; prereq 6T) Fetler
- 177s. **Analysis of Contemporary Music.** Twentieth-century styles and techniques including works of Bartok, Hindemith, Stravinsky, Schönberg, and others. (3 cr; prereq 6T) Fetler
- 180f-181w-182s. **Piano Pedagogy II.** Concerned primarily with the group teaching of adults both at the beginning and advanced levels of piano in the following situations: the piano minor, the piano major, the music education piano major, the nonmusic major, in college teaching. Also the adult education and extension classes, along with the public school teacher. In addition to demonstration and lecture classes there will be a required laboratory set-up whereby the student teacher gains practical, on-the-spot experience and training teaching adult students. (2 cr per qtr; prereq 2 yrs piano, 2 yrs theory, or #)
190. **Hymnology.** History of hymn texts and tunes. Byzantine, Lutheran, Anglican, Baptist, Congregational, Methodist, Presbyterian, Unitarian and other hymns. History of hymn books. (3 cr; prereq 6 cr in 34-35-36 or Art 56-57-58 or Phil 11 or Phil 50-51-52 or Engl 66, 67 or #) Fleischer, Riedel
- 197f-198w-199s. **Advanced Counterpoint.** Bach's *Art of the Fugue*; practice in technique of writing 3- and 4-voice fugues; contrapuntal devices and problems; analysis of polyphonic examples of various periods. (2 cr per qtr; prereq 99) Fetler

FOR GRADUATE STUDENTS ONLY

- 200-201-202. **Basis of Musical Expression**
203. **Notation of Polyphonic Music**
204. **Graduate Applied Music**
- 209-210-211. **Advanced Topics**
212. **Special Problems**
215. **Advanced Conducting**
- 227-228-229. **Seminar: Composition and Orchestration**

Music Education (MuEd)

(College of Education)

The following courses in music education are regularly open to Arts College students:

- 63w. **Conducting I.** Basic elements of baton technique; styles of beats, types of arcs, preparatory beats, patterns, other general ideas in starting the young conductor. (2 cr; prereq 6T or #)
- 65f,w. **Instrumentation.** Orchestra and band instruments in combination; revision of materials suitable for school use; discussion of capabilities of school performers on the various instruments. (3 cr; prereq Mus 6T) Ivory

Natural Science

See Interdisciplinary Programs

Naval Science (Nav)

FACULTY—Captain E. M. Morgan, USN, *chairman*; Lieutenant Colonel A. J. Sullivan, USMC, *associate chairman*; Major C. Fimian, USMC; Lieutenant George C. Greene; Lieutenant Michael J. McCabe; Lieutenant Stanley B. Palmer; Lieutenant Commander I. G. Pottinger; Lieutenant John M. Richardson, Jr.

The course in naval science is designed to give those students enrolled in the Naval ROTC program a background in naval subjects to prepare them upon graduation to receive a commission in the Navy, Naval Reserve, Marine Corps, or Marine Corps Reserve. This course is, however, available to any student in the Arts College as well as to any student in another college of the University. For information concerning the requirements and the opportunities in the NROTC program, see the *Bulletin of Army-Navy-Air Force ROTC* or call at the Naval Science office, 203 Armory.

The Arts College will accept credits from junior and senior courses in naval science to fulfill a minor toward the B.A. degree.

LOWER DIVISION COURSES

(All NROTC Students)

1st Year

- 11f. **Naval Orientation.** Naval customs. The organization for national security. Naval leadership. Forms of modern naval warfare. (3 cr)
- 12w-13s. **Sea Power.** Survey of sea power's influence on history from ancient times to present. (3 cr per qtr; prereq 11 or #)

2nd Year

- 22w-23s. **Naval Weapons and National Policy.** The underlying reasons and circumstances under which the family of naval weapons is developed; the impact of these developments on naval warfare; the influence of weapons on national policy and those considerations of national policy which govern and influence the development of weapons; the integration of the family of naval weapons into modern effective naval weapons systems, and possible courses of future development of naval weapons systems. (3 cr per qtr; prereq 11, 12, 13 or #)

UPPER DIVISION COURSES

I. Line Sequence

3rd Year

- 51f. **Naval Operations.** Elements of shipboard operations: relative motion, tactical communications, rules of the nautical road, and naval maneuvering. (3 cr)
- 52w. **Naval Operations: Introduction to Navigation.** Fleet communications and meteorology. Dead reckoning, piloting, and electronic navigation. (3 cr)
- 53s. **Celestial Navigation.** Theory and practical application of navigating using the stars, sun, moon, and planets. (3 cr; prereq high school trigonometry or Math T or #)

4th Year

- 61f. **Naval Engineering.** Beginning principles of marine engineering; stress on control so student can manage moderate-size steam plant. Basic thermodynamics and limitations: energy, entropy, temperature. Mass transfer, equilibrium, irreversibility of ideal gas state vs steam cycle. Derivation of statics and dynamics of floating hull. (3 cr; prereq high school trigonometry and algebra or Math Z and Math T or #)
- 62w. **Naval Engineering and Naval Management.** Propulsion plant control: regulatory features, necessity, drawbacks, influence on plant economy; alternative methods of operation. Design problems. Principles and foundations of naval and personal management. Intent and application of Uniform Code of Military Justice. (3 cr; prereq 61 or #)

63s. **Principles of Naval Leadership.** Management psychology, individual differences, group dynamics, and the art of manipulating these to produce a desired good. (3 cr; prereq 62, 68 or #)

II. Supply Corps Sequence

3rd Year

57f. **Supply Management I.** An introduction to Navy supply management. Case studies and problems in organization, budgets, and inventory management. (3 cr)

58w. **Supply Management II.** Series of problems in financial management and accounting, and the procurement of naval material. (3 cr; prereq 57 or #)

59s. **Supply Management III.** Series of problems in management of material in a shipboard supply department, security, inventories, and supply support. (3 cr; prereq 58 or #)

4th Year

63s. **Leadership.** (See 4th year of Line Sequence)

67f. **Retail Sales.** Ship's store afloat introduction. Organization and operation of ship's stores afloat. Problems and case studies in ship's stores. (3 cr)

68w. **Retail Sales: Leadership.** Operation and management of service activities, balance sheets and operating statements. Problems and case studies in ship's stores afloat. Principles of naval management and functions of the Uniform Code of Military Justice. (3 cr; prereq 67 or #)

III. Marine Corps Sequence

3rd Year

54f. **Evolution of the Art of War I.** Evolution of warfare from earliest recorded times up to and including the Mexican War. (3 cr)

55w. **Evolution of the Art of War II.** Continuation of the evolution of the art of war, to include Civil War campaigns, World Wars I and II, plus a consideration of U.S. military and foreign policy. (3 cr)

56s. **Modern Basic Strategy and Tactics.** The theoretical principles behind modern strategy and tactics. (3 cr)

4th Year

64f. **Amphibious Warfare I.** Evolution of current amphibious warfare techniques and doctrine from Gallipoli to the Korean War. (3 cr)

65w. **Amphibious Warfare II.** Introduction to doctrinal techniques and present concepts to include planning, embarkation, rehearsal, support, and logistics. (3 cr)

66s. **Leadership.** Functioning of the Uniform Code of Military Justice. Service leadership as pertinent to the Marine Corps. (3 cr)

Norwegian

See Scandinavian

Oriental

See Slavic and Oriental Languages

Personal Orientation

See Interdisciplinary Programs

Philosophy (Phil)

FACULTY—Karl H. Potter, *chairman*; May Brodbeck, Herbert Feigl, Homer E. Mason, Gareth Matthews, Grover E. Maxwell, Francis V. Raab, Douglas Lewis, Ralph G. Ross, D. Burnham Terrell.

Major Advisers in Arts College—Professors Brodbeck, Feigl; Associate Professors Mason, Matthews, Maxwell, Potter, Raab, Terrell.

Major Sequence in Arts College—Two courses from Phil 50-51-52, one of which shall be 52, and others to make a total of at least 30 credits in Upper Division philosophy courses including at least 12 credits in courses numbered 100 or above.

Prerequisite for major sequence, Phil 1 and 2. Phil 1A and 2A will not be accepted for this requirement.

Phil 1, 2, and 3 are introductory. They may be taken singly or in any order. The sections of 1, 2, and 3 are scheduled so that one may be taken at almost any hour and so that, if another of the courses is elected, it may usually be taken at the same hour in the following quarter.

Notice of Nonmajors Concerning General Education Courses—Since almost all courses in this department are suited to general education, each student is advised to choose according to his interest. In the Lower Division, we particularly emphasize Phil 2 (Logic), and in the Upper Division the whole or part of the sequence 50-51-52 (History of Western Philosophy).

Students intending to enter theological seminaries or other institutions of training in religious work should note the special pretheological curriculum (see page 172).

LOWER DIVISION COURSES

- 1f,w,s. **Problems of Philosophy.** Introduction; main fields of investigation; permanent problems; principal methods and schools of philosophy; historical and contemporary views. (5 cr; prereq***) Staff
- 2f,w,s. **Logic.** Difference between logical and fallacious reasoning; functions and uses of language; rules of good definition and sound argument. (5 cr) Staff
- 3f,w,s. **Ethics.** Examination of the problems which arise when human beings attempt to think systematically about conduct and values (are there absolute standards?), problem of free will, and survey of historical views about the right and the good. (5 cr; prereq **) Staff
10. **Science and Religion.** Inquiry into nature of science and religion as currently interpreted, with an attempt to find grounds of conflict and/or reconciliation. (2 cr; prereq soph)
11. **World Religions.** Systematic study of five living world religions: Hinduism, Buddhism, Islam, Judaism, and Christianity. Readings from original scriptures, classical interpretations. Emphasis upon the major philosophical and ethical concepts of each religion. (5 cr)

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

Attention is called to Ortl 75-76-77 (Asian Civilizations) and Arab 162 (Hispano-Arabic culture) listed under Slavic and Oriental Languages.

50f-51w-52s. **General History of Western Philosophy.** Survey of major developments in Western philosophic thought from its beginnings among the Greeks to middle of 19th century. 50: Greek philosophy; Socrates, Plato, Aristotle. 51: Stoicism, Epicureanism, and Medieval Christian Synthesis. 52: Modern philosophy from Descartes to Hegel; impact of science; backgrounds of contemporary philosophical problems. (5 cr per qtr, §60H, §61H, §62H) Staff

** Phil 2 is open to freshmen. Phil 1 and 3 are open to third-quarter freshmen.

- 60H, 61H, 62H. **Honors Course: Advanced History of Philosophy; Ancient, Medieval, Modern.** A survey of the history of philosophy for superior undergraduates. (3 cr per qtr, §50-51-52; prereq honors candidacy) Staff
70. **Logic of Scientific Reasoning.** Introduction to principles of scientific method; definition and classification; observation, measurement, experiment; elementary statistical concepts; hypotheses, evidence, and confirmation; the nature and limits of the scientific enterprise. (3 cr; prereq 2) Maxwell
- 90H, 91H, 92H. **Honors Course: Undergraduate Seminar.** Topics of contemporary interest and importance will be taken up in weekly meetings under the direction of a different faculty member each quarter. Independent work and active participation by members of the seminars will be emphasized. (3 cr per qtr; prereq honors candidacy and 6 cr in Upper Division philosophy courses) Staff
- 93H. **Honors Course: Thesis.** Individual assignments carried out under the direction of the honors candidate's adviser or another faculty member. (2 cr; prereq sr, honors candidate in philosophy, GPA of 3.50 or better in previous work)
- 101f. **Principles of Philosophy.** Topics include knowledge, meaning, truth, reality, mind and nature, human values, and action. (4 cr; prereq sr or grad who have not had 1; offered when feasible)
- 103w. **Eighteenth-Century Philosophy.** Philosophic background of 18th-century enlightenment; rationalist and empiricist currents; deism; optimism; great chain of being. Readings from works of Locke, Hume, Voltaire, Diderot, Pope, and others. (3 cr; for history and literature students as well as philosophy majors; offered when feasible)
104. **Nineteenth-Century Thought.** Main currents in European philosophy; British and French philosophical psychology and social philosophy. German thought: Hegel, Marx, Schopenhauer, Nietzsche. (3 cr; prereq 52 or 62H, or §; offered 1964-65)
- 105f. **Introduction to American Philosophy: Puritanism to Pragmatism.** Puritanism, the Revolutionary period, transcendentalism, and evolutionism. Among philosophers discussed: Edwards, Paine, Emerson, Peirce. (3 cr; especially for students of American history and literature) Ross
- 106w. **American Philosophy from William James.** (Continuation of 105) Among philosophers discussed: James, Dewey, Santayana, Blanshard. (3 cr; prereq 105 or §) Potter
107. **Philosophy in Modern Literature.** Survey of basic philosophical ideas in modern civilization as they are expressed in major works of literature. (3 cr; prereq major or minor in philosophy or literature, or §; offered when feasible) Terrell
- 108w. **Political and Social Ethics.** Ethical principles, theoretical and practical, at the basis of the social order. (3 cr; prereq 3, or §; offered 1964-65 and alt yrs) Raab
109. **History of Ethics.** Most significant contributions to development of ethical theory in Western philosophy, with emphasis on British writers of modern period (17th-19th centuries). (3 cr; prereq 3, 1 qtr history of philosophy or §; offered 1965-66 and alt yrs) Terrell
- 112f. **Plato.** Philosophy of Plato based on analysis of major dialogues. (3 cr; prereq 50, 60H, or §)
- 114w. **Aristotle.** Philosophy of Aristotle based on analysis of selected passages from his major works. Particular attention given to his relationship to Plato. Survey made of Aristotelian tradition in Western philosophy. (3 cr; prereq 1 qtr history of philosophy, or §)
118. **Medieval Philosophy.** Selected topics in the writing of several medieval philosophers (e.g., Augustine, Anselm, Aquinas, Scotus, and Ockham). (3 cr; prereq 50, 51 or §) Matthews
120. **Rationalism.** Philosophies of Descartes, Spinoza, and Leibniz. (3 cr; prereq 1 qtr history of philosophy, or §; offered when feasible)
121. **Descartes.** Analysis of philosophical works of Descartes. (3 cr; prereq 1 qtr history of philosophy or §; offered 1964-65 and alt yrs)
122. **Spinoza.** Philosophy of Spinoza, based primarily on analysis of his *Ethics*. (3 cr; prereq 121 or §; offered when feasible)
123. **Leibniz.** Philosophy of Leibniz based on analysis of selected philosophical writings. (3 cr; prereq 121 or §; offered when feasible)
124. **Malebranche.** A study of several philosophical texts of Malebranche. (3 cr; prereq 52 or 62H or §; offered when feasible)
129. **Locke.** Detailed study of the *Essay Concerning Human Understanding* and related works, with attention to Locke's sources and influence. (3 cr; prereq 52, 62H, or §; offered 1965-66 and alt yrs)
130. **Berkeley.** Detailed study of Berkeley's philosophical works. (3 cr; prereq 52, 62H or §; offered 1964-65 and alt yrs)
131. **Hume.** Detailed study of Hume's *Treatise and Inquiry*. (3 cr; prereq 52, or 62H, or §) Terrell

132. **Later Empiricism.** The major developments in empiricist traditions, principally in Great Britain, between Hume and Russell. (3 cr; prereq 52 or #; offered when feasible) Terrell
- 134s. **Kant.** Philosophy of Kant based on analysis of selected passages from his major works. (3 cr; prereq 52, or 62H or #) Mason
136. **Brentano.** A study of the philosophy of Franz Brentano, and its significance in the background of contemporary philosophy. (3 cr; prereq 52 or #; offered when feasible) Terrell
- 137w. **Kierkegaard.** A detailed examination of the major philosophical works of Kierkegaard. (3 cr; prereq one qtr history of philosophy or #) Mason
138. **Contemporary Existentialism.** Existentialist philosophers since Kierkegaard, especially in France and Germany (especially Heidegger, Sartre, Jaspers, and Marcel). (3 cr; prereq 52 or 62H or 137 or #; offered 1964-65 and alt yrs) Mason
140. **Contemporary Philosophy.** Current systematic and critical philosophies, especially idealism, naturalism, realism, pragmatism, positivism as represented by their principal exponents. (3 cr; prereq 52 or 62H or #) Raab
- 150s. **Ethical Theory.** Distinguishing characteristics of a moral judgment; application of moral judgments to motives, acts, and persons; moral freedom and responsibility; moral relativity, skepticism, and the justification of moral standards; examination of representative systems. (3 cr; prereq 3, or #)
- 151w. **Principles of Aesthetics.** Nature of aesthetic experience; standards of aesthetic evaluation; beauty in art and beauty in nature; status of subject matter in the arts; relation of form and content; concepts of representation, expression, style, meaning, and truth in the arts; use of symbols in art; relation of the arts to knowledge, and to society; relation of aesthetics to ethics. (3 cr; prereq #)
- 154f. **Elements of Symbolic Logic.** Systematic introduction to modern logic. Topics include dimensions of language; calculus of propositions, classes, and relations; applications to foundations of mathematics. (4 cr; prereq 2 or #)
- 155w. **Intermediate Symbolic Logic.** Axiomatic development of logic; properties of deductive systems; modal and many-valued logics; application to philosophical problems. (3 cr; prereq 154; offered 1965-66 and alt yrs) Brodbeck
- 157f. **Metaphysics.** Some recent attempts to discover general principles characteristic of the universe. (3 cr; prereq 1 qtr history of philosophy, or #) Brodbeck
- 158f. **Theory of Knowledge.** Analysis of the logical structure and experiential roots of knowledge. Topics include meaning, validity, truth, reason and experience, induction, criteria of objectivity, and reality. (4 cr; prereq 2 or #) Feigl
160. **Philosophy of Science.** Provides a clear understanding of meaning, methods and implications of modern science through examination of basic concepts, presuppositions, and procedures. Topics include description, explanation, prediction, experimentation; space, time, number, matter, energy; causality, probability, statistics; organic life, evolution, mind. (4 cr; prereq 2 or #) Feigl
162. **Philosophy of Language.** A study of contemporary attempts to deal with philosophical problems about language. Special attention will be given to the concept of meaning. Some attention will be given to the notions of language found in various forms of philosophical analysis. (3 cr; prereq 2, or 6 Upper Division cr in philosophy or #; offered when feasible) Mason
- 164s. **The Logic of the Social Sciences I.** Philosophical examination of foundations of behavior sciences in general; their concepts, laws, and theories; concrete illustrations from these sciences; problems of value and objectivity; logical nature of social philosophies and ideologies; role of social scientist in a democratic society. (3 cr; prereq 15 cr in social science, psychology, education, history, or philosophy, or #) Brodbeck
165. **The Logic of the Social Sciences II.** A closer and more specific study of items introduced in preceding course, with greater attention to logical methods and problems peculiar to each of the specialized social sciences. (3 cr; prereq 164; offered when feasible) Brodbeck
167. **Philosophy of History.** Idealistic, theological, and economic interpretations of history, with particular reference to concepts of progress, continuity, pluralism, etc., and to philosophical aspects of historical methods. (3 cr; prereq 6 cr in philosophy or 10 cr in history; offered 1965-66 and alt yrs) Mason
- 171s. **Philosophies of India I.** The basic concepts of the Hindu, Buddhist, and Jain philosophies of life, as found in ancient and modern sources. Introduction to the Indian theory of philosophical argumentation and inference. (3 cr; prereq 5 cr in philosophy, 3 cr in courses pertaining to India or #)
172. **Philosophies of India II.** Introduction to the problems of systematic inquiry in India, with special attention to the analyses of causation, freedom, and knowledge in Buddhism, Jainism,

Nyaya-Vaisesika, Purva-Mimamsa, Samkhya, and the various Vedantas. (3 cr; prereq 171 or #) Potter

182f. **Philosophy of Religion.** Discussion of ground and sanctions of religion, according to various philosophies. (3 cr; prereq 6 cr) Matthews

190f-191w-192s. **Seminar: Philosophy.** Topics to be arranged according to students' interests. (3 cr per qtr; prereq sr, 9 cr, or #) Staff

193f-194w-195s. **Seminar: History and Philosophy of Theology.** (3 cr per qtr; prereq sr or #)

FOR GRADUATE STUDENTS ONLY

210, 211, 212, 213. **Seminar: Moral Philosophy**

217, 218, 219. **Seminar: Social and Political Philosophy**

223, 224, 225, 226. **Seminar: Epistemology**

227, 228. **Seminar: Logical Theory**

230, 231, 232. **History of Philosophy, Advanced**

233, 234, 235. **Seminar: Philosophy of Religion**

241, 242, 243. **Seminar: Philosophy of the Physical Sciences**

244, 245, 246. **Seminar: Philosophy of Psychology**

247, 248, 249. **Seminar: Logic of the Exact Sciences**

250, 251, 252. **Seminar: Philosophy of the Social Sciences**

260, 261, 262, 263. **Seminar: Metaphysics**

268-269. **Seminar: Studies in Aesthetics**

350, 351, 352. **Research in History of Philosophy**

360, 361, 362. **Research in Philosophy of Science**

Physical Education for Men (PEM)

Chairman—Deane E. Richardson

A towel and locker fee of \$2.50 per quarter is charged all students using physical education facilities for activity. Uniforms for class work or recreational activity may be rented for \$2 per quarter.

The following courses in physical education for men are open, with a maximum of 6 credits, to Arts College students. Students planning to enter the College of Education later are held to a requirement of 3 credits.

1Af-Bw-Cs. **Sports Education.** Orientation in a variety of recreational sports. Objective is to provide instruction and competition in those sports in which men may participate now and in future years as a means of obtaining recreation, regular exercise, and social intercourse. Student must furnish his own equipment for golf and skating. (1 cr per qtr)

1Af. Badminton, Bowling,** Golf,** Handball, Paddleball, Squash, Touchball, Weight Training

Swimming, Beginning (for non-swimmers only)

Tennis, Beginning

Adapted Activities. (Prereq #)

1Bw. Badminton, Bowling,** Golf (beginning),** Handball, Paddleball, Skating, Weight Training

Swimming, Beginning

Tennis, Beginning

Adapted Activities. (Prereq #)

1Cs. Bowling,** Golf,** Handball, Squash, Tennis (Beginning), Weight Training

Swimming, Beginning

Adapted Activities. (Prereq #)

2Af-Bw-Cs. **Sports Education.** Offers an opportunity to develop proficiency in an elected recreational sport in which student has had previous experience. Student must furnish his own equipment for golf and skating. (1 cr per qtr)

** Additional charge.

- 2Af. Archery**
 Ballroom Dancing (coeducational)
 Body Building
 Conditioning
 Golf, Advanced**
 Gymnastics
 Handball and Squash
 Square and Folk Dancing (coeducational)
 Swimming, Intermediate. (Prereq ability to swim 50 yds)
 Swimming, Advanced. (Prereq ability to swim 100 yds)
 Touch Football, Volleyball
 Weight Training
- 2Bw. Badminton**
 Ballroom Dancing (coeducational)
 Basketball
 Conditioning
 Body Building
 Gymnastics
 Judo
 Life Saving. (Prereq ability to swim 100 yds)
- Skating**
 Square and Folk Dancing (coeducational)
 Squash and Handball
 Swimming, Intermediate. (Prereq ability to swim 50 yds)
 Tennis, Beginning
 Volleyball
 Weight Training
- 2Cs. Archery**
 Ballroom Dancing (coeducational)
 Body Building
 Conditioning
 Golf**
 Gymnastics
 Life Saving. (Prereq ability to swim 100 yds)
 Paddleball, Horseshoes
 Softball, Volleyball
 Square and Folk Dancing (coeducational)
 Swimming, Intermediate
 Tennis, Beginning and Intermediate
 Weight Training

Physical Education for Women (PEW)

(College of Education)

Chairman—Eloise M. Jaeger

The following courses in physical education for women are open to Arts College students. No more than 6 credits in activity courses may apply to the B.A. degree. Students planning to enter the College of Education later are held to a requirement of 5 credits in activity courses. After this credit requirement has been met, a choice may be made of "additional elective" courses listed below.

A physical education fee of \$3.25 per quarter is charged for all activity courses (A, B, C). In addition, a \$3.25 fee is charged for the following numbered courses: 54, 76, 87, 88, 89. Maximum fee per student, \$6.50 per quarter.

Students should register for classes in 210 Johnston Hall during the regular college registration period. Students should check the *Class Schedule* to be sure their activity rating is suitable for the class in which they registered.

All classes meet in Norris Gymnasium for the first meeting, except St. Paul Campus classes. A student forfeits her place in class if she is absent the first day the class meets unless she has notified the office at 101 Norris Gymnasium (373-3403) that she is unable to attend. If a class is closed when a student registers, she should report to the first class meeting for possible cancellations.

Fall Quarter (A)

Aquatics

- Swimming, Beginning
- Swimming, Advanced Beginning
- Swimming, Intermediate
- Swimming, Advanced
- Swimming, Synchronized
- American Red Cross Senior Life Saving

Dance

- Ballroom Dance, Beginning
- Folk and Square Dance
- Modern Dance, Beginning, Intermediate

Gymnastics

- Conditioning Exercises
- Posture and Individual Exercise
- Tumbling and Trampoline

** Additional charge.

Individual and Dual Sports

Archery, Beginning
 Badminton, Beginning
 Bowling, Beginning
 Fencing, Beginning
 Riflemarksmanship

Skating, Figure, Beginning
 Social Games and Mixers

Team Sports

Volleyball
 Field Hockey

*Winter Quarter (B)***Aquatics**

Swimming, Beginning
 Swimming, Advanced Beginning
 Swimming, Intermediate-Advanced
 American Red Cross Senior Life Saving
 American Red Cross Water Safety In-
 structors Course

Dance

Ballroom Dance, Beginning
 Folk and Square Dance
 Modern Dance, Beginning
 Modern Dance, Intermediate

Gymnastics

Conditioning Exercises
 Posture and Individual Exercise
 Tumbling and Trampoline

Individual and Dual Sports

Archery, Beginning
 Badminton, Beginning
 Badminton, Intermediate
 Bowling, Beginning
 Fencing, Beginning, Intermediate
 Riflemarksmanship
 Skating, Figure, Beginning, Intermediate
 Social Games and Mixers
 Tennis, Beginning

Team Sports

Basketball
 Volleyball

*Spring Quarter (C)***Aquatics**

Swimming, Beginning
 Swimming, Advanced Beginning
 Swimming, Intermediate
 Swimming, Advanced and Diving
 Swimming, Synchronized
 American Red Cross Senior Life Saving
 American Red Cross Water Safety In-
 structors Course

Dance

Ballroom Dance, Beginning, Intermediate
 Folk and Square Dance
 Modern Dance, Beginning
 Modern Dance, Intermediate-Advanced

Gymnastics

Conditioning Exercises
 Posture and Individual Exercise

Individual and Dual Sports

Archery, Beginning-Intermediate
 Fencing, Beginning
 Golf, Beginning
 Golf, Intermediate, Advanced
 Riding, Beginning
 Riflemarksmanship
 Social Games and Mixers
 Tennis, Beginning
 Tennis, Intermediate-Advanced

Team Sports

Softball

Additional Elective Courses—These courses may not be used to meet any college requirement in physical education:

25f,w,s. American Red Cross First Aid (Standard and Advanced Course). (2 cr)

54s. Camp Leadership. (3 cr)

76s. The Teaching of Creative Dance for Children. (3 cr; prereq beginning modern dance)

80s. History and Trends in Dance. (3 cr; prereq #)

87f. Dance Composition. (2 cr; prereq #)

88s. Advanced Dance Composition. (2 cr; prereq #; not offered 1964-65)

89s. Dance Production. (3 cr; prereq #)

Physics (Phys)

(Institute of Technology)

FACULTY—Alfred O. C. Nier, *chairman*; Benjamin Bayman, Jay Benson, J. Morris Blair, A. Mark Bolsterli, Ronald Brown, Warren Cheston, Charles Chotkowski, Hans Courant, James Earl, Emanuel Feuchtwang, George Freier, Stephen Gasiorowicz, Donald Geffen, George Greenless, Edward Hill, Norton Hintz, Russell Hobbie, Walter Johnson, Paul Kellogg, Homer Mantis, Edward Ney, Lewis Nosanow, Carl Poppe, Otto Schmitt, Peter Signer, Joseph Valasek, Frank Verbrugge, Cecil Waddington, Clifford Wall, William Webber, James Wertz, John Williams, John Winckler, William Zimmermann.

Major Advisers in Arts College—Professors Bolsterli, Hill, Wall, Wertz, and Zimmermann.

Major Sequence in Arts College—Phys 100A-101A-102A; 103A-104A-105A; 107-109-111; 123; plus 6 credits chosen from 120; 121; 122; 133-133A; 134; 136; 144; 146; 148. In addition to the physics courses above it is strongly recommended that a student take Math 107-108 during his third year.

In planning his program a student should study the prerequisite requirements for the courses he expects to take. In particular he should note that in order to begin the major sequence at the beginning of his third year a student must have completed Phys 7-8-9 or 11, 12, 12A, 13, 13A, 14, 14A and Math 106 or their equivalents by the end of his second year, which in turn implies that he enter either Math 10 or Math 15 at the beginning of his first year.

Major Adviser in the College of Education—Professor Freier.

For the specialized curriculums in natural science and physical science, see the *Bulletin of the College of Education*.

Prerequisites for any course in physics may be waived if a petition for registration in the course is granted by the School of Physics. Students who have any credit in one of the sequences Phys 1-2-3 (combined with 1A-2A-3A), 4-5-6, 7-8-9, 11-12-12A-13-13A-14-14A will not receive credit for the corresponding course in another sequence.

LOWER DIVISION COURSES

- 1-2-3. **Introduction to Physical Science.** Demonstration lectures on the principles of physics and the physical phenomena underlying these principles. 1: Mechanics. 2: Heat and electricity. 3: Sound and light. (3 cr per qtr; prereq high school algebra and plane geometry for 1, 1 or # for 2, 1 or # for 3; 3 lect hrs per wk)
- 1A-2A-3A. **Introduction to Physical Science Laboratory.** Laboratory course given in conjunction with 1-2-3. (1 cr per qtr; prereq 1 or ¶1 for 1A, 2 or ¶2 for 2A, 3 or ¶3 for 3A [combination of 1-2-3 with 1A-2A-3A may be used to fulfill the laboratory science group requirement in the Arts College but does not serve as prereq for advanced physics courses]; 2 lab hrs per wk)
- 4-5-6. **General Physics.** (Primarily for premedical students) 4: Mechanics. 5: Heat and electricity. 6: Sound and light. Laboratory work is an integral part of course. (5 cr per qtr; prereq Math 40 or ¶Math 40; 4 lect hrs, 1 quiz hr, 2 lab hrs per wk)
- 7-8-9. **General Physics.** (Primarily for students majoring in physics, mathematics, or chemistry) 7: Mechanics. 8: Heat, electricity. 9: Sound and light. Laboratory work is an integral part of course. (5 cr per qtr; prereq Math 13A or 42, 24 or ¶24 or 43 or ¶43 for 7...7 and Math 25 or ¶25 or 44 or ¶44 for 8...8 for 9; 4 lect hrs, 1 quiz hr, 2 lab hrs per wk)
10. **General Physics.** Wave motion, sound, optics, electricity, and magnetism. (4 cr; for IT architecture students only; prereq 12, ¶10A, Math 24A or ¶24A or 43 or ¶43; 4 lect hrs, 1 quiz hr per wk)
- 10A. **Physics Laboratory.** Laboratory exercises in wave motion, electricity, and magnetism. (1 cr; prereq ¶10; 2 lab hrs per wk)
11. **General Physics.** Kinematics and classical dynamics. (5 cr; prereq Math 13A or ¶13A or 42 or ¶42; 4 lect hrs, 1 quiz hr, 2 rec hrs per wk)
12. **General Physics.** Mechanics (continued), heat, elementary kinetic theory. (4 cr; prereq 11, ¶12A, Math 24A or ¶24A or 43 or ¶43; 4 lect hrs, 1 quiz hr per wk)

- 12A. **Physics Laboratory.** Laboratory exercises in mechanics. (1 cr; prereq ¶12; 2 lab hrs per wk)
13. **General Physics.** Wave motion, sound, geometrical and physical optics. (4 cr; prereq 12, ¶13A, Math 25B or ¶25B or 44 or ¶44; 4 lect hrs, 1 quiz hr per wk)
- 13A. **Physics Laboratory.** Laboratory exercises in heat, sound, optics. (1 cr; prereq ¶13; 2 lab hrs per wk)
14. **General Physics.** Electricity and magnetism. (4 cr; prereq 13, Math 26B or ¶26B or 55 or ¶55; 4 lect hrs, 1 quiz hr per wk)
- 14A. **Physics Laboratory.** Laboratory exercises in electricity and magnetism. (1 cr; prereq ¶14; 2 lab hrs per wk)
- 14H. **Honors Course: General Physics.** Electricity and magnetism. (4 cr; prereq 13 and Math 26B or ¶26B or 55 or ¶55, Δ ; 4 lect hrs, 1 quiz hr per wk)
- 15H. **Honors Course: Physics Laboratory.** Parallel to 14H. (1 cr; prereq ¶14H, Δ ; 3 lab hrs per wk)
20. **Elementary Physical Acoustics.** Physical principles of acoustics and wave motion with particular application to the field of music and musical instruments. Laboratory work is an integral part of the course. (5 cr, §3, §6, §9 or §13; intended primarily for music and music education majors; prereq 1 yr high school algebra)

UPPER DIVISION COURSES

Upper Division credit is allowed for Phys 8 and 9 to students not majoring in chemistry, mathematics, or physics.

50. **Intermediate General Physics.** Elementary kinetic theory, charged particle dynamics, special relativity, electromagnetic radiation, elementary atomic physics. (4 cr; prereq 6 or 9 or 14, Math 27 or ¶27 or 106 or ¶106; 4 lect hrs and 1 quiz hr per wk)
- 50A. **Physics Laboratory.** Parallel to 50. (1 cr; prereq ¶50; 2 lab hrs per wk)
- 50H. **Honors Course: Intermediate General Physics.** Elementary kinetic theory, charged particle dynamics, special relativity, electromagnetic radiation, elementary atomic physics. (4 cr; prereq 6 or 9 or 14H, Math 27 or ¶27 or 106 or ¶106, Δ ; 4 lect hrs and 1 quiz hr per wk)
51. **Intermediate General Physics.** Elementary nuclear physics, wave motion, wave phenomena. (4 cr; prereq 50 and Math 27 or 106; 4 lect hrs and 1 quiz hr per wk)
- 51A. **Physics Laboratory.** Parallel to 51. (1 cr; prereq ¶51; 2 lab hrs per wk)
- 51H. **Honors Course: Intermediate General Physics.** Elementary nuclear physics, wave motion, wave phenomena. (4 cr; prereq 50H and Math 27 or ¶27 or 106 or ¶106, Δ ; 4 lect hrs, 1 quiz hr per wk)
- 52H. **Honors Course: Physics Laboratory.** Parallel to 50H. (1 cr; prereq ¶50H, Δ ; 3 lab hrs per wk)
- 53H. **Honors Course: Physics Laboratory.** Parallel to 51H. (1 cr; prereq ¶51H, Δ ; 3 lab hrs per wk)
- 60-61. **Intermediate Physics.** Atomic molecular and nuclear physics emphasizing implications for the biological sciences. Topics selected from: atomic, molecular, and nuclear structure; interaction of electromagnetic radiation with matter; radioactivity; hydrodynamics; thermodynamics; kinetic theory and elementary statistical mechanics; transport phenomena; reaction kinetics. (3 cr per qtr; primarily for premedical students and students majoring in biological sciences; prereq 6 and Math 40 or Δ) Beck
70. **Industrial Summer Employment.** Employment (contracted by the student) with an industrial firm in a professional or semiprofessional capacity doing work in the field of physics. Applications must be approved by the department prior to employment. Ten weeks of summer employment with a written report on this work approved by both employer and the department. (1 cr; prereq 3 yrs academic work, Δ during previous spring qtr)
- 100-102-104. **Mechanics, Electricity, and Magnetism.** Theoretical course designed to prepare students for advanced work. (4 cr per qtr, §100A or §MM 29 for 100; prereq 3rd yr, 9 or 14, Math 27 or 106 for 100...100 or MM 29 for 102...102 for 104; 4 lect hrs per wk)
- 100A-101A-102A. **Introduction to Analytic Mechanics.** An analytic course in Newtonian mechanics with emphasis on conservation principles. Topics include: particle dynamics in one, two, and three dimensions with special attention to the central force problem; dynamics of a system of particles including general motion of a rigid body and normal-mode analysis of coupled systems; moving co-ordinate systems; mechanics of continuous media including wave motion and elementary hydrodynamics; general co-ordinates and the Lagrange formulation of mechanics. Mathematics beyond the prerequisites is developed as required. (3 cr

- per qtr, §Phys 100 or §MM 28 for 100A, §Phys 100 or §MM 29 for 101A; prereq 3rd yr, 9 or 14, Math 27 or 106 for 100A...majors in fields other than physics may use MM 28, 29 as prereq for 102A; 3 lect hrs per wk)
- 103A-104A-105A. Introduction to Electric and Magnetic Fields.** The classical theory of electric and magnetic fields, developed with the aid of vector calculus. Topics include electrostatics and potential theory, magnetostatics, Maxwell's equations, material media and plasmas, electromagnetic waves, and electromagnetic radiation. (3 cr per qtr; prereq 4th yr or §, 9 or 14, Math 27 or 106 for 103A; 3 lect hrs per wk)
- 107-109-111. Atomic and Nuclear Physics.** Emphasis on an interpretation of experimental phenomena. Topics include kinetic theory, Maxwell-Boltzmann distribution, special relativity, the nuclear atom, atomic and molecular structure and spectra, black-body radiation, wave mechanics, nuclear physics, modern developments in classical physics, astrophysics, particle physics. (3 cr per qtr, §50 or §51; prereq 9 or 14, Math 27 or 106, § if taken out of sequence; 3 lect hrs per wk)
- 108-110-112. Principles of Modern Physics.** An analytical course developing elementary quantum mechanics from its historical background with applications to atomic and nuclear physics. Topics include origin of quantum theory, electrons and quanta, atomic structure, particles and waves, the theory of quantum mechanics, one-electron atoms, exclusion principle, multi-electron atoms, X rays, scattering and nuclear physics. (3 cr per qtr; prereq 51 or §, Math 153 or 108; 3 lect hrs per wk)
- 113. Techniques of Nuclear Physics.** Statistics of random events; interactions of photons, charged, and neutral particles with matter; detection devices; beam handling; measurement and analysis of cross sections. (3 cr; prereq ¶103A)
- 114, 116, 118. Elementary Physical Investigation.** Problems, either experimental or theoretical, of special interest to student. Written report required. (Cr ar; prereq 3rd yr, Δ)
- 120, 121, 122. Experimental Atomic and Nuclear Physics.** Techniques and methods used in physics research laboratories. Experiments deal with vacuum gauges and equipment; mass spectroscopy; X-ray diffraction; health physics; detection of charged particles, neutrons and gamma rays, and the measurement of several fundamental atomic constants. (3 cr; prereq 51 or ¶107 or ¶108, §; 6 lab hrs per wk; student may take 1 or 2 qtrs of this sequence in any order)
- 123. Thermodynamics.** An analytical introductory course intended primarily for fourth-year physics majors. Formulation of the basic laws of thermodynamics concerning temperature, energy, and entropy and their application to simple systems. (3 cr; prereq 9 or 14, Math 27 or 106; 3 lect hrs per wk)
- 124-125. Kinetic Theory and Statistical Mechanics.** An introductory sequence in the principles of kinetic theory, dealing principally with gases, the Maxwell-Boltzmann distribution, and the elementary theory of transport processes, and the principles of statistical mechanics, dealing with the equilibrium properties of both classical and quantum systems of independent or interdependent particles. (3 cr; prereq 123 or § for 124; 3 lect hrs per wk)
- 126-127-128. Elementary Solid State Physics.** Introduction to physics of bulk matter. Structure and types of solids; ionic, molecular, and metallic solids; thermal, electrical, and magnetic behavior of matter; theory of conduction in metals and semiconductors; crystal imperfections and their effects. (3 cr per qtr; prereq 51, Math 27 or 106)
- 131. Geometrical Optics.** Fundamentals of ray optics and study of its applications to optical instruments and their components. (3 cr; prereq 3rd yr, 15 cr in physics, Math 25B or 44; 3 lect hrs per wk)
- 133. Physical Optics.** Wave theory of interference, diffraction, polarization, and double refraction, with a study of their applications. (3 cr; prereq 3rd yr, 15 cr in physics, Math 25B or 44; 3 lect hrs per wk)
- 133A. Physical Optics Laboratory.** Parallel to 133. (1 cr; prereq ¶133; 3 lab hrs per wk)
- 134. Experimental Optics Laboratory.** Spectrometry, optics of compound lenses, photometry, absorption, interferometry, and polarized light. (3 cr; prereq 3rd yr, 15 cr in physics, Math 25B or 44; 1 lect hr and 5 lab hrs per wk)
- 136. Spectrum Analysis Laboratory.** Measurement of wave lengths, intensities and absorption coefficients in the infrared, visible, and ultraviolet regions of the spectrum. (3 cr; prereq 3rd yr, 15 cr in physics, Math 25B or 44; 1 lect hr and 5 lab hrs per wk)
- 144. Electrical Measurements.** Ballistic and current galvanometers, magnetic flux measurements, potentiometers, D.C. and audio-frequency A.C. bridges, elementary D.C. and A.C. circuit theory. (4 cr; prereq 9 or 14, Math 26B or 55; 3 lect hrs and one 3-hr lab per wk)
- 146. Physics of Vacuum Tubes and Associated Circuits.** Characteristics of vacuum tubes, power supply, and amplifier circuits with emphasis on applications to physics research. (4 cr; prereq 144 or §; 3 lect hrs and one 3-hr lab per wk)

148. **Application of Electronic Circuits.** Use of tubes and transistors in amplifier, oscillator, and pulse generating circuits employed in physics research. (4 cr; prereq 146 or #; 3 lect hrs and one 3-hr lab per wk)
165. **Introduction to Physics of the Atmosphere.** A survey of the physical processes which determine the mean state of the atmosphere. Topics in radiative transfer and thermodynamics are reviewed in preparation for the discussion of the heat budget and temperature distribution of the atmosphere. Atmospheric properties and phenomena treated include: formation of clouds and precipitation, convection and stability, atmospheric electricity and ozone. (3 cr; prereq 50, Math 27 or 106)
166. **Meteorology I.** Quantitative description of large-scale atmospheric motions. The basic equations of meteorological hydrodynamics are introduced and applied in actual weather situations. (3 cr; prereq 165 or #)
167. **Meteorology II.** Introduction to theoretical meteorology. Critical examination of the mathematical models used to describe the large-scale flow processes; energy transformations in atmospheric flow; atmospheric turbulence and eddy transport. (3 cr; prereq 166, vector analysis or #)
- 171-172-173. **Classical Theoretical Physics.** Principal topics are classical mechanics, special theory of relativity, and classical electrodynamics. Emphasis is placed on the application of advanced mathematical techniques to these subjects. (3 cr per qtr; prereq 104 or both 102A and 105A, Math 153 or 108 or equiv; 3 lect hrs per wk)
- 171A, 172A, 173A. **Techniques of Theoretical Physics.** Drill in the solution of mathematical physics problems. (1 cr per qtr; prereq ¶171, ¶172, ¶173 or #)
- 181-183-185. **Atomistics and Elementary Quantum Mechanics.** Elementary quantum mechanics, with applications from atomic and nuclear physics. Topics considered include Schrödinger's equation, wave mechanics, matrix representations, perturbation theory, electromagnetic radiation, scattering, and many-body problem. (3 cr per qtr; prereq 111 or 112, Math 153 or 108 or equiv; 3 lect hrs per wk)

FOR GRADUATE STUDENTS ONLY

- 201-202-203. **Dynamics of Fluid Motion**
- 204-205-206. **Statistical Thermodynamics**
- 207-208-209. **Electrodynamics, Theoretical Optics, and the Theory of Relativity**
- 210-211-212. **Quantum Mechanics**
- 213, 214, 215. **Seminar: Contemporary Experimental Physics**
- 216, 217, 218. **Seminar: Contemporary Theoretical Physics**
- 222-223-224. **Principles of Mathematical Physics**
- 225-226-227. **Advanced Quantum Theory**
- 228-229-230. **Nuclear Physics**
- 231-232-233. **Theory of Atomic and Molecular Structure**
- 234, 235. **Low Temperature Physics**
236. **Radiofrequency Spectroscopy**
- 237, 238, 239. **Seminar: Radiofrequency Spectroscopy**
- 240, 241, 242. **Seminar: Solid State and Low Temperature Physics**
- 246-247-248. **Cosmic Ray Physics**
- 249-250-251. **Solid State Physics**
- 252, 253, 254. **Seminar: Nuclear Physics**
- 255, 256, 257. **Seminar: Mass Spectroscopy**
- 258, 259, 260. **Seminar: Cosmic Ray Physics**
- 261-262-263. **Mathematical Foundations of Quantum Mechanics**
- 264-265-266. **Elementary Particle Physics**
- 267-268-269. **Atmospheric Physics**
- 270-271-272. **Special Topics in Nuclear Theory**
- 273-274-275. **Plasma Physics**
- 301, 302, 303. **Research in Physics**

Physiology (Phsl)

(College of Medical Sciences)

FACULTY—Maurice B. Visscher, *chairman*; Marvin B. Bacaner, James S. Beck, H. Mead Cavert, Charles Edwards, Irwin J. Fox, Eugene Grim, Rodney B. Harvey, John A. Johnson, Joseph T. King, J. S. Lee, Nathan Lifson, Victor Lorber, Carlos Martinez, Carlo Terzuolo.

Major Advisers in Arts College—Professors Grim, Johnson.

Major Sequence in Arts College—Phsl 55-56; 20 credits in approved Upper Division courses in related fields.

Modification of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

LOWER DIVISION COURSES

2w. **Human Physiology.** (4 cr [will not count for cr for admission to Medical School except by permission of the dean of the College of Medical Sciences]; prereq 1 qtr zoology, 1 qtr chemistry)

UPPER DIVISION COURSES

51w. **Human Physiology.** Lectures, demonstrations. (5 cr; primarily for nursing and physical therapy students; prereq 1 yr chemistry, zoology)

55f-56w. **Principles of Physiology.** A beginning course in physiology emphasizing physical and chemical foundations and utilizing a quantitative approach. Lectures, demonstrations, and readings. (5 cr per qtr; prereq 1 yr general college chemistry, 1 yr college physics, mathematics through integral calculus) Johnson

60w. **Human Physiology.** Lectures, demonstrations. (6 cr; primarily for medical technology and pharmacy students; prereq college course in organic chemistry, zoology, and physics)

101w. **Human Physiology.** (10 cr; primarily for dentistry students; prereq courses in physiological chemistry and human or mammalian anatomy) Staff

106s. **Human Physiology.** Primarily for medical and graduate students. (7 cr [4 cr without lab]; prereq courses in zoology, organic chemistry, and neuroanatomy) Visscher and staff

107f. **Human Physiology.** Continuation of 106. (8 cr [5 cr without lab]; cr given independently for 106 and 107; prereq same as for 106) Visscher and staff

110f-111w. **Physics for Biologists.** Atomic molecular and nuclear physics emphasizing implications for the biological sciences. Topics selected from atomic, molecular, and nuclear structure; interaction of electromagnetic radiation with matter; radioactivity; hydrodynamics; thermodynamics; kinetic theory and elementary statistical mechanics; transport phenomena; reaction kinetics. (3 cr per qtr; primarily for premedical students and students majoring in biological sciences; prereq 6 and Math 40 or Δ) J S Beck

Polish

See Slavic and Oriental Languages

Political Science (Pol)

FACULTY—Charles H. McLaughlin, *chairman*; Charles H. Backstrom, Harold W. Chase, William H. Flanigan, Edwin Fogelman, Robert T. Holt, Walter W. Klein, Samuel Krislov, Benjamin E. Lippincott, Janis J. Penikis, Orville C. Peterson, David E. RePass, Robert E. Riggs, Thomas M. Scott, Lloyd M. Short, Mulford Q. Sibley, Francis J. Sorauf, Jr., John E. Turner, George A. Warp.

Major Advisers in Arts College—Professors Chase, Holt, Lippincott, McLaughlin, Short, Sibley, Turner, Warp; Associate Professors Backstrom, Fogelman, Krislov, Riggs, Sorauf; Assistant Professors Flanigan, Klein, Scott.

Preparation for a Major Sequence—14 or 15 credits, including Pol 1-2 (6 cr) or 5 (5 cr), and A-B (6 cr), and 3 credits selected from the other Lower Division courses in political science; plus history (Hist 1, 2, 3 or 4, 5, 6 or 20, 21, 22), or economics (Econ 1-2 and QA 5), or sociology (Soc 1, 2 and 45). In addition Phil 2 and Psy 1-2 are recommended.

Major Sequence—The foregoing preparatory work is designed to provide a general knowledge of (1) the systems of government of the United States and of major European states, and (2) the principal terms and concepts of political science. To this knowledge the major sequence should add (3) a knowledge of the works of a number of great contributors to political ideas; (4) fairly exact and thorough knowledge of some extensive part of three of the following fields of political science: (a) political theory (Pol 160 through 166); (b) comparative government and politics (Pol 60, 61, 141-142 through 158-159, and 196); (c) international relations (Pol 171 through 196); (d) politics and behavior (Pol 51, 67, 137, 138, 167-168); (e) American governmental systems and processes (Pol 52, 53, 80, 81, 107 through 118); (f) public administration (Pol 120 through 135, and 176); (g) public law (Pol 60, 61, 101, 102, 103, 109, 180-181-182, 183). In addition the student must show ability to study independently and write a satisfactory term paper in at least one of the three chosen fields (see Pol 95).

To these ends a major student must obtain 30 credits in Upper Division courses in political science. Of these not more than 15 can be in any one field nor more than 24 in any two fields. These must be distributed among the fields chosen in a pattern approved by a major adviser so as to avoid excessive concentration in one or two fields or fragmentation among many. The major and minor work should constitute an integrated plan of study.

Majors in International Relations (Foreign Service Training, Area Studies)—Special programs in international relations and foreign areas will be arranged for students of good standing who desire a general introduction to these fields. Courses are drawn from political science, economics, history, geography, and related departments. Those intending to take the examinations for the United States Foreign Service are advised to follow such a program and to prepare themselves adequately in modern foreign languages. See page 89 in this bulletin and see the special bulletin, *Programs in International Relations and Area Studies*; consult McLaughlin, Turner, Holt or Klein.

Honors Program—A departmental honors program is open to students who have completed Lower Division work with a 3.00 grade average and who obtain departmental approval. Honors candidates must complete 33 Upper Division credits in political science. Of these 24 will be allocated to the satisfaction of modified field requirements; at least two fields must be included, and not more than 12 credits can be taken in any one field. In addition 9 credits will be taken in special honors courses: junior tutorial courses in the scope and methods of political science (Pol 90H) and great issues and major literature of political science (Pol 91H), and a senior honors thesis (for which credit is given in either 92H or 93H or 94H). Candidates must also pass an oral examination by a committee of the faculty. For admission to the program consult Professor Holt.

Major Adviser for Students in College of Education—Professor Backstrom.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation*: At least 36 credits in political science including Pol 1, 2, 3, A-B, 25, and at least 18 credits in Upper Division courses.

In lieu of a teaching minor, students will be required to take at least 48 credits in other social science departments. For further information see *Bulletin of the College of Education*.

Note for Graduate Students—Courses in political science numbered from 100 through 199 may be taken by graduate students for credit, subject to the requirement of additional work over and above that assigned to undergraduates. However, these credits cannot be used to satisfy course requirements for graduate majors or fields of concentration in political science. These requirements are stated wholly in terms of graduate seminars (200-level courses), although students deficient in undergraduate training may be required to take as extra work any prerequisite 100-level courses. The 100-level courses may be used for a graduate minor or related field in political science for the M.A. degree, and in part for the Ph.D. minor. See the *Bulletin of the Graduate School*.

General Education—Except for Pol 27, all of the 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. Pol 80 and 81 are specifically offered for nonmajors. Most of the Upper Division courses in this department also are appropriately considered as general education courses and are, in fact, elected by large numbers of students who are not majors or minors in political science.

LOWER DIVISION COURSES

- 1f,w-2w,s†-3s. American Government and Politics.** Analysis of principles, organization, procedures, and functions of government in the United States—national, state, and local. Attention will be given throughout to current issues. (3 cr per qtr, \$5) Chase, Scott
- 5f,w,s. American Government and Politics.** Covers most of Pol 1-2; 5 may be substituted for 1-2 whenever 1-2 is required. (5 cr, \$1-2) Staff ar
- 7w, 8s. Tutorial: American Government and Politics.** Intensive work in selected topics drawn from the subject matter of Pol 1-2-3. (3 cr per qtr; prereq 1 or 2 or 5 with grade of B or better)
- Af,w-Bw,s-Cs. The State in the Modern World.** Examination of principles, structure, and operation of modern state. Emphasis on nation state; historical development; democratic government (United States, Great Britain); totalitarian government (Nazi Germany, Soviet Russia); conflict between states. (3 cr per qtr; C may be taken concurrently with B; nonmajor students may enter any qtr) Fogelman (Af-Bw-Cs), Lippincott (Aw-Bs)
- Dw, Es. Tutorial: The State in the Modern World.** Intensive work in selected topics drawn from the subject matter of Pol A-B-C. (3 cr per qtr; prereq A or B with grade of B or better)
- 25f,w,s. World Politics.** Introduction to contemporary international relations; policies of the great powers; nationalism; internationalism. (3 cr)
- 26w. American Foreign Policy.** An introduction to the institutions and processes which determine American foreign policy. Traditional and postwar foreign policies. (3 cr) Klein
- 27s. Analysis of International Relations.** Methods of systematic analysis of the problems of international relations and the factors affecting them. Theoretical positions. (3 cr; prereq 25 or 26 or #) Holt

UPPER DIVISION COURSES

Upper Division courses in this department are open to Lower Division students who have an average grade of C in the prerequisite courses. Courses which carry graduate credit may not be taken earlier than the third quarter of the student's sophomore year.

Nonelective Courses

- 90Hs. Honors Course: Research in Political Science.** Survey of the discipline of political science, its central problems and unifying concerns; introduction to the important research methods and data available to political scientists. (3 cr; open only to majors who have been admitted to political science honors program) Flanigan
- 91Hf. Honors Course: Senior Honors Seminar.** Readings in the great issues and major literature of political science. (3 cr; prereq 90H)

- 92Hf, 93Hw, 94Hs. Honors Course: Work in Selected Fields. (Cr ar; prereq 18 cr; consult major advisers)
- 95f,w,s. Major Paper. (No cr; required of all majors except those admitted to honors program; consult major advisers)

Political Theory

- 160f. **American Political Thought.** 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. (3 cr; prereq B or 9 cr in social science or #) Sibley
- 161w. **Problems of Democracy.** Analysis of postulates and implications; moral foundations; democratic theory and the economic order; liberty and authority; equality; representation; spiritual order; democracy and practical politics; critics of democracy. (3 cr; prereq B or 9 cr in social science or #) Sibley
- 162s. **Recent Political Thought.** Main currents from Marx to present; Marx, Marxism, and their critics; non-Marxist socialism; syndicalism; anarchism; Catholic and Protestant theories; conservatism; pacifism; political thought in law and literature. (3 cr; jr, sr only; prereq B or 9 cr in social science or #) Sibley, Fogelman
- 163s. **Political Theory and Utopia.** (Same as Hum 163) Selected great utopias from the viewpoint of the political theorist; the idea of planning in ideal states; the achievement of utopia; stability and change in the great utopias; the problem of authority and law; anarchist, socialist, and conservative utopias; utopia and totalitarian ideology; utopia and democratic ideology. (3 cr; prereq B or 9 cr in social science or #) Sibley, R Swanson
- 164f. **Development of Political Thought: Ancient.** Hebrew ideas, Moses to second Isaiah; classical Greek thought; Plato and Aristotle; primitive natural law; Cynics and Stoics; theory in Roman Republic and Empire; first-century Christianity. (3 cr; prereq B or 9 cr in social science or #) Sibley
- 165w. **Development of Political Thought: The Middle Ages.** 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; economics and politics. (3 cr; prereq B or 9 cr in social science or #) Sibley
- 166s. **Development of Political Thought: Early Modern.** Machiavelli; the idea of sovereignty; Protestant conceptions; English Civil War; Hobbes, Spinoza, Locke, the idea of progress; Godwin, Burke, Rousseau, rise of romanticism; German idealism. (3 cr; prereq B or 9 cr in social science or #) Sibley

Comparative Government and Politics

- 60f, 61w. **Introduction to Legal Systems.** For description see course listing under heading Public Law.
- 141f-142w.† **European Government and Politics.** Britain, France, Germany, and Italy. Political institutions in their social setting; problems of power and responsibility, governmental stability; political decision-making, government and the economic order. (3 cr per qtr; prereq B or 12 cr in social science or #) Holt
- 143s. **Government and Politics of the Soviet Union.** An analysis that seeks to explain rise of Bolshevism; sources and nature of its ideology; history of communist regime; institutional character; organization of power; role of the party; foreign, economic, and cultural policies; significance for Western civilization. (3 cr; prereq B or 12 cr in social science or #) Turner
- 145f. **Government and Politics of the Scandinavian Countries.** (3 cr; prereq 6 cr or 12 cr in social science)
- 146w. **Social Legislation and Social Institutions in the Scandinavian Countries.** (3 cr; prereq 2, or 5 or Soc 1)
- 149f-150w. **Government and Politics of South Asia.** Political institutions of South Asian countries in their social setting; sources and nature of ideologies; politics and class structure; parties and elections; economic and social policies. (3 cr per qtr; prereq 6 cr or 12 cr in social science or #)
- 153f. **Japanese Government and Politics.** Constitutional and political development in Japan; political ideas, government, political parties, and problems. (3 cr; offered 1965-66 and alt yrs) Turner
- 154w. **Chinese Government and Politics.** Constitutional and political development in China; political ideas, government, political parties, and problems. (3 cr; offered 1964-65 and alt yrs) Turner

- 155f. Latin-American Government and Politics I.** Analysis of factors such as colonial institutions, the economy, the social structure, which condition constitutional and political organization. (3 cr; prereq 2 or 5 or #) Klein
- 156w. Latin-American Government and Politics II.** Survey of contemporary political systems; analysis of factors underlying political instability and political change in Latin America. (3 cr; prereq 155 or #) Klein
- 157s. Government and Politics of Developing Areas.** Analysis of the political problems of new nations with particular emphasis on political consequences of the breakdown of the traditional society and problems of developing new institutional forms and procedures. (3 cr; prereq C or 15 cr in any combination of economics, sociology, and/or anthropology) Holt or Klein
- 158w-159s. Comparative Governmental Systems: Principles and Problems.** Application of the comparative method to study of politics with reference to Western and non-Western institutions; organization of political power in the 20th-century state; parties and pressure-groups; voting behavior, representation and legislation; policy-making; bureaucracy; socio-economic bases of government. (3 cr per qtr; prereq 6 cr in any Upper Division comparative government course or #) Fogelman
- 196s. Proseminar in East and South Asia.** For description see course listing under heading International Relations.

International Relations

- 171. Scandinavian Foreign Policy.** (3 cr; prereq 6 cr in history or political science or #; offered when feasible)
- 175f. Diplomacy.** Nature and functions, historical development of diplomacy; its relation to forms of government and power systems. Traditional diplomacy, diplomacy by conference and in international organizations, personal diplomacy, open and secret diplomacy. Essentials of diplomatic usage. Diplomatic agents. (3 cr) Penikis
- 176w. U.S. Foreign Affairs Administration.** Control of foreign relations; treaties and executive agreements; structure and functions of foreign affairs agencies—Department of State, U.S. Information Agency, Central Intelligence Agency, Department of Defense, National Security Council; co-ordination of agencies; the Foreign Service and other overseas agencies. (3 cr; offered 1965-66 and alt yrs) Penikis
- 177s. U.S. Foreign Policy.** Analysis of factors conditioning U.S. foreign policy: geographic and economic position, defense needs and dispositions, social structure, ideologies, psycho-cultural characteristics, technological revolution; public opinion; political participation; role of parties, interest groups, bureaucracy; leadership; decision-making processes. (3 cr; offered 1965-66 and alt yrs) Penikis
- 180f-181w†-182s. International Law (Peace).** 180-181: Relation of international law to individuals, states, international community; jurisdictional problems; survey of principles developed in diplomatic practice, national courts, international adjudications. 182: Status of diplomatic agents and consuls, treaties, arbitration, treatment of aliens, pacific settlement. (3 cr per qtr) McLaughlin
- 183s. International Law (Conflict).** War and hostile measures short of war, military occupation, war crimes, neutrality, collective security sanctions. (3 cr; prereq 181 or #; offered when feasible) McLaughlin
- 184f. International Politics I.** Study of state action in international relations; forms of state action; foreign policy-making analysis; capabilities analysis. (3 cr) Klein
- 185w. International Politics II.** Analysis of systems of interaction among nation-states; balance of power, bipolar, and other types of international system; conflict and co-operation. (3 cr) Klein
- 186s. Regional International Systems.** Examination and comparison of selected regional systems, past and contemporary; stability and change. (3 cr; prereq 185) Klein
- 187f. International Organization I.** Study of the organization of interaction among nation-states; decision-making in international organizations; comparison of national and international political institutions; world organization for collective security and peaceful settlement of disputes. (3 cr) Riggs
- 188w. International Organization II.** Study of world organization for social, economic, cultural, and humanitarian co-operation; comparison of functional and political organizations; problems of international administration. (3 cr) Riggs
- 189s. Regional International Organization.** Analysis and comparison of selected regional international organizations; regional defense, social and economic co-operation; relationship between regional and world organizations; economic and political integration. (3 cr) Riggs

- 196s. **Proseminar in East and South Asia.** (Same as Anth 196, Geog 196, Hist 196, Ortl 196) Integrating course for students majoring in East and South Asia Area Studies program. (3 cr; prereq sr) Interdepartmental staff

Politics and Behavior

- 51f. **Field Work in Politics.** Field study of political organization, leadership, and activities in the local community and the state. In election (even-numbered) years, it will deal with legislative candidates; in alternate (odd-numbered) years, with interest groups. (3 cr; prereq 2 or 5; see also 52w, 53s under heading American Governmental Systems and Processes.) Backstrom
- 67f. **Political Behavior Laboratory.** Laboratory exercises illustrating the subject matter of political behavior. Analysis of survey research data on political attitudes and voting behavior. (2 cr; prereq 167 or ¶167) Flanigan
- 137f. **American Political Parties.** 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. (3 cr; prereq 2 or 5 or #) Sorauf
- 138s. **American Political Campaigns and Elections.** Examination of national, state, and local campaigns and elections, including field work in local political parties and election campaigns. (3 cr; prereq 2 or 5 or #) Backstrom
- 167f-168w. **Political Behavior.** Political personality and public opinion. Role of attitudes, interests, and values. Voting behavior and elections. Group and organizational behavior. Mass society, elite theory, and group theory. Conceptual approaches and advanced analytic techniques. (3 cr per qtr) Flanigan

American Governmental Systems and Processes

- 52w, 53s. **Field Work in Government.** 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. (3 cr per qtr, 53 offered when feasible; prereq 2 or 5; see also 51f under heading Politics and Behavior) Backstrom
- 80f. **National Government in the United States.** Special reference to current problems and developments. (3 cr; not open to soph or students who have had 2 or 5) Scott
- 81w. **State and Local Government and Politics.** Analysis of state constitutions; legislative, executive, and judicial organization and procedures; political parties, political interest groups and elections; state-local government relations; personnel, finance, and major functions. (3 cr; not open to soph or students who have had 2 or 5; offered 1965-66 and alt yrs) Scott
- 107f. **The American Chief Executive.** The constitutional powers and political roles of the President and governors; the chief executive and administration; executive relations with legislatures; party and popular leadership; presidential roles in crisis. (3 cr; prereq 2 or 5 or #)
- 108w. **Legislative Organization and Procedure.** Congress and the state legislatures at work. (3 cr; prereq 2 or 5 or #) Short
- 109s. **The Judicial Process.** The structure of the American judiciary; the selection of judges; the process of litigation; influences on judicial decisions; impact of and compliance with decisions; the role of the Supreme Court in the American political system. (3 cr; prereq 2 or 5 or #) Sorauf
- 115f. **State Government.** The states in the American federal system; intergovernmental relations with the national and local governments; governmental institutions and processes, with special reference to Minnesota. (3 cr; prereq 2 or 5 or #) Short
- 116f. **Local Government I.** Local units in their social, legal, and theoretical context. (3 cr; prereq 2 or 5 or #) Scott
- 117w. **Local Government II.** Politics of local units; leadership and decision-making structures and processes. (3 cr; prereq 2 or 5 or #) Scott
- 118s. **Local Government III.** Metropolitan problems; governmental organization and political processes. (3 cr; prereq 2 or 5 or #) Scott

Public Administration

- 120f. **Municipal Functions.** Line activities of municipal government; law enforcement, traffic, fire, health and hospitals, welfare, parks and recreation, education and libraries, public works, public utilities, planning, housing, urban renewal. (3 cr; prereq 2 or 5 or #) Peterson
- 121w. **Municipal Administration.** Basic administrative relationships in municipal government, personnel and financial administration, purchasing and contracting, legal service, administrative planning and research, reporting. (3 cr; prereq 2 or 5 or #) Peterson

- 123f. Planning.** (Same as Arch 104, Econ 110, and Soc 106) Social, economic, political, geographic, and technical phases of modern city planning. (3 cr; prereq sr) Borchert, Heller, Peterson, Sirjamaki, Vivrett, Warp
- 124f. Government and Welfare.** Federal, state, and local programs in the fields of social insurance, public assistance, welfare services, and housing. Emphasis on philosophy, policy development, and administration. (3 cr; prereq 2 or 5 or §) Warp
- 126w. Government and the Economic Order.** Survey of relation of government to all of the major areas of the economy; policy-making and policy decisions are emphasized. (3 cr; prereq 2 or 5 or §) Warp
- 127s. Administrative Regulation.** Administrative development of regulatory programs; tools and techniques of administration; problems of organization, interest groups, and safeguards. (3 cr; prereq 2 or 5 or §) Warp
- 131f. Public Administration.** Organization and areas, administrative responsibility. (3 cr; prereq 2 or 5 or §) Short
- 132w. Public Administration.** Personnel administration. (3 cr; prereq 131 or §) Short
- 133s. Public Administration.** Financial administration. (3 cr; prereq 131 or §) Short
- 135s. Development Administration.** Administration of economic, social, and political development; planning, organizing, and programming of change; technical assistance, synergistic interaction between government and industry, loans and subsidies, contracts, public enterprise; resources administration. (3 cr) Warp
- 176w. U. S. Foreign Affairs Administration.** For description see course listing under heading International Relations.

Public Law

- 60f, 61w. Introduction to Legal Systems.** Elementary survey, primarily for social science students, of principal legal systems of the Western world. Emphasis upon organization, procedures, methods of growth, relation to political and economic systems, basic juristic conceptions, rather than upon substantive rules of law. The latter are drawn in when needed for illustration. 60: Roman law and European derivatives. 61: Anglo-American law. (3 cr per qtr; prereq jr or §; offered 1964-65 and alt yrs) McLaughlin
- 101f. Principles of American Constitution I.** Nature of constitutions, judicial review, national-state and interstate relations. (3 cr; prereq 2 or equiv) Chase
- 102w. Principles of American Constitution II.** Organization and powers of the national government. (3 cr; prereq 101 or equiv) Chase
- 103s. Principles of American Constitution III.** Constitutional rights, due process and equal protection of the law. (3 cr; prereq 101 or 102 or equiv) Chase
- 109s. The Judicial Process.** For description see course listing under heading American Governmental Systems and Processes.
- 180f-181w†-182s. International Law (Peace).** For description see course listing under heading International Relations.
- 183s. International Law (Conflict).** For description see course listing under heading International Relations.

FOR GRADUATE STUDENTS ONLY

General

- 200. Scope and Methods of Political Science I**
- 201. Scope and Methods of Political Science II**

Political Theory

- 205Af, Bw, Cs. Topics in the Development of Political Thought**
- 208Aw-Bs. Readings in the Classics of Politics**
- 210Aw, Bs. Topics in Twentieth-Century Political Thought**
- 212Af-Bw-Cs. Contemporary Political Theory**
- 214Af, Bw. American Political Thought**
- 216Af, Bw, Cs. Problems in Political Thought**

219Af, Bw, Cs. Individual Reading and Research in Political Theory and Development of Political Thought

Comparative Government and Politics

220Af-Bw. Government and Politics in Western Europe

221s. Government and Politics of the U.S.S.R.

223. Government and Politics of Japan and China

224. Government and Politics of India and South Asia

226. Government and Politics in Latin America

228. Democratic Systems

229. Totalitarian Systems

230. Politics of Developing Systems

232. Comparative Methodology and Research Design

233A, B. Research Seminar: Comparative Government and Politics

234Af, Bw, Cs. Individual Reading and Research in Comparative Government and Politics

International Relations

235Af-Bw. Seminar: International Politics

236s. Research Seminar: International Politics

238Af-Bw. Seminar: International Organization

239s. Research Seminar: International Organization

241Af-Bw. Seminar: International Law

242s. Research Seminar: International Law

245f. Seminar: Diplomacy

246w. Seminar: Foreign Policy

247s. Research Seminar: Diplomacy and Foreign Policy

249Af-Bw-Cs. Individual Reading and Research in International Relations

Politics and Behavior

250. Public Opinion and Political Participation

251. Seminar: Political Parties

252. Seminar: Interest Groups

255. Seminar: Political Leadership and Decision Making

256. Seminar: Political Psychology and Socialization

258A-B. Research Seminar: Politics and Behavior

259Af, Bw, Cs. Individual Reading and Research in Politics and Behavior

265. Seminar: Community Power Systems

American Governmental Systems and Processes

260f. Seminar: Legislative Process

261w. Seminar: Executive Process

262s. Seminar: Judicial Process

263. Seminar: Intergovernmental Relations

264. Seminar: Local Government and Politics

265. Seminar: Community Power Systems

266. Seminar: Public Policy

268A-B. Research Seminar: American Governmental Processes

269Af, Bw, Cs. Individual Reading and Research in American Governmental Systems and Processes

Public Administration

270Af. Public Administration Seminar: Organization Theory and Administrative Behavior

270Bw. Public Administration Seminar: Finance

270Cs. Public Administration Seminar: Personnel

273. Topics in Development Administration

275. Seminar: Comparative Public Administration

278. Administrative Law

280s. Seminar: Local Administration

282Af, Bw, Cs. Administrative Internship

283Af, Bw, Cs. Research Seminar: Public Administration

284Af, Bw, Cs. Individual Reading and Research in Public Administration

Public Law

241Af-Bw. Seminar: International Law

242s. Research Seminar: International Law

262s. Seminar: Judicial Process

278. Administrative Law

285. Research Seminar: Judicial Process and Administrative Law

290Af, Bw. Seminar: Constitutional Law

292s. Research Seminar: Constitutional Law

295Af. Fundamental Concepts of Public Law

295Bw, Cs. Jurisprudence

299Af, Bw, Cs. Individual Reading and Research in Public Law

Portuguese

See Romance Languages

Psychology (Psy)

FACULTY.—John G. Darley, *chairman*; Elliot Aronson, Ralph F. Berdie, Dana H. Bramel, Marvin D. Dunnette, G. W. England, Paul W. Fox, Norman Garnezy, Marshall G. Greenberg, A. J. Hafner, Starke R. Hathaway, Gordon T. Heistad, James J. Jenkins, David L. LaBerge, Lloyd H. Lofquist, Howard P. Longstaff, David T. Lykken, Kenneth MacCorquodale, Paul E. Meehl, Warren W. Roberts, Wallace A. Russell, William Schofield, Milton A. Trapold, Robert G. Warnken, Bernard Weiner, Ben Willerman, Robert D. Wirt.

Major Advisers in Arts College—Professors Aronson, Dunnette, Jenkins, LaBerge, Lofquist, Longstaff, MacCorquodale, Roberts, Russell, Schofield, Willerman, Wirt; Assistant Professors Bramel, Fox, Greenberg, Trapold, Warnken.

All students contemplating a major in psychology must pick up a set of mimeographed material in room 112 Psychology, consult the Student Counseling Bureau, and allow enough time for the results to be reported to the Psychology Department prior to consulting a major adviser.

Major Sequences in Arts College—

A. Honors Sequence. For high-ability students preparing for graduate work in psychology. Requires a 3.00 over-all grade point average at the University of Minnesota.

Qualified students will normally be identified by advisers, or they may apply for candidacy as they enter Upper Division. All applications should be made to the chairman of the Psychology Department, and must be approved by him. (Prerequisites: 1-2 and 4-5.) Psy 70; 120-121 or 128-129 or 132-133 or 117; and one of the following: 101-102 or 125-126 or 140 and 141 or 151 or 167 plus Jour 115.

An individual research project must be completed under the personal supervision of a faculty member in the particular field of psychology selected by the student. This research project is to result in a thesis of high quality. The student may receive credit for this work by registering for Psy 190.

Additional Upper Division courses in psychology will be elected with consent of the adviser, leading to a total of 27-33 credits.

Honors candidates may be required to attend regularly a departmental honors seminar in which matters of a substantive and professional nature will be discussed.

Students will be encouraged to attend appropriate all-college honors seminars.

B. General Sequence. Intended for students who have a broad interest in psychology regardless of whether they plan to take additional work beyond the B.A. degree. (Prerequisites: 1-2 and 4-5.) Psy 70; 144-145 or 125-126 or 120-121; 55 or 75 or 148 or 151; at least 6 credits distributed over at least two of the following groups: (a) Psy 130 or 160 or 155; (b) Psy 140; (c) CPsy 80; (d) Psy 117 or 118 or 132-133 or 3 credits of 190; plus 9 to 15 additional credits in Upper Division psychology courses.

All students majoring in psychology are strongly urged to elect courses in mathematics, especially Math 10 and 40. Math 10 and Biol 1-2 are recommended for students planning to enter graduate work in clinical psychology.

Psy 70 should be taken as soon as possible in the junior year.

Majors in psychology may take not more than 33 Upper Division credits in psychology, educational psychology, and child development combined. This is in accordance with the general principle that a liberal arts degree should not involve overspecialization.

Psy 190 requires original work and should not be taken until as late in the student's program as possible.

Many of the courses numbered below 200 are designed for nonmajors as well as majors in psychology. This department particularly recommends Psy 55, 75, 140, and 144-145 as courses contributing to the general education of all students. Honors sections of Psy 1-2, 4-5 and 144-145 are available to qualified students.

For courses in child psychology see page 46.

LOWER DIVISION COURSES

1f,w-2w,s,† General Psychology. General introduction to study of human behavior. Prerequisite for all advanced courses in psychology. (3 cr per qtr; prereq soph or 3rd qtr fr with B avg) Greenberg, Jenkins, LaBerge, MacCorquodale, Trapold

4f,w,s-5w,s†-6s. Introductory Laboratory Psychology. Experiments illustrating subject matter of contemporary psychology. Included are human and animal learning, motivation, verbal behavior, problem solving, visual perception, psychological measurement, personality and social psychology. (2 cr per qtr; prereq soph, 1-2 or ¶1-2) Russell, Fox, staff

10s. Applications of Psychology. Review of research findings and individual techniques in the study of vocational choice and personal adjustment with particular emphasis on the psychology of college students. (3 cr; not intended for students planning to major in psychology; not open to any student who has had *any psychology or educational psychology course over 100*; prereq 2) Hewer, Berdie

UPPER DIVISION COURSES

In this department courses numbered between 50 and 75 are open to sophomores who have an average grade of at least C in all their courses.

- 55s. Sensation and Perception.** Roles of the stimulus, the receptor organ and the brain, and of learning and motivation, in man's perception of his world. Lectures and demonstrations. (3 cr; prereq 2) Roberts
- 70f,w,s. Principles of Psychological Measurement.** Uses and limitations of fundamental varieties of psychological measurement. (3 cr, §QA 5, §Soc 45; prereq 2, 5) Dunnette, Greenberg
- 75s. Introduction to the Psychology of Learning.** Survey of the basic methods in the study of learning. Development of fundamental concepts and principles governing the learning process. (3 cr; prereq 2) LaBerge, Trapold
- 101f-102w.† Experimental Psychology.** Critical treatment of content and methods of experimental psychology. Emphasis on current problems in perception, learning, motivation, and complex processes. Class will design, execute, and analyze two or three experimental projects per quarter. (3 cr per qtr; prereq 2, 5, 70, or equiv) LaBerge, Trapold
- 117f. Analysis of Behavior.** A systematic formulation of the topics of psychology based upon a Skinnerian analysis. Scientific method, learning, motivation, and emotion are discussed. (3 cr; prereq 2, and one course numbered 50 and above) MacCorquodale
- 118w. Verbal Behavior.** An account of an individual's verbal behavior in terms of his past history and current circumstances. Psy 117 is not prerequisite but the same method of analysis is used. (3 cr; prereq 2, and one course numbered 50 and above) MacCorquodale
- 120w-121s. Theories of Personality.** Summary and evaluation of the major contemporary theories of personality. Among the theorists whose works will be discussed are Freud, Adler, Allport, Sheldon, Murray, and Rogers. (3 cr per qtr; prereq 9 cr in psychology)
- 125f-126w. Differential Psychology.** Introduction to methodology of differential psychology. Quantitative studies of the nature of psychological traits and influence of age, sex, heredity, and environment in the causation of individual differences in ability and temperament. (3 cr per qtr; prereq sr, 70, or 5 and 5 cr in statistics for 125...125 for 126) Darley, Dunnette, Jenkins
- 128f-129w.† Psychology of Learning.** Psychological theory: characteristics and function. Critical analysis of all learning theories and their application to problems of normal and abnormal behavior. (3 cr per qtr; prereq 75 except for students in Sequence A and grad students) Trapold
- 130w,s. Vocational and Occupational Psychology.** Psychology of individual differences in intelligence, aptitudes, interests, and training, as related to vocational counseling psychology and problems of work adjustment. Lectures and laboratory work. (3 cr; prereq 2 and 5 or 5 cr in statistics) Lofquist
- 132f-133w.† Psychology of Motivation.** Classical and contemporary theories of motivation. Elaboration of basic drives into motives, acquisition of new drives and goals; dynamics of the elaborated drive structure. Motivation in complex situations involving set, level of aspiration, the Zeigarnik effect, frustration, etc. (3 cr per qtr; prereq 9 cr in psychology) Russell
- 135f-136w-137s. Counseling Psychology.** Theories of counseling; theories of vocational choice. Psychological techniques in case analysis, interviewing, and remedial work. Types of vocational problems. Illustrative case histories. (3 cr per qtr; prereq sr...9 cr or # for 135-136, 130 for 137) Lofquist, Warnken
- 140w. Social Psychology.** Survey of theories and evidence. The effects of other persons, mass communications, social class, and group membership upon the individual's attitudes and behavior. (3 cr; prereq 2, 5, and 9 cr in social science) Aronson, Bramel
- 141s. Social Psychology of Small Groups.** Communication and influence processes; factors related to group cohesion; problem-solving behavior of groups; relation of group structure to function; emergence of leadership and relation between leadership and group process; types of member participation. (3 cr; prereq 2, 5, 9 cr in a social science; offered when feasible) Willerman
- 144w-145s.† Abnormal Psychology.** Normal and abnormal behavior contrasted. Dynamics and determinants of personality maladjustments. (3 cr per qtr; prereq either 9 cr in psychology... or 6 cr in psychology, plus either Biol 2 or 12 cr in social science) Garnezy
- 148f. Physiological Psychology.** Elements of neural anatomy and physiology, tonus, neuromuscular set, integration, and the neural basis of learning. Their importance for psychology. (3 cr; prereq 2, 5 or Biol 2 or #) Roberts
- 150w. Perception.** Critical analysis of the methods of investigation and data obtained in the study of selected problems of perception including: psychophysical methods, form perception, space

- perception, constancy, spatially co-ordinated behavior, and attention. Emphasis will be primarily but not exclusively on visual perception. (3 cr; prereq 55, 70 or #) Pick
- 151s. **Animal Psychology.** Historical, philosophical, and biological foundations; consciousness; motivation; learning; reasoning; judgment; abnormal behavior; social influences. (3 cr; prereq 2, 5 or equiv in another science) Roberts
- 155s. **Industrial Psychology.** Application of psychological methods in business and industry. Staffing, personnel development and training; employee motivation and morale; social psychological factors in industry; biomechanics and production; theories of industrial organization; communication and leadership in an industrial setting. (3 cr; prereq 2, 5 or 3 cr in statistics) Dunnette
- 156f.w. **Psychology of Advertising.** Psychological analysis of basic principles underlying advertising and selling. Consumer research is stressed. Research techniques for investigating advertising problems and analysis of consumer wants are considered in detail. (3 cr; prereq 2 and Principles of Economics) Longstaff
- 160f.w. **Psychology in Personnel Work.** Selection and retention of a stabilized personnel. Standardized interview; principles and technique of employment tests; methods of judging character qualities; rating scale; personnel classification methods; morale and its measurement. (3 cr; prereq 2, 5, or 3 cr in statistics, and Principles of Economics or #) Longstaff
- 167w. **Measurement of Opinions and Attitudes.** Problems of sample survey techniques, including the preparation of questionnaires, methods of sampling, procedures in data analysis, social implications of polling, and applications of survey techniques in public affairs and in social science research. (3 cr; prereq sr, 70 or equiv; offered when feasible) Dunnette
- 169s. **Quantitative Models in Psychology.** Applications of mathematics in the construction of quantitative models for the description and prediction of behavior; introductions to measurement of sensation, game theory, decision theory, and information theory. (3 cr; prereq 5 and calculus or #) Greenberg
- 171f-172w†-173s. **Clinical Psychology I: Assessment.** Theory and practice of personality appraisal, especially of deviant individuals and in a psychiatric context. Diagnostic interview and mental status; history-taking; behavior ratings; psychological deficit; prediction; structured personality tests. (3 cr per qtr; prereq sr, 145 and a course in mental measurement or statistics; students intending to use this course professionally should postpone taking it until they are in Graduate School) Meehl, Meier, Schofield
- 190f,w,s. **Project in Psychology.** Individual library study or experimental investigation. (Cr ar; prereq sr, #) Staff

FOR GRADUATE STUDENTS ONLY

- 200-201-202. **Systematic Psychology**
- 207-208-209. **Advanced Social Psychology**
- 210, 211, 212. **Research Problems**
213. **Seminar: Philosophical Psychology**
- 215, 216, 217. **Seminar: Special Areas of Psychology and Related Sciences**
- 221, 222, 223. **Seminar: Personality Research**
- 224, 225, 226. **Seminar: Advanced Clinical Child Psychology**
- 227-228-229. **Seminar: Vocational Rehabilitation Counseling**
- 230, 231, 232. **Field Work in Psychometrics and Applied Psychology**
- 235-236-237. **Counseling Psychology Practicum**
- 240, 241, 242. **Seminar: Student Personnel Work**
243. **Experimental Psychodynamics**
244. **Research Problems in Experimental Psychodynamics**
- Phil 244, 245, 246. **Seminar: Philosophy of Psychology**
246. **Psychoanalytic Theory**
247. **Mathematical Theories of Behavior**
- CPsy 248. **Clinical Child Psychology**
- CPsy 249. **Treatment of Disturbed Children**
- 250-251-252. **Advanced Seminar: Vocational Rehabilitation Counseling**
- 253, 254. **Research in Psychopathology**

- 257-258-259.† Research Methods in Social Psychology
 260-261-262.† Seminar: Differential Psychology and Industrial Applications
 265-266-267. Seminar: Advanced Clinical Psychology
 270. Advanced Psychological Measurement
 271-272-273.† Clinical Psychology II: Treatment
 274. Preclinical Practicum in Clinical Psychology
 275-276-277. Seminar: Research in Counseling Psychology
 281, 282, 283. Seminar: Psychology of Marriage
 284-285-286. Seminar: Psychology of Language
 290-291. Projective Techniques
 296. Internship in Clinical Psychology
 299. Tabulating Equipment Laboratory

Public Health (PubH)

(College of Medical Sciences)

Chairman—Gaylord W. Anderson

Advisers in Arts College—Professors G. Anderson and Thomson; Professor Bearman for biostatistics.

Major Sequence in Biostatistics in Arts College—PubH 110, 111, 120, 121, 130, 131, and 18 credits in Upper Division courses approved by the adviser.

Modifications of this sequence will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

For further information about undergraduate curriculums leading to graduate work in biostatistics consult with members of the staff in biostatistics.

For additional details of courses of study in public health see the *Bulletin of the School of Public Health*.

LOWER DIVISION COURSES

- 3f,w,s.** Personal Health. Normal body function; causes and prevention of disease. (2 cr, §2, §50) Thomson
 4s.** Health Problems of the Community. Prevention of disease in family and community. (2 cr; prereq 2, 3, or successful passing of exemption exam; exemption from 2 or 3 on the basis of military service does not serve as a prereq) Thomson

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 50f,w,s.** Personal and Community Health. Fundamental principles of health conservation and disease prevention. (3 cr, §2, §3, §4, §51, §52, §53, §100A) Thomson
 51w.** Community Hygiene. Community programs for disease control. (3 cr, §4, §50, §52, §53, or §100 or those excused from 3 on basis of military service; prereq 2, 3, 3A) Stauffer
 75s. Introduction to Environmental Sanitation. Principles of urban and rural sanitation relating to water, food, wastes, housing, accidents, radiation, air, insects, rodents. (3 cr; prereq 3 cr in public health) Bond
 100Af. Elements of Public Health I. Occurrence and prevention of communicable, degenerative, and industrial disease; protection of food, water, and milk; maternal and child health. (3 cr; prereq 3 or 50, or equiv and a course in bacteriology) G Anderson, Schuman, Thomson

** No credit is granted for this course in the major sequence in public health nursing.

- 102Aw. Environmental Sanitation.** General principles of urban and rural sanitation; problems encountered by official health agencies. (2 cr; prereq 100A or #) Bond, others
- 103f,w,s. Public Health Bacteriology.** Bacteriologic and serologic diagnosis, public health laboratory administration and methods. (Cr ar; prereq grad, MicB 102, 116 and #) Bauer
- 106w. Public Health Administration.** Structure, basic functions, and activities of public health agencies. (3 cr; prereq 100A) G Anderson, Hamilton
- 125f,s. Public Health Education.** Planning educational aspects of community health programs; group procedures; public relations; selection, development, and use of mass media. (2 cr; prereq #) Grout

For other courses in public health see the *Bulletin of the Graduate School*, or the *Bulletin of the School of Public Health*.

Biostatistics

- 110f-120w. Biostatistics I and II.** Introduction to role of statistics in research; finite and infinite population sampling; simple tests of hypotheses, power; estimation; regression; correlation; other measures of association; standard distributions including normal, t , χ^2 , F , binomial, Poisson; special distributions arising from nonparametric procedures. (3 cr; prereq sr, Math 10 or #, ¶111-121) Bearman, Brown
- 111f-121w. Biostatistics Laboratory I and II.** Presentation of data; descriptive statistics; practice and practical application of principles and methods covered in 110 and 120. (2 cr; prereq ¶100-120) Briese, Loewenson
- 130s. Biostatistics III.** Principles and methods of analysis of effects and components of variance in experiments and surveys; one-way, two-way and higher nested, crossed, or mixed classifications; simple and multiple analysis of covariance. (3 cr; prereq 120 with C grade, ¶131) Bearman, Brown
- 131s. Biostatistics Laboratory III.** Practice and practical application of principles and methods covered in 130. (2 cr; prereq ¶130) Briese, Loewenson

Other courses in biostatistics designed primarily for students in public health, medicine, or Graduate School may be open to students in Arts College by special arrangement with Mr. Bearman.

Physiological Hygiene

- 91f. Physiological Hygiene.** Basic physiological principles and facts. (4 cr [to receive credit for this course 92 must also be completed except by #]; prereq 8 cr in chemistry and 4 cr in human anatomy or equiv) Taylor
- 92w. Physiological Hygiene.** Effects of exercise, nutrition, environment, and age on performance and health. (4 cr; prereq 91 or equiv) Taylor
- 95f. Human Nutrition.** Particular reference to public health. Nutritional values of foods, food utilization and requirements, food management, nutrition education. (3 cr; prereq courses in chemistry and biology, or #) Stief
- 191f. Science of Human Nutrition.** Surveys; nutritional status; undernutrition; malnutrition; dietetics in social relief and medical practice. (3 cr; prereq #) Keys, J Anderson
- 192w. Physiology of Exercise.** Muscular efficiency, training, deconditioning, effects of exercise on metabolism and physiological systems. (Cr ar; prereq Phs1 106, 107 or equiv and #) Taylor, Simonson

Radio and Television

Courses relating to radio and television are offered by the School of Journalism and the Department of Speech and Theatre Arts to juniors and seniors who have had the appropriate prerequisite courses. Usually students wishing to prepare for radio and television production and performance enroll as speech majors, those directed toward broadcast advertising, journalism, and public affairs programming as journal-

ism majors; supporting work comes from the alternate department and from other areas.

Religion

While the University has no department of religion, attention is called to the following courses from several departments which deal with religious matters:

Anthropology

- 124—Culture Sphere of China
- 125—Peoples and Cultures of India
- 126—Peoples and Cultures of South East Asia and Indonesia
- 127—The Islamic Culture Sphere
- 161—Primitive Religion

Classics

- Grk 73—Hellenistic Greek

English

- 66-67—The Literature of the Bible (offered when feasible)

Music

- 134-135-136—History of Church Music
- Other related courses:
 - 105—American Music
 - 107—Georg Friedrich Handel: Life, Works
 - 108—Heinrich Schütz: Life, Works

- 109—Lasso and Palestrina

- 140—Interpretation of Choral Masterpieces

- 150—Organ Literature

- 154-155-156—Music in the Middle Ages and Renaissance

- 164-165-166—Music in the Baroque Era

- 190—Hymnology

- Mus D, or 12C or 12E—Voice

- Mus 27—Organ

Philosophy

- 10—Science and Religion

- 11—World Religions

- 137—Kierkegaard and Scandinavian Philosophy

- 171-172—Philosophies of India

- 182—Philosophy of Religion

Sociology

- 142—Religion as a Social Institution

Rhetoric (Rhet)

(College of Agriculture, Forestry, and Home Economics)

Chairman—Ralph G. Nichols

47f,w,s. Efficient Reading. Increases reading rate, comprehension, and vocabulary. Not a remedial course. (1 cr for Arts College students; prereq score above 30th percentile on a standard reading test) Brown

Romance Languages

FACULTY—Armand A. Renaud, *chairman*; Robert Barta, Irene Berga, Santiago A. Cúneo, Robert Estelle, John E. Fadell, Rodolfo O. Floripe, Silvano B. Garofalo, Russell G. Hamilton, Jr., Diana Johnstone, Ruth Jones, Lawrence Mantini, John H. Matthews, Richard A. Narváez, Elizabeth Nissen, Walter T. Pattison, Dorothy E. Rundorff, Mireille Rydell, Arturo Serrano-Plaja, John M. Sullivan, Lorin Uffenbeck, Harry F. Williams.

Major Advisers in Arts College—Professors Pattison, Williams; Associate Professors Floripe, Nissen, Renaud.

Romantic (Rom)

114s. Introduction to Romance Philology. Origins of the Romance languages. Factors that influenced their growth and structure in early Catalan, French, Italian, Portuguese, Provençal, Roumanian, and Spanish texts. Required of all departmental majors. Replaces Fren 56 and Span 171-172-173. (3 cr; prereq Fren 30 or Ital 25 or Port 25 or Span 30 or #) Williams

207-208-209. Old Provençal

CLit 221-222-223. Seminar: Comparative Literature

French (Fren)

Major and Minor Sequences in Arts College—

Major: Fren 30, and 33 Upper Division credits, including 55, 60, 61, 62; 65, 66, 67 or 65H, 66H, 67H; 85, 86, 87; 114. The 85, 86, 87 sequence, required for Arts College majors, must be taken at the same time as the 65, 66, 67 sequence. In exceptional cases, students may be allowed by the department to elect course work in literature on the 100 level instead of the corresponding Upper Division offerings.

Minor: A minimum of 15 credits in courses above 53. The department recommends one of the following sequences:

- A. Fren 65, 66, 67; 85, 86, 87; 114.
- B. Fren 60, 61, 62 (12 cr) and 5 additional credits in Upper Division French.
- C. Fren 65, 66, 67 (9 cr) and 8 additional credits in Upper Division French.
- D. Fren 54, 55, 57, 107-108-109.

Major Advisers for Students in College of Education—Associate Professor Renaud, Assistant Professor Sullivan.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation:* Fren 30, and 36 Upper Division courses including: Fren 54, 55, 57, 60-61-62, 65-66-67, 100 or 107, 114. At least one more quarter of the 107-108-109 sequence or Clas 56 is recommended. *Minor recommendation:* 23 college credits of which 18 credits will be in courses numbered above 25, including: Fren 30, 55, 60-61-62.

LOWER DIVISION COURSES

Note—Juniors, seniors, and graduate students should consider Fren 50-51-52.

Honors Program—See Fren 2H, 3H, 25H and consult major advisers.

1f,w-2f,w,s-3f,w,s. Beginning French. Beginning course stressing pronunciation, aural comprehension, basic grammatical forms, patterns of French and ability to recombine them in new situations. The reading and writing skills will be developed as a complement to the acquisition of the spoken objectives. (5 cr per qtr; students submitting 1 yr high school French for entrance must take 2 or 2H and those offering 2 yrs must take 3 or 3H) Mantini, Rydell, and staff

25f,w,s. Intermediate French. (Formerly Fren 4) An intensive review of grammatical forms and patterns principally through a systematic analysis of a variety of French texts. (5 cr; prereq 3 or 3 yrs high school French)

2Hw-3Hs-25Hf. Honors Sequence: Beginning and Intermediate French. Students in 2H and 3H attend the Tuesday and Thursday sections of the regular French 2 and 3, but meet in special groups on MWF. Includes the discussion of at least one literary masterpiece each quarter. Students who complete this sequence with a grade of A or B may omit Fren 30. (5 cr per qtr; open to superior students on basis of performance in previous qtr or by special permission)

30f,w,s. Introduction to French Literary Texts. (Formerly Fren 20) A variety of literary works representing the principal genres are examined through stylistic analyses and literary explanations. Students learn critical terminology and discuss literary problems and techniques. (3 cr; prereq 25 or 4 yrs high school French or #)

UPPER DIVISION COURSES

Upper Division courses with numbers less than 100 are open to Lower Division students who have an average grade of at least C in the prerequisite courses.

50f-51w-52s. Reading French: A Beginning Course for Juniors and Seniors. Aims to develop reading proficiency by concentrating from the outset on vocabulary building and reading

techniques; formal grammar is reduced to a minimum. Intensive study of a variety of texts in class, and individual projects in extensive readings. (3 cr per qtr, §1, §2, §3; prereq jr; cannot be counted toward either a major or a minor in French) Fadell

- 53s. **French Diction.** (1 or 2 cr; open only to candidates for the French play; prereq 3 or #)
- 54f,w. **French Composition.** (Formerly Fren 103) (3 cr; prereq 25 or equiv) Sullivan
- 55f,w,s. **French Conversation and Pronunciation.** (Formerly Fren 54) In addition to regular conversation course, an hour each week is devoted to practical phonetics and pronunciation drill. (3 cr; prereq 25 or equiv; 3 rec and 1 lab hr) Sullivan
- 57s. **Advanced French Composition.** (Formerly Fren 104-105) (3 cr; prereq 54 or #) Sullivan
- 58w,s. **Advanced French Conversation.** (Formerly Fren 55) (3 cr; prereq 55 or #) Sullivan
- 60f, 61w, 62s. **French Civilization and Culture.** Systematic study of development of French culture, with oral and written French exercises based on material of the course. Course conducted in French. First term deals with period of Middle Ages, second term with period from Renaissance to French Revolution, third term with period beginning with French Revolution to present. (4 cr per qtr; prereq 25) Renaud
- 65f. **Survey of French Literature: Rabelais to La Bruyère.** (3 cr; prereq 30...¶85 for majors) Rydell
- 65Hf. **Honors Course: Survey of French Literature: Rabelais to La Bruyère.** (3 cr; prereq 25H or 30 with an A, and #...¶85 for majors) Renaud
- 66w. **Survey of French Literature: The Age of Enlightenment.** (3 cr; prereq 30...¶86 for majors)
- 66Hw. **Honors Course: Survey of French Literature: The Age of Enlightenment.** (3 cr; prereq 25H or 30 with an A, or 65H, and #...¶86 for majors) Uffenbeck
- 67s. **Survey of French Literature: Romanticism to Surrealism.** (3 cr; prereq 30...¶87 for majors) Matthews
- 67Hs. **Honors Course: Survey of French Literature: Romanticism to Surrealism.** (3 cr; prereq 25H or 30 with an A, or 66H, and #...¶87 for majors) Matthews
- 77f-78w-79s. **French Literature in English Translation.** For students with little or no knowledge of French but interested in the contribution of France to European and world literature. Representative works, chosen from Medieval times to the present day, are examined through various movements, genres, or themes. (2 cr per qtr; knowledge of French not required; does not count toward a major in French) Matthews, staff
- 85f. **Sixteenth and Seventeenth-Century French Literature.** (2 cr; prereq 30 or #, ¶65) Renaud
- 86w. **Eighteenth-Century French Literature.** (2 cr; prereq 30 or #, ¶66) Uffenbeck
- 87s. **Nineteenth- and Twentieth-Century French Literature.** (2 cr; prereq 30 or #, ¶67) Matthews
- 100f. **French Phonetics.** (3 cr; prereq French major or #) Sullivan
- 105s. **French Stylistics.** (3 cr; prereq 57 or #) Sullivan
- 107f-108w-109s. **The Structure of Modern French.** The application of linguistics to the study of present-day French. (9 cr; prereq 57 or ¶57 or #) Mantini
- 110f. **French Romanticism.** (3 cr; prereq sr with #, grad; offered 1964-65 and every 3rd yr) Uffenbeck
- 111w. **Nineteenth-Century Literature: The Drama.** (2 cr; prereq sr with #, grad; offered 1965-66 and every 3rd yr) Matthews
- 114s. **Introduction to Romance Philology.** (See Romanic, above)
- 121f. **Pre-Renaissance and Pléiade Poetry.** (3 cr; prereq sr with #, grad; offered 1965-66 and every 3rd yr) Renaud
- 124w. **Montaigne and Pascal.** (3 cr; prereq sr with #, grad; offered 1965-66 and every 3rd yr) Renaud
- 125f. **Renaissance and Baroque Drama: Corneille and the Origins of the Classical Drama.** (3 cr; offered 1964-65 and every 3rd yr) Renaud
- 126s. **The Classical Tragedy: Racine.** (3 cr; offered 1965-66 and every 3rd yr) Renaud
- 127f. **Classical Comedy: Molière.** (3 cr; offered 1966-67 and every 3rd yr) Renaud
- 128w. **French Poetry from d'Aubigné to La Fontaine.** (3 cr; offered 1966-67 and every 3rd yr) Renaud
- 129s. **The Novel of the Seventeenth Century.** (3 cr; offered 1964-65 and every 3rd yr) Renaud
- 130f. **The Poetry of Victor Hugo.** (2 cr; offered 1964-65 and every 3rd yr) Uffenbeck
- 131f. **Baudelaire.** (2 cr; offered 1966-67 and every 3rd yr) Matthews

- 132f. Symbolist Poets: Verlaine, Rimbaud, Mallarmé. (2 cr; offered 1964-65 and every 3rd yr) Matthews
- 140w. The Novel of the Eighteenth Century. (3 cr; offered 1966-67 and every 3rd yr)
- 141s. Eighteenth-Century Dramatic Literature. (3 cr; offered 1964-65 and every 3rd yr)
- 142f. Voltaire. (3 cr; offered 1964-65 and every 3rd yr)
- 143s. Diderot. (3 cr; offered 1964-65 and every 3rd yr)
- 144f. Rousseau. (3 cr; offered 1966-67 and every 3rd yr)
- 148s. The Drama of the Twentieth Century: Claudel, Giraudoux, Anouilh, Montherlant, Camus, Sartre. (3 cr; offered 1966-67 and every 3rd yr) Matthews
- 153w. Balzac. (3 cr; offered 1965-66 and every 3rd yr) Uffenbeck
- 154s. Stendhal. (3 cr; offered 1964-65 and every 3rd yr) Uffenbeck
- 155w. Flaubert, Maupassant, and Narrative Techniques. (3 cr; offered 1964-65 and every 3rd yr) Matthews
- 156w. Zola, Goncourt, and the Naturalistic Novel. (3 cr; offered 1965-66 and every 3rd yr) Matthews
- 158w. Proust. (2 cr; offered 1966-67 and every 3rd yr) Matthews
- 159w. The Art of the Novel: Mauriac and Malraux. (3 cr; offered 1964-65 and every 3rd yr) Matthews
- 161s. From Gide to the Existentialist Novels of Sartre and Camus. (3 cr; offered 1964-65 and every 3rd yr) Matthews
- 165w. Poetry in the Twentieth Century: Apollinaire, Valéry, Eluard. (2 cr; offered 1964-65 and every 3rd yr) Matthews
- 175f-176w-177s. French Literary Doctrines from the Pléiade to the Present. (2 cr per qtr; offered 1965-66 and every 3rd yr)
- 190f-191w-192s. Directed Readings for Undergraduates. (1-3 cr per qtr; prereq consent of dept chm) Staff

FOR GRADUATE STUDENTS ONLY

- 207-208-209. Old Provençal
- 210-211. French Seminar: History of "Sensibilité" in the Eighteenth Century Through the Revolution
222. French Seminar: The Baroque in Sixteenth- and Seventeenth-Century Literature
223. French Seminar: Religious Thought in the Seventeenth Century
- 230-231-232. Research Methods and Materials
- 241-242-243. Old French Philology. (Formerly Fren 171-172-173). (2 cr per qtr; prereq 1 yr Latin and Fren 114 or #)
- 244f-245w-246s. Readings in Old French Literature. (Formerly Fren 204-205-206) (2 cr per qtr; prereq 114 or #)
- 250-251-252. French Seminar
- 259, 260, 261. Directed Readings in Romance Languages

Italian (Ital)

Major and Minor Sequences in Arts College—

Major: 27 credits in Italian courses numbered 60 or above including 114, and 3 additional credits chosen from the following: Engl 75; Fren 65-66-67, 121; Hist 103A, 104A, 105A; Ital 159-160, 161-162; Lat 133.

Minor: A minimum of 15 credits above Ital 50.

LOWER DIVISION COURSES

- 1f-2w-3s. **Beginning Italian.** Stresses aural comprehension, correct pronunciation, basic grammar, and a practical reading knowledge. (5 cr per qtr, §50) Nissen
- 25f. **Intermediate Italian.** A conversational approach to a review of grammatical forms and patterns. Literary texts are analyzed and discussed in Italian. (3 cr; prereq 3 or §) Garofalo
- 50w. **Reading Knowledge of Italian.** (Formerly Ital 5) (5 cr, §1; prereq reading knowledge of Latin or one of the Romance languages or §...no previous knowledge of Italian necessary) Nissen

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 60f-61w-62s. **Italian Civilization and Culture.** Systematic study of development of Italian culture, with oral and written exercises in Italian based on the material of the course. Course conducted mainly in Italian. The first term deals with period of Middle Ages, the second term with humanism and the Renaissance and the third term with the period of the Risorgimento to the present. (3 cr per qtr; prereq 25 or §) Nissen
- 65f. **Survey of Italian Literature: Dante to Lorenzo de Medici.** (Formerly Ital 68) (3 cr; prereq **; offered 1965-66 and alt yrs) Nissen
- 66w. **Survey of Italian Literature: The Renaissance.** (Formerly Ital 69) (3 cr; prereq **; offered 1965-66 and alt yrs) Nissen
- 67s. **Survey of Italian Literature: Tasso Through Pirandello.** (Formerly Ital 70) (3 cr; prereq **; offered 1965-66 and alt yrs) Nissen
114. **Introduction to Romance Philology.** (See Romanic, above)
- 150w. **Modern Poetry (Leopardi, Carducci, etc.).** (Formerly Ital 71) (3 cr; prereq **; offered 1964-65 and alt yrs) Nissen
- 155f. **Modern Short Story (Verga, Pirandello, etc.).** (Formerly Ital 76) (3 cr; prereq **; offered 1964-65 and alt yrs) Nissen
- 159f-160w. **Dante.** (3 cr per qtr; prereq one course above 50; students may enter any qtr with §; offered 1965-66 and alt yrs) Nissen
- 161f-162w. **The Sixteenth Century.** (3 cr per qtr; prereq one course above 50; offered 1964-65 and alt yrs)
- 164s. **Dante in English.** (3 cr; prereq §; offered when feasible) Nissen
- 172f. **Modern Drama (Giacosa, Pirandello, etc.).** (3 cr; prereq one course above 50; offered 1964-65 and alt yrs) Nissen
- 173s. **Boccaccio.** (3 cr; prereq one course above 50; offered 1965-66 and alt yrs) Nissen
- 174s. **Petrarch.** (3 cr; prereq one course above 50; offered 1964-65 and alt yrs) Nissen
- 175w-176s. **The Italian Novel.** 175: Manzoni's *Promessi Sposi*, Verga's *Mastro Don Gesualdo*, Fogazzaro's *Piccolo Mondo Antico*, Deledda's *Elias Portolu*. 176: Three novels selected from the works of Svevo, Pirandello, Bacchelli, Palazzeschi, Silone, Moravia, Pratolini, Vittorini, Calvino. (3 cr per qtr; prereq 62 or §; offered 1964-65 and alt yrs) Nissen
- 180f. **Early Italian Poetry: The Frederician Poets and the Dolce Stil Nuovo.** Development of certain fundamental poetic forms (sonnet, *sestina*, *ballata*, *madrigale*, *canzone*). (3 cr; prereq 67 or §; offered when feasible)
- 185w. **Survey of Italian Literature.** (3 cr; prereq one course above 50; offered when feasible)
- 186s. **Survey of Italian Literature.** (3 cr; prereq one course above 50; offered when feasible)
- 259, 260, 261. **Directed Readings in Romance Languages.** (Cr depends upon amount of work accomplished) Nissen

** The prerequisite is Ital 3 or 4; but for students beginning Italian in the Upper Division it may be Ital 2 or 50 with consent of instructor.

Portuguese (Port)

Advisers—Associate Professor Floripe, Assistant Professor Hamilton.

No major or minor sequences are available in Portuguese, but in exceptional cases students may be allowed by the department to combine Portuguese and Spanish to form a Portuguese-Spanish major or minor.

1f-2w-3s. **Beginning Portuguese.** Aural comprehension, correct pronunciation, basic grammar, and a practical reading knowledge. Brazilian speech is stressed but Lusitanian forms are also studied. (5 cr per qtr) Hamilton

25f. **Intermediate Portuguese Grammar and Composition.** An intensive review of grammar accomplished in part through the careful reading and analysis of selected cultural and literary texts. (5 cr; prereq 3 or #) Hamilton

30w. **Introduction to Luso-Brazilian Culture and Literature.** Stresses the cultural development of Portugal and Brazil, examined in literary texts. (3 cr; prereq 25 or #) Hamilton

114. **Introduction to Romance Philology.** (See Romanic, above)

190-191-192. **Directed Readings for Undergraduates.** (1-3 cr per qtr; prereq consent of dept chm) Floripe, Hamilton

Spanish (Span)

Major and Minor Sequences in Arts College—

Major: Students may arrange major programs in either Sequence A or Sequence B:

A. Span 54, 55; 60, 61, 62; 65, 66, 67 or 65H, 66H, 67H; 85A, 86A, 87A; 114.

B. Span 54, 55; 60, 63, 64; 74, 75, 76; 85B, 86B, 87B; 114.

The 85, 86, 87 sequences, required for majors, must be taken at the same time as the corresponding literature survey sequence. In exceptional cases, students may be allowed by the department to elect course work in literature on the 100 level instead of the corresponding Upper Division offerings.

Minor: A minimum of 15 credits in courses 54 or above. The department recommends one of the following sequences:

A. Span 65-66-67, 85A-86A-87A, 114.

B. Span 74-75-76, 85B-86B-87B, 114.

C. Span 54, 55, and 60-61-62 or 60-63-64.

D. Span 54, 55, 57, 107-108-109.

Major Adviser for Students in College of Education—Associate Professor Floripe.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation:* 36 Upper Division credits in Spanish including 54; 55; 57; 60, 61, 62, or 60-63-64; 65-66-67, or 74, 75, 76; 107, 108, 114. It is recommended that the student also take 109 or Clas 56. *Minor recommendation:* 23 college credits of which 18 credits will be courses numbered above 25 including one of the following sequences: 60, 61, 62 or 60-63-64 or 65-66-67 or 74, 75, 76.

LOWER DIVISION COURSES

Note—There are two beginning courses in Spanish, 1-2-3, and 1A-2A-3A. The student should study the description of each sequence and select the one most suited to his needs and interests.

- 1f,w-2f,w,s-3f,w,s. **Beginning Spanish.** Beginning course stressing correct pronunciation, aural comprehension, basic grammar, and a practical reading knowledge. (5 cr per qtr; students submitting 1 yr high school Spanish for entrance must take 2 and those offering 2 yrs must take 3) Estelle
- 1Af-2Aw-3As.** **Beginning Spanish: Conversational Approach.** Stresses conversation. Gives the students a basic active speaking vocabulary, assurance in self expression, and facility in the spoken language. Ten class meetings a week; 5 hours demonstration (introduction to texts dealing with real-life situations and necessary grammar) plus 5 hours intensive conversational drill in sections small enough to insure for each student individual attention. Less outside preparation required than for standard course. (5 cr per qtr) Cúneo
- 25f,w,s. **Intermediate Spanish.** (Formerly Span 53) An intensive review of grammar accomplished to a great extent through analysis of a variety of cultural and literary texts. (5 cr; prereq 3 or 3A, or 3 yrs high school Spanish)
- 2Hw, 3Hs, 25Hf,w,s. **Honors Course: Beginning and Intermediate Spanish.** Students attend the Tuesday and Thursday sections of the regular Span 2 and 3, but meet in special groups on MWF. Includes the discussion of at least one literary masterpiece each quarter. Students who complete this sequence with a grade of A or B may omit Span 30. (5 cr per qtr; open to superior students on basis of performance in previous qtr or by #)
- 30f,w,s. **Introduction to Spanish and Spanish-American Literary Texts.** (Formerly Span 21) A variety of literary works representing the principal genres are examined through stylistic analyses and literary explications. Students learn critical terminology and discuss literary problems and techniques. (3 cr; prereq 25 or 4 yrs high school Spanish or #) Rundorff

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 53s. **Spanish Diction.** (Formerly Span 52) (1 or 2 cr; prereq candidates for Spanish play or #) Cúneo
- 54f,w. **Spanish Composition.** (3 cr; prereq 25 or equiv) Narváez
- 55f,w,s. **Spanish Conversation.** (3 cr; prereq 25 or equiv) Narváez
- 57f. **Advanced Spanish Composition.** (Formerly Span 60) (3 cr; prereq 54) Narváez
- 58w,s. **Advanced Spanish Conversation.** (3 cr; prereq 55) Narváez
- 60f, 61w, 62s. **Spanish Civilization and Culture.** (Formerly Span 90-91-92) (3 cr per qtr; prereq 30 or equiv) Pattison
- 63w, 64s. **Latin-American Civilization and Culture.** (Formerly Span 70-71-72) (4 cr per qtr; prereq 60 or #) Cúneo
- 65f. **Survey of Spanish Literature: Poema del Cid to the Celestina.** (3 cr; prereq 30...¶85A for majors) Rundorff
- 65Hf. **Honors Course: Survey of Spanish Literature: Poema del Cid to the Celestina.** (3 cr; prereq 25H or 30 with an A, and #...¶85A for majors) Rundorff
- 66w. **Survey of Spanish Literature: The Golden Age.** (3 cr; prereq 30...¶86A for majors) Serrano-Plaja
- 66Hw. **Honors Course: Survey of Spanish Literature: The Golden Age.** (3 cr; prereq 25H or 30 with an A, or 65H, and #...¶86A for majors) Serrano-Plaja
- 67s. **Survey of Spanish Literature: Neoclassicism to Early Twentieth Century.** (3 cr; prereq 30...¶87A for majors) Rundorff
- 67Hs. **Honors Course: Survey of Spanish Literature: Neoclassicism to Early Twentieth Century.** (3 cr; prereq 25H or 30 with an A, or 66H, and #...¶87A for majors) Rundorff
- 74f, 75w, 76s. **Survey of the Literature of Spanish America.** (3 cr per qtr; prereq 30...¶85B, ¶86B, ¶87B for majors) Floripe
- 79s. **A Century of Latin-American Thought: 1850-1857.** Introduction to the men who have moulded the thought of Latin America and to the ideas which have shaped the attitude of their countries toward freedom, democracy, and social progress. Since there is no surer way to the heart and soul of a culture than a knowledge of the men whom it calls great,

** The sequence of courses that must be followed is Span 1-2-3 or 1A-2A-3A, and a student may not receive credit for more than one of these sequences.

- this course is another step in the understanding of the Latin-American republics. Conducted entirely in Spanish. (2 cr; prereq jr or §, 6 qtrs Spanish) Cúneo
- 80f. **Spanish-American Novel and Social Problems.** Deals with some of the outstanding social problems of Latin America as presented in the novels of its leading authors. These works capture the essence of social problems and suggest possible solutions for them. Conducted entirely in Spanish. (2 cr; prereq jr or §, 6 qtrs Spanish) Cúneo
- 81w. **Spanish-American Novel and Social Problems.** The scope is similar to that of Span 80 but the works and problems under study are different. Conducted entirely in Spanish. (2 cr; prereq jr or §, 6 qtrs Spanish) Cúneo
- 85Af. **Medieval and Renaissance Spanish Literature.** (2 cr; prereq 30 or §, ¶65) Rundorff
- 86Aw. **The Literature of the Golden Age.** (2 cr; prereq 30 or §, ¶66) Serrano-Plaja
- 87As. **Modern Spanish Literature.** (2 cr; prereq 30 or §, ¶67) Pattison
- 85Bf. **Colonial American Literature.** (2 cr; prereq 30 or §, ¶74) Floripe
- 86Bw. **Romanticism to Modernismo.** (2 cr; prereq 30 or §, ¶75) Floripe
- 87Bs. **Contemporary Latin-American Literature.** (2 cr; prereq 30 or §, ¶76) Floripe
- 105s. **Spanish Stylistics.** (3 cr; prereq 57 or equiv) Narváez
- 107f-108w-109s. **The Structure of Modern Spanish.** A scientific approach to the structure of present-day Spanish, with special attention to syntax. Phonology, word-formation, and dialectal differences. (3 cr per qtr; prereq 57 or § or ¶57) Narváez
- 110f-111w-112s. **Spanish Literature: Nineteenth Century.** (3 cr per qtr; prereq 65, 66, 67; offered 1964-65 and alt yrs) Pattison
- 114s. **Introduction to Romance Philology.** (See Romanic, above)
- 115f. **Spanish Literature of the Seventeenth Century: The Drama.** (3 cr; prereq 65, 66, 67; offered 1965-66 and alt yrs) Serrano-Plaja
- 116w. **Spanish Literature of the Seventeenth Century: The Novel.** (3 cr; prereq 65, 66, 67; offered 1965-66 and alt yrs) Serrano-Plaja
- 117s. **Spanish Literature of the Seventeenth Century: Poetry.** (3 cr; prereq 65, 66, 67; offered 1965-66 and alt yrs) Serrano-Plaja
- 120f. **The Ballad.** (3 cr; prereq 65, 66, 67; offered when feasible)
130. **Cervantes: Don Quijote.** (3 cr; prereq 65, 66, 67; offered 1964-65 and alt yrs)
- 131w. **The Picaresque Novel.** (3 cr; prereq 65, 66, 67; offered when feasible) Rundorff
- 140f. **Latin-American Literature: Poetry.** Silva, Darío, Neruo, Chocano, Herrera y Reissig, Lugones, Agustini, Mistral, Ibarbourou, Storni, López Verlarde, and Neruda. (3 cr; prereq 65, 66, 67 or 76; offered 1965-66 and every 3rd yr) Floripe
- 141w. **Latin-American Literature: Essay, Short Story, Drama.** Rodó, González Prada, Ricardo Rojas, Blanco Fombona, Ugarte, Vasconcelos, Alfonso Reyes, Quiroga, Gallegos, Florencio Sánchez. (3 cr; prereq 65, 66, 67 or 76; offered 1965-66 and every 3rd yr) Floripe
- 142s. **Latin-American Literature: Novel.** Gallegos, Azuela, Rivera, Güiraldes, Barrios, Gálvez, Lynch, Ciro Alegría. (3 cr; prereq 65, 66, 67 or 76; offered 1965-66 and every 3rd yr) Floripe
- 143f, 144w, 145s. **Colonial and Nineteenth Century Latin-American Literature.** (3 cr per qtr; prereq 65, 66, 67 or 76; offered 1966-67 and every 3rd yr) Floripe
- 146f, 147w, 148s. **Spanish-American Novel and Short Story.** (3 cr per qtr; prereq 65, 66, 67, or 76; offered 1964-65 and every 3rd yr) Floripe
- 155f. **Spanish Literature of the Sixteenth Century: The Novel.** (3 cr; prereq 65, 66, 67; offered 1964-65 and alt yrs) Serrano-Plaja
- 156w. **Spanish Literature of the Sixteenth Century: The Drama.** (3 cr; prereq 65, 66, 67; offered 1964-65 and alt yrs) Serrano-Plaja
- 157s. **Spanish Literature of the Sixteenth Century: Poetry.** (3 cr; prereq 65, 66, 67; offered 1964-65 and alt yrs) Serrano-Plaja
- Arab 161f. **Hispano-Arabic Literature and Culture: History of Islamic Spain.** (3 cr; prereq §) Irving
- Arab 162w. **Hispano-Arabic Literature and Culture: Arab Philosophy in Spain.** (3 cr; prereq §) Irving
- Arab 163s. **Hispano-Arabic Literature and Culture: Hispano-Arabic Literature.** (3 cr; prereq §) Irving

- 174f. **Twentieth-Century Spanish Literature: Drama.** Benavente, Martínez Sierra, Linares-Rivas, Alvarez Quintero, Valle Inclán, Marquina, García Lorca, and Casona. (3 cr; prereq 65, 66, 67; offered 1965-66 and alt yrs) Pattison
- 175w. **Twentieth-Century Spanish Literature: Prose.** Unamuno, Azorín, Baroja, Valle Inclán, Ortega y Gasset, Pérez de Ayala, Gómez de la Serna. (3 cr; prereq 65, 66, 67; offered 1965-66 and alt yrs) Pattison
- 176s. **Twentieth-Century Spanish Literature: Poetry.** Juan Ramón Jiménez, Unamuno, Antonio and Manuel Machado, Valle Inclán, García Lorca, Alberti, Moreno Villa, Alexandre, León Felipe, Guillén, and Salinas. (3 cr; prereq 65, 66, 67; offered 1965-66 and alt yrs) Pattison
- 190, 191, 192. **Directed Readings for Undergraduates.** (1-3 cr per qtr; prereq consent of dept chm) Staff

FOR GRADUATE STUDENTS ONLY

- 230-231-232. **Research Methods and Materials**
- 241-242-243. **Old Spanish Philology**
- 244-245-246. **Readings in Old Spanish Literature**
- 250-251-252. **Spanish Seminar**
- 253-254-255. **Seminar: Latin-American Literature**
- 259, 260, 261. **Directed Readings in Romance Languages**

Russian

See Slavic and Oriental Languages

Sanskrit

See Classics

Scandinavian (Scan)

FACULTY—Alrik Gustafson, *chairman*; John Gundersen, Ghulan Mohammed, Marion J. Nelson, J. Allen Simpson, Cecil Wood.

Major Adviser in Arts College—Professor Nelson.

Major Sequence in Scandinavian Languages and Literature in Arts College—Scan 51-52, 61 or 71, 161 or 162, 171, 172, 191-192-193 and 5 additional credits in Scandinavian numbered 51 or above.

Major Sequence in Scandinavian Area Studies—See special bulletin, *Programs in International Relations and Area Studies*.

For nonmajors in Scandinavian who may wish to include Scandinavian courses among electives chosen for their "general education values" the following courses are especially recommended: Scan 161, 162, 171, 172, and Art 140, 141, 142. No knowledge of Scandinavian languages is required for these courses except for Scandinavian majors.

LOWER DIVISION COURSES

- 1f-2w. **Beginning Norwegian.** (5 cr per qtr) Gundersen, Simpson
- 3s. **Intermediate Norwegian.** (5 cr; prereq 2 or equiv) Gundersen, Simpson
- 4f-5w-6s. **Advanced Norwegian.** (3 cr per qtr; prereq 3 or equiv) Nelson, Simpson
- 7f-8w. **Beginning Swedish.** (5 cr per qtr)

- 9s. Intermediate Swedish. (5 cr; prereq 8 or equiv)
 10f-11w-12s. Advanced Swedish. (3 cr per qtr; prereq 9 or equiv)

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 51f. **Scandinavian Literature in the Nineteenth Century.** Survey of Danish, Norwegian, and Swedish literature from Romantic Movement and mid-19th-century idealistic realism to realistic and naturalistic break-through of the drama and prose fiction in the 1870's and 1880's. (2 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only) Gustafson, Simpson
- 52w. **Contemporary Scandinavian Literature.** Rapid sketch of characteristic trends in Scandinavian literature of the last half century, especially as reflected in lyric poetry, the short story, and representative autobiographical works. (2 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only) Gustafson, Simpson
- 61s. **Norwegian Conversation.** Practice in conversation employing common Norwegian vocabulary and idiom of today and based on material drawn from present-day Norwegian life. (3 cr; prereq 3 or equiv) Gundersen
- 71s. **Swedish Conversation.** Practice in conversational Swedish of today, with subject matter drawn from immediate everyday Swedish conditions. (3 cr; prereq 9 or equiv)
- Ger 113f. **Gothic.** (3 cr; prereq 80 and 11 cr in courses 70 and above or equiv; offered 1964-65) C Wood
- Ger 114w-115s. **The Methods of Comparative Germanic Linguistics.** (3 cr per qtr; prereq 113; offered 1964-65) C Wood
- Soc 117s. **Scandinavian Folk Movements: Their Social and Political Significance.** (3 cr; prereq 1 or #) Mohammed
- Phil 137w. **Kierkegaard.** A detailed examination of the major philosophical works of Kierkegaard. (3 cr; prereq one course from Phil 50-51-52 or #) Mason
- Art 140f. **Scandinavian Architecture.** (3 cr; prereq sr, grad or Δ) Nelson
- Art 141w. **Scandinavian Painting.** (3 cr; prereq sr, grad or Δ) Nelson
- Art 142s. **Scandinavian Sculpture and the Minor Arts.** (3 cr; prereq sr, grad or Δ) Nelson
- Pol 145f. **Government and Politics of the Scandinavian Countries.** (3 cr; prereq 6 cr, or 12 cr in social science) Mohammed
- Pol 146w. **Social Legislation and Social Institutions in the Scandinavian Countries.** (3 cr; prereq Pol 2, or 5 or Soc 1) Mohammed
- Ger 157f-158w-159s. **Old Norse: Language and Literature.** (3 cr per qtr; prereq knowledge of one Germanic language other than modern English) C Wood
- 161w. **The Late Nineteenth-Century Scandinavian Novel.** Examination of "the great tradition" in the modern Scandinavian novel, together with the circumstances, intellectual and political, social and economic, out of which it grew. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only) Gustafson
- 162s. **Contemporary Trends in the Scandinavian Novel.** Characteristic trends in Scandinavian life and thought in the 20th century as expressed in the prose fiction of Sigrid Undset, Johannes V. Jensen, Olav Dunn, Hjalmar Bergman, Pär Lagerkvist, Halldór Laxness, F. E. Sillanpää, and others. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only) Gustafson
- 171f. **Ibsen and the Beginnings of the Modern Drama.** Intensive examination of plays of Ibsen, especially with reference to the role he has played as "founder" of modern European drama. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only) Gustafson
- 172w. **Strindberg and the Drama in Revolt and Transition.** Strindberg as master of the naturalistic drama and as "father of modernity" in European and American theater since his day. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only) Gustafson
- 173s. **The Contemporary Scandinavian Theater.** Examination of the Scandinavian drama and theater of today, particularly with reference to the "experimental" trends both in dramatic composition and staging. (3 cr; prereq 6 or 12, or 8 cr in literature; knowledge of Scandinavian languages required for majors only) Gustafson

191f-192w-193s. **Readings in Scandinavian Literature.** Intensive reading of representative Scandinavian texts. Designed especially for majors and minors in Scandinavian, each student fulfilling his reading requirements in Danish or Norwegian or Swedish, depending upon his language of primary interest. (3 cr per qtr; prereq 6 or 12) Gustafson, Nelson

FOR GRADUATE STUDENTS ONLY

215-216-217. **Studies in Scandinavian Romanticism**

218-219-220. **Studies in Late Nineteenth-Century Scandinavian Literature**

221-222-223. **Dramatic Interpretative Problems in Strindberg**

Attention is called to CLit 221-222-223, Seminar in Comparative Literature, and Scan 161, 162, 171, 172.

Secretarial Training

See Business Administration

Slavic and Oriental Languages

FACULTY—Richard B. Mather, *chairman*; Wassilij Alexeev, Edward M. Copeland, Jr. (on leave), Adele K. Donchenko, Thomas B. Irving, Vasant S. Khoklay, Chun-Jo Liu, Amy T. Matsumoto, Pearl C. Niemi, Tatiana Prokopov, William R. Schmalstieg.

Major Advisers in Arts College—Professor Irving, Arabic; Associate Professors Liu and Mather, Chinese; Assistant Professor Copeland, Japanese (on leave); Associate Professors Niemi and Schmalstieg, Russian.

General Program—Courses especially recommended for general education purposes are Arab 161-162-163, Chin 110-111-112, Jpn 110-111-112, Ortl 75-76-77-78 and 110-111-112, Russ 75-76-77 and 110-111-112.

Arabic (Arab)

Major Sequence in Arts College—Arab 61-62-63, 71-72-73, 74-75-76, and 6 credits in courses 50 or above.

LOWER DIVISION COURSES

1f-2w-3s. **Beginning Spoken Arabic.** A study of one modern dialect. Students are expected to use the laboratory for practice. If possible the dialect will vary each year. (5 cr per qtr) Irving, staff

UPPER DIVISION COURSES

Upper Division courses with numbers less than 100 are open to Lower Division students who have an average grade of at least C in the prerequisite courses.

51f-52w-53s. **Dialect Analysis.** The study of differences in various Arabic dialects, contrasting at least two of these. (3 cr per qtr; prereq 3) Staff

61f-62w-63s. **Introduction to Arabic Grammar and Reading.** Fundamentals of the standard written language in easy texts. (3 cr per qtr; prereq 1-2-3 or two courses numbered 50 or above in any foreign language) Irving

71f-72w-73s. **Intermediate Arabic.** Reading and analysis of texts of moderate difficulty. (3 cr per qtr; prereq 63) Irving, staff

74f-75w-76s. **Survey of Arabic Literature.** Pre-Islamic, Umayyad, Abbasid, and modern prose and poetry at intermediate level. (3 cr per qtr; prereq 72 or #) Irving, staff

- 101f-102w-103s. **Advanced Classical Arabic.** Reading and analysis of both early classical texts and modern writing. Emphasis will be placed on structure, syntax, and style. (3 cr per qtr; prereq 73) Irving
- 105w. **Structure of Arabic.** A descriptive analysis of the main structure of Arabic, both classical and colloquial. (2-3 cr; prereq Clas 56 or Arab 63 or #) Irving
- 151f-152w-153s. **Directed Readings.** (1-3 cr per qtr; prereq 63 or #; for advanced students wishing to work on special problems) Irving
- 161f. **Hispano-Arabic Literature and Culture: History of Islamic Spain.** (3 cr; prereq #) Irving
- 162w. **Hispano-Arabic Literature and Culture: Arab Philosophy in Spain.** (3 cr; prereq #) Irving
- 163s. **Hispano-Arabic Literature and Culture: Hispano-Arabic Literature.** (3 cr; prereq #) Irving
- 191H-192H-193H. **Honors Course: Research.** Individual studies for honors work at an advanced level. (1-3 cr per qtr; prereq 153 or #) Irving

Chinese (Chin)

Major Sequence in Arts College—Chin 51-52-53, 56-57-58, 101-102-103, 6 credits from 110-111-112 and 6 credits selected from 151-152-153 and 191-192-193.

LOWER DIVISION COURSES

1f-2w-3s. **Beginning Chinese.** (5 cr per qtr) Liu

UPPER DIVISION COURSES

Upper Division courses with numbers less than 100 are open to Lower Division students who have an average grade of at least C in the prerequisite courses.

51f-52w-53s. **Intermediate Chinese.** (3 cr per qtr; prereq 3) Mather

56f-57w-58s. **Chinese Composition.** (2 cr per qtr; prereq 3) Liu

101f-102w-103s. **Advanced Chinese.** Readings in modern vernacular literature. (3 cr per qtr; prereq 53 or equiv) Liu

110-111-112. **Chinese Literature in Translation.** (3 cr per qtr; prereq 9 cr in literature or #; knowledge of Chinese required only of majors, who will read assigned portions in original; offered 1964-65 and alt yrs) Liu, Mather

151f-152w-153s. **Directed Readings.** (1-3 cr per qtr; prereq 103 or #) Liu, Mather

191Hf-192Hw-193Hs. **Honors Course: Research.** (1-3 cr per qtr; prereq 153 or #) Liu, Mather

Indian (Indn)

LOWER DIVISION COURSES

1f, 2w, 3s. **Beginning Hindi.** Class will meet seven times per week; 5 hours will be with a speaker of Hindi and 2 with a linguist. In addition, there will be 4 hours of required attendance at the language laboratory. (5 cr per qtr) Staff

10f-11w-12s. **Beginning Indian Language.** The particular language offered—Marathi, Gujarati, Kannada, Urdu, Bengali, etc.—will depend on student need. (5 cr per qtr) Staff

UPPER DIVISION COURSES

54-55-56. **Intermediate Hindi.** (5 cr per qtr; prereq 3 or equiv) Staff

61f-62w-63s. **Intermediate Indian Language.** (3 cr per qtr; prereq 12 or #) Staff

101f-102w-103s. **Advanced Hindi.** (3 cr per qtr; prereq 56 or #; offered when feasible) Staff

110. **Indian Literature in Translation.** Survey of Indian literature from the Vedas to the present. (3 cr; prereq 6 cr in literature or 3 cr in courses pertaining to India or #) Staff

151f-152w-153s. **Directed Readings.** (3 cr per qtr; prereq 103 or #) Staff

Japanese (Jpn)

Major Sequence in Arts College—Jpn 51-52-53, 56-57-58, 101-102-103, 6 credits from 110-111-112 and 6 credits selected from 151-152-153 and 191-192-193.

LOWER DIVISION COURSES

1f-2w-3s. Beginning Japanese. (5 cr per qtr) Matsumoto, staff

UPPER DIVISION COURSES

Upper Division courses with numbers less than 100 are open to Lower Division students who have an average grade of at least C in the prerequisite courses.

51f-52w-53s. Intermediate Japanese. (3 cr per qtr; prereq 3) Matsumoto

56f-57w-58s. Japanese Composition. (2 cr per qtr; prereq 3) Matsumoto

101f-102w-103s. Advanced Japanese. Readings in modern prose and poetry; introduction to the classical language. (3 cr per qtr; prereq 53) Staff

110-111-112. Literature in Translation. Survey of Japanese literature from 8th century A.D. to present. (3 cr per qtr; prereq 9 cr in literature; knowledge of Japanese required only of majors, who will read assigned portions in the original; offered 1965-66 and alt yrs) Copeland

151f-152w-153s. Directed Readings. (1-3 cr per qtr; prereq 103 or #) Staff

191Hf-192Hw-193Hs. Honors Course: Research. (1-3 cr per qtr; prereq 153 or #) Staff

Lithuanian (Lith)

105f-106w-107s. Structure and History of Lithuanian. (3 cr per qtr; prereq at least two Upper Division courses in early Indo-European languages or #; offered when feasible) Schmalstieg

Oriental (Ortl)

UPPER DIVISION COURSES

75f. Asian Civilization: India. (3 cr; prereq soph with #, jr; offered 1964-65 and alt yrs) Staff

76w. Asian Civilization: China. (3 cr; prereq soph with #, jr; offered 1964-65 and alt yrs) Mather

77s. Asian Civilization: Japan. (3 cr; prereq soph with #, jr; offered 1965-66 and alt yrs) Copeland

78s. Asian Civilization: Islamic World. (3 cr; prereq soph with #, jr; offered 1964-65 and alt yrs) Irving

Polish (Plsh)

LOWER DIVISION COURSES

1f-2w-3s. Beginning Polish. Provides essentials for speaking, understanding, and reading basic Polish. (5 cr per qtr) Schmalstieg

4-5-6. Intermediate Polish. Grammar review, reading of advanced texts, and practice in speaking Polish. (3 cr per qtr; prereq 1-2-3 or #; offered when feasible)

Russian (Russ)

Major Advisers in College of Education—Associate Professors Niemi and Schmalstieg.

Major Sequence in Arts College—Russ 56-57-58, 61-62-63, 71-72-73, and 6 credits each from 75-76-77 and 110-111-112.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation*: 36 Upper Division credits including Russ 56-57-58, 61-62-63, 71-72-73, 75-76-77, and Clas 56. *Minor recommendation*: 27 Upper Division credits including Russ 56-57-58, 61-62-63; 71-72-73 or 75-76-77; and Clas 56.

LOWER DIVISION COURSES

1f-2w-3s. *Beginning Russian*. (5 cr per qtr) Staff

4f-5w-6s. *Intermediate Russian*. (3 cr per qtr; prereq 3) Donchenko

15f-16w-17s. *Beginning Russian Conversation*. 15 and 16: Drill in basic speech patterns. 17: Lectures and discussion in *Russian*, at an introductory level. (2 cr per qtr; prereq 3 or equiv; offered when feasible) Alexeev

UPPER DIVISION COURSES

Upper Division courses with numbers less than 100 are open to Lower Division students who have an average grade of at least C in the prerequisite courses.

56f-57w-58s. *Russian Conversation*. (3 cr per qtr; prereq 6 or 17 or #) Alexeev

61f-62w-63s. *Russian Composition*. (2 cr per qtr; prereq 6 or 17 or #) Alexeev

71f-72w-73s. *Readings in Russian Literature*. Selected readings of modern Russian prose, with aim of attaining facility in reading. (3 cr per qtr; prereq 6 or #) Niemi

75f-76w-77s. *Russian Civilization and Culture*. Aspects of Russian culture (land, peoples, languages, institutions, intellectual and artistic trends and achievements). (3 cr per qtr; prereq 10 cr in history or literature; knowledge of Russian not required) Donchenko

103-104-105. *Russian Syntax and Composition*. Study of problems of syntax; practice in Russian prose composition. (2 cr per qtr; prereq 63)

110f-111w-112s. *Russian Literature in Translation*. 110: Pushkin, Lermontov, Gogol. 111: Turgenev and Dostoevsky. 112: Tolstoy and the period from 1880. (3 cr per qtr; prereq 9 cr in literature; knowledge of Russian required only of majors who will read assigned portions in the original) Niemi

113f-114w-115s. *Soviet Russian Literature*. (3 cr per qtr; knowledge of Russian required only of majors who will read assigned portions in the original) Alexeev

125f-126w-127s. *Structure and History of the Russian Language*. (3 cr per qtr; prereq 6 or equiv; offered 1965-66 and alt yrs) Schmalstieg

131f-132w-133s. *Russian Poetry: Nineteenth Century*. (3 cr per qtr; prereq 73 or #) Niemi

141f-142w-143s. *Dostoevsky*. Analytic approach to study of the novels of Dostoevsky. (3 cr per qtr; prereq 9 cr in literature; offered 1965-66 and alt yrs) Niemi

151f-152w-153s. *Directed Readings*. (1-3 cr per qtr; prereq 73 or #) Niemi

Slavic (Slav)

113f-114w-115s. *Old Church Slavic*. Introduction to Slavic linguistics. (3 cr per qtr; prereq Clas 56 or equiv; offered 1964-65 and alt yrs) Schmalstieg

161f-162w-163. *Comparative Balto-Slavic Grammar*. Philological and linguistic study of relations among the Baltic and Slavic languages. (2 cr per qtr; prereq Russ 6 and Lith 107; offered when feasible) Schmalstieg

Social Science

See Interdisciplinary Programs

Social Work (SW)

FACULTY—John C. Kidneigh, *director*; Ronald Bounous, Miriam Cohn, Beulah Compton, John Crane, Edward France, Susan Goldman, Philip Hovda, Dagny Johnson, Gisela Konopka, Lawrence Merl, Mayo K. Newhouse, Anne W. Oren, Ida Rapoport, H. Etta Saloshin, Lyndell Scott, Dorothy Whitmore, Helen Yesner.

Professional education for social work is at the graduate level—see *Bulletin of the Graduate School* and special *Bulletin of the School of Social Work*. The undergraduate preprofessional education for social work is jointly administered with the Department of Sociology—see Sequence B in Sociology below.

Sociology (Soc)

FACULTY—E. D. Monachesi, *chairman*; Joan Aldous, Merrilyn Belgum, George Donohue, Roy G. Francis, Walter Gerson, Edward Gross, Reuben Hill, Arthur Johnson, Barbara Knudson, Don A. Martindale (on leave 1964-65), Joel Nelson, John Photiadis, Arnold M. Rose, Israel Rubin, Gregory P. Stone, Murray A. Straus (on leave 1964-65), Irving Tallman, David A. Ward.

Major Advisers in Arts College—Professors Francis, Hill, Johnson, Martindale, Monachesi, Rose, Stone, Straus; Instructors Belgum, Rubin.

Major Sequences in Arts College—

Sequence A. General sociology is built upon a core requirement of 21 credits as follows: Soc 53, 111, 120, 162, 180, and 140 or 141, and 170 or 171, and 9 additional credits in Upper Division sociology courses selected with the approval of the major adviser.

Prerequisites for Sequence A—Soc 1 and 45, and a total of 15 credits from courses in sociology, anthropology, education, history, philosophy, political science, psychology, and zoology.

Sequence B. An interdepartmental sequence recommended as preparation for graduate study in the School of Social Work as well as preferred preparation for some beginning positions in social welfare agencies. It may be taken as a substitute for the major and minor sequences required for the B.A. degree. The specific requirements for this sequence are: Soc 53, 90, 91, 141 or 126, 118 or 152 or 112 or 153 and any two of 144, 123, 140, 145, 146, 162; Anth 165 or Soc 120; CPsy 80, 81; Hum 54 or 6 credits in Upper Division humanities courses approved by the adviser; Pol 124 or Soc 120 and one of Pol 161, 162, Soc 170, 171, 172; Psy 144-145. A student majoring in this sequence must earn a minimum of 60 credits in Upper Division courses.

Prerequisites for Sequence B—Soc 1, 3, 45; Pol 1-2 or 5; Psy 1-2; Anth 2A or 100; Econ B-C or 50A-B.

Education for social work is offered on three levels: (a) undergraduate study, which includes a broad range of the social sciences and some courses of primarily informational nature which deal directly with social work; (b) 2 years of graduate social work study involving theory, field practice under tutorial supervision and research culminating in the M.S.W. degree; and (c) 2 additional years of study and research leading to the Ph.D. degree. For information about graduate professional preparation for social work see the *Bulletin of the Graduate School* and the special *Bulletin of the School of Social Work*.

Sequence C. An interdepartmental sequence in training for delinquency control. The sequence is intended to meet the needs of those students who wish to prepare for graduate professional training as well as of those who wish to prepare for sub-professional careers in the control of delinquency. The sequence may be taken as a substitute for the major and minor sequences required for the B.A. degree. The

specific requirements for this sequence are: Soc 53, 90, 91, 103, 105, 107, 108, 109, 118, 119, 144, 180, 120 or Anth 165, Soc 141 or 126; Soc 170 or 171 or 172 or Pol 161 or 162; CPsy 80, 81; Psy 144-145; SW 275, Hum 54 or 6 credits in Upper Division humanities courses approved by the adviser. It is recommended students plan to have completed a satisfactory work experience in an institution or probation office caring for delinquent children between their junior and senior years. Some stipends are now available for such summer work and it is hoped that more stipends will become available for qualified students.

Prerequisites for Sequence C—Soc 1, 3, 45; Anth 2A; Econ B-C or 50A-B; Pol 1-2, or 5; Psy 1-2.

Modifications of these sequences will be permitted upon petition approved by the major adviser and the assistant dean for the Upper Division.

Major Advisers in College of Education—Professors Hill, Johnson.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Major recommendation:* 30 credits in sociology including Soc 1, 3, 45, 53, 180 and at least 13 additional credits in courses numbered 50 or above.

See the *Bulletin of the College of Education* for additional required courses. For a specialized minor curriculum in social studies see the *Bulletin of the College of Education*.

Honors Course—Students interested in the work of an honors course should consult the chairman of the department. For honors sections of Soc 1, 2, and 3, see the *Class Schedule*.

For purposes of general education the Department of Sociology recommends the following courses: Soc 1, 2, 3, 14, 53, 124, and 151.

LOWER DIVISION COURSES

1, 1A, 1H, 2, 2H, 3, 3H. **Introduction to Sociology.** These courses are introductory to the field of sociology and constitute an integrated sequence. Students may, however, elect to take one or more of these courses.

1f,w,s. **Man in Modern Society.** Characteristics of human group life. Analysis of factors associated with development of human group life and man's social environment; structure of social environment and its influence upon individual's behavior. (3 cr) Francis, Gerson, Gross, Nelson, Stone

1Af,w,s. **Man in Modern Society.** (3 cr; for students of College of AFHE only)

1Hf. **Honors Course: Man in Modern Society.** (3 cr) Rubin

2f,w,s. **The American Community.** Sociological analysis of modern American society. Topics emphasized include distribution of population, urban-rural differences, social factors in business systems, occupational groups, determination of social status, and minority group adjustment. Attempts to familiarize student with current research methods. (3 cr; prereq 1 or 1A or 1H or 3)

2Hw. **Honors Course: The American Community.** (3 cr) Rubin

3f,w,s. **Social Problems.** Survey course in contemporary social problems with special emphasis on personal demoralization and social disorganization. (3 cr) Gerson, Johnson, Nelson

3Hs. **Honors Course: Social Problems.** (3 cr) Rubin

14w,s. **Rural Sociology.** Presentation of factual data necessary to an understanding of problems of rural social life. (3 cr)

14Af,w. **Rural Sociology.** (3 cr; for students of College of AFHE)

45f,w,s. **Social Statistics.** Introduction to statistical methods employed in analyses of social data including methods of measuring central tendency, dispersion, significance of differences, and correlation. (5 cr, §QA 5, §Psy 70) Francis, Stone

UPPER DIVISION COURSES

Soc 53 is open to third quarter sophomores who have an average grade of at least C in the prerequisite courses. Other Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 53f,w.s. **Elements of Criminology.** General survey of field of criminology. (3 cr; prereq 1 or 1A or 1H or #)
- 90w. **American Social Welfare.** Survey of social service with consideration of areas of social needs, social agencies, their purpose and function, and methodology and philosophy of social work practice. (5 cr; prereq 3) Cohn
- 91f.s. **Introduction to Social Work Process.** General application of interviewing method for students who plan to work professionally in fields involving human relationships, such as social work, public health nursing, speech pathology, etc. (3 cr; prereq 90 or consent of major adviser) Cohn
95. **Introduction to Public Welfare.** Public welfare function of American government with especial emphasis on social security programs. (3 cr; prereq 90 or consent of major adviser; offered when feasible)
- 97f-98w-99s. **Tutorial and Honors Work in Selected Fields.** (3 cr per qtr; prereq consent of major adviser in sociology)
- 100s. **Contemporary Penology.** Analysis of some of the more important developments in recent attempts at treatment of criminals and the prevention of crime. (3 cr; prereq 1, 53, or #)
- 101f. **Criminological Theories: Historical and Contemporary.** Consideration and evaluation of major historical and contemporary theories of criminal behavior. (3 cr; prereq 1, 53, or #)
- 102f. **Adult Parole and Probation.** Critical examination of problems and practices in supervision of adult criminals. (3 cr; prereq 1, 53, or #; offered 1964-65 and alt yrs)
- 103s. **Law and the Legal System for Correctional and Social Workers.** A study of law and the judicial process for social workers, particularly those engaged in the correctional field. Included are the nature and effect of legal rules, constitutional, legislative, and judicial; the adversary process; the right to a hearing; the right to and function of counsel; fact determination under the rules of evidence; concepts underlying criminal law and procedures; the juvenile court; probation and parole. (3 cr; prereq regis in Sequence C or B or #) Pirsig
- 104f. **Police Problems and Practices in the United States.** Personnel, organization, and public relations of police forces, with special attention to successful techniques of integrating police work with other community agencies. (3 cr; prereq 1, 53, or #; offered 1964-65 and alt yrs)
- 105w. **Institutional Treatment of Juvenile Delinquents: Problems and Practices.** Current problems of institutional treatment of juvenile offenders and the contributions of different professions to treatment. (3 cr; prereq regis in Sequence C or B or #) Konopka
- 106f. **Planning.** (Same as Arch 104, Econ 110, and Pol 123) Social, economic, political, geographic, and technical phases of modern city planning. (3 cr; prereq sr) Broek, Rose, Vivrett, Warp
- 107f-108w-109s.† **Observation of Delinquency Control and Treatment.** (1 cr per qtr; prereq sr, regis in Sequence C or #) Knudson
- 111w. **Population Theory.** Emphasizes cultural and social phases of population change, with particular reference to birth rates, death rates, and migration. Implications of population change are also discussed. (3 cr; prereq 1 or #) Francis
- 112s. **World Population Problems.** Population policy, both historical and present-day, in Europe, Asia, and other selected areas but with special emphasis on United States. Some discussion is given to field of population and power politics. (3 cr; prereq 1, or #) Francis
- 115w. **Social Aspects of Housing and Standards of Living.** Analysis of housing of the masses in relation to problems arising in urban overcrowding, population distribution, and standard of living as affected by distribution of national income, and factors related to personal and social disorganization. (3 cr; prereq sr, 1, or #)
- 117s. **Scandinavian Folk Movements: Their Social and Political Significance.** (3 cr; prereq 1, or #)
- 118f. **Delinquent Behavior.** Critical analysis of nature of delinquent behavior and its "causes," with consideration of the help that understanding of causes can give to its modification and its prevention. (3 cr; prereq 53) Monachesi
- 119w. **Modern Agencies for the Control of Juvenile Delinquency.** Functions of the school, of welfare, casework, and groupwork agencies, of the juvenile bureau in police departments, the juvenile court, detention home, probation services, clinics, and integrated state agencies like the Minnesota Youth Conservation Commission in the prevention and modification of delinquent behavior. (3 cr; prereq 53 and 118) Ellington
- 120f,w. **Social Psychology.** Research and theory regarding relation of the individual to social groups. Emphasis on socialization processes; effects of social interaction and isolation; individual behavior under conditions of social organization and disorganization; cultural influence and its limits. (3 cr; prereq 1, or #) Rose
- 121s. **Advanced Social Psychology.** Examination of methods of acquiring knowledge in social psychology, with analysis of outstanding pieces of research. Studies examined are concerned

- with social psychology of small groups, neurotic behavior, mass behavior, and the making of political and economic choices. A major aim is to familiarize student with current thinking and research in this field in light of concepts and theories presented in introductory course in social psychology. (3 cr; prereq 120 or #) Rose
- 122w. Sociology of Conflict.** Manifest forms of antagonism among groups of persons; causes of conflict; methods of resolving through accommodations; role of conflict and social change. (3 cr; prereq 1, or #)
- 123w. Minority Group Relations.** Interaction of social and cultural groups in America. Processes leading to group contact; characteristics and contributions of ethnic groups in United States; mechanisms and problems of group adjustment. Democratic theory and practice; sources of prejudice; contemporary status of principal minority groups; international implications; trends and proposed solutions. (3 cr; prereq 1 or #) Gerson
- 124s. Social Movement in a Changing Society.** Examination of factors underlying social change in the modern mass society. Consideration of recent researches on social movements, reform and revolution, culture contact, impact of rapid technological change. The individual and the social structure under conditions of rapid social change. (3 cr; prereq 1, or #) Rose
- 125f. Opinion and Communication: Social Factors.** Examination of processes of opinion formation and change in relation to personality and social structure will lay groundwork for analysis of flow of public communications through society and impact of selected types of mass communication on particular audiences. (3 cr; prereq sr, 1 or 120 or Psy 140 or #...recommended that this course be taken as a 3-qtr sequence with Psy 167 and Jour 115)
- 126w. Family Development.** Analysis of the natural history of families, how they form, function, and achieve distinctive identities. Focus on the developmental growth of children and parents in interaction in seven stages of the family life cycle, from engagement planning to family dissolution. (4 cr; prereq 1 and CPsy 80 or #) Hill
- 140f.s. Social Organization.** 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. (3 cr; prereq 1, or #) Gross (f), Nelson (s)
- 141f,w,s. The Family.** Evolution of the family, development of family unity or disunity, roles of the several members of the family, methods of investigation of the family. (3 cr; prereq 1, or #) Johnson
- 142w. Religion as a Social Institution.** (3 cr; prereq 1, or #) Johnson
- 143. The Newspaper as a Social Institution.** (3 cr; prereq 1, or #; offered when feasible)
- 144s. Social Stratification and Mobility.** Relationship of social mobility to social stratification and social organization. Analysis of the hierarchical structure of society in relation to class and status. (3 cr; prereq 1, or #) Gross
- 145f. Urban Sociology.** Introduction to study of cities; urban ecology; urban institutions and urban way of life. (3 cr; prereq 1, or #) Stone
- 146f. Industrial and Occupational Sociology.** Analyzes the occupational group, the factory, and the business enterprise as social institutions, with particular attention to contrasting functions of formal and informal organization, and to significance of cooperation, authority, communication, status, and group norms in the working situation. (3 cr; prereq 1 and 15 cr in sociology, psychology, political science, or economics) Gross
- 151s. Comparative Social Organization.** Consideration of the demographic and ecological characteristics, stratification system, institutional organization, and forms of association in several modern nations other than the United States. (3 cr; prereq 20 cr in sociology, economics, or political science, or #)
- 152s. Sociology of Medicine and Medical Institutions.** Social factors associated with the incidence of physical and mental illness and its treatment. The social organization of medical institutions. Public needs and medical services. The sociology of aging, and the social problems of the aged. (3 cr; prereq 1, or #; offered 1965-66 and alt yrs) Rose
- 153w. Sociology of Leadership and Group Action.** Survey of the nature, function, and sources of leadership in modern society. Description and analysis of techniques of leadership and their role in group actions. Examination and application of instruments for evaluating leadership and participation within groups; the organization and function of voluntary groups. (3 cr; prereq 15 cr in sociology, psychology, anthropology, political science, history, or #)
- 154w. The Family in World Perspective.** (Same as HE 183) Comparison of family organization and modes of functioning in selected major world civilizations. Emphasis on adaptation of the family to urbanization and industrialization, and family influences on personality formation. (3 cr; prereq 1, Psy 1) Straus
- 160f. Rural Community Organization.** History, structure, and place of the rural community in American society; an analysis of community demography, ecology, stratification, urbanization, and processes of co-operation and conflict. (3 cr; prereq 1 or #) Photiadis

- 161s. Rural Community Analysis.** Offered especially for all persons interested in rural community organization, rural teaching, extension work, and related fields. Emphasis is placed on tools, techniques, and methods of making community field studies. (3 cr; prereq 1, sr, or §) Photiadis
- 162f,w. Rural Social Institutions.** Factors in rural environment which condition functioning of rural social institutions, including the family, school, church, local government, health, and welfare. (3 cr; prereq 1 or §) Photiadis
- 170f. Analytical Social Theory.** Examination of major problems of sociological theory (positivistic, rationalistic, idealistic); major theoretical concepts. (3 cr; prereq 1, or §)
- 171w. Social Life and Cultural Change.** Theories of social change, with particular attention to their methodological problems. Materials drawn from the comparative social thought and structure of antiquity utilized as basic data for analysis. (3 cr; prereq 1, or §)
- 172s. Backgrounds of Modern Social Thought.** Survey of major trends of social thought from Renaissance to 19th century, with special attention to those factors contributing to origin of sociology. (3 cr; prereq 1, or §)
- 180f,w. Methods of Social Research.** Survey of major methods employed in social research, including a consideration of their advantages and limitations when applied to specific types of problems. (3 cr; prereq 45 or equiv) Monachesi, Nelson
- 182w. Statistical Methods.** Selected problems of social relationship described, analyzed, and interpreted by means of common statistical methods. (3 cr; prereq 45 or equiv) Francis
- 183s. Problems in Social Measurement.** Theoretical analysis of problems involved in measuring social variables, including consideration of problems of reliability, validity, and standardization in construction of new measuring instruments. (3 cr; prereq 45 or 182 or equiv) Francis
- 184w, 185s, 186f. Field Work and Laboratory Training in Social Research.** Open to students whose records in statistical and research courses indicate ability to carry on individual research projects to advantage under supervision. (2-3 cr per qtr; prereq 45 or 182 or ¶45 or ¶182)

FOR GRADUATE STUDENTS ONLY

- 201, 202. Seminar: Research Problems in Crime and Social Conflict**
- 203, 204, 205. Seminar: Research Problems in Juvenile Delinquency**
- 210, 211, 212. Seminar: Problems in Population Research**
- 220, 221, 222. Seminar: Social Psychology**
- 223, 224, 225. Seminar: Research in Problems of Modern Mass Society**
- 226. Seminar: Family Development**
- 227-228. Seminar: Contemporary Research on Marriage and the Family**
- 230, 231, 232. Seminar: Research in Group Structure and Function**
- 233, 234, 235. Seminar: Methods for the Evaluation of Social Action Programs**
- 238-239.† Seminar: Principles of Sociology**
- 241, 242, 243. Seminar: Research Problems in the Family**
- 245, 246. Seminar: Research in Urban Sociology**
- 247-248-249. Seminar: Research in Large Scale Organization**
- 251-252-253. Selected Problems in Comparative Sociology**
- 260, 261, 262. Seminar: Rural Sociology**
- 263. Seminar: Research Methods in Rural Sociology**
- 270, 271, 272. Seminar: Social Theory**
- 273. Seminar: Sociology of Science**
- 280, 281, 282. Seminar: Recent Developments in Sociological Research Techniques**
- 284, 285, 286. Seminar: Statistical Theory in Relation to Social Theory and Practice**
- 297, 298, 299. General Seminar**

Spanish

See Romance Languages

Speech and Theatre Arts

FACULTY—Kenneth L. Graham, *chairman*; William S. Howell, *associate chairman*; Harvey L. Adey, Gerald Anderson, Arthur H. Ballet, Leonard Bart, Ernest Bormann, Bernard L. Brock, Lauren Ekroth, Donald Fogelberg, Virginia Fredricks, Sheldon Goldstein, Frederick Greenberg, Sir Tyrone Guthrie, Ernest Henrikson, Rollie R. Houchins, J. Vernon Jensen, Wendell J. Josal, Maxine Klein, Frank Lassman, Richard McDermott, Richard Martin, Robert Moulton, Ralph Nichols, Robert L. Scott, George L. Shapiro, Gerald Siegel, John Sisco, Donald K. Smith, Robert Sonkowsky, Clark Starr, Ray Stassen, Richard Taylor, David W. Thompson, Ronald Wendahl, Frank M. Whiting, Donald Z. Woods, E. William Ziebarth.

Major Advisers in the Arts College—Professors Ballet, Graham, Henrikson, Howell, Lassman, Scott, Thompson, Whiting; Associate Professors Bormann, Jensen, Josal, Moulton, Shapiro, Siegel, Sonkowsky, Starr; Assistant Professors Adey, Bart, Wendahl; Instructor Klein.

Major Sequences in Arts College—

A. General: Spch 51, 65, 67, 81, 82 or 83, 101, 106, 126, 161 and 169; Th 61 or 75. Prerequisites: Spch 5; Th 11, 12, 21; Psy 1-2.

B. Theatre and Television Drama: Spch 81; Th 91, 90 or 92, 111, 112 and 12 other speech and/or theatre arts credits selected with the major adviser. Prerequisites: Th 11, 12, 21, 22, 23, 34; Psy 1-2.

Students following theatre and television drama major should consider the following courses: Mus 12A, B, C^{**}; Art 20, 24, 60B; Clas 81, 82, 91, 92, 93 (or 181, 182, 191, 192, 193); Engl 55, 56, 126, 127, 129; Ger 140, 141, 142; HE 22, 50, 125; PEW fencing, 80, 87, 88, 89††; Scan 171, 172, 173; Extension Division: Theatre Dance.††

C. Public Speaking and Discussion: Spch 51, 55, 56, 67, 101, 102, 103, 106, 109, 126, 169. Prerequisites: Spch 5; Psy 1-2.

D. Radio and Television: Spch 65, 67, 69, 81, 106, 170; Th 63; plus 6 credits from Spch 82, 83, Th 61, and 9 other speech and/or theatre arts credits selected with major adviser. Prerequisites: Spch 5; Th 11, 12, 21; Psy 1-2.

Students following the radio and television major should consider courses in journalism to meet either minor or elective requirements. Such students usually elect from among Jour 84, 85, 111, 113, 130-131, 162.

Modifications of these sequences will be permitted with approval of the major adviser.

E. Honors Major: An honors major is available to qualified students. Application for admission to the honors major should be made to the department at the time of admission to the Upper Division of the Arts College. The honors major is planned with the assistance of an adviser, and consists of not less than 36 credits in speech and/or theatre arts, including from 6 to 9 credits in Spch or Th 94H, 95H, and 96H and the preparation of an undergraduate thesis. Further information on the honors major may be obtained in the departmental office.

Major Advisers in College of Education—Professors Graham, Ballet; Associate Professor Starr; Assistant Professors Adey, Fredricks, Houchins.

Requirements for a Teacher's Certificate (applicable only to students in the College of Education)—*Recommendation for Majors in Speech Education:* 48 credits

** Special sections for theatre majors.

†† These courses open to men and women.

‡‡ Extension Division credit only.

in speech distributed as follows: a core of 21 credits, Spch 5, 51, 67, 81; Th 11, 12, 21; 27 credits taken in either of two curriculums, as follows:

Curriculum I—Spch 106, 161; 12 credits selected from Spch 55, 56, 65, 97, 101, 102, 103, 109, 126A, 126B, 169; 9 credits selected from Spch 82, 83, Th 63, 74, 75, 76

Curriculum II—Th 22, 34, 63 or Spch 65, 76, 90 or 91, 92, 111, 112, 131 or 132

Recommendation for Minors in Speech Education: Students minoring in speech and theatre arts are required to take Spch 5, 51 and 81; Th 11, 12; plus 15 additional credits chosen from one of the following groups:

Group A—Spch 55, 56, 65, 67, 101, 102, 106, 126A, 126B, 161, 169

Group B—Th 21, 63, 74, 75, 76, 131, 132; Spch 82

Speech and theatre arts minors in education with English majors will register for EdT 75D, but those with a major other than English will register for EdT 76C.

Speech and theatre arts majors in the College of Education may follow the language arts sequence with emphasis in speech and theatre arts. See the *Bulletin of the College of Education*.

For further information concerning teaching majors and minors, and concerning the specialized curriculum in speech pathology and in teaching the deaf, students should consult the *Bulletin of the College of Education*.

Speech Activities—All students in the University are entitled to participate in Intercollegiate Debating, the Freshman-Sophomore Debate, the Freshman-Sophomore Oratorical Contest, the Pillsbury Oratorical Contest, the Verse Reading Contest, and the activities of the University Theatre.

Since many secondary school speech teachers are expected to direct speech activities, students preparing to enter teaching are urged to participate in the activities sponsored by the department.

Note—The University maintains a clinical service for students with speech-hearing defects. Students who desire treatment should consult the director of the Speech and Hearing Clinic, 215 Shevlin Hall.

General Education—The department recommends courses in public address, theatre history, and oral interpretation of literature for meeting the goals of general education. See descriptions for: Spch 5, 50, 51, 55, 81, 101, 106; Th 11, 12, 171.

Speech (Spch)

LOWER DIVISION COURSES

5f,w,s. Fundamentals of Speech. Development of basic skills in meeting a variety of speech situations: extemporaneous speaking, oral reading, discussion. Development of basic understanding of speech processes and forms. (5 cr; prereq fr with Δ , soph) Shapiro and staff

5Hf,w,s. Honors Course: Fundamentals of Speech. Development of basic skills in meeting a variety of speech situations: extemporaneous speaking, oral reading, discussion. Development of basic understanding of speech processes and forms. (5 cr; prereq 3rd qtr fr with B avg with Δ)

6f,w,s. Fundamentals of Speech. Activities progress from co-operative investigation to individual advocacy. Emphasis is placed on investigation and persuasion ranging from the informal committee session to the formal meeting requiring parliamentary rules. (3 cr; prereq fr with Δ , soph, 5) Shapiro, staff

6A. Voice and Articulation. Fundamentals of voice production and articulation. Considerations of physiological, physical, and psychological factors. Examination and application of basic approaches used in voice and articulation improvement to individual cases. (3 cr; prereq 5 and 6; offered when feasible)

9f,w,s. Freshman Discussion and Debate. Open to freshmen who qualify for Freshman Debate Squad. (1 cr; prereq fr with C avg) Scott, Shapiro

UPPER DIVISION COURSES

Upper Division courses are listed in the following divisional groups: Public Address and Rhetoric; Interpretation; Speech Science, Pathology, and Audiology; Radio and Television; General.

Public Address and Rhetoric

- 50f,w,s. Public Speaking.** The principles of preparing and presenting public speeches; directed practice in public speaking. Consideration of the functions of public speaking in contemporary life. (3 cr, §5; prereq upper div standing)
- 51f,w,s. Advanced Public Speaking.** Preparation and delivery of speeches on current public issues. (3 cr; prereq 5) Scott, Shapiro
- 55f,s, 56w. Speech Writing and Platform Speaking.** Essentials of speech writing, organization, style. Presentation of speeches from manuscripts. (3 cr per qtr; prereq 5 or §) Bormann, Smith
- 61. Personal Development Through Speech.** (3 cr; prereq 5, Psy 2; offered when feasible)
- 97f,w. Intercollegiate Oratory and Debate.** Open to students who represent the University in annual contest of Northern Oratorical League and to students who qualify for intercollegiate debate squad. (2 cr; prereq soph with C avg, jr) Scott, Shapiro
- 101f, 102w, 103s. Argumentation and Persuasion.** Theories of modern motivational rhetoric. Analysis of persuasive speaking; practice in preparation and delivery of oral argument. (3 cr per qtr; prereq 5, Psy 2, 10 cr in social science) Brock, Howell, Scott
- 106f,w,s. Discussion.** Co-operative thinking; recognition and definition of problems, critical analysis, examination of possible solutions. Planning, preparing for, participating in, and leading classroom, public, and radio and television discussions. (3 cr; prereq 5) Bormann, Cashman, Howell
- 109f. Classical Rhetoric.** Greek and Roman theories of speech making; historical and philosophic context and influence on education. (3 cr; prereq 5 and Δ) Scott
- 110w. History and Criticism of British Public Address.** British orators, their works, the historical setting. British rhetorical theory. (3 cr; prereq 5 and Δ) Jensen
- 124. Experiments in General Speech.** Correlates of speech skills, audience reactions, and speech improvement. (3 cr; prereq 5, Psy 2; offered when feasible) Bormann
- 126Aw. History and Criticism of American Public Address.** Survey of the history and criticism of religious and reform speaking in the United States from 1620 to 1920. (3 cr; prereq 5, Psy 2) Bormann
- 126Bs. History and Criticism of American Public Address.** A survey of the history and criticism of political speaking in the United States from the time of the revolution to the present. (3 cr; prereq 5, Psy 2) Bormann
- 169s. Speech and Language in Human Behavior.** Basic orientation on the place of speech and language in human behavior. Individual projects and collateral reading. (3 cr) Shapiro

Interpretation

- 81f,w,s, 82w,s, 83f,s. Interpretative Reading.** Aesthetic theory of literature and of oral reading. Practice in reading for interpretation and mastery of technique. 81: Fiction. 82: Poetry. 83: Drama. (3 cr per qtr; prereq 5...81 is prereq to 82 or 83) Thompson, Fredricks
- 105w. Theory of Reading and Acting.** Literature as an art; its various forms; psychology of creative imagination; speech elements in literature; origins and nature of speech symbols and techniques of their use. (3 cr; prereq 83 and Psy 2) Fredricks, Thompson
- 107f,s. Platform Reading.** Advanced course in oral interpretation of selected poems and plays. Speech melody, rhythm, platform techniques. Problems in aesthetic analysis. Lecture recitals. (3 cr; prereq 83) Fredricks, Thompson

Speech Science, Pathology, and Audiology

- 67f,w,s. Phonetics.** Sounds of American English as they occur separately and in connected speech. Strong and weak forms, stress, assimilation. Practice in ear training. (3 cr; prereq 5) Wendahl
- 125f. Speech for the Hearing Impaired.** Differential effects of hearing impairment on speech. Analysis of speech disorders of persons with impaired hearing. Historical and current approaches used in development and improvement of the speech of individuals with impaired hearing. (3 cr; prereq 67 or equiv) Houchins

- 127w. Language for the Hearing Impaired.** Language problems resulting from impaired hearing. Survey of approaches of developing and teaching language to the hearing impaired individual. (3 cr; prereq 152 or #) Houchins
- 140f. Introduction to Voice Science.** Phonetic, anatomic, physiological, and physical bases of speech. (3 cr; prereq 5, Psy 2) Wendahl
- 141w. Anatomy and Physiology of Voice Mechanism.** Respiration, articulation, and phonation. (3 cr; prereq 5, 67, or #, Psy 5) Wendahl
- 142s. Physical Bases and Instrumentation of Speech.** Relationship of basic principles of sound to speech mechanism. Analysis of speech sound production. Application of mechanical and electronic equipment to speech; basic theory and uses. (3 cr; prereq 5, 67, 140 or #, Psy 5) Wendahl
- 145f. Basic Hearing Science.** The nature of normal hearing. Historical backgrounds and issues; theories of hearing. Pitch, loudness, quality and their scaling; hearing limits; differential sensitivity. Combination tones, masking, adaptation, binaural effects, and spatial localization. Some contemporary theoretical considerations such as information theory and signal detection theory. (3 cr; prereq 152 or #) Ward
- 149w. Speech Habilitation for Persons with Neuromuscular Disorders.** Physiological, neurological, and psychological characteristics of persons with cerebral palsy and other types of neuromuscular disorders and a study of methods used in their speech habilitation. (2 cr; prereq 161, 162, 163 or #) Greenberg
- 150s. Organic Speech Disorders: Aphasia.** In adults and children. Etiology, language, and associated nonlanguage problems; therapeutic considerations and procedures. (2 cr; prereq 161, 162, 163 or #) Greenberg
- 151. Cleft Palate Speech Problems.** Research, clinical practice concerning cleft palate. Observation. (2 cr; prereq 141, 161, 163 or #) Starr
- 152f. Hearing Disorders.** Basic orientation to audiology. Physiology and anatomy of auditory mechanism. Symptomatology and pathology of hearing disorders, their medical and surgical treatment. Clinical and classroom management, including discovery programs, hearing aids, language development, lipreading, speech correction, auditory training, psychology of hard-of-hearing and deaf, vocational guidance, educational channels. (3 cr; prereq 5, 67, Psy 2 or #) Lassman
- 153w. Audiometry and Hearing Aids.** Clinical and group audiometry; screening and diagnostic techniques, pure tone and speech audiometry; hearing conservation programs. Modern hearing aids; selection and usage problems. (3 cr; prereq 5, 67, 152, Psy 2 or #) Lassman
- 155s. Lipreading and Lipreading Methods.** Schools and methods of teaching lipreading. Supervised practice in teaching lipreading to hard-of-hearing persons. (3 cr; prereq 5, 67, 152, Psy 2, or #) Lassman
- 156s. Auditory Training.** Problems of auditory discrimination and of hearing aid usage in persons with hearing deficiencies. Methods of developing skills in listening with and without acoustic amplification. Supervised practice with acoustically handicapped children and adults. (3 cr; prereq 152 or #) Houchins
- 157f-158w-159s. Clinical Methods and Practice in Audiology.** Methods and supervised practice in the analysis, diagnosis, and habilitation of communication disorders of persons with auditory impairments. (3 cr per qtr; prereq 153 and #) Lassman
- 160f,w,s. Diagnosis of Speech Disorders.** Consideration of research and clinical material pertinent to construction and use of diagnostic instruments. Participation in clinical diagnostic facilities. (3 cr; prereq 161 or ¶161 and #) Martin
- 161f,w. Introduction to Speech Correction.** Basic orientation in speech correction. Analysis of common disorders of speech, their characteristics, prevention, and correction. Basis for more advanced study in speech pathology or for a basic understanding of the field. (3 cr; prereq 5, or Δ) Siegel, McDermott
- 162w. Speech Pathology.** Causes, characteristics, and therapy. Stuttering. (3 cr; prereq 5, 67, 161) Henrikson
- 163s. Pathologies of Speech.** Voice and articulation disorders. (3 cr; prereq 5, 67, 161) Starr
- 164f, 165w, 166s. Clinical Methods and Practice in Speech Pathology.** (3 cr per qtr; prereq sr, 5, 67, 161, 162, 163) Henrikson, Starr

Radio and Television

- 65f,w,s. Radio and Television Speech.** Fundamentals of practice and theory in speaking for radio and television. Emphasis on projects and exercises in radio and television performance and scripting; introduction to studio equipment and procedures. (3 cr; prereq 5) Goldstein, Bart

- 69w,s. **Radio and Television Production.** An introduction to the problems of radio and television production. Equipment and staff organization; interrelationships with program design. Exercises in production. (3 cr; prereq 65) Goldstein, Bart
- 170s. **Radio and Television Programming.** Theory and practice. Principles of program effectiveness; program policies of the industry. Building and production of experimental programs; emphasis on talk and discussion. (3 cr; prereq 65 or Th 63 or #) Goldstein

General

- 94Hf, 95Hw, 96Hs. **Honors Course: Tutorial Seminar in Speech.** Independent reading, thesis preparation, and discussion of research in selected fields. (3 cr per qtr; prereq candidate for graduation with honors in speech and Δ) Staff
- 122f,s. **Introduction to Research.** Graduate research in speech; selection of topics and methods of investigation. Required of all graduate majors in speech; Th 100 required for all graduate majors in theatre arts. (3 cr; prereq sr, 5, Psy 2; not offered fall 1964) Bormann
- 181, 182, 183. **Readings in Speech.** Directed reading and preparation of reports on selected subjects. (Cr ar; prereq 5, and 6 addtl cr and #) Staff

FOR GRADUATE STUDENTS ONLY

201. **General Seminar**
- 203, 204. **Debate Coaching**
- 207, 208, 209. **Seminar: Persuasion**
- 221, 222, 223. **Seminar: Oral Interpretation of Literature (not offered 1964-65)**
- 231, 232, 233. **Seminar: Advanced Speech Problems**
234. **Seminar: History and Criticism of Public Address**
235. **Seminar: Small Group Communication**
- 241, 242, 243. **Seminar: Radio and Television Research**
251. **Seminar: Listening Comprehension**
257. **Language Retardation**
- 261, 262, 263. **Seminar: Speech Pathology**
- 267-268-269. **Seminar: Experimental Phonetics**
270. **Advanced Clinical Audiology**
- 271-272-273. **Seminar: Hearing**
- 275, 276, 277. **Seminar: Rhetoric**
- 281, 282, 283. **Seminar: Organic Disorders of Speech**
- 291, 292, 293. **Research**

Theatre Arts (Th)

LOWER DIVISION COURSES

- 11f,w,s. **Introduction to the Theatre Arts.** History and theory of plays and writing as well as various arts and crafts of the theatre. (3 cr) Ballet
- 12f,w,s. **Laboratory Section: Introduction to the Theatre.** A laboratory in the practice of the arts and crafts of the theatre; scenery and particularly construction and painting, stage operation, theatre lighting, costuming, or make-up. (1 cr; prereq 11 or ¶11) Adey
- 13Hf,w,s. **Honors Course: Introduction to the Theatre.** An enrichment honors course for students who have completed Th 11 with outstanding work in class. (1 cr; prereq 12 and #) Ballet
- 21f,w,s. **Beginning Acting: Creative Approach.** Creation and presentation of original scenes and skits. Ability to respond to the imaginative situation with individuality and effectiveness is stressed. (3 cr; prereq fr with Δ, soph, 12) Klein, staff

- 22f,w,s. **Beginning Acting: Creating a Role.** The application of creative techniques to the analysis, understanding, and theatrically effective communication of roles from dramatic literature. (3 cr; prereq 21) Klein
- 23f,w,s. **Beginning Acting: Technique.** Fundamentals of body movement, rhythms, and acting technique. Individual and group performances. (3 cr; prereq 22) Moulton
- 24f,w,s. **Stage Make-up.** Theory and practice in the art of stage make-up. (1 cr; prereq 12) Ar
- 34f,w,s. **Stagecraft: Construction and Painting.** Theory and practice in construction, painting, and shifting of stage scenery. (3 cr; prereq soph, 12) Adey

UPPER DIVISION COURSES

Total cumulation of credits allowable in courses 101, 102, 103, 114, 121, 122, 123, 124, 141, 142, 143, 151, 174, 175, 176: MFA candidates—unlimited credit; MA candidates—9 credits; PhD candidates—18 credits.

- 51f, 52w, 53s. **Our Theatre Today.** Discussion and analysis of current trends, problems, and achievements in theatre of the present day. (1 cr per qtr; prereq acceptance as an undergrad theatre major or #) Staff
- 61f,w-62s. **Advanced Acting.** 61: Characterization, styles of acting, and stage technique. Presentation of scenes from great plays. 62: Continuation with emphasis upon stage dialects. (3 cr per qtr; 61f open only to students in major sequence B; 61w open to others; prereq 22) Ar
- 63f,w,s. **Radio and Television Drama.** Historical development of radio and television drama, including production, direction, and acting techniques. (3 cr; prereq 21, Spch 5...Spch 65 recommended) Cichoke
- 74f. **Play Production in the Secondary School.** Technical fundamentals: stagecraft, design, lighting, and costuming. (3 cr; prereq 12) Adey
- 75w. **Play Production in the Secondary School.** Fundamentals including the analysis and production of selected scenes. (3 cr; prereq 21, 74) Adey
- 76s. **Play Production in the Secondary School.** Administration of dramatics program in high school. Direction of full-length play. (3 cr; prereq 75 or 112 or #) Adey
- 90f. **Costuming.** Theory, design, and construction of costumes for stage and television. (3 cr; prereq 12, 34) Moulton
- 91w. **Scene Design.** Theory and practice of designing scenery as a functional environment for the stage and television. (3 cr; prereq 12, 34) Josal
- 92s. **Lighting.** Theory and practice in applying methods and principles of lighting in theatre and television. (3 cr; prereq 12, 34) Josal
- 94Hf, 95Hw, 96Hs. **Honors Course: Tutorial Seminar in Theatre Arts.** Independent reading, thesis preparation, and discussion of research in selected fields. (3 cr per qtr; prereq candidate for graduation with honors in theatre arts and Δ) Staff
- 100w. **Introduction to Research.** Graduate research in theatre arts; selection of topics and methods of investigation. Required of all graduate majors in theatre arts. (3 cr; prereq sr, Spch 5, Psy 2) Bormann
- 101f, 102w, 103s. **Theatre Practicum.** Individual creative projects meeting approval of a faculty committee in one or more of these areas: playwriting, directing, acting, and design. (2-6 cr per qtr; prereq Δ) Staff
- 111f-112w-113s. **Stage Direction.** 111: Theory of direction. Exercises in blocking and production of short scenes. 112: Rehearsal problems and direction of two one-act plays. 113: Problems of theatre management and staging; direction of full-length play. (3 cr per qtr; prereq sr, 21, 90 or 92, 91 and #) Whiting
- 114w. **Theatre Management and Promotion.** Theory and practice in box office procedures, house management, publicity and promotion; special problems in college, community, children's, and professional theatre. (3 cr; prereq 12) Loppnow
- 115f-116w. **Playwriting and Production.** Creative practice in play construction. 115: One-act play. 116: Full-length play. (3 cr per qtr; prereq 12, 21 or Δ) Ar
- 117s. **Writing Radio and Television Drama.** Group invention and presentation of scenarios. Individual writing of an original 30-minute radio or television play. (3 cr; prereq 11, 21, Spch 5 or Δ) Thompson
- 121f, 122w, 123s. **Problems in Acting.** Acting problems stemming from differences in genres and styles of dramatic production from the Greeks to the present. Emphasis on intensive scene

- and character analysis and on skill in communicating character and concept to an audience in individual and group performance. (3 cr; 5 hrs per wk; prereq 61, 62 or #) Ar
- 131w. **Creative Dramatics.** Principles and methods of developing original dramatizations with children. Observation of children's classes in creative dramatics. Readings, projects, term papers. (3 cr; prereq 12, Spch 5, or elementary education major, or #...21 recommended) Graham
- 132s. **Children's Theatre.** Selection, direction, and production of plays for children's audiences, co-ordinated with current productions of the Young People's University Theatre. (3 cr; prereq 12, Spch 5 or #) Graham
- 141f-142w-143s. **Production of Television Drama.** Televised drama produced and analyzed with reference to adaptation of techniques and theory from stage production. (3 cr per qtr; prereq 63 or Spch 65; Th 61, 111, 112, Spch 69, and #; offered 1965-66 and alt yrs) Goldstein
- 151su. **Theatre Symposium.** An intensive study of the art of the theatre with particular emphasis on productions and production methods of the Tyrone Guthrie Theatre. Conducted by professional critics, actors, directors, and designers as well as University faculty members. (6 cr; grad or #) Ballet, staff
- 173f, 172w, 171s. **History of the Theatre.** Plays, arts, and crafts of the theatre from their beginnings to present. Reports and projects. (3 cr per qtr; prereq sr, 12, 100 or #100, Spch 5) Graham, Josal, Sonkowsky
- 174f-175w-176s. **History and Technique of Stage Movement.** The application of historical research in the areas of manners, games and dances to techniques of body movement for the stage. (3 cr per qtr; prereq 171, 172, 173 or #) Moulton
180. **American Theatre.** The theatre as an aspect of American culture from 1752 to the present. (3 cr; prereq 12 or grad; offered when feasible)
- 181, 182, 183. **Readings in Theatre Arts.** Directed reading and preparation of reports on selected subjects. (Cr ar; prereq Spch 5, and 6 addtl cr and #) Staff
- 190f. **Advanced Problems in Costuming.** Theory of stage costume. Special projects and reports. (3 cr; prereq 111, 112 or #) Moulton
- 191w. **Advanced Problems in Scenic Design.** Theory of scenic design. Special projects and reports. (3 cr; prereq 111, 112 or #) Josal
- 192s. **Advanced Problems in Stage Lighting.** Theory of stage lighting. Special projects and reports. (3 cr; prereq 111, 112 or #) Josal

FOR GRADUATE STUDENTS ONLY

- 211, 212, 213. **Seminar: Stage Direction**
- 221, 222, 223. **Seminar: Playwriting**
- 251, 252, 253. **Seminar**
- 271, 272, 273. **Seminar: Dramatic Theory**
- 281, 282, 283. **Research**
290. **Seminar: Stage Costuming**
291. **Seminar: Scenic Design**
292. **Seminar: Stage Lighting**
294. **Seminar: Visual Arts of the Drama**
295. **Seminar: Theatre Planning**

Statistics (Stat)

FACULTY—Bernard W. Lindgren, *chairman*; Jacob E. Bearman, Byron W. Brown, Oswald H. Brownlee, Robert J. Buehler, Theophilos N. Cacoullos, John S. Chipman, Raymond Collier, Ralph E. Comstock, Roy C. Francis, Charles Gates, Delbert Hastings, Leonid Hurwicz, Benton Jamison, Gopinath Kallianpur, Charles H. Kraft, Elmer W. Learn, Gayle W. McElrath, Richard B. McHugh, John Neter, Steven Orey, William E. Pruitt, Edgar Reich, Merrill F. Roff, Paul Rosenbloom, Harold Ruben, James Sentz, Robert N. Shoffner, Milton Sobel, Horace L. Thomas, Constance van Eeden.

Major Advisers in Arts College—Professors Bearman, Collier, Hurwicz, McElrath, Neter; Associate Professors Gates, Lindgren.

Major Sequence in Arts College—Calculus through Math 108, Math 131A, and 21 credits in Upper Division courses in statistics including Stat 131-132-133. Students majoring in statistics who minor in mathematics must take 6 additional credits in Upper Division courses in mathematics or statistics.

COURSES OPEN TO UNDERGRADUATES

Courses referred to below, numbered below 200, and offered in other colleges may be taken for credit in the Arts College by students majoring or minoring in statistics.

- 41. Introduction to the Ideas of Statistics.** The role of statistics in scientific investigation. Deterministic and probabilistic models. Probabilistic models as an aid to inference. Types of inference and decision procedures. Bayes' theorem. Maximum likelihood, best unbiased and likelihood procedures. Decision theory. (3 cr; prereq Math 10 or #)
- 90. Introduction to Probability and Statistics.** Elementary probability and probability distributions; sampling and elements of statistical inference. (3 cr; prereq differential and integral calculus)
- 101w. Introduction to Decision Theory.** Elements of probability; basic concepts in statistical decision theory; relationship to game theory and other types of decision problems; prediction and inference. (3 cr; prereq Econ 101A, or Math 40, or Math 42, or Math 13, or #)
- PubH 110-120-130. Statistical Methods (Biostatistics).** Role of statistics in research; estimation; sampling; significance tests; power; regression; correlation; analysis of components of variance; experimental design; analysis of covariance. (3 cr per qtr; prereq ¶111-121-131, and Math 10, or #...grade not lower than C in preceding course for 120, 130)
- PubH 111-121-131. Statistical Methods Laboratory (Biostatistics).** Presentation of data, descriptive statistics, computational procedures, use of desk calculators, applications of principles and methods in 110-120-130. (2 cr per qtr; prereq ¶110-120-130)
- 121f-122w-123s. Theory of Statistics.** 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. (3 cr per qtr; for nonmajors; prereq Math 10 for 121, Math 43 for 122, Math 44 for 123, or equiv)
- 131f-132w-133s. Theory of Statistics.** 131: Probability models, univariate and bivariate distributions, independence, basic limit theorems. 132-133: Statistical decision theory, sampling, estimation, testing hypotheses, parametric and nonparametric procedures for one-sample and two-sample problems, regression, analysis of variance. (3 cr per qtr; prereq ¶Math 55 for 131, ¶107-108 for 132-133, or equiv)
- Math 133B-134B. Probability with Technological Applications.** Spectral analysis of stationary processes, linear and nonlinear transformations, recurrent events, random walk and diffusion, Markov chains, Poisson processes. (3 cr per qtr; prereq Stat 131, Math 153...or Stat 131, Math 148-149...or #)
- 144-145. Theory of Sample Surveys.** Mathematical treatment of survey sampling, including stratified and multistage sampling, models for nonsampling errors. (3 cr per qtr; prereq 123 or 133)
- IE 171. Quality Control.** Quality standards, application of statistical methods and sampling theory, interpretation of results and corrective action. (3 cr; prereq Stat 90 or 131 or #)
- QA 171. Statistical Methods for Sample Surveys.** Introduction to commonly used sampling methods, including stratified sampling, multistage sampling and cluster sampling, methods of estimation, including ratio and regression estimates; design of surveys taking into account various costs; statistical measurement and control of nonsampling errors. (3 cr; prereq QA 51 or Math 51 or QA 161 or Math 161 or equiv)
- IE 177. Industrial Sampling Techniques.** Selection and operation of attributes sampling plans; operating characteristic curves; sampling techniques for continuous production; variables sampling plans; administrative and economic comparisons. (3 cr; prereq IE 171 or Math 171)
- Math 178A-B-C. Introduction to Probability.** Largely based on W. Feller, *An Introduction to Probability Theory and Its Applications* with emphasis on logical development and varied applications. Random walks, Markov chains, and discrete stochastic processes. (3 cr per qtr; prereq 108 or Stat 133 or #)
- QA 181. Quality Control and Industrial Statistics.** Acceptance sampling by attributes and variables; construction of single, double, and multiple acceptance sampling plans; statistical control charts and their operation; effectiveness of control charts; modification of control charts for special problems. (3 cr, §IE 171, §IE 177; prereq QA 51 or Math 51 or QA 161 or Math 161 or equiv)

- 181A,B,C. **Topics in Statistics.** Topics vary according to the needs and the available staff; may be repeated for credit. (3 cr per qtr; prereq 123 or 133 and #)
- 191f-192w-193s. **Analysis and Design of Experiments.** Theory and applications of the general linear model, regression, analysis of variance, and the design of experiments. (3 cr per qtr; prereq 123 or 133, and matrix theory)
194. **Introduction to Correlation and Multivariate Analysis.** The multivariate normal distribution and its properties. Inference on sample mean vectors and covariance matrices. Distribution and uses of sample correlation coefficients. Distribution and uses of Hotelling's T^2 statistic. Classification problems and the discriminant function. (3 cr; prereq 133 and Math 131A or #)

FOR GRADUATE STUDENTS ONLY

- 201-202-203. **Theory of Statistical Inference**
- 221-222-223. **Advanced Statistical Theory**
- 241A,B,C. **Nonparametric Inference**
- 251A,B,C. **Multivariate Analysis**
- Math 258-259-260. **Advanced Probability Theory**
- 281A,B,C. **Advanced Topics in Statistics**
- Math 284. **Stochastic Processes**
- Math 293. **Seminar: Stochastic Processes**
301. **Seminar**

Swedish

See Scandinavian

Theological Training, Preparation for

Chairman—William A. McDonald

Major Advisers in Arts College—Professors Hoyt, Kwiat, McDonald, Matthews; Associate Professors Mather, Smith; Assistant Professor Mason.

The title "Preparation for Theological Training" is accurate in fact but misleading in emphasis. That the studies taken in a liberal arts college actually precede seminary training is obvious enough. That their main function should be to prepare the student for seminary work is dubious. An even more important task is getting the student ready for his total responsibility as a minister and as a citizen—most particularly in those areas where the liberal arts college can do the job more efficiently than a specialized seminary program conceivably can.

The student should, of course, learn as early as possible what seminary he plans to attend and what prerequisites it demands. But he should study its catalogue just as much to learn those areas in which it does *not* offer training as to ascertain those in which it does. For he should plan his program with a clear sense of his mission as a minister and of the part that the liberal arts can play in fulfilling that mission.

The Lower Division curriculum outlined below satisfies the Arts College distribution requirements. At the same time it specifies a number of modifications. Therefore the freshman who intends (or is seriously considering) entering a theological seminary should study the program carefully, talk it over with specially designated Lower Division advisers, and also discuss it as soon as possible with one of the above-mentioned major advisers—Mr. Hoyt, 723 SocSci(W); Mr. Kwiat, 257 ForH; Mr. Mason, 364 ForH; Mr. Mather, 322 FolH; Mr. Matthews, 368 ForH; Mr. McDonald, 310 FolH; Mr. Smith, SocSci(W) 778. Such consultation will be useful whether or not the student decides to elect the interdepartmental program rather than a regular departmental major.

In planning their Lower Division program students should see the General Distribution Requirements listed on page 5, as well as the special requirements and recommendations listed below.

LOWER DIVISION

- A. **Freshman English:** Engl A-B-C (if eligible); otherwise Engl 1A-2A-3A or 1B-2B-3B.
- B. **Foreign Language:** Greek strongly recommended.
- C. **Social Science:** Hist 14, 15, 16 (required; may be fulfilled by Hist 50, 51, 52 and 6 cr in other departments [excluding history and psychology])
- D. **Natural Science:** Psy 1-2 (required) and 9 credits in mathematics or physical science. Laboratory requirement may be met by taking Psy 4-5.
- E. **Humanities:** Phil 2 (required) and 10 credits in other departments (excluding history and mathematics). Engl 21, 22, 23, 37, 38, 39, Comp 27, 28, Spch 5 recommended.
- F. **Health:** PubH 2 (Personal and Public Health, 2 cr) or PubH 3 (Personal Health, 2 cr) or equivalent.

UPPER DIVISION

The following are specific requirements, not all of which need be met by Upper Division courses. However, at least 60 credits must be earned in Upper Division courses for graduation.

- A. **Fine Arts:** 9 credits minimum selected from art, music, theatre arts.
- B. **History:** 18 credits minimum in medieval and modern history (at least 9 modern).
- C. **Language and Literature:** 9 credits minimum in English; 9 credits minimum in Greek, Hebrew, Latin, modern foreign language, foreign literature in translation, or humanities.
- D. **Philosophy:** 21 credits minimum, including history of philosophy (Phil 50-51-52).
- E. **Social Science:** 12 credits minimum in anthropology, economics, political science, sociology, speech, psychology.

Zoology (Zool)

FACULTY—Magnus Olson, *associate chairman*; V. Elving Anderson, Robert M. Benolken, Alan B. Hooper, Robert K. Josephson, Norman S. Kerr, Peter Luyck, David J. Merrell, Roger D. Price, Sheldon C. Reed, A. Glenn Richards, Otto H. Schmitt, Nelson T. Spratt, Jr., Grover C. Stephens, James C. Underhill, Franklin G. Wallace, Dwain W. Warner, Frederick G. Williams.

Major Advisers in Arts College—Professors Olson, Stephens, Wallace; Associate Professors Anderson, Merrell; Assistant Professors Hooper, Josephson, Kerr, Underhill.

Major Sequence in Arts College—Zool 51, 52, 53, 66, 91 or 92, 94 and 8 additional credits in courses numbered 50 or above. It is suggested that students expecting to major in zoology take Zool 51 and one of the following courses: Zool 52, 53 or 66, during the sophomore year.

Preparation for Major—Biol 1-2 and GeCh 4-5 or equivalent. It is strongly recommended that majors take mathematics through Math 40; chemistry including GeCh 11, AnCh 57, and OrCh 61-62; and Phys 4-5-6; or their equivalent. Students intending to do graduate work in zoology will be expected to have this background.

Honors Program: Zoology Majors—Information regarding college honors program for zoology majors is available in the zoology office.

Major Adviser in College of Education—Magnus Olson.

For the specialized curriculum in natural sciences see *Bulletin of the College of Education*.

General Education—It is recommended that the nonscience or nonzoology major student select from the following courses: Biol 1-2, 1A-2A, Zool 66, 68, 71, 73, 74, 96. Biol 1-2 is prerequisite to all listed courses except Biol 1A-2A, which is a terminal course, and Zool 68.

LOWER DIVISION COURSES

- Biol 1f,w,s-2f,w,s.† General Biology.** Introduction to living things both plant and animal, and to the major biological concepts. Structure, function, classification, and evolution of organisms. (5 cr per qtr)
- Biol 1Af,w,s-2Af,w,s.† General Biology.** Introduction to living things and the major biological concepts. A terminal course primarily for nonmajors and students not pursuing a pre-professional program related to the biological sciences. (3 cr for 1A, 4 cr for 2A)
- Biol 2Hf,w,s. Honors Course.** For students earning an A or B in Biol 1.

UPPER DIVISION COURSES

Upper Division courses are open to sophomores under conditions explained at the beginning of Section II.

- 51f. Cell Biology.** Dynamic aspects of cell structure and macromolecular organization, with emphasis on current research. (3 cr; prereq Biol 2 or equiv, GeCh 4-5 or #) Hooper
- 52w. General and Comparative Embryology.** Embryological development of invertebrate and vertebrate forms. (5 cr; prereq Biol 2 or equiv) Spratt
- 53w. Comparative Anatomy.** Comparative study of vertebrate systems, tracing the development of various structures from lowest forms to man. (5 cr; prereq soph, Biol 2 or equiv)
- 65f. Histology.** Microscopic structure of the tissues and organs. (5 cr; not open to regular 3-yr premed or predent students; prereq Biol 2 or equiv) Olson
- 66f,s,su. Introduction to Genetics and Eugenics.** Genetic principles derived from experimentation with both plants and animals are considered, together with their application to practical problems, including those of human society. (3 cr; prereq Biol 2 or equiv) Reed (f) Merrell (s)
- 67f,s. Genetics Laboratory.** Experiments with living material to demonstrate the principles of heredity and their chromosomal basis. (2 cr; prereq 66 or f66 or #) Reed, Merrell
- 68s. Introduction to Human Genetics.** A survey of human genetics for students without background in biology. (3 cr; not open to any student who has had Biol 1-2 or equiv; prereq jr) Anderson, Reed
- 71s. Fauna of the Central United States.** Identification, classification, and life histories of common land and freshwater animals exclusive of insects and birds. (5 cr; prereq Biol 2 or equiv)
- 72su. Natural History of Invertebrates and Fishes.** A taxonomic and ecological survey of the local fauna, including life histories and habitats. (6 cr; prereq Biol 2 or equiv; offered at Lake Itasca Forestry and Biological Station only)
- 73w. Invertebrate Zoology.** Review of invertebrate phyla with emphasis on functional morphology and phylogeny. (3 cr; prereq Biol 2 or equiv; offered 1965-66 and alt yrs) Stephens
- 74w. Introductory Entomology.** General morphology, life histories, habits, and classification of insects. (5 cr; prereq Biol 2 or equiv) Price
- 75w-76s. Introductory Ornithology.** Laboratory and field course in structure, classification, distribution, migration, habits, habitats, and identification of birds. (3 cr per qtr; prereq Biol 2 or equiv) Warner
- 77w. Mammalogy.** Distinguishing characteristics and life histories of the various mammal groups, particularly those represented in the state. (4 cr; prereq Zool 53) Beer
- 91f. Comparative Animal Physiology.** An introduction to animal physiology, emphasizing functional aspects of organ systems from a comparative viewpoint. (5 cr; prereq Biol 2, GeCh 5, or #) Stephens
- 92s. Introduction to General Physiology.** Introduction to biochemical and biophysical study of the functioning of cells and cell systems. (5 cr; prereq soph, Biol 2 or equiv, 10 cr in chemistry [OrCh 61-62 recommended]) Josephson
- 93f. Introduction to Animal Parasitology.** Elementary course dealing with parasitic protozoa, worms, and arthropods, and their relation to diseases of man and animals. (5 cr; prereq Biol 2 or equiv) Wallace

- 94w. **Introductory Animal Ecology.** General ecology stressing ecological principles and terrestrial ecology. (3 cr; prereq Biol 2 or equiv) Underhill
- 95s. **Introductory Animal Ecology Laboratory.** Field trips stressing local habitat types and instruments used in ecological research. (1 cr; prereq 94 and #) Underhill
- 96f. **Organic Evolution.** Survey of evidence for and causes of evolution. (3 cr; prereq Biol 2 or equiv) Merrell
- 97Hf-98Hw-99Hs. **Senior Seminar.** A discussion of biological topics of current interest. (1 cr per qtr; prereq sr, major in a biological science, #) Staff
- 107s. **Protozoology.** Introduction to taxonomy, morphology, physiology, development, and genetics of free-living protozoa. (4 cr; prereq #) Kerr
- 108w. **Comparative Neurology.** Comparative study of the morphology and physiology of nervous systems with emphasis on evolutionary trends in the invertebrate phyla. (5 cr; prereq 91 or 92 or equiv and #) Josephson
- 110s. **Animal Behavior.** Survey of effector mechanisms, their nervous and endocrine control, and behavior patterns of animals. (3 cr; prereq 91 or 92 or equiv and #) Stephens
- 112f. **Advanced General Physiology.** Topics of current interest in physiology. (3 cr; prereq 91 or 92 or equiv and #) Josephson
114. **Sensory Physiology.** Survey of general properties of receptor organs with an emphasis on visual, auditory, and mechano receptor units. (3 cr; prereq 92 or equiv and #; offered 1965-66 and alt yrs) Benolken
- 115su. **Advanced Natural History of Invertebrates and Fishes.** Advanced taxonomic and ecological survey of local fauna, detailed and independent ecological study of several taxonomic groups. (6 cr; prereq 15 cr in zoology; offered at Lake Itasca Forestry and Biological Station only)
- 116s. **Population Ecology.** General principles of population, covering population dynamics and trophic relationships. (3 cr; prereq 94 or #...Bot 50 or 130 or equiv recommended; offered 1964-65 and alt yrs) Underhill
- 118w. **Experimental Ecology.** Experimental approach to study of environmental factors affecting animal populations. Ent 201 is the companion laboratory course. (3 cr; prereq 9 cr in biology or equiv and 3 cr in animal or plant ecology and #) Chiang
- 119su. **Linnology.** Conditions for life in the water and distribution of aquatic animals. (6 cr; prereq 15 cr in Zoology incl Biol 2 or equiv; offered at Lake Itasca Forestry and Biological Station only) Underhill
- 121f. **Ichthyology.** Taxonomy and habits of North American fishes, especially those of upper Mississippi drainage. (3 cr; prereq 15 cr incl Biol 2 or equiv) Underhill
- Ent 125f. **Insect Morphology.** Comparative studies of external and internal macrostructure of insects; phylogeny and function. (4 cr; prereq Zool 74 and #) Cook
- Ent 126w. **Microanatomy and Development of Insects.** Histochemistry and fine structure; reproductive behavior, embryology and postembryonic development of insects. (4 cr; prereq 125, OrCh 42 or 62, #) Brooks
- Ent 127s. **Insect Metabolism and Co-ordination.** Homeostasis, permeability, circulation, metabolic systems and products, properties of muscle and nerves, sensation, behavior. (4 cr; prereq BioC 106...MdBc 101 recommended) Richards
- Ent 130s. **Principles of Systematic Entomology.** Lectures on history of systematic entomology, the species concept and higher categories, systematic procedures, and zoological nomenclature. (2 cr; prereq 15 cr in entomology or zoology and #) Cook
- 135su. **Field Ornithology.** Field and laboratory studies of ecology and life histories of the birds in the Itasca Park region. (4 cr; prereq 15 cr in zoology; offered at Lake Itasca Forestry and Biological Station only) Welty
- 138f,w,s. **Seminar: General Physiology and Biophysics.** (Cr ar) Staff
- Ent 140. **Biological Microscopy.** Necessary elements of optics, use and limitations of various types of microscopes, interpretation of microscopical data. Laboratory, demonstrations, plus project in the field of student's interest. (4 cr; prereq 15 cr in zoology, entomology, or botany, and #; offered when demand warrants) Richards
- 143su. **Animal Parasites.** Parasites of local fauna with special reference to helminths. (6 cr; prereq 15 cr incl Biol 2 or equiv; offered at Lake Itasca Forestry and Biological Station only)
- 144f. **Medical Entomology.** Principal arthropods noxious to man and animals. Emphasis on those that serve as vectors of pathogenic organisms of man and animals. (3 cr; prereq 15 cr incl 74 or equiv and #) Price

- 145w. Parasitic Protozoa.** Structure, life histories, and economic relations of protozoal parasites of man and animals. Laboratory diagnosis. (3 cr; prereq 15 cr incl Biol 2 or equiv and §) Wallace
- 146s. Helminthology.** Worm parasites of man and animals, their structure, life histories, and biological relationships. (3 cr; prereq 15 cr incl Biol 2 or equiv and §) Wallace
- 151w. Cellular Metabolism.** Metabolism of biochemical compounds and integration and regulation of metabolic pathways involved in maintenance and reproduction of the cell. (3 cr; prereq Biol 2, OrCh 62, and §) Hooper
- 153s. Molecular Biology.** Quantitative analysis of cellular processes which may be treated on a molecular basis: osmotic pressure, Brownian motion, ion distribution, phase separations, intermolecular forces. (3 cr; prereq 51, Phys 9 or equiv and §; offered 1964-65 and alt yrs) Benolken
- 155f, 156w, 157s. Biophysics.** Theoretical and experimental aspects of biology that can be studied by quantitative physical means. 155: Tissue ultrastructure (biostatics) as revealed by hypermicroscopy, birefringence, X ray, electron and radioactive means, and by colloidal and micellar phenomena. 156: Dynamics of biophysical systems: excitatory state, contraction, secretion, synthesis. 157: Integrative biophysical systems, stability of systems, transmission of information, sensory mechanism. (3 cr per qtr; prereq 28 cr distributed between physics and biology, and §...physical chemistry and general physiology recommended; schedule ar) Benolken, Schmitt
- Ent 162su. Vertebrate Ecology.** Field work on populations and their relationships to local environments; habitat analysis and ecological research methods. Individual and team research projects, field trips, and lecture. (6 cr; prereq Bot 50 and Zool 94; offered at Lake Itasca Forestry and Biology Station only) Marshall, Tester
- 170f. Advanced Genetics.** General laws involved in heredity and variation with their application to microorganisms, higher plants, and animals exclusive of man. (3 cr; prereq 15 cr incl 66, 67 or §67, or equiv) Anderson, Merrell, Reed
- 171w. Genetics and Speciation.** Application of genetic principles to problems of speciation and evolution. (3 cr; prereq 15 cr incl 66, 67 or §67, or equiv) Merrell
- 175s. Human Genetics.** Inherited characters in man, particularly in relation to medicine, with some reference to the relation of genetics to marriage and to social conditions. (3 cr; prereq 66 or §) Reed
- 176w. Problems and Methods in Human Genetics.** Principal methods for research in human genetics. Importance of appropriate statistical techniques. Use of genetic concepts in exploring new problems. Individual study of current problems and group discussion. (3 cr; prereq 175 or §) Anderson
- 182s. Experimental Embryology.** Growth, differentiation, and metabolism of developing organisms. (5 cr; prereq 52 and 92 or equiv and §) Spratt
- 195su. Problems in Ornithology, Ecology, and Limnology.** Principles and further work in special lines adapted to needs of individual students. (Cr ar; prereq Biol 2 or equiv and §; offered at Lake Itasca Forestry and Biological Station only) Staff
- Ent 196su. Special Problems in Entomology and Vertebrate Ecology.** Advanced work in entomology and ecology and ample opportunity for individual research, especially in various faunistic studies. (Cr ar; prereq §; offered at Lake Itasca Forestry and Biological Station only) Cook, Marshall, Tester
- 197f, 198w, 199s. Advanced Work.** Individual work in some special discipline. (Cr ar; prereq Biol 2 or equiv and §) Staff

FOR GRADUATE STUDENTS ONLY

- 100f, 101w, 102s. Basic Zoology**
- Ent 201w. Experimental Ecology Laboratory**
- Ent 202s. Insect Ecology**
- Ent 203. Insect Physiology**
- Ent 209w. Topics in Comparative Physiology**
- 211f, 212w, 213s. Research in Ecology**
- 214s. Field Ecology**
- 217f, 218w, 219s. Research in Physiology**
- 221f, 222w, 223s. Research in Biophysics**

- 224f, 225w, 226s. Research in Ornithology
- 229f, 230w, 231s. Research in Histology
- 233f, 234w, 235s. Research in Embryology
- 237f, 238w, 239s. Research in Cytology
- Ent 241f, 242w, 243s. Research in Entomology
- 244f, 245w, 246s. Research in Protozoology
- 251f, 252w, 253s. Research: Genetics
- 261f, 262w, 263s. Research in Parasitology
- 270w-271s. Cytology
- 272w-273s. Cytology Laboratory
- 283f, 284f, 285f. Physiology of Development
- 291f, 292w, 293s. General Seminar
- 296f, 297w, 298s. Seminar: Special Research Fields

Entomology, Fisheries and Wildlife

(College of Agriculture, Forestry, and Home Economics)

Students in the Arts College may elect courses in entomology, fisheries, and wildlife by arrangement with the department, but before registering for any course they should get the approval of the Scholastic Committee. See the *Bulletin of the College of Agriculture, Forestry, and Home Economics*.

Section III

PREPROFESSIONAL CURRICULUMS IN THE COLLEGE OF LIBERAL ARTS

AS EXPLAINED at the beginning of Section I of this bulletin, many students enter the College of Liberal Arts to obtain the essential foundation for entrance into professional schools. Preprofessional work consists of courses particularly related to the fields of ultimate interest, together with courses of broadening general educational nature.

It is essential that the student study preprofessional requirements for the field of his choice carefully if he is to continue his college career without loss of time. Detailed outlines of the curriculums in the Arts College which are prerequisite for entrance into the various professional schools are presented below.

A. UNIVERSITY COLLEGE

See Section I, page 11.

B. SCHOOL OF ARCHITECTURE

This 6-year curriculum is intended for students who wish to combine with their professional training more general education than is offered by the 5-year professional curriculum in architecture. It normally leads to the bachelor of arts degree (B.A.) with a major in architecture at the end of 4 years and the bachelor of architecture degree (B.Arch.) at the end of 6 years.

The work of the first 4 years constitutes a modified version of the curriculum prescribed for the Arts College major in architecture. The following procedures and program of studies should be adhered to in order to complete the work required for the two degrees in the proper sequence and in the normal time:

First and Second Years—The first 2 years' work may be taken at the University of Minnesota in the Lower Division of the Arts College, or at other accredited institutions. During this period the student should complete the requirements for entrance to the Upper Division as stated on page 5. These requirements should include the following:

(Credits shown in parentheses)

High school or college equivalents of Higher Algebra or Solid Geometry	Phys 1A-2A-3A—Physical Science Laboratory (3)
Math T, 15—Trigonometry and College Algebra (8)	Art 23A-24A-25A—Drawing and Painting I (6)
Math 42—Analytic Geometry and Calculus I (5)	Approved electives to make a minimum total of 90 credits
Phys 1-2-3—Introduction to Physical Science (9)	

Third and Fourth Years—During these years the student is registered in the Upper Division of the Arts College as a regular candidate for the B.A. degree with a major in architecture. Such a candidate must secure the approval of the School of Architecture. Application forms may be obtained from the School of Architecture

or from the Office of Admissions and Records. *Applications should be submitted not later than June 1 preceding the beginning of the academic year for which admission is being sought.*

The following courses should be included:

Arch 51-52-53—History of Architecture (9)
 Arch 81-82-83—Architectural Design (18)
 Arch 91-92-93—Architectural Design (18)
 Art 60A-61A-62A—Drawing and Painting II (6)
 Math 43—Analytic Geometry and Calculus II (5)
 MM 92-93—Statics; Solid Mechanics for Architects (8)

Approved electives to make a minimum total of 180 credits acceptable for the B.A. degree.
 CE 38-39-41—Structural Design, or Arch 71-72-73—Building Technology, may be taken but will not carry credit toward the B.A. degree.

Fifth and Sixth Years—See the *Bulletin of the Institute of Technology*.

C. SCHOOL OF BUSINESS ADMINISTRATION

The purpose of the prebusiness curriculum is to combine courses in liberal education with preliminary basic courses in business administration and economics. In recognition of the widening social responsibility of business management, the student is urged to elect courses in several fields outside of business administration and economics in addition to fulfilling the following requirements.

To be eligible for admission to the School of Business Administration, the student must present approximately 90 credits, earned in a recognized college or university with a scholarship average of at least C. (Physical education and personal orientation course credits are not counted for credit by the School of Business Administration.)

The School of Business Administration offers courses leading to the degrees of bachelor of science in business (regular or accounting programs) and bachelor of science in economics (economics or statistics programs). Students from the Arts College preparing to enter the school in pursuit of either of these degrees must satisfy the following prebusiness requirements.

Lower Division Requirements for Admission to the Programs Leading to the Degree of Bachelor of Science in Business

All applicants to the School of Business Administration must meet the following course requirements:

(Credits shown in parentheses)

1. Business and Economics Courses—19 credits

Sophomore courses:

Acct 24, 25, 26—Principles of Accounting (9)
 QA 5—Elements of Statistics (4)
 Econ 1-2†—Principles of Economics (6)

2. Freshman English—9-15 credits (satisfaction of Arts College Freshman English requirement)

Engl A-B-C—Freshman Literature and Composition (15)
 Engl 1A-2A-3A or 1B-2B-3B—Freshman English (12)
 Comm 1-2-3—Communication (12)
 Exemption from the requirement

3. Mathematics—5 or more credits

Math 10 (or Math 15)—College Algebra, or equivalent. Math Z may be prerequisite for Math 10 or 15. Math 40 (or 42) is recommended.

4. Social Sciences—15 credits

In two or more of the following departments (at least 5 credits** must be taken in each department used to satisfy this requirement): anthropology, geography, history**, political science, psychology, and sociology (except Soc 45, Social Statistics, which is not acceptable in fulfillment of this requirement). SSci 1-2-3 and 5 credits in one of the above departments will satisfy this requirement.

5. Natural Sciences—8-10 credits

In a single natural science to be selected from botany, chemistry, geology, physics, zoology. All courses must include laboratory. This requirement can be met currently in the Arts College only with the following courses:

- Biol 1-2—General Biology (10)
- GeCh 4-5—General Inorganic Chemistry (10) (or higher numbered courses)
- Geo 1,2—General Geology (8)
- Phys 1 with 1A and either 2 with 2A or 3 with 3A—Physical Science (8)
- NSci 4-5 and Geo 1—Physical World (10)

6. Humanistic Courses—10 credits

From at least two of the following categories (at least 5 credits†† must be taken in each category used to satisfy this requirement): art, English literature (which may include 6 cr literature from Engl A-B-C or 1A-2A-3A), foreign literature, history**, humanities, music, philosophy, speech and theatre arts, a foreign language. This entire requirement may be met with 10 credits of foreign language.

7. Electives to complete the approximately 90 credits required for admission.

8. Students planning to enter the B.S.B. accounting program are required to complete, in addition to the above:

- Math 40 (or Math 42)—Introduction to Calculus
- Comp 27—Advanced Writing

Lower Division Requirements for Admission to Sequences Leading to the Degree of Bachelor of Science in Economics

Economics Sequence

These are the same as those for the B.S.B. degree (see above). Minor modifications in these requirements may be made upon petition to the department.

Statistics Sequence

- Engl A-B-C or 1A-2A-3A or 1B-2B-3B or Comm 1-2-3—Freshman English (9-15)
- Math 42—Analytical Geometry, Calculus I (5)
- QA 5—Elements of Statistics (4)
- Acct 24, 25, 26—Principles of Accounting (9)
- (or) Acct 55A-B—Elementary Accounting (8)
- 19 credits in social sciences (including philosophy) and/or additional mathematics

It is desirable that Math 43 be taken in sophomore year. Electives to complete the minimum of 90 credits required for admission.

Recommended electives include modern language, history, political science, and Econ 40. If possible, Math 43 should be taken before the student enters Upper Division.

For detailed information about the individual subjects of study in this curriculum (course numbers and titles, credits, prerequisites, etc.), see Section II of this bulletin.

** History may be used to satisfy the requirements in only one area.

†† 4½ transfer credits will satisfy the 5-credit requirement.

D. SCHOOL OF DENTISTRY

The 6-year dentistry program consists of 2 years of prescribed liberal arts work, during which students are registered in the Arts College and are subject to its regulations, plus 4 years in the School of Dentistry, from which they receive 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. Prerequisite course work can be begun at any time, but students are accepted into the School of Dentistry only in fall quarter.

Requirements for Admission

General—A minimum of 90 quarter credits (60 semester credits) from an accredited liberal arts college is required, but broader and more extensive general education is valuable. Quality credits may not be used to decrease the 90-credit requirement. The minimum scholastic average for consideration is C, but admission is on a competitive basis and an average above C is usually necessary.

The required courses and minimum credits accepted are given below. The science courses must include both lecture and laboratory instruction.

1. *English*—12 quarter credits. If the basic English course is less than 12 quarter credits, additional credits can be completed in composition, literature, or speech to satisfy the minimum requirement of 12 quarter credits.
2. *General biology or general zoology*—10 quarter credits
3. *Physics*—12 quarter credits
4. *General principles of chemistry*—12 quarter credits. It is preferred that the course include semimicro qualitative analysis.
5. *Organic chemistry*—8 quarter credits. The course content must contain both the aliphatic and aromatic series.

The elective courses should be selected to give the student as broad and liberal an education as possible within the limits of the time available. Preferably, the courses should include at least 20 credits in such liberal arts courses as anthropology, classics, economics, history, humanities, languages, philosophy, political science, psychology, sociology, and speech. Additional credits are recommended in mathematics, analytical chemistry, comparative anatomy, genetics, basic drawing, and a course in the etymology of technical terms used in science.

A maximum of 5 quarter credits in ROTC courses may be accepted as part of the 90 credits; credits in physical education, human anatomy, physiology, histology, and bacteriology are not acceptable to meet this requirement.

Students anticipating graduate study after earning D.D.S. degree should take additional credits in the higher mathematics and the sciences.

At the University of Minnesota, the requirements for admission described above are commonly met by the following courses, provided algebra and plane geometry have been taken in high school:

Engl 1A-2A-3A (12 qtr cr), or Engl 1B-2B-3B (12 qtr cr), or Comm 1-2-3 (12 qtr cr), or Engl A-B-C (15 qtr cr); Biol 1-2 (10 qtr cr); GeCh 4-5, 6 (14 qtr cr); OrCh 61-62 (8 qtr cr); Phys 1-2-3 and 1A-2A-3A (12 qtr cr); elective courses to include at least 20 credits in liberal arts subjects as listed above. It is recommended that additional electives be selected from the following courses: Math T, 10, 15, 40; AnCh 57; Zool 53, 66; Art 20; and Clas 48

Dental Aptitude Test—All applicants are required to take the Dental Aptitude Test. It is given three times a year, usually in October, January, and April. A good time to take the test is during the first quarter of the sophomore year, or as soon as the courses in biology or zoology and general chemistry have been completed. Although the test generally measures aptitudes rather than special knowledge, some

questions are specific and detailed; thus a review of biology and chemistry prior to taking the test is advisable. An application form and a brochure describing the test and listing the testing dates are available from the Office of Admissions and Records, 105 Morrill Hall, University of Minnesota, Minneapolis, Minnesota 55455.

Residence Requirements—First choice is given to Minnesota residents, second choice to residents of neighboring states that do not have dental schools, and third choice to other nonresidents who have acceptable reasons for attending the University of Minnesota School of Dentistry. Nonresidents are accepted only if their scholarship has been outstanding and if their other qualifications indicate unusual promise for the study of dentistry and a career in science.

The Committee on Admissions will give preference to those applicants who have high scholastic records in college; who make satisfactory scores on the dental aptitude test; who will have completed all course requirements by the end of the usual academic year previous to the desired date of admission; who, after having been granted a provisional acceptance, maintain an academic record of quality at least as good as the record at the time of the provisional acceptance; and who, in all other respects, give promise of becoming successful students and dentists of high standing.

Application Procedures

General—Application blanks can be secured from the Office of Admissions and Records, 105 Morrill Hall, University of Minnesota, Minneapolis, Minnesota 55455. Applications should be filed between October 1 and April 15 of the academic year prior to the fall quarter the applicant desires to enroll in the School of Dentistry. While the closing date for application is April 15, early filing is encouraged since late application may be to the student's disadvantage. Applicants may be required to appear for a personal interview at the discretion of the Committee on Admissions.

Seven-Year Program in Arts and Dentistry Leading to the Degrees of Bachelor of Arts (from Arts College) and Doctor of Dental Surgery (from School of Dentistry)

Students in this combined course must complete all the distribution requirements of the Arts College and must earn 135 credits including the usual pre-dental requirements. Of the 135 credits, 45 must be earned in residence in the Arts College Upper Division and a minimum of 30 must be in Upper Division courses.

The Arts College credits must include a minor and 15 Upper Division credits outside the major and minor areas. Since the major area is dentistry, the 15 Upper Division elective credits must be in the humanities and social sciences. An average of C must be maintained in all University of Minnesota courses, in all transfer credits applicable to the B.A. degree, and in courses taken in residence in Upper Division.

During his third year, the student elects work in Upper Division subject to the approval of the Scholastic Committee. The course work of the first 2 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 2 more years' work.

Program Leading to the Degree of Graduate Dental Hygienist and Bachelor of Arts

Students may enter the 2-year dental hygiene program in the School of Dentistry either as freshmen or upon transfer from some other college. When they have com-

pleted this program as specified in the *Bulletin of the School of Dentistry*, with a C average, they may enter the Arts College.

To receive the bachelor of arts degree, in addition to the dental hygiene degree (G.D.H.), students must fulfill the distribution requirements listed on pages 5 and 6 of this bulletin and the graduation requirements listed on pages 8 to 10. Liberal arts courses taken while in the School of Dentistry or elsewhere may be applied toward these graduation requirements. Usually 3 additional years of work are required, depending on amount of other work taken here or elsewhere.

For detailed information about the individual subjects of study in this curriculum (course numbers and titles, credits, prerequisites, etc.) see Section II of this bulletin.

E. COLLEGE OF EDUCATION

All students who plan to receive a teacher's certificate from the State of Minnesota upon graduation from the University of Minnesota must be graduated from the College of Education. For many curriculums, however, students 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.

Curriculums in Which Students Normally Begin Directly in the College of Education

Art Education	Music Education
Business and Distributive Education	Physical Education
Industrial Education	Recreational Leadership

These curriculums are described in the *Bulletin of the College of Education*. Arts College students who decide on one of the above majors should transfer to the College of Education as soon as possible.

Curriculums in Which Students Normally Spend the Freshman Year in the Arts College

- Elementary Education
- Nursery-Kindergarten-Primary (NKP)

General Requirements for Transfer to the College of Education

1. A total of 45 quarter credits completed with a 2.00 (C) grade point average
2. 30 credits with a 2.00 grade point average from the following 4 areas:
 - a. Freshman English—12-15 credits
 - Engl A-B-C, 1A-2A-3A or 1B-2B-3B
 - (or) Comm 1-2-3
 - (or) Exemption from the requirement
 - b. Sociology or Social Science—6-9 credits
 - Soc 1 and 3 (6 cr)
 - (or) SSci 1-2-3 (9 cr)
 - c. Geography—5 credits
 - Geog 1 or 4

d. Natural Science—15-16 credits

- NSci 1-2-3 (15 cr)
 (or) NSci 4-5 (6 cr) and Biol 1-2 (10 cr)
 (or) NSci 4-5-6 (10 cr) and Biol 1A-2A (6 cr)

Other areas from which freshmen should choose courses are history or political science, public health, and physical education.

3. At the time of entrance to the College of Education a student must present a certificate from the University Health Service indicating that he is free of physical defects or health conditions that would prevent the successful pursuit of educational work, and a certificate from the Speech and Hearing Clinic that he meets the speech requirements for teaching.
4. At the time of applying for transfer to the College of Education, the student must complete two interviews as part of the clearance procedure.

Application Procedures

1. A student should apply for transfer *early* in the quarter in which he will meet the following criteria:
 - a. He has a 2.00 grade point average on previous work.
 - b. He will accumulate 45 credits in that quarter.
 - c. He will meet the 30-credit distribution requirement (see "2" above) with a C average.
2. The student makes application at the "Transfers Within the University" window (window 5) in 105 Morrill Hall.
3. The student should complete the necessary clearances as outlined on the clearance form that is issued at the time of the application for transfer.
4. A student who applies early will be notified of action on his application in time to register in the College of Education for the next quarter (e.g., a student entering the Arts College in the fall quarter should apply early in spring quarter and be admitted in the summer for the following fall quarter).

A student who does not meet grade average requirements (over-all and in the areas) in the quarter in which he accumulates 45 credits may not apply again for admission to the College of Education until the quarter in which he will accumulate 90 credits. Students in this situation in the sophomore year may not continue in the Arts College as "pre-elementary education" students but must choose other majors.

Curriculums in Which Students Normally Spend Two Years in the Arts College Before Transfer

Core Curriculum	History	Political Science
Economics	Language Arts	Russian
English	Latin	Spanish
French	Mathematics	Sociology
Geography	Natural Science	Speech
German	Physical Science	Speech Pathology

Minors may also be completed in most of the above areas and in journalism, library science, and school health education. Special combinations of majors and

minors are provided in the language arts, natural sciences, and physical science curriculums.

A student preparing to teach academic subjects in high school will take the first 2 years in the Arts College. He should secure a copy of the *Bulletin of the College of Education* and have an adviser in that college at the beginning of the sophomore year. To qualify for the state high school standard certificate he must have one major and one or more minors in subjects commonly taught in high school. The selection of suitable majors and minors, and the most desirable combination of subjects, is very important in securing a high school teaching position. Counselors in the Student Personnel Office of the College of Education will help students in making a selection and will also furnish information with respect to the current demand for teachers in the various fields.

Requirements for Transfer to the College of Education

1. General Requirements

- a. 90 quarter credits with a 2.00 (C) grade point average
- b. 15 quarter credits in a major field with a 2.50 (C+) grade point average
- c. 10 quarter credits in a minor field with a 2.00 (C) grade point average
- d. Specific courses: Psy 1-2 (6 cr); PubH 5 or 50 (3 cr) or equivalent; non-professional physical education courses (3 cr required for men; 5 cr required for women)
- e. At the time of entrance to the College of Education a student must present a certificate from the University Health Service indicating that he is free from physical defects or health conditions that would prevent the successful pursuit of educational work, and a certificate from the Speech and Hearing Clinic that he meets the speech requirements for teaching
- f. At the time of applying for transfer to the College of Education, the student also must complete clearances, including certain psychological tests and interviews.

2. Distribution Requirements

All students, except those majoring in speech pathology, must meet the general education requirements of one of the two plans outlined below. See the *Bulletin of the College of Education* for a more detailed description.

Plan I

- a. Freshman English or Communication or exemption from the requirement (12-15 cr)
- b. Foreign Language (0-20 cr depending on the amount of the same language presented from high school study)
- c. Social Science (10-12 cr)
- d. Natural Science (10-15 cr; psychology and mathematics excluded)

Plan II

- a. Freshman English or Communication or exemption from the requirement (12-15 cr)
- b. Social Science (18 cr) from at least two departments
- c. Natural Science (18 cr; must include 9 cr of laboratory science other than psychology and mathematics)
- d. Humanities (18 cr) from at least two departments

3. Requirements for the Major

A student should plan carefully the Lower Division courses in his intended major which he can include in his pre-education work in the Arts College.

The general requirement of 15 credits with a 2.50 grade point average is a minimum, and a student should see Section II of this bulletin and specific requirements in the *Bulletin of the College of Education* for courses to include in a major or a minor.

Students with 90 credits who have not fulfilled all requirements for transfer may consult with a counselor of the College of Education, 206 Burton Hall, for individual consideration for admission.

Application Procedures

1. Apply for admission to the College of Education at the "Transfers Within the University" window (window 5) in 105 Morrill Hall early in the third quarter of the sophomore year. This allows sufficient time to schedule psychological tests and speech and health examinations prior to registration for the next quarter.
2. Complete the clearances as outlined on the clearance form that is issued when application for transfer is made.

At any time students may talk 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 a career in teaching.

Combined Program in Arts and Education Leading to the Degrees of Bachelor of Arts (from the Arts College) and Bachelor of Science (from the College of Education)

For students who qualify, the Arts College and the College of Education provide an opportunity for joint registration in a program leading to the B.A. and B.S. degrees. To earn both degrees, the student must complete the requirements of both colleges and must spend 1 year of Upper Division residence in each college. The total time required is but little more than 4 years if the student enters it at the beginning of the junior year. For information on eligibility and the procedures for application, consult the Upper Division office (225 Johnston Hall) or the College of Education (206 Burton Hall).

F. LAW SCHOOL

Requirements for Admission and for the Combined Degree in Arts and Law

The Law School offers the professional degree of bachelor of laws (LL.B.) which qualifies one for bar examinations and admission to practice. The course of study in the Law School consists of 3 years plus 15 quarter credits of law usually taken in the summer after the first or second year.

Admission to the Law School requires the bachelor of arts degree or its equivalent. The degrees, bachelor of science and bachelor of business administration, with a well-balanced program will be accepted as the equivalent of the B.A. degree.

A few students are admitted after 3 years if, among other requirements, they have completed their major and will receive the B.A. degree from their college upon the successful completion of the first year in Law School. The Law School discourages students from seeking to enter Law School before completing 4 years of college education. Those with 4 years of good college work are better prepared, both

for law studies and for practice of law, than the few who enter after 3 years of college. They have twice as much Upper Division or senior college work in which they gain experience in independent, critical thinking, and a much broader educational base in preparation for their private and public responsibilities as a lawyer.

Any student who expects to seek admission after only 3 years of college should seek advice from the Law School dean's office where he can obtain full particulars on the requirements for admission after 3 years.

Applications for admission to the Law School should be submitted by March 1 for the class entering Law School in September each year.

Details with respect to admission requirements and the Law School program may be found in the *Bulletin of the Law School*. Attention is directed to the fact that a student's prelaw scholastic record and the results of the Law School Admission Test given by the Educational Testing Service at Princeton, New Jersey, will be considered in determining his admissibility. This test is given in February, April, August, and November of each year at the University of Minnesota as well as at numerous other test centers throughout the world. Students should plan to take the test in November 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 dean at the Law School; from the Student Counseling Bureau, 101 Eddy Hall, University of Minnesota, Minneapolis, Minnesota 55455, or from the Educational Testing Service, Princeton, New Jersey.

G. LIBRARY SCHOOL

The basic minimum preparation for a professional career in librarianship is an M.A. degree. The recognized prerequisite to this degree is a 4-year degree with a major field of concentration and a minor in library science of 15 quarter credits. Students with a B.A. degree who have not completed the 15 credits in library science may apply for admission and be admitted with the provision that they begin their study by enrolling in the five courses prerequisite to graduate study. For additional information see the *Bulletin of the Library School* and the *Bulletin of the Graduate School*.

H. COLLEGE OF MEDICAL SCIENCES

The principal curriculums offered in the College of Medical Sciences are the following: medicine, nursing, medical technology, physical therapy, and occupational therapy. Each affords training for a different profession, and the requirements vary accordingly.

1. Curriculum in Medicine**

There are two 7-year programs of study which lead to the degree of doctor of medicine. Both require 3 full years of college work (135 credits exclusive of quality credits) which must include the courses prescribed for admission to the Medical School. In the first program the student may freely choose elective subjects to make

** Students who wish to receive the B.A. degree before entering the Medical School must include all required premedical subjects listed here and all other requirements for the degree prescribed in Sections I and II of this bulletin. Such students may find it an advantage to get a degree with an interdepartmental rather than a departmental major (see page 9).

up the total of 135 credits. He will receive the degree of bachelor of science after he completes 2 years of work in the Medical School. In the second of the two programs, the student must meet the requirements for admission to the Upper Division of the Arts College, which he should enter after 2 years of residence in the Lower Division. His program for the third year must be submitted for approval to a premedical adviser through the Upper Division office, 225 Johnston Hall. He will receive the degree of bachelor of arts after he completes satisfactorily 1 year of work in the Medical School.

Program Plans—Because of the large number of applicants to the Medical School and the consequent high percentage of students failing to be admitted although they may meet the minimum entrance requirements, all premedical students are urgently advised to plan their 3 years of premedical work in such a way that, in case they are not admitted to the Medical School, they may still proceed toward a degree in some other college without undue loss of time. They should consider this possibility from the first quarter of their registration in the University.

Seven-Year Program in Science and Medicine Leading to the Degrees of Bachelor of Science (from Medical School) and Doctor of Medicine (from Medical School)

The minimum requirements to be considered for admission to the Medical School are 3 full years of college work, amounting to 135 credits, with a scholarship average of C. At the present time, because of the large number of applicants, an average well above C is necessary in order to achieve admission.

The premedical work, for which the student is registered in the Arts College, must include the following required courses or their equivalent as approved by the Admissions Committee of the Medical School.

REQUIRED COURSES

English: Engl A-B-C, Freshman Literature and Composition (15 cr); or Engl 1A-2A-3A, Freshman English (12 cr); or Engl 1B-2B-3B, Freshman English (12 cr); or Comm 1-2-3, Communication (12 cr); or exemption from the requirement

Biology: Biol 1-2, General Biology (10 cr)

Chemistry: GeCh 4-5-6 (or equiv), General Chemistry (14 cr); AnCh 57, Quantitative Analysis (4 cr); OrCh 61-62, Elementary Organic Chemistry (8 cr)

Mathematics (as a prerequisite for physics): Higher Algebra and Trigonometry, taken in high school or college (for credits see Section II, Mathematics); Math 10, College Algebra and Analytic Geometry (5 cr); and Math 40, Introduction to Calculus (5 cr)

Physics: Phys 4-5-6, General Physics (15 cr; prereq Math 40 or ¶40 or comparable mathematics, ††)

Humanities, Social Sciences, and Other Liberal Arts (27 cr). Courses are to be selected for the student's individual program from liberal arts subjects such as anthropology, classics, economics, geography, history, modern languages, philosophy, psychology, sociology, or other courses in the social sciences, or humanities, or both.

A suggested schedule of the required courses in a 3-year premedical program follows:

First year—GeCh 4-5-6 (14 cr); Biol 1-2 (10 cr); Engl A-B-C (15 cr) or Engl 1A-2A-3A (12 cr) or Engl 1B-2B-3B (12 cr) or Comm 1-2-3 (12 cr); Math Z, T, 10 taken according to placement tests; Math 40 if possible.

†† Students matriculated in schools other than the University of Minnesota must complete a physics sequence comparable to the above: i.e., a physics course for which trigonometry and college algebra are prerequisites.

Second year—OrCh 61-62 and AnCh 57 (12 cr); Phys 4-5-6 (15 cr); social science (12 cr); Math 40 if not taken during the freshman year; electives selected in conference with an adviser.

Third year—Humanities (9 cr); electives chosen in conference with an adviser.

ELECTIVE COURSES

The Admissions Committee will show preference for the applicant who has displayed a well-developed interest in, and aptitude for, a special field of knowledge.

Prospective applicants are usually encouraged to concentrate many of their electives in areas of the humanities or social sciences in order to broaden the base of their liberal arts education, since the required premedical courses provide a concentration in the physical and biological sciences. The nature of Medical School education is such that there is additional concentration in science courses and little time for formal pursuit by the medical student of general or special liberal arts subjects. The College of Medical Sciences, therefore, encourages students to acquire an appreciation and understanding of social and cultural matters before entering on their medical studies. It is usually undesirable, from this point of view, for the premedical student to select elective courses exclusively in the physical and biological sciences. Exceptions will be made for the student whose special interest and aptitude lead him toward a science major. All prospective applicants are urged to take advantage of a fourth year of college work in pursuit of either general or specialized education before entering Medical School.

The Medical School at the University of Minnesota no longer includes in its minimum admission requirements courses in genetics, psychology, and physical chemistry. All of these subjects, however, are strongly recommended as pertinent basic science fields for inclusion in the college program of a 3- or 4-year premedical student at the University of Minnesota. Appropriate introductory courses in these subjects are the following:

(Credits shown in parentheses)

Zool 83—Introduction to Genetics and Eugenics (3) PCh 107-108—Physical Chemistry (6) (requires additional preparation in calculus for most premedical students)

Psy 1-2—General Psychology (6)

A superior premedical student with an outstanding academic record in science and mathematics courses, especially if he may contemplate a career in research or academic medicine, should schedule when possible introductory and advanced courses in these fields at a higher level than the listed minimum requirements. For example, premedical students with strong preparation in and aptitude for mathematics should consider taking Phys 7-8-9 in lieu of Phys 4-5-6. Similarly, PCh 101-102-103, OrCh 63, and Upper Division, courses in biology may be appropriately included in the programs of superior students preparing for medicine or for graduate study in a medical science.

Although a reading knowledge of a modern foreign language is not a requirement for admission, it is recommended, especially for students interested in medical research or in graduate medical training.

Admission to Medical School and Application Procedures

Application forms may be obtained from the Office of Admissions and Records after March 1, along with detailed instructions for filing the application. The completed application form must be filed about 12 months before the student plans to enter medical school, no later than October 1. Two official college transcripts must accompany the application.

The Medical College Admission Test (MCAT) and certain additional tests are required of all applicants. The Medical College Admission Test is given twice each year, in early May and late October, at designated test centers including the University of Minnesota. This test is given under the auspices of the Association of American Medical Colleges by the Psychological Corporation, 304 East 45th Street, New York 17, New York. Each applicant is required to pay a \$15 fee to the Psychological Corporation. He must register for the test at least 2 weeks before the examination is to be given, at the Student Counseling Bureau, 101 Eddy Hall, University of Minnesota, or directly with the Psychological Corporation.

A group of special tests, sometimes referred to as the Minnesota Medical Aptitude Test Battery, is required of all applicants to the Medical School at the University of Minnesota and is administered at the Student Counseling Bureau. Alternately, these tests are administered by arrangement with established test centers of other colleges and universities, after the completed Medical School application form has been returned to the University. A general administration of these special tests is arranged by the Student Counseling Bureau on the Minneapolis Campus of the University annually in early October. The time and place for this testing session is announced early in fall quarter through the Official Bulletin of the *Minnesota Daily*.

A report of physical examination and current health status is also required and is to be filed with the completed application. This health report is to be filled in by the Health Service of the student's college or university or by his personal physician.

Letters of reference will be solicited by the College of Medical Sciences from the list of names provided by the applicant. A student should list persons who have direct knowledge of his personal qualifications for medical study and a career in professional medicine.

The foregoing statements governing the quality and amount of premedical training required for admission to the Medical School will apply for those who present the minimum amount of work. In cases of mature and superior students, especially those who have taken degrees and have a record of outstanding accomplishment in some special field of study, even though it may not have been closely related to medicine, concessions may be made. Such cases will be considered individually by the Admissions Committee upon petition to the dean of the College of Medical Sciences.

A broad, general education is considered fundamental to medical study, but no student can pursue the medical course to advantage without adequate knowledge of biology, chemistry, and physics. Therefore, no substantial amount of the credits required in these premedical subjects is likely to be waived by the Admissions Committee.

Information and counseling on premedical programs can be obtained in the Lower Division and Upper Division offices, College of Liberal Arts. Medical School representatives are available for consultation on Medical School admission, application, and policies in the office of the dean of the College of Medical Sciences, 1360 Mayo Memorial, and in the office of that college's director of Special Educational Services, 126 Millard Hall. For additional detailed information and background, premedical students are advised to see the *Bulletin of the Medical School* and the annual *Admission Requirements* handbook of the Association of American Medical Colleges. This latter useful reference is available in college and medical school advising offices and in most college libraries.

Residence—Preference for admission to the Medical School of this University is given to residents of Minnesota and to residents of neighboring states that do not have 4-year medical schools. Nonresidents from other areas are accepted only if their scholarship has been outstanding and other qualifications indicate that they have unusual promise for studying medicine.

Bachelor of Science Requirements

Students who have completed elsewhere 3 or more years of collegiate or university work, which includes the required subjects specified above and which work is in other respects the full equivalent of 3 years of premedical academic work at the University of Minnesota, also will be awarded the degree of bachelor of science by the Medical School following satisfactory completion of 2 years in the Medical School.

Seven-Year Program in Arts and Medicine, Leading to the Degrees of Bachelor of Arts (from Arts College) and Doctor of Medicine (from Medical School)

This program requires 3 years of college work and 4 years in Medical School. The first 2 years of college work may be taken in any accredited college, but the third year (45 credits) must be taken in the Upper Division of the Arts College of this University.

Students in this combined program must complete the distribution and English proficiency requirements of the Arts College (except Item F, Public Health) and must earn 135 credits in the Arts College including the usual premedical requirements.** Of the 135 credits, 45 must be earned in residence in Upper Division; a minimum of 30 must be in Upper Division courses, and the program must be approved by a premedical adviser. The Arts College credits must include a minor and 15 Upper Division credits outside the major and minor areas. Since the major area is medicine, the 15 Upper Division elective credits must be in the humanities and social sciences. An average of C must be maintained in all University of Minnesota courses, in all credits applicable to the B.A. degree (including transfer credits), and in courses taken in residence in Upper Division. The first year of the course in the Medical School, when completed with the standards required by that school, counts as the equivalent of the fourth year (45 credits) of the Arts course.

In this program, procedures and policies for application and admission to Medical School are those outlined above.

Combined Medical-Graduate Programs and Graduate Study in Basic Medical Sciences

A combined medical-graduate study program is available to certain highly qualified students with interest in graduate study in one of the basic medical sciences (anatomy, biochemistry, microbiology, pharmacology, or physiology). Under this program, a student may pursue, over an extended period, both the curriculum leading to the M.D. degree and a graduate study program in one of the stated areas. In some cases, stipend support may be provided for the graduate portion of the program. Students interested in this program or in graduate study in one of the basic medical sciences are encouraged to schedule, following consultation with departmental advisers, higher level introductory and advanced courses in biology, chemistry, mathematics, and physics than those indicated as minimum requirements for admission to the Medical School. Reading competence in one or more foreign languages is exceedingly important for students in graduate study in medical sciences.

To qualify for the combined medical-graduate program, a student must be accepted for admission to the Medical School and to the Graduate School, and his

** For recommended electives and the restrictions governing them, see Elective Courses above, and Section 1, pages 8 to 10.

program of study must be approved by the Committee on Combined Medical-Graduate Programs of the College of Medical Sciences. Students wishing to explore a combination of graduate study in a basic medical science with the medical curriculum are encouraged to consult the office of the dean of the College of Medical Sciences, 1360 Mayo Memorial, or the director of Special Educational Services, 126 Millard Hall, and a faculty adviser in one of the basic medical science departments.

2. Curriculum in Nursing **

The curriculum in basic 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 to the School of Nursing, students must have satisfactorily completed certain requirements in general education, and must give evidence that they are able to pursue more advanced study. Students interested in qualifying for admission are urged to seek current information by writing to the School of Nursing or making an appointment to discuss their program with faculty members of the School of Nursing.

An adviser from the Arts College is assigned to prenursing students enrolled there during the freshman year to assist them with course selection, registration, and academic advisement.

The minimum quarter credit requirement for the first year is 45 (or 30 semester hours of credit) plus a current Red Cross first aid certificate for the standard course. Thirty-six (36) of these 45 quarter credits (or 24 of the 30 semester credits) must be distributed as follows:

- Group A—Freshman English (12 qtr cr)
- Group B or E—Foreign Language or Humanities (9 qtr cr)
- Group C—Social Science (9 qtr cr, incl Anth 2A)
- Group D—NSci 4 and 5 required (6 qtr cr, ††)

The remaining credit requirement must be fulfilled by course selections from any of those grouped as B, Foreign Language; C, Social Science; D, Natural Science; and E, Humanities in the *Bulletin of the School of Nursing*. For a detailed description of these groupings refer to information about Plan B of the basic program in the *Bulletin of the School of Nursing*.

Because of the sequence of courses in the School of Nursing, students may enter only in the fall quarter of the academic year. Those who wish to enroll in another college or university for the first year are urged to contact the School of Nursing before beginning their program elsewhere.

After admission as a sophomore student to the School of Nursing, the student continues to take general education courses and she starts courses in clinical nursing. In the total program, there is an approximate half and half balance of general education courses and courses in nursing or related areas. For further information about this portion of the program see the *Bulletin of the School of Nursing*. ††

** For advanced professional and practical nursing curriculums, see the *Bulletin of the School of Nursing*.

†† Students who transfer from another college may substitute 6 quarter credits (4 semester credits) of general chemistry for NSci 4 and 5.

†† By action of the State Legislature, scholarships have been established for nursing students who are residents of Minnesota. Anyone interested should inquire at the office of the School of Nursing, 125 Owre Hall.

3. Curriculum in Medical Technology

The program in medical technology is a 4-year course given in the Arts College and in the College of Medical Sciences. The degree of bachelor of science is awarded upon completion of the prescribed curriculum.

The first 2 years are spent in the Arts College. After completing 90 credits, including the required courses, with a C average, the student is eligible for admission to medical technology (that is, for registration in the College of Medical Sciences). The entire fourth year (12 months) is spent in clinical experience in the laboratories of the University Hospitals.

The following courses or their equivalents are prerequisites for admission to the junior year:

(Credits shown in parentheses)

Engl A-B-C—Freshman English and Composition (15) or Engl 1A-2A-3A or 1B-2B-3B—Freshman English (12) or Comm 1-2-3 (12) or exemption from the requirement	Anat 4—Elementary Human Anatomy (5)
GeCh 4-5, 6—General Principles of Chemistry (15)	Math 10—College Algebra and Analytic Geometry (5)
AnCh 57—Quantitative Analysis (4)	Phys 2-3—Introduction to Physical Science (6)
OrCh 61-62—Elementary Organic Chemistry (8)	MicB 53—General Microbiology (5)
Biol 1-2—General Biology (10)	MedT 10-11-12—Orientation in Medical Technology (3)
Zool 65—Histology (5)	MedT 30-31-32—Case Presentations (3)
	Electives—there is no essential limitation to the subjects which may be chosen as electives

The *Bulletin of the Division of Medical Technology*, 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 should consult special advisers in the Medical Technology office, C-205 Mayo Building (telephone: Federal 9-7311, extension 2601).

Advisers—All students in this course should consult advisers in the Medical Technology office, C-205 Mayo Building. Registration each quarter must be reviewed by one of these advisers.

4. Course in Physical Therapy

The Course in Physical Therapy is a 4-year curriculum leading to a bachelor of science degree in physical therapy. The first 2 years are spent in the College of Liberal Arts during which time the studies are mainly in the basic sciences. To be considered for entrance to the College of Medical Sciences in the fall quarter of the junior year, the student must complete 90 quarter credits, including certain required courses or their equivalents, with a C+ average in the basic sciences. The last 2 years are spent in the College of Medical Sciences, Department of Physical Medicine and Rehabilitation. The student must complete a minimum of 600 hours of supervised clinical practice in physical therapy departments of various affiliated hospitals.

The following courses or their equivalents are prerequisites for admission to the junior year:

(Credits shown in parentheses)

Engl A-B-C—Freshman Literature and Composition (15) or Engl 1A-2A-3A—Freshman English (12) or Engl 1B-2B-3B—Freshman English (12) or Comm 1-2-3 (12) or exemption from the requirement	Psy 1-2—General Psychology (6)
Biol 1-2—General Biology (10)	3 additional credits in psychology (CPsy 80—Child Psychology is acceptable)
GeCh 4-5—General Inorganic Chemistry (10)	9-12 credits from the Departments of Humanities, History, Sociology, Political Science, Philosophy, Anthropology, Social Science
Phys 1-2—Introduction to Physical Science (6)	PubH 50—Personal and Community Health (3)
(or)GC7A—Physical Science: Elements of Physics (5)	(or) PubH 3 and 4—Personal Health and Health Problems of the Community (4)
Anat 4—Elementary Anatomy (5)	PMed 2A—Orientation to Physical Therapy (1)
Phsl 51—Human Physiology (5)	Sufficient electives to make a total of 90 quarter credits

Advisers—All prospective physical therapy majors should consult advisers in the Physical Therapy office, 860 Mayo Building (telephone: Federal 9-7311, extension 2721). Registration must be approved by a physical therapy adviser each quarter. For more detailed information see the *Bulletin of the Department of Physical Medicine and Rehabilitation*.

5. Course in Occupational Therapy

The course in occupational therapy is a program of 4 academic years plus 1 quarter which is given in the Arts College and in the College of Medical Sciences. The degree of bachelor of science is awarded upon completion of the prescribed curriculum.

The first 2 years are spent in the Arts College. After completing 90 credits and the required courses of the first 2 years with a high C average, the student is eligible for admission to the Course in Occupational Therapy in the College of Medical Sciences, Department of Physical Medicine and Rehabilitation. During the senior year, 9 months are spent in clinical training in various types of hospitals and institutions for the sick and handicapped.

The following courses or their equivalents are prerequisites for admission to the junior year:

(Credits shown in parentheses)

Engl A-B-C—Literature and Composition (15)	CPsy 80—Child Psychology (3)
or Engl 1A-2A-3A—Freshman English (12)	Physical education (1)
or Engl 1B-2B-3B—Freshman English (12)	PMed 1—Introduction to Occupational Therapy (1)
or Comm 1-2-3 (12) or exemption from the requirement	PMed 4—Orientation to Occupational Therapy (2)
Biol 1-2—General Biology (10)	PMed 5—Therapeutic Recreation (2)
Hum 21-22—American Life I and II (6)	PubH 3—Personal Health (2)
Anat 4—Elementary Anatomy (5)	GC 7C—Physical Science: Elements of Chemistry (5)
Psy 1-2—General Psychology (6)	Ind 2—Wood Processing I (3)
Soc 1—Man in Modern Society (3)	Ind 12—Handicrafts (3)
Phsl 51—Human Physiology (5)	Ind 15—Graphic Arts I (3)
Art 1—Principles of Art (5)	
ArEd 53-54—Weaving (6)	

For more detailed information the student should consult a special adviser in the Occupational Therapy office, 860 Mayo Building (telephone: Federal 9-7311, extension 2721). See *Bulletin of the Department of Physical Medicine and Rehabilitation*.

Advisers—All students in this course should consult a special adviser in the Occupational Therapy office and have their program reviewed each quarter. This applies to students who are still in the Arts College.

For detailed information about the individual subjects of the study in these curriculums (course numbers and titles, credits, prerequisites, etc.) see Section II of this bulletin.

I. COLLEGE OF PHARMACY

The College of Pharmacy offers the professional degree of bachelor of science in pharmacy (B.S. in Pharm.) which is one of the qualifications for examination for licensure as a registered pharmacist.

The first year of the 5-year curriculum (prepharmacy year), offered to students enrolled in the Arts College, is required for admission to a 4-year program of pro-

fessional study in the College of Pharmacy. The prepharmacy year must include specified courses and elective credits as follows:

GeCh 4-5—General Principles of Chemistry (10)	Math T—Trigonometry (3)
GeCh 6—Principles of Solution Chemistry (4)	Comm 1-2-3—Communication (12)
Math 10—College Algebra and Analytic Geometry (5)	Electives (6 to 8)

Students enrolled in the Arts College for the prepharmacy year usually take, in addition to the above courses, PhmT 1A-1B-1C (3 cr).

Students who have completed 2 or more years in the Arts College may be eligible for admission to a 3-year program of professional study in the College of Pharmacy provided they have also taken the following courses required in the pharmacy curriculum:

Biol 1-2—General Biology (10)	OrCh 61-62—Elementary Organic Chemistry (8)
Phys 1-2-3—Introduction to Physical Science (9)	Econ 1-2—Principles of Economics (6)
Phys 1A-2A-3A—Introduction to Physical Science Laboratory (3)	Acct 24, 25—Principles of Accounting (6)
	Electives (not less than 6)

The College of Pharmacy and the School of Business Administration offer an optional combined course requiring, in addition to the courses of the pharmacy curriculum, 55 additional credits in business administration and economics and leading to the degrees of bachelor of science in pharmacy (B.S. in Pharm.) and bachelor of science in business (B.S.B.).

Admission to the College of Pharmacy is based upon the earned grade point average in the prepharmacy studies. A grade point average of 2.50 (C+) or above assures admission. Applicants with grade point averages below 2.50 will be considered individually. Application forms are available at the Office of Admissions and Records or at 115 Appleby Hall, and should be addressed to the Office of Admissions and Records.

An over-all C average in courses taken while enrolled in the College of Pharmacy is required for graduation. In addition, all candidates for the degree of bachelor of science in pharmacy are required to pass a comprehensive examination covering the professional studies in the College of Pharmacy.

J. 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 Sequence B of the Department of Sociology which is described in Section II, Sociology, of this bulletin. Admission is not limited, however, to those who complete the recommended Sequence B. For entrance requirements see the *Bulletin of the Graduate School* and the special *Bulletin of the School of Social Work*.

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