Catalog of
The University of Iowa

1972-74

The University Catalog is available for examination in all Iowa high schools, offices of the county superintendents of schools, the public libraries and in each of the junior and community colleges in the state. Copies are also available for examination at the major state government offices in Des Moines and in each office on the University campus in Iowa City. Copies may be ordered from the Office of Admissions and Registrar at $1.00 per copy. Reprints of the various college and departmental sections of the Catalog are available without charge on request to the Office of Admissions and Registrar.

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University Calendar

SUMMER SESSION
Registration, 8 a.m.
Opening of classes, 7 a.m.
University holiday; offices closed
Close of Summer Session classes, 5 p.m.
Opening of Independent Study Unit for law and graduate students
Close of Independent Study Unit

1973
June 4, Monday
June 5, Tuesday
July 4, Wednesday
July 27, Friday
July 30, Monday
August 24, Friday

1972-73
August 28, Monday
August 31, Thursday
September 4, Monday
October 28, Saturday
November 22, Wednesday
November 23-24, Thursday, Friday
November 27, Monday
December 14, Thursday
December 16, Saturday
December 23, Friday
December 25-26, Monday, Tuesday
January 1, Monday

SECOND SEMESTER
Beginning of Registration, 8 a.m.
Opening of classes, 7:30 a.m.
Foundation Day
Beginning of spring vacation, 10 p.m.
Saturday-only classes meet
Resumption of classes, 7:30 a.m.
Close of Second Semester classes
Beginning of Examination Week, 7:30 a.m.
Close of Examination Week
University Commencement, 9:30 a.m.
University holiday; offices closed

1974
June 3, Monday
June 4, Tuesday
July 4, Thursday
July 26, Friday
July 29, Monday
August 23, Friday

1973-74
August 27, Monday
August 30, Thursday
September 3, Monday
October 27, Saturday
November 21, Wednesday
November 22-23, Thursday, Friday
November 26, Monday
December 13, Thursday
December 15, Saturday
December 21, Friday
December 24-25, Monday, Tuesday
January 1, Tuesday

1973-74
January 10, Thursday
January 14, Monday
February 25, Saturday
March 8, Friday
March 9, Saturday
March 18, Monday
May 3, Friday
May 7, Tuesday
May 15, Wednesday
May 24, Friday
May 27, Monday
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The First Iowa General Assembly chartered The University of Iowa February 23, 1847, just two months after Iowa's admission to statehood.

The University now comprises 10 colleges, with a total enrollment of approximately 20,500 students. Its 900-acre main campus spans the Iowa River valley and merges with the business center of Iowa City, a community of 50,000 inhabitants near Cedar Rapids, Iowa's second largest city.

The University of Iowa was the first state university in the nation to admit women on an equal basis with men. It founded the first law school west of the Mississippi River. It established one of the first university-based medical centers in the Midwest. It was the first state university in the nation to establish an interfaith school of religion. It was an innovator in accepting creative work—fine art, musical compositions, poetry, drama, fiction—for academic credit. It established Iowa City as a national college-prospect testing center. It was a leader in the development of actuarial science as an essential tool of business administration. As a pioneering participant in space exploration, it has become a center for education and research in astrophysical science.

In these and numerous other ways the University has been and continues to be a creative contributor to the advancement of knowledge and the improvement of life, through teaching, research and public service.

More than two-thirds of the University's undergraduate students are enrolled in the College of Liberal Arts. Students planning to pursue degree programs in the colleges of Business Administration, Dentistry, Education, Law, Medicine, Nursing and Pharmacy qualify for admission to those programs by meeting general graduation requirements in the College of Liberal Arts or in equivalent studies at other institutions. Students declaring engineering majors go directly into the College of Engineering.

The College of Liberal Arts includes schools of Art and Art History, Journalism, Letters, Library Science, Music, Religion and Social Work.

Study toward advanced degrees in all fields is administered by the Graduate College. The University's enrollment is approximately one-quarter of the University's total.

Female students comprise 52% of the University's undergraduate student body.

The male-female ratio among undergraduate students is 1.1:1. One-third of the University's entering freshmen have B averages or above in high school. Nearly 90 percent ranked in the upper half of their high school classes, 30 percent in the upper tenth.

More than half plan to go on to advanced study, and about one-fourth plan to go on to medical schools.

Half of the University's students have part-time jobs. One-fourth have education loans. One of 10 undergraduates and one of four freshmen have scholarships.

The Faculty

The University's faculty numbers 1,200 full-time members. Many are nationally and internationally recognized. Most are engaged to some extent in research which contributes to their effectiveness as teachers. The University seeks to maintain a healthy balance between teaching and research, and between undergraduate and graduate-professional teaching.

A substantial number of the University's 1,400 part-time instructors—including graduate assistants—have had full-time college-level teaching experience. They are appointed on the basis of their competence in the area in which they teach. Most intend to pursue careers in higher education and therefore have a primary interest in meeting the University's standards of excellence in teaching. All are teamed with and supervised by regular faculty members.

Accreditation and Associations

The University of Iowa has been accredited by the North Central Association of Colleges and Secondary Schools since the Association's organization in 1913. The University is a member of the Association of American Universities. It is associated with Northwestern, Indiana, Purdue, Ohio State and Michigan State Universities, and the Universities of Minnesota, Wisconsin and Michigan in the Western Conference. It is associated with the "Big Ten" universities and The University of Chicago in the Committee for Institutional Cooperation (CIC).

Various colleges and schools of the University are members of accrediting associations in their respective fields, as follows:

- **Colleges**
  - Business Administration—American Association of Collegiate Schools of Business
  - Dentistry—American Dental Association
  - Engineering—Engineers Council for Professional Development
  - Law—American Bar Association and Association of American Law Schools
  - Medicine—Liaison Committee on Medical Education (representing the American Medical Association and the Association of American Medical Colleges)
  - Nursing—National League for Nursing
  - Pharmacy—American Council on Pharmaceutical Education

- **Schools**
  - Library Science—American Library Association
Music—National Association of Schools of Music
Social Work—Council on Social Work Education

Departments
Chemistry—American Chemical Society
Dental Hygiene—American Dental Association, Council on Dental Education

Physical Therapy—American Medical Association in collabora-

tion with the American Physical Therapy Association

Psychology—American Psychological Association

Speech Pathology and Audiology—American Speech and Hear-
ing Association

Sessions
The University’s academic year is comprised of two semesters
of approximately 17 weeks each. The University also conducts
an eight-week summer session and, following that, an Independ-
ent Study Unit of from one to four additional weeks for stu-
dents in the Graduate College and the College of Law.

Code of Student Life
University of Iowa students have a large measure of freedom and
self-determination, because liberal policies affecting student life
have best served the University’s liberal approach to education.

Standards for the conduct of student life are set forth in a code
carefully written and regularly reviewed by a committee of stu-
dents and faculty members. This Code of Student Life reflects
the principles expressed in the 1967 Joint Statement on Rights
and Freedoms of Students, drafted and endorsed by the National
Student Association and the American Association of University
Professors. Accordingly, the Code relates only to student mis-
conduit which adversely affects some University process or
function, or some other distinct interest of the University as an
academic community. Students are expected to acquaint them-
sewles with the Code and to conduct themselves in accord with
the standards it sets forth.

Human Rights
The University is guided by the precepts that in no aspect of its
programs shall there be a difference in the treatment of persons
because of race, creed, color, national origin, age, sex or any
other classifications that deprive the person of consideration as
an individual, and that equal opportunity and access to facilities
shall be available to all. This principle is expected to be observed
in the admission, housing and education of students; in policies
governing programs of extracurricular life and activities; and in
the employment of faculty and staff personnel. The University
shall work cooperatively with the community in furthering this
principle. (See “Board of Regents statements.”)

Admission
Correspondence regarding admission to any college of The Uni-

versity of Iowa should be addressed to the Admissions Office,

1 Jessup Hall, The University of Iowa, Iowa City, Iowa 52240.
The first letter should request an application for admission,
brieIy describe the prospective applicant’s high school and col-
lege background and outline his or her plans for further study,
including the department or general field in which he or she
expects to major. All applicants for admission to all colleges of
the University must submit formal applications to the Admis-
sions Office and must furnish official transcripts and other sup-
porting material as specified.

Determining Residence
For admission, tuition and fee purposes, the University Registrar
classifies all students enrolling in the University as residents or
nonresidents of Iowa, according to criteria established by the
Iowa Board of Regents and on the basis of information provided
by the student and all other relevant information.

Application Deadlines
Applicants for admission must submit the required application
documents to the Office of Admissions by the deadline dates
listed below. Different deadline dates apply to foreign students.

College of Liberal Arts
May 22—Summer Session
August 13—First Semester
January 2—Second Semester

College of Business Administration
May 1—Summer Session
June 1—First Semester
November 15—Second Semester

College of Dentistry
February 15—First Semester only

College of Engineering
May 22—Summer Session
August 13—First Semester
January 2—Second Semester

Graduate College
May 1—Summer Session
July 15—First Semester
December 15—Second Semester

College of Law
April 1—Summer Session
May 1—First Semester only
(to admission Second Semester)

College of Medicine
January 1—First Semester only

College of Nursing
February 15—First Semester
November 15—Second Semester (registered nurses only)
November 15—Summer Session (registered nurses and two-
year cooperative program students only)
General Information

College of Pharmacy
August 15—First Semester only

Dental Hygiene Program
April 1—First Semester only

Teacher Education Program
May 15—First Semester
December 15—Second Semester

Foreign Students
Self-funded students located out-of-state:
January 1—Summer Session
March 1—First Semester
August 1—Second Semester
Students in the U.S. or Canada, or those who will be sponsored by their government or by a private educational agency or foundation:
May 15—Summer Session
July 1—First Semester
December 1—Second Semester

American College Tests
The University of Iowa requires all entering freshmen and undergraduate transfer students to complete the American College Test (ACT) and have their test scores reported to the University before they register for classes.

The University of Iowa uses ACT scores for:
Admission—As a criterion for admitting some students unconditionally or on probation, for requiring some students to attend a probability summer session; and for denying admission to applicants who do not meet minimal standards.
Placement—As a basis for placing students in certain basic course requirements; for placing others in sections designed to meet individual needs; and for advising students concerning their programs of study and future educational plans.
Scholarship—As a criterion for awarding University-administered scholarships and loans.

Scholastic Aptitude Test (SAT) scores may be submitted with freshman or undergraduate transfer admission applications and will be used for admission evaluation. However, ACT scores must be submitted prior to registration.

It is advisable that anyone interested in applying for undergraduate admission at Iowa complete the American College Tests during the fall prior to his or her anticipated registration. Applicants who have completed the tests but did not have their scores reported to the University should request this reporting from the Records Section, American College Testing Program, Box 451, Iowa City, Iowa 52240. Further information, including testing dates and location, may be obtained from high school or college counselors, or from the ACT Program.

Graduate and Professional College Examinations
Prospective Graduate College applicants should take the Graduate Record Examination (GRE) Aptitude Test or, if applying for admission to a department of the College of Business Administration other than economics, the Admission Test for Graduates in Business (ATGB). Prospective applicants to the colleges of Dentistry, Law or Medicine are required to take admission tests of the respective colleges.

Application Fee
A $10.00 application fee must accompany applications submitted by prospective students not previously enrolled for full-time study at the University during the regular academic year. A Graduate College applicant must pay the fee, unless be or she has earned a degree from The University of Iowa. Application fees are not refundable, except to Iowa residents who are denied admission.

Medical Information
In the interests of providing optimum health care, Student Health Service strongly recommends that following their admission incoming students submit physical examination reports and personal health histories on the forms provided for that purpose. This information does not affect the student's admission and is exclusively for the use of Student Health Service as necessary background for attending to the student's health needs.

Registration
All persons who attend University classes are required to register and pay the established tuition and fees. A graduate student may audit courses with the approval of the instructor and the Dean of the Graduate College. Graduate students who audit courses will be assessed fees based on the lowest credits for which the course is available that semester.

Records
All academic records are maintained by the Office of the Registrar and will not be released without written permission of the student. However, at the end of each semester, grade reports are mailed to parents of all unmarried freshmen under the age of 19 without the students' written permission. Summary reports are routinely prepared and mailed to the principals of all Iowa and selected out-of-state high schools, and to the dean of each Iowa two-year college, describing the progress of each student who came directly from those institutions to the University.

Tuition and Fees
The following is the University's schedule of tuition and fees, per semester, for the 1972-73 academic year:

<table>
<thead>
<tr>
<th>Resident</th>
<th>Full (9 or more sem. hrs.)</th>
<th>Half (5-8 sem. hrs.)</th>
<th>Quarter (1-4 sem. hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration</td>
<td>$310</td>
<td>$198</td>
<td>$123</td>
</tr>
<tr>
<td>Dentistry (see “College of Liberal Arts” and “Graduate College”)</td>
<td>435</td>
<td>273</td>
<td>165</td>
</tr>
<tr>
<td>Engineering</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
<tr>
<td>Graduate</td>
<td>355</td>
<td>225</td>
<td>138</td>
</tr>
<tr>
<td>Law</td>
<td>355</td>
<td>225</td>
<td>138</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
<tr>
<td>Medicine</td>
<td>435</td>
<td>273</td>
<td>165</td>
</tr>
<tr>
<td>Nursing</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>310</td>
<td>198</td>
<td>123</td>
</tr>
</tbody>
</table>

**Nonresident**

<table>
<thead>
<tr>
<th>Full</th>
<th>Half</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>(9 or more)</td>
<td>(5-8)</td>
<td>(1-4)</td>
</tr>
<tr>
<td>Business Administration</td>
<td>825</td>
<td>537</td>
</tr>
<tr>
<td>Dentistry</td>
<td>800</td>
<td>492</td>
</tr>
<tr>
<td>Education (use &quot;College of Liberal Arts&quot; and &quot;Graduate College&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>625</td>
<td>387</td>
</tr>
<tr>
<td>Graduate</td>
<td>600</td>
<td>372</td>
</tr>
<tr>
<td>Law</td>
<td>635</td>
<td>393</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>625</td>
<td>387</td>
</tr>
<tr>
<td>Medicine</td>
<td>800</td>
<td>492</td>
</tr>
<tr>
<td>Nursing</td>
<td>625</td>
<td>387</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>625</td>
<td>387</td>
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</table>

*(Criteria used by the University to classify students as residents or nonresidents for admission and fee purposes are fully stated in "Board of Regents Statements.")*

The University reserves the right to change tuition and fees, with the approval of the Iowa Board of Regents. General fees provide for the student's use of Iowa Memorial Union facilities; use of libraries, laboratories and gymnasia; free admission to minor sports events and to student-faculty concerts and plays; admission to major sports events and to performances by visiting stage and concert artists, at reduced rates; subscriptions to the student newspaper, *The Daily Iowan*, on a housing unit basis; certain student hospital services; and other activities and services as announced.

**Procedure for Payment of Student Accounts**

Tuition and fees, board, room and other University residence hall or fraternity-sorority housing expenses, and such incidental University expenses as library and parking fees, are payable on an installment basis, with billing the first of October, November and December for the fall semester, and the first of February, March and April for the spring semester. A $5.00 penalty is assessed student accounts not paid by the 12th of the month they are due. Students with accounts overdue on the 20th of the month are reported to the Registrar for cancellation of registration. There is a $10.00 fee for reinstatement.

**Foreign Students**

With a population in excess of 30,000 students, the University enrolls approximately 400 foreign students from 72 foreign countries. Most of the foreign students at Iowa are studying for professional and graduate degrees. (A foreign student is defined as a student from another country who does not have an immigrant visa or is not in the process of obtaining permanent resident status, and who will register in the University on a non-immigrant visa.)

**Admission Standards**

In University colleges, schools and departments which do not have sufficient facilities to accept all qualified applicants, admission is competitive and priority is given to the best-qualified applicants. Foreign students must present superior academic and personal qualifications; evidence of the ability to understand and to be understood in English, both oral and written; and proof that they will have sufficient funds available to them for their first year of study.

**Test of English as a Foreign Language (TOEFL)**

All applicants who are not citizens of the United States are required to submit acceptable scores on the Test of English as a Foreign Language (TOEFL). This regulation is waived if the person holds a diploma or a degree from a recognized secondary school or university in the United States, the United Kingdom, Canada (excluding Quebec), Australia or New Zealand. The examination is given at various times of the year and in many centers throughout the world. Information on how and where to take the TOEFL examination may be secured by writing to TOEFL Educational Testing Service, Princeton, New Jersey 08540.

**Admission Information**

Prospective foreign students are advised to write to the University one year in advance of proposed enrollment. The first letter should include date of birth, educational background including dates and names of degrees earned, schools attended, examinations taken and their results, the semester of proposed enrollment, the desired field of study and the degree objective. When appropriate, an application for admission will be forwarded by the Office of Admissions and Registrar. Materials are normally sent by surface mail, unless the applicant includes International Postal Reply coupons which allow the University to return the application by air mail. An admitted foreign student is sent by air mail an admission letter, arrival instructions and the Certificate of Eligibility (Immigration Form I-30 or DSP-60). They are forms required by U.S. Consulates to grant visas to enter the U.S. Each semester an undergraduate foreign student must carry a minimum of 12 semester hours. A graduate foreign student must take a minimum of nine semester hours. Each course varies in the value of semester hours, but the average is usually three semester hours per course.

**Costs**

Student living costs are difficult to estimate, because prices change and individual requirements differ. An overall figure for tuition, room and board, books, clothing, laundry, recreation and other expenses is estimated at $3,400 (U.S.) for 12 months for a single student.

**Scholarships, Fellowships and Loans**

Few scholarships and fellowships are available to foreign students at The University of Iowa. Those that exist are awarded by the student's department and usually require the student to do some teaching or research work. The admission application allows the foreign student to indicate a desire to compete for such scholarships or fellowships. Loan funds for emergencies may be available only if there is evidence of repayment possibility. Additional information about financial aid is available from U.S. embassies, consulates or U.S. Information Service libraries.
General Information

Employment
No student should count on earning a major part of his or her expenses while enrolled at the University. First, according to U.S. immigration law, a foreign student is not permitted to work during his or her first academic year, and thereafter the student cannot work more than 20 hours per week. Second, it is especially difficult in Iowa City for any student, native or foreign, to obtain part-time work of a professional nature.

Financial Documentation
In order to avoid unnecessary hardship and to comply with U.S. immigration regulations, the University requires that all foreign students provide evidence of ability to meet the educational and living expenses as specified above. An affidavit of support is required of all students, stating the source of support for their first year of study. If these sources are well-known agencies or organizations, a letter or certified copy of a letter describing the award on their official stationary is required. If these sources are individuals, including the student, this affidavit must be accompanied by a confidential bank statement on the bank’s official stationary. Both of these documents should be notarized. These documents should be forwarded to the Foreign Student Advisor, The University of Iowa, Jessup Hall, Iowa City, Iowa 52240.

Foreign Student Services
The University’s Office of International Education and Services helps foreign students with immigration, personal and academic questions. For a full description of its activities, see “General Services.”

Numbering of Courses
Each course in the regular University curriculum has an identifying number, preceded by the number of the college, department or program in which the course is administered. For example “4:11” is the code for the course numbered 11 in the Department of Chemistry (4), entitled “Elementary Quantitative Analysis.” Usually, course numbers below 100 designate “Primarily for Undergraduates”; numbers 100 to 199 designate courses “For Undergraduates and Graduates”; and numbers 200 and above designate course “Primarily for Graduates.” The University reserves the right to alter its course offerings without further notice.

College of Business Administration
6A Accounting
6B Business Administration
6E Economics
6S Office Management

College of Dentistry
81 Fixed Prosthodontics
82 Operative Dentistry and Endodontics
83 Dental Technology
84 Removable Prosthodontics
85 Oral Pathology
86 Oral Diagnosis
87 Oral Surgery
88 Dental Hygiene
89 Orthodontics
90 Periodontics
92 Periodontology
93 Oral Biology
111 Community Dentistry
114 Comprehensive Care

College of Education
7A Adult Education
7C Counseling and Guidance
7D Educational Administration
7E Elementary Education
7F Social Foundations and Comparative Education
7H Higher Education
7P Educational Psychology, Measurement and Statistics
7S Secondary Education
7U Special Education
7V Educational Media
7X Education Interdisciplinary

College of Engineering
51 Engineering
52 Chemical Engineering
53 Civil Engineering
55 Electrical Engineering
56 Industrial and Management Engineering
58 Mechanical Engineering
59 Mechanics and Hydraulics

91 College of Law

College of Liberal Arts
0 Nondepartmental Courses
1E Art Education
1M Art History
1S Art Studio
2 Botany
3 Speech Pathology and Audiology
4 Chemistry
5 Child Behavior and Development
8 English
9 French
10 Basic Skills Courses
11 Core Courses
12 Geology
13 German
14 Greek
16 History
17 Home Economics
18 Italian
19 Journalism
20 Latin
21 Library Science
22C Computer Science
22MD Mathematics
22S Statistics
23 Military Science
23A Aerospace Military Studies
24 Music Training
25 Music
26 Philosophy
27 Physical Education for Men
28 Physical Education for Women
29 Physics and Astronomy
30 Political Science
31 Psychology
32 Religion
33 European Literature and Thought
34 Sociology
35 Spanish
36 Speech and Dramatic Art
36B Broadcasting
36C Radio, TV, Film
37 Theatre
38 Zoology
39 Portuguese
39B Chinese and Oriental Studies
39R Japanese
41 Russian
42 Social Work
44 Geography
45 American Civilization
48 Comparative Literature
50 Hospital and Health Administration
51 General Science
59 Social Studies
102 Urban and Regional Planning
103 Linguistics
104 Recreation Education
108 School of Letters

113 Anthropology

College of Medicine
50 Medicine Non-Departmental
60 Anatomy
61 Microbiology
62 Dermatology and Syphilology
63 Preventive Medicine and Environmental Health
64 Neurology
65 Nutrition
66 Obstetrics and Gynecology
67 Ophthalmology
68 Otolaryngology and Maxillofacial Surgery
69 Pathology
70 Pediatrics
71 Pharmacology
72 Physiology
73 Psychiatry
74 Radiology
75 Surgery
76 Orthopaedic Surgery
77 Radiation Research Laboratory
78 Internal Medicine
79 Urology
87 Oral Surgery
89 Biochemistry
101 Physical Therapy
115 Family Practice
116 Anesthesiology

95 College of Nursing
46 College of Pharmacy
University of Iowa freshmen and sophomore students under 21 and unmarried are required to live in University residence halls. Exemptions may be requested for such reasons as living at home, medical necessity, mandatory religious obligations, bona fide employment, fraternity or sorority membership, residence in University of Iowa Residence Halls for four semesters or status as a veteran of the U.S. armed forces.

Exemption forms should be obtained from the University Housing Office and completed and returned to that office immediately. They must be received at least 30 days before the beginning of the summer session for which the exemption is requested. Detailed information regarding specific exemptions is available from the University Housing Office.

Accommodations for juniors, seniors, and graduate students are available in University residence halls, as well as in privately operated off-campus units.

Fair Housing Policy
The following is the University's statement on fair housing practices:

"It is and shall be the first policy of the University that house hunters shall rent to all students on the basis of their individual merits as persons, without consideration of discrimination on the basis of race, creed, color, or national origin."

"Iowa City has a fair-housing ordinance providing for equality of opportunity to secure housing without discrimination due to race, religion, or ancestry, except in certain instances involving owner-occupied dwelling units. A Human Relations Commission is responsible for the observance of this ordinance and for the initiation of remedies for violations of it."

University Residence Halls
University residence hall furnishings, facilities and services are designed to provide a pleasant atmosphere conducive to effective study.

Single, double and triple rooms, with full or partial board, are available in the Grand Avenue Residence Halls (west campus), which include Hillcrest, Quadrangle, South Quadrangle and Rowan Hall 1 and 2; and in the Clinton Street Residence Halls (east campus), which include Burge Hall, Currier Hall, Deam House and Stanley Hall. A room-only option is available in the South Quadrangle residence hall. Students not living in residence halls may contract for full or partial board.

There are lounges, study rooms, brownie libraries and recreation rooms in or available to each residence hall; the University Library maintains reserve book stations in the residence halls.

Each residence hall is divided into small living units. Each hall has a full-time head resident, and there is a student resident adviser in each living unit. Each unit has its own student governing body and is represented in the government of its residence hall.

Student-initiated residence hall programs and activities provide a wide range of opportunity to pursue social, cultural, recreational, and athletic interests.

Graduate Students
Graduate students and students over 21 requesting residence hall accommodations are assigned to areas reserved for them in designated residence halls.

Applications and Assignment
Prospective students receive University residence hall application forms with their admission application forms. A prospective student who wants residence hall housing should read the contract carefully, supply all information requested and return the completed contract to the Office of Admissions with the completed admission application.

Applications for residence hall housing are not considered until the applicant has been admitted to the University.

Students are encouraged to choose their own roommates. Prospective roommates must request assignment together when they apply. The assignment of roommates will not be made until all of the prospective roommates' application materials have been received. Roommate assignment is made without regard to race, color, national origin, or religion.

Students already living in University residence halls are given preference in the assignment of accommodations for the following year.

A University residence hall contract is binding for the academic year, unless the student cancels his or her registration or submits a written notice of cancellation of the residence hall contract to the University Housing Office by June 1 for the academic year, January 1 for the spring semester or May 15 for the summer session.

Rates—The basic rate for University residence hall housing for the 1971-72 academic year was $11.14 for a double or $17.70 for a triple room, with full board. Rates for the several available room types and board options vary according to the accommodations, and all rates are subject to change annually.

Married Student Housing
There are 749 University-operated apartments available to married students.

Hawkeye Drive Apartments
192 two-bedroom units; furnished, except for electric range and refrigerator. Units rented for $105 per month for the 1971-72 academic year. Rent does not include electricity and telephone.
Hawkeye Court Apartments
216 one-bedroom units, 288 two-bedroom units, unfurnished, except for electric range and refrigerator. Each unit has its own gas furnace and electric water heater. Rates for 1972-73 are $92.00 for one bedroom, $112 for two bedrooms, unfurnished. Rent does not include gas, electricity or telephone.

Parklawn Apartments
Forty one-bedroom and 15 efficiency units, all unfurnished, except for electric range and refrigerator. Each unit has its own gas heater. Rates for 1972-73 are $87.00 for one-bedroom units, $70.00 for efficiency units. Rent does not include gas, electricity or telephone.

Prospective students are invited to apply for married-student housing before they complete enrollment, but will not be assigned housing until they have been admitted to the University.

An advance payment of $25.00 is required for all apartments. All of the above rates are subject to change annually.

Graduate teaching assistants, who have half-time appointment and enroll for at least five semester hours of coursework each semester, are eligible for teaching assistant's priorities at student rates in apartments.

Married-student apartments are assigned in the order applications are received. Assignments are contingent on the applicants meeting all University admission requirements.

Off-Campus Housing
The Protective Association of Tenants is a student organization which provides a listing service of off-campus housing, works with tenants' rights problem and provides a tenants' handbook to help inform individuals of the law and of the rights of tenants.

Fraternities
Twenty undergraduate and seven professional fraternities operate chapter houses at Iowa. House accommodates 35 to 45 men. Undergraduate fraternities are Acacia, Alpha Epsilon Pi, Alpha Tau Omega, Beta Theta Pi, Delta Chi, Delta Tau Delta, Delta Upsilon, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Psi, Phi Kappa Sigma, Pi Kappa Alpha, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Sigma Pi and Tau Kappa Epsilon. One additional fraternity is currently being organized, Theta Xi Colony.

Professional fraternities operating chapter houses include Alpha Chi Sigma (chemistry), Alpha Kappa Kappa (medicine), Delta Sigma Delta (dentistry), Nu Sigma Nu (medicine), Phi Beta Pi (medicine), Phi Rho Sigma (medicine) and Psi Omega (dentistry).

Sororities
The 13 national sororities active at Iowa are Alpha Chi Omega, Alpha Delta Pi, Alpha Epsilon Phi, Alpha Gamma Delta, Alpha Phi, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Gamma, Delta Zeta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Kappa Gamma, Pi Beta Phi and Zeta Tau Alpha.
Services for Students

Admissions, Records and Convocations
The Dean of Admissions and Records is responsible for coordinating the services of the Office of Admissions and the Registrar's Office, maintaining enrollment profiles and developing enrollment projections, conducting commencement and convocation ceremonies, and publishing the University Catalog.

Registrar
The Office of the Registrar determines the residence status of each student, assesses fees, issues University identification cards, supervises registration procedures, and maintains all students' academic records and official transcripts. It also assists students in determining graduation requirements, processing applications for degrees, and interpreting college and University academic regulations, and it provides assistance to students concerning Selective Service and military service matters, helps students veterans with University application and enrollment procedures, and provides administrative supervision of students under vocational rehabilitation.

High School-College Relations
Administered as a part of the Office of Admissions, the High School-College Relations Office coordinates and implements all scheduled relations with secondary schools and institutions of higher education.

Educational Opportunities Program
Also administered as a part of the Office of Admissions, this office identifies students from educationally and economically disadvantaged backgrounds, and arranges financial and academic assistance on the basis of individual need for admitted students. The program originated as the Martin Luther King Scholarship Program.

Special Support Services
Established especially for veterans, members of minority groups, low-income students and special-admission students, this office provides assistance with special needs including requests for tutors, lecture notes, study sessions, financial aid and vocational counseling.

Student Financial Aid
The Office of Student Financial Aid administers the University's extensive general program of scholarships, grants, loans and part-time job placement.

Academic Advisory Offices
Each student is assigned a faculty adviser to assist with registration, educational planning and academic counseling. Students planning to complete preprofessional courses are assigned to academic advisers from the area of their choice. Students in the professional colleges are advised by the college dean or their designated representatives. Graduate students are advised by their department heads and the Graduate College Dean. In addition to academic advising, advisers also serve as general consultants to students, and refer those with special problems to the appropriate areas.

Evaluation and Examination Service
Evaluation and Examination Service administers many of the University's required and optional tests for entering students. It is also a center for many national testing programs, including the American College Tests, Medical College Admission Test, Graduate Record Examination, Admissions Test for Graduate Study in Business, Graduate School Foreign Language Test, Law School Admission Test, Test of English as a Foreign Language and National Teacher Examination.

Evaluation and Examination Service duplicates, scores and analyzes many course examinations. It helps faculty members develop and improve their classroom tests by evaluating the results of examinations. It also helps faculty or student groups which have particular project requests, such as teacher or course evaluation. Additionally, Evaluation and Examination Service conducts some institutional research projects.

Student Health Services
All students currently registered at the University are eligible for Student Health Services. There is no charge for consultations during regular office hours. Calls after office hours are subject to nominal fees.

Student Inaugural cost is provided without charge to students requiring medical supervision and nursing care. If the student needs hospitalization, such service is available on a clinical-pay basis.

Supplemental student insurance is available on a year-to-year basis at a minimal group-plan cost. A special policy is available for coverage of emergency and/or hospital care for students' dependents, at the hospital and by physicians of their choice. These policies are offered at the beginning of the academic year.

Dental Service
The University of Iowa College of Dentistry is primarily a teach-
ing clinic, the purpose of which is to educate and train future dentists. Students are accorded the same opportunity for treatment as all other patients. It should be emphasized that the College of Dentistry is not a part of the University Student Health Service and does not render service under the student health hospitalization fund. Fees are established for all services rendered and may be paid by either cash or Master Charge.

Speech and Hearing Clinic
Speech and hearing tests are given to all incoming undergraduate students. Any University student with speech or hearing problems may receive needed clinical services from the Speech and Hearing Clinic without charge. Services include diagnostic examination, consultations, individual conferences, individual therapy sessions, group instruction in small workshop groups and referral to other clinics as needed.

Iowa Memorial Union
The Iowa Memorial Union is the center of the University's co-curricular activities. It houses the Student Development Center, Student Activities Center, University Counseling Service, Career Counseling and Placement Office, U of I Foundation and Alumni Association offices. Its facilities include a variety of food services, a bowling and billiards area, a barber shop and beauty salon, a creative crafts center, a book store, a sundries store, a television room, lounges, meeting rooms, auditoria for lectures and concerts, art and sculpture display areas, and in the adjoining Iowa House, 112 guest rooms for parents, alumni, conference and workshop participants, and other visitors to the campus.

Student Development Center
The Student Development Center is a general counseling agency and clearinghouse of information for students. Students wanting any kind of information or having problems of a social or extracurricular nature can get help from this office, either directly or by referral. Staff members work with individuals and with student groups and organizations, including fraternities, sororities and residence hall governing bodies.

University Counseling Service
The professionally trained counselors and psychologists of the University Counseling Service staff offer vocational, educational and personal counseling to University students, staff and faculty. Interviews are confidential and information is released only upon the client's written request. All counseling and testing services are available without cost to any University student or staff member.

Placement Services
The University's Career Counseling and Placement Office, Educational Placement Office and College of Engineering Placement Bureau cooperate with the colleges and departments in counseling students about employment, helping them locate positions and arranging interviews. A small fee is charged for preparation of the student's credentials.

Student Religious Opportunities
Recognizing the religious interests of University students, various faiths and denominations have established campus centers and ministries. The Association of Campus Ministers coordinates inter-religious activities and promotes religious consciousness, understanding and commitment.

Intercollegiate Athletics
The University is a member of the Western Intercollegiate Conference (Big Ten), and has athletic programs in football, basketball, track, baseball, swimming, golf, wrestling, tennis, cross country and gymnastics. Operating policies are determined by the Board of Control of Athletics, which is composed of 13 members from the University's teaching and administrative staff, two University alumni and one representative of the University Staff Council.

Division of Recreational Services
Every interested student, male and female, has the opportunity to compete in more than 20 different intramural sports and recreational activities. The Division of Recreational Services also offers a wide range of recreational loan programs in such activities as karate, tennis, golf, scuba diving and gymnastics. Inforal activities are provided for students, faculty, staff members and their spouses and families. Activities include basketball, badminton, volleyball, table tennis, swimming, handball, paddleball, squash, canoeing, ice skating, golf, archery, weight training, billiards, squash, tennis, fencing and judoing.

The Action Studies Program
Patterned after the "free university" concept, the Action Studies Program provides a vehicle for immediate response to student demand for courses too current or too experimental for initiation as part of the regular University curriculum. Students may coordinate as well as participate in most ASP courses. Course taken for no credit are free. Regular tuition is charged for credit courses.
Administrative Staff

Dean Leath W. Duryee
University Librarian, State M. Benya
Assistant University Librarian Richard M. Kubat
Assistant University Librarian Wayne Hustad
Administrative Assistant Lowell D. Duhning
Bibliographer Frank S. Hamill
Assistant Director Emerita Grace Van Norman

General Facilities

The University's Main Library and its 14 departmental libraries house a total of more than 1.5 million volumes.

About half of the collection is in the Main Library whose capacity has been doubled by an addition occupied in 1972. This additional space includes new facilities for the School of Library Science, a new undergraduate library in the second floor containing reader spaces and a separate collection of some 30,000 books selected for use by undergraduate students, and a new and enlarged study area for graduate students on the fourth and fifth floors.

The Law Library, containing approximately 144,000 volumes, is one of the strongest university law libraries in the Midwest.

The Art Library contains approximately 24,000 volumes; Botany-Chemistry, 47,000; Business Administration, 11,000; Dentistry, 10,600; Education-Psychology, 94,500; Engineering, 35,500; Geology, 20,400; Library Science, 8,000; Mathematics, 24,000; Medical, 92,800; Music, 41,000; Pharmacy, 10,000; Physics, 22,500; Speech Pathology, 2,250; and Zoology, 20,750.

In addition, the collections of the State Historical Society and the Public Library in Iowa City are available to students and staff members of the University.

Special Resources

Main Library facilities include microform reading rooms; listening rooms for collections of recorded drama, poetry and speech; seminar and conference rooms; a map center; carrels for graduate students; and individual study rooms for faculty members engaged in research. Other services include the reserved book stations for undergraduate students in the Burge and Quadrangle dormitories.

The Human Relations Area Files consist of full data on a sample of societies throughout the world, are designed to facilitate comparative studies of social and cultural behavior.

The University's Linn-Her Collection brought together by Luther A. Brewer of Cedar Rapids, Iowa, is considered one of the most complete to exist. It contains, 2,315 separate volumes, 1,924 manuscripts and manuscript letters written by Hunt or to him by his many famous literary friends; almost 100 association volumes; and nearly 600 editions of Hunt's writings. The Hunt Memorial Collection contains approximately 3,700 volumes, of which 3,000 were bequeathed to the University by Mrs. Ramsey in memory of her husband, formerly a lecturer in the College of Medicine. The collection is particularly rich in first editions, including many superb bindings made especially for Mrs. Ramsey.

The John Springer Collection of books on typography was given to the University by John Springer, a longtime Iowa City printer. The collection includes 1,880 volumes containing type specimens, books important in printing history and volumes illustrating the art and progress of printing through the centuries.

The "Ding" Darling Collection comprised originals of nearly 6,000 cartoons in which for more than 40 years Ding recorded and commented on the economic, political and diplomatic affairs of the United States. His cartoons are virtually a pictorial history of this country during the first half of the twentieth century. A subject index to the collection enhances its usefulness for reference and research.

The Bollinger-Lincoln Collection, gathered by Judge James W. Bollinger of Davenport, Iowa, consists of about 4,200 books and pamphlets devoted to Abraham Lincoln. The collection is one of the best libraries of Lincoln in the United States. A number of items in it is concerned with John Wilkes Booth and the trial of his fellow conspirators, while another large group of books contains reminiscences of people who knew Lincoln. Lastly, a number of broadsides relating to Iowa and the Civil War period have been added to the collection, developing yet another phase of Lincoln's period in American history.

The Blunden Collection comprises approximately 290 volumes of poetry, biography and criticism, and 600 manuscripts or letters relating to the contemporary English poet Edmund Blunden.

The French Revolution Collection includes more than 8,000 political pamphlets, chiefly from the years 1788-1799, reprinted by numerous French newspapers and government publications of the time.

The Locust Floors Collection includes approximately 5,070 books written by locusts and more than 440 manuscripts.

The "X" Collection is a gathering of 13,170 early, rare or special works on diverse subjects, including books of the fifteenth and sixteenth centuries, early Americans, Roxburghe Club Publications, periodicals, and the like.

The Manuscripts Collection include more than 5,500 individually cataloged letters or manuscript items of English and American authors or historical figures, primarily of the nineteenth and twentieth centuries, in addition to 215 inventoried collections of personal letters and correspondence files relating to midwestern economic, political and agricultural history.

The Map Collection contains 56,800 maps, 57,913 indexed aerial photographs, and 1,832 atlases, gazetteers and related reference items.
The University Archives preserve materials relating to the history of the University. The collection of University publications from 1825 to 1959, originally assembled by Dean Amos N. Currier, is today supplemented by 450 file drawers of correspondence and records; approximately 1,750 shelf-feet of records, papers and publications, and an extensive collection of photographs dating back to 1911.

Other special collections include the Harvey Ingham Collection of books dealing with the American Indian; the Levi G. Leonard Collection of manuscripts and documents dealing with railroading in the Midwest, particularly the Union Pacific; the History of Hydraulics Collection; the Edwin Ford Piper Collection of ballads and folksongs; and the Chautauqua Collection donated by Harry P. Harrison, manager of the Redpath Bureau. The Chautauqua Collection contains several thousand letters and documents descriptive of the Chautauqua movement.

Staff

Acquisitions: Barbara K. Geanakoplos, Head; E. Ann Ford; Kath-leen B. Wachol. Circulation: David A. Asmuth; Ruth E. Christ; Mary G. Clark; Kathy Ann Edwards; Karen A. Fischer; Judith K. Groce- dyke; Vivian E. Hickman; Karl K. Kahler; Tatjana Lorkovic; George P. Mullaly; Mary E. Noell; Rosemary E. Ross; Ann-ethylene M. Park; Emeritus; Yong Kyih Nyo Mei; Emeritus. Circulation: David D. Hudson, Head; Linda M. Sardarov, Browning Room Librarian; Lillian N. Sega, Reserved Books Librarian; Chuck Hintz, Head Emeritus. Government Publications: Carol L. Kehler, Head; Mary Lee Biser; William H. Hunkins; Mary R. McIver. Reference: Julia Hartley, Head; Frank C. Allen; Rebecca L. Johnson; Dorothy M. Kettel; Laura A. Martin; Keith A. Rager; Jean S. Schaaf, Ada M. Stoffel. Sociology: Helen S. Clark, Head; Jim E. Cole; Mary E. Horton; Evelyn S. Murphy; Anne D. Roberts; Charlene E. Soli. Special Collections: Francis J. Pakula, Head; Richard S. Green; Robert A. McCown; Karl M. Rogers, Irene Steigl, Emeritus. Departmental Libraries: Art, Hartley L. Stifford; Botany, Chemistry, Pauline L. Mayne; Business Administration, Peter J. Hartley; Dental, Margaret R. Johnson; Education-Psy- chology, Anne O. Evans, Sharon B. Morin, Jane M. Phillips; Geology, Vera J. Bacon; Library Science, Karen S. Hildebrand; Mathematics, Marjorie G. Wilkie; Medical, Robert V. Cey- der, Edwin A. Holzman, Julie Van Berg; Music, Rita B. Benson, Elizabeth L. McWilliams, Pharmacy, Sandra Ballance; Physics and Zoology, Jack B. Dickey, Speech Pathology, Carol Vogt.
The primary function of the College of Liberal Arts is to provide a liberal education—to encourage the student in the fullest possible development of his or her intellectual abilities, his or her capacities as a person and as a member of society. While the long-range goal is that of producing an intellectually, spiritually, physically, emotionally and aesthetically well-rounded individual, the College seeks to accomplish this primarily by emphasis on intellectual achievement. Through its curriculum and related activities, the College assists the student in the continued development of fundamental intellectual skills, particularly in writing, reading, speaking and quantitative thinking. It guides the student toward a mastery of reading, significant facts and methods of work in such fields as the sciences, social sciences, language and literature, fine arts, history, and philosophy. It aids the student in the development of a resourceful and independent mind, the ability to use as well as to accumulate knowledge. Finally, it attempts to provide the student with experiences which will be conducive to the development of strength of character and a sense of personal responsibility.

The College of Liberal Arts offers programs leading to the degrees Bachelor of Arts (B.A.), Bachelor of Science (B.S.), Bachelor of Music (B.M.), Bachelor of Fine Arts (B.F.A.) and Bachelor of General Studies (B.G.S.).

The College awards bachelor's degrees in these areas:

- American Civilization
- Anthropology
- Art and Art History
- Astronomy
- Biochemistry
- Botany
- Chemistry
- Child Behavior and Development
- Chinese Language and Civilization
- Classics
- Dental Hygiene
- Economics*
- Elementary Education*
- English
- European Literature and Thought
- French
- General Science*
- General Studies*
- Geography
- Geology
- German
- Greek
- History
- Home Economics
- Italian*
- Japanese Language and Civilization
- Journalism
- Latin
- Linguistics
- Letters
- Mathematical Sciences
- Medical Technology*
- Microbiology
- Music
- Philosophy
- Physical Education for Men
- Physical Education for Women
- Physics
- Political Science
- Portuguese*
- Psychology
- Recreation Leadership
- Religion
- Russian
- Social Studies
- Social Work
- Sociology
- Spanish
- Speech and Dramatic Art
- Speech Pathology and Audiology
- Special Education
- Zoology

The Graduate College awards advanced degrees in all of the above areas, except those marked with asterisks, and in these other College of Liberal Arts areas:

- Chemical Physics
- Comparative Literature
- Computer Science
- Cultural Anthropology and Linguistics
- Hospital and Health Administration
- Law Enforcement and Correction
- Library Science
- Museum Training
- Nuclear Science
- Science Education
- Speech Pathology and Audiology
- Statistics
- Urban and Regional Planning
Schools and Divisions

There are seven schools and two divisions within the College of Liberal Arts.

The Division of Fine Arts includes the School of Art and Art History, School of Music and Department of Speech and Dramatic Art.

The Division of Mathematical Sciences comprises the departments of Computer Science, Mathematics and Statistics, the latter including the program in actuarial science. The department shares a common undergraduate program affording a variety of course selections which lead to and may include advanced work in one or more areas of specialization.

The School of Journalism offers courses leading to the Bachelor of Arts, Master of Arts and Doctor of Philosophy degrees. The Certificate of Journalism is awarded to qualified undergraduates.

The School of Letters is a federation of the departments of East Asian Languages and Literature, Classics, English, French, Italian, German, Russian, Spanish, Portuguese, Linguistics, and Speech and Dramatic Art and the programs in American Civilization, Comparative Literature, Modern Letters, International Writing, Translation and Writers Workshop. The Windhover Press is also part of the School. The School strengthens the degree programs of its component academic units through cooperative planning and joint appointments, makes it possible for a student to pursue a program in two or more language areas, and serves the University as a whole through interdepartmental course offerings in literature for nonmajors by sponsoring lectures and conferences on literary topics and by bringing distinguished scholars and writers to the campus for conferences with students and faculty members.

The School of Library Science provides a basic course of study leading to the Master of Arts in Library Science degree. It also offers a certificate program for school librarians.

The School of Religion offers undergraduate and advanced degree programs and provides elective courses for nonmajors. The board in control of the School is composed of members of the University's teaching and administrative staffs and of representatives of the religious communities of Iowa.

The School of Social Work offers programs leading to the Bachelor of Science and Master of Social Work degrees.

Advanced Placement

Under the Advanced Placement Program of the College Entrance Examination Board, a high school senior may take comprehensive achievement examinations in a number of subjects and the College of Liberal Arts grants college credit and, where appropriate, advanced placement of students who pass these examinations. For information, write to the College Entrance Examination Board, 475 Riverside Drive, New York City 10027.

The Advanced Standing Program in English

An entering student who has had the type of high school preparation sponsored by the Advanced standing Program in English qualifies to attempt the College of Liberal Arts rhetoric requirement with credit by taking the rhetoric proficiency examination offered before the course begins. At least two weeks before he or she registers at the University, his or her Advanced Standing English teacher should send a statement to the Director of Admissions that the student has satisfactorily completed such preparation. For information about the Advanced Standing Program in English, write to the Rhetoric Program Coordinator, The University of Iowa.

Credit by Examination

A student may earn up to 32 semester hours of credit, or exemption without credit, in the general education program of the College, or in certain introductory departmental courses, through tests offered in the College-Level Examination Program of the College Entrance Examination Board. Information about the tests and permission to take them may be obtained from the Liberal Arts Advisory Office.

Pass-Fail Courses

The College permits enrollment in any course on a pass-fail basis, provided the course is outside the student's major field and the student's advisor and the course instructor approve. Not more than two pass-fail courses may be elected in a semester, and not more than 32 semester hours of work on a pass-fail basis will be accepted toward graduation. Pass credits are not figured into the student's grade-point average.

Second Grade Only Option

If a student registers during his or her next term in residence (or the next term in which the course is offered) for a course completed in the immediately preceding term, only the grade and credit of the second registration will be counted in the grade-point average.

The Honors Program

The Honors Program is a College-wide plan for exceptionally promising students. Honors students are assigned to special sections in general studies courses. Those whose major departments offer Honors curricula have opportunities to enhance their studies in Honors seminars, independent research and other special activities, and to earn the baccalaureate degree with Honors. Entering freshmen whose records indicate they would benefit from the Honors Program are invited to participate. However, the Program is open to all interested and qualified students.

The Preprofessional Program

Up to 30 semester hours of credit earned in another college of the University will be accepted toward the bachelor's degree by the College of Liberal Arts, provided all specific requirements for the degree have been met, including the requirements for a major in some department or area of concentration. This makes it possible for the student who enters the college of Medicine or Dentistry, or the medical technology, physical therapy or dental hygiene programs, for which a bachelor's degree is not an admission requirement, to obtain a bachelor's degree from the College of Liberal Arts upon successful completion of one academic year in the professional college or program.

The Liberal Arts Advisory Office

The College of Liberal Arts Advisory Office assigns faculty ad-
visors to students enrolled in the College. These advisors help students with registration and in the progressive development of their educational programs. A student planning to enroll in a preprofessional program is assigned a special advisor in that area. Academic advisors also serve as general consultants to students and refer those with special problems to appropriate areas. The Advisory Office staff is available for conferences with students who have questions or problems on academic matters.

The Liberal Arts Advisory Office also administers the Credit by Examination program and takes care of other academic affairs of the College.

Admission Requirements
A student seeking admission to the College of Liberal Arts must meet the requirements set forth in this section and, in addition, must meet any special requirements for the curriculum of his or her choice.

Entering Freshmen
An applicant seeking admission as an entering freshman must have the high school from which he or she graduated provide a certificate of high school credits, including a complete statement of high school record, rank, scores on standardized tests, and certification of graduation. An applicant may be tentatively admitted after he or she has completed the junior year in high school, but admission will not be final until receipt of the final transcript and certification of high school graduation.

A graduate of an approved Iowa high school who has the proper subject-matter background, is in the upper one-half of his or her graduating class, and meets specific curricular requirements, will generally be admitted upon certification of graduation. An applicant who is not in the upper one-half of his or her graduating class may be required to take special examinations, and, after a review of all available data, the admissions officer, may be admitted unconditionally, admitted on probation, required to enroll for a trial period during a preceding summer session or denied admission.

A graduate of an accredited high school in another state must meet at least the same standards as a graduate of an Iowa high school. The options for admissions by probation or trial enrollment may not be open to these students.

A graduate of a nonaccredited high school must submit all data required above, and must take examinations which demonstrate his or her general competence to do successful college work.

An applicant who is not a high school graduate must submit all data required above, and take examinations which demonstrate general competence to do college work and provide evidence of specific competence for admission to a given curriculum.

Undergraduate Students Transferring from Other Colleges

Students from Accredited Colleges and Universities

Transcripts of records are given full value if they come from colleges or universities accredited by the North Central Association of Colleges and Secondary Schools or similar regional associations. The recommendation is contained in the current issue of the Report of Credit Given by Educational Institutions published by the American Association of Collegiate Registrars and Admissions Officers will be followed for schools not regionally accredited.

Each applicant must submit an official transcript bearing the original seal and signature of the official in charge of records from each college or university the student has previously attended. The applicant must also submit any other records or letters the college may require to support his or her application for admission.

A transfer applicant is expected to have maintained a C average (2.0 in a 4-point system) for all college work attempted and must not be under suspension from the last college attended. Transfer applicants who are not residents of Iowa are expected to have maintained a 2.25 average. An applicant who does not meet this standard may be permitted to take entrance examinations. An applicant who successfully completes the examinations may be admitted on probation.

In general, transfer applicants under academic suspension from the last college attended will not be considered for admission during the period of suspension, or, if suspended for an indefinite period, will not be considered until six months have passed since the last date of attendance. When eligible for consideration the applicant will be considered on the basis of his or her performance on the entrance examinations.

A transfer applicant under disciplinary suspension will not be considered for admission until a clearance and a statement of the reason for suspension are filed from the previous college. When it becomes proper to consider an application from a student under suspension, the College must take into account the fact of the previous suspension. An applicant granted admission under these circumstances will in each case be admitted on probation, and his or her admission will be subject to cancellation.

A graduate of an accredited junior college who has obtained an A.A. degree, have met all of the core and basic skills requirements of the College of Liberal Arts except the language requirement. A maximum of 62 semester hours (or the equivalent) will be accepted by transfer credit for the first two years of enrollment in a junior college.

Students from Nonaccredited Colleges

The College may refuse to recognize credit from a nonaccredited college or may admit the applicant on a provisional basis and provide a system for the validation of some or all of the credit. The validation period shall not be less than one semester and will generally be for fall term admittance. The College will specify to the student the terms of the validation process at the time of provisional admission. Each student from a nonaccredited college is considered on his or her merits, and admission or rejection is at the discretion of the admissions officer.

Students who transfer from junior colleges must earn a minimum of 62 semester hours in the College of Liberal Arts to qualify for a degree, regardless of the number of transfer credits they have earned. A maximum of 30 semester hours earned through correspond-
Academic Standards
Marking System
The University of Iowa uses the following marking system:

<table>
<thead>
<tr>
<th>Mark</th>
<th>Definition</th>
<th>Grade Points for Each Semester Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Superior</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Above Average</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>Below Average—Passing</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Failing</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
<td>0</td>
</tr>
<tr>
<td>P</td>
<td>Passing</td>
<td>0</td>
</tr>
<tr>
<td>O</td>
<td>No Report</td>
<td>0</td>
</tr>
</tbody>
</table>

The cumulative grade-point average is computed by multiplying the hours of credit in each course by the appropriate grade-point totaling the grade-points earned to date and dividing the sum by the number of hours undertaken, excluding courses in which the student received W or F. An Incomplete must be completed during the next session of the student's registration, in order not to revert to a grade of F. A zero must be replaced by a grade during the next semester's work, in order for it not to revert to a grade of F.

Classification of Students
Freshman—Less than 28 semester hours
Sophomore—28 to 55 semester hours
Junior—56 to 89 semester hours
Senior—90 or more semester hours

Scholarship Requirements
Generally, to qualify for graduation, a student must have at least a C (2.0) average in all college work attempted, in all work at The University of Iowa and in all work attempted in his or her major field at Iowa and elsewhere.

Minimum semester and cumulative grade-point requirements for good standing in the College of Liberal Arts are 1.5 for freshmen, 1.6 for sophomores, 1.75 for juniors, 1.9 for seniors.

Entering freshmen admitted on probation must attain good standing during the first semester. Freshmen who are admitted in good standing but fail to maintain it during the first semester must regain it during the second semester. Upperclassmen may be allowed two successive semesters on probation.

Students who are dropped from the College for the first time may apply for readmission after one year. Those who are dropped a second time are not eligible to apply for readmission until five years later.

Graduation Requirements
At least 124 semester hours of credit at The University of Iowa are required for the baccalaureate graduation of students who enter as freshmen. Hour requirements for transfer students will be indicated in their Admission Statements. A year's work is considered to be a minimum of 30 semester hours. At least the last 30 semester hours or 45 of the last 60 semester hours of credit must be earned in residence in the College of Liberal Arts at Iowa.

The Basic Program
The College of Liberal Arts curriculum requires that before graduation all students attain acceptable levels of performance in:
- Basic skills: Rhetoric (reading, writing, speaking)
- Physical education
- Mathematics
- Core areas (literature, social science, natural science, histori-cal-cultural)
- Foreign language
- Area of concentration (including work in the major field and such courses in related fields as are advised by the major department)

Methods by Which Requirements May Be Satisfied
Rhetoric
All students must register at their first enrollment for rhetoric, as assigned on the Admission Statement, and must continue to enroll each semester until the proficiency tests are passed. Students assigned to 1/2 or 2/3 Rhetoric may attempt the three hour and speech tests before taking the course but must enroll for 10.3 until they learn the results of the tests. By satisfactorily passing these tests, a student can earn up to four semester hours of credit.

Transfer students may be allowed two successive semesters on probation and may then drop transfer work and take courses at the University of Iowa. By transferring six semester hours of credit in speech from another institution of good standing by transferring six semester hours in English composition and either completing two semester hours of credit in speech (362:23) at the University or satisfac-torily passing the speech test for transfer students. A student who transfers less than six semester hours in composition must register for the rhetoric course indicated on his or her Admission Statement and must continue until the requirement is satisfied. Students transferring 40 semester hours or more of advanced standing are exempt from the rhetoric requirement. A maximum of eight semester hours of credit in the Rhetoric Program will be counted toward the baccalaureate degree.

Physical Skills
The University's physical skills requirement may be met by earning, during the freshman year, four semester hours of physical education skills courses, or by passing the comprehensive test in physical education skills. This test is given each semester at announced time during the closing week of the term. Up to four semester hours of credit may be awarded for successful comple-tion of the test.
Freshmen who elect to meet the requirements by examination, but who failed to pass, must register for physical education skills for at least one quarter before repeating the examination. Students who have not passed the test or met the requirements before the beginning of the sophomore year must register for the course during the sophomore year. Students who wish to do so may take the sophomore course for zero credit.

Petroleum may meet the physical skills requirement by presenting to the Office of the Registrar official evidence of having completed the basic training program in some branch of the armed forces.

Transfer students may meet the physical skills requirement by transferring 40 semester hours of advanced standing, by transferring four semester hours (or the equivalent) of college credit in physical education and satisfactorily completing the appropriate two-hour U of I course in physical education skills.

A maximum of four semester hours in physical education skills will be counted toward the bachelor's degree.

Students who have passed their twenty-third birthdays prior to admission are excused from the physical education skills requirement.

Mathematics

The mathematics requirement may be met by presenting at least two and one-half years of high school mathematics, exclusive of such courses as business arithmetic and consumer mathematics; by satisfactory accomplishment in the placement test in mathematics; or by satisfactorily completing a college-level mathematics course acceptable to the Department of Mathematics.

Historical-Cultural, Natural Science, Social Science and Literature Core Requirements

All students must meet the core requirements by satisfactorily completing either one or four courses, one of the eight-semester-hour core courses offered in the core area. However, with the approval of the department, students may be excused from the core requirement in the major area. The student may also be excused by earning eight or more semester hours of credit in approved departmental courses in one or more departments in the area where such courses are offered, or by achieving a satisfactory score on a comprehensive examination in the core subject.

Literature core courses may not be taken until the Rhetoric Program requirements are satisfied.

General Examinations of the College-Level Examination Program are offered for fulfillment of core requirements and for college credit. There are three tests, covering humanities, natural science and social sciences. They are administered by the University Examination Service. Registration for these exams must be completed in the Liberal Arts Advisory Office. Information regarding specific student eligibility for the tests may be obtained from that office.

Transfer students have the option of meeting the natural science, social science and historical-cultural core requirements by submitting, at the time of entrance from another institution, acceptable credit for an eight-semester-hour course comparable to the core required courses at The University of Iowa, from among the following subject areas:

Historical-Cultural—history, philosophy, religion, American civilization, and/or the history and appreciation of art, music or drama.

Natural Sciences—astronomy, biochemistry, botany, chemistry, geology, mathematics, microbiology, physiology and/or zoology.

Social Sciences—anthropology, economics, geography, political science, psychology and sociology.

A transfer student may meet the literature core requirement by submitting, at the time of entrance, six semester hours of college credit in literature from another institution; or three semester hours of college credit in literature from another institution and completing four semester hours in a literature core course at The University of Iowa. Students transferring less than three semester hours must complete one of the eight-semester-hour courses in the literature core area.

Foreign Languages

Candidates for the Bachelor of Arts degree are required to complete at least four semesters of study in one foreign language. This requirement may also be satisfied by completion of four years of high school study in one language; by the completion of a combination of high school and college study equivalent to four semesters of college-level study; or by satisfactory performance in an achievement examination measuring proficiency equivalent to that attained in four semesters of college study in one language. A student who has completed two years of high school language study and who elects the beginning course in the same language in college will have added to his or her graduation requirements the number of semester hours assigned to that course.

Candidates for the Bachelor of Fine Arts, Bachelor of Music and Bachelor of Science degrees must complete at least eight semester hours of approved college-level study in one foreign language or an equivalent combination of high school and college study. Candidates for the Bachelor of General Studies degree have no foreign language requirement.

Bachelor of General Studies Degree

The requirements for the B.G.S. degree are completion at The University of Iowa of 60 semester hours of courses numbered 100 and above, not to include more than 20 hours from one department and, unless exempt, completion of the appropriate rhetoric course. There are no specific core course requirements for this degree. All rules and regulations of the College of Liberal Arts apply to the B.G.S. degree (e.g. total hours, residence, deadlines, academic standards, pass-fail, credit by examination, correspondence study, work in other colleges, etc.), except as specified above.

Area of Concentration Major

The head of the department or chairman of the area in which the student wishes to concentrate his or her studies specifies the requirements in this area.

Maximum Credit in One Department

Not more than 30 semester hours of credit may be earned in one
department of study and applied toward the B.A. or B.S. degrees from the College of Liberal Arts.

Credit for ROTC
Regardless of the number of hours earned in ROTC, exclusive of flight training, only a maximum of eight semester hours of credit in ROTC courses may be counted toward the semester-hour minimum requirement needed for graduation in the College of Liberal Arts.

Credit for Graduate Courses
Undergraduates in the College of Liberal Arts must secure the specific approval of the appropriate departmental executive officer and the dean of the College of Liberal Arts to register for courses numbered above 199 and to use them as part of an undergraduate program.

Maximum Student Load
Eight semesters or four academic years is the time normally required for the completion of a program leading to the bachelor's degree from the College of Liberal Arts. The normal schedule for the semester is 16 semester hours. No student may carry more than 19 semester hours without the permission of the dean of the Liberal Arts Advisory Office.

Graduation Honors
High scholastic achievement is recognized at graduation in two ways: graduation “with distinction,” based on grades only; and graduation “with honors” in a particular field, based both upon grades and the completion of special work as outlined by the College and the major department.

To be eligible for any form of graduation honors, the student must complete the final 60 semester hours in residence in the College of Liberal Arts and must have completed at least 45 hours in residence in the College before his final registration.

Requirements for graduation with distinction are:

<table>
<thead>
<tr>
<th>Pharmacy</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest distinction</td>
<td>3.75 + GPA</td>
</tr>
<tr>
<td>Highest distinction</td>
<td>3.50-3.74</td>
</tr>
<tr>
<td>Distinction</td>
<td>3.25-3.49</td>
</tr>
</tbody>
</table>

The grade-point average upon which graduation with distinction is determined includes all work undertaken before the opening of the final session. Transfer students must also have attained the required grade average on all work undertaken in the College of Liberal Arts at the University of Iowa. Students who enroll in a professional college at Iowa to complete the final 30 semester hours of elective credit required for a degree from the College of Liberal Arts are eligible for the designation "graduation with distinction" upon the conferring of a bachelor's degree, provided that at least 60 semester hours earned prior to enrollment in the professional college have been completed in residence in the College of Liberal Arts at the University of Iowa.

The appropriate designation or designation are entered on the student's permanent record in the Office of the Registrar and on his diploma.

Basic Skills
The Rhetoric Program
The purpose of the College of Liberal Arts rhetoric skills requirement is to ensure, as far as possible, that incoming undergraduates develop the reading, writing and speaking skills they need to get the most out of university education and adult life. The Rhetoric Program is designed to serve this purpose in ways which help students adjust to university life.

All entering freshmen and all undergraduate transfer students who have not already met the requirement are assigned either to the two-semester "main course" or the one-semester advanced course in rhetoric. Assignments are based on high school records, American College Test scores and, for transfer students, coursework completed at other institutions.

Some students are reassigned on the basis of their first two weeks of rhetoric coursework. Others are reassigned or excused on the basis of their scores in rhetoric examination tests offered during the first week of the semester.

The Rhetoric Program also offers special, individual assistance in its reading, writing and speech laboratories.

<table>
<thead>
<tr>
<th>181 Rhetoric Main Course</th>
<th>4 s.h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>183 Rhetoric Main Course</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>181, 183 Rhetoric Main Course</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>183 Rhetoric Advanced Course</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>181 Rhetoric Advanced Reading</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

Graduation Honors

Physical Education Skills
The physical education skills and elective physical education programs are designed to contribute to students' liberal education and well-rounded development by ensuring that, before graduating, they have a basic knowledge of the body functions in relation to exercise and at least a minimum level of skill in a variety of physical activities which may be used throughout life for recreation and to maintain a reasonable degree of physical fitness.

The instructional program in physical education skills provides for a wide variety of activities, including physical conditioning, archery, badminton, bowling, canoeing, casting and angling, diving, fencing, figured skating, gymnastics, handball, ice hockey, judo, lacrosse, life saving, field hockey, home recreation games, rifle, rugby, soccer, swimming, softball, squash, baseball, table tennis, tennis, track and field, wrestling, volleyball, water polo, water safety instruction, weight training, wrestling. The program also gives the student an opportunity to correct physical defects which respond to therapeutic exercises.

Elective Physical Education
The elective physical education program offers courses in the
activities listed above for students who have met the College of Liberal Arts physical education skills requirement but wish to improve their skill and knowledge in activities of their choice.

Physical Education Skills for Men

1921 Physical Education Skills for Men 1 s.h.
Ancillary foundations of physical education activities; instruction and training in sports skills, corner sports activities and physical conditioning activities; required of all male students in Liberal Arts who are unable to satisfy written and proficiency test battery in sports skills and physical conditioning.

1922 Physical Education Skills for Men 1 s.h.
Continuation of 1921

1923 Physical Education Skills for Men 1 s.h.
Continuation of 1922

1924 Physical Education Skills for Men 1 s.h.
Continuation of 1923

1925 Physical Education Skills for Men 0 s.h.
Open only to students who elect to take physical education without credit.

1926 Physical Education Skills for Men 0 s.h.
Continuation of 1925

Physical Education Skills for Women

1921 Physical Education Skills for Women 2 s.h.
Intensive work in selected activities from the areas of sports, dance, aquatics and gymnastics, emphasis on movement principle.

1922 Physical Education Skills for Women 2 s.h.
Continuation of 1921

1923 Physical Education Skills for Women 0 s.h.
For first semester sophomore students electing to take physical education without credit.

1924 Physical Education Skills for Women 1 s.h.
Open by preprature only

Core Courses

Except where noted, both semesters of a course must be completed if it is to satisfy the core course requirement of the College of Liberal Arts. Exceptions are made for transfer students who need only one one-semester course to finish a requirement. Students who have completed requirements in any area may take its core courses as one-semester electives.

Literature

The core requirement in Literature may be satisfied by taking 111L the basic course, and following it with one of the second-semester alternatives. Writing ability as required by the Rhetoric Program is a prerequisite. English majors are exempt from core Literature. Others wishing to fulfill the requirement by examination should contact the Liberal Arts Advisory Office. Core courses in literature may also be taken for elective credit.

Most sections meet three times a week for discussion, ask for substantial independent reading and stress writing as a tool for learning as well as expression. Selecting literature from the student's own lifetime as well as great works of the past, these courses treat literature as a shared experience that rests on definable assumptions, uses characteristic sets of conventions, and is accessible to different kinds of interpretation.

111 Interpretation of Literature 4 s.h.
Interpretative strategies available to makers of poetry, narrative and drama, with some consideration of film as literary medium

112 British andClassical Literature 4 s.h.
Selections from Old and New Testament literature, Homer, Greek dramatists, Plato, Vergil and others

Core Courses

1123 Medieval and Renaissance Literature 4 s.h.
Selections from Beowulf, Chaucer, Shakespeare, Milton and others

114 The Tragedies of Shakespeare 4 s.h.
Major representation of tragic vision of man's experience in sixteenth and seventeenth century English tragedies.

118 The Idea of Comedy

119 Reflective Literature 4 s.h.
Selected masterpieces as well as recent developments in art of storytelling in both poetry and prose

117 Lyric Poetry

118 Poetry from major periods of development as well as contemporary verse, with special attention to language and major formal patterns of poetry

1158 Dramatic Literature

Selected plays from Shakespeare's time to present with some consideration of dramatic outline and forms in other genres

Social Science

Anthropology, economics, geography, political science, psychology and sociology courses which will satisfy the social science core requirement are listed in the Schedule of Courses.

Natural Science

Life Science

1121 Human Biology 4 s.h.
Topic in human evolution, reproduction, genetics and major integrated functions of the biological systems from cells to behavior; our place in and problems with our environment; lecture, laboratory, reading and discussion; independent of 1122

1122 Ecology and Evolution 4 s.h.
An overview of discussions of evolution and of diversity of living things, their patterns on earth, their organization in ecological systems and dynamics of evolutionary processes; lecture, laboratory, reading and discussion; independent of 1122

Earth History and Resources

1123 Earth History and Resources (first half) 4 s.h.
Not open to those who have had 111L, 111S or 112

1124 Earth History and Resources (second half) 4 s.h.
Not open to those who have had 112; a second semester course in earth and processes by which they evolved; evolution of organisms and man's current use and misuse of present environments; either semester may be taken independently of the other; two lectures, two laboratory-discussion meetings per week

Physical Sciences

1126 Chemistry and Physics of the Environment 4 s.h.
Fundamental discussion and classification of chemistry and physics of ecology of our planet, of earth, water and the air, life and non-living reality, relations of pollutants to man, chemistry and physics of balance of nature; all relevant principles of physics and chemistry as elementary level; no prerequisites; for non-science majors; lecture and discussion, one semester; open to freshmen

Historical and Cultural Studies

1128 Problems in Human History 4 s.h.
Introduction to learning about past and its meaning for present; various topics in world history, emphasis on periods of fascinating and famous times about evidence, as well as on critical evaluation of what historians have already written about the subject

1121 Western Civilization: Middle Ages to 1915 4 s.h.

1122 Western Civilization: 1916 to Present 4 s.h.
Evolution of Western civilization with emphasis on political, social, economic, and cultural development of Europe, as related to problems of our own time

1123 Philadelphia of Man (first semester) 4 s.h.
Some major philosophical changes from man and society from Plato to present
Afro-American Studies

Program Chairman: Charlotte T. Darden

Degrees offered: B.A., B.A. Ed. in Afro-American Civilization, with concentration in Afro-American Studies.

Vigorous efforts are being made to develop a satisfactory curricula and attract capable faculty to portray the experiences of black people in America. This program is concerned as well with the history and culture of black people in Africa and the Caribbean. It also focuses on the contemporary racial crisis with a commitment to the eradication of prejudice and stereotypes.

The purpose of the program is to provide University students with an understanding of the black man's contribution to American civilization—past and present.

Afro-American Studies has been organized to further research and teaching in the area of black culture. The student wishing to specialize in Afro-American studies will emphasize this area in his or her graduate coursework, either as an examination field at the time of comprehensive examinations and write an interdisciplinary dissertation on some aspect of Afro-American culture.

The plans call for a four-year development combining present courses with new courses. The curriculum is being developed in four phases for the purpose of preparing students and faculty members to add and delete courses systematically.

The Committee of Afro-American Studies also sponsors the Afro-American Cultural Center.

Staff: professors Beding, Lane, Doffy, Schoor, Reish (Education); Hubbard (Engineering), Kovats (Business Administration); Van Dyke (Political Science), Corigan, Fabre (American Civilization), Turner, Hutton, Abugosh (English), Carter (Anthropology), McNulty (Geography), Moses (History).

Courses Primarily Concerned with the Afro-American Experience

American Civilization

4010 Black Poetry Workshop 3 s.h.
4011 Contemporary Black Experience 3 s.h.
4015-19 Afro-American Literature 1-3 s.h.
Same as English 311-15
4016 Afro-American History (1896-1920) 3 s.h.
4017 Afro-American History (1896-1930) 3 s.h.
Same as History 111-16
4018 Afro-American Drama 3 s.h.
4020 The Culture of Black America: An Interdisciplinary Approach 3 s.h.
An overview of the social, economic, political and religious experiences which have informed the black American.
Pathways and by-products of social and historical situations which perpetuate and maintain processes of racial discrimination.
A society and its black writers.
African-American Literature.
Spanish-speaking Peoples of the United States
Social Anthropology of the Caribbean
Urban Anthropology
Peoples of Africa
Peoples and Cultures of North Africa and the Middle East
Art

Business Administration

6010 Individual Rights in an Indifferent Society 3 s.h.
6020 Employment Relations and Public Policy 3 s.h.

Economics

60137 Economics of Urban Problems 3 s.h.

Education

70104 Education in Newly-Developed countries 2 or 3 s.h.
70120 Educational Sociology 3 s.h.
70220 Seminar: Value Problems in the Administration of American Education 3 s.h.

Same as 70180

71015 Teaching the Equally-Denied 2 or 3 s.h.
71016 Teaching the Equally-Denied 2 or 3 s.h.
Geography
44:191 Africa 3 s.h.

History
16:81 Survey of American History 1450-1787 3 or 4 s.h.
16:82 Survey of American History (1777-present) 3 or 4 s.h.

Sociology
*24:155 Race and Ethnic Relations 3 s.h.
*24:178 African Social Structure and Change 3 s.h.
Same as 15:125

Urban and Regional Planning
100:102 Urban Politics 3 s.h.
100:204 Planning of Metropolitan Areas 4 s.h.

American Civilization
Program Chairman: Alexander C. Kern
Degrees offered: B.A., M.A., PH.D.

At both the undergraduate and graduate levels, the program in American Civilization provides a wide cultural background in American studies and a proportionate amount of specialization in line with the student's individual interests. The courses offer information on the social and cultural development, the artistic and literary growth, and the distinctive ideals and values of American civilization.

The undergraduate program offers an excellent non-professional, liberal education for improved citizenship and rounded personal development. It can also serve as preparation for higher school teaching in American literature, American history and the social sciences; and it can form a solid basis for graduate study in American civilization, English, history or law.

The graduate program emphasizes the interdisciplinary approach to total American culture as the integrating background for more specific emphasis in selected areas from such as the following: Afro-American contributions, the fine arts, history, literature, music, philosophy, popular culture, religion, the social sciences and women's studies.

Undergraduate Study
The 16 semester courses required for a major are to be selected from:

Group A
Four semesters of American history:
16:61 Survey of American History
16:61-2 Individual Study
16:63-4 Hours Tutorial
16:65-4 Hours Seminar
16:67 Hours Thesis
16:161 The Colonial Period in American History
16:162 The American Revolutionary Period
16:163-4 The United States in the Middle Period
16:164-5 Recent American History
16:167-8 The Contemporary United States
16:170 The Northeast 1776-1850
16:171-2 The Frontier in American History
16:173-4 American Economic History
16:175-6 American Foreign Relations
16:179-80 American Intellectual History
16:181 Topics in American Social History
16:183-4 History of Iowa
16:197-8 Afro-American History
16:199 Religious and Democratic Traditions of the United States

Two semesters in two of these subject areas:
6E:1-2 Principles of Economics
6E:11 Labor Economics
6E:13 Introduction to Urban and Regional Economics
6E:17 Problems in Urban Economics
6E:151 American Economic History
6E:161 History of Economic Thought
7A:10 Introduction to Adult Education
7F:102 History of American Education
7F:103 Comparative Education
7F:117 Philosophies of Education
7F:135 John Dewey and Education
7F:153 Methods: High School English
7H:170 Methods: High School Social Studies
44:1 Introduction to Human Geography
44:30 Introduction to Economic Geography
44:35 Introduction to Urban Geography
44:122 Natural Resources of the United States
44:141 The United States and Canada

03:1 Introduction to American Politics
03:100 The American Political System
03:104 Political Parties
03:105 The Presidency
03:106 American Public Policies
03:107 American Constitutional Law and Politics
03:148 Legislative Behavior
03:163 American Foreign Policies
31:1 Elementary Psychology
31:101 Advanced Social Psychology
31:103 General Semantics
34:1 Introduction to Sociology: Principles
34:2 Introduction to Sociology: Problems
34:20 Principles of Social Psychology
34:23 Seminar: Collective Behavior
34:128 Culture and Personality
34:156 Race, Community and the American Political System
34:160 American Society
34:170 Population and Society
34:171 The Urban Scene
34:172 The Urban Community
113:1 Introduction to the Study of Culture and Society
113:101 General Anthropology
32:72-3 Religion in American History
32:174 The Catholic Church in America
32:176 The Genius of American Religious Institutions
32:177 Puritanism in the Shaping of America

American Civilization
Group C
Four semester courses in American literature

Group D
45:1 American Civilization (survey)
45:90 Senior Colloquium
Two of them:
45:10 Individual Rights in an Industrial Society
45:13 American Folk Literature
45:15 Significant Books in American Civilization
45:16 Human Rights and the Law in America
45:16-5 American History
45:15 American Civilization in the 20s and 30s
45:197 Interpretation of American Civilization
45:198 Literature and the Film
45:191 Introduction to Graduate Study in American Civilization

These listings are not complete; a considerable variety of under-
graduate programs can be formulated within the required groups.

The Master of Arts Program

On the master's level the program offers the study of the total
culture of the United States in historical perspective, and the
student is examined in both the history of American civilization
and the methods and bibliography of its study, with emphasis
on social, intellectual and literary expression.

Requirements for the Master of Arts degree in American
Civilization:
- thirty-eight semester hours of graduate work beyond the
  B.A., distributed among American literature and
  history, and methods of studying American civilization;
- study of a selected list of works important for an under-
  standing of American civilization;
- an examination over both items above; and
- completion of two successful language papers which demon-
  strate command of methods and materials.

The Doctoral Program

Coursework and Independent Study

Through a balanced and integrated program of courses and
readings, the Ph.D. candidate will progress from the broad
survey knowledge at the master's level to a depth of understand-
ing of the literature, history, social sciences, fine arts and philo-
osophy of the United States (together with their European
backgrounds, including English literature). The student will also
be responsible for knowledge of any subjects his thesis commit-
tee deems valuable for the completion of his dissertation.

Qualification

Before being admitted to candidacy for the degree, the student
must demonstrate his training and ability.

Comprehensive Examinations

Since American civilization is too broad a subject to be mastered
completely, each student must offer three approved fields for the
written portion of the comprehensive examination. These are to
include all of American literature, one field of American history
as defined by the Department of History and a third field involv-
ing a further discipline.

A wide range of choices is possible from such areas as social
science, one of the arts, philosophy, religion, Afro-American
studies, popular culture, women's studies and film. Accordingly,
with the advice and consent of his or her adviser and the depart-
ment concerned, the student must select an acceptable body of
work to be covered in the area of the comprehensive examina-
tion.

In addition, on the oral portion of the examination the candi-
date must demonstrate an acceptably solid command of the total
culture of one of the following periods:
- American Colonial Civilization to 1750
- American Civilization 1750-1835
- American Civilization 1836-1876
- American Civilization 1877-1914
- American Civilization 1914 to the present

Thesis

The student must present a satisfactory thesis on a topic which
concerns more of the above fields. Before the thesis topic is
approved, the student must explain his project to a committee
and convince the members that the topic is one which can be
successfully completed.

Final Oral Examination

This examination will be predominantly over the field of the
thesis.

Languages

Certification of an acceptable competence in two modern lan-
guages or in one language and one research tool area, such as
bibliography or fluency in one language demonstrated by taking
a literature course in that language is required of all students.

This requirement should be satisfied as early as possible and
certainly before the student takes the comprehensive examina-
tion.

Staff:

- professor Baeder, Corgias, Gerber, Kern, Oeter, Paul,
  Sanye, Whitaker, Moran, Davis, Turner (English); Dyk-
  stra, Gelfand, Hawley, James, Mead, Peerson, Roberts,
  Kier-
  ber (History); Alexandre, Cutter, Selbering (Art); Addis,
  Bunzic, Bergmann (Philosophy); Davis, Johnson, Schmid-
  hausen, Van Dyke (Political Science); Gonzales, Helm, Gold-
  berg, McIlough (Anthropology); Saunders (Sociology); Duffy
  (Education), Becker, MacCave (Speech and Drama); Hubbard,
  Meyers (Engineering); Kovenzy (Business Administration);
  Voorhees (Law)

Courses Primarily for Undergraduates

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>45:1 American Civilization I</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>45:2 American Civilization II</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>45:1 Introduction to Graduate Study in</td>
<td>3 a.h.</td>
</tr>
<tr>
<td>American Civilization</td>
<td></td>
</tr>
<tr>
<td>45:15 Contemporary Black Experience</td>
<td>3 a.h.</td>
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</tbody>
</table>
Anthropology

4886 Senior Colloquium 3 a.h.
Exploration of real culture of an era in historical perspective by applying disciplines of history, literature, art, philosophy and social science

4887 Honors Colloquium 3 a.h.

4888 Honors Project 3 a.h.

4891 Project for Undergraduates 3 or 6 a.h.

4892 Readings in American Civilization 3 a.h.

Courses for Undergraduates and Graduates

48110 Technology and Responsibility 3 a.h.
Same as Civil Engineering 581.110 and 581.115

48115 Afro-American Literature I 3 a.h.
Same as English 5115

48116 Afro-American Literature II 3 a.h.
Same as English 5116

48120 20th Century Afro-American Fiction 3 a.h.

48125 Intellectual Rights in an Industrial Society 3 a.h.

48132 Afro-American Folk Literature 3 a.h.

48133 Afro-American Poetics in American Civilization I 3 a.h.

Same as English 5133

48134 Significant Essays in American Civilization II 3 a.h.

Same as English 5134

48135 Significant Essays in American Civilization III 3 a.h.

Same as English 5135

48141 Human Rights and Law in America 3 a.h.

48145 Afro-American History (1619–1965) 3 a.h.

Same as History 5145

48146 Afro-American History (1966–present) 3 a.h.

Same as History 5146

48155 Black Action Theater 3 a.h.

48160 Afro-American Drama 3 a.h.

48165 Introduction to American Civilization: Materials and methods for graduate study 3 a.h.

Same as History 5165

48166 Afro-American Civilization: Material and methods for graduate study 3 a.h.

48167 Readings in American Literature 3 a.h.

Courses Primarily for Graduates

49210 Colloquium in American Civilization or arr.

Selected topics studied in depth, may be repeated, prerequisite consent of instructor

49211 Research in Afro-American Culture or arr.

49212 Afro-Americans in the New World 3 a.h.

Same as Anthropology 51212

49215 Politics and the Black Worker 3 a.h.

49261 Human Rights and World Order 3 or 6 a.h.

Same as Political Science 51261

49263 American Civilization 3 a.h.

49264 American Civilization and Culture 3 a.h.

Same as English 51264

49265 Readings in African-American Art and Culture or arr.

Same as English 51265

49267 Reading in American Literature or arr.

Same as English 51267

49268 Readings in African American Literature or arr.

49280 Special Problem: Graduate 6 or arr.

49285 Ph.D. Thesis 6 or arr.

Anthropology

Department Chairman: Roland Buhle, Department Chairman, R.A., Ph.D. (Ethnology and cultural anthropology and linguistics)

Undergraduate Program

Anthropology takes Homo sapiens as its central object of study and provides a framework for understanding the species’ place in the natural world: evolutionary background and development, the organization of social life, cultural and symbolic systems, the evolution of cultures and societies, the interrelations among society, personality, and value systems, and factors that have shaped and subcultures other than his own.

Majors must take a minimum of 29 semester hours of courses in anthropology, including 113.3 Introduction to the Study of Culture and Society and 111.11 Introduction to Archeology and Physical Anthropology. In addition, each student must take one course in archeology, one course in ethnology and one course in social anthropology. The remaining hours are to be selected in consultation with the advisor. Core coursework is encouraged in such related areas as sociology, linguistics, geography, psychology, and statistics. The advisor may be consulted for specific recommendations.

Effective coursework in anthropology offers a wide range of choices, including courses dealing with language and culture, social problems of underdeveloped areas, culture and personality, religious studies in folk and tribal settings primitive art, biological anthropology and urban anthropology. In the undergraduate program, specialization is discouraged, and the program is aimed at giving the student the broadest possible cultural background.

Special Programs

Honors

Designed for maximum development of superior students’ abilities and interests, the Honors Program in anthropology is open to students who have completed at least one year of college and have a point average of 3.0 overall and 3.2 in anthropology. In addition to the regular requirements for a major in anthropology, Honors students must complete the Department’s Honors Seminar and Honors Research course and serve as tutors for the anthropology core course, The World’s Peoples.

Field Research

Opportunities are available for students to participate in anthropological field research either at a site near Mexico City or at various sites in Iowa. Under the direction of University and state archaeologists, they acquire on-the-job knowledge of archaeological techniques and methods of "reading" artifacts.

Graduate Programs

Students applying for admission to the graduate program in anthropology will be considered regardless of the field of their previous training. Applicants may enter the anthropology graduate program with a B.A. degree or with advanced standing. A candidate for admission must submit a completed University application form; transcripts of all previous graduate and under-
graduate work, three letters of recommendation, and scores from the aptitude portion of the Graduate Record Examination. All entering graduate students, whether enrolled in the M.A. or Ph.D. programs are required to take the Departmental qualifying examination during the second semester of residence.

M.A. Program

The M.A. program is generally in nature, equipping one to deal with any aspect of anthropology at an introductory level. Although most students choose one of the traditional subfields of anthropology for special emphasis, further specialization is neither expected nor encouraged.

The Department of Anthropology offers two programs leading to the M.A. degree, with or without thesis. The latter program is considered a terminal degree and ordinarily will preclude the student’s consideration for candidacy for the Ph.D.

In either program the candidate must take the qualifying graduate examination in anthropology during the second semester in residence. The main purpose of the qualifying examination and evaluation procedure is to determine whether or not a student is qualified to become a professional anthropologist and, if qualified, whether at the M.A. or Ph.D. level. Since the examination is administered quite early in the student’s graduate program, previous experience will be considered in evaluating performance. The exam consists of two parts. The first covers all aspects of anthropology—biological, cultural, archeological and linguistic. Those who pass the qualifying examinations with distinction may be permitted to bypass the master’s degree and proceed directly to the Ph.D.

The number of credit hours required for the M.A. varies from 30 to 38 semester units, depending on prerequisite anthropological training. In any event, the M.A. in anthropology will probably require to complete 38 hours including thesis credit. A student with a B.A. in anthropology will be required to complete a minimum of 30 semester hours. One course from each of the following categories must be completed in graduate work at The University of Iowa: social anthropology, ethnology, archeology, and linguistics or linguistic anthropology.

In combination with undergraduate work and with graduate work completed at The University of Iowa or elsewhere, the student must have two courses in each of the previously listed areas. The program must also include an approved course in statistics or methodology. All courses must be completed with a grade of “B” or better to meet the distribution requirements.

Ph.D. Program

Graduate training in anthropology at the Ph.D. level leads to professional competence in both scholarly research and teaching. It represents a balance between a general knowledge in all the subfields of anthropology and a professional level of specialization in either archeology or ethnology-social anthropology.

Total credit hour requirements for the Ph.D. program are 54 graduate hours. Full admission to the Ph.D. program is contingent on the successful completion of the qualifying examination required of all graduate students in the Department. Distribution requirements are specified in terms of levels of competence and specialization rather than in terms of completed courses. In the comprehensive examination, in addition to the course work, the student will be tested for general knowledge in the various subfields of anthropology: ethnology-social anthropology, archeology, linguistic anthropology and physical anthropology, as well as more comprehensively in the specialization he or she has selected. The distribution requirement for the Ph.D. includes the mastery of two research skills, a geographic-cultural area and an anthropological research topic.

Ph.D. in Cultural Anthropology and Linguistics

The Ph.D. in cultural anthropology and linguistics prepares the student for professional teaching and research in the linguistic and non-linguistic aspect of cultural behavior and the nature of the relationship between them. The program consists of three years of academic work, including participation in interdisciplinary courses and, in most cases, a period of field work.

The only explicit requirements are the achievement of two appropriate research tools from a list which includes foreign language, statistics, symbolic logic and computer programming, quasiquantitative completion of a basic series of courses in linguistics and in anthropology (courses in general linguistic theory, phonetics, grammatical analysis, phonological analysis and historical-comparative linguistics) and in anthropological history, theory or methods, social anthropology, social institutions and an ethnographic area and satisfactory completion of a series of interdisciplinary courses in language and culture, ethnolinguistic field methods and ethnolinguistic theory.

Beyond this basic training, the candidate for the Ph.D. in cultural anthropology and linguistics may concentrate in one of the two areas with further work, or strike a balance between the two. At the completion of the core program, each student’s achievement will be evaluated by the candidate’s advisor in consultation with the two departments, and appropriate recommendations are made.

It is not necessary that the student entering the program have taken an undergraduate major in either anthropology or linguistics. However, all candidates will have had the equivalent of one introductory course in linguistics and anthropology (103:20C and 113:01), these must be made up as deficiencies.

The student may take the M.A. degree in either anthropology or linguistics before proceeding to the joint Ph.D. Previous work in one of the two areas at the M.A. level may be applied toward the joint doctorial program requirements in that division.

Research Skills

Masters of two skills appropriate to the student’s research interests are required of all students. Although one of these is normally a foreign language, two skills other than language are permissible if appropriate to the student’s program. Among the skills acceptable, in addition to the language, are a second language, fluency approaching that of a native speaker in the first language, mathematics, logic, statistics, computer programming, geography, survey techniques, paleontology or ecological techniques.

The student must demonstrate knowledge of the ethnography of one of the major culture areas as defined by the Department.
These include Sub-Saharan Africa, North Africa and the Middle East, Europe, Northern Eurasia, South Asia (India and Paki- stan), Southeast Asia, China, Japan, North America, South America, the Caribbean and Middle America, and Oceania (includ- ing Australia and New Zealand). Substitutes for this re- quirement may be made for students specializing in archaeology, e.g., the archaeological record of a major cultural area.

Students will demonstrate their original research in one of their anthropological research topics: culture and personality, kinship and social structure, social and cultural change, language and culture, religion, prohibition, health and human behavior, primitive art, ecology, political structure, urban anthropology and the history of anthropology. This will ordinarily include a period of field work.

Special Facilities

The Department of Anthropology houses the State of Iowa's Archaeological Collection. The University of Iowa was one of 20 universities which joined in 1969 to create the Human Relations Area Files, an extensively annotated bibliography of source materials on the people of the world—their environments, behavioral patterns, social life and culture. There are duplicat- HRA Files at each participating university. Continually expend- ing, they not only provide a comprehensive reference guide but are themselves a valuable source of information. At Iowa, the HRA Files and other Main Library resources give anthropology students ready access to source material on more than 400 cul- ture.

The Faculty

Members of the Anthropology faculty have studied and lived in the Orient, the Near East, Africa, Latin America, and among American Indians. Ongoing research in the Department includes work on such problems as the development of technologies to analyze ceramics in the Upper Tequichaon Valley in Mexico, research on traditional cultures and language of Tripolitanian Jews, computer assisted population demography in a Tanzania tribe, patterns of female end and end in mating pat- terns in Liberia, the effects of a regional power installation on the Indians in the Black Mesa area, a comparative linguistic and ethnographic study among the Athabaskan Indians of Alaska and Northwestern Canada, and interrelations between social class and political power in Iran. Faculty members have con- tinued their research work during the past two years in Mexico, Japan, Liberia, the Canadian Subarctic, Africa and Israel. Staff: Professors Helen Schuler, associate professor Clarion, Goldberg, Ackie; assistant professors Carter, Koczwoski, Marshall, McHugh.

Courses: Anthropology

For Undergraduates Only

115/16 Introduction to the Study of Culture and Society 4 s.h. The comparative study of culture and social organization; may be taken in partial fulfillment of social science major requirement.

115/10 The World's Peoples: An Ethnographic Survey 4 s.h. Anthropological studies of understanding the world's beliefs and practices by which different peoples live; anthropological literature and ethnographic

Anthropology

These include Sub-Saharan Africa, North Africa and the Middle East, Europe, Northern Eurasia, South Asia (India and Pakistan), Southeast Asia, China, Japan, North America, South American, the Caribbean and Middle America, and Oceania (including Australia and New Zealand). Substitutes for this requirement may be made for students specializing in archaeology, e.g., the archaeological record of a major cultural area.

Students will demonstrate their original research in one of their anthropological research topics: culture and personality, kinship and social structure, social and cultural change, language and culture, religion, prohibition, health and human behavior, primitive art, ecology, political structure, urban anthropology and the history of anthropology. This will ordinarily include a period of field work.

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Ethnology

115/10 The American Indian 3 s.h. History and culture: emphasis on North America; prehistoric: 115/2 or 113/3; prehistoric: 115/10 or 113/10.

115/15 Africa in the New World 14 s.h. Biocultural development of the peoples of the New World and their interaction and influence on prehistoric and early modern societies. Additional coursework may be taken in partial fulfillment of social science major requirement.

115/10 Spanish-Speaking Peoples of the U.S. 3 s.h. Spanish-speaking peoples in the history of Spanish-Americans, Mexican-Americans, Puerto Ricans and Cuban population composition; emphasis on contemporary problems of immigration and assimilation.

115/15 Native Peoples of South America 3 s.h. Indigenous peoples of South America and their environment; emphasis on the environment and its role in the development of their cultures.

115/16 Native Peoples of Middle America 3 s.h. Indigenous peoples of Middle America, emphasis on the environment and the relationship between the environment and the development of their cultures.

115/17 Social Structure of Latin America 3 s.h. Social and economic structures of Latin American countries and their development and influence on Latin American society.

115/18 Urban Anthropology 3 s.h. The development and role of the city in pre-modern society; processes of urbanization with particular attention to the development of large cities, the transformation of Latin American and the development of urbanization systems in the Americas.

115/15 American Social Structure and Social Change 3 s.h. American social structure and social change; emphasis on the development and influence of social structures and social change in the Americas.

115/15 The World's Peoples: An Ethnographic Survey 4 s.h. Anthropological studies of understanding the world's beliefs and practices by which different peoples live; anthropological literature and ethnographic

Courses: Anthropology

For Undergraduates Only

115/16 Introduction to the Study of Culture and Society 4 s.h. The comparative study of culture and social organization; may be taken in partial fulfillment of social science major requirement.

115/10 The World's Peoples: An Ethnographic Survey 4 s.h. Anthropological studies of understanding the world's beliefs and practices by which different peoples live; anthropological literature and ethnographic

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115/16 Native Peoples of Middle America 3 s.h. Indigenous peoples of Middle America, emphasis on the environment and the relationship between the environment and the development of their cultures.

115/17 Social Structure of Latin America 3 s.h. Social and economic structures of Latin American countries and their development and influence on Latin American society.

115/18 Urban Anthropology 3 s.h. The development and role of the city in pre-modern society; processes of urbanization with particular attention to the development of large cities, the transformation of Latin American and the development of urbanization systems in the Americas.

115/15 American Social Structure and Social Change 3 s.h. American social structure and social change; emphasis on the development and influence of social structures and social change in the Americas.
It prepared the artist-teacher concept, appointing its teacher on the quality of their work rather than the number of their academic degrees. It was one of the first university-based art schools to bring established professional artists—Giusto Wood was among them—to its faculty.

With the School of Letters and the School of Music, the School of Art and Art History made Iowa one of the first two universities to accept creative works for academic credit. It was among the first, and is still one of few, schools of art at which studio art and art history are joint studies reflecting the concept that the young artist will benefit from a formal study of the traditions of art, and the prospective historian from personal experience with the creative process.

The school achieved national recognition for its large exhibitions of contemporary American painting and sculpture. A number of its graduates enjoy success as practicing professional artists and art historians. Most have become teachers. Currently there are more applicants than jobs in teaching, and that situation apparently persists. However, Iowa graduates continue to be placed in acceptable positions.

There is no "commissions" art offered in the Iowa program, and few of the school's graduates enter that field. An undergraduate major in art history is, in most instances, a preparation for work toward an advanced degree, either in art history—where most positions require an advanced degree—or in a related field, such as museum work.

All undergraduate programs in art at Iowa develop the major at the broadest setting of a liberal education. The student earns one-half to one-third of his or her credits in non-art courses, beginning with the College of Liberal Arts general graduation requirements—history, mathematics, and physical skills, a foreign language, and introductory coursework in literature, social science, natural science and the historical-cultural area.

The major requirements in art are broad and flexible. They discourage specialization. The art history major requires at least an A in one course in one of the major areas of art history and at least three areas of studio art. The aim of the joint curriculum is to give students a basic understanding of art and aesthetics; it does not focus on particular short-term styles.

The Art Forms Program
Since 1969 the foundation work in studio has been organized as the Art Forms Program. The first year combines drawing and painting with basic design. It moves from representational drawing and two-dimensional design projects into major theory experiments with three-dimensional materials, processes and structures, some print projects and painting in various media. There is also a supplementary program of lectures, films and gallery events.

During the third semester, students draw from microscopes in biology laboratories, work in the College of Medicine's anatomy laboratories and are encouraged to pursue individual or collaborative projects.

The fourth year is oriented toward three-dimensional work. Students conceive and execute individual projects in new and traditional materials, become involved with film and videotape, and evaluate and document their own work.

The Bachelor of Arts Degree: Studio Art Major
In addition to the general College of Liberal Arts graduation requirements, the Bachelor of Arts degree with a studio art major requires from 21 to 30 semester hours of studio work. It is at least three different areas of studio work, the introductory art history course and at least one additional art history course.

The Bachelor of Arts Degree: Art History Major
The Bachelor of Arts degree requirements for an art history major include eight semester hours of studio work, 18 to 30 semester hours of coursework in art history, at least two semesters of study in a second foreign language (one of the two is usually German) and 16 semester hours of coursework in classics, drama, history, literature, music, philosophy, religion, and sociology and/or anthropology.

At least 38 nor more than 50 credits earned in art courses can be counted toward the 124-credit total required for graduation with the Bachelor of Arts degree in studio art or art history.

The Bachelor of Fine Arts Degree
The program leading to the Bachelor of Fine Arts degree gives greater emphasis to studio work. The general requirements are the same as for the Bachelor of Arts degree, except that the foreign language requirement is reduced from 12 to eight semester hours.

The major requirements are 11 semester hours of art history, 10 semester hours of basic studio work and 26 semester hours of intermediate and advanced studio work. The latter may be earned in one major and three minor studio areas, or in one or more fully developed major areas and two minor areas.

The Art Education Major
The B.A. in art education is a joint offering of the College of Education and the College of Liberal Arts. For this degree the student may have all the courses required of an art major taking a B.A. in studio or art history but must elect sufficient course in education to meet state certification requirements. Students having outstanding performance in art history may be encouraged by the art history faculty to take an Honors Program in that field.

Admission
All high school graduates qualifying for admission to entry into the University are hereby eligible for admission to the School of Art and Art History. Students planning to major in studio in art history must elect sufficient courses in education to meet state certification requirements. Students having outstanding performance in art history may be encouraged by the art history faculty to take an Honors Program in that field.

Graduate Programs
Almost all the students receiving graduate degrees in the School of Art are full-time. Very few become full-time professional artists or, in the art history field, enter immediately into museum work although opportunities in the latter may increase in the future. As with most career-oriented programs, those at the graduat
level in art offer the students a high degree of individual planning and course selection.

Art History

The purpose of this program is to train professionally-oriented art history students planning a career in teaching, research and selected aspects of the museum field. It also offers courses to help broaden the conceptual and aesthetic understanding of students majoring in studio practice and other disciplines. Degrees are offered at the Master of Arts and Doctor of Philosophy levels. The individual graduate program in art history is planned in accordance with the student's background and interests. A reading proficiency in one foreign language is required for the M.A. degree.

Entrance into the doctoral program presupposes the completion of the M.A. degree or its equivalent and recognition of the student's scholarly promise by the art history faculty. Following his or her acceptance into the program, the student plans a thesis or her continuing study with his or her advisor and committee, which must include one member from outside the School. Formal entry into candidacy is preceded by a general examination. The written dissertation must constitute a worthy contribution of knowledge.

For details as to field of responsibility and other considerations relating to the M.A. or Ph.D. program, address the Professor of Charge of Art History.

Studio M.A.

The graduate program in studio begins with coursework of the student's choosing. Following the student's selection of major emphasis and a faculty advisor, a clearance review is held at stated intervals at which time it is determined whether the student is accepted into the degree program. Although the student may specialize or broaden his or her coursework to any degree satisfactory to him or her and his or her advisor, it generally follows that at least one course in drawing is taken by all graduate students in studio and courses in art history are required. A studio thesis is also required. The thesis must be accompanied by a written statement which, with the advisor's approval, may be no more than an inventory record and photograph.

Studio M.F.A.

Entrance into the M.F.A. program requires a clearance review of the student's work, following completion of the M.A. degree or acceptance of the M.A. thesis. Clearance reviews are held at stated intervals. M.F.A. candidates have requirements in art history and courses outside the School. Otherwise the student is free, following consultation with his or her advisor, to take such courses and to undertake such media emphasis as he or she desires and to select a studio minor. The studio thesis is a requirement and again the written portion, with the advisor's approval, may be at the inventory level. For more detailed information, address the Director, School of Art and Art History.

Art Education

The M.A. candidate in art education will take courses in that field and in art history and studio. While teacher certification is required, course emphasis is determined by the student, in consultation with a faculty advisor. The written thesis may result from research in art history or art education or, if it accompanies a studio thesis, may be a brief descriptive statement.

Facilities

The building housing the School of Art is located in the University's Center for Fine Arts complex on the west bank of the Iowa River. The Center also includes the new Museum of Art, the University Theatre and the new Music Building and Hancher Auditorium.

A recently-constructed wing of the School of Art building provides a large undergraduate painting studio, one of the world's most complete inagale print shops, and an art history lecture hall, as well as School offices.

Other School of Art facilities include a smelting furnace for bronze casting, a well-equipped darkroom, kilns sufficiently large to fire kilo-size ceramic sculptures, and a large shop for woodworking, metalworking and industrial design. There are also glass and metal working furnaces and video equipment and advanced spray equipment for the application of plastic film and fiberglass in multimedia work.

Additionally, of course, there are many studios of various sizes. The School's library is one of the best in the nation, in size and function. It contains more than 35,000 volumes.

The School's visual resources include more than 140,000 slides used in art history classes, and students have access to an additional 70,000 photographs and study cards.

While set a School of Art facility, the University's Center for New Performing Arts involves School of Art people in most of its activities. The Center was established by the Rockefeller Foundation to encourage collaboration among such areas as art, dance, writing, film, music and theatre.

The Faculty

The School's faculty is composed of dedicated teachers who are active scholars and artists. The publications of art historians result from wide-ranging research projects, including notable research in the Far East, North Africa and Europe, as well as the Americas. Members of the school faculty participate in national and international exhibitions. The art education faculty are involved both in studio and scholarly evaluation of educational programs.

Staff: professors Alexander, Berford, Quiller, Francavic, Laskowsky, Leachy, *Schulze, Seiberling, Teus, Wilke, associate professors Breiter, Myers,** Patrick,** Tucker, Wilcox, visiting artists Schmidt, Tysack; assistant professors Begley, Choo, DePuma, Foster, Jee, Johnson, Moxon, Rogers, Walker, Woodham; alumnus Frederic Brownlee, Rosenbaum

Librarian, Art Library: Harles-Sifford
Curator, Visual Materials: Carolyn Milligan

* On leave, fall semester 1972
** On leave, spring semester 1972-73
Courses for Undergraduates and Graduates

Art History

Courses for Undergraduates and Graduates

Near Crosses southbound until 10:15 have as prerequisite an introductory course. In the appropriate art history text or instructor's manual.

101:22 Introductory Art: African 3 s.h.
101:23 Introductory Art: American 3 s.h.
101:24 Introductory Art: Asian 3 s.h.
101:25 Introductory Art: European 3 s.h.
101:26 Introductory Art: Islamic 3 s.h.
101:27 Introductory Art: Medieval 3 s.h.
101:28 Introductory Art: Renaissance 3 s.h.
101:29 Introductory Art: Modern 3 s.h.
101:30 Introductory Art: Contemporary 3 s.h.
101:31 Introductory Art: Prehistoric 3 s.h.
101:32 Introductory Art: Pre-Columbian 3 s.h.
101:33 Introductory Art: African 3 s.h.
101:34 Introductory Art: Asian 3 s.h.
101:35 Introductory Art: European 3 s.h.
101:36 Introductory Art: Islamic 3 s.h.
101:37 Introductory Art: Medieval 3 s.h.
101:38 Introductory Art: Renaissance 3 s.h.
101:39 Introductory Art: Modern 3 s.h.
101:40 Introductory Art: Contemporary 3 s.h.
101:41 Introductory Art: Prehistoric 3 s.h.
101:42 Introductory Art: Pre-Columbian 3 s.h.
101:43 Introductory Art: African 3 s.h.
101:44 Introductory Art: Asian 3 s.h.
101:45 Introductory Art: European 3 s.h.
101:46 Introductory Art: Islamic 3 s.h.
101:47 Introductory Art: Medieval 3 s.h.
101:48 Introductory Art: Renaissance 3 s.h.
101:49 Introductory Art: Modern 3 s.h.
101:50 Introductory Art: Contemporary 3 s.h.
101:51 Introductory Art: Prehistoric 3 s.h.
101:52 Introductory Art: Pre-Columbian 3 s.h.
101:53 Introductory Art: African 3 s.h.
101:54 Introductory Art: Asian 3 s.h.
101:55 Introductory Art: European 3 s.h.
101:56 Introductory Art: Islamic 3 s.h.
101:57 Introductory Art: Medieval 3 s.h.
101:58 Introductory Art: Renaissance 3 s.h.
101:59 Introductory Art: Modern 3 s.h.
101:60 Introductory Art: Contemporary 3 s.h.
101:61 Introductory Art: Prehistoric 3 s.h.
101:62 Introductory Art: Pre-Columbian 3 s.h.
101:63 Introductory Art: African 3 s.h.
101:64 Introductory Art: Asian 3 s.h.
101:65 Introductory Art: European 3 s.h.
Botany

Department Chairperson: Robert L. Hallary
Degrees offered: B.A., B.S., Ph.D.

Botany is a science contributing to our understanding of plants, their structure, function, distribution on the earth, diversity, behavior and relation to human affairs. Many students majoring in botany are preparing to enter careers in fields related to the plant sciences such as agriculture, forestry, horticulture, plant breeding, microbiology, the chemistry of natural products, ecology, medicine, pharmacy and zoology.

Some recent graduates of the B.A. program at Iowa have entered careers as technicians in pharmaceutical research laboratories, in plant breeding stations and in seed production laboratories. Most of those who have gone on to advanced degrees are in the teaching profession. One is a curator of mycology with the New York Botanical Gardens, where he participates in regular plant exploration trips in the Arctic and in tropical South America. One is in the United States Forest Service in Montana. Another is a research associate in the United States Forest Products Laboratory at Madison, Wisconsin. Four are scientists at the National Fungus Collections Laboratory in the U.S.D.A. These few examples illustrate the variety of professions open to botany graduates.

The Bachelor of Arts Degree

In addition to the general requirements of the College of Liberal Arts (see "College of Liberal Arts"), students majoring in botany are required to take:

- Mathematics through 225:20 Elementary Functions 4.1, 4.4 and 4.6 General Chemistry 4.121-2 and 4.141 Organic Chemistry

Twenty-four semester hours of botany to include:

1. Introduction to Botany 4.3
2. Presented: Evolution of Land Plants 4.3
3. Plant Biochemistry 4.9
4. Biology of the Local Flora 3.3
5. General Botany 4.3
6. 1010 or 37.10 Genetics 3 or 4.3

At least seven semester hours are to be selected from other botany courses numbered 100.


An undergraduate program leading to graduation "with Honors" provides opportunities for participation in independent research projects guided by professional staff members. Prerequisites for admission to the program are senior standing and cumulative grade-point averages of 3.0 overall and 3.5 in botany. In addition to the regular requirements for the B.A. degree, Honors students must complete three semester hours of research.
Graduate Study

The Department offers graduate training in diverse areas. Many involve interdisciplinary training, and some, such as genetics and ecology, require extensive study outside the Department. For these reasons each student will be assigned a faculty guidance committee to help set goals for graduate training and to plan the course requirements necessary to achieve them.

Admission

See "Graduate College."

General Requirements

All students should become thoroughly familiar with the requirements of the Graduate College; responsibility for compliance with these requirements rests with the student. Students who have not met the verbal and quantitative parts of the Graduate Record Examination are required to take these tests during the first semester of residence. In addition, those who plan to apply for a fellowship are advised to take the advanced biology part of the Graduate Record Examination.

Departmental Requirements

Candidates for advanced degrees in botany are required to perform some service as teaching or research assistant.

If the enrolling student has little or no training in botany or biology, some introductory coursework will be required in accordance with the academic needs of the individual. In addition, mathematics at the level of analytic geometry and a year of organic chemistry are usually required of entering students. Credits prescribed by the student's guidance committee should be made up during the first year of residence; these courses may be taken for reduced graduate credit.

The Master's Degree in Botany

Advanced study may be undertaken with emphasis in anatomy, embryology, cell biology, ecology, genetics, molecular biology, mycology, palaeobotany, physiology, taxonomy. The master's degree may be earned by completing at least 30 semester hours of graduate study, including six semester hours in 2-225 Research. The preparation of a thesis is optional.

Each student must:

- Submit a program of study approved by a guidance committee comprising three members of the graduate faculty, one of whom may be from another department. Normally, as a guidance procedure, the program of study should be prepared during the first semester in residence as a regular graduate student.
- Complete at least 16 semester hours of graduate courses in botany, as prescribed by the guidance committee. No more than six semester hours of 2-225 Research and 2-229 Thesis may be used to satisfy this requirement.
- Achieve a grade-point average of 3.0 on all courses—other than Research—attained up to the time of the final examination.
- Take a written examination during the term in which he or she registers to graduate. This is followed within a week by an oral examination. These examinations cover the courses and subject experience the student has had up to this point.

The Master's Degree in Biology for Science Teachers

Emphasis in Botany

A student electing this degree must complete at least 30 semester hours of graduate work, including the preparation of an acceptable thesis, or 38 semester hours without thesis. Undergraduate preparation must include eight semester hours of botany and eight semester hours of zoology; a general biology course may not be submitted as part of this requirement.

Graduation requirements:

With thesis—14-16 semester hours of botany including 2-225 Research, eight semester hours of zoology electives, and four to eight semester hours of electives in cognate fields.

Without thesis—20-24 semester hours of botany including 2-225 Research, eight to 16 semester hours of zoology electives, and four to eight semester hours in cognate fields.

The candidate must have at least a 3.0 grade-point average on all courses attempted at the time of the final examination.

Doctor of Philosophy

The general requirements of the Graduate College apply to all students (see "Graduate College"). Specialization may be in any one of the fields listed under the master's degree.

With the aid of his or her major professor, the student should enter directly into planning for the degree and submit a program of study to a guidance committee consisting of the major professor and two other members of the graduate faculty, one of whom may be from another department. Normally, as a guidance procedure, the program of study for the Ph.D. is prepared during the first semester in residence following the award of a master's degree. The guidance committee approves the formal courses or proficiency requirements which the candidate must meet. The background of the candidate, his or her educational and career goals, and his or her current or prospective research interest are taken into consideration. The committee also establishes which portion of the formal coursework or specific proficiency (such as ability to read certain foreign languages) will be demanded of the student before he or she is admitted to the comprehensive examination.

The candidate must take both written and oral comprehensive examinations covering his or her fields of concentration and research. Preparation for comprehensive examination affords an opportunity for the student to review and establish continuity of thought concerning the basic ideas and disciplines in his or her profession.

At least 72 semester hours of graduate credit are required, including courses taken for the master's degree.

The doctoral thesis must be submitted before the final examination, which is primarily a defense of the ideas and methods of obtaining the data therein. The doctoral thesis should be an original contribution to the general body of knowledge. In addition to its research contribution, it should contain a discussion
of related knowledge and the candidate's interpretations, specu-
lations and generalizations about his or her specific topic.

Special Facilities and Activities

Students conducting experiments or research projects requiring the use of plants have access to greenhouses and special culture rooms with controlled environments. A remodeled plant physiology laboratory is available, with associated greenhouses.

There is an excellent departmental library in the building.

A number of research laboratories are equipped with standard and more sophisticated apparatus. A new electron microscope in the operation. Students and staff may use the Scanning Electron Microscope Laboratory in the Zoology Building.

A herbarium for research and herbarium study includes collections of more than 200,000 specimens. This herbarium includes an extensive collection of seed plants and ferns from Iowa and the Midwest, especially, research specimens from Mexico and Central America, the Canary Islands of plant systems and the Martin collection of fungi and algae. Within a few miles of the campus, a forest preserve is available for field trips and experimental projects. A biological field station at Iowa Lakeside Laboratory at "Ravens Run" on the Iowa Lakeside Laboratory in the northwestern Iowa counties affords excellent con-
ditions for summer study in field biology, limnology, physiology, aquatic ecology and plant taxonomy. Students frequently partici-
pate in field expeditions in the Canadian Northwest, Mexico and Central America.

Graduate students are frequently invited to the University of Computer Center in their research projects.

Faculty

The academic staff of the Department of Botany consists of 12 full-time faculty members and several half-time graduate teaching assistants. Each is involved in teaching both undergraduate and graduate courses, plus tutorial counseling of students con-
ducting independent projects. The specialties of our faculty include a wide range of disciplines in the plant sciences, in addi-
tion to considerable collaboration in research and teaching with colleagues in cognate areas such as biochemistry, geology, mic-
obiology and zoology.

Staff professors: Hubert, Mary, Rozinski, associates: professors Crisler, Davis, Janet, Nathanson; assistant professors Carlson, Schablon, Jantzen, Surzicki

Librarians-in-Charge, Botany Library: Pauline L. Muns

Courses Primarily for Undergraduates

41 Introduction to Botany 3 s.h.
Cultural experience with biology of plant life; structure, functions, reproduction and inheritance in plants. Open to all students recommended for students in general science, biology and those preparing to teach science. Three lectures and two laboratory periods per week; exam. by 21/2 or 21/2 or 21/2 to satisfy the natural science core requirement.

41/1 Evolution of Land Plants 3 s.h.
Development and morphology of seed plants. Three lectures and two laboratory periods per week; prerequisites 21/1 or 21/2 or 21/2 or equivalent.

21/2 Alpine and Fungi 3 s.h.
Biology of the major groups; their development, reproduction morphology and evolutionary relationships; two lectures and two laboratory periods per week; prerequisites 21/1 or equivalent.

2/12 Biology of the Level Flora 3 s.h.
Identification, recognition and reproduction of angiosperms and gymnosperms of Iowa and southeastern Iowa; the flora of Middle American and the Great Plains; the flora of Iowa. Two lectures and one laboratory per week; field work under limited; prerequisite: 21/1 or equivalent.

Courses for Undergraduates and Graduates

211 History of Taxonomy 3 s.h.
History of taxonomy as illustrated by study of variation within and relations-
tween selected families and orders of angiosperms; prerequisites: 21/1 or equivalent.

2293 Genetics 3 s.h.
Structure, behavior and function of hereditary material; laboratory work with basic patterns of inheritance; topics for nomenclature; laboratories and field trips. Two lectures and two laboratory periods; prerequisite: 21/1 or Zoology 211 or equivalent.

2/105 Fundamental Genetics 3 s.h.
Nature and function of genetic mechanisms; three lectures and one laboratory per week; 21/1 or equivalent.

2/104 Cytogenetics 3 s.h.
Structure and function of chromosomes; process of meiosis; chromosomes in mitosis and meiosis; karyotypes, genes, chromosomes, chromosomes of man; basic concepts of chromosome; karyotypes; karyotypes of higher eukaryotes; genetics of man; karyotypes of mammals, two lectures and two laboratory periods; prerequisite: 2/103 or Zoology 211.

2/106 Physiological 3 s.h.
Structure and reproduction of algae, freshwater and marine, including eukaryota and physiography of representatives of major taxonomic groups; lecture, laboratory and field trips; prerequisite: 2/110 or equivalent.

2/109 Bryology 3 s.h.
Lecture and laboratory; field work dealing with development, structure and evolu-
tion of mosses and liverworts; prerequisite: 2/110 or equivalent.

2/110 morphology, cytology and taxonomy of fungi with study of representatives of fungi; prerequisite: 2/110 or equivalent.

2/112 Plant Physiology 3 s.h.
Physiology of fungi; growth and morphological investigations; prerequisites: 2 lectures and two laboratory periods per week; one lecture and one laboratory period per week; prerequisite: 2/110 or equivalent.

2/111 Plant Physiology 3 s.h.
Lecture and laboratory; experimental study of factors affecting plant growth and development of seed plants. Prerequisites: 2/110 or 2 lectures and two laboratory periods per week; one lecture and one laboratory period per week; prerequisite: 2/110 or equivalent.

2/113 Plant Anatomy 3 s.h.
Lecture and laboratory; experimental study of vascular systems, mechanical growth and development of seed plants. Prerequisites: 2/110 or 2 lectures and two laboratory periods per week; one lecture and one laboratory period per week; prerequisite: 2/110 or equivalent.

2/114 Ultrastuctural Plant Cytology 3 s.h.
Lecture and laboratory work on the cells and cell wall of higher eukaryotes with emphasis on the relationships of their components to their functions; inclusion of cell wall compo-
nents, the ultrastructure of the wall and wall culture, and effects of wall modification; prerequisites: 2/110 or equivalent.

2/115 Botanical Micronotography 3 s.h.
Special procedures, preparation of permanent microscopes slides; student use of mechanical and electrical microscopes; preparation of plant material, standard cytoplasmic techniques; necessary for research in various fields of biology; prerequisites: 2/110 or equivalent.

2/120 Botanical Microscopic Microscopy 3 s.h.
Methods and student use of light microscope, including use of student microscope slides; field and student use of light microscope; prerequisite: 2/110 or equivalent.
2117 Experimental Techniques 2 h.
Lecture and laboratory work with alkali, sampling, colorimetry, spectrophotometry, chromatography and selected chemical analyses: procedures, concept of solution equilibrium, ionic interaction and complex formation.

2118 Experimental Techniques 2 h.
Calibration of 1,15, but may be taken as an independent study, chemical analysis, enzyme studies and measurement of photosynthesis and respiration.

2130 Paleobotany 3 h.
Large, trace, and pollen spore plant; field laboratory study of pollen-bearing deposits, application to vegetation, broadsheet, potential and archaeological problems. paralleled a course in geology, biology or botany; same as 1212.

2131 Biology of the Lunar Flora 4 h.
Comparative study of the taxonomy, morphology, physiology and ecology of Physopora (lower fungi) and water molds; paralleled 2 h. or equivalent.

2134 Honors in Botany gr. or cr.
Both seniors; paralleled senior standing and grade-point average 3.5 or over.

2191 Evolution 4 h.
Nature of evolutionary mechanisms, their genetic bases and their expression in terms of adaptation and distribution of plants and animals, lecture, discussion, reading; prerequisite: 353 or 211 or equivalent; same as 711.

2194 Microbiology 4 h.
Basic principles as they relate to adaptations of organisms to environments, organization and differentiation of populations, and structure and function of massive: prerequisite or introductory course in biology, science or botany; same as 2512.

2197 Medical Botany 4 h.
Basic techniques used in study of fungi which are pathogenic for man, regulations limited and on consent of the instructor; same as Microbiology 540.

2197 Plant Physiology gr. or cr.
Research, conferences, and written reports on phases of plant science of personal interest in students; paralleled in various other fields of study.

2198 Genetics of Cell Organelles gr. or cr.
Lecture and laboratory on functions and molecular genetics of cell; prerequisites: 2111 or instructor approval. 2 h. or equivalent.

2199 Plant Pathology 4 h.
Behavior of fungi and other organisms as parasites in the environment, and the role of host-parasite interaction in plant disease. 2 h. or equivalent.

2210 Special Topics gr. or cr.
Readings, conferences, and written reports on phases of plant science of personal interest in students; paralleled in various other fields of study.

2210 Genetics of Cell Organelles gr. or cr.
Lecture and laboratory on functions and molecular genetics of cell; prerequisites: 2111 or instructor approval. 2 h. or equivalent.

2211 Seminar: Genetics 3 h.
Lecture, conferences, and written reports on selected topics in genetics; specific topics will be selected each year, course may be repeated for credit; prerequisite: 210 or 212 or 310 or consent of the instructor; same as Zoology 2211.

2214 Seminar: Plant Physiology 3 h.
Delineation of the developmental status of cell and tissue differentiation, developmental anatomy and experimental morphology of plants: prerequisite: 2111 or 2114 or equivalent.

2231 Seminar: Land Use Ecology 3 h.
Two-year cycle of lectures and laboratory work on classes of forest as preparation for teaching and research, prerequisite: 210 or consent of instructor.

2232 Advanced Plant Physiology gr. or cr.
Behavior and physiological plant reading and reference; prerequisites: 210 or 211 or equivalent and one year of college chemistry or physics.

2241 Seminar: Ecology 3 h.
Procedural seminar with lectures, discussions and literature review on selected topics in ecology, offered in alternate years; may be repeated for credit.

2255 Seminar: Environmental Science 3 h.
Lectures and laboratory intended for advanced graduate students with definite plan to use techniques of electronic microscopy in their research, theoretical and practical aspects of tissue preparation, thin sectioning, histochemistry, autoradiography, negative staining and densitometry of plant material; requirements, maintenance of electron microscope, enrollment limited; prerequisites: 2111 and consent of instructor.

2317 Presentation: Plant Physiology 3 h.
Readings and discussions of current American and foreign research literature, monographs and professional texts; prerequisite: 2309 or 2310 and consent of instructor.

2421 Seminar: Botany gr. or cr.
Research projects for one hour of credit for credit for better graduation open to senior majors in botany and graduate students in other departments.

2526 Research in Botany gr. or cr.

Chemistry

Department Chair: F. James D. Duke
Degrees offered: B.S., B.A., B.S. or B.A., M.S., Ph.D.

Chemistry is a basic science involving the study of substances and the changes they may undergo. Whether there is a need for scientific methods of analysis and a knowledge of how substances interact, chemistry is a prerequisite.

There are career opportunities for chemists in education, government and industry; opportunities are most numerous in work on environmental and health problems.

A chemistry major with a Bachelor of Science or Arts degree and the required education courses may teach at the high school level. State laboratories and agencies are employing many chemists.

In industry, the chemist with a bachelor's degree may find employment in routine laboratory work, assisting on a research team in new product development, marketing, sales, plant management or some other area on the business side.

The student preparing for a professional career in chemistry research or college-level teaching pursues the bachelor's degree as an introduction to advanced degree work in chemistry.

The bachelor's degree in chemistry also provides a good background for advanced study in such fields as biochemistry, botany, microbiology, zoology, pharmacology, physiology, medicine, medical chemistry, metallurgy, geology, geochemistry, and chemical engineering.

The undergraduate program in chemistry at Iowa is intended to provide a balanced coverage. Students are prepared for careers in industry, and are given a basic science education for related fields such as biology, botany, microbiology, pharmacy, medical chemistry, medicine, pharmacology, zoology, physiology, oceanography and geology.

The Department of Chemistry offers a one-year program for students who are not going to major in a science area. Originally developed for students in nursing, this year of courses in general chemistry and a general chemistry laboratory provides a well-rounded terminal program.

The two-year program in chemistry provides a good background for science majors. This program includes classes designed for background in general and organic chemistry.
Students majoring in chemistry must meet the basic skills and core course requirements for a liberal arts degree, and complete a structured program of chemistry courses. Before the junior year, the student will take from 16 to 18 hours of chemistry courses, and other courses necessary to do advanced work in chemistry. A special undergraduate advisor is available to help students work out their own programs.

The Bachelor of Science Degree
The B.S. curriculum in chemistry is the professional training program leading to employment in the chemical industry and in government research laboratories. The present and the future demand for B.S. chemists for research, control or process development work is excellent. The B.S. program also provides all of the prerequisites for graduate work in chemistry or biochemistry.

Chemistry Courses

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<tr>
<th>Course ID</th>
<th>Course Title</th>
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<tr>
<td>4/1, 4/1*</td>
<td>Principles of Chemistry</td>
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<tr>
<td>4/6</td>
<td>Elementary Chemistry Laboratory</td>
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<tr>
<td>4/121, 122</td>
<td>Organic Chemistry</td>
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<tr>
<td>4/111, 112</td>
<td>Analytical Chemistry</td>
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<tr>
<td>4/131, 132</td>
<td>Physical Chemistry</td>
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<tr>
<td>4/141, 142</td>
<td>Intermediate Chemistry Laboratory</td>
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<tr>
<td>4/143, 144</td>
<td>Advanced Chemistry Laboratory</td>
</tr>
<tr>
<td>4/160</td>
<td>Advanced Inorganic Chemistry</td>
</tr>
<tr>
<td>4/161</td>
<td>Introductory to Senior Research</td>
</tr>
<tr>
<td>4/162</td>
<td>Senior Research</td>
</tr>
<tr>
<td>4/20</td>
<td>Chemistry Orientation</td>
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</tbody>
</table>

* May be satisfied by examination

Mathematics

Selected courses to include integral calculus.

Physics

Two semesters (either 29:1, 2 or 29:17, 18; 29:17, 18 are recommended)

Foreign Languages

German 13/1, 12, 21, or two semesters of German and two semesters of either French or Russian.

Electives

Advanced science elective courses plus credit earned in senior research must total a minimum of seven semester hours. Advanced science electives may be chosen in the areas of chemistry, mathematics, astronomy, physics, engineering, nuclear sciences, biochemistry, paleobiology, pharmacology, botany, zoology, geology, physiology.

The Bachelor of Arts Degree

The B.A. curriculum in chemistry provides a general education with some concentration in fundamental chemistry but with wider choice of electives. Students electing this program may qualify for high school teaching, provided the required hours of education are included. By choosing the proper electives, students planning to enter medicine, dentistry or some other scientific field may meet the entrance requirements for such professions and also obtain the B.A. degree. Courses required for the Bachelor of Arts degree are:

Chemistry Courses

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<td>Analytical Chemistry</td>
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<td>4/141, 142</td>
<td>Physical Chemistry</td>
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<td>4/160</td>
<td>Intermediate Chemistry Laboratory</td>
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<tr>
<td>4/162</td>
<td>Advanced Chemistry Laboratory</td>
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</tbody>
</table>

* May be satisfied by examination

Mathematics

Selected courses to include integral calculus.

Physics

Two semesters (either 29:1, 2 or 29:17, 18; 29:17, 18 are recommended)

Foreign Languages

A minimum of 12 semester hours in one language which must be chosen from German, French or Russian.

Electives

Advanced courses in chemistry, biology, mathematics, physics or in other scientific areas are recommended.

Teaching Certification

The chemistry courses required for the B.S. or B.A. degrees satisfy the requirements for a major for teaching in secondary schools. Chemistry courses through organic chemistry satisfy the requirements for a teaching minor in Chemistry. The requirements for a minor in mathematics may be satisfied by an additional advanced course in mathematics. A minor in physics requires a minimum of 10 additional semester hours in physics. (See College of Education.)

One- and Two-Year Curricula in Chemistry

The following courses are available to students who desire a two-year curriculum in chemistry.

<table>
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<tr>
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<tr>
<td>4/6</td>
<td>Elementary Chemistry Laboratory</td>
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<tr>
<td>4/7, 8</td>
<td>General Chemistry</td>
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<tr>
<td>4/9</td>
<td>General Chemistry Laboratory</td>
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<tr>
<td>4/11</td>
<td>Elementary Quantitative Analysis</td>
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<tr>
<td>4/121, 122</td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td>4/141, 142</td>
<td>Intermediate Chemistry Laboratory</td>
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</tbody>
</table>

Courses 4/1, 4 or 4/5 and 4/6 (or 4/7, 8 and 9) and 4/121, 122, 141 are designed to fulfill a background in general and in organic chemistry. Chemistry 4/7, 8 and 9 are recommended if a one-year curriculum in chemistry is desired.

* May be satisfied by examination
Graduate Study in Chemistry

Admission

The Department of Chemistry requires the completion of a bachelor's degree in chemistry for admission to graduate study in chemistry. Students with a bachelor's degree in engineering, mathematics or physics may also work in chemical physics. The requirements for admission prescribed by the Graduate College must also be fulfilled.

Programs

The Department offers a full program of courses, research and seminars leading to the M.S. and Ph.D. degrees in the areas of analytical, inorganic, organic and physical chemistry and in chemical physics. Students seeking the Ph.D. degree in chemistry are required to demonstrate competence in each of the four areas of chemistry. This can be accomplished by receiving a minimum 2.70 grade-point average in the courses listed below or by examination. Candidates for the M.S. degree are required to obtain minimum grades of C in three of these courses or to meet the requirement by examination.

4:170 Advanced Inorganic Chemistry
4:171 Advanced Analytical Chemistry
4:172 Advanced Organic Chemistry
4:173 Advanced Physical Chemistry

Entering students will be given the opportunity to take examinations to demonstrate competence in the areas listed above. These exams will be given at the beginning of the academic year and will cover material equivalent to that given in the courses listed.

Students with undergraduate majors in chemistry, mathematics or physics may elect chemical physics as a major area of specialization. Programs of study leading to advanced degrees are administered jointly by the departments of Chemistry and Physics. Selected courses in chemistry, mathematics and physics are substituted for the above required courses. Course requirements can be obtained by writing to the chairman, Department of Chemistry.

M.S. with Thesis

A Master of Science degree with thesis is offered in the fields represented above. A program of courses consisting of a minimum of 30 semester hours is required. Eight semester hours of the 30 may be in research. Research work for the master's degree is under the direction of a staff member and is started in the second semester of residence.

M.S. without Thesis

A program of courses consisting of a minimum of 30 semester hours is required for the master's degree without thesis. A student electing this program selects an adviser in his or her major field of interest and fulfills all the requirements stated above with the exception of research work and the thesis.

Ph.D.

A program of study for the Ph.D. degree in the fields previously listed consists of a minimum of 72 semester hours of graduate work. Graduate studies taken for the master's degree constitute part or the 72-hour minimum. The program of study includes the previously specified courses and courses in the major field of interest. The related field may be in chemistry or in some other discipline.

Each candidate for the Ph.D. degree must select a research problem in consultation with his or her research director. The problem must be investigated diligently and carried to a suitable state of completion so that it demonstrates marked capacity and originality in research. A thesis covering the research work is written in the form specified by the Graduate College as evidence of a completed research project.

Examinations

Although research rather than subjective examinations (except in courses) is emphasized, a minimum number of oral examinations are required for the various advanced degrees. The oral examination for the M.S. degree with thesis consists of a defense of the written thesis. A minimum grade-point index of 3.5 is required to admission for the master's examination. The examination for the M.S. degree without thesis covers graduate coursework. The Ph.D. oral comprehensive examination may also serve as the oral examination for the M.S. degree.

An oral comprehensive examination in defense of a prepared research proposition is required for candidacy for the Ph.D. degree. Students who have demonstrated the required competence in the four areas of chemistry and who have maintained a minimum grade-point index of 2.70 are admitted to the oral examination upon presentation and preliminary approval of their research proposal.

Six months after the Ph.D. oral comprehensive examination, another oral examination is given to evaluate the candidate's research progress. A final oral examination is required of all candidates for the Ph.D. degree. The Ph.D. thesis and a manuscript of the written portion of the thesis (written in the correct style for a chemistry journal) must be defended satisfactorily before an examiner appointed by the Department of Chemistry. The Ph.D. examining committee, composed of five members of the graduate faculty, is the final authority in recommending the conferral of the Ph.D.

Languages

The Department of Chemistry does not require a proficiency in foreign languages as a part of the training for an advanced degree. However, students majoring in organic chemistry are required to demonstrate competence in the reading of German.

Teaching

The Department of Chemistry requires all graduate students majoring in chemistry to teach as part of their training for an advanced degree.

P.L.D. in Applied Mathematics

The Department of Chemistry cooperates in interdisciplinary
doctoral programs in Applied Mathematical Sciences. See "Division of Mathematical Sciences."

Facilities
The Department of Chemistry is housed in a five-story building and a new (1962) six-floor annex and auditorium addition. The building contains 22 undergraduate laboratories, 48 graduate research laboratories, six storerooms, three shops and a number of special-purpose instruction rooms. Modern equipment worth over $2 million is available for research.

The Department's excellent library facilities are available to all students. The library contains all standard reference works, textbooks, complete volumes of journals and subscriptions to over 300 current scientific journals.

The University Computer Center is also available to chemistry students. In fact, some advanced courses require the student to use the Center.

Staff professors: Baehringer, Bickel, Burke, Dail, Duke, Gordon, Platz, Pettit, Snell, Stock, Swain, T. Swain, T. 

Courses Primarily for Undergraduates
4.1 Principles of Chemistry I 33 or 4 s.h.
For beginning students who plan to take more than two semesters of chemistry: two lectures and one discussion weekly; engineering students register for four semester hours, which includes one laboratory period each week.

4.2 Principles of Chemistry II 3 s.h.
For beginning students who plan to take more than two semesters of chemistry and who have had a good high school chemistry course: two lectures and one discussion weekly; prerequisite: passing score on a chemistry examination for which an additional three semester hours of total credit will be awarded at a maximum of three semester hours of advanced college placement credit from high school chemistry.

4.3 Elementary Chemistry Laboratory 3 s.h.
One lecture and one laboratory weekly; prerequisite: 4.1, 4.3, 4.4 of 4.2.

4.4 General Chemistry I 4 s.h.
For beginning students who plan to take one or two semesters of chemistry: three lectures and one optional discussion weekly.

4.5 General Chemistry II 4 s.h.
One lecture and one laboratory weekly; prerequisite: 4.3, 4.4 of 4.2.

4.6 Elementary Organic Chemistry 2 s.h.
One lecture and one laboratory weekly; prerequisite: 4.1, 4.3, 4.4, 4.5 of 4.2.

4.7 General Chemistry Laboratory 3 or 4 s.h.
One lecture and one laboratory period weekly; prerequisite: 4.1 or 4.3 of 4.2.

4.11 Elementary Quantitative Analysis 4 s.h.
First of a two-semester sequence; two lectures and two laboratory periods weekly; prerequisite: 4.4.

4.12 Chemistry Laboratory 0 s.h.
Chemistry curricula: methods of study, chemicaln laboratories; fields of chemical specialization, present and future development, required for all majors in chemistry: each semester, one meeting per week as arranged; no prerequisite.

4.13 Development of Ideas in Chemistry 4 s.h.
Development of ideas from biblical and modern chemistry, traced logically, chronologically and from a historical point of view, whence elective for non-chemistry students is recommended weekly; one laboratory weekly.

4.2 Chemistry in Our Lives 3 s.h.
Contemporary issues involving chemistry, particularly relevant to chemical developments after our way of life, three lectures weekly.

4.105 Inorganic Syntheses 2 or 3 s.h.
Preparation of a variety of inorganic compounds; up to laboratory periods weekly; prerequisite: 4.10.

4.106 Introductory Organic Chemistry 3 s.h.
A two-semester course in organic chemistry with emphasis on biochemical reactions modified for high school biology teachers; three lectures weekly.

6.115 Analytical Chemistry I 3 s.h.
A two-semester course in analytical chemistry with emphasis on instrumental methods of analysis; three lectures weekly; for B.S. and B.A. majors in chemistry; prerequisite: 4.13.

6.116 Analytical Chemistry II 3 s.h.
Continuation of 4.115, which is prerequisite.

6.119 Instrumental Methods of Analysis 3 s.h.
Proportions, ultraviolet, spectrofluorometric, polarographic and electrical methods of analysis; two lectures and one or two laboratory weekly; prerequisite: 6.116.

6.131 Organic Chemistry I 3 s.h.
General principles illustrated by preparations and study of typical representatives of aliphatic and aromatic systems; three lectures weekly; prerequisites: 4.4 and 4.5.

6.132 Organic Chemistry II 3 s.h.
Continuation of 4.131, which is prerequisite.

6.133 Introduction to Organic Research 3 to 5 s.h.
Synthesis and purification of organic compounds; methods and techniques of structure determination; two conferences and one to three laboratory periods weekly; prerequisites: 4.132 and 4.142.

6.135 Qualitative Organic Analysis 3 or 4 s.h.
Identification of pure organic compounds and mixtures; two lectures and two laboratory periods weekly; prerequisite: 4.132, 4.133, 4.142.

6.141 Introduction to Polymer Chemistry 3 s.h.
Nature and properties of polymers; structure, properties and preparative methods; three lectures weekly; prerequisite: 6.132, 4.142.

6.138 Elementary Physical Chemistry 3 s.h.
Elements of theoretical chemistry, elementary for premedical students and some physical sciences majors; three lectures weekly; prerequisite: 4.122.

6.139 Physical Chemistry I 3 s.h.
Applications of laws of physics to chemical phenomena; three lectures weekly; prerequisites: Physics 216, Mathematics 222, 267 or 326, 327.

6.142 Physical Chemistry II 3 s.h.
Continuation of 4.131, which is prerequisite.

6.143 Introduction to Symmetry in Quantum Chemistry 3 s.h.
Elementary symmetry arguments applied to quantum chemistry problems; prerequisite: 4.132.

6.144 Intermediate Chemistry Laboratory I 1 s.h.
Preparation, purification, analysis and synthesis of chemical compounds, principally organic compounds; one lecture and two laboratory periods; prerequisite: 4.131.

6.145 Intermediate Chemistry Laboratory II 2 s.h.
Continuation of 4.144, which is prerequisite; one lecture and two laboratory periods; prerequisite: 6.144.

6.150 Advanced Chemistry Laboratory I 2 s.h.
Physical and analytical chemistry; one lecture and two laboratory periods weekly; prerequisites: 4.111 and 4.133.

6.151 Advanced Chemistry Laboratory II 2 s.h.
Continuation of 4.150, which is prerequisite; one lecture and two laboratory periods weekly; prerequisite: 6.150.

6.161 Introduction to Senior Research 1 s.h.
Information received from chemical literature and patents; preparation and analysis of chemical research problems; one meeting weekly, may be repeated once for credit; prerequisite: senior standing in chemistry.

6.182 Senior Research 1 to 4 s.h.
May be repeated for credit; prerequisite: senior standing in chemistry.

6.175 Advanced Inorganic Chemistry 3 s.h.
Advanced topics in inorganic chemistry: three lectures weekly; prerequisite: 4.133.

6.176 Advanced Analytical Chemistry 3 s.h.
Discipline of logical use of modern analytical techniques: three lectures weekly; prerequisite: 4.132, 4.142.

6.178 General Organic Chemistry 2 s.h.
General organic chemistry for advanced students; three lectures weekly, prerequisite: 6.132, 6.142.

6.179 Advanced Physical Chemistry 3 s.h.
Physical chemistry for advanced students; three lectures weekly; prerequisite: 6.132.

6.181 Chemical Pedagogy 3 s.h.
Techniques and practices of presenting chemical principles and theories of self
Coursework for students, one lecture and two laboratory periods; prerequisite: senior standing.

Course Titles for Graduates

4321 Special Topics in Inorganic Chemistry 3 s.h.
Introductory study of the interaction of molecules with exciton-mediated states, one lecture weekly; topics change annually; may be repeated for credit; prequisite: 4320.

4320 Coordination Compounds 3 s.h.
Fundamental theory of coordination chemistry, one lecture weekly; prequisite: 4300.

4322 Introduction to Inorganic Research 2 s.h.
Techniques for inorganic research, including methods and structures determination, one lecture weekly, prequisite 4320.

4324 Physical Methods in Inorganic Chemistry 5 s.h.
Applications of physical methods to problems in inorganic chemistry, emphasis on current development, lecture, two laboratory periods, prequisite: 4320.

4311 Analytical Chemistry and Spectroscopy 3 s.h.
Theory and practice of analytical and quantitative analysis by methods of emission spectroscopy, ultraviolet, visible and infrared spectroscopy, study of methods in solution, spectroscopy and chemical structure, one lecture and one laboratory weekly; prequisite: 4312.

4315 Electron Microscopy 3 s.h.
Theory and practice of electron microscopic methods, structure, applications to organic and inorganic materials, one lecture and four laboratory periods, prequisite: 4312.

4321 Special Topics in Analytical Chemistry 3 s.h.
Topics change annually; may be repeated for credit; three lecture weeks; prequisite: 4320.

4323 Special Topics in Organic Chemistry 3 s.h.
Topics change annually; may be repeated for credit; three lecture weeks; prequisite: 4320.

4324 Physical Organic Chemistry 3 s.h.
Practical, physical-chemical concepts of molecular structure, chemical reaction, and reaction rates applied to organic compounds, three lecture weeks; prequisite: 4322 and 4310.

4325 Methods of Organic Reactions 3 s.h.
Applications of basic mechanistic concepts to organic reactions, three lecture weeks; prequisite: 4322.

4329 Advanced Organic Preparations 3 s.h.
Preparation of pure compounds, one lecture, one laboratory period; prequisite: 4322.

4321 Biochemical Thermodynamics 3 s.h.
Fundamental principles of medicine, thermodynamics, and chemical engineering, one lecture, two laboratory periods; prequisite: 4322.

4322 Biophysical Thermodynamics 3 s.h.
Advanced topics in statistical thermodynamics, one lecture, two laboratory periods; prequisite: 4322.

4324 Quantum Mechanics in Chemistry 3 s.h.
Quantum mechanical principles, time-independent and time-dependent perturbation theory, molecular quantum mechanics, one lecture, one laboratory period; prequisite: 4322.

4325 Quantum Mechanics in Chemistry 3 s.h.
Quantum mechanics of chemical systems, time-independent and time-dependent perturbation theory, one lecture, one laboratory period; prequisite: 4322.

4320 Physical Chemistry 3 s.h.
Continuation of 4323, which is prerequisite; group theory, molecular orbitals, and radiationless transitions in the framework of quantum chemistry, one lecture, one laboratory period; prequisite: 4322.

4326 Biochemistry 3 s.h.
Chemical kinetics and mechanisms of chemical reactions from a molecular viewpoint, one lecture, one laboratory period; prequisite: 4322.

4327 Spectroscopy 3 s.h.
Applications of infrared, ultraviolet, and mass spectroscopy in chemical problems, three lecture weeks; prerequisite: 4322 and 4312, one consent of instructor.

Seminars in Chemistry

4321 Seminar: Analytical Chemistry 0 or 1 s.h.

4322 Seminar: Inorganic Chemistry 0 or 1 s.h.

4323 Seminar: Organic Chemistry 0 or 1 s.h.

4324 Seminar: Physical Chemistry 0 or 1 s.h.

Research in Chemistry

4311 Research: Analytical Chemistry 0 or 1 s.h.

4320 Research: Inorganic Chemistry 0 or 1 s.h.

4320 Research: Organic Chemistry 0 or 1 s.h.

4320 Research: Physical Chemistry 0 or 1 s.h.

Child Behavior and Development

(Institute of Child Behavior and Development)

Acting Director: Howard V. Meredith

Degrees offered: B.A., M.A., Ph.D.

A primary function of the Institute is the training of students for research and teaching careers in the field of child development. In discharging this function the Institute offers programs leading to the B.A. degree in child development, the M.A. degree in preschool education, the M.A. degree in child behavior and the Ph.D. degree in child psychology.

Undergraduate Major

The B.A. program in child development serves a twofold purpose. For students not planning to continue academic training beyond the bachelor's level, it provides a scientifically-oriented liberal arts education focusing on accumulated knowledge regarding infant and child behavior. For students who plan to obtain subsequent graduate training in child psychology and related fields, it provides a scholarly foundation of method and content. Career opportunities are scarce for students at the B.A. level. At the M.A. level there is a variety of employment opportunities, and career opportunities are plentiful for students earning the Ph.D. degree.

Majors in the B.A. program gain experience in working with children in research settings and may elect participium in one of the Institute preschool groups. In the course of meeting the general requirements of the College of Liberal Arts, students satisfy the following curricular specifications:

1. Prerequisites

211 Elementary Psychology 3 s.h.

2211.30 Elementary Functions (or equivalent) 3 s.h.

3. Major courses

291 College Physics 3 s.h.

292 College Physics 3 s.h.

47 General Chemistry I 3 s.h.

48 General Chemistry II 3 s.h.

37.3 Principles of Biology 5 s.h.

37.101 Principles of Human Genetics 3 s.h.

4. Required courses

591 Introduction to Child Psychology 3 s.h.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>592</td>
<td>Laboratory in Child Psychology</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>593</td>
<td>Social Development of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>594</td>
<td>Language Processes in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5154</td>
<td>Sensation and Perception in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>26:104</td>
<td>Introduction to Philosophy of Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 225:120</td>
<td>Probability and Statistics</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:114</td>
<td>Children's Language Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:96</td>
<td>Observation and Participation in the Preschools</td>
<td>2.6 s.h.</td>
</tr>
<tr>
<td>5:100</td>
<td>Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:101</td>
<td>Basic Processes in Children's Learning</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>7P:131</td>
<td>Educational Psychology</td>
<td>3-4 s.h.</td>
</tr>
<tr>
<td>17:19</td>
<td>Principles of Nutrition</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:120</td>
<td>Experimental Psychology I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:121</td>
<td>Experimental Psychology II</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:122</td>
<td>Psychology of Learning</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:123</td>
<td>Motivation</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:125</td>
<td>Perception</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:144</td>
<td>Statistical Inference in Behavioral Science</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>37:101</td>
<td>Principles of Human Genetics</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Graduate Majors**

**M.A. in Preschool Education**

This M.A. program, which normally takes two years to complete, provides information regarding child behavior theory, opportunities for applying this knowledge in a laboratory preschool, practice in teaching children and working with their parents, and experience in preschool administration and supervision of teachers in training. In addition to the requirements listed below, the student must select a minor area of interest in such areas as kindergarten methods, special education, personality development and socialization. The program prepares students for careers as administrators and teachers in institutions concerned with education of preschool-aged children. Career opportunities also exist in social agencies, state departments of education and university academic departments.

**Required courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:201</td>
<td>Methodological Problems in Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>(register for 5:199)</td>
<td></td>
</tr>
<tr>
<td>5:215</td>
<td>Seminar: Child Development Research</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:230</td>
<td>Preschool Education</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:231</td>
<td>Seminar: Curriculum Development in the Preschool</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:234</td>
<td>Advanced Practicum in Preschool Education</td>
<td>1.5 s.h.</td>
</tr>
<tr>
<td>5:301</td>
<td>Research in Child Development</td>
<td>5-7 s.h.</td>
</tr>
<tr>
<td>7E:157</td>
<td>Methods: Early Childhood Education I</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Elective courses (12 semester hours required from those listed below)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:100</td>
<td>Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:154</td>
<td>Sensation and Perception in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>Language Processes in Children (register for 5:199)</td>
<td></td>
</tr>
<tr>
<td>5:218</td>
<td>Social Behavior of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:235</td>
<td>Psychophysiology of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:240</td>
<td>Learning in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:241</td>
<td>Motivational Determinants of Child Behavior</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:429</td>
<td>Visual Psychophysics of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:424</td>
<td>Psychological Learning in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:422</td>
<td>Infant Learning and Perception</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>17:168</td>
<td>Nutrition Work in Children</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Recommendation** for the granting of the M.A. degree in preschool education requires completion of 33 prescribed semester hours of graduate study with a minimum grade-point average of 2.5, preparation of an acceptable thesis and satisfactory performance on a final examination consisting of written and oral parts.

**M.A. in Child Behavior**

This M.A. program provides the student with advanced training in each of several content areas of child psychology and substantial opportunity for participation in research activities. The program, which normally requires two years to complete, is designed to prepare students as junior collaborators in psychological research with children. Graduates are qualified for positions such as laboratory supervisor, research associate and technical or research assistant. They may also be prepared to serve as instructors or conduct graduate courses in child psychology. Students who complete this program with demonstrated ability for further study gain training that is appropriate for pursuit of doctoral work in child psychology.

**Required courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:201</td>
<td>Methodological Problems in Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:215</td>
<td>Seminar: Child Development Research</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:240</td>
<td>Learning in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:301</td>
<td>Research in Child Development</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:143</td>
<td>Introduction to Statistical Methods</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>225:148</td>
<td>Advanced Statistical Methods</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>225:159</td>
<td>Design of Experiments</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>31:232</td>
<td>History and Systems of Psychology</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>31:235</td>
<td>Laboratory Techniques</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>or 22C:100</td>
<td>Introduction to Computer Programming and Planning</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

**Elective courses (nine semester hours required from those listed below)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:218</td>
<td>Social Behavior of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:235</td>
<td>Psychophysiology of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:241</td>
<td>Motivational Determinants of Child Behavior</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:429</td>
<td>Visual Psychophysics of Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:424</td>
<td>Psychological Learning in Children</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>5:422</td>
<td>Infant Learning and Perception</td>
<td>3 s.h.</td>
</tr>
<tr>
<td></td>
<td>Mathematical Models of Child Behavior</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>
5249 Discrimination Learning in Children 3 s.h.
5282 Infant Learning and Perception 3 s.h.

Recommenation for the granting of the M.A. degree in child behavior requires completion of 36 semester hours of graduate study with a minimum grade-point average of 2.5, preparation of an acceptable thesis and satisfactory performance on a final examination consisting of written and oral parts.

Ph.D. in Child Psychology

The Ph.D. program, which normally takes three to four years to complete, involves a major in experimental child psychology and substantial coursework in general experimental psychology in the Department of Psychology. There is no language requirement. Following completion of core courses in research methodology, quantitative methods, philosophy of science and general psychology, the student and his or her advisor jointly plan a program of studies designed to provide specialized training in areas of child psychology of particular interest to the student, including learning and cognition, motivation, memory processes, social development, sensation and perception, and psychophysiology. Emphasis is placed throughout on the normal child. Classroom and library activities are complemented by the In-Service Training Program, through which the student receives individualized research experience participating in faculty projects. Collaborative and independent investigations in addition to the Ph.D. dissertation are encouraged. The training given graduates of this program prepares them to teach and to conduct research oriented toward either basic or applied problems in a wide variety of settings, including college and university academic departments, research units in hospitals and clinics, and government agencies.

Required courses:

5301 Methodological Problems in Child Development 3 s.h.
5219 Seminar: Child Development Research 0 s.h.
5240 Learning in Children 3 s.h.
5241 Motivational Determinants of Child Behavior 3 s.h.
228:148 Advanced Statistics: Methods 4 s.h.
228:159 Design of Experiments 4 s.h.
22M:197 Readings in Mathematics: Calculus I 3 s.h.
26:209 Philosophy of Science 2 s.h.
31:222 Conditioning and Learning 3 s.h.
31:232 History and Systems of Psychology 3 s.h.

One of the following:

22M:197 Readings in Mathematics: Calculus II 3 s.h.
22S:157 Correlation Methods 3 s.h.
31:245 Quantitative Methods in Psychology 3 s.h.

Two of the following:

5211 Social Behavior of Children 3 s.h.
5222 Perceptual Processes in Children 3 s.h.
5235 Psychophysiology of Children 3 s.h.
5243 Verbal Processes in Children 3 s.h.

One of the following:

5244 Mathematical Models of Child Behavior 3 s.h.
5249 Discrimination Learning in Children 3 s.h.

Admission to Ph.D. candidacy requires a minimum grade-point average of 3.0 for all graduate courses taken, completion of an M.A. research thesis or the equivalent, satisfaction of research skill requirements in mathematics and philosophy of science, passing of a comprehensive doctoral examination and presentation of an acceptable prospectus for the Ph.D. dissertation.

Recommenation for the granting of the doctoral degree requires 90 semester hours of graduate credit with a minimum grade-point average of 3.0, completion of all phases of the curricular program selected, preparation of an original research dissertation and satisfactory defense of the dissertation before an Institute faculty-student seminar and a Graduate College examining committee.

Graduate Admission Requirements and Procedures

Applicants to the three graduate programs are evaluated with respect to previous academic record, performance on the verbal and quantitative portions of the Graduate Record Examination and letters of reference. In general, applicants who have maintained less than a 3.0 undergraduate grade-point average (on a 4-point scale) are considered only if other information indicates a strong potential for graduate study. The corresponding requirement is 2.75 for the two M.A. programs.

Graduate students are admitted at the same time to the Graduate College and to the Institute. Application for admission to the Graduate College is made to the Director of Admissions, The University of Iowa, Iowa City 52240. The applicant must submit a formal application and official transcripts of all previous academic work, as well as scores on the Graduate Record Examination Aptitude Test. Application for admission to the Institute is made to the chairman of admissions, Institute of Child Behavior and Development, The University of Iowa, Iowa City 52240. The applicant must submit formal applications to a curricular program, official college transcripts, declaration of purpose in pursuing graduate work and the names of three professors who can write pertinent letters of recommendation.

Prospective applicants may obtain all necessary application forms and information on graduate assistantships and other types of student support by writing the chairman of admissions at the Institute.

Facilities

East Hall, which houses the Institute administrative, faculty and graduate student offices, also contains the Education-Psychology Library, the Institute's own library and shop, facilities, and laboratories for research with infants and children. The University Preschool Laboratories, located four blocks from East Hall and operated by Institute personnel, provide both teaching and research facilities. The annual enrollment exceeds 100 children who constitute a readily accessible population of preschool-aged subjects. The Institute maintains several mobile trailers used for research with school children of all ages to whom access is given through the cooperation of numerous public and private schools in the Iowa City area.

The Institute maintains a well-equipped workshop staffed with skilled personnel to construct and maintain all of its research apparatus. The preschool complex includes numerous laboratory rooms equipped with one-way vision facilities. A wide variety of timing, recording, stimulus production and computational
Courses for Undergraduate Students Only

S211 Introduction to Child Psychology 3 a.h.
Research and theory in child psychology, with emphasis on basic principles of learning and motivation; prerequisite Psychology 211 or equivalent; same as Psychology 311; students earning optional laboratory should register for 592.

S212 Laboratory in Child Psychology 1 a.h.
Demonstration and laboratory research and participation in class experiment with preschool- and primary-age children; same as Psychology 312; should be taken concurrently with or following 592.

S213 Developmental Psychology of Infancy 3 a.h.
Development of perceptual characteristics in infants through experience; prerequisites Psychology 311 or equivalent.

S214 Language Development in Children 3 a.h.
Basic data, theoretical analysis and current controversy concerning nature of language development; prerequisite Psychology 311 or equivalent.

S215 Observation and Participation in the Preschools 2 to 6 a.h.
The University Preschool as laboratory for studying and assessing influence of environment, family difficulties, learning processes and motivations on development of children; open to graduate and undergraduate students with majors other than child development.

S216 Basic Processes in Children's Learning 3 a.h.
Basic processes in learning: principles, methods of studying learning in children, classical and operant conditioning, discrimination learning, concept formation, memory, prerequisite: Psychology 211 or equivalent.

S217 Sensation and Perception in Children 3 a.h.
Research procedures and results; sensory and perceptual processes in children; prerequisite Psych 211 or equivalent.

S218 Readings in Child Psychology 3 a.h.
Graduate students for whom 521-526 and/or 594 would be appropriate may enroll for up to 3 term seminars based on credit 521-526 and/or 594 by registering for this course; prerequisite consent of instructor.

S219 Methodological Problems in Child Development 3 a.h.
Analysis and discussion of scientific method in its application to child psychology; laboratory exercises in analyzing studies in child psychology.

S220 Child Development 1 a.h.
Analysis and critical evaluation of proposed and completed research projects and conferences in child psychology.

S222 Perceptional Processes of Children 3 a.h.
Analysis of research on perceptual development: topics include basic sensory development, pattern, form and distance discrimination, and perceptual constancy; prerequisite: Psych 211 or equivalent and consent of instructor.

S223 Preschool Education 3 a.h.
Principle and procedure, with emphasis on unique aspects of University Preschool Laboratories.

S224 Seminar: Curriculum Development in the Preschool 2 a.h., no enrollment.
Principles of curriculum development; improvement throughout preschool years; prerequisite: Psych 211 or equivalent.

S225 Advanced Practicum in Preschool Education 1 to 6 a.h.
Clinical observation and participation in Preschool Laboratories; prerequisite: consent of instructor.

S226 Psychophysiology of Children 3 a.h.
Psychophysiological correlates of growth and development of child psychology; methods and concepts from studies relating psychological and electrophysiological variables with emphasis on experimental work with monkeys and children; prerequisite consent of instructor.

S227 Learning in Children 3 a.h.
Review and analysis of experimental research on learning processes; emphasis on classical and instrumental conditioning, generalization, discrimination learning, verbal learning, memory; same as Psychology 311.

S228 Intellectual Development of the Child 3 a.h.
Maturational vs. environmental interpretations of child behavior; child research concerned with anxiety, fears, frustration, conflict, innate motivation, boredom; prerequisite: consent of instructor.

S229 Visual Perception in Children 3 a.h.
Analysis and interpretation of research relevant to study of visual processes in children; prerequisite consent of instructor.

S230 Developmental Psychology of Children 3 a.h.
Applications of ecological models to developmental processes in general; emphasis on field and experimental data, opportunity to analyze case histories, requires basic knowledge of statistics and research design.

S231 Biological Aspects of Child Behavior 3 a.h.
Influence of genetic process and related environmental factors on social and personality development; prerequisite: consent of instructor.

S232 Advanced Psychophysiology of Children 3 a.h.
Linear and nonlinear behavior with special emphasis on psychophysiological techniques; same as Psychology 313.

S233 Determination of Intelligence 3 a.h.
Theory and research on acquisition by children of differential responding in classical- as compared with instrumental conditioning and in stimulus, stimulus-related and stimulus- neutral discrimination; includes a preliminary treatment of theory and representative research on generalization of conditioning and extinction; prerequisite: Psych 211 or consent of instructor.

S234 Advanced Practicum in Child Learning 2 a.h.
Theory and research on acquisition by children of differential responding in classical- as compared with instrumental conditioning and in stimulus, stimulus-related and stimulus-neutral discrimination; includes a preliminary treatment of theory and representative research on generalization of conditioning and extinction; prerequisite: Psych 211 or consent of instructor.
Classics

Department Chairman: Roger A. Hornby
Degree offered: B.A., M.A., Ph.D.

Undergraduate Program

In its broadest sense, classics is the study of the ancient languages, literature, and cultures of the area surrounding the Mediterranean basin from approximately 2000 B.C. to 450 A.D. It embraces three civilizations: the Minoan-Mycenaean, Greek, and Roman; two languages: Greek and Latin; and a geographical area including Europe, North Africa, Egypt, and the Near East. The aim of the Classics Department is to understand and to interpret the contributions of the ancient world to life in the present. The student of classics is primarily humanistic in that it concentrates upon the aspects of man which have made him a civilized human being. An undergraduate degree in classics not only prepares one for secondary teaching, but serves also as a foundation for law, history, art, philosophy and religion, as well as for advanced work in classics. Some of our recent graduates have become secondary and university teachers; others have gone on to become lawyers, doctors, librarians, museum curators and bankers.

Undergraduate Requirements

Three majors are currently offered by the Department, one of which concentrates on Greek, one on Latin and one which combines the two—Classics.

Major in Greek

Thirty semester hours minimum are required, of which 24 must be in Greek language courses. Ten following or their equivalents are the normal elementary courses and count toward the 24 semester hour minimum:

- 14001 and 14002 Elementary Greek
- 14011 and 14012 Second-Year Greek

The remaining hours are usually filled by third-year Greek, "Homeric and Herodotus," and fourth-year Greek, "Greece and Persia," and "Fifth Century Athens." A student majoring in Greek would also take a course in Greek language, but also knowledge of the major works of Greek literature and something of the history of ancient Greece and the Near East of the seventh through the fifth centuries B.C., who most of the modern notions of political, artistic and social life began.

Major in Latin

Thirty semester hours minimum are required, of which 24 must be in Latin language courses above 200 2015, and which include 201 201 Latin Elementary Latin Composition or a part equivalent. For most undergraduates, the concentration will be on the era of the late last century of the republic and the first century of the Roman empire, roughly the period from 133 B.C. to 64 A.D. when Rome finished its hegemony over the Mediterranean basin and laid the foundations for law and the republican form of government which have persisted into the modern world.

Major in Classics (Greek and Latin)

Thirty-six semester hours are required, 24 in one language and 12 in the other. The course requirements for the major in Greek are the same as those indicated for Greek or Latin. For the minor in Greek the student needs at least two reading courses of six semester hours each and three hours of composition. The classics major combines, in effect, the programs of the other two majors, and is primarily designed for those who intend to go on to graduate work in classics.

Undergraduates in Greek, Latin or Classics are excused from four semester hours of the literature core requirement but must complete 11001. (For the general requirements of the College of Liberal Arts, see "College of Liberal Arts." For the requirements of the Iowa Teacher's Certificates, see "College of Education.""

Honors

For exceptional students, two courses are offered in Honors Reading, one each semester of the senior year, for three semester hours of credit each semester. These credits are not in addition to the 30 (or 36) semester hours required of majors in the Department. The readings and discussions are on either an ancient author, or a field in ancient history or literature chosen by the student and the instructor. During the first semester the student presents an essay every other week; at the end of the second semester the student presents a long paper which is examined by at least three members of the Department. There are no admission requirements for any degree program offered by the Department.

Graduate Program

For the general requirements of the Graduate College, including the comprehensive examinations, see "Graduate College." Graduate students in classics may include in their program no more than six semester hours of courses numbered 101-160 and six semester hours of courses numbered 161-199.
M.A. in Greek, Latin or Classics

A minimum of 30 semester hours of courses numbered 101 and above is required.

Candidates in Latin who have had no Greek are normally expected to include at least elementary Greek in their programs. In addition, the course 14:201 or 20:201 Proseminar: Introductory to Advanced Study (three semester hours) is required.

Special programs will be arranged for candidates who wish to prepare for teaching the classics in English (general education courses, world literature, etc.).

Ph.D. in Classics

Completion of the degree requires an ability to read and write Greek and Latin, as tested in qualifying examinations; the reading of considerable portions of Greek and Latin literature as outlined on a reading list prepared by the student and his or her advisor and approved by the Department; a tested reading knowledge of German and French; passing three written comprehensive examinations in ancient history, a special field, and Greek or Latin literature, and a two-hour oral examination on Greek or Latin literature, writing and defending a dissertation embodying original research or interpretation of a classical subject.

Required courses are:

- 14:201 or 20:201 Proseminar: Introduction to Advanced Study 3 s.h.
- One of each from the following two areas:
  - Greek Art or Philosophy 3 s.h.
  - Ancient Linguistics or Paleography 3 s.h.
  - Latin Seminar 6 s.h.
- Greek Seminar 6 s.h.

One of the seminars (six semester hours) will normally be taken after the writing of the comprehensive examinations.

Special Facilities

Extensive collections of classical texts and periodicals in the University Library and the Art Library facilitate research in the major areas of the curriculum.

The Department itself has a varied collection of slides on classical subjects and a small library of its own.

Associated with the Department is the Classical Museum, which contains a valuable collection of coins, vases and similar objects from Mycenae, Pompellum and Heracleum.

The University of Iowa is a supporting institution of the American School of Classical Studies at Athens and the American Academy in Rome, thereby making the facilities of those schools available to its faculty and graduates.

The University of Iowa is also a contributing member of an international group which is sponsoring the uncovering of and publication of information about the ancient monasteries of Tunisia. Annually a team from The University of Iowa goes to Tunisia to work on this project.

The Faculty

Members of the Classics Department faculty are regular contributors to the leading classical and archeological periodicals and are authors of many books interpreting the ancient world. They are recognized nationally and internationally and reflect the diverse possibilities which exist in the field of classics for the study of literature, history, or ancient art and archeology.

Staff, professors Goldstein, Horowitz, professor emeritus Nybakken; associate professors Alexander, Hollerman; assistant professors Bush, Flickinger, Gardner, Jackson.

Greek

Courses for Undergraduates Only

Students wishing to satisfy the R.A. foreign language requirement by studying Greek should take the following sequence of courses: 14:1, 2, 14:2, 14:3.

14:1 Elementary Greek 4 s.h.
- Fundamentals of Ancient Greek and basic concepts of Greek civilization; one meeting per week.

14:2 Elementary Greek 4 s.h.
- Continuation of 14:1; selections from Greek authors are read.

14:3 New Testament in Greek 2 s.h.
- Rapid reading of selections from the Gospels, may be taken with or after 14:2.

14:4 Second-Year Greek 3 s.h.
- Reading of selected texts in Greek prose and poetry; prerequisites: 14:2 or equivalent.

14:5 Second-Year Greek 3 s.h.
- Continuation of 14:1, which is prerequisite.

Courses for Undergraduates and Graduate students

14:121 Homer and Herodotus 3 s.h.
- For third-year Greek students, selections from Homer’s “Iliad” and Odyssey and from Herodotus’ “Histories” and “Persian Wars” in Greek; complete works read in English.

14:122 Homer and Herodotus II 3 s.h.
- Continuation of 14:121, which is prerequisite.

14:161 Greek and Persia 2 s.h.
- For students in fourth-year Greek; covers leading to Persian war, place of the Persians in Greek society, the Persians in Greek art, Anacharsis’ “Persian” tour and selections from Herodotus’ “Histories” read in Greek, supplementary readings in English.

14:175-177 Fifth-Century Athens 3 s.h.
- Continuation of 14:161, which is prerequisite; changing intellectual climate of late fifth century; a selection of ideas and institutions of Athenian democracy; selections from Thucydides, Sophocles’ “Oresteia,” Aristophanes’ “Lysistrata” and fragments of the tragedians, read in Greek; supplementary readings in English.

14:171 Greek Elementary Composition 3 s.h.
- Reviews of vocabulary and syntax. Greek sentence structure and composition of short passages in Greek.

14:172 Advanced Greek Composition 3 s.h.
- Prerequisite in written language. Greek prose with style of Lucian and Demosthenes as models.

14:189 Homeric Greek Historical Texts 3 s.h.
- Readings in Politics and Manchac.

14:191, 14:192 Honors Reading 3 s.h.
- Supervision of special author or topic leading to several short papers in first semester, a long paper in second semester; both courses required for Honors Reading.

14:198 Private Tutorial 1 to 3 s.h.
- For Classics majors who have completed four years of Greek or equivalent.

14:199 Private Assignments 1 to 3 s.h.
- For individual study, for advanced students who are not majors in the Department; may be repeated.

Courses for Graduate Students

14:201 Proseminar Introduction to Advanced Study 3 s.h.
- Advanced methods and discipline bibliography, ancient criticism, paleography, history of classical scholarship; required of all graduate students.

14:205 Advanced Reading 2, 3 s.h.
- Open only to graduate students in the Department.

14:209 Indo-European Philology 3 s.h.
- Exampaline of comparative method as applied specifically to Greek and Latin, and study of phonological and morphological laws, some 20:203
Comparative Literature

Program Chairman: Alan F. Nagel
Degrees offered: B.A., M.A., Ph.D.

The purpose of the Comparative Literature Program is to present literature as an interdisciplinary and international study and to provide a basis for intensive work in literature, literary theory and critical method. The Program does not offer an undergraduate major; undergraduates interested in comparative studies are encouraged to investigate the major in Letters, which is closely coordinated with Comparative Literature.

Admission
Interested students who meet the requirements for admission to graduate study in the University should consult Professor Alan F. Nagel, chairman of the committee. Formal application is made to the University Office of Admissions.

Master of Arts Degree
The optional degree of Master of Arts in comparative literature may be granted to a student in the Program when he or she has completed 45 semester hours of graduate coursework, at least 24 of them in The University of Iowa, with a grade-point average of 3.25 or better and in accordance with a plan of study approved by the Comparative Literature examining committee, and when he or she has passed the qualifying examinations for the Ph.D. in comparative literature and has been admitted to the doctoral program.

Doctor of Philosophy Degree
A student seeking a doctorate in comparative literature will study one literature in depth for a major professional concentration and, for a minor, choose a limited area of specialization in two other literatures. A third portion of the program is devoted to comparative study which brings the major and minor into one focus. A total of 90 semester hours (including any work done for the M.A. degree) is required.

Languages
A study of literature across linguistic boundaries requires special training in languages. Accordingly, a thorough knowledge of at least two foreign languages is essential to the literary curriculum. Entering students should have advanced knowledge of one foreign language (approximately three years of college work or the equivalent). They are expected to be able to communicate in this language, in all its forms, within two years after admission to the program. A high degree of competence should also be developed in using and analyzing texts in the second foreign language. Some reading skill must be demonstrated in a third foreign language.

Doctoral candidates ordinarily offer courses in Old English, Old or Middle High German, Old Norse, Old French, Old Spanish, etc., or in a classical language and literature. They may, if appropriate, choose a literary course in a fourth modern foreign language if they wish.

Course of Study
The major should comprise about half of the student’s program. Majors are offered in Classics, English, French, German, Italian and Spanish. Courses should range over the entire history of that literature and should also involve a close study of the most important literary genres. The minor, requiring the study of at least two additional literatures, permits several choices: a student
may elect to study a segment of literary history, an aspect of Classical literature, a Medieval literature, a genre (e.g., novel, socialist realism, or modernism), or a critical theory. Students and seminars are available in English, French, German, Italian, Russian, and Spanish, as well as in Latin and Greek.

Comparative study consists of work in comparative literature courses and seminars. A reasonable knowledge of literary traditions and an understanding of the comparative method in scholarship and criticism should be obtained in these courses. Although the student's training in comparative literature involves an understanding of the European tradition as a whole, it is expected that he or she will apply the comparative method within his or her area of concentration (e.g., French, English or German novel, or the eighteenth century or Roman Catholicism). Particular programs for each student will be worked out with faculty advisors.

Examinations
By the end of his or her first year of graduate work, the student should be qualified as a candidate for the doctorate. Qualification consists of an examination or essay composed in the foreign language of the student's choice on a literary work written in that language and an oral discussion (also in the foreign language) of the work in question; and an oral examination designed to test the student's grasp of comparative critical principles and likelihood of success in further work within the comparative discipline.

At the end of the student's regular course of study he or she will take a comprehensive examination consisting of a written and an oral part. The oral examination is devoted partly to further elaboration of questions asked in the written exam. In addition, the student will be given two weeks' time to outline his or her projected dissertation and compile a bibliography for it. He or she will, at the end of this period, defend his or her project before the Program committee.

Dissertation
The candidate's dissertation should demonstrate his or her ability to write a substantial piece of scholarly criticism or scholarship and his or her proficiency in the designated foreign language. A reasonable knowledge of another foreign language is highly desirable. Students may present their work in any foreign language.

Students and seminars are available in English, French, German, Italian, Russian, and Spanish, as well as in Latin and Greek.

Courses
Students in comparative literature are expected to concentrate their studies primarily in departmental courses in the literatures of their choice and should show evidence of considerable work in foreign literature taken in the original. In addition, students and seminars listed below unify studies in several literatures.

Upper Division
46:103 European Renaissance
3 s.h.

46:106 European literature of the 17th Century
3 s.h.

46:108 European literature of the 18th Century
3 s.h.

46:110 European literature of the 19th Century
3 s.h.

46:112 Theory and Technique of Oral Literature
3 s.h.

46:113 Literary Genres in European Literature
3 s.h.

46:115 Theory and Methodology of Oral Literature
3 s.h.

46:116 Theory and Technique of Oral Literature
3 s.h.

46:117 Study of literature on the basis of oral composition in ancient, medieval, and modern world
3 s.h.

46:119 Individual Study
3 s.h.

Primarily for Graduates
46:204 Romance and Italian Literature
3 s.h.

46:205 German literature and literary criticism
3 s.h.

46:211 Intellectual Backgrounds of Literary Periods
3 s.h.

46:212 History of European literature
3 s.h.

46:213 History of European literature
3 s.h.

46:214 Literary Genres and Styles in European Literature
3 s.h.

46:215 Patterns of Style and Literary Forms
3 s.h.

46:216 Theory and Methodology of Oral Literature
3 s.h.

46:218 Comparative studies involving at least two bodies of myth and epic literature on individuals and societies
3 s.h.

46:220 Workshop courses designed to study principal notions and qualities of the canon
3 s.h.

46:226 Recent European and American criticism
3 s.h.

46:228 Seminar in Comparative Literature
3 s.h.

46:229 Seminar in Comparative Literature
3 s.h.

46:230 Seminar in Comparative Literature
3 s.h.

46:231 Seminar in Comparative Literature
3 s.h.

46:232 Seminar in Comparative Literature
3 s.h.

46:233 Seminar in Comparative Literature
3 s.h.
Dental Hygiene

Computer Science
See "Mathematical Sciences"

Dental Hygiene

Department Chairman: Pauline Bresnahan
Degree offered: B.S., M.S.

Undergraduate Program

The dental hygiene program at Iowa State University is designed to integrate related subjects to provide sequential, laboratory and clinical experiences. For example, content traditionally presented as separate courses in oral prophylaxis technique, head, neck, and dental anatomy, and dental materials are combined into a related junior core of learning. Additional coursework taken during the junior year is therapeutic, microbiology, radiology and periodontology.

During the senior year, students advance clinical skills in the comprehensive dental clinic. They perform clinical services working as members of dental teams. A dental office "practice is simulated to provide a more realistic learning environment, not only for the hygiene student in performing clinical skills but for both the hygiene and dental student in realizing the potential value of the dental team approach. Such clinical involvement enables the dental hygiene student to participate more effectively as a member of the dental team. Weekly lectures and seminars are scheduled to re-enforce clinical learning.

Senior students not participating in the clinical dental hygiene core are enrolled in a community dental health core. Courses traditionally taught as isolated subject-oriented units, such as dental health education, public health and audiovisual media, are incorporated into an integrative core of learning. Learning emphasis is on the relationship between the underlying theory and practical application of community dental health. Weekly field experiences enable students to apply knowledge of human behavior, basic principles of communication skills, theories of learning and methods of teaching to community dental health activities.

Special Programs

The College of Dentistry is conducting a five-year experimental program in dental hygiene which will extend through the 1975-76 academic year. The study is designed to test the feasibility of teaching expanded duties in dental hygiene, operative dentistry and periodontology. Twelve students are selected from each junior class to enter the program.

Admission Requirements

Eligibility for admission to the professional program requires at least 60 semester hours of college coursework and a minimum 2.25 cumulative grade-point average (2.4 for a transfer student). To fulfill the 80 semester hours of college coursework the student must satisfy general education requirements of the College of Liberal Arts and complete the following dental hygiene prerequisites:

- five semester hours (eight for transfer students) of zoology or general biology;
- four semester hours of inorganic chemistry;
- four semester hours of organic chemistry (course to include: biochemistry);
- four semester hours of microbiology;
- three semester hours of nutrition;
- four semester hours of psychology; and
- four semester hours of sociology.

The dental hygiene major is completed as upper division credit. Students who have completed an associate degree program in
Dental Hygiene

Graduate Program

The University of Iowa College of Dentistry’s graduate program in dental hygiene was developed in response to the fast-growing demand for qualified educators in dental hygiene. It is one of four established dental hygiene graduate programs in the nation.

With increasing pressure from the public generally and dentistry particularly for the recruitment of undergraduate students in dental hygiene and with national increase in number of dental hygiene programs, opportunities for qualified dental hygiene educators are innumerable.

Although a majority of the students who complete the master’s degree program at Iowa enter the teaching or administrative area of dental hygiene education, others have pursued related areas of interest, including public health service and doctoral studies.

The curriculum is designed to enable the graduate to formulate educational policies, objectives and curricula and to plan, supervise and evaluate learning activities; understand the principles of curriculum development, select and apply a variety of methods to achieve particular educational aims, facilitate the supervision of students and collaboration of faculty personnel and understand and apply group learning processes; understand the role and operation of graduate institution effectiveness and educational accomplishments and involve others in productive decision-making processes; and interpret and apply research findings and conduct and report original research.

Two full semesters and a summer session are required to complete the program. In addition to professional courses in the College of Dentistry, the program includes supplementary courses in the colleges of Liberal Arts, Medicine and Education. Approximately one-third of the courses are in education, one-third in dental hygiene and one-third in elective subjects.

Courses in education include tests and measurements, statistics, problems in college teaching and administration in higher education. Courses in dental hygiene include preparation, application and evaluation in teaching clinical dental hygiene; analysis of current research in the development of motor coordination and manual skills; changing concepts in dental hygiene education and administration; and an original research project on either a biological or educational nature.

The program’s flexibility permits the student to pursue a minor in an area of particular interest. Electives may be taken in nutrition, speech pathology, sociology, or in the biological or medical sciences.

Special Programs

United States Public Health Service traineeships are available to qualified applicants enrolled in the Dental Hygiene graduate program at Iowa. Traineeships cover the initial cost of transportation to the University, the university, a yearly tax-exempt stipend and a dependency allowance.

If the recipient is unable to complete the required 38 semester hours in two semesters and a summer session, the traineeship may be extended. A prospective traineeship recipient must be admitted to The University of Iowa Graduate College and the Dental Hygiene graduate program before applying for a traineeship.

Admission Requirements

To be admitted for study toward the Master of Science degree in dental hygiene at The University of Iowa, in accordance with the general admission requirements of The University of Iowa Graduate College, the applicant must have:

• a bachelor’s degree from an accredited college or university, with content equivalent to that required at Iowa;

• a 2.5 minimum grade-point average (4 = A) for all previous college work;

• previous practical experience in some aspect of dental hygiene; and

• satisfactory performance levels on the Aptitude Test of the Graduate Record Examination (GRE).

Staff: associate professor Brine; assistant professors Buchanan, Sisty, William; instructors Burns, Mescher, Schwind, Taylor

Courses for Undergraduates

59/101 Dental Hygiene Core I

59/101 Dental Hygiene Core II

59/102 Clinical Dental Hygiene

59/103 Community Dental Health

59/104 Geriatric Dental Hygiene

59/105 Pediatric Dental Hygiene

59/111 Independent Study
Courses for Graduates

59:201 Directed Teaching Experience or arr.
Application of learning theories in writing of dental hygiene; students share responsibility with faculty in preparation of educational objectives, didactic materials and test items for a selected course. Prerequisites: satisfactory completion of course in dental hygiene; writing proficiency for graduate students in courses experience in lecture, laboratory, and clinical assignments.

59:202 Directed Teaching Experience or arr.
Consultation with faculty; students encouraged to select a concentration different from their last assignment of teaching experience.

59:203 Research/Dental Hygiene
Application of research methodology through development of an original research project.

59:203 Practicum I 3 s.h.
Introduction to clinical aspects in dental and dental hygiene education; practicums include observation of current situations and diversity of programs in dental hygiene specialties in relation to current trends, type of program and institutional affiliations, and student selection criteria.

59:204 Practicum II 2 s.h.
Curriculum design applied to organization, development and evaluation of curricula in dental hygiene education. In addition to elements of traditional curriculums, content includes methods and practices of teaching for programs in dental hygiene.

East Asian Languages and Literatures
Department Chairman: Hue-Ling Nieh
Degrees offered: B.A. in Chinese or Japanese, M.A. in Chinese

Undergraduate Programs
The Department offers training in spoken and written Chinese and Japanese languages, and instruction in the classical and modern periods of literature in both languages. Some courses are offered in literature in translation. The Department also contributes to the training of students in other fields requiring a knowledge of Chinese or Japanese.

The student completing a major may expect to acquire sufficient knowledge of Chinese or Japanese languages to prepare him or her for graduate study or work in other disciplines demanding a knowledge of those languages.

Undergraduate majors are expected to complete a program of 30 semester hours in Chinese or Japanese languages, literature, civilization and an external concentration. The latter enables the student to achieve a certain degree of concentration in an established discipline, enhancing both his or her intellectual development and vocational preparation. Some students take advantage of the external concentration to work out a double major program.

Major in Chinese Language and Literature

These are the course requirements for a major in Chinese language and literature:

<table>
<thead>
<tr>
<th>Language</th>
<th>30 s.h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>39:01 Elementary Chinese</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>39:02 Elementary Chinese</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>39:103 Second-Year Chinese</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>39:104 Second-Year Chinese</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

Besides the above courses, two courses from the following are required:

| 39:107 Readings in Modern Chinese | 3 s.h.  |
| 39:108 Readings in Classical Chinese | 3 s.h.  |

| 39:109 Readings in Documentary Chinese | 3 s.h.  |
| 39:114 Study of the Written Character | 3 s.h.  |
| 39:21 Survey of Chinese Literature I | 3 s.h.  |
| 39:142 Survey of Chinese Literature II | 3 s.h.  |
| 39:140 Contemporary Chinese Literature | 3 s.h.  |
| 39:146 Chinese Poetry | 3 s.h.  |
| 39:145 Poetry in Chinese Painting | 3 s.h.  |
| 39:146 Classical Chinese Fiction | 3 s.h.  |
| 39:148 Chinese Drama | 3 s.h.  |
| 39:149 Chinese Theatre | 3 s.h.  |
| 39:151 Modern Chinese Fiction | 3 s.h.  |
| 39:205 Asian Civilization: China | 3 s.h.  |
| 39:159 History of the Chinese Language | 3 s.h.  |
| 39:153 History of China to 1860 | 3 s.h.  |
| 39:154 History of Modern China | 3 s.h.  |
| 39:155 Ethnology of China | 3 s.h.  |
| 39:157 Chinese Calligraphy and Painting | 1 s.h.  |
| 39:158 Chinese Calligraphy and Painting | 1 s.h.  |
| 39:159 Art of China | 3 s.h.  |
| 39:161 Religion in China | 3 s.h.  |
| 39:174 Introduction to Chinese Philosophy | 2-3 s.h. |

External Concentration (Recommended) 6-9 s.h.

Majors are encouraged to take courses in Japanese language and literature, and courses in a cognate sequence excluding those listed above, in one of the following fields: anthropology, art, Greek and Roman classics, economics, education, English, French, geography, German, history, journalism, linguistics, philosophy, political science, religion, Russian, sociology or Spanish.

Major in Japanese Language and Literature

These are the course requirements for a major in Japanese language and literature:

<table>
<thead>
<tr>
<th>Language</th>
<th>30 s.h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>39:201 Elementary Japanese</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>39:102 Elementary Japanese</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>39:103 Second-Year Japanese</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>39:104 Second-Year Japanese</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

Besides the above courses, two courses from the following are required:

| 39:108 Readings in Classical Japanese | 3 s.h.  |
| 39:109 Advanced Readings in Modern Japanese | 3 s.h.  |
| 39:113 Japanese Speech | 3 s.h.  |
| 39:115 Japanese Composition | 1 s.h.  |
| 39:119 Japanese—English Translation | 3 s.h.  |

<table>
<thead>
<tr>
<th>Literature</th>
<th>9 s.h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>39:143 Survey of Classical Japanese Fiction</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:144 Survey of Classical Japanese Poetry</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:145 Survey of Modern Japanese Fiction</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:146 Survey of Modern Japanese Poetry</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:150 Japanese Literature and the West</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:162 Japanese Dramatic Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:151 Classical Japanese Literature</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:156 Asian Civilization</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>39:107 Readings in Modern Chinese</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>
393:138 The Structure of Japanese 3 s.h.
393:153 History of Japan to 1867 A.D. 3 s.h.
393:154 History of Modern Japan 3 s.h.
393:155 Ethnology of Japan 3 s.h.
393:156 Art and Architecture of Japan 3 s.h.
393:179 Japanese Thought 3 s.h.
393:161 Religion in Japan 3 s.h.

External Conversation (Recommended) 6-9 s.h.

Majors are encouraged to take courses in Chinese language and literature, and courses in a cognate sequence excluding those listed above, in one of the following fields: anthropology, art, Greek and Roman classics, economics, education, English, French, geography, German, history, journalism, linguistics, philosophy, political science, religion, Russian, sociology or Spanish.

(For general requirements of the College of Liberal Arts, see "College of Liberal Arts.")

Honor

To become a candidate for Honors in Chinese or Japanese language and literature, the student must be a major in the field, have at least a 3.0 cumulative grade-point average and be recommended for Honors study by his or her advisor.

An Honor's candidate must complete the two-semester sequence 393:191 and 393:192 Undergraduate Honors Tutorial (Chinese) or 393:191 and 393:192 Undergraduate Honors Tutorial (Japanese) during the senior year; enroll in 393:195 Senior Honors Thesis (Chinese) or 393:195 Senior Honors Thesis (Japanese) during the senior year and prepare a thesis on the language or literature in his or her major field, under supervision of an advisor; and maintain at least a 3.0 average for all Honors courses and all coursework taken the senior year. A student who fulfills these requirements will receive the B.A. degree "with Honors."

M.A. Program in Chinese Language and Literature

Graduate study in Chinese Language and Literature is designed to train students either for continuing study on an advanced level or for study leading to the doctorate, or for preparation for high school teaching, government service or a career in business that requires a general knowledge of Chinese language and culture along with a broad regional background. Therefore, two programs leading to the M.A. degree are offered: Program A provides special emphasis in Chinese language, literature and civilization, with a major; Program B is a prescribed curriculum program, without thesis, permitting a student to select courses of study from a wide choice in order to provide the best possible training for the type of work he or she plans to do.

Applicants for graduate study should have completed an undergraduate major in Chinese language and literature, or its equivalent, and taken the Graduate Record Examination: Aptitude Test. Students with deficiencies in their undergraduate major are expected to make up such deficiencies, in addition to carrying the graduate study program, and to spend a longer term of study. Intensive summer institutes of Chinese and Japanese afford a good opportunity for making up deficiencies in those languages.

Mastery of the Chinese language is an essential requirement for the master's degree. Normally students who have had two years of Chinese language instruction in undergraduate courses are expected to fulfill the language requirement by taking Chinese for one additional year.

Program A comprises 30 semester hours of coursework, with the M.A. thesis counting for no more than four hours. The thesis could be a selected piece of original research involving the use of Chinese language material or it could be a piece of annotated translation, accompanied by notes and an interpretative essay, of a significant Chinese work.

Program B, without thesis, comprises 36 semester hours of coursework and would lead to a certificate M.A. degree.

A comprehensive examination is administered during the candidate's last semester of registration, and an oral examination given on the thesis where a thesis is included in the program. All candidates are expected to fulfill the general requirements of the Graduate College.

The following are typical programs of graduate study for the two programs:

Program A (M.A. with thesis)
Advanced Chinese (beyond the first two years) 9 s.h.
Seminar Methods of Sociological Research 9 s.h.
One of the following courses:  3-6 s.h.
Introduction to Chinese Linguistics
History of the Chinese Language
Seminar in Chinese Linguistics
Advanced courses in Chinese literature and civilization
Thesis 8-11 s.h.

Total 30 s.h.

Program B (M.A. without thesis)
Advanced Chinese (beyond the first two years) 9 s.h.
Seminar Methods of Sociological Research 3 s.h.
Advanced courses in Chinese literature and civilization 9-12 s.h.
One of the following courses:  3-6 s.h.
Introduction to Chinese Linguistics
History of the Chinese Language
Seminar in Chinese Linguistics
Additional courses in education, history, philosophy, art, journalism, linguistics, etc., depending upon the student's interest and objective.

Total 36 s.h.

Ph.D. Minor in Chinese

Requirement for a Chinese minor are 12 credits in graduate standing. Transfer students may offer up to six credits in coursework from other institutions; however, under such circumstances, the student may be required to undergo a special examination.

The Oriental Library Collection

The General Collection located in the Main University Library was begun when the Chinese Language and Area Center was first established. The current holding is estimated at Chinese, 20,000 volumes; Japanese, 4,000; Korean, 300. Besides basic reference
Courses Primarily for Graduates

21203 Topics in Chinese Institutional History
21204 Seminar in Chinese History
21205 Seminar in Modern Chinese History
21206 Seminar in Medieval Chinese History
21207 Reading in China
21208 Reading in Modern China
21209 Reading in Medieval China

Study of a major religion of China, same as Religion 32112

Courses of Study (in English)

21203 Buddhist Sacred Texts
21204 Islamic and Buddhist sacred texts in translation; same as Religion 32155
21205 Indian Religious Texts
21206 Brahmanical and Buddhist sacred texts; same as Religion 32177
21207 Philippine Religion and Religious Practice in India both in its history and in modern expression; same as Religion 32153
21208 Painting of the East Asian Art
21209 History of the East Asian and Asian Art

Study of an East Asian art

Oriental Culture

32103 Art of India
32103 Art of India and Cambodia: artistic principles, stylistic development, their role in philosophies and religions

Art and Architecture of Southeast Asia: artistic principles, styles, developments, their role in philosophies and religions
Economics

Economics is the study of how people determine what they will produce, consume, buy and sell. It is also concerned with the coordination of such activities between individuals and groups within and across societies. Economists examine such problems as unemployment, economic growth and development, inflation, the balance of trade and economic welfare.

The University of Iowa offers three undergraduate degrees in economics. One, the Bachelor of Business Administration, is offered through the College of Business Administration and is described in that section of the Catalog. The Bachelor of Arts degree in economics is designed to allow the student maximum flexibility in attaining a well-rounded liberal arts education. The Bachelor of Science degree has more mathematical content and is designed to meet the needs of students considering postgraduate work in economics or related business and technical fields. The Bachelor of Science degree is also recommended for Honors students.

Program for the B.A. Degree

In addition to the general College of Liberal Arts requirements in skills and core courses, including at least two years of a foreign language, these are the requirements for the B.A. major in economics:

- **Courses Outside the Department**
  - 225:23 Elementary Probability and Statistics
  - 225:7 and 225:8 Quantitative Methods I and II

- **Courses in Economics**
  - 20 semester hours of credit in 100-level courses, including 6E:103 or 6E:102 Microeconomics and 6E:103 or 6E:104 Macroeconomics. Most 100-level courses in economics have as prerequisites either 6E:1 and 6E:2 Principles of Economics, or senior standing. 6E:1 and 6E:2 will satisfy the social science core requirement. Credit gained in 6E:106 cannot be counted toward the 20 semester hours of 100-level economics courses required for the B.A. degree.

Program for the B.S. Degree

In addition to the general College of Liberal Arts requirements in skills and core courses, including one year of a foreign language, the B.S. in economics requires these courses and electives:

- **Course Outside the Department**
  - 225:23 and 225:26 Calculus

- **Courses in Economics**
  - 20 semester hours of 100-level economics courses, including 6E:102, 6E:104 and 6E:181. 6E:1 and 6E:2 will satisfy the social science core requirement. Credit earned in 6E:106 cannot be counted toward the 20-hour requirement.

Honor in Economics

The Department of Economics offers an undergraduate degree "with Honors in economics." Students interested in this program should consult the chairman to obtain a prospectus.

Graduate Study

Various programs of graduate study in the Department of Economics are outlined in "Economics" under "College of Business Administration." Staff: professors Crotanian, Krause (Murray Professor), Lloyd, Morgan, Nordquist, Peck, Wu; professor emeritus Olson; associates professors Albrecht, Balch, Barnard, Jeffers, Pogue, Ruffle, Sterbert, Seng, Swanson; associate professors Dent, Joseph, Redisch, Wensink, Williamson.

Courses

See "Economics" listing under the "College of Business Administration."

Education

See "College of Education.”

English

Contact: 1001 Henry Building

Department Chairman: John C. Gerber

Director of Undergraduate Study: Richard C. Jones


The Undergraduate Program

The English Major

The general purpose of the English major is to provide a program of humane learning, principally through the study of language and literature and the discipline of writing. The chief aim of the study of literature is the largest part of the major, is to help the student enlarge his experience and thus to liberate him from the parochial outlook of his own time and place. The study of literature should provide a constantly increasing awareness of form and value in human experience, as shaped by language.

The chief aim of the discipline of writing is to help the student explore the relationship between experience and meaning, as these are structured by language, and to encourage him to define his ideas and his relationships with other human beings as precisely and forcefully as possible.

The chief aim of the study of language is to help the student
la examine historically and scientifically the possibilities and limitations of language.
Because the major is designed to help students see language and literature in the entire symbolic process, it enables him to perceive how man projects his feelings and ideas and values in such media as painting, sculpture, music, dance, film, television, architecture and the theatre, as well as in literature.

In more specific terms, the major should learn to read efficiently a wide variety of literary and non-literary texts—poetry, fiction, drama and non-fiction of several eras and many levels of complexity. He should read to find meaning in his existence rather than to escape from it. He should be able to write lucidly. Ideally he should become powerfully evocative and be able to judge between what is significantly new and what is merely gaudy in writing. He should find writing a pleasure, even though it might also be difficult and demanding, and he should have experimented with a variety of forms. He should buttress this practical experience of writing with work theoretical and practical knowledge of how language works.

In terms of mastering a body of literary knowledge and skill, the major should acquire a critical vocabulary sufficient to call his attention to major problems of reading and to express his understanding of literary texts. He should begin to develop a historical sense about literature and should experience enough older literature to know that contemporary writers exhibit the continuity of culture. He should read substantial amounts of literature of his own time and nation as well as the major older works of his own language. He also should acquire some acquaintance, at least in translation, with the Bible, classical literature, major works in European languages and a variety of materials from other cultures.
The major should be able to discuss literature orally, having learned to fuse his ideas with the ideas of others to fashion insights not previously available to either. He should be able to give a clear account of texts. He should also be able to undertake independent study. Especially he should be able to define problems so that appropriate evidence for solution can be identified.
The only absolute requirement for the major in English is 30 hours of work of instruction set by the Department of English, including at least nine semester hours of work in courses dealing principally with literature written before 1800. Otherwise the student works out a program with his adviser that seems best to meet his special needs and interests. Early in his junior year he is required to take the Professor’s Majors Test. The pamphlet On Designing an English Major gives detailed help in preparing such a plan. In each major is advised to select a broad chronological range in his study of literature, a sampling of several genres and some background material in literatures of other countries, particularly in Biblical and classical literature. He is advised to seek close experience with language by taking courses in linguistics and writing. He is encouraged to take work that will enrich his intellectual and historical background and that will enable him to relate literature to the fine arts and other means by which man intensively forulates his experience.
Finally, students contemplating graduate study in English or teaching as a career are counseled to include courses which will be essentially relevant to their later work. Typically an English major takes about 45 semester hours in English.

English and Education
The Department accepts a major responsibility for training teachers of English at all levels, the elementary school through graduate school. At the undergraduate level this goal is represented in programs for elementary and secondary school teachers as well as general preparation for graduate work. At the master's level several programs are appropriate for the different interests of teachers in secondary schools, two-year colleges and four-year colleges. The Department also participates in the work of the Master of Arts in Teaching program of the College of Education. Although doctoral study is primarily scholarly and creative, the Department requires that all of its Ph.D.'s have supervised experience in teaching and shares with the College of Education the responsibility for training teachers and researchers in English education.

Students planning courses to help them in their first teaching experiences should remember that they will have to be able to work with details of expression in English. They will probably need advanced training in writing—nonfiction, poetry and fiction are all important—or rhetoric or linguistics or all of these. Their literary study should emphasize a range of close reading experiences in different kinds of literature as well as the methods for exploring a literary text. Especially, they should remember the importance of a broad educational experience for their own future and study as a basis for understanding the interests of their students. Finally, those undertaking a career in teaching should remember that an undergraduate degree represents minimal training for good teachers, so they should plan a program which will permit graduate study at a later time.

English majors who are working for teacher certification must devote one semester of the year to professional training apart from coursework in the English Department. The Department also participates in a joint major in English and elementary education. Advisers for this program are specialists in elementary education who can advise students about appropriate and permissible changes in English requirements. Students who cannot find one complete the English major as well as the core in elementary education may concentrate in English by choosing at least 20 semester hours of work in English from the list of courses required in the major. Although students majoring in English are excused from the literature core courses, students submitting a concentration must take them.

Students who are seeking certification for secondary teaching in fields other than English may seek minor certification in English. Such certification is appropriate for students majoring in speech or journalism. Such a student must complete 20 semester hours of English electives in addition to core courses in rhetoric, speech or writing. The program must include a course in each of these areas: advanced composition, Shakespeare, American literature and British literature of the nineteenth or twentieth centuries. In addition to the 20 semester hours of English, the student is required to take Methods of Teaching, High School English in the College of Education. While this program meets minimum requirements for certification, the Department believes that someone desiring to teach English should have considerably more training in the field.
The Citation for Excellence in Creative Writing

The Citation for Excellence in Creative Writing is added to the regular English major to encourage some students to improve as poets or fiction writers. It is open to any major who is admitted to the Undergraduate Workshop.

Any major may include to his program credit for up to four semester hours in 8:81 Fiction Writing and four semester hours in 8:82 Poetry Writing, but only students who are admitted on a competitive basis to the Undergraduate Poetry or Fiction Workshops (8:83 and 8:86) may be considered for citations. Students in these workshops, if they wish the citation, must submit a collection of poems or stories to the Undergraduate Creative Writing committee at least six weeks before the end of their final semester. Otherwise, their programs follow the same patterns and procedures as those taken by the regular majors.

The English Major with Honors

This major has the same general purposes as the regular major. In addition, it provides an opportunity for especially talented students to work independently and to graduate with special distinction.

The program for Honors majors permits considerable substitution of advanced work for the more elementary courses, requires registration in a special honors seminar and requires the writing of an undergraduate thesis. Each student works out his program with his advisor. Since almost all Honors candidates continue on for graduate work, many of the programs have a pregraduate school cast to them.

The Literature Seminars

One course deals with a generous selection of masterpieces of English literature from Chaucer to 1900; another concentrates on American literature and British literature since 1900. Students register for 12 hours of credit in the one semester. In this way they read as much as would be contained in four ordinary courses. Classes meet for two hours a day five days a week. Three professors attend all sessions, and the instruction is divided equally among them. Since all works are discussed and compared within and across the conventional historical divisions, the students undergo an intensive discipline in practical criticism. They write a paper a week, practice oral reading and productions of scenes from plays and often write parodies, imitations and other exercises as means of increasing their sensitivity to literary styles.

Some of the educational advantages of these "seminars" are: the usual fragmentation of material is replaced, through comparisons, by integration; historical, critical and creative considerations illuminate one another; learning becomes a cooperative venture; and students benefit from the plurality of intellectual approaches and from intellectual engagement with one another.

Graduate Programs

The aims of the masters' programs are much the same as those for the undergraduate programs, except that they are more demanding and professional. For those who want such training, the Department undertakes to prepare students in its masters' program for teaching English in high schools and community colleges. For those wishing to continue as candidates for the Ph.D., it undertakes to provide the necessary breadth of background for such study.

The purpose of the Ph.D. program is almost totally professional. Since almost all of those who have finished the program have become college and university teachers, the Department's clear obligation is to train Ph.D. candidates for teaching, publication and service which will be required of them as faculty members in other departments of English. While here they are regarded by the faculty as junior colleagues in varying stages of progress toward entering the profession full time.

Master of Arts

Requirements for the Master of Arts are 30 semester hours, at least 24 of which must be earned in residence; one departmental seminar with a grade of B or A; and satisfactory performance in a four-hour written examination over a reading list. Candidates for the Ph.D. may receive the M.A. degree by completion of foreign language requirements for the Ph.D., admission to candidacy for the Ph.D., completion of 45 semester hours with a grade-point average no lower than 3.25, and satisfactory performance on an examination.

Master of Arts and Specialist in Education

This is a two-year, 60-hour program for those wishing to prepare themselves for teaching in community colleges. It was planned in consultation with teachers and administrators of several community colleges and with the College of Education; content is maintained with these advisors. The program includes five hours of work in linguistics, 15 hours in literature, six hours in advanced writing, and 24 hours in professional courses taught by specialists in English and in education. One semester of the four is spent as an intern in a community college, such as Drake (Moline), Forest Park (St. Louis), Kirkwood (Cedar Rapids) and Muscatine.

Master of Fine Arts

The requirements for this degree are flexible, but they ordinarilY include 48 semester hours of work, chiefly in the Writers Workshop; a book-length collection of poems or short stories, a novel, a play or a work in some other appropriate form; and an examination on modern literature in the form which the student himself is employing.

Doctor of Philosophy

Requirements include formal admission to candidacy by a vote of the Department; a high level of competence in two foreign languages and their literatures; a comprehensive examination (written and oral) covering two historical periods of English and/or American literature and one special subject; distributed coursework in three other historical areas; three seminars; coursework in linguistics and the history of criticism; a dissertation which may be either a scholarly study or a piece of imaginative writing; and a final examination in defense of the dissertation. All doctoral candidates are required to gain teaching experience, preferably in the Rhetoric and Core Literature programs of the College of Liberal Arts.
Courses
Courses below 100 are primarily for undergraduate English majors. Courses numbered 100–199 are general interest courses for nonmajors as well as for undergraduate majors and English graduate students wishing to fill out gaps in their undergraduate programs. Courses numbered 200–399 are designed for graduate students planning to teach in high school or junior college, but appropriate for any person wishing to have guided and extensive reading within a specific area. Courses numbered 300–499 are primarily for students working toward the Ph.D., but appropriate for students working toward a master's degree and intending in the future to continue toward the higher degree. A complete description of all courses to be offered in a given semester may be obtained in the English Department office immediately preceding the beginning of that semester.

For Undergraduates

General Interest Courses

Regaining better courses, primarily for freshmen not majoring in English, although credit may be applied to the requirements for the major:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>B1 Modern Fiction</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>B2 Modern Poetry</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>B3 Modern Drama</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>B4 Modern Prose</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>B5 Translation of Literature</td>
<td>3.00</td>
<td></td>
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<tr>
<td>B6 Shakespeare</td>
<td>3.00</td>
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</tbody>
</table>

Introductory Courses in Critical Reading

Basic limited-enrollment courses primarily for majors, but open to any undergraduate; some tests may be used to illustrate representative problems in interpreting and evaluating literature.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>201 Understanding Fiction</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>202 Understanding Poetry</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>203 Introduction to the Criticism of Literature</td>
<td>2.00</td>
<td></td>
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</tbody>
</table>

Representative Works Courses

Basic limited-enrollment courses primarily for majors, but open to any undergraduate; each course concentrates on 10 to 15 major works from time listed to course title; works chosen for their interest, their representativeness of literature of time and their use in enhancing one's skill in reading.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>801 Representative English Works of the Renaissance</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>802 Representative English Works, 1600–1660</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>803 Representative English Works, 1660–1800</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>804 Representative American Works, 1800–1890</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>805 Representative Works Since 1900</td>
<td>3.00</td>
<td></td>
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</tbody>
</table>

Major Authors Courses

Basic limited-enrollment courses primarily for majors, but appropriate for any undergraduate; each course concentrates on 10 to 15 major works from time listed to course title, works chosen for their interest, their representativeness of literature of time and their use in enhancing one's skill in reading; by several major works by permission of instructor, student may repeat registration for same course number if texts have been changed.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>811 Chaucer</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>812 Shakespeare</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>813 Milton</td>
<td>2.00 or 3.00</td>
<td></td>
</tr>
<tr>
<td>814 Pope and Swift</td>
<td>2.00 or 3.00</td>
<td></td>
</tr>
<tr>
<td>815 Blake, Wordsworth, Coleridge</td>
<td>2.00 or 3.00</td>
<td></td>
</tr>
<tr>
<td>816 Carlyle and Dickens</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>817 Shelley and Keats</td>
<td>6.00 or 3.00</td>
<td></td>
</tr>
<tr>
<td>818 Conrad and D. H. Lawrence</td>
<td>3.00 or 3.00</td>
<td></td>
</tr>
<tr>
<td>819 Tennyson and Hemingway</td>
<td>2.00 or 3.00</td>
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</tbody>
</table>

Expository Writing Courses

Emphasizing communication in writing for all undergraduate pre-profession successful completion of freshman composition the equivalent.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>811 Expository Writing</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>812 Theories of Rhetoric</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>813 Modern English Literature</td>
<td>3.00</td>
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</tbody>
</table>

Creative Writing Workshops

Open to undergraduates only by permission of instructor; manuscripts should be submitted to Writers Workshop office prior to registration.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>825 English Writers Workshop: Fiction</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>826 English Writers Workshop: Poetry</td>
<td>3.00</td>
<td></td>
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</tbody>
</table>

Honor Courses

Courses limited to students in the undergraduate Honors program and to others by special permission of instructor:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>836 Honors ProseSeminar</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>837 Honors Poetry Seminar</td>
<td>3.00</td>
<td></td>
</tr>
</tbody>
</table>

Literature Semester Courses

Limited enrollment, ten-week studio courses reinforcing the reading of whole texts, discussions, 10 to 12 papers and other work as detailed in sequence Department announcements, pre-registration required; Literature Seminar I satisfies all major requirements for literature before 1800, students should have taken at least one course-level literature course before registering in either course.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>894, 895, 896, 897 English Literature before 1800</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>894, 895, 896, 897 American and Contemporary British Literature</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>897 American and Contemporary British Literature</td>
<td>3.00</td>
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</tr>
</tbody>
</table>

Independent Study Courses

Must be arranged by the student with instructor of choice prior to registration; ordinarily the student should consult instructor from whom he or she previously took a course.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>885 Undergraduate Honors Project</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>889 Special Project for Undergraduates</td>
<td>3.00</td>
<td></td>
</tr>
</tbody>
</table>

For Undergraduates and Graduates

Literature and Culture Courses

Primarily for undergraduate and beginning graduate students, these lecture courses designed to either major works and authors within the context of the social, political, intellectual and aesthetic movements of their time, literary history in basic part of the work, but which goal is to show literature in the whole culture of the historical period.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8102 Literature and the Culture of the Renaissance</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>8103 Literature and the Culture of 18th Century England</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>8104 Literature and the Culture of 19th Century England</td>
<td>4.00</td>
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</tbody>
</table>

Advanced Linguistics
8290 Very Modern English Language and Literature 3 s.h.
8297 Survey of Modern Linguistics 3 s.h.
8287 Problems in English Linguistics 3 s.h.
8288 Introduction to Language Data Processing Sae as Linguistics 455/14

Bibliography
9200 Literary Tools and Research Methods 3 s.h.

Graduate Seminars
Represent the most advanced work in English and American literature and in related disciplines; permission of a given seminar may vary from semester to semester; course in this area open only to candidates for the Ph.D. and further graduate students with equivalent background knowledge; permission of instructor required for registration.

8402 Seminar: Medieval Literature cr. arr.
8403 Seminar: Middle English Literature cr. arr.
8404 Seminar: Chaucer cr. arr.
8405 Seminar: Renaissance Humanistic Literature cr. arr.
8406 Seminar: Renaissance Dramatic Literature cr. arr.
8411 Seminar: Shakespeare cr. arr.
8412 Seminar: 17th-Century Humanistic Literature cr. arr.
8414 Seminar: 17th-Century Dramatic Literature cr. arr.
8415 Seminar: Early Elizabethan Theatre History cr. arr.

Sae as Speech 367.621
8416 Seminar: Milton cr. arr.
8417 Seminar: Jacobean and Neoclassical Prose cr. arr.
8418 Seminar: Jacobean and Neoclassical Poetry cr. arr.
8419 Seminar: Modern British Drama 3, 3 or 4 s.h.
8420 Seminar: Modern Literature cr. arr.
8421 Seminar: Victorian Literature cr. arr.
8422 Seminar: 19th-Century Fiction cr. arr.
8424 Seminar: 19th-Century British Literature cr. arr.
8426 Seminar: 20th-Century British and American Literature cr. arr.
8428 Seminar: 20th-Century British Poetry cr. arr.
8441 Seminar: Modern American Literature cr. arr.
8445 Seminar: American Romantic Literature of the 19th Century cr. arr.
8446 Seminar: 19th-Century American Literature cr. arr.
8447 Seminar: American Realistic Literature of the 19th Century cr. arr.
8448 Seminar: Modern Letters cr. arr.

Sae as Letters 466-450
8457 Seminar: Social Factors in American Literature cr. arr.
8464 Seminar: African-American Writers of the 20th Century cr. arr.
8466 Seminar: Problems in Aesthetic and Literary Theory cr. arr.
8467 Seminar: Modern Romanticism and Modernism cr. arr.
8469 Seminar: Comparative Literature 455/225 cr. arr.
8480 Seminar: American Plays and Cultures and Culture cr. cr.

Sae as American Civilization 455/225
8481 Seminar: American Writers of the 19th Century cr. arr.
8484 Seminar: Problems in Aesthetic and Literary Theory cr. arr.

Sae as Comparative Literature 455/225
8485 Seminar: American Writers of the 19th Century cr. arr.
8471 Seminar: Shakespeare in Performance cr. arr.
8472 Seminar: Shakespeare in Performance cr. arr.
8473 Seminar: Shakespeare in Performance cr. arr.
8474 Seminar: Shakespeare in Performance cr. arr.
8475 Seminar: Shakespeare in Performance cr. arr.
8476 Seminar: Shakespeare in Performance cr. arr.
8477 Seminar: Shakespeare in Performance cr. arr.

Independent Study
Students registering for independent study courses must have consent of instructor for topic and number of credit hours prior to registration.
8500 Readings in Medieval Literature cr. arr.
8500 Readings in 10th-Century Literature cr. arr.
8510 Readings in 17th-Century Literature cr. arr.
8515 Readings in 16th-Century Literature cr. arr.
8520 Readings in 16th-Century Literature cr. arr.
8525 Readings in American Literature cr. arr.
8530 Readings in American Literature cr. arr.
8535 Readings in American Literature cr. arr.
8540 Readings in American Literature cr. arr.
8545 Readings in American Literature cr. arr.
8555 Readings in American Literature cr. arr.
8560 Readings in American Literature cr. arr.
8565 Readings in American Literature cr. arr.
8570 Readings in American Literature cr. arr.
8575 Readings in American Literature cr. arr.
8580 Readings in American Literature cr. arr.
8585 Readings in American Literature cr. arr.
8590 Readings in American Literature cr. arr.

European Literature and Thought
Program Chairman: Joseph E. Baker
Degree offered: B.A.
European literature and thought courses are open to juniors, seniors and graduate students from any department. A variety of opinion is brought to bear upon ideas under question. No technical background in history, philosophy or literature is necessary. Classes must meet three hours a week, and each course may be taken independently.

These courses are conducted by round-table discussions. Some of the important issues of contemporary thought are explored and evaluated through a basic reading list of outstanding works. Two or more instructors from various departments such as literature, philosophy, history, fine arts and the sciences, guide the discussions, drawing on their specialized knowledge and particular methods.

Undergraduate Major
A major in European literature and thought serves as a basis for a liberal education and equips a student for further work in the special arts of his choice. The major is set up to provide broad specializations are ordinarily obtained under the specialized requirements of a single department.

Most students can major in this area and still have room for earning teaching certificates in one or more related departments. Many can satisfy the requirements for a double major, in this program and in some single department also.

Requirements for the Major
These specific requirements are in addition to the general requirements of the College of Liberal Arts:

- European literature and thought (round-table courses) 12 s.h.
- History, social sciences 12 s.h.
- Philosophy, religion, history of science 12 s.h.
- Literature of England and of the Continent 12 s.h.
- Fine arts (excluding studio courses) 3 s.h.
- Foreign language: European; one semester beyond the second year (Course in foreign literature in the original language may also be used to satisfy the requirement in literature) 3 s.h.

Students considering a major in European literature and thought should consult with the chairman before the end of the sophomore year.
Honors
The degree of Bachelor of Arts with Honors may be earned by superior students who undertake a further program of independent study. To be admitted as a candidate for Honors, the student must have the endorsement of the chairperson of the program in European literature and thought.

Staff: professors Aspel (French and Italian), Baker (English), Bergman (Law), Davis (Political Science), Duke (Chemistry), Felding (German), Hartow (Business Administration), Oberto (Music), Schartmann (Religion), Schering (Art), Stoll (Psychology), Wahlke (Political Science), Wimeth (Sociology), associate professors Cameron (Speech and Dramatic Art), Bingle (Zoology), Hopkins (Law), Hamlet (English), ter Haar (German); assistant professor Kluck (Physics)

Courses
331/1 The Pursuit of Happiness 2 to 4 a.h.
Treatment of individual happiness in various types of human experience by Aristotle, Fichte, Collaer, Montaigne, Voltaire, Beckett, Swift, etc.
331/2 The Good Society 2 to 4 a.h.
Study of problems of social and political thought and their presentation in art. Emphasis on Lao-Tzu and Plato; Socrates, Marx, Rousseau, Voltaire; Tocqueville; Rousseau; Schiller; Marx; Lenin; and modern American sociologists.
331/3 Man’s Life in Society and its Development as seen in works by Plato, Sartre, Mauss, Rousseau, Spinoza, Locke, Boccace, Marx, recent literature and cinema. 2 to 4 a.h.

331/4 Science and the Nature of Man 2 to 4 a.h.
Relationship of scientific to social and humanistic thought.
331/5 Form and Mimesis in the Arts 2 to 4 a.h.
Introduction to comparative study of arts; development of forms and other cultural patterns, institutions and rituals, through close examination of creative and interpretative writings, specific works of music and graphic art.
331/6 Roots of Modern Culture 2 to 4 a.h.
Literary and social manifestations of modern Romanesque culture.
331/7 Special Projects 2 to 4 a.h.

French and Italian

Department Chairman: John T. Reithraegle, Jr.
Degrees offered: B.A. (French or Italian), B.A. (French), B.B. (French)

The purpose of the undergraduate program is to give the student a firm foundation in the language, literature and culture of the countries represented. The four-year sequence of language courses offers training in the skills necessary to speak, read, write and understand the language at a high level of competence. The specialized courses in literature and civilization, taught in the foreign language, introduce the student to the intellectual and cultural climate of France and Italy and provide a historical perspective for contemporary life.

About half of the French majors combine study in their specialized area with secondary education and secure jobs in high school teaching. Others enter various professional careers, business and government service, professional schools (such as law and library science) and graduate school in a branch of the humanities like French, political science or comparative literature. The latter group almost invariably prepare for the M.A. or Ph.D. with junior/community college, college or university teaching as a goal.

Undergraduate Programs
The undergraduate major is expected to develop increasingly sophisticated skills in the written and spoken language. Coursework in literature and culture involves a close reading of a wide variety of works followed by analyses and discussions in the language which are designed to sharpen the student’s critical approach to the material.

The major in French requires as a minimum the completion of the courses 9207-9208 and 9111-9112 second- and third-year Composition and Conversation, and either 9225 French Pronunciation or 9127 French Pronunciation and Discourse. In addition the student will elect four courses in literature at the 100 level and a fifth in either fourth-year composition, literature, civilization, contemporary France or the French film.

The minimum requirements for a major in Italian are 18111 Intermediate Italian 1; 18112 Advanced Composition and Conversation; 18105-6 Introductory to Italian Literature (given in Italian); 18119-20 Dante and His Time; and either 18101 Literature of the Nineteenth Century or 16102 Literature of the Twentieth Century (both given in Italian).

The Department participates in the Honors program. In cooperation with the other regents’ institutions of Iowa, a summer study program is sponsored at the Universidad de Caen.

Graduate Program
The M.A. and Ph.D. in French are professional degrees which prepare the candidate for teaching at the college or university level.

Appointments
Teaching, research and laboratory assistantships are available to qualified graduate students. A certain number of EPDA fellowships in French (for prospective community college teachers), teaching-research fellowships, and University scholarship fellowships and graduate assistantships are also available. Inquiries should be addressed to the Department Chairperson.

Several exchange assistantship agreements with the French Ministry of Public Education and the Université de Poitiers make it possible for a limited number of graduate students one year residence in France.

Requirements
Candidates for advanced degrees must have completed the equivalent of the undergraduate major in French. Deficiencies in previous training may be removed by taking appropriate courses.

Master of Arts
Three different programs are offered leading to the Master of Arts.
Master of Arts with Thesis
This program requires a minimum of 30 semester hours, of which six may be taken in 9/277 (thesis supervision), the passing of a written and oral examination, and the defense of a thesis. The course of study must include four semester courses in literature at the graduate level, 9/157 French Pronunciation and Oratory, and 9/209 and 9/210 Advanced Composition and Conversation. Candidates may occasionally take courses in related fields.

Master of Arts without Thesis
The requirements for this program are identical to those for the M.A. with thesis, except that the candidate must fulfill the 30-semester-hour requirement in regular coursework.

Master of Arts in French Education
This is an advanced degree intended primarily for prospective secondary and junior college teachers. Requirements include a total of 38 semester hours at the advanced level, of which eight may be taken in education or related fields and a minimum of nine semester hours of graduate coursework in French literature. Other suggested courses include 9/153 and 9/154 fourth-year Composition and Conversation, 9/209 and 9/210 Advanced Composition and Conversation, 9/113 and 9/114 French Civilization, 9/110 Methods: High School Modern Foreign Language, 9/131 Language Laboratory Procedures, 9/132 Contemporary France, and 9/137 and 9/138 French Pronunciation and Diasilo. Candidates must pass a final examination in French education and related fields.

Doctor of Philosophy
The Ph.D. degree in French is awarded, after completion of at least three years of graduate work, of which one must be spent in residence at the University, the passing of a comprehensive examination and the oral defense of a dissertation. The dissertation is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit. Candidates must demonstrate early their ability to undertake independent investigation by completing two research papers in connection with courses taken.

Specific requirements for the Ph.D. in French must include 9/201 and 9/202 Old French, proficiency in a foreign language other than French, and competence in a second related field defined as three graduate courses (minimum of eight semester hours) in that field. The choice of language and the specific courses in the related field are to be determined by the Department according to individual needs.

In pursuing the program, coursework and individual reading must be designed to impart a good knowledge of the history of the French languages, its literature and related civilization from medieval to modern times; provide adequate experience in a related area of the humanities; and develop the capacity for critical analysis of literary texts.

Graduate students working toward an advanced degree are required to spend one year in teaching as graduate assistants in the Department.

The Faculty
Faculty members in French and Italian bring to the classroom a wide variety of teaching experience and in many cases are recognized nationally and internationally in their fields of specialization. Each period of French Literature—from medieval studies to contemporary literature—is represented by at least one scholar whose publications enable him to direct courses and dissertations in his or her field. The Department is particularly strong in contemporary French literature, with three senior faculty members in that field. Biographies of nine of the 13 graduate faculty are published in the Directory of American Scholars (Volume III, 1969).

Staff: professors: Aeppli, Cerreta, O'Gorman; professors emeriti: Carhart, LeVola, Ratermann; associate professors: Greene, Hrabey, Ikuyama, Nothnagle, de St. Victor; assistant professors: Szerit, Tate, Wayne; assistant professor emeritus: Kanse. In- structure: Bengecq

Laboratory Director: Winston J. Reese

French Courses

Primary for Undergraduates
Students who have had no experience with French through study or foreign residence are required to take placement tests. If students with two years of high school French place in 9/1, fourth semester will be added to their graduation requirements.

A waiver may not be issued for other credit or quality points, as an elementary course if he has already completed a higher level course for which the elementary course or its equivalent is a prerequisite.

9/1 Elementary French
For students who take no knowledge of French
9/3 Elementary French
Prerequisite: 9/1 or equivalent
9/1 First-Year Literature of Commitment
4 a.h.
Basics of 11th-12th-century English; may be taken as part of core literature
9/11 Intermediate French
3 a.h.
Recommended for students who plan to pursue study of French with second-year prerequisite: 9/12 or equivalent
9/12 Intermediate French
3 a.h.
Continuation of 9/11, prerequisite: 9/11 or equivalent
9/75 French Pronunciation
1 a.h.
9/75 French Pronunciation
9/72, 9/72, 9/72, 9/72
9/72 Second-Year Composition and Conversation
4 a.h.
Recommended for students who plan to pursue study of French or who wish to improve their active command of the language; prerequisite: 9/12 or equivalent
9/102 Second-Year Composition and Conversation
4 a.h.
Continuation of 9/72, prerequisite: 9/72 or equivalent
9/91 PhD. French I
no cr.
9/92 PhD. French II
no cr.
9/93 PhD. French III
no cr.
9/94 PhD. French IV
no cr.
9/97 Spanish Work
no cr.
Prerequisites: 9/12 or equivalent

For Undergraduates and Graduates
9/118 Introduction to French Literature
3 a.h.
From early writings to end of eighteenth century; given in French for French majors, in English for others; prerequisite: 9/12, 9/25 or equivalent
9/119 Introduction to French Literature
3 a.h.
Continuation of 9/118, but may be taken as an independent unit; from nineteenth century to present.

French and Italian
General Science
Program Head: Robert C. Vager
Degrees offered: B.A., B.S.

The general science major is designed primarily for students interested in a professional area requiring a background in more than one science discipline. Specific programs exist for each professional area which meet the same basic requirements for graduation. Students not interested in one of the professional areas must meet with an adviser to structure a specific program. Completion of random courses will not meet the requirements.

Minimum requirements for the general science degree involve the selection of courses from three of these science departments: Chemistry, Geology, Physics/Astronomy, Botany, Zoology and Mathematics.

Two options are available: completion of 20 semester hours in one department and eight semester hours in each of two other departments or completion of 16 semester hours in one department, 12 semester hours in a second department and eight in a third. Earth science and life science core courses may not be used as part of the 12-, 16- or 20-semester-hour sequence, but either may be used to fulfill an eight-semester-hour requirement. At least 10 semester hours must be completed in residence.

The B.A. requires completion of a minimum of four semesters of college-level study totaling not less than 12 semester hours in German, French or Russian. The B.S. requires eight semester hours of one of these three languages. The student's adviser can approve the selection of another language if there are circumstances making such a choice desirable. Students in the B.S. program must complete a minimum of 40 semester hours of science credit.

Engineering-General Science Combination
(B.S. in engineering; B.A. in liberal arts)
Coordinator: Donald H. Madsen

Mathematics
22M:20 Elementary Functions 3 s.h.
22M:25-6 Calculus I-II 8 s.h.

Elective in mathematics (as prescribed by the various departments of the College of Engineering) 5 s.h.

Physics
19:17-18 Introductory Physics I and II 1 s.h.

Chemistry
4:1 and 4:4 Principles of Chemistry 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.

(Associated course in chemistry or physics may be substituted for an equivalent course in mathematics.)

Total required courses 36 s.h.

Medical Technology
Directors: John A. Koepke (VA Hospitals), Michael L. O'Connor (University Hospitals)

Chemistry
4:1 and 4:4 Principles of Chemistry I and II 6 s.h.
4:11 Elementary Quantitative Analysis 4 s.h.
4:11-122 Organic Chemistry I-II 6 s.h.

Zoology
37:3 Principles of Animal Biology 5 s.h.
37:118 Parasitology 4 s.h.

Elective in zoology 3 to 4 s.h.

Mathematics
22M:3 Introduction to Statistical Methods 3 s.h.
22M:4 College Algebra 4 s.h.

(More advanced mathematics courses may be substituted)

Other Science Requirements
61:156 General Microbiology 4 s.h.

Total required courses 35-40 s.h.

Nuclear Medical Technology
Coordinator: R. E. Peterson

Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:11 Quantitative Analysis 4 s.h.
4:121-122 Organic Chemistry I-II 6 s.h.

Zoology
37:3 Principles of Animal Biology 5 s.h.
37:101 Principles of Human Genetics or
37:110 Fundamental Genetics 4 s.h.

Physics
29:1-2 College Physics 8 s.h.

Mathematics
22M:2-3 Mathematical Techniques I-II 6 s.h.

(More advanced mathematics courses may be substituted)

Other Science Requirements
60:1 Elementary Human Anatomy 4 s.h.
72M:3 Introduction to Human Physiology 4 s.h.
77:303 Introductory Radiation Biology 4 s.h.
99:161 Biochemistry 4 or 5 s.h.

Total required courses 34-56 s.h.

Physical Therapy
Coordinator: Terry R. Jones

Two options available: completion of 20 semester hours in one science area and eight semester hours in each of two other areas; or completion of 16 semester hours in one science, 12 semester hours in another.
hours in a second science and eight semester hours in a third; required science courses total 36 semester hours for the B.A. degree and 40 semester hours for the B.S. degree.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Principles of Animal Biology</td>
<td>5 s.h.</td>
</tr>
<tr>
<td>Principles of Human Genetics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>College Physics</td>
<td>8 s.h.</td>
</tr>
</tbody>
</table>

Elective Courses in Required Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Chemistry</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>General Chemistry Laboratory</td>
<td>2-3 s.h.</td>
</tr>
<tr>
<td>Chemistry in Our Lives</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Elementary Quantitative Analysis</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Organic Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>Principles of Modern Embryology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Fundamentals of Genetics</td>
<td>5-8 s.h.</td>
</tr>
<tr>
<td>Comparative Vertebrate Anatomy</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Microscopic Anatomy</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>Parasitology</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Human Anatomy</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>Intermediate Physiology</td>
<td>5 s.h.</td>
</tr>
</tbody>
</table>

Pre-Dentistry Standards

Coordinator: James Faller

Required Courses

(For application to The University of Iowa College of Dentistry)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>Elementary Chemistry Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>Organic Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>Intermediate Chemistry Laboratory I</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>College Physics</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>Principles of Animal Biology</td>
<td>5 s.h.</td>
</tr>
</tbody>
</table>

Total required courses: 32 s.h.

Pre-Medicine

Coordinator: James J. Rucker

Chemistry

4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:121-122 Organic Chemistry I-II 6 s.h.
4:141 Intermediate Chemistry Laboratory 2 s.h.
Qualified students may substitute 4.5 Principles of Chemistry for 4:1 and 4:4

Physics

29:1 and 29:2 College Physics 8 s.h.

Zoology

37:3 Principles of Animal Biology 5 s.h.

Upon completion of Principles of Animal Biology, a student must also complete one advanced course in zoology from the list below to meet the minimum requirement for admission to the University of Iowa College of Medicine. (See admission requirements listed under "College of Medicine")

37:102 Principles of Modern Embryology 4 s.h.
37:103 Comparative Anatomy of Vertebrates 4 s.h.
37:105 General Physiology 4 s.h.
37:107 Invertebrate Zoology 4 s.h.
37:109 Genetics 4 s.h.
37:110 Fundamental Genetics 4 s.h.
37:120 Proteology 4 s.h.

In addition to meeting the minimum requirements for admission to medical school, students must add four semester hours of chemistry or three semester hours of zoology or four semester hours of physics to satisfy the requirements of the B.A. in general science (Total of 36 s.h.)

Students who earn a B.S. degree are required to earn an additional four semester hours of science credit, resulting in a total of 40 s.h. Mathematics (required for medical school admission, but not for a general science major).

For students with four years of high school mathematics:

22M:20 Elementary Functions 3 s.h.
(More advanced courses in mathematics should be substituted if prerequisites can be met.)

Pre-Veterinary Science

Coordinator: James J. Rucker

Chemistry

4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:6 Elementary Chemistry Laboratory 2 s.h.
4:121-122 Organic Chemistry I-II 6 s.h.
4:141 Intermediate Chemistry Laboratory I 2 s.h.

Physics

29:1-2 College Physics 8 s.h.

Zoology

37:3 Principles of Animal Biology 5 s.h.
37:110 Fundamental Genetics 4 s.h.
Botany
2:1 Introduction to Botany 5 s.h.

Science Teaching
Coordinator: Robert E. Yager

Biology Emphasis
Botany and Zoology
2:1 Introduction to Botany 5 s.h.
37:3 Principles of Animal Biology 5 s.h.
Electives in botany and zoology (at least three semester hours in each department) 18 s.h.

Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
4:121-122 Organic Chemistry I-II 6 s.h.

Others
12:3 Principles of Geology (Physical) 2 s.h.
or
12:4 Principles of Geology (Historical) 2 s.h.
29:1 College Physics 4 s.h.
97:128 Meaning of Science 2 s.h.
97:130 History of Science 2 s.h.
Total required courses 52 s.h.

Chemistry Emphasis
Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
or
4:6 Elementary Chemistry Laboratory 2 s.h.
or
4:8 General Chemistry I 3 s.h.
or
4:9 General Chemistry Laboratory 2 s.h.
or
4:1 Quantitative Analysis 4 s.h.
or
4:131-132 Physical Chemistry I-II 6 s.h.

Physics
29:1 College Physics 4 s.h.
or
29:17 Introductory Physics I 4 s.h.
or
29:2 College Physics 4 s.h.
or
29:18 Introductory Physics II 4 s.h.
or
29:19 Introductory Physics III 4 s.h.
or
59:61 General Astronomy 4 s.h.

Mathematics
223:3 Mathematical Techniques II 3 s.h.
or
223:20 Elementary Functions 3 s.h.
or
223:22-26 Calculus I-II 8 s.h.

Others
97:128 Meaning of Science 2 s.h.
97:130 History of Science 2 s.h.
Total required courses 54 s.h.

Earth Sciences Emphasis
Geology
12:5, 11:33 Principles of Geology (Physical) 2 s.h.
or
12:4, 11:24 Principles of Geology (Historical) 2 s.h.
or
12:9 Geology of Iowa 2 s.h.
or
12:42 Mineralogy 3 s.h.
or
12:121 Principles of Paleontology 3 s.h.
or
12:61 Principles of Stratigraphy 3 s.h.
or
12:171 Geomorphology 4 s.h.

Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
or
4:6 Elementary Chemistry Laboratory 2 s.h.
or
4:11 Quantitative Analysis 4 s.h.

Physics
29:1-2 College Physics 8 s.h.
or
29:61-62 General Astronomy 8 s.h.

Others
4:19 Geography of Natural Resources 4 s.h.
or
4:101 Introduction to Weather and Climate 3 s.h.
or
97:128 Meaning of Science 2 s.h.
or
97:130 History of Science 2 s.h.
or
Total required courses 54 s.h.

If 11:23 and 11:24 are elected, 58 semester hours will be required

Physics and Astronomy
Physics
29:1 College Physics 4 s.h.
or
29:17 Introductory Physics I 4 s.h.
or
29:2 College Physics 4 s.h.
or
29:18 Introductory Physics II 4 s.h.
or
29:19 Introductory Physics III 4 s.h.
or
29:27 Electrical Measurements 3 s.h.
or
29:129 Electricity and Magnetism 3 s.h.
or
Electives in Physics or Mathematics 6 s.h.

Mathematics
223:3 Mathematical Techniques II 3 s.h.
or
223:20 Elementary Functions 3 s.h.
or
223:22-26 Calculus I-II 8 s.h.

Chemistry
4:1 and 4:4 Principles of Chemistry I-II 6 s.h.
or
223:20 Elementary Chemistry Laboratory 2 s.h.
or
4:11 Quantitative Analysis 4 s.h.

Others
97:128 Meaning of Science 2 s.h.
or
97:130 History of Science 2 s.h.
or
Total required courses 54 s.h.
Minors in Science Teaching

Coordinator: Robert E. Yager

Five teaching minors in science are also available for persons majoring in other academic areas; only these combinations of courses qualify a person for certification in the area specified with each heading.

Biology—22 s.h.

2.1 Introduction to Botany 5 s.h.
37.3 Principles of Animal Biology 5 s.h.
97.128 Meaning of Science 2 s.h.
97.130 History of Science 2 s.h.
Electives in Botany and Zoology 8 s.h.

Chemistry—22 s.h.

4.1 and 4.4 Principles of Chemistry I–II 6 s.h.
4.6 Laboratory Chemistry 2 s.h.
4.11 Quantitative Analysis 4 s.h.
4.121 Organic Chemistry 1 3 s.h.
4.131 Physical Chemistry 3 s.h.
97.128 Meaning of Science 2 s.h.
97.130 History of Science 2 s.h.

Physical Science—24 s.h.

4.1 and 4.4 Principles of Chemistry I–II 6 s.h.
4.6 Elementary Chemistry Laboratory 2 s.h.
29.1 and 2 College Physics 8 s.h.
Electives in Chemistry or Physics 6 s.h.
97.128 Meaning of Science 2 s.h.
97.130 History of Science 2 s.h.

General Science—25 s.h.

2.1 Introduction to Botany 5 s.h.
37.3 Principles of Animal Biology 5 s.h.
29.61 General Astronomy 4 s.h.
12.3 Principles of Geology (Physical) 2 s.h.
12.4 Principles of Geology (Historical) 2 s.h.
4.1 General Chemistry 4 s.h.
29.1 College Physics 4 s.h.
97.128 Meaning of Science 2 s.h.
97.130 History of Science 2 s.h.

Earth Science—18 s.h.

12.3 Principles of Geology (Physical) 2 s.h.
12.4 Principles of Geology (Historical) 2 s.h.
12.5 Physical Geology Laboratory 1 s.h.
12.6 Historical Geology Laboratory 1 s.h.
29.61 General Astronomy 4 s.h.
29.62 General Geology 4 s.h.
Electives in Geology 2 s.h.
97.128 Meaning of Science 2 s.h.
97.130 History of Science 2 s.h.

Staff: professor Yager; associate professors Cosman, Phillips; assistants professors Sharp, Townsend; assistant assistant professor Glass

Courses Primarily for Undergraduates

028 Investigations in Science 5 s.h.
Special projects to develop ability secondary school students; credit may be used for natural science core students returning to University as regular students; may be repeated.
028 Science Survey 4 s.h.

Courses of broad conceptual scope providing science content; attention to societal implications of scientific research and modern technology.
048 Science Survey 4 s.h.

Experiences in laboratories and classrooms where science technology is examined; individual projects characterize major efforts; several areas within the University structure provide bases for a segment of science.

97.50 Science Foundations I 4 s.h.
Introduces multidisciplinary approach to areas of more fundamental concepts of science. Emphasis placed upon individualized exploration of major science content areas; coordinates research to elementary education majors.
97.51 Science Foundations II 4 s.h.

A course for prospective teachers who plan to implement environmental education programs in secondary schools; content from geology, astronomy, earth science, biology, psychology, sociology, religion and other areas utilized in an attempt to provide insight into broad problems of environment and how these problems can be handled in an integrated way in schools.

97.52 Science in Society 3 or 5 s.h.

Major topics in development of twentieth-century American science; effect of early Greek, Roman and modern European science upon current concepts of scientific enterprise.
97.54 Problems in Integrating Teaching of Environmental Science 3 s.h.

Genetics

Program Chairman: Dawson Moberg

Genetics is an interdisciplinary program of the departments of Biochemistry, Botany, Microbiology and Zoology. The M.S. and Ph.D. degrees are taken in one of the participating departments; degrees are not offered in genetics.

Because genetics cuts across traditional divisions in biology, each student's program is built of appropriate courses in the several departments based on the student's research study in frequency interdepartmental, using facilities for genetics in two or more departments.

Undergraduate students who want to prepare for graduate study in genetics should complete an undergraduate degree with a major or emphasis in biology. Facilities of calculus in undergraduate study are recommended. Most of the present students in the interdisciplinary program were prepared in botany and zoology.

Aided by a Biological Sciences Development Award from the National Science Foundation, the University has recently increased its faculty in genetics. The program depends primarily
upon these several geologists, especially for teaching, but it involves a number of other scientists whose research includes geography.

The program is administered by an interdisciplinary committee.

Staff: professor Broun (Zoology), Frankel (Zoology), Milligan (Zoology), Mohler (Zoology), Wiesner (Psychology), Zehl (Pediatrics), associate professor Chalkley (Biochemistry), Cowley (Biochemistry), and Staton (Microbiology); assistant professors Carlson (Botany), Fields (Microbiology), Litvin (Zoology), Hegmann (Zoology), Surzycki (Botany), Walker (Microbiology).

Courses

Biochemistry
50:101 Molecular Genetics 3 or 4 s.h.
Sears as Zoology 37:171

Botany
2:120 Genetics 2 or 4 s.h.
Same as Zoology 4:120
2:163 Plant Cell Genetics 3 or 4 s.h.
Same as Zoology 2:113

Zoology
2:126 Genetics of Cell Organelles 3 s.h.
2:161 Eucaryotic Cell Biology or 1 s.h.

Microbiology
61:270 Topics in Microbial Genetics 3 s.h.
61:370 Molecular Mechanisms in Heredity 3 s.h.

Geography

Departmental Chairman Clyde F. Kahn
Degrees offered: B.A., B.S., M.A., Ph.D.

Vanished is the legendarv encyclopedia geographer crammed with isolated bits of information ranging from the capital city of Mauritius to the annual Yukon valley supply production or the height of the highest mountain in Outer Mongolia. Modern geography is concerned more with the spatial aspects of human behavior than with the memorization of rainfall data, crop production or the length of rivers. Students who elect courses in geography soon find that geographic insights and methods of inquiry are related to the solution of many of the complex problems confronting modern society, such as air and water pollution, traffic jams, the development of ghetos in large cities, rapidly increasing populations and conflicts between nations. An increasing number of undergraduate students is discovering that a major in geography prepares them with concepts and methods for orienting cities, market regions, school districts or other human inhabited areas.

Much of modern geography is problem-oriented. It is scientific as well as humanistic in its approach to the solution of these problems. It is involved with two basic considerations: the best means to obtain accurate facts or data; and the tools and techniques necessary for analyzing these data to see if they verify or alter existing explanations for the facts as they are observed.

Modern technology has come to the aid of the profession in achieving both of these goals. Satellite instrumentation, such as radar, infra-red and visible light cameras, are being used to gather information for understanding and solving a wide range of human problems. The computer has proved to be a priceless aid in analyzing these data, which are influencing the planning of urban areas, the development of better policies and practices for the use of resources, the solution of pollution and other environment-man problems, the easing of internal and international conflicts, and many other endeavors. Today's geography is man-centered and contributes to the decision-making processes involved in determining how man can improve the quality of life in this complex age.

Career opportunities for undergraduate majors in geography exist in various branches of government and in business. There is a demand for persons capable of dealing with resource management, economic development, market area analysis and other problems related to the distribution and spatial interaction of physical, economic, social and political phenomena in the world as a whole or in major parts of it.

There is also a growing demand for young people concerned with man's perception of and his subsequent interactions with the natural environment. Courses in geography are commonly required of students preparing to enter the teaching profession at the elementary and secondary school levels, of students who want to work in urban and regional planning, and as a background for many related professions, including law, hospital administration and transportation engineering.

The Undergraduate Program

The Geography faculty has attempted to build an undergraduate program which contributes to the liberal education of all undergraduate students; it provides innovative and relevant preparation for undergraduate majors for careers in which an understanding of geography is basic and it joins in significant interdepartmental programs involving regional, urban and environmental components.

A number of geographic themes and principles comprise the intellectual framework of the discipline and serve as unifying threads through all courses constituting the Department's program. The stress is on the spatial aspects of human behavior, environment-man relations, the spatial organization of territory for achieving institutional goals and the geography of particular parts of the world, such as newly developed regions.
Students electing to major in geography will be exposed to concepts and methods of inquiry in physical, economic, social, and political geography, especially as they relate to urban areas. They will be taught how to state problems from a geographic point of view, where and how to find relevant data for analyzing these problems, how to relate their findings to existing theories and how to apply their findings to real-world situations.

Geography courses open to undergraduate students may be taken in any order or simultaneously; no undergraduate course in geography has any prerequisites. Most courses below the 100 level are open to freshmen.

Undergraduate students may be admitted to the major program in geography after conferring with the Department chairman.

Students majoring in geography must meet the general College of Liberal Arts and humanities core requirements. Credits earned in five geography courses—44:1 Geography and Human Activities, 44:2 Natural Environment and Man, 44:11 Introduction to Social Geography, 44:19 Natural Environmental Issues, 44:30 Introduction to Economic Geography, and 44:25 Introduction to Urban Geography—may be applied toward the science core requirement.

The Bachelor of Arts and Bachelor of Science degree programs both require 26 semester hours of coursework in geography, including the Undergraduate Seminar and at least 12 semester hours in 100-level courses.

It is recommended that all complete Geography and Human Activities, and Natural Environment and Man. With the help of their advisers, students may plan study programs which best suit their individual needs.

For example, those considering careers in urban planning, or who expect to work in an urban environment, might well take a cluster of courses including Introduction to Urban Geography, 44:113 Political Behavior and Urban Spatial Structure, 44:135 Internal Spatial Structure of Urban Areas, 44:136 Geographic Analysis of Urban Areas, 44:137 City Growth and Development, and other courses related to the study of urban structure and function in urban environments.

Students interested in problems relating to ecology might elect Natural Environment and Man, Introduction to Social Geography, Natural Environmental Issues, 44:101 Introduction to Weather and Climate, 44:116 Political Ecology, 44:120 Natural Hazards and 44:122 Natural Hazards of the United States.

All undergraduate students majoring in geography must take a course in statistics, such as 22S:43 Introduction to Statistical Methods, or its equivalent, such as 44:108 Quantitative Methods or 34:11 Theory, Research, and Statistics.

Students in an M.A. program must also complete 22S:25 Calculus or its equivalent.

Students who wish professional careers in geography are urged to complete the B.S. program. Those contemplating careers in foreign service should complete three years’ study of the appropriate foreign language.

The Association of the American Geographers publishes a monthly bulletin, Jobs in Geography.

The Graduate Program

The goals of the Department at the graduate level are to prepare graduate students to carry on creative and productive research in geography involving the use of theory, modeling and formal verification methods; to prepare students at both the M.A. and Ph.D. levels for positions to which they aspire in research, teaching or some area of applied geography; and to help students develop their ability to apply knowledge of facts, theories and methodologies to specific societal problems. The achievement of these goals is demonstrated in large measure by the demand for Iowa graduates to fill positions on college and university faculties, in research-oriented institutions and in business and government.

The graduate program at Iowa is concerned with the locational analysis of physical, economic, social and political phenomena; the spatial aspects of human behavior; and the interaction of man and his environment.

To develop concepts, models and theories which facilitate the study of these basic aspects of geography, the Department offers a graduate program of courses and seminars at the intermediate and advanced levels and directs research efforts of qualified students. In addition, courses have been developed to provide graduate students with the technical skills necessary for geographic analysis of human activities and the environments in which they take place. Special attention is given to the utilization of theory and the construction of models in analyzing human behavior in urban areas and in selected regions.

In determining the advisement of a student to the graduate program, the Geography Department considers the total record of each student individually. In addition to the general rules and regulations set forth in the Manual of Rules and Regulations of the Graduate College, the Department considers the student’s undergraduate grade-point average, especially during his or her junior-senior years, his or her scores on the Graduate Record Examination Aptitude Test; letters of recommendation from those with whom he or she has taken courses; and an essay in which the applicant sets forth the reasons for wanting to continue his or her study of geography at The University of Iowa.

Students with undergraduate grade-point averages between 2.5 and 2.75 will be admitted for the M.A. degree on condition that they pass the Graduate Record Examination with a score of 2.75 or higher on their first 12 hours of graduate work, as approved by the Department, in order to remain as graduate students. Foreign students and others from undergraduate institutions which evaluate students on a basis other than grade-point averages will be considered according to their relative academic standing in their respective institutions.

All M.A. students are required to complete a minimum of 30 semester hours of graduate work, including 44:08 Quantitative Methods I, 44:201 and 44:202 Geographical Analysis I and II.

A maximum of six semester hours of credit may be earned by the satisfactory completion of a thesis for those who wish to take the M.A. degree with thesis. The remainder of both M.A. programs may be composed of graduate level courses or research seminars, as approved by the faculty.

All M.A. students must pass a final examination.

Students whose objective is the Ph.D. degree are required to complete 44:08 Quantitative Methods, 44:201-202 Geographical Analysis I and II, and 208 Advanced Quantitative Methods, preferably during the first year in residence. However, the student may meet these course requirements with a satisfactory
performance in written examinations during the first week of the first semester for which he or she registers.

All doctoral students must also complete two research seminars preferably during their second year in residence, under the direction of different faculty members. They are also required, unless excused by the faculty, to register for 44330 each semester while in residence. During the academic year, one semester hour of credit will be awarded each semester on an S/U basis for this course. The remainders of the Ph.D. program includes appropriate graduate courses, seminars and research in geography, depending on the interest of the student. Courses in disciplines closely related to the student's objectives and interests; and courses which satisfy the test requirements. Programs for students who wish to study for the Ph.D. in geography are established separately for each student. For this reason, as soon as possible after beginning graduate work, doctoral students are urged to declare a general area of specialization within the discipline and to secure a faculty advisor. During the second year in residence, if possible, the doctoral student should declare a specific field of specialization within his or her general area of interest.

Preferably during his or her second year in residence, and no later than the fifth semester, the doctoral student must, with the approval of his or her advisor, submit one of his or her own research papers to the faculty, who will pass upon the merits of the research demonstrated therein. Such a paper is commonly referred to as a Qualifying Paper.

Research tool requirements for the Ph.D. candidates are of two kinds. One is the course 44-220 Advanced Quantitative Methods; the other may be satisfied by completing any other appropriate course, as approved by the faculty at the time the student declares his or her specific area of specialization.

To become a candidate for the Ph.D. degree, the student is required to pass a comprehensive examination consisting of written and oral parts, in which he or she demonstrates analytical proficiency with respect to his or her major area of specialization and a general knowledge of the discipline, including both content and methodology. Upon passing the comprehensive examination, the doctoral candidate will prepare a research design to be presented before the staff seminar. After the design is approved by the faculty, the candidate is expected to conduct the necessary research and analysis, and to present his or her findings in an appropriately written dissertation, which must be formally defended in a final oral examination.

All doctoral candidates are expected to have supervised experiences as classroom instructors and research assistants before being awarded the Ph.D. degree.

Innovations in Teaching

During the past year or two, faculty members have initiated some interesting changes in their teaching strategies, in order to improve their instruction and to develop greater student interest and participation.

Courses have been re-oriented, from an emphasis on a body of knowledge to be learned to the development of problem-solving abilities. Attempts are being made to break with the well-established teaching procedures, such as the "lecture-read-test" syndrome.

In some instances, lectures are no longer the focus of a course.

Rather, lectures are built around the activities to be performed in the discussion-laboratory periods. So, too, are the reading assignments. In other instances, the lectures, laboratories, discussions, readings, papers and examinations are being used in such a way as to achieve new goals. There is also interest in the development of a series of computer-program units for use in several undergraduate courses. As a result of these innovations, several courses have been ranked above average in the Course-Instructor Evaluation Program sponsored by the Student Association Senate during recent years, and enrollments in all courses have increased.

Research Productivity

Since its origin, the Iowa Department of Geography has made significant contributions to the advancement of research in geography and is continuing to do so. It was among the first in the country to adapt the scientific method to geographic research; to use quantitative methods in the analysis of the location and distribution of natural and cultural phenomena over the earth's surface; and to develop mathematical models and geographic theory. In most instances, the research program of the Department produces an immediate feedback to the instructional program. Thus, the content of both undergraduate and graduate courses reflects the latest advances in the discipline, both in content and methodology.

Rating of Department

In its recent evaluation of graduate departments, the American Council on Education ranked the Iowa Department of Geography as "strong." The Department was also included in the list of 15 "leading" departments of geography in the nation.

The Faculty

Individual faculty members participate in University, local, state, national and international groups whenever significant work can be made of their special research contributions. They give time and energy to professional organizations and have served as executive officers, as members of governing boards and as review and consulting editors for the Association of American Geographers, the National Council for Geographic Education, the Regional Science Association, the International Geographical Union and the National Council for the Social Studies.

Relations with Other Departments

In both their instructional and research efforts, members of the Geography faculty work closely with their colleagues in other departments within the College of Liberal Arts, as well as in other divisions of the University, and especially with the Institute of Urban and Regional Research. The Department's interest in problems relating to the environment, for example, has led to cooperation in the establishment of interdisciplinary courses and research projects with other departments in both the natural and social sciences, as well as in the schools of Engineering, Medicine and Law.
The Map Library

Housed on the third floor of the Main Library, the Map Library contains more than 50,000 maps, a total of 1,820 atlases and reference works, and about 9,000 aerial photographs, primarily of Iowa. The map collection in the Library is a depository library for maps of the U.S. Army Topographic Command, formerly Army Map Service. The Geography Library contains approximately 40,000 maps, including both geologic maps and U.S. Geological Survey topographic maps. The Department of Geography has its own collection of topographic maps, maps of large urban centers and supply of aerial photographs for use by students in working out laboratory exercises.

In recent years, the Department has been fortunate in receiving grants for supporting research and service activities. Many of these grants include funds for supporting research and other assistance.

Staff: professors Koh, Morton; associate professors Dauser, Lindberg, McNulty, Reynolds, Rushton, Salisbury; assistant professors Goudier, Mearce

Courses and Graduates

441 Introduction to Human Geography

4.5 hours

Application of geophysical concepts to contemporary social, economic and political problems; urban growth; problems of pollution; diffusion of innovations; territoriality; and economics open to freshmen.

442 Natural Environment and Man

4 hours

Specialization of the world's natural resources, including climate, water, landfoms, soils, vegetation and minerals; man's role in defining nature of resources; regional problems in resources use, environmental pollution and natural hazards; open to freshmen.

441 Introduction to Social Geography

4.5 hours

Principles and methods of social geography; population: man in relation to his environment; spatial aspects of social systems, including education, religion, recreation, residential and social services; diffusion of ideas and ideas over space; social change and social change; closed spatially; open to freshmen.

441 Natural Environmental Issues

3 hours

Issues arising from man's use of resources and their relationship between people and the environment; population pressures on agricultural resources; energy and mineral resources requirements of industrial societies; open to freshmen.

442 Introduction to Economic Geography

4.5 hours

Location and spatial organization of world major types of economic activities, including manufacturing, mining, transportation, marketing, service operations and companies. Open to freshmen.

442 Introduction to Urban Geography

4.5 hours

Processes of urbanization and city growth; spatial structure and patterns; urban activities; geographic concentration of urban problems in cities and their effects on the environment; open to freshmen.

450 Urban Geography Seminar for Major Students

2 hours

Nature of geography as a professional field; geographic methods of analysis and writing in geography; problem of research paper required of all undergraduate students; research topics; open to undergraduates majoring in geography; prerequisite approval of faculty member with student's written request.

4600 The World of Wine

2 or 3 hours

Production, distribution and consumption of wines throughout the world, with emphasis on quality wine as related to topography, soils, weather-conditions and aging; three-week field trip of students of selected European countries planned for those who elect this course; five semester hours of credit, field trip scheduled for three weeks immediately following the end of spring semester period in May; open only to juniors and seniors.

442 Geography of the Third World

4.5 hours

Geography of processes and problems of underdeveloped; special implications of the concepts of planning settlement in third world countries; open only to juniors and seniors.

444 Geography of a Divided World

3 hours

World divided by differences in social, economic and political values and systems; major regional problems of the world, as characterized by international issues and impact of revolution; changes now in process, open only to juniors and seniors.

Courses and Graduates

4410 Readings in Geography

4 credits

Required for students who have completed appropriate number of geography courses and who are interested in pursuing specific topic of their choice may be so by registering for special readings in geography; permission of faculty member to whom is necessary. Students required to register for special readings in geography.

4411 Introduction to Weather and Climate

3 hours

Spatial distribution of weather elements, wind circulation, hours, storms and general world climate, including air pressures and climate changes; laboratory work in study of weather maps and climate data.

4416 Geography in the Baptist Curriculum

5 hours

Concepts and content of geography essential to effective educational programs of geographic literacy, as of audio-visual media in teaching geography.

4416 Quantitative Methods

3 hours

Mathematical and statistical techniques in current research in geography.

4419 Political Geography in Cities

5 hours

Political organization of urban areas and the problems and impact of reform.

4419 Political Geography

5 hours

Political sociology, urbanization, the relationships between the political behavior of individuals, groups and systems, and the structures of their social, cultural, political and economic environments; theory of political and social organization based on assumptions of political and economic system.

4419 Natural Environmental Issues

3 hours

Issues arising from man's use of the natural environment and related problems arising from an expanding world population; i.e., water and land pollution; population pressures on agricultural resources; energy and mineral resource requirements versus the quality of the environment.

4422 Natural Hazards

3 hours

Natural hazards as related to urban environment, forestation, mineral, drought and floods; human adjustment to these events, ranging from immediate responses to delay of occurrence and evasion to long-term responses for the formation, flood control, zoning and insurance.

4421 Stream Processes and Landforms

3 hours

Hydrology of drainage basins, and role of river flow in shaping form of bed surfaces.

4422 Natural Resources of the United States

3 hours

Nature, pattern and characteristics of important natural resources: land, water and air; as baselines for natural resources planning.

4416 Location of Economic Activities

3 hours

Location and distribution of economic activities, including pricing location of service industries and service industries; United States moves toward increased use of mineral resources; development of world metals in special districts; functional, large and small; classification and inventory manufacturing and service activities in both world and national levels.

4416 Theory of Marketing and Location

3 hours

Theory and practice of marketing location, and its application to different industries and types of economy; analysis of industrial location; open to freshmen.

4423 Urban Geography

3 hours

Methods of urban growth and urban forms; spatial patterns of selected activities; processes that generate these patterns; current problems.

4428 The Third World

3 hours

Residential segregation of minority groups; social structure of "ghetto" areas; urban and suburban environments, social aspects of problems of economic and social areas.

4437 City Development

3 hours

Process and policy considerations related to urban growth and change; theoretical and operational factors controlling development; open to undergraduates majoring in geography; prerequisite approval of faculty member with student's written request.

4438 Theories, models and substantive findings concerning spatial organization in human activities; economic systems, spatial distribution of industries, and transportation systems; formal and informal spatial patterns; models of analytical and economic models of urban geographic system; formal and informal spatial patterns; the implications of urban system.

4436 Perspectives on Urban Environment Issues

3 hours

Spatial aspects of development in Africa, geographical interpretation of economic conditions confronting African societies.

4431 Perspectives on Urban Environment Issues

3 hours

Relationships between man's social behavior and biological and physical aspects of his environment.
of his environment; impact of technology on environment; technological, eco-
nomical; political and behavioral solutions to environmental problems, exam. as 232-331

Courses for Graduates Only
44201 Geographical Analysis I 3 s.h.
Prerequisites: Introduction to statistics. Study of a variety of techniques in light of philosophical development in science in general; critical review of research literature of the past

44202 Geographical Analysis II 3 s.h.
A critical examination and evaluation of current analytical and theoretical
devlopments in geography; prerequisites: 44201

44208 Advanced Quantitative Methods 3 s.h.
Mathematial and statistical techniques in current geographical research with
emphasis upon employment of computer and development of research design; prerequisites: knowledge of computer programming and 44206, its equivalent or consent of instructor.

44215 Locational Analysis of Political Behavior 3 s.h.
Locational issues of political and governmental behavior at individual and various
socioeconomic levels; special emphasis upon political behavior, aspects of political
societies, aspects of modern political behavior; prerequisites: 44202, 44208 or consent of instructor.

44216 Behavioral Analysis in Geography 3 s.h.
Various behavioral studies building strategies pertaining to special behavior
and spatial structure, with emphasis on environmental perception approaches; prerequisites: 44206, 44208 or consent of instructor.

44218 Location Analysis of Economic Behavior 3 s.h.
Classical theories for the location of economic activities contrasted with alternate approaches of special analysis of school of economic geography; contemporary efforts to develop behavioral models of decision-making in computer processing and market programming and behavior of programming agents in solution of special allocation problems at present expectations; prerequisites: 44202, 44208, 44190 or consent of instructor.

44236 Spatial Structure of Residential Areas 3 s.h.
Behavioral processes as related to spatial patterns of residential areas; processes of residential site selection and attributes of residential areas, linkages between residential areas and other elements of urban areas; prerequisites: 44190, 44206 or consent of instructor.

44238 Travel Behavior in Urban Areas 3 s.h.
Theoretical and conceptual basis of urban travel behavior; current models of travel
behavior; interaction between infrastructure spatial structure and travel behavior; new research strategies and empirical behavioral trends helpful in predicting internal urban travel behavior processes; prerequisites 44190, 44206 or consent of instructor.

44251 Geographic Perspectives on Development 3 s.h.
Theoretical and empirical studies of the development process, with special emphasis
upon the developing countries. The emphasis will be on the environment of development studies; prerequisites: 44006, 44206 or consent of instructor.

44253 Human Geography of the Eastern United States 3 s.h.
Human settlement, physiological and sociological response to extraneous
of post colonial, and pre-contact communities; emphasis in central Africa, Berengar (Abdus-Sierra) and northwestern North America, measured from time of appearance of man in present; emphasis on geographical theories and social science; lectures 113326, 12236 and 72322

44268 Field Techniques in Physical Geography 3 s.h.
Sampling procedures and collection of fossil data in physical geography, together
with laboratory analysis of data of fossil flora.

44266 Research Seminar: The Teaching of Geography 3 s.h.
Research seminar: Quantitative Methods, Computer Methods and Modeling 3 s.h.

44311 Research Seminar: Geographical Analysis of Social Behavior 3 s.h.

44315 Research Seminar: Locational Analysis of Political Behavior 3 s.h.

44318 Research Seminar: Human Geography 3 s.h.

44319 Research Seminar: Interactional Theory 3 s.h.

44320 Research Seminar: Urban Travel and Transportation 3 s.h.

44327 Research Seminar: Urban Growth and Development 3 s.h.

44338 Urban Transportation Issues 3 s.h.

44339 Urban Information Systems 3 s.h.

44350 Staff Seminar 3 s.h.

44358 Field Seminar 3 s.h.

44400 Research: The Teaching of Geography 3 s.h.

44410 Research: Geographical Analysis 3 s.h.

44411 Research: Models of Spatial Behavior 3 s.h.

44415 Thesis 3 s.h.

Geology

Department Chairman: Brian F. Glennier
Degree offered: B.S., M.S., Ph.D.

Geology is the theoretical and practical application of all scientific disciplines to the study of the earth. How the earth was formed, what it looks like now and how it has been changing over time is what you will study in this course. Career opportunities are available to professional geologists in industry, teaching, urban planning, geological and mineral surveys, government and research institutions. The master's degree is required for most hiring agencies as the working degree in geology. However, an undergraduate degree is fully satisfactory in certain teaching, federal and industrial situations.

About half of Iowa State geology graduates find jobs in the petroleum industry as exploration geologists. Most of the rest go on to graduate school or take jobs with government or business. Others are interested in urban planning environmental studies, engineering, archeology, science education or oceanography as advanced areas. Geology is suited to all these.

The program at Iowa stresses theoretical geology and paleon-
tology more than the engineering or agricultural phases of the discipline. The Department specializes in relating science to the study of the earth. Geology majors receive at least an academic year's work in basic scientific areas—physics, bi-
ology, chemistry and mathematics—in addition to a course in each major area of geology.

Each year more than 1,400 students enroll in Earth History and Resources, a hands-on, laboratory-discussion-lab course designed to fulfill the College of Liberal Arts requirement for natural science core studies.

Other offerings for nonmajors include a lecture sequence for persons interested in a general survey of geology and several advanced courses without prerequisites—palaeontology, geology of Iowa, history of the vertebrates, a plant in crises, minerals and world affairs. Landforms.

The Undergraduate Programs

The Bachelor of Science Degree

The Bachelor of Science program is designed primarily to prepare
students for graduate study and for employment in in-
dustry. Required courses are the B.S. program fall into four categories:

Liberal Arts

Students majoring in geology must meet the general requirements of the College of Liberal Arts in rhetoric and physical skills, mathematics, foreign language; and the literature, historical-cultural, social science and natural science core areas. It is recommended that they satisfy the language requirement with French, German or Russian; and the social science core requirement with approved courses in economics, geography and/or anthropology. Most students meet the Liberal Arts requirements in less than the 62 hours allowed.

Geology Courses

These are in addition to the College of Liberal Arts' general requirements:

11:23 Earth History and Resources 4 s.h.
11:24 Man and His Physical Environment 4

or two seminars of freshman geology 6-8

12:42 Mineralogy 3
12:53 Elementary Petrology and Geochemistry 3
12:112 Geological Field Methods 1
12:113 Summer Field Course 6
12:121 Principles of Paleontology 3
12:191 Structural Geology 4
12:198 Senior Seminar 1

or two elective geology courses 6

Supporting Sciences

The geology major requires at least 10 semester hours of college-level mathematics, including either one semester of calculus or 223E:35 Engineering Mathematics I (computer science or statistics courses may be counted toward the 10-hour requirement) and eight hours of physics, eight hours of chemistry and five hours of college-level zoology or botany.

Research

Many students in the junior or senior year are ready to pursue some aspect of original investigation for credit. Those who are may assist a faculty member or graduate student with an ongoing research project or undertake a small-scale project involving a combination of field work and laboratory and library investigations. Such work is in addition to the required 30 semester hours of geology courses.

The Bachelor of Arts Degree

Requirements are the same for the B.A. as for the B.S. degree, except that two years of foreign language are required instead of one.

Graduate Programs

Students planning to take graduate work in geology should have completed geology and supporting courses equivalent to those required of undergraduate geology majors at Iowa. Deficiencies may be remedied at the beginning of graduate study.

Prospective graduate students in geology should consult the "Rules and Regulations" in the "Graduate College" section of the Catalog for general admission and graduate study requirements.

All graduate students in geology are required to perform teaching, research or other appropriate services for the Department, as part of the degree program.

The Master of Science Degree

The M.S. degree programs are designed to complete the student's breadth, fundamental background in geology and the supporting sciences. They prepare the student for a professional career in geology, or for more advanced and specialized studies—although it is some situations and with faculty approval the student may select a specialized program at the master's level.

The Department chairman assigns each entering graduate student to a faculty advisor and designates two additional faculty members to form the student's advisory committee. The committee is responsible for approving a suitable program of coursework, guiding the student in the development of research plans and—before the end of the student's first year of residence—approving his or her thesis topic. If he or she is taking the degree with thesis.

The degree requires at least 30 semester hours of credit in graduate level coursework, including not more than eight semester hours of thesis and research credit, and at least 24 hours in residence at Iowa.

Master's degree candidates complete at least one-half of the Ph.D. language and tool requirements as part of the master's program. Coursework taken to satisfy these requirements does not count toward the semester-hour requirements for the degree.

To qualify for the final master's examination, the candidate must have at least a 2.75 (4.0 = A) grade-point average on University of Iowa graduate courses offered toward a degree.

The Master of Science Degree with Thesis

Students are encouraged to select thesis topics involving a variety of geological subdisciplines and scientific skills. Mapping those are considered particularly appropriate if the area is widely chosen. Other topics may be equally acceptable.

The Master of Science Degree without Thesis

Relatively few students are encouraged to pursue this program, which requires that the applicant have approximately three month's experience working under supervision of a professional geologist, or equivalent experience in some phase of geologic activity.

If possible the student should receive prior faculty permission to apply the experience toward the degree.

The student must submit a written report on the activity and on the geologic principles is involved and its value and broader applications and implications. No college credit is granted for this activity.

The M.S. degree without thesis requires at least 38 semester hours of graduate coursework, of which at least eight hours must be earned in other departments of the University.

The faculty in Geology may also require the student to submit a formal scientific report dealing with an appropriate subject or project. Credit may be granted for this report.

The final examinations cover coursework and work done in lieu of the thesis.
The Master of Arts in Teaching (North Science)

This program enables students to combine certification to teach secondary school with participation in a specialized graduate curriculum. It requires the College of Education, the M.A.T. degree requires at least 20 semester hours of graduate study and at least 18 hours of graduate coursework in earth science.

The Doctor of Philosophy Degree

The Doctor of Philosophy degree in geology requires at least 72 semester hours of graduate coursework, including at least two full-time semesters in residence beyond the first 24 hours of graduate study.

Departmental language and tool requirements for the Ph.D. degree may be met either by achievement of competence in two languages or in one language and one tool, or achievement of proficiency in one language.

Competence is normally achieved by satisfactory completion of a one-year sequence of appropriate courses, proficiency by satisfactory completion of a two-year sequence.

French, German and Russian are languages which meet Departmental requirements; statistics and computer science are suitable tool areas. In exceptional circumstances the faculty may approve other languages or tool areas.

Courses in such related disciplines as botany, chemistry, physics and zoology are not regarded as satisfying tool requirements, although they may provide indispensable background for the various stages of geological specialization.

Coursework taken to satisfy language and tool requirements may not be applied to credit requirements for the degree.

Within broad limits, the student's course selection should reflect his or her own needs, interests and abilities. These are minimum requirements:

Satisfaction of course requirements for the M.S. degree in geology at Iowa. Where appropriate, additional work in one area may be approved as satisfying requirements in another.

An appropriate graduate course in another discipline. Courses classified between Geology and other departments are not generally considered to meet this requirement.

At least 24 semester hours of graduate coursework, exclusive of credits for dissertation research and beyond coursework applied toward the M.S. degree.

The comprehensive examination covers—in depth—all subdivisions of one major field and one subdivision in each of three other major fields. It is also presumed that the doctoral candidate is proficient in the basic elements of general geology, as presented by current elementary textbooks.

These are the major and minor fields:

**Economic Geology**
- Petroleum
- Economic Minerals
- Exploration Geophysics

**Petroleum-Geology**
- Petroleum Geology
- Economic Minerals

**Mineralogy**
- Igneous and Metamorphic Petrology
- Experimental Petrology

**Structural Geology**
- Geotectonics
- Structural Analysis
- Remote Sensing
- Stratigraphy
- Physical Stratigraphy
- Biostratigraphy
- Depositional Environments
- Sedimentary Petrology
- Sedimentation
- Sandstone and Carbonate Petrology
- Physical Stratigraphy
- Pleistocene Studies
- Petroleum Geology
- Vertebrate Palaeontology
- Palynology
- Palaeontology
- Palaeobotany
- Palaeocology
- Biostratigraphy
- Geomorphology
- General Geomorphology
- Glacial and Palaeocene
- Remic Sense
- Environmental Geology
- Ground Water
- Remote Sensing
- Ecology
- Other Minor Subjects
- Botany
- Zoology
- Chemistry
- Physics
- Geography
- Hydraulics
- Archaeology-Anthropology
- Science Education
- Others

**Cooperative Activities**

Students benefit greatly from the presence on campus of the Iowa Geological Survey and the State Archeologist. The Department has joint professorships with the Survey and the Department of Botany. Students sometimes work during summers and the school year on projects for the Survey—surveying, keeping well records, drafting and doing special projects. There is cooperation between the Geology, Geography, Archaeology, Chemistry and Physiology departments in service, equipment, joint instruction and equipment.

**Field Trips**

Field trips are an integral part of several courses in geology. Weekend general-interest events are frequent. Iowa City is situated in the midst of the richly fossiliferous Palaeozoic bedrock. Marine and terrestrial fossil assemblages, extensive reefs and unique geode sites are available within a few hours' drive. All four Pleistocene glaciations are represented in Iowa and each offers distinctive landforms and fossil assemblages.
Spring recites provides time for longer trips which are available to all geology students. In recent years these have included the Grand Canyon, the Florida Keys, the southern Appalachians, the Big Bend Region of Texas and the Oaxara. Advanced courses for seniors and graduate students regularly visit Colorado, Ontario, Kansas, Oklahoma and California.

The Senior Seminar
All geology majors take part in a once-a-week senior seminar designed to help consolidate accumulated knowledge in geology. The participating student chooses two staff members to work with and presents two papers to the class and faculty. Students can present research results, reviews of topics in geology or analyses of current geologic events. Different faculty members prepare each week, and student discussion is lively.

Joint Programs
Joint programs can be arranged. Typical joint majors include chemistry, physics, zoology and anthropology.

Original Research
Many students in the junior or senior year are ready to pursue original research for credit. They may assist a faculty member or graduate student with a current research project or initiate a small-scale project involving a combination of field, laboratory and library investigation. Independent study is encouraged. Undergraduate courses have produced term reports which subsequently were published.

The Honors Program
A degree "with Honors" in geology is offered. Students in the Honors Program can elect a senior thesis.

Staff: professors Furrich, Gmelin, Hopkin, Tuttle; adjunct professors Struhlis, Tarkw, Tarkwell; professor emeritus Testor; associate professor Clark, Heckel, Kramper, McCormack, Senekw, Scott, assistant professors Baker, Canaday, Dlha, Scholten; research associate Stirling.

Laboratory Manager: Roger C. Russel.
Library: Miss B. Bacon.
Technician: Mr. H. K. Harris.

Courses Primarily for Undergraduates

124 Lectures in Earth History and Resources 2 s.h.
124 Men and His Physical Environment 2 s.h.
124 Simple and Historical Geology (Graded) 2 s.h.
124 Principles of Physical Geology 4 s.h.
124 Principles of Historical Geology 2 s.h.
120 Geologic Field Methods 4 s.h.
124 Introduction to Geology 4 s.h.
124 Field Methods of Geology 4 s.h.
124 Geologic Field Methods 4 s.h.
1204 Field Trip 2 s.h.
1208 Introduction to Geology 4 s.h.
1208 Field Methods of Geology 4 s.h.
1208 Geologic Field Methods 4 s.h.
1208 Field Trip 2 s.h.
1208 Survey of geology is the course for students who have had previous course in geology. Students who are major in geology must take 1208.
1208 Geologic Field Methods 4 s.h.
1208 Field Trip 2 s.h.
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1208 Geologic Field Methods 4 s.h.
1208 Field Trip 2 s.h.
1208 Survey of geology is the course for students who have had previous course in geology. Students who are major in geology must take 1208.
12/120 Vertebrate Paleontology 3 s.h.
Evolution of the vertebrates, taxonomic, stratigraphic and paleontological concepts of selected taxa; laboratory; prerequisite: introductory geology or zoology and departmental approval.

12/121 A Planet in Crisis 3 s.h.
Critical review; scientifically-based, of the limits of earth's resources and human population; includes basic ecology, population, resources and pollution; factors, discussion and reading devoted for general populace students, are open to graduate science majors; same as 25/121.

12/122 Paleobotany 3 s.h.
Phenomenon of plants used for fossil evidence, paleobotanical techniques, en-
vironmental applications in coal and petroleum industry; finishes, laboratory, field trips, prerequisite: introductory botany or geology; same as 23/120.

12/126 Paleomagnetism 2 s.h.
Nations, origin and use of paleo and quaternary field and laboratory study of polarized

tolens; application to archaeologic, historic, geologic and archaeological problems; prerequisite: college geology, college biology or botany; same as 2/21.

12/127 Sedimentary Environments 2 s.h.
Lecture, laboratory and field course treating the processes of weathering, transporta-
tion, deposition and diagenesis which produce clastic, bioclastic and chemi-
cal sedimentary rocks; prerequisite: physical principles and biological geology 12/128 Depositional Environments.

12/129 Survey of modern sedimentation of shoreline toward interpretation of depositional environments of ancient sedimentary rocks and deciphering of read-
ing stratigraphic patterns; prerequisite: sedimentology, stratigraphy, paleontology or consent of instructor.

12/134 Principles of Sedimentary Geology 3 s.h.
Theory and practice of mineral study with petrographic microscope; prerequisites:
12/134 2 or 4, 12/36A or B, 23/128 or 25/128 may be taken concomitantly.

12/134 A X-ray Crystallography 5 s.h.
Theory and practice of petrographic, single crystal method; X-ray fluorescence, space group symmetry, application to geological problems, offered in 1972-73 and in alternate years; prerequisite: consent of instructor.

12/134 D Crystal Chemistry 3 s.h.
Principles of solid state geochmstry as applied to important rock groups, natural silicates, oxides, carbonates and silicates, with use of understanding geologic; offered in 1972-73 and in alternate years; prerequisite: consent of instructor.

12/132 Thin Section Petrography 3 s.h.
Laboratory course in descriptio, classification and genesis of igneous, sedimentary and metamorphic rocks; prerequisites: 12/134.

12/134 Thermodynamics and Phase Equilibria 3 s.h.
Prerequisites: physical chemistry fundamentals to thermodynamics; prerequisites:
12/134 or equivalent; consent of instructor.

12/134 A Geostatistics 2 s.h.
Application of statistics to geological problems: measurement of one semester of
rival, prerequisite: consent of instructor.

12/134 B Stratigraphy 3 s.h.
Prerequisites: earth or physical geology and geology 12/134.

12/134 C Sedimentary Petrology 2 s.h.
Principles of geology, major rock types, including bioturbation, geometry and geologi-
al, laboratory; prerequisite: consent of instructor.

12/134 D Metamorphic Petrology 3 s.h.
Prerequisites: earth or geology and geology 12/134.

12/134 E Geochronology 3 s.h.
Prerequisite: college earth science or geology.

12/134 F Geology and Paleogeography 3 s.h.
Prerequisite: college earth science or geology.

12/134 G Geochronology 3 s.h.
Prerequisites: earth or physical geology and geology 12/134.

12/134 H Geochronology 3 s.h.
Seminar on use of geochronology, paleontology, biostratigraphy, and stratigraphy to

12/134 I Stratigraphy elucidate geologic, paleogeologic, and diagenetic processes and or other studies in interpret quaternary environments; prerequisite use of
12/134 J Geochronology 3 s.h.
12/134 K or 12/134 L or 12/134 M or 12/134 N may be repeated; same as 12/134.

12/134 L Applied Geochronology 3 s.h.
Lecture seminar with topics in study and research; lab- field-oriented ap-
12/134 M Geochronology 3 s.h.
approach to study evolution of selected geologic and geochronologic features; prerequisite:
12/134 N or consent of instructor.

12/135 Conodont Mammals 3 s.h.
Prerequisites: 12/132.

12/135 Native Materials and Man 3 s.h.
Prerequisite: permission in course of geology; main work done in lab and field with
12/135 A Native Materials and Man 3 s.h.

12/135 A Native Materials and Man 3 s.h.
Prerequisite: permission in course of geology; main work done in lab and field with
12/135 B Native Materials and Man 3 s.h.
12/135 C Native Materials and Man 3 s.h.
12/135 D Native Materials and Man 3 s.h.
12/135 E Native Materials and Man 3 s.h.
12/135 F Native Materials and Man 3 s.h.
12/135 G Native Materials and Man 3 s.h.
12/135 H Native Materials and Man 3 s.h.
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12/135 J Native Materials and Man 3 s.h.
12/135 K Native Materials and Man 3 s.h.
12/135 L Native Materials and Man 3 s.h.
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12/135 O Native Materials and Man 3 s.h.
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12/135 Q Native Materials and Man 3 s.h.
12/135 R Native Materials and Man 3 s.h.
12/135 S Native Materials and Man 3 s.h.
12/135 T Native Materials and Man 3 s.h.
12/135 U Native Materials and Man 3 s.h.
12/135 V Native Materials and Man 3 s.h.
12/135 W Native Materials and Man 3 s.h.
12/135 X Native Materials and Man 3 s.h.
12/135 Y Native Materials and Man 3 s.h.
12/135 Z Native Materials and Man 3 s.h.

Courses Primarily for Graduates

12/210 Seminar in Geologic Remote Sensing 2 s.h.
Review of current literature and research, detailed study of remote sensing tech-
niques, including field and laboratory experiences; prerequisites: 12/110 and con-
sent of instructor.

12/211 Investigative Paleontology 2 s.h.
Intricate, use of computer in studies of vertebrates, rocks, geology and petroleum industry; prerequisite: 12/211 or consent of instructor.

12/220 Micropaleontology 2 s.h.
Prerequisites: 12/210 and consent of instructor; may be repeated.

12/220 Sedimentary Petrology: Carbonates 3 s.h.
Laboratory and lecture-seminar course treating carbonate, geochemistry and or other studies in interpret quaternary environments; prerequisite use of
12/220 A Sedimentary Petrology: Carbonates 3 s.h.
12/220 B Sedimentary Petrology: Carbonates 3 s.h.
12/220 C Sedimentary Petrology: Carbonates 3 s.h.
12/220 D Sedimentary Petrology: Carbonates 3 s.h.
12/220 E Sedimentary Petrology: Carbonates 3 s.h.
12/220 F Sedimentary Petrology: Carbonates 3 s.h.
12/220 G Sedimentary Petrology: Carbonates 3 s.h.
12/220 H Sedimentary Petrology: Carbonates 3 s.h.
12/220 I Sedimentary Petrology: Carbonates 3 s.h.
12/220 J Sedimentary Petrology: Carbonates 3 s.h.
12/220 K Sedimentary Petrology: Carbonates 3 s.h.
12/220 L Sedimentary Petrology: Carbonates 3 s.h.
12/220 M Sedimentary Petrology: Carbonates 3 s.h.
12/220 N Sedimentary Petrology: Carbonates 3 s.h.
12/220 O Sedimentary Petrology: Carbonates 3 s.h.
12/220 P Sedimentary Petrology: Carbonates 3 s.h.
12/220 Q Sedimentary Petrology: Carbonates 3 s.h.
12/220 R Sedimentary Petrology: Carbonates 3 s.h.
12/220 S Sedimentary Petrology: Carbonates 3 s.h.
12/220 T Sedimentary Petrology: Carbonates 3 s.h.
12/220 U Sedimentary Petrology: Carbonates 3 s.h.
12/220 V Sedimentary Petrology: Carbonates 3 s.h.
12/220 W Sedimentary Petrology: Carbonates 3 s.h.
12/220 X Sedimentary Petrology: Carbonates 3 s.h.
12/220 Y Sedimentary Petrology: Carbonates 3 s.h.
12/220 Z Sedimentary Petrology: Carbonates 3 s.h.

12/222 Human Ecology and Origin of Man 2 s.h.
Preparation: 12/222 Human Ecology and Origin of Man 2 s.h.

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German

12/271 Advanced Geomorphology 3 a.h.
Prerequisite: 12/272

12/272 Field Geomorphology 5 a.h.
One-week field trip to selected areas of geomorphic interest, prior to classes to introduce these areas, post-trip classes to consider regional aspects, prerequisites: 12/271, 12/274, 12/277

12/274 Seminar: Economic Geology 2 a.h.
Supervised development and initiation of mineral deposits; prerequisite: 12/182 or 12/184, consent of instructor, alternate years

12/286 Economic Geology: Petroleum 2 a.h.
Methods of exploration and development; typical structural complexities and factors, offered in alternate years; prerequisite: 12/182 and 12/182

12/285 Geology of Ore Deposits 2 a.h.
Origin of metals, ores and magmatic belts, based on geophysical, geochemical and geologic evidences; offered in 1712 and in alternate years; prerequisite: 12/281, 12/284, recommended: one year of calculus

12/280 Advanced Physical Geology 3 a.h.
Mechanisms of behavior of rock materials and physical processes in geology; offered in 1971-72 and in alternate years: prerequisite: one year of calculus

12/286 Seminar: Structural Geology 2 a.h.
Offered in 1971-74 and in alternate years; may be repeated: prerequisite consent of instructor.

12/300 Research: Summer Field and Laboratory or. arr.
May be repeated.

12/362 Seminar: General Geology or. arr.
May be repeated.

12/186 Research: Ground Water or. arr.
May be repeated.

12/360 Research: Palaeontology or. arr.
May be repeated.

12/361 Research: Micropalaeontology or. arr.
May be repeated.

12/360 Research: Sedimentology and Sedimentary Petrology or. arr.
May be repeated.

12/360 Research: Petrology or. arr.
May be repeated.

12/360 Research: Petrology or. arr.
May be repeated.

12/360 Research: Petrology or. arr.
May be repeated.

12/360 Research: Palaeontology or. arr.
May be repeated.

12/360 Research: Bioturbation or. arr.
May be repeated.

12/360 Research: Economic Geology or. arr.
May be repeated.

12/366 Research: Geophysics or. arr.
May be repeated.

12/360 Research: Structural Geology or. arr.
May be repeated.

12/360 Research: Remote Sensing or. arr.
May be repeated.

German

Department Head: Edward Suvorovsky
Degrees offered: B.A., M.A., Ph.D.

The primary function of the Department of German is to transmit to American liberal arts students knowledge of the language and literature, the civilization and culture traditionally designated as German.

University graduates with a major in German frequently enter the teaching profession. (For teacher certification requirements, see "College of Education.") They may also find positions in government, foreign service and commercial enterprises, where their specialized knowledge of the language and literature, the history and culture of Germany is indispensable.

Undergraduate Requirements

Students majoring in German are normally required to complete, in addition to the general requirements of the College of Liberal Arts (see "College of Liberal Arts"), a minimum of 24 semester hours of coursework in the Department beyond the 15-semester-hour basic program. The following course sequence or the equivalent is required of majors who have had no previous experience with the German language:

The Basic Program

First and Second Year

12/11 First Semester German 3 a.h.
12/12 Second Semester German 3 a.h.
12/21 Third Semester German 3 a.h.
12/22 Fourth Semester German - Reading 3 a.h.
12/23 Fourth Semester German - Composition and Conversation 3 a.h.
12/22 and 12/23 may be taken concurrently, if desired, or tandem.

Third Year

12/31 German Classics 3 a.h.
12/32 German Classics 3 a.h.
12/33 Intermediate Composition and Conversation 3 a.h.
12/34 Intermediate Composition and Conversation 3 a.h.

Fourth Year

12/101 Advanced Composition and Conversation 3 a.h.
12/105 German Cultural History 3 a.h.
12/111 Survey of German Literature 3 a.h.
12/112 Survey of German Literature 3 a.h.

An eight-week intensive course, 13/111, is offered each fall semester for students who seek the teaching certificate and are enrolled for the professional semester in the College of Education.

Courses are to be taken in sequence after initial placement, unless permission to vary the sequence is approved by the faculty.

Students who intend to go on for an advanced degree are encouraged to add 13/103 German Phonology (three semester hours) to the above.

German majors, graduate as well as undergraduate, are urged to supplement their degree programs with either semester of 16/149-150 History of Germany but preferably both.

If a student who handles German with native proficiency wishes to major in German, he or she may do so, but since most of the undergraduate course requirements are waived in such a case, it will be necessary for him or her to declare German as a second major. The student is expected to earn a complete first major in a subject in which he or she has no such obvious advantage over his or her peers.

Teacher Certification

In view of the requirements of the College of Education for teacher certification, which are subject to change and which may conflict at times with the sequential requirements of the major in German, it is strongly advised that the student consult with the Departmental chairman or undergraduate advisor to help ensure the successful completion of his or her program.
The Teaching Minor

In addition to the basic program of the first and second year, above, the following courses or their equivalents constitute a teaching minor in German:

1311 German Classics
1332 German Classics
1333 Intermediate Composition and Conversation
1334 Intermediate Composition and Conversation
13101 Advanced Composition and Conversation

Honors in German

German majors of junior or senior standing with an overall grade-point average of at least 3.0 and a 3.5 grade-point average in German may enroll in this program. The student chooses an instructor in the field of his or her special interest, under whom he or she works. An extensive reading program, discussions, regular reports and a seminar paper are required for each work unit (two semester hours). A total of six to eight semester hours may be taken in this program. Also, graduate courses and seminars are open to the student judged to be ready for them. A comprehensive examination in the senior year terminates the program.

Special Facilities

Students have the opportunity to improve their comprehension and command of the language by working with recorded material in the Language Laboratory. An extensive collection of works and periodicals in the University Library facilitates research in all major areas of German literature and Germanic linguistics.

Graduate Study Requirements

Master of Arts Degree in German

M.A. with Thesis

Graduate students of German who demonstrate an interest in and potential for productive scholarship on the graduate level and who plan to continue to the doctorate should elect the program with thesis. A minimum of 30 semester hours or the equivalent of graduate-level work beyond that which normally constitutes an undergraduate major in German at the University of Iowa (see above) is required. If the candidate for the M.A. degree in German has not already had these undergraduate courses or their equivalents, he or she will include them in his or her program along with the other required courses as listed below in the required courses for the Master of Arts degree in German. The candidate will receive graduate credit for such makeup work, but this credit will not normally be counted toward the degree. Additional courses are elected with the approval of the graduate advisor. Of the minimum 30 semester hours required for the degree, six graduate work may be taken outside the Department with the approval of the graduate advisor in such related subjects as philosophy, history, linguistics, other languages, etc. Normally two semester hours of credit may be received for satisfactory completion of a thesis. The thesis may be either linguistic or literary and is subject to the approval of the faculty. Those students planning to go on to the Ph.D. degree are required to write a thesis unless departmental approval to do otherwise is granted.

Before the M.A. exams can be administered—usually after acceptance of the M.A. thesis—the candidate must show a competence level in a foreign language other than German equivalent to two years of college study or four years of high school study, with a grade of B or higher.

M.A. without Thesis

A graduate student who desires his or her program to be centered in the direction of optimum preparation for secondary school teaching, government service, translation, etc., may elect the one without thesis. This program requires a minimum of 38 semester hours of coursework calculated to provide the student with training for the work he or she plans to do and is considered terminal. The same course requirements outlined for the M.A. with thesis apply to candidates for the M.A. without thesis; however, students in this program should, with the approval of the graduate advisor, choose as electives those courses which will best prepare them for their teaching careers, etc.

Required Courses: Master of Arts Degree in German

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Description</th>
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<tbody>
<tr>
<td>13.102</td>
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<tr>
<td>13.103</td>
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<td>13.105</td>
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<td>13.202</td>
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<td>13.285</td>
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<td>13.295</td>
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<td>*13.241</td>
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<td>3 s.h.</td>
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<tr>
<td>*13.245</td>
<td>3 s.h.</td>
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</tbody>
</table>

*The candidate will receive graduate credit for these courses, but this credit will not normally be counted toward the degree.

All M.A. and Ph.D. candidates must include 13.285 in their graduate work.

Doctor of Philosophy Degree in German

The Ph.D. degree is awarded upon the satisfactory completion of 15 graduate semester courses or their equivalents beyond the requirements for the M.A. degree and fulfillment of the requirements of this Department of German and the Graduate College (see "Graduate College"). The candidate may concentrate in either Germanic languages or German literature. The Ph.D. program will normally include the coursework listed below, or their approved equivalents, and at least two advanced seminars. The remainder of the program is planned by the candidate in consultation with the graduate advisor in such a way as to assure satisfactory balance and concentration. The student may earn up to 15 semester hours of credit for satisfactory completion of the Ph.D. dissertation. Some graduate courses outside the Department in related subjects may be counted toward the degree with the approval of the graduate advisor. Each candidate is required to demonstrate adequate teaching ability in German. Wherever possible the Department will afford the opportunity
and privilege to deserving graduates to gain valuable teaching experience under supervision by making available such awards as teaching-research fellowships, teaching assistantships, tuition scholarships, etc.

A reading knowledge of French or Russian, and of a modern Scandinavian language or Dutch is required of all doctoral candiates in Germanic linguistics; a candidate concentrating in literature must demonstrate a reading knowledge of French and of another language which has been certified by his or her adviser as pertinent to the research interests of the student. Competence in these languages may be demonstrated by two years of college study or four years of high school study, with a grade of "B" or higher in each of the languages or through testing by the Department. The requirements must be met before the comprehensive exams can be administered.

Required Courses: Doctor of Philosophy Degree, Concentration in German Literature

13:102 3 s.h. 13:251 3 s.h.
13:103 3 s.h. 13:261 3 s.h.
13:109 3 s.h. 13:271 3 s.h.
13:111 3 s.h. 13:281 3 s.h.
13:112 3 s.h. 13:282 3 s.h.
13:201 3 s.h. 13:285 3 s.h.
13:202 3 s.h. 13:286 3 s.h.
13:241 3 s.h. 13:291 3 s.h.
13:244 3 s.h. 13:294 3 s.h.
13:245 3 s.h. 13:295 3 s.h.

Required Courses: Doctor of Philosophy Degree, Concentration in Germanic Linguistics

13:102 3 s.h. 13:251
13:103 3 s.h. 13:261 (any one)
13:105 3 s.h. 13:271
13:111 3 s.h. 13:281
13:112 3 s.h. 13:282 (any one)
13:201 3 s.h. 13:286
13:202 3 s.h. 13:291
13:241 3 s.h. 13:294 (any one)
13:243 3 s.h. 13:295
13:245 3 s.h. 103:112 3 s.h.
13:346 3 s.h. 103:133 3 s.h.
13:247 3 s.h. 103:250 3 s.h.
13:252 3 s.h. 103:351 3 s.h.
13:258 3 s.h. 103:353 3 s.h.

Concentration in one period of German literature 9 s.h.

* The candidate will receive graduate credit for these courses, but this credit will not normally be counted toward the degree.

Courses

Normally, for purposes of quick placement, two units of high school language instruction are considered equivalent to one unit on the college level. For example, a student who has completed two years of high school German language instruction is ordinarily expected to register for the second year of college German (13:21), but if such a student is not sufficiently prepared for 13:21, he or she can secure permission to register for 13:12, or even 13:11. If the latter occurs, however, three semester hours are added to his or her general graduation requirement. Preceptin-placement exams are given to students in whose cases the routine procedures above do not seem suitable.

Students electing to satisfy an eighteen-hour-semester minimum foreign language requirement in German (i.e., B.S., B.F.A. or B.M. degree candidates) may do so by completing the basic course which consists of the following sequence: 13:11, 13:12 and 13:21, for a total of nine semester hours.

Students who elect to satisfy in German their twelve-semester-hour minimum foreign language requirement for the B.A. degree, may do so by completing, in addition to the nine-semester-hour basic course sequence above, a fourth-semester-hour course. For this fourth-semester-hour course the student has an option of taking either 13:22 or 13:23.

A student may not take or repeat, for either credit or quality points, any course he or she has already completed a higher-level course which assumed the earlier course, or its equivalent, to be a prerequisite.

Primarily for Undergraduates

13:19 First-semester German 9 s.h.

First unit of three-semester course sequence; emphasis on reading and basic structure of German language.

13:19 Second-semester German 9 s.h.

Second unit of three-semester course sequence; study of basic structure of German language continued; emphasis on vocabulary building and reading ability.

13:17 German Heros and Erotic Literature of the Middle Ages 4 s.h.

Masterpieces of this period, including Paracelsus, The заболо́гому and The text in English translation. Includes second-semester core requirement in literature; also designed for language majors and may be taken by other interested undergraduates; same as 11:17.

13:21 Third-semester German 3 s.h.

Third unit of three-semester course sequence; basic structure of German language continued; emphasis on reading; includes language major course; may be taken concurrently or for full credit.

13:29 Fourth-semester German Reading 3 s.h.

Standard fourth-semester course for students satisfying foreign language requirement for B.A. degree; fundamental basis of German grammar; reading of short but representative literary works.

13:39 Fourth-semester German: Elementary Composition and Conversation 3 s.h.

Fourth-semester course which also satisfies foreign language requirement for B.A. degree; recommended for students who wish further training in active use of the language; students planning teaching positions, delivering speeches, carrying on conversation in German.

1931 German Classics 3 s.h.

Representative works of Lessing, Goethe and Schiller studied in their relation to Classical and Modern German Literature, prerequisites: 13:22 or equivalent, same as 10:17.

13:32 German Classics 3 s.h.

Continuation of 13:31; representative works of nineteenth- and twentieth-century authors; prerequisites: 13:22 or equivalent; same as 10:12.

13:33 Intermediate Composition and Conversation 3 s.h.

Practice in translation of selected English texts, precepting of German texts, and second unit of second-year German instruction with oral participation; same as 13:39.
German

13:34 Intermediate Composition and Conversation II 3 a.h. 

Continuation of 13:33, with more emphasis on original composition and entrepreneurship aspects; prerequisite: 12:34 or equivalent. 

13:35 PhD. Reading 3 cr. 

or 13:34 and 13:36 comprise four-visit service course for graduate students seeking research work competencies in German acquired by their respective departments; 13:35 intended for those students who have had no previous experience in German composition. 

13:36 PhD. Reading (Second Semester) 3 cr. 

Continuation of 13:35; however, students with adequate experience may elect this course which is oriented toward reading for seminars; prerequisite: 13:35 or equivalent. 

15:00 Honor Program in German or, art. 3 a.h. 

Readings from significant Austrian works of the twentieth- and twentieth-century.

For Undergraduates and Graduates 12:10 German Grammar 5 cr. 

Open only to German majors and minors. 

12:97 Advanced Composition and Conversation 3 cr. 

Required for undergraduate German majors and minors; prerequisite: 12:34 or equivalent. 

12:10 Advanced Composition and Conversation 3 cr. 

Prerequisite: 12:10 or 12:34; or equivalent. 

12:10 Advanced Composition and Conversation 3 cr. 

Prerequisite: 12:10 or equivalent. 

12:19 German Phonology 3 cr. 

Analysis of structure of sound-system of German language and introduction to problems of German morphology and syntax; basic language course; same as 352:103. 

12:10 German Cultural History 5 cr. 

Cultural history of Germany from earliest beginnings to present, with special emphasis on development of arts, philosophy, and literature. 

12:17 Teaching of German 0 to 2 a.h. 

On-the-job training course for graduate teaching assistants in the Department. 

12:11 Survey of German Literature 3 cr. 

Survey of development of German literature from earliest times to 1775; prerequisite: 15:10 or equivalent. 

12:13 Survey of German Literature 3 cr. 

Survey of German literature from 1775 to present; prerequisite: 12:11 or equivalent. 

12:15 Survey of German Literature 3 cr. 

Survey of German literature from 1775 to present; prerequisite: 12:11 or equivalent. 

12:19 German Literature in Translation 3 cr. 

Readings in German literature in translation; prerequisite: satisfactory completion of literature course; same as 352:103. 

12:19 Yiddish Literature in Translation 3 cr. 

Yiddish literature and its relationship to literature in eleventh and twelfth centuries, with special emphasis on Itzik Meir and David Ben Zeira; same as 352:107. 

12:10 Methodology in High School Modern Foreign Languages 3 cr. 

Same as Education 75:320. 

12:10 History, Theories, Modern Modes 3 cr. 

Above-referred to as critical of readers' abilities, ability to read German desirable, for those majors engaged. 

12:10 Ritts, George, Hofmarcher 3 cr. 

Three posts taught as group and as individual artists, with special emphasis in their respective and representative works. 

12:15 Kahler, Bernard 3 cr. 

Three these students enrolled in twentieth-century Austrian literature class conducted in English and readings done in translation by those not majoring in German. 

12:15 Brecht 3 cr. 

Critical analysis of his plays, poetry, and aesthetic, and of his influence on moderns, same as 352:103. 

12:15 The Poet Tradition 3 cr. 

The development of drama in the moderns; emphasizing in Goethe's Faust original analysis of Faust I and Part II; with special emphasis on philosophical and aesthetic aspects. 

Primarily for Grad/ Adv/ 595 12:30 Advanced Studies in German 3 cr. 

Special problems of German literature and language; opens to graduate majors in German. 

13:30 German Praxisrater 3 a.h. 

For first-year graduate students; general introduction to graduate study in area of German literature and Germanic linguistics; bibliography, methods of research, their preparation and writing, and specific problems introduced and discussed. 

13:30 German Praxisrater 3 a.h. 

Continuation of 13:30. 

12:31 The German Novel I 3 a.h. 

Development of novel and representative novels analyzed; good reading knowledge of German required. 

12:32 The German Novel II 3 a.h. 

The German Novel; second semester. 

12:33 German Literature 242 3 cr. 

Early period; emphasis in modern literature from Luther to 1920; critical analysis of representative poems together with study of German criticism and criticism of poetry during this period. 

12:24 The German Drama 3 a.h. 

Development of German drama and representative drama analyzed; good reading knowledge of German required. 

12:26 The German Drama 3 a.h. 

Development of German drama and plays from 1820 to present. 

12:22 The German Drama 20th Century 3 a.h. 

12:27 The German Novels 3 a.h. 

Origin and history of novel in Germany from Goethe to Kafka; critical analysis of representative works with emphasis on characters and themes; development of genre. 

12:31 History of the German Language 3 a.h. 

Development of German language and dialects from prehistoric times to present; same as 352:241. 

12:22 Middle High German 3 cr. 

Grammar and syntax of High German language in period from eleventh to fourteenth centuries; primarily for students concentrating in Legislation, same as 452:22. 

12:22 Middle High German Literature 3 cr. 

Primarily for students concentrating in Legislation. 

12:22 High German literature 3 cr. 

High German dialects in its medieval recorded forms and cultural, political, and social influence exerted upon them from medieval to modern-German-speaking areas, eighteenth to nineteenth centuries; selected readings from literature of period, same as 352:22. 

12:24 Old Saxon 3 cr. 

Study of language of early Low German documents, and of historical practice of Low German with respect to other Germanic languages; prerequisite: Gothic or Old High German or Old English; same as 352:24. 

12:24 Gothic 3 cr. 

Study of language of Old German, its importance for understanding of historical development of Germanic language; introduction to comparative Indo-European linguistics. 

12:31 Early German Literature 3 cr. 

Survey of early German literature and Middle High German period. 

12:22 German Literature of the Renaissance and Reformation 3 cr. 

Survey of Renaissance and the rise of the university movement in religion, the Reformation; development of ideas and movements in German literature and thought; readings and analysis of representative works. 

12:22 German Literature of the Renaissance and Reformation 3 cr. 

Survey of early German literature and Middle High German period. 

12:22 The Age of Enlightenment and the Period of Sturm and Stress 3 cr. 

Study of literature of the Enlightenment and the Period of Sturm und Drang. 

12:22 The Age of Enlightenment and the Period of Sturm and Stress 3 cr. 

Continuation of 12:22, but may be taken as separate units. 


12:22 Goethe 3 cr. 

12:22 Schiller, the life and thought, in major literary works. 

12:22 Schiller 3 cr. 

German Romantics, their representative works, and influence of their philosophy on modern civilization. 

German 3 cr. 

German Romantics, their representative works, and influence of their philosophy on modern civilization.
History

12926 German Realism 3 s.h.
Concept, development and manifestations of Realism in German literature from the late eighteenth to the early twentieth century.

12929 Nietzsche, Impressionism and Expressionism in German Literature 3 s.h.
Survey of German literary currents from Nietzsche to the twentieth century.

12966 Special Topics in German Literature 3 s.h.
or. arr.
May be repeated for credit.

12989 Special Topics in Germanic Philology 3 s.h.
or. arr.
May be repeated for credit.

13289 Master's Thesis 3 s.h.
or. arr.
May be repeated for credit.

13999 Senior Seminar in Linguistics 3 s.h.
May be repeated for credit (up to 34 s.h.)

13999 Senior Seminar in Germanic Linguistics 5 s.h.
May be repeated for credit.

13791 Rhetoric in Early German Literature 2 s.h.
May be repeated for credit.

13821 Senior Seminar in German Literature of the 18th Century 3 s.h.
May be repeated for credit.

13981 Senior Seminar in German Literature of the 19th Century 3 s.h.
May be repeated for credit.

13996 Senior Seminar in German Literature of the 20th Century 3 s.h.
May be repeated for credit.

13598 German Poetry of the 20th Century 3 s.h.

13599 Theory of Literature 3 s.h.

14000 Ph.D. Dissertation 0-9 s.h.
or. arr.
May be repeated for credit.

Greek

See "Classics"

History

Department Chairman: Sydney I. James
Degrees offered: B.A., M.A., Ph.D.

In addition to providing information and methods which are an essential and integral part of any liberal education, the Department trains professional historians and teachers of history at various levels. It serves those who require a knowledge of a period or aspect of history as background for their own specialized interests in other fields, and participates in several interdisciplinary programs such as American Civilization and East Asian Studies, which offer work toward undergraduate and graduate degrees.

Undergraduate Majors

The three forms of the undergraduate major in history have different purposes. The general major (Plan A) is for those who like the subject and have no special goals which might make the other forms more suitable. Though Plan A majors may take nothing but lecture courses, they are encouraged to include some small discussion classes and individual study projects. The amount of work in American history which may count toward the major requirements is limited to ensure that the student primarily interested in American history will gain perspective by becoming acquainted with another cultural tradition. The requirement of work in related areas is intended to ensure another sort of breadth in the student's experience. History majors without further preparation go into a variety of positions in business, public service, or journalism. Many, however, plan further training in history, law, religion, library science or social work as preparation for careers where advanced work is necessary.

To enroll under Plan B, the major program for teachers, the student must secure approval from his or her adviser.

The honors major (Plan C) is open to students who meet the standards of the Honors Program and have been admitted by its director. The major requirements contain few limitations, except those designed to bring honors majors together in small classes and to encourage individual study in consultation with an advisor. The thesis requirement makes it especially important for the student to find a congenial adviser. The honors major is most useful to those who have interests they wish to pursue on their own, but it has also proved highly effective in preparation for law school and graduate work in history.

The requirements for the bachelor's degree with a major in history are as follows:

General Major in History (Plan A)

1. Satisfaction of Historical-Cultural Core requirement; prospective history majors are advised, but not required, to complete this requirement by taking 1129-30 Problems in Human History or 1131-32 Western Civilization

2. A minimum of 24 semester hours in courses offered by the Department of History; no more than 12 semester hours of American history will count toward fulfilling this requirement.

3. A minimum of 16 to 18 semester hours in related courses outside the Department of History: anthropology, economics, fine arts (excluding studio courses), geography, literature (excluding workshop courses), philosophy, political science, psychology, religion and sociology, alternatively, the completion of a second major (besides history) in one of the above areas will satisfy this requirement; core courses or courses taken to satisfy core requirements will not be counted toward the fulfillment of the related area requirement.

Prospective Teachers in History (Plan B)

1. Core courses; any two chosen from 1129-30 Problems in Human History and 1131-2 History of Western Civilization (or equivalents, for transfer students)

2. At least 18 semester hours of work in courses offered by the History department, of which 12 semester hours are in the ancient world and medieval Europe, and American history

3. At least 24 semester hours of work in basic courses in three of these areas of the social sciences: anthropology, economics, geography, political science and sociology; courses taken to fulfill the core requirements will not be counted toward this requirement

Required courses in teaching methods and practice teaching

History Honors Major (Plan C)

This program leads to the Bachelor of Arts degree with Honors. The Department will admit to this program students with a grade-point average of 3.0 or above. Applications should normally be made at the beginning of the junior year. Requirements are:

A minimum of 24 semester hours of work in history, with at least nine hours in department's honors offerings, which may include as many as six hours of honors thesis credit.

Course outside the Department as for the general major.

Successful completion and oral defense of an honors thesis

Graduate Study

The graduate degree programs prepare students to teach in high schools or colleges. Those who pursue these degrees, however, often go into such occupations as archival work, library work, historical-site preparation and display, publishing and various kinds of commercial research. Some enter the program leading to degrees in both law and history. The Departmental office keeps track of special training programs in museum or archival skills which graduate students can use as supplementary training.

The standard subjects—history of the United States and Western Europe—are offered in many sub-specialties differing in time periods, topics and the research interests of the faculty. In Far Eastern, Slavic European, ancient and Latin American subjects there are fewer courses, and prospective students should make certain their interests can be realized here. The simplest way to do this is to look over the research and teaching interests of the faculty as indicated in the Guide to Graduate Study sent to all applicants for admission. Several members of the staff are interested in quantitative methods of research; an even larger number works in intellectual history and the relation of thought to society.

Graduate Admission

All applicants for admission, whether for the M.A. or Ph.D. programs, must meet the general requirements for admission set by the Graduate College. In addition, they must pass the Graduate Record Examination Aptitude Test, have an official report of their performance in that examination forwarded to the Graduate Admission Office and submit a specimen of their writing—such as a term paper, seminar paper or M.A. thesis—to the History Department. All applications for graduate awards and/or admission are due February 15 for the fall semester or November 10 for the spring semester. The candidate is advised to take the Graduate Record Examination at an early date since an admission decision cannot be made until scores are received.

Graduate Degree Requirements

Master's Degree

No special courses are required for admission to candidacy for this degree. As soon as possible in the first semester of his or her residence, the candidate should select a field of special interest and consult with a faculty member in that field, who will act as his or her supervisor. A plan of study approved by the supervisor and the Departmental executive must be filed with the Graduate College during the semester in which the degree is to be granted and before the final examination.

Plan A—This program is for students professionally interested in historical research who mean to continue to do further work in history leading to a doctor's degree. It requires a minimum of 30 semester hours of credit, including the completion of a research essay.

The candidate must elect at least 24 semester hours of work in history.

The candidate must select one division in history in which the subject of his or her essay will fall. He or she must earn at least 12 semester hours credit in this major field, including at least one seminar.

The candidate must earn at least six semester hours credit in a second division, including either a seminar or a readings course.

The essay in the major division is based on original research and prepared under the direction of the supervisor. It may not exceed 15,000 words unless the supervisor judges that a longer treatment is necessary; it may be as short as the supervisor thinks sufficient. Work on the essay will normally begin in the seminar in the major division and be continued with 16:296 Individual Study, in which rewriting will be completed under the close editorial scrutiny of the supervisor. In exceptional classes where the essay completed in seminar is judged to be of outstanding quality, other courses may be substituted for Individual Study.

Plan B—This plan, for those desiring only a master's degree, requires a minimum of 30 semester hours credit. Students who complete the M.A. under this plan may not become candidates for the doctorate in history. The work must be planned as early as possible in the first semester by the candidate in consultation with his or her adviser.

The candidate must earn at least 24 semester hours of credit in history.

The work in history must include at least 12 semester hours in one division of history. These hours must include at least one readings or seminar course.

The candidate's program must also include at least six semester hours each in two other divisions in history, or six hours in one other division in history and six hours in a related department. These hours must include at least one reading or seminar course in history.

After completing these requirements, or in the semester in which he or she expects to complete them, the candidate must present himself or herself to the Department for an oral and written comprehensive examination in his or her major division by three members of the Department. In the event of an unsatisfactory performance, the examinees may allow one reexamination.

Doctor of Philosophy

Students who earn the M.A. under Plan A at Iowa are admitted to the Ph.D. program upon the favorable recommendation of the examining committee. Students who earn the M.A. at another university must meet the general requirements for admission to the Graduate College and must submit a specimen of their writing, such as a seminar paper or an M.A. thesis, to the History Department.

The candidate must earn at least 72 semester hours of credit,
including credit for work done toward the master's degree. The 72 seminar hours must include at least 18 seminar hours in 20th-century events in the history of art, music, or drama; and at least 12 of these 18 hours must be completed before taking the comprehensive examinations, and at least 12 of these 18 hours must be completed at The University of Iowa. The candidate must also earn two seminar hours of credit in the philosophy of history, historiography or methods of historical research, in courses specifically approved by the Department to satisfy this requirement (currently 16:208-299 and 26:112). Otherwise the candidate, in consultation with their supervisor, is free to distribute work in whichever way will best prepare him or her for the comprehensive examination and for writing the dissertation. As soon as possible in the first semester of his or her residence as a Ph.D. candidate, the student should consult with the faculty member who seems most likely to become the dissertation supervisor. The Department has no common language requirement for the Ph.D., but since the supervisor may and in many cases will require the candidate to demonstrate a reading knowledge of one or more foreign languages and proficiency in the use of other tools of study, the student and the supervisor should agree early what these requirements will be. The candidate may not complete his or her comprehensive examination until these requirements have been satisfied. In consultation with his or her supervisor, the student should invite one or more other faculty members to join with the supervisor to constitute a committee of direction. The committee is to consist of the faculty members who are prepared to examine the candidate in each of the several fields of study which he or she will present in the comprehensive examination. When it is formed, the committee's first task will be to set the terms and conditions of the comprehensive. The common conditions require by the Department are that the candidate must be examined in writing in four distinct fields, at least three of them in history; the fields in history must be chosen from at least two different divisions (below), and a single oral examination must be held, covering all four of the fields presented. The Medieval World Medieval Europe Europe, 1500 to 1815 Europe, 1815 to present Russia and the Soviet Union United States History Latin American History British Empire and Commonwealth Chinese History Japanese History The committee may define and limit the individual fields for which the candidate is examined, especially for each field, the extent of the written examination, which may take the form of a syllabus, a critical bibliography, a topical paper, or combinations of the above or from which he or she is judged to have failed. The Ph.D. program is designed to be completed in four or five years from the commencement of graduate study. In any event, students must complete all degree requirements within five years from the end of the semester in which the comprehensive examination was passed, or failing this, must repeat the comprehensive examination. Special Facilities The University Library provides materials for graduate work in all fields of history offered by the Department, though often these materials must be supplemented by interlibrary loans or by the use of other libraries. The library is strong in all aspects of U.S. history. It houses the Henry A. Wallace papers and related collections, as well as other unique materials. In European history the special strengths are in French and English materials. The Iowa State Historical Society in Iowa City and the Herbert Hoover Presidential Library in West Branch 10 miles away possess additional research materials of great value. Qualified graduate students are invited to apply for fellowships and assistantships. Inquiries should be directed to the Departmental office. Staff: professors Aylott, June, Gabel, Green, Goldstein, Hale, Hawley, Horwitz, James, Lafford, Maid, Pelton, Persons, Ruhbrugh, Schoenbaum, Spizer, Stoebe, professor emeritus Livington; associate professors Dyssarta, Hennessey, Kerber, Larmour, assistant professor Large, instructor James, Moses

Courses Primarily for Undergraduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:81</td>
<td>Survey of American History, 1600-1777</td>
<td>3 or 4 s.h.</td>
</tr>
<tr>
<td>16:82</td>
<td>History of American History, 1777-Present</td>
<td>3 or 4 s.h.</td>
</tr>
<tr>
<td>16:27</td>
<td>Religion in American History, 1865-1890</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>16:28</td>
<td>Development of Religious Thought and Institution in United States</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>16:29</td>
<td>Religion in American History 1890-Present</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>16:30</td>
<td>Development of Religious Thought and Institution in United States</td>
<td>3 s.h.</td>
</tr>
</tbody>
</table>

16:32 Medieval European Society; Special Topics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:50</td>
<td>Individual Study Undergraduate</td>
<td>2-9 s.h.</td>
</tr>
<tr>
<td>16:51</td>
<td>Individual Study Undergraduate</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>16:52</td>
<td>Individual Study Undergraduate</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>16:60</td>
<td>Honors Tutorial</td>
<td>2-9 s.h.</td>
</tr>
<tr>
<td>16:61</td>
<td>Honors Seminar: Problems in European History</td>
<td>2-9 s.h.</td>
</tr>
<tr>
<td>16:62</td>
<td>Honors Seminar: Problems in American History</td>
<td>2-9 s.h.</td>
</tr>
<tr>
<td>16:63</td>
<td>Historical Background of Contemporary Issues</td>
<td>2 s.h.</td>
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</tbody>
</table>

Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:180</td>
<td>Historical Background of Contemporary Institutions</td>
<td>2-9 s.h.</td>
</tr>
<tr>
<td>16:181</td>
<td>Survey of the Development of Economic Ideas and Institutions</td>
<td>2-9 s.h.</td>
</tr>
<tr>
<td>16:182</td>
<td>Historical Background of Social Science, political and intellectual history of ancient civilization from its rise to modernity in one or more of areas of Aegaeas the great, not open to freshmen</td>
<td>2-9 s.h.</td>
</tr>
<tr>
<td>16:183</td>
<td>Survey of the Hebraeic World and Rome</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>16:184</td>
<td>Social, economic, political and intellectual history of Greece-Roman world from fourth century B.C. to 1453</td>
<td>2-9 s.h.</td>
</tr>
</tbody>
</table>
Early Modern Western Europe

16:121 Survey of Early Modern Europe, 1500 to 1648 3 a.h.

16:122 Survey of Early Modern Europe, 1648 to 1815 3 a.h.

16:123 Europe in the Renaissance 3 a.h.

16:124 Europe during the Reformation and Counter-Reformation 3 a.h.

16:125 The Age of Absolutism 3 a.h.

16:126 Intellectual History of the Renaissance 3 a.h.

16:127 Intellectual History of the 17th Century 3 a.h.

16:128 French Revolution and Napoleon 3 a.h.

16:129 Absolutism in Europe, 1500–1815 3 a.h.

16:130 British Empire and Commonwealth 3 a.h.

16:131 British Empire and the American Revolution 3 a.h.


16:133 British Empire and the Napoleonic Wars 3 a.h.

16:134 British Empire and the Industrial Revolution 3 a.h.

16:135 British Empire and the Victorian Era 3 a.h.

16:136 British Empire and the 20th Century 3 a.h.

Modern Western Europe

16:144 Survey of Modern Europe 1815–1900 3 a.h.

16:145 Survey of Modern Europe, 1890–1929 3 a.h.

16:146 Survey of Modern Europe, 1929–Present 3 a.h.
Home Economics

Department Chairperson: Margaret C. Obearm
Degrees offered: B.S., B.S. M.S., M.S.T.

The Department offers courses which contribute to the liberal education of University students, as well as those included in the major. Concentrations in one or more areas of home economics makes it possible for undergraduate majors to develop some depth of specialization. The home economics core provides opportunities for professional orientation and some understanding of relationships among the various areas of specialization within home economics.

Home economics as a career offers a wide range of opportunities: teaching, dietetics, merchandising, interior and textile design, product development and quality control in textile and food industries, consumer relations, family life education and services, food service management, and service with community or government agencies.

Undergraduate Requirements

In meeting the general requirements of the College of Liberal Arts, students majoring in home economics should choose courses in other departments which are prerequisites for home economics courses. In addition to Liberal Arts core requirements, students are expected to complete the home economics core, made up of 17/190 Marriage and Family Interaction and one course from each subject area within the Department, and to satisfy requirements in one area of specialization.

The Bachelor of Arts

Each student may select one of the following programs, on the basis of interest and professional goals.

Family Development

These courses are required: 17/10 Growth and Development of the Young Child; 17/113 Clothing Economics; 17/112 Family Economics; 17/113 Textile Design II; 17/114 Interior Decoration II; 17/115 Directed Studies in Related Arts; 17/120 Advanced Nutrition; 3/13 Elementary Psychology; 3/14 Introduction to Sociology; a course in family sociology; and a course in economics.

Students seeking certification to teach home economics must also complete the requirements of the College of Education.

In the other areas of home economics the requirements are 17/31 Introduction to Food Study, or 17/313 Food Study and 17/132 Food Study Laboratory: 17/41 Principles of Nutrition, or 17/143 Nutrition, and 17/20 Design for the Home, 17/70 Clothing, 17/81 Textiles, 17/133 Meal Management and 17/165 Family Housing.

The student should select additional courses in home economics and education in consultation with the faculty advisor. Experience can be arranged for students interested in working with handicapped children and other special groups.

Food and Nutrition

This program comprises 17/331, 17/132, 17/134 Experimental Food I and 17/142, plus courses relating to an emphasis on food, nutrition or dietetics.

Related Art and Housing

Required courses are 17/50, 17/54 Interior Decoration I, 17/60 Introduction to Textiles, or 17/81, 17/112, 17/115 Survey of Traditional Interiors, 17/160 Textile Design I: Printing and Dyeing, 17/165, 18/1 or 18/2 Elements of Art, and 18/20 Basic Design; and 68/1 or 68/2 Principles of Economics.

Electives in home economics, studio art, art history, marketing, communications, advertising, sociology, anthropology, psychology, and urban and regional planning are recommended, depending on the student's professional goals.

Textiles and Clothing

Required courses are 17/70, 17/72 Clothing Design and Selection; 17/81, 17/171 Costume Design; 17/73, 17/182 Advanced Textiles, 17/183 Textile Economics, and 4/6.

Depending on the student's professional goals, courses in busi-
The Bachelor of Science: Food and Nutrition

Programs leading to this degree are recommended for students contemplating graduate study and for students interested in research positions in colleges and universities or in industrial, government or medical laboratories.

In addition to home economics coursework required for the B.A., students in the B.S. program take 17:135 Physical Growth and Nutrition and other courses appropriate to their professional interest; a second year of foreign language; 23:2 Calculus I; 4121 Organic Chemistry I; 99:120 Chemistry of Biological Materials; 99:130 Metabolism; 99:140 Experimental Biochemistry; 61:157 General Microbiology; 29:1 and 29:2 College Physics; and 72:13 Introduction to Human Physiology.

Textile Science

This program prepares students for graduate studies in textiles or for positions in the textile industry. It comprises the general College of Liberal Arts requirements for the B.S. degree, the same home economics course requirements as for the B.A. degree; and courses in chemistry, physics, mathematics and textile science. Supplementary coursework may be taken in engineering, computer science, statistics and microbiology.

Programs for Teaching Majors

Three options are available to students who want to teach home economics in secondary schools.

Undergraduates would complete the secondary teacher education sequence, which includes requirements of the College of Education and those specified for certification in the family development section for the B.A. degree.

Students with the B.A. or B.S. degree may enroll in the certification only program in order to meet certification requirements. Courses for this program are selected according to the student's professional goals and in consultation with the faculty adviser.

Students with an undergraduate degree in a non-teaching home economics major may complete the Master of Arts in Teaching program. Requirements for this degree are described in the section on graduate programs in home economics.

The Honors Program

Honor work in home economics consists of 17:191 Seminar and 17:192 Problems, in which students do creative work or a research project. To be eligible for Honors, a student must have junior standing; 30 semester hours in residence at the University; an overall cumulative grade-point average of 3.0 or above; a grade-point average of 3.2 in all home economics courses; and at least 12 semester hours in home economics. A written report or Honors project and an examination are required. The faculty adviser, the chairman of the Department and another member of the faculty serve as a committee for evaluation of the student's work.

The Graduate Program

In addition to the general requirements of the Graduate College, degree candidates must complete specific requirements of the Department, which include written and oral comprehensive examinations.

Master of Arts and Master of Science

For either of these two degrees, students must complete at least 30 semester hours of graduate work with a thesis, or 36 semester hours of graduate work without a thesis, in addition to adequate prerequisite for the degree. The designation of the degree depends on the area of major work.

The thesis plan is recommended for students interested in preparing for teaching and research in colleges and universities, for positions in industry and for continued study beyond the master's degree. The thesis may be undertaken in the Department of Home Economics or in cooperation with related departments or colleges.

Master of Arts in Teaching

This program is designed for students who have an undergraduate degree in home economics. The program includes 18 hours in home economics and the professional sequence required by the College of Education. Comprehensive examinations are given at the completion of the program.

Staff: professors Whitehead, Hoffman, Osman; professor emeritus Woodruff; associate professors Keyes, Osborn; associate professor emeritus Smith; assistant professors Mohamed, Purnell, Skyler, Stevens, Wolfson, Lecturers Jenkins, Schell, instructors Bader, Barrington, Cannon, Dorfman, Fowles, Haus, Savage, Williams.

Courses Primarily for Undergraduates

17:19 Growth and Development of the Young Child 3 s.h.
17:31 Introductory Food Study 3 s.h.
17:41 Principles of Nutrition 3 s.h.
17:60 Design for the Home 3 s.h.
17:65 Intermediate Design 3 s.h.
17:70 Clothing 3 s.h.
17:71 Intermediate Clothing 3 s.h.
17:76 Uniform Construction 3 s.h.
17:80 Textile Science 3 s.h.
17:81 Textile Science 3 s.h.
17:82 Textile Fibers and Weaving 3 s.h.
17:83 Textile Fibers and Weaving 3 s.h.

17:80 Textile Fibers and Weaving 3 s.h.
17:81 Textile Science 3 s.h.
17:82 Textile Fibers and Weaving 3 s.h.
17:83 Textile Fibers and Weaving 3 s.h.
Hospital and Health Administration

Program Director: Gerhard Hartman
Degrees offered: M.A., Ph.D.

As hospital and health administration embraces many fields of academic preparation, the program has primary identification with the College of Medicine and the Graduate College but utilizes the facilities and resources of the entire University.

Many significant phases of hospital and health administration present problems profoundly different from those usually con- fronted in business, education or government. Certain vital as- pects of hospital and health administration—personnel policy, procedural, technical and public relations problems which are

unique; it is precisely for this reason that this program was originally instituted.

Programs of Study

Master of Arts

The Master of Arts program requires a minimum of 60 on- campus semester hours of academic work during four semesters and completion of a thesis during the second year of study. After receiving the degree, and when deemed professionally advan- ceganous, the student is offered the opportunity to undertake a postgraduate assistantship in a carefully selected hospital or health institution under the direction of a qualified administrat-

or. While the curriculum stresses the conceptual unity and gen- eral nature of the administrative decision-making process, courses are designed to acquaint the student with the institu- tional environment of contemporary hospitals and health organiza- tions. Administrative problems unique to health admin- istration are stressed. Techniques of motivating goal-oriented behavior are considered, and organizational theory is examined as it pertains to the provision of hospital and medical care. The first-year curriculum is designed to help the student de- velop a frame of reference which will enable him or her to relate past experiences and undergraduate education to the specialized program of graduate study in the hospital and health-care set- ting. The case-study and role-playing approaches are used in the seminar setting, and subject matter is drawn from all administrativa- tion specialties. Problems are posed in situations which typify health-care institutions.

In order to help the student place contemporary health-care institutions in a meaningful perspective, emphasis is placed upon the history and evolution of formal health organization, and upon trends and developments on the international health scene. During each semester the student is expected to complete major written projects as well as to defend his or her arguments orally.

During the second academic year, greater emphasis is given to individual study. Plans of study are developed to broaden and deepen the student's understanding of the planning of health services and medical care administration while increasing under- standing of essential social science research methodology.

The program of study culminates with preparation of the master's thesis. Research for and writing of the thesis is under- taken during the third and fourth semesters.

Since the curriculum in hospital and health administration is based on the concept of the generic nature of administration, the plans of study emphasize an interdisciplinary approach. In ad- dition to the study in hospital and health administration, students' programs include courses from the departments of Sociology, Political Science, Philosophy and Psychology, the School of Journalism, the College of Business Administration, Education and Engineering. Additionally, master's candidates are expected to meet a three-semester-hour requirement in statistics.

Upon satisfactory completion of the two-year on-campus aca- demic sequence and graduation, each student will be placed with a hospital or health organization as a postgraduate assistant in the capacity of an executive or administrative trainee.
Doctor of Philosophy

The academic program at the doctoral level is highly individualized. Students admitted to this program will normally be motivated by a desire to learn the advanced aspects of hospital and health administration with the intention of teaching and engaging in research.

Students may pursue doctoral study directly after completion of the bachelor's degree or the master's degree, whether in hospital administration or another appropriate field. Students have been accepted with and without previous hospital operational experience. Those students who expect to continue their training through the doctoral degree may file a joint program for the master's and doctor's degree.

Staff: professor Hartman; assistant professors Amidon, Brown, Tocher; instructor Algar, Dolen, Johnston

*In leave

Courses

80:151 Fundamentals of the Modern Hospital or. art. Organization in theoretical aspects and operations of all types of modern hospitals and health organizations. lectures and seminars 80:152 Fundamentals of Modern Hospital and Health Administration or. art. Continuation of 80:151 80:153 Principles of Hospital and Health Administration or. art. Emphasis on development of understanding of human relations and skills required for effective administration of hospitals and health organizations, lectures, seminars, and field trips 80:154 The Hospital in Modern Society or. art. Develops conceptual skills required by hospital administrators 80:155 Administrative Aspects of Medicine 2 semesters and lectures to orient to research problems peculiar to medical care administration 80:156 Advanced Hospital and Health Administration 2 or 3 semesters and lectures and seminars to introduce students to key problems in hospital administration, statistics, law, public relations, structural management and community relations 80:157 Seminar: Problems of Administrative Behavior in the Modern Health Organization 3 semesters and exercises, role-playing and similar approaches to develop skills in administrative skills 80:158 Problems of Administrative Behavior in the Modern Health Organization 3 semesters

Continuation of 80:157 80:159 Current Developments in Hospital and Health Administration 2 semesters and exercises, role-playing and similar approaches to hospital and health care administration emphasized, seminars, lectures and field trips 80:111 Theoretical Hospital and Health Administration or. art. Original study, review and presentation of a problem area in health-care administration 80:120 Labor Relations in Health-Care Facilities 3 semesters and lectures, laboratory and field work for labor relations in health-care facilities, credit management, motivational and organizational theory of labor in health-care areas 80:123 Financial Management of Health-Care Organizations 3 semesters and lectures, laboratory and field work for financial management in health-care facilities, emphasis on theory and practice, assignment of costs, capital expenditures, establishment and analysis of financial ratios, private and public policies 80:124 Health Care in America 3 semesters and lectures, laboratory and field work for health care in America, emphasis on governmental role in health care system 80:130 Contemporary Health-Care Issues 3 semesters and laboratory and field work for contemporary health care issues, emphasis on theoretical and practical aspects of hospital operations, productivity, and organizational issues

80:203 Seminar: Hospital and Health Administration or. art. 83:155 Advanced Hospital and Health Organization and Management or. art. Comprehensive course covering all phases of hospital operations and planning 83:156 Advanced Hospital and Health Organization and Management or. art. 83:165 Research: Hospital Administration or. art. 83:255 Research: Hospital Administration or. art. 83:256 Research: Hospital and Health Administration or. art. 83:275 Individual Study 83:285 Clinical Education in Hospital Administration or. art. 83:300 Clinical Education in Hospital and Health Administration or. art. Continuation of 83:280 83:350 Medical Education for Hospital and Health Administrators 3 semesters and seminars, work experience in hospital administration and from related areas such as business administration, sociology, public health and education

Italian

See "French and Italian"

Journalism

Director: Robert E. MacLean, Jr., Associate Director: Robert D. Tiddo

Degrees offered: B.A., M.A., Ph.D. (in mass communications)

Undergraduate Program

Most important positions today require skill and responsibility in communication. The well-being of our communities and institutions depends on accurate and responsible communications. The quality of our government depends on how well the print and broadcast media inform the electorate. Wherever a journalist chooses to work, he or she will be in a vital role—a role requiring an extensive knowledge of the diversity of human experience. Equipped journalists must understand themselves, their relationship to an event, its actual reporting of their information and the effects of their work—what happens when the products of their creations are consumed by a reader, viewer or listener.

The Basic Program

Our program in general journalism requires 24 semester hours of coursework or electives for the major. The student has a great deal of freedom to pursue other fields of interest. We strongly recommend a second major. Study in another area—sociology, art, economics, psychology, political science—provides excellent background for journalism. The program stresses liberal arts background. It is designed to encourage students to become active questioners. In addition to occupational skills, students are expected to develop an understanding of what their work means to the society in which they live.

The program has no semester-long courses in newswriting, beginning reporting, copy editing, advanced reporting and other areas standard in most journalism programs. The two-year program—usually taken in the sophomore and junior years—places a great deal of responsibility on the student and offers him or her numerous opportunities to develop the skills of reporting, writing and editing in his or her laboratory work.

Students enroll for four semesters in a general course and a laboratory course, for a total of 24 semester hours. Two semes-
Journalism

Electives
In addition to the 24 semester hours of general journalism courses, there are elective courses including photography, picture editing, radio-television news, public relations, history, law, writing, news-editorial problems and others. However, no more than 24 hours in Journalism may be taken toward the 124 hours needed for a Bachelor of Arts degree.

Practicum
The Journalism Practicum is open to majors and nonmajors. Any student on a journalism internship or regularly employed as a journalist may enroll for discussion and expert review of his or her work.

Teacher Certification
There is a strong demand for high school teachers who are qualified to teach journalism and are also certified in another subject. Full-time journalism teaching positions are rare in secondary schools in Iowa and most other states. If a student wishes to major in journalism and teach in secondary schools, he or she must take additional journalism elective courses and the required education courses. Twelve semester hours in Journalism is the minimum requirement for certification, with an additional six to 10 semester hours recommended.

Honors
The Department grants a degree with Honors in Journalism. An Honors seminar and readings for Honors are offered. Both may be repeated. In the reading class, a major paper is required in the terminal semester.

For Nonmajors
Courses designed to develop informed critics and consumers of journalism attract many nonmajors. They include Communication of Social Issues, Special Topics in Communication, History of Books and Print, Comparative Foreign Communications Systems and Communication: Concepts and Perspectives, and others.

Transferring
Journalism courses taken at other college and universities will transfer as electives but, in most cases, transfer students should expect to spend two years at Iowa to complete the general journalism major.

Graduate Programs

Master of Arts in Journalism
The School of Journalism offers a Master of Arts program which combines professional practice in the media with consideration of their effects, responsibilities and significance. It prepares students for a wide variety of positions in communication, including further study at the doctoral level.

The degree is awarded with or without a thesis. Students who write a thesis must earn a minimum of 30 semester hours of graduate credit, of which a maximum of five semester hours may
be credit for the thesis. Those who do not write a thesis must earn a minimum of 38 semester hours of graduate credit, of which two or more hours must be in 19-180 Special Projects in Mass Communication. In both cases, at least nine semester hours of graduate credit must be taken outside the School of Journalism.

All candidates are required to take 19-205, Master's Seminar during their first semester in residence. This course seeks to incorporate fundamentals of theory, history, mass communication, popular culture, society, international communication and other topics through projects and issues encountered through guest speakers, lectures, assigned readings and written assignments. Each candidate must take at least three hours in Master's Practicum (19-205) in the area of his or her choice (newspaper journalism, magazine, public relations, radio, television, advertising, journalism education, photojournalism, etc.).

The student satisfies the balance of the requirements with elective courses chosen in consultation with his or her adviser and the other two faculty members who serve as his or her committee. The program concludes with a comprehensive examination, the nature of which is specified by the candidate's committee.

Doctorate in Mass Communication

The doctorate in mass communication is an interdisciplinary degree. The central objective of the program is to develop scholars who will make significant contributions to teaching and research in communication.

The program emphasizes the development of an understanding of problems in communication. A student develops skills applicable to fields such as university teaching, news communication, organizational and community analysis, international communication and a variety of functions which require the ability to develop effective communication strategies.

The program is designed around a small core of graduate work in communication, but encourages the student to work with his or her sponsor and committee to create a program appropriate to the student's needs.

Every student in the doctoral program must take the Ph.D. Seminar (19-309) from the start of the program until after presentation and acceptance of the dissertation proposal. Beginning no later than the student's second enrollment and continuing until he or she begins work on the dissertation, he or she works in a Research Practicum (19-301) with one or more members of the graduate faculty. All Ph.D. students and all active graduate faculty members attend the weekly Ph.D. Seminar, and thus have an opportunity to present, discuss and evaluate material.

A Ph.D. student, in order to continue in the program, must find a doctoral advisor before his or her third enrollment. A graduate faculty member who will serve as sponsor and mentor. The sponsor need not also be the dissertation advisor.

A minimum of 27 semester hours (including the dissertation) beyond the B.A. or B.S. is required for a doctoral degree. Upon completion of the coursework, a comprehensive examination is administered by a committee of at least five faculty members. The nature and scope of this examination is specified by the committee. The thesis work is supervised by a committee of at least five faculty members. A formal dissertation proposal is considered by this committee. For the final defense of the dissertation, the committee must include at least one member from outside the School's faculty. Also, one member of the dissertation committee will be appointed by the School's director of graduate studies to serve as the dean.

Candidates in both the M.A. and Ph.D. programs must fulfill the requirements of the Graduate College.

Special Facilities

The School has specialized laboratories for photography, typogra- graphy, audio-taping, video taping, typing, copy preparation and print production. The newscast of the University radio station, WDUU, serves as a laboratory for broadcast journalists.

Many psychology students use the newsroom of the University student newspaper, The Daily Iowan, as a professional laboratory. The School maintains a journalism reading room. The technology center houses most of the equipment used in courses in computer graphics, project and editing equipment, material and slide copying equipment and other audiovisual equipment. The School also has a small desktop computer.

Special Faculty Strengths

Most of the School's staff have had practical training and work experience in communication enterprises such as newspapers, broadcasting, public relations and advertising. A number are gifted, recognized, highly productive scholars.

Center for the Advanced Study of Communication

Affiliated with the College of Liberal Arts and Sciences in the School of Journalism, the Center for the Advanced Study of Communication offers students a variety of intellectual and practical opportunities through its publishing, research and program activities. The Center engages in the publication of books, an international scholarly journal and an occasional papers series; it contracts for research or consults with government and private agencies on communication-related problems; and it develops seminars, colloquia and symposia on the wide range of communication-related issues both here and abroad.

Staff: Gallup professor Thuyet; professors Duncan (on leave), MacLean, Molseder; associate professors Fox, Hordt, Kottman, Talbott; assistants professors Aschoff, Costello, Hunt, Zima; instructors Ansert, Bauer, Butler, Cox, Johns, Martin, Murphy, Trupp.

Special Courses

1913 Professor Bannister 12 a.h.

Example reading, preparation of papers, discussion of mass communication problems. Open to students only; may be repeated to a maximum of 12 semester hours.

1914 Reading and Discussion (1) 13 a.m.

Reading and discussion of mass communication problems. Open to students only; may be repeated to a maximum of 12 semester hours.

1910 Student Seminar 12 a.h.

Report and discussion concerning major problems and social problems in mass communication with which graduate mass communication students deal. Open to students only; may be repeated to a maximum of 12 semester hours.

1915 Student Seminar 12 a.m.

Report and discussion concerning major problems and social problems in mass communication with which graduate mass communication students deal. Open to students only; may be repeated to a maximum of 12 semester hours.

1917 Student Seminar 12 a.m.

Report and discussion concerning major problems and social problems in mass communication with which graduate mass communication students deal. Open to students only; may be repeated to a maximum of 12 semester hours.
Required Courses for Undergraduate Major

18:110 Communication I 3 s.h.
Theory of role of journalism and communication in human behavior. Introduction to
and study of news, language, society, ethics, and the news business. Discussion of
distinctive roles, opportunities for study tailored to individual student's in-
terests. Pre-/corequisite: 18:105; first semester.

18:100 Communication I Laboratory I 1 s.h.
Laboratory experience involved in interpersonal and mediasite construction in a decision-making, problem-solving con-
text. Emphasis on skills, knowledge, ethics, imagery, and the role of language in society.

18:102 Communication I Laboratory II 1 s.h.
Combination of 18:100, prerequisites: 18:105; corequisite: 18:100; second semester.

18:113 Study of mass media, historical and philosophical analysis of media, society, and
use of mass media, social significance, history, moral and legal responsibility, social influence on behavior, and
socially significant issues facing professionals both present and future. Learning
of basic journalism skills and knowledge through self-directed mini-projects, complete
practice in human伦交行为 on humans and issues, analysis of mass media issues, and
social issues. Pre-/corequisite: 18:105; second semester.

18:117 Mass Communication I 1 s.h.
Combination of 18:102, prerequisites: 18:105; corequisite: 18:102; second semester.

18:118 Mass Communication Laboratory I 1 s.h.
Combination of 18:102, prerequisites: 18:105; corequisite: 18:102; second semester.

Courses Primarily for Undergraduates

18:116 Communication: Concepts and Perspectives 3 s.h.
Intensive, relatively small course in the study of mass media and its role in society, with
emphasis on role of communication in an information society, and in human
behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:110 The News Media 3 s.h.
An introduction to the media and their role in society and in human behavior, and
emphasis on role of mass media in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:113 Supervision of School Publications 3 s.h.
Supervision of school publications, including instructions in journalistic technique, and
the role of the news in society. Pre-/corequisite: 18:105; second semester.

18:114 Newspapers in the Classroom of a Free Society 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:115 Typography 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:116 Broadcast Design 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:119 Promotional Concepts/Buyer Behavior 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:120 Advertising Theory and Planning 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:125 Advertising Problems 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:129 Photographic Journalism 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:134 Communication Systems Design 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:135 Radio-Television News 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:136 Broadcast Design 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:141 Mass Communications and Social Change 2 or 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:142 Journalism & Social Issues 2 or 3 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.

18:147 Special Topics in Communication 1 s.h.
An introduction to the role of the news in society, and in human behavior, and the role of mass media in society. Pre-/corequisite: 18:105; second semester.
Courses Primarily for Graduates

19:211 Seminar: Special Topics in Communication 3 s.h.
- Knowledge in behavioral sciences related to understanding of communication processes, with emphasis on the structure and flow of communication in small groups, mass media, and various social agencies.
- Seminar attendance and participation.

19:212 History of Writing and Printing 3 s.h.
- Professional laboratory practice for master’s students, intensive course in which students work cooperatively in solving problems in research, analysis, and presentation of topics in the field of mass communication, followed by critical review and analysis by appropriate specialists. Seminars are open to upper-division students only; must be repeated for credit.

19:215 Mass Communications 3 s.h.
- Seminar in research and writing practicum.

19:216 Understanding Public Relations 3 s.h.
- Seminar in research and writing practicum.

19:217 Newspapers: An International Perspective 3 s.h.
- Seminar in research and writing practicum.

19:218 Mass Media and Ethics 3 s.h.
- Seminar in research and writing practicum.

19:219 Publicity and Advertising 3 s.h.
- Seminar in research and writing practicum.

19:220 Mass Communications 3 s.h.
- Seminar in research and writing practicum.

19:221 Media Theory and Criticism 3 s.h.
- Seminar in research and writing practicum.

19:222 Public Relations 3 s.h.
- Seminar in research and writing practicum.

19:223 Media and Society 3 s.h.
- Seminar in research and writing practicum.

19:224 Broadcast Media in Society 3 s.h.
- Seminar in research and writing practicum.

19:225 Mass Communication and Society 3 s.h.
- Seminar in research and writing practicum.

19:226 Media Law and Policy 3 s.h.
- Seminar in research and writing practicum.

19:227 Mass Communication and Politics 3 s.h.
- Seminar in research and writing practicum.

19:228 Mass Communication and Social Policy 3 s.h.
- Seminar in research and writing practicum.

19:229 Mass Communication and Economic Policy 3 s.h.
- Seminar in research and writing practicum.

19:230 Mass Communication and Cultural Policy 3 s.h.
- Seminar in research and writing practicum.

19:231 Mass Communication and Political Policy 3 s.h.
- Seminar in research and writing practicum.

19:232 Mass Communication and Legal Policy 3 s.h.
- Seminar in research and writing practicum.

19:233 Mass Communication and Economic Policy 3 s.h.
- Seminar in research and writing practicum.

19:234 Mass Communication and Social Policy 3 s.h.
- Seminar in research and writing practicum.

19:235 Mass Communication and Cultural Policy 3 s.h.
- Seminar in research and writing practicum.

19:236 Mass Communication and Political Policy 3 s.h.
- Seminar in research and writing practicum.

19:237 Mass Communication and Legal Policy 3 s.h.
- Seminar in research and writing practicum.
national literature, or to ignore other forms that key at least close to literature—like film—may now seem arbitrary. Authors and readers alike give their attention to literary works of many kinds in their native languages, in foreign languages and in translation. Letters, speaking, gesturing, reading—our different means of communication still have much in common. The undergraduate program in the School of Letters offers a way to discover the variety of literature with in one's own private life and in the lives of people from other languages and times.

Course of Study

An undergraduate in letters may take courses from any of the departments of literature. A typical student might study classical and modern theater, oral literature and fiction from several countries. Or he or she might include work in film and practice in writing on a hand-press. He or she may do all his or her readings in translation or may read in one or more foreign languages. There are no requirements for admission to the major; interested students should see the chairman or one of the advisors to the major.

Staff: Negel, chairwoman (English and Comparative Literature), Deligio (English and Comparative Literature), Frank (Spanish and Portuguese), Gillefle (Speech and Dramatic Art), Grenze (French and Italian), Holszog (Classics), Parkes (German), Weber (Russian), Wooton (English)

Courses

108:101 Westerns of Western Literature in Translation 2 a.h.
108:102 Masterpieces of Western Literature in Translation 2 a.h.
Combinations of 108:101, but may be taken as an independent unit 2 a.h.
108:103 Great Drama in Translation 3 or 4 a.h.
Same as Classics 14.28 AND Speech 347.171
108:104 Roman Drama in Translation 3 or 4 a.h.
Same as Classics 14.28 AND Speech 347.171
108:105 Modern Drama in Translation 3 or 4 a.h.
Same as Classics 14.28 AND Speech 347.171
108:106 European Novel, 1850 to Present 3 a.h.
Same as English 14.06
108:107 European Drama in Translation 3 a.h.
108:108 European Poetry in Translation 3 a.h.
Same as English 14.04
108:110 German Literature in Translation 3 a.h.
Same as German 14.11
108:111 French Literature in Translation 3 a.h.
Same as French 14.11
108:112 Russian Literature in Translation 3 a.h.
Same as German 14.11; prerequisite: junior standing and consent of instructor
108:141 Chinese Literature 1 3 or 4 a.h.
Same as Far Eastern Studies 31.141
108:142 Chinese Literature 2 3 or 4 a.h.
Same as Far Eastern Studies 31.142
108:171 Contemporary Chinese Literature 3 or 4 a.h.
Same as Far Eastern Studies 31.171
108:144 Japanese Chinese Fiction 3 or 4 a.h.
Same as Far Eastern Studies 31.144
108:150 Japanese Modern Fiction 3 or 4 a.h.
Same as Far Eastern Studies 31.150
108:151 Russian Literature in Translation 3 or 4 a.h.
Same as Russian 41.151
108:152 Russian Literature in Translation 3 or 4 a.h.
Same as Russian 41.152
108:161 19th Century French Novels 3 or 4 a.h.
108:162 20th Century French Novels 3 or 4 a.h.
Same as English 4340
Students with a strong background in library science may elect to write a thesis, with approval of the director. Six semester hours of credit may be counted toward the thesis.

The program normally requires two semesters and one summer of residency; however, students, by the requisition of the program, are advised to undertake the internship program. The program normally requires two semesters and one summer of residency; however, students, by the requisition of the program, are advised to undertake the internship program.

Admission Requirements and Procedures
Scholastic requirements for admission to the M.A. program include:

- A degree from an accredited college or university, with a minimum 2.5 grade-point average on a 4-point scale, and at least 30 semester hours of study in the liberal arts and sciences;
- At least one year of college credit (six to 10 semester hours) in a modern foreign language with a grade of C or better;
- Satisfactory score on the Graduate Record Examination.

Personal qualifications and aptitude for library work are assessed by means of letters of recommendation and a personal interview with the director of the School or a member of the faculty.

Because of the large number of applications, the School cannot accept every applicant who meets the scholastic admission requirements. The applicant's general suitability for librarianship is an important consideration. Priority is given to recent college graduates with a strong liberal arts background who desire to enroll as full-time students.

Applicants are encouraged to write to the School of Library Science for a Preliminary Information Form. If the preliminary information indicates satisfaction of the basic admission requirements, the School will schedule a personal interview. Prospective students are urged to apply four to six months before the date they want to be admitted.

Certification in School Librarianship

Students who desire to become school librarians may fulfill certification requirements within the M.A. program; however, they must meet the criteria of the M.A. program, and they may pursue the degree certification program described below.

The certification program, a 30-semester-hour sequence, accepts both undergraduate and graduate coursework, does not require a foreign language for admission and carries a more liberal policy toward transfer and correspondence credits than does the M.A. program.

The certification program includes the following courses:

- Required courses (18 semester hours):
  - 21:151: Reference I
  - 21:152: Cataloging and Classification
  - 21:153: Selection of Library Materials
  - 21:154: Introduction to Librarianship
  - 21:155: School and College Internship
  - Three hours of audiovisual coursework

- Elective courses (12 semester hours):

Students are encouraged to take a curriculum course for the grade level (elementary, junior high or high school) at which they expect to work. Other suggested courses: 21:123 Children's Literature, 21:124 History of Children's Books, 21:152 Practicum in Libraries, 21:193 Literature for Adolescents, 21:202 Libraries and Storytelling for Younger Children, 21:322 Multimedia Concepts in Libraries, 21:234 Library Services to Children and Young Adults. With consent of his or her advisor, the student may select other library science courses.

For librarians serving up to half time in a school library, 15 semester hours of library science are required for certification as a teacher-librarian.

Facilities and Resources

The School of Library Science is in the north wing of the University's Main Library, which is open to the public. The library is equipped with a variety of library services for students and faculty of the School. The system contains more than 1.5 million volumes in the Main Library and its departmental branches and currently employs more professional staff than the School.

In addition to the University libraries, students have access to a variety of library services in Iowa City and nearby communities for clinical and laboratory purposes. The State Historical Library in Iowa City, the Iowa City and Cedar Rapids public and school libraries, the Coe, Cornell and Grinnell college libraries, and, by arrangement, the Herbert Hoover Presidential Library in West Branch, Iowa, are available to students.

Financial Assistance

The School of Library Science annually awards several tuition scholarships, as well as quarter-time graduate and research assistantships. Prospective students are urged to apply for these awards before March 1. Students interested in part-time employment should contact the libraries of the Iowa City area.

ution of his or her native language, explaining how languages change in the process of their transmission from one generation to the next, or characterizing regional and social variation in language—are extensions of this main one. Since language is uniquely human, and since the use of lan-
guage is central to almost everything we do, the findings of linguistics bear upon other fields of study which deal with human behavior: anthropology, sociology, psychology, literature, the teaching of languages, the diagnosis and treatment of speech disorders Moreover, the formal properties of grammar (that is, of models of "linguistic competence") are of interest to math-
ematicians and computer scientists.

Students majoring in other disciplines concerned with lan-
guage or with symbolic systems (as for example, modern or classical languages and literatures, speech science, anthropology, psychology, philosophy or mathematics) are encouraged to com-
plement the study of basic major subjects—either at the graduate or the undergraduate level—with relevant courses in linguistics.

Undergraduate Program

The undergraduate program is designed to provide a foundation in linguistic theory, training in the scientific analysis of languages and proficiency in a language other than the one native to the student. Specifically, the program includes work in general lin-
guistics, phonetics, grammatical and phonological analysis, study of the history or structure of a particular language (courses in this area are currently available for several languages, includ-
ing English, the Romance languages, Russian, German and Chi-
nese) and other courses in linguistics to be selected in consulta-
tion with the student’s adviser. In addition to his or her work in linguistics proper, the undergraduate student’s program in-
cludes elementary courses in psychology, anthropology, lan-
guage and culture. The total program includes electives in one of the subgroup in the major or minor.

The number of language study included in the student’s program depends upon his or her pre-university language training. During the senior year the stu-
dent undertakes an independent research project under the di-
rection of a member of the Linguistics faculty.

M.A. Program

The Master of Arts program in linguistics provides graduate training in general linguistics to students from a variety of academic backgrounds who have an interest in languages and the theory of language. The program is adaptable to the needs of students who plan to pursue further graduate study in linguis-
tics or related fields, of students who wish to complement their undergraduate training in related fields (e.g., language teaching or anthropology) with specialized training in linguistics. Graduat-
e courses are also open to qualified students who are taking degrees in other fields.

The M.A. program of study includes a graduate introduction to linguistics, two courses in syntactic theory, two courses in the general area of historical and comparative linguistics, and other courses in linguistics and related fields, to a total of 37 semester hours of coursework. A thesis is also required.

Ph.D. in Cultural Anthropology and Linguistics

The Ph.D. in cultural anthropology and linguistics prepares the student for professional teaching and research in the linguistic and the non-linguistic aspects of cultural behavior and the nature of the relationship between them. The program consists of three years of academic work, including participation in interdisciplinary courses and, in most cases, a period of field work.

The content of the anthropology-linguistics doctoral program may be adjusted to accommodate an emphasis either in an-
thropology or in linguistics, or a balance of the two. The only explicit requirements are the acquisition of two appropriate re-
search tools from a list which includes a foreign language, statis-
tics, symbolic logic and computer programming, statutory completion of a basic series of courses in linguistics and in an-
thropology (in linguistics, courses in general linguistic theory, phonetics, grammatical analysis, phonological analysis and historical-comparative linguistics; in anthropology, courses in anthropological history, theory or methods, social anthropology, social institutions and an ethnographic area) and satisfactory completion of a series of interdisciplinary courses in language and culture, ethnological methods and ethnolinguistic theory.

Beyond this basic training, the candidate for the Ph.D. in cultural anthropology and linguistics may concentrate in one of the two areas with further work or may achieve a balance be-
tween the two. At the completion of the core program, each student’s achievement is evaluated by a joint com-
mittee of the two departments, and appropriate recommenda-
tions are made.

It is not necessary that the student entering the program have taken an undergraduate major in either anthropology or linguis-
tics. However, the student has had the equivalent of the intro-
ductive courses in linguistics and anthropology (103-200 and 113-103), these must be made up as deficiencies.

The student may take the M.A. degree in either anthropology or linguistics before proceeding to the joint Ph.D. Previous work in one of the two areas at the M.A. level may be applied toward fulfilling the requirements in that division of the joint doctoral program.

Ph.D. in English with a Major in Linguistics

The program of study leading to the Ph.D. degree in English with major in English linguistics consists of a thorough founda-
tion in linguistic theory and the methods of linguistic research with intensive study and research in the structure and history of the English language and some study of English and/or American literature. Normally the holder of such a degree would follow a career of teaching and research as a linguist in a univers-
ity English department, but his or her training under this pro-
gram might well lead to other related fields.

The major part of the training in this program is in general linguistic theory and English linguistics. Subordinate areas are literature and the older Indo-European languages. The student is also expected to take appropriate courses in a related area or related areas—for example, history, philosophy, or anatomy.

The linguistics area of the program is planned in consultation with the student’s adviser. It is expected to include work in syntax, phonology and dialectology. The English linguistics area
includes Old English, Middle English, the structure of English, the history of the English language and the teaching of English as a second language. An important part of the program is a semester of directed research—usually in the last year of coursework—the history of Modern English, the historical development of English and the period of the history of the English language which corresponds to the literary period the student has chosen for study.

Literary study includes, at least, British and Shakespearean drama, as well as a literary period of the student's choice. Contrary to traditional expectations, the student of English linguistics does not have to be a medievalist—students in this program have concentrated in literary studies ranging from the Old English period to the twentieth century.

In the area of the older Indo-European languages, there are regular offerings in Germanic (Old High German, Middle High German, Old Saxon, Old Norse, Gothic), Romance (Old French, Old Spanish), Greek and Latin. Upon demand, courses have been offered in Old Provencal and Old Irish. The student of English linguistics is encouraged to take at least one course in an older Germanic language and at least one additional course in German, or one of the other older Indo-European languages.

The program of the doctoral student in English linguistics is rounded out by work in such areas as medieval history, the philosophy of language, language and culture, and psycholinguistics.

The comprehensive examination for the degree consists of written and oral parts. In the written portion of the examination, the student is examined on general linguistics, the structure of Modern English (including American dialects), the history of the English language and the literary period elected. The oral examination may range over all these areas.

The dissertation treats some topic in the history of English, in the structure of English at any stage of its historical development or in any of its dialects, or in applied English linguistics.

Special Facilities

The Department of Linguistics has an acoustics laboratory, consisting of a sound spectrograph, a studio-type tape recorder and an audiomagnetic. There is also a remote typewriter terminal connected with the IBM 360/65 computer at the University Computing Center.

The Faculty

Although the Department of Linguistics is new (established in September, 1970), it has a growing reputation not only in the United States but nationally. Members of its faculty have achieved national recognition in the areas of stylistics, American Indian language and the history of the English language. The status of linguistics at the University of Iowa is well deserved, since linguistics was being taught in the Department of English at The University of Iowa before the “father” of American structural linguistics, Leonard Bloomfield, published his famous book, Language, in 1933.

The Department of Linguistics is small (currently nine faculty members and approximately 35 students enrolled as undergraduates and graduate majors) and enjoys all the benefits of smallness: a close relationship between faculty and students, a considerable influence of students upon Departmental affairs and a high degree of individual instruction. A large part of the student’s education in linguistics is conducted informally in 571 English-Philosophy Building—the general work-room and Departmental library—through daily “tail sessions” between students and faculty members. The blackboard in that room is always filled with phonological rules, syntactic “trees” and other evidence of the activity of linguistics.

All graduate students and junior undergraduates meet once a week for an hour and a half with members of the faculty to keep abreast of current research in the “Survey of Current Research in Linguistics,” at which a student presents a critical review of some recently published piece of linguistic research.

Staff: professor Hrozný, McCollum, McLoughlin, Peff, associate professor Wacht, Soga; assistant professors Kołodowska, McLaughlin, instructor Martin; interdepartmental faculty Bowers (Speech), Craig (Speech Pathology and Audiology), Dusazer (German), Fleck (Computer Science), Gomerozov (Russian) and Hoceslami (Computer Science), Molli (Speech Pathology and Audiology), Ogurjono (French and Italian), Ruozzo (German), Stasiites (Spanish and Portuguese).

Courses for Undergraduates and Graduates

102:15 English for Foreign Students

102:30 Introduction to Linguistics

102:31 Introduction to Language and Communication

102:311 Aural and Acoustical Phonetics

102:41 Syntax and Semantics

102:411 Analytical and phonetic transcription

102:4111 Linguistic Analysis I

102:4112 Linguistic Analysis II

102:412 Phonological theory; procedures for analyzing and describing phonological structure of languages; phonetics; 102:312 or equivalent

102:413 Language and the Arts

102:416 Laboratory Methods

102:417 History of Linguistics

102:419 Introduction to Language Processing

102:420 History and Comparative Linguistics

102:440 Principles of language learning, second-language acquisition and genetic classification of languages; international and American historical linguistics; 102:312 or equivalent

102:443 Romance Linguistics

102:446 Comparative Indo-European languages; 102:312 or equivalent

102:451 History of the English Language

102:452 Development of phonological and grammatical structure of English from Old to Modern English; historical differentiation in English; 102:312 or equivalent

102:461 The Structure of English

122:31 Contemporary Linguistic theory as a theory of description and structure of modern English; 102:312 or equivalent

102:414 The Structure of English
Division of Mathematical Sciences

Degree offered: B.A., B.S., Ph.D.

Undergraduate Program
The Division has a comprehensive undergraduate program in which undergraduate students who seek a major in mathematici-

cal sciences may plan studies which will lead to (and may in-

clude) advanced work in one or more departments of the Divi-

sion. The Division offers two majors. One is a general major in which the student may choose courses from any of the three departments in the Division of Mathematical Sciences and which must include substantial work in at least one of the three departments. A number of suggested programs for completing this major are listed below.

The second major is intended for students with a strong inter-

est in computer science. This program requires both substantial

work in computer science and 12 semester hours of work in an

area outside of computer science. The work outside computer

science is expected either to prepare the student for further work

in computer science or to familiarize the student with an area

in which he or she might do computer programming, designing

or other computer work (for example, engineering, physics, busi-

ness administration or economics).

The specific requirements of each of these programs are listed

below. In addition to the requirements listed here, each student

majoring in the Division of Mathematical Sciences must satisfy

the general requirements of the College of Liberal Arts. Credit

may be transferred from other institutions, but transfer students

must take a minimum of nine semester hours beyond the first

year of calculus or beyond the first course in computer science

(22C:7 Introduction to Computing with Fortran).

Requirements for a Major in Mathematical Sciences
To satisfy this program a student must take at least one year of

calculus (either 22M:25 and 22M:26, or 22M:33 and 22M:34) and

at least seven courses, each carrying at least three hours of

credit offered by the Division, but not including:

22C:1 Survey of Computing

22C:9 Programming with Business-Oriented Lan-

guage

22C:100 Introduction to Computing with Fortran

22C:117 Computing with PL/I

22M:1 Basic Mathematical Techniques

22M:2-3 Mathematical Techniques I-II

22M:4 Matrix Algebra

22M:7 Quantitative Methods I

22M:10-11 Fundamentals of College Mathematics I-II

22M:13-16 Introductory Mathematics for the Biologi-

cal Sciences I-II

22M:20 Elementary Functions

22M:25-26 Calculus I-II

22M:29 Computational Techniques of Calculus and

Linear Algebra

22M:35-36 Engineering Mathematics I-II

22M:37 Quantitative Methods II

22S:25 Elementary Probability and Statistics

22S:43 Introduction to Statistical Methods

22S:80 Insurance Mathematics

Except for students seeking a secondary teaching certificate,

the seven courses must include two chosen among:

22C:122 Advanced Computer Organization

22C:123 Programming Languages

22C:135 Introduction to Computation Theory

22C:145 Artificial Intelligence

22M:100 Differential Equations

22M:118 Complex Variables

22M:170 Numerical Methods

22M:171 Numerical Solutions of Differential Equa-

tions

22M:103-104 Foundations of Mathematics I-II

22M:110-111 Elementary Topology

22M:115-116 Introduction to Analysis I-II

22M:120-121 Abstract Algebras I-II

22M:130-131 Elementary Theoretical Mechanics I

22M:139-132

22S:153-154 Introduction to Mathematical Statistics I-II

22S:164-165 Introduction in Probability I-II

22S:177 Numerical Analysis for Actuaries

22S:178 Graduation

Students who complete the requirements for a secondary

teaching certificate may satisfy this requirement by taking any

two 100-level courses. Students should not change from one of

the calculus sequences (22M:25-26 and 22M:33-34) to the

other, since the material is organized differently in the two se-

quences.

Suggested Programs

Some typical programs in various areas are listed below. They

need not be followed exactly; in fact, it is expected that each

student will meet with his own advisor and work out a program

which reflects his or her mathematical interests. The require-

ments are flexible enough to allow for changes in a student's

interests.

General Program

Unless a student has a strong interest in a special area in math-

ematics, a rather general program is suggested. This type of

program should include 22C:7 Introduction to Computing with

Fortran, preferably along with calculus during the freshman

year. The program should also include a course such as 22M:50

Elements of Group Theory, 22M:55 Fundamental Properties of

Spaces and Functions or 22M:103 Foundations of Mathematics,

and it should include at least a semester's work in statistics and

probability.

Additional work, in particular the 100-level course require-

ment, should be taken in whatever area of mathematical sciences

is of most interest to the student. Students contemplating em-

ployment in government or industry upon completion of the

B.A. degree should consider 22C:17 Computing with PL/I and

courses in numerical analysis, applied statistics and operations

research.
Actuarial Science

Normally a student would not complete all of these courses during the undergraduate years. Instead he or she would be advised to take a more general program and to consider completing the actuarial courses as part of a graduate program. Students of actuarial science are also advised to take at least one course in computer science and to consider a substantial program of courses from among those offered by the College of Business Administration.

Applied Mathematics
All students interested in applied mathematics should take the sequence 22M:25-28 Calculus I-III and Linear Algebra or the sequence 22M:35-38 Engineering Mathematics I-IV. The courses 22M:109 Differential Equations, 22M:118 Complex Variables, 22M:170 Numerical Analysis and 22M:171 Numerical Solutions of Differential Equations are recommended. Additional courses directly concerned with applications of mathematics are 22M:130-131 Elementary Theoretical Mechanics I and II, 22M:175 Fourier Series and Boundary Value Problems and 22M:173 Transform Calculus. Other general courses which may be of interest are 22M:50 Elements of Group Theory, 22M:105 Analysis for Applications, 22M:116 Introduction to Analysis II, 22M:116 Elementary Theory of Numbers and 22M:150 Linear Algebra. Students in applied mathematics should be familiar with computer programming (22C:7 Introduction to Computing with Fortran) can be taken early along with calculus) and with the basic idea of probability and statistics (the courses 22S:152-154 Introduction to Mathematical Statistics I-II or 22S:192 Probability and Statistics are appropriate). Students who plan to do graduate work in applied mathematics should take 22M:115 Introduction to Analysis I.

Mathematics Education
For the requirements by teacher certification, see "College of Education." The following program is suggested for students having an interest in mathematics education:

- 22M:30 Elements of Group Theory (before 78:135 Education) and 22M:70 Euclidean Plane Geometry.

- In the 100-level courses, the student should strive for exposure to the following areas (broadly preferred over depth): 22S:100-121 Abstract Algebra, 22S:101-104 Foundations of Mathematics, 22M:115-116 Introduction to Analysis and 22M:110-111 Elementary Topology.

In addition, a student should take at least two semesters of coursework outside the Mathematics Department but within the Division of Mathematical Sciences, e.g., 22C:7 Introduction to Computing with Fortran, 22C:17 Computing with PL/1, 22S:154-156 Introduction to Mathematical Statistics and 22S:164 Introduction to Probability.

Pure Mathematics

Probability and Statistics
The basis for this program is the calculus sequence 22M:25-28 Calculus I-III, Linear Algebra and 22M:35-38 Engineering Mathematics I-IV, together with one of the three sequences: 22S:152-154 Introduction to Mathematical Statistics, 22S:164-165 Introduction to Probability, or 22S:192 Probability and Statistics for Engineering and Physical Sciences and 22S:193 Engineering Statistics. Students should also select one or two courses in computer science from 22C:7 Introduction to Computing with Fortran, 22C:17 Introduction to Computing with PL/1, or 22C:18 Assembler Language Programming and one or two courses in mathematical analysis from 22M:55 Fundamentals of Analysis and 22M:105 Analysis for Applications and 22M:115 Introduction to Analysis I. Substantial work in one of the biological, social, physical or engineering sciences is also highly recommended.


Courses offered on a credit/no credit basis allow a student to augment these suggested programs so as to prepare for a vocation in statistics upon graduation. However, this would require very tight scheduling and a real sacrifice in the breadth and maturity to be gained in a more liberal program. Thus a student normally should be guided by the suggested program and plan or completing professional preparation in graduate study.
Requirements for a Major Specializing in Computer Science

Undergraduates specializing in computer science should gain a strong background in mathematics and in programming languages and computer systems. To accomplish this, the following core courses are required for a B.A. degree in the mathematical sciences concentrating in computer science:

22M:25 Calculus I 4 hrs.
22M:26 Calculus II 4 hrs.
22M:27 Introduction to Linear Algebra 4 hrs.
22C:7 Intro. to Computing with Fortran 3 hrs.
22C:17 Computing with PL/I 3 hrs.
22C:18 Assembly Language Programming 3 hrs.
22C:23 Programming Concepts 3 hrs.
22C:31 Computer Organization and Programming 3 hrs.
22C:50 Discrete Structures 3 hrs.
and one from the following:
22M:50 Elements of Group Theory 3 hrs.
22M:103 Foundations of Mathematics I 3 hrs.
22M:167 Graph Theory 3 hrs.
22C:135 Computational Theory 3 hrs.
55:172 Switching Theory 3 hrs.
29 hrs.

Each undergraduate major must also complete 12 semester hours of courses in a field related to computer science at the 400-level. Suggested fields are engineering, physics, mathematics, statistics, business administration and economics. If mathematics is selected the courses must be in addition to those shown as fulfillment of the basic core requirements.

Other courses strongly recommended by the computer science faculty are:
55:10 Logic and Digital Systems
56:14 Operations Research
56:14 Digital Systems Simulation I
52:148 Analog Computing
22M:130 Probability and Statistics
22M:170 Numerical Methods

Applied Mathematical Science

Committee Chairmen: William F. Ames
Degree offered: Ph.D.

Applied mathematical science at Iowa is an autonomous, broad-
ly-based interdisciplinary program leading to the Doctor of Philosophy degree. The program seeks to help the student achieve a basic command of all aspects of mathematics, at least one science (behavioral, biological, engineering, physical or medical) and the methods of applied mathematics. Additionally, the pro-
gram seeks to develop the "attitude" of an applied mathematician as emphasized by the totality of the discipline.

Creative activities of an applied mathematician include the formulation of scientific concepts and problems in math-
ematical terms, the solution of the resultant mathematical prob-
lems; the discussion, interpretation and evaluation of the results

of his or her analysis; the exploration of new ideas and areas of
application; and the development of mathematicial theories in
areas which have not hitherto been subjected to systematic
mathematical treatment. These efforts may, in turn, lead to the
formation of new mathematical ideas and theories, at a result of
abstractions and generalizations.

Students applying for admission are expected to have an excel-

lent background in science and mathematics, together with a
desire to apply mathematics to the solution of relevant scientific
questions. Each student will have a committee of three or more
faculty members to guide and carefully supervise his or her
program. The individual plan of study will be specifically devel-
oped by incorporating the desired balance in the appropriate
science, advanced mathematics and applied mathematical
science with the student's background, interests and goals.

A major objective of the program is to have the development
of each student's dissertation follow the full cycle of research in
applied mathematical sciences. Guided by the supervising com-
mitee, each student is expected to recognize a significant prob-
lem within his or her science. Thus he or she develops an appro-
propriate mathematical model for that problem, critically examines
that model with respect to its tractability and success in predic-
tion, and develops improvements if necessary.

Since this is a Ph.D. program, students may enter with either a bachelor's or a master's degree. All applicants must satisfy the general requirements of the Graduate College. Fellowship, graduate tuition scholarships and some research and teaching assistantships are available to qualified applicants. Teaching and research assistantships carry stipends appropriate to the work done, and pay up to $3,600 for the nine-month academic year. Tuition is not included, but some tuition scholar-
ships are given to graduate assistants and, in most instances, the
much lower in-state tuition rate is charged. Students are eligible
for federal fellowships and traineeships. Doctoral candidates are
also eligible for four-year Teaching Research Fellowships. Un-
der this plan, one or two years will be spent in teaching and one
or two in research assignments. During the final year the student
will receive fellowship support for interrupted study, private re-
search and writing. The stipend is $3,600 for 12 months, plus tuition.

Applications for these appointments must be received before
March 1, in any year. For application forms and further infor-
mation about the academic program, write to the Chairmen, Pro-
gram in Applied Mathematical Science, Graduate College, The
University of Iowa, Iowa City, Iowa 52240.

Computer Science

Department Chairmen: John D. Vose
Degree offered: B.A., M.S., Ph.D.

Computer science is a mathematically-based discipline con-
cerned with algorithms and information. Since only the existence
of the digital computer makes the existence of algorithms and
the manipulation of information practical, computer science is
concerned with the digital computer in a central way. Thus the
computer scientist will be involved about engineering aspects of
computer science and mathematical and other applications
of computers. More directly, the computer scientist must be
competent in programming and at the same time have an under-
standing of the limitations and implications of digital computers
relative to information and algorithms.

To provide the broadest possible background for his students
and to the advantage of courses offered naturally in other fields,
the normal curriculum in computer science includes work in
several related fields. Within limits, an advanced degree program
in computer science can be constructed to serve a particular need
of a student. However, a certain core of courses should generally
be taken by any candidate for an advanced degree in this field.

It should be emphasized that if a student is concerned about
a specific subject area in which computer science is a necessary
but not a major part of his or her goal, then the student may
be better served by taking his or her degree in that other area
with a heavy concentration of courses in computer science.
The Department offers the degree B.A. in Mathematical Science
jointly with the Division of Mathematical Science, the M.S. and
Ph.D. in computer science.

Undergraduate Program
See "Division of Mathematical Sciences"

Graduate Service Course Sequence
In many instances a prerequisite to advanced study and re-
seach is comprehension of the use of a digital computer. The
department of the Faculty endorses the study of computer
science by graduate students so as to gain the necessary profi-
ciency in the use of a computer. However, the Department will
do not certify such competence in the area of computer science.
Instead, the department which urges a graduate student to gain
proficiency in this field is expected to verify that such proficiency
has been gained.

The following sequence of courses is recommended for gradu-
ate students in other disciplines wishing to gain proficiency in
the use of the computer.

22C:100 Introduction to Computing with Fortran 2 s.h.
22C:117 Computing with PL/I 2 s.h.

These two courses provide the student with a basic understand-
ing of the capabilities of computers and experience in writing
programs in two of the most widely-used programming lan-
guages, Fortran and PL/I.

There will be more graduate students for whom the above
sequence will not be sufficient because of their particular re-
search needs. Depending upon those needs, such courses as
22C:118 Advanced Language Programming or 22C:213
Last Processors and Data Structures may be useful.

graduate Program
Although the plan of study of each advanced degree student is
individually arranged to fit his or her needs, each student will
be expected to study in the areas of programming, computer
systems and compilation theory. The specific requirements for
the M.S. and Ph.D. degrees follow.

The M.S. graduate will find careers as programmers or sys-
tem analysts in industry, business or government, as well as in
directing and teaching computer in four-year colleges. The
Ph.D. student can find the same opportunities and in addition
can find a career in research and teaching at the advanced level.

Master of Science
Admission
The student seeking admission is subject to the general rules of
the Graduate College (see "Graduate College"). Although the
student's undergraduate major is not specified, it is strongly
recommended that the candidate for the degree have a B.A. or
B.S. in mathematics, engineering or physical science. If the stu-
dent's undergraduate program does not include equivalents of
the courses listed in the undergraduate program in Computer
Science of the Division of Mathematical Sciences, he or she may
be expected to complete these courses prior to admission to graduate
courses for which these are prerequisites.

Requirements
Upon admission, the chairman will appoint an advisor for the
student. The advisor and student will draw up a plan of study
which will assure that the candidate achieves proficiency equiva-
ient to that which can be gained as follows:

22C:122 Advanced Computer Organization 3 s.h.
22C:123 Programming Languages 3 s.h.
22C:130 Introduction to Computation Theory 3 s.h.
22C:193 Problems in Computer Science 1 s.h.

Other 22C courses 6 s.h.

Mathematics and statistics courses 6 s.h.

Additional courses selected by the student
with the approval of his or her advisor 7 s.h.

M.S. and Ph.D. candidates will elect to write a thesis, provided the
advisor consents. The student may apply up to six semester hours
of thesis credit toward the total required for an M.S. degree. The
maximum number of semester hours for the M.S. degree in com-
puter science with or without thesis is 30.

M.S. Comprehensive Examination
The candidate for the M.S. degree must successfully complete
a set of written comprehensive examinations as described below.
The examinations may require an oral review of the comprehen-
sive examination. All M.S. candidates must take both parts of the
exam.
Part I: Fundamental Concepts
The student must take parts A, B and C:
A. Programming (two hrs.)
B. Computer Systems and Hardware (two hrs.)
C. Computation Theory (two hrs.)
The material covered on these exams is that typically taught in 22C:122 Advanced Computer Organization, 22C:123 Programming Languages and 22C:135 Introduction to Computation Theory.

Part II: Specialty Area
The student must take one of the parts listed below. Each exam lasts two hours, except part F which lasts for three hours.
A. Advanced Programming
B. Advanced Computer Systems and Hardware
C. Advanced Computation and Automata Theory
D. Artificial Intelligence
E. Matrix Theory and Numerical Analysis
F. Any one of the standard master’s examinations offered by the Mathematics or Statistics Departments.
A student should consult the detailed topical outline of the master’s examination which is available in the Mathematical Sciences Division office and library.

Thesis
The M.S. thesis, if the student elects to write one, must be an original contribution to computer science of at least moderate importance. It may be in any area deemed acceptable by the thesis committee. An oral defense of the thesis will be required in addition to the comprehensive examination.

Doctor of Philosophy
Admission
Admission to candidacy for the Ph.D. degree is granted only upon the recommendation of a faculty sponsor and the approval of a Departmental committee. The Department cooperates with the Program in Applied Mathematical Sciences in developing interdisciplinary doctoral programs.

Requirements
The student’s advisor and chairman will select the guidance committee, which will help the student draw up a plan of study for his or her Ph.D. work.
The student will be expected to complete about 90 semester hours beyond the bachelor’s degree, including a thesis. The student need not have a master’s degree when he or she starts the Ph.D. curriculum, nor need he or she acquire one. However, it is the usual case that the Ph.D. student first acquire a master’s degree in computer science or in some other mathematical or physical science. Every Ph.D. student in computer science is expected to be knowledgeable in all areas recognized as belonging to the field of computer science and to be expert in at least one field. At present, the computer science student should be knowledgeable in the following four categories:

- Programming concepts, including programming, program- ming languages, systems theory, applications programming, simulation, artificial intelligence and numerical analysis
- Theory of computation, including automata theory, computability and formal languages
- Mathematical foundations, including set theory, algebra, analysis, logic and graph theory
- Computer systems, logical design and switching theory

Although the plan of study for each student will be drawn up by the student and his or her committee to fit his or her special needs, every student is expected to complete approximately half of his or her coursework in the first two categories. Moreover, he or she is expected to complete at least half of the coursework in courses numbered 200 or above. Finally each student must complete two semester hours of 22C:193.

To ensure breadth of preparation in certain areas, the student must complete three courses, at least one of which is at the 200 level, with grades of A or B in each of three areas.

Two selected from:
- Algebra
- Analysis
- Logic and set theory
- Statistics and probability
- Numerical analysis

The third may be selected from:
- Electrical engineering
- Operations research
- Business administration
- Linguistics
- Other related areas as approved by Department

Ph.D. Comprehensive Examination
A student is admitted to candidacy for the Ph.D. degree in computer science only after he or she has completed the comprehensive examination described below, provided he or she has been recommended by a member of the computer science faculty. The comprehensive examination will normally be taken only when the student has completed coursework as required by the plan of study. The written examinations, which may be followed by an oral re-exam, are as follows:

Part I. Programming and System Concepts
A three-hour examination on all aspects of programming and systems

Part II. Theory of Computation
A three-hour examination on the theoretical aspects of computer science

Part III. Candidate’s Specialty Area
An examination to be prescribed for the student

Descriptions of all the examinations are available at the computer science offices.

Thesis
Each student must write a thesis which is a significant original contribution to the field of computer science and successfully defend it in an oral examination conducted by the dissertation committee.

Staff: professors Weg. J. Dreye, associate professors Dolch, Fleck, Mikhishin; assistant professors Bacon, Toaster, McClain, Aiton; instructors Ejiorsia, Workman
Courses Primarily for Undergraduates

32C:1 Survey of Computing 3 a.h.
32C:2 Potential and limitations of computers and computer methodology; elements of computer programming, use of libraries and packages, use of computers in physical, biological, and social sciences, and applications.

32C:3 Introduction to Computing with Fortran 3 a.h.
32C:3 Computer structures, machine language programming, algorithms; major emphasis on memory allocation, input/output, bulk storage, and symbolic manipulation.

32C:4 Programming with Business- Oriented Languages 3 a.h.

32C:5 OR5, or other business-oriented languages with applications to business; computer programming, programming, project solutions.

32C:6 Assembly Language Programming 3 a.h.

32C:7 Writing in PL/1 3 a.h.

32C:7 Description of PL/1 as a scientific language; use of PL/1 in linear structures, data types, program execution, file handling, interrupt/return and program control.

32C:8 List Processors and Data Structures 3 a.h.

32C:9 Algorithms, structures, file, and list structures, file and list processing, searching and matching, algorithms, data structures, and program design.

32C:10 Programming Languages in Business 3 a.h.

32C:11 DSL Languages 3 a.h.

32C:12 Programming Languages and Programs 3 a.h.

32C:13 Computer Organization and Programming 3 a.h.

32C:14 Machine- oriented description of hardware systems, including input and output, programs, and computer memory, as well as microprocessors, atomic, and assembly languages.

32C:15 Computer Software 3 a.h.

32C:16 Computer Architecture 3 a.h.

32C:17 Computer Architecture 3 a.h.

32C:18 Computer Architecture 3 a.h.

32C:19 Computer Architecture 3 a.h.

32C:20 Computer Architecture 3 a.h.

32C:21 Computer Architecture 3 a.h.

32C:22 Computer Architecture 3 a.h.

32C:23 Computer Architecture 3 a.h.

32C:24 Computer Architecture 3 a.h.

32C:25 Computer Architecture 3 a.h.

32C:26 Computer Architecture 3 a.h.

32C:27 Computer Architecture 3 a.h.

32C:28 Computer Architecture 3 a.h.

32C:29 Computer Architecture 3 a.h.

32C:30 Computer Architecture 3 a.h.

32C:31 Computer Architecture 3 a.h.

32C:32 Computer Architecture 3 a.h.

32C:33 Computer Architecture 3 a.h.

32C:34 Computer Architecture 3 a.h.

32C:35 Computer Architecture 3 a.h.

32C:36 Computer Architecture 3 a.h.

32C:37 Computer Architecture 3 a.h.

32C:38 Computer Architecture 3 a.h.

32C:39 Computer Architecture 3 a.h.

32C:40 Computer Architecture 3 a.h.

32C:41 Computer Architecture 3 a.h.

32C:42 Computer Architecture 3 a.h.

32C:43 Computer Architecture 3 a.h.

32C:44 Computer Architecture 3 a.h.

32C:45 Computer Architecture 3 a.h.

32C:46 Computer Architecture 3 a.h.

32C:47 Computer Architecture 3 a.h.

32C:48 Computer Architecture 3 a.h.

32C:49 Computer Architecture 3 a.h.
Mathematics

Undergraduate Program

See "Division of Mathematical Sciences"

Graduate Program

Master’s Programs

To be admitted to candidacy for the M.S. degree in mathematics, a student must have completed work in undergraduate mathematics roughly equivalent to the program previously described for the M.S. degree in mathematics. A student whose preparation does not meet this requirement, in the opinion of his or her initial advisor, may be required to take certain additional courses to cover the deficiencies.

Recent graduates of the Mathematics master’s programs have found positions both in education (largely secondary school) and industry.

The Department offers the M.S. degree without thesis and the M.S.T. (Master of Arts in Teaching). The M.S. degree may be taken with an education option. For all of these degrees the student is required to take a two-semester sequence in algebra and a two-semester sequence in analysis. A comprehensive exam covers the material in these sequences and, in the case of prospective secondary school teachers, material in required education courses. The content of this examination is given in Chapter 10 of the department’s graduate study guidelines. The minimum of 18 hours in the Department of Mathematics from the courses listed below.

Any course in the Department of Mathematics numbered 200 and above except 22M:105

Any of the following courses in the Department of Computer Science:

- 22C:122 Advanced Computer Organization
- 22C:113 Programming Languages
- 22C:135 Introduction to Computation Theory
- 22C:145 Artificial Intelligence
- 22C:199 Automata Theory I

Any of the following courses listed below.

Two from 22M:130-131 Abstract Algebra I and II and 22M:205-206 Introduction to Algebra, including either 22M:121 or 22M:206.

Two courses in mathematics education

Course Distribution

A minimum of 24 semester hours in the Division of Mathematical Sciences from these courses:

Any course in the Department of Mathematics numbered 200 and above, except 22M:105 Analysis for Applications.

- 22C:132 Advanced Computer Organization.
- 22C:133 Programming Languages.
- 22C:135 Introduction to Computation Theory.
- 22C:145 Artificial Intelligence.
- 22C:199 Automata Theory I or any 200-level course in computer science.

- Either 22M:133-134 Introduction to Mathematical Science, 22S:164-165 Introduction to Probability, or any statistics course having any of these as a prerequisite.

Comprehensive Examinations

A six-hour examination over the required courses will assess the candidate’s knowledge of mathematics and his knowledge of the relevance of specific concepts to the teaching of secondary school mathematics.

Program II

Required Courses

Two from 22M:115-116 Introduction to Analysis I-II and 22M:210-211 Analysis I-II, including either 22M:116 or 22M:211.


Course Distribution

A minimum of 24 semester hours in the Division of Mathematical Sciences, and a minimum of 18 semester hours in the Department of Mathematics from the courses listed below:

Any course in the Department of Mathematics numbered 200 and above except 22M:105

Any of the following courses in the Department of Computer Science:

- 22C:122 Advanced Computer Organization
- 22C:133 Programming Languages
- 22C:135 Introduction to Computation Theory
- 22C:145 Artificial Intelligence
- 22C:199 Automata Theory I

Any of the following courses listed below.

Two from 22M:130-131 Abstract Algebra I-II and 22M:205-206 Introduction to Algebra I-II or a course which has any of these as a prerequisite.

Comprehensive Examination

This examination (for candidates in Program II) consists of two three-hour examinations over the required courses.

With the permission of the graduate committee, a candidate may substitute an approved part of the Ph.D. comprehensive examination for part of the master’s examination.
In both programs a minimum of 30 hours of graduate credit is required for the master's degree.

Program III (non-departmental students enroll to a Ph.D in another area)

Required Courses

None

Distribution Limitations

Same as Program II

Course Limitations

Same as for Program II

Comprehensive Examinations

The student in Program III will be considered to have passed the comprehensive examinations for the master's degree in mathematics upon satisfying the following two conditions:

- Maintaining minimum grade-point average of 3.0 in all mathematics courses taken for the master's degree in mathematics
- Successful completion of comprehensive Ph.D. examination in chosen area

A student in Program III will be assigned a mathematics adviser who will work with the student and the student's adviser in his or her area outside the Division to establish an appropriate curriculum for the master's degree in mathematics.

M.A.T. (Master of Arts in Teaching)

- Minimum of 18 semester hours of coursework in Division of Mathematical Sciences, including two-semester sequence in Analysis and two-semester sequence in Algebra
- Minimum of 20 semester hours of graduate work in Education, including Methods of Teaching Secondary Mathematics, Student Teaching, Educational Psychology and either History or Philosophy of Education
- Six hours of examination over required courses in analysis, algebra and education; examination assesses candidate's knowledge of mathematics and knowledge of relevance of specific concepts to teaching of secondary school mathematics; candidate also examined on knowledge of general education
- Course in either American government or American history also required for Iowa certification; may be undergraduate course

General Information

It is expected that candidates for the Master of Science degree will be able to complete their degree program in four summer sessions or one academic year and one summer session. M.A.T. candidates should expect to complete a program in approximately three semesters during the academic year and one summer session.

Required courses in the programs and a broad selection of electives will be offered regularly during summer sessions. In addition, during each semester of the academic year, at least one course of interest to teachers will be offered by the Division of Mathematical Sciences during the late afternoon or evening.

Admission Requirements

Regular admission to a Master of Arts program requires at least a 2.5 cumulative grade-point on a 4.0 scale. Regular admission to the M.A.T. program requires a 2.7 grade-point average.

Doctoral Programs

Most of the recent graduates of the Ph.D. program have found positions teaching in universities or colleges. Within the Ph.D. program there is ample opportunity to take courses in applicable mathematics, both in the Mathematics Department and other departments in the Division. There is thus no formal Departmental policy distinguishing between pure and applied mathematics, although the Department faculty itself is considerably stronger in the "pure" area.

The Department of Mathematics also cooperates in interdisciplinary doctoral programs with the program in Applied Mathematical Sciences.

The requirements for the Ph.D. in mathematics include 72 hours of graduate credit, at least three years of graduate residence, including at least one at The University of Iowa, the passing of a comprehensive qualifying examination as described below. Also, required in the field of research chosen by the candidate are a comprehensive examination in depth, the writing of a thesis and a final examination. Ordinarily, the candidate must demonstrate to the adviser's satisfaction proficiency in French, German or Russian.

The qualifying examination covers those of the areas of algebra, analysis, logic and foundations, and topology. Each student decides in which three of the areas he or she wishes to be examined. The examinations are regularly given twice in each academic year, early October and early April. Further information on these examinations is available in the Mathematics office. Beginning graduate students who plan ultimately to work for the Ph.D. should follow the guidelines given above for the various M.S. programs, and should seek their adviser's help in planning a course of study that will prepare them for the comprehensive qualifying examination. Students who enter after having taken some graduate work elsewhere should likewise consult an adviser for an evaluation of the previous work and the planning of further study.


Undergraduate Courses: Lower Division

These courses are not open to graduate students except by special arrangement with the chairman of the Department.

2396:1 Basic Mathematical Techniques

- Fundamentals of algebra and trigonometry, elementary functions and their graphs, solving equations, elementary differential equations, logarithms, computing, and the application of the techniques of single variable calculus to the solution of problems from the sciences.

2396:2 Mathematical Techniques I

- Logarithms, permutations, combinations, roots of polynomial equations, inequalities, progressions, complex numbers, primarily intended for students who need
and analyze scientific experiments so that every usable bit of information is squeezed from the data.

Undergraduate Program
(See "Division of Mathematical Science")

Graduate Program
The graduate program is designed to reflect the dual role of statistics as an independent discipline within the mathematical sciences and as a research tool. The Department offers programs leading to the M.S. degree under both the thesis and nonthesis plans in the fields of theoretical statistics and probability, applied statistics, actuarial science and operations research. Programs leading to the Ph.D. degree are offered in theoretical statistics, probability and applied statistics. The Department of Statistics also cooperates in developing interdisciplinary doctoral programs under the Program in Applied Mathematical Science.

To be admitted to the graduate program, the applicant should have an undergraduate major in one of the mathematical sciences. With the approval of the Department, selected candidates may be granted admission on the basis of mathematical training through one year of calculus.

Master's Degree Programs
Each of the three nonthesis M.S. degree programs offered by the Department requires the successful completion of at least 30 semester hours of graduate work. The required minimum grade-point average for the M.S. degree is 2.5.

The specific course requirements for the three nonthesis M.S. degree programs are given below. If a specified course, or its equivalent, was taken while the student was an undergraduate, an appropriate graduate-level course, selected with the help of the student's adviser, will be substituted in the degree program.

Theoretical Statistics and Probability

223M112 Introduction to Analysis I
223M153154 Introduction to Mathematical Statistics I-II
223M164165 Introduction to Probability I-II
and at least six semester hours from among:
223M116 Introduction to Analysis II
223M210211 Analysis I-II
223M400 Applied Statistical Decision Theory
223M767168 Introduction to Stochastic Processes I-II
223M770 Introduction to Nonparametric Statistics
223M772 Topics in Mathematical Statistics
223M253 Theory of Statistics
223M255 Among Program
223M255 Multivariate Analysis
223M271272 Statistical Inference I-II

Applied Statistics
The following courses are recommended and constitute the core of the program:

223M103 Introduction to the Design of Surveys
223M153154 Introduction to Mathematical Statistics I-II
223M158 Design and Analysis of Experiments
223M162 Regression Analysis
223M173 Statistical Computation and Compilaton
223M100 Introduction to Computing with Fortran
The remaining courses may be selected from group:
223M127128 Statistical Methods in Educational Research I-II
223M133 Quality Control and Reliability
223M148 Advanced Statistical Methods
223M150 Applied Statistical Decision Theory
223M161 Application of Multivariate Statistical Theory
223M164 Introduction to Probability I
223M170 Introduction to Nonparametric Statistics
223M170 Numerical Methods
56M143 Digital Systems Simulation I
56M241 Operations Research

Other courses relevant to applied statistics, but not appearing on this list, may be selected for inclusion in M.S. program in consultation with adviser.

Actuarial Science
223M153154 Introduction to Mathematical Statistics I-II
223M177 Numerical Analysis for Actuaries
223M178 Graduation
223M179 Advanced Mathematics of Finance
223M180 Mathematics of Life Insurance
223M181182 Actuarial Theory and Practice I-II
223M183 Construction of Demographic Tables
223M184 Risk Theory
223M297 Seminar: Actuarial Theory

and at least one course from outside Division of Mathematical Sciences, most students elect courses from College of Business Administration

Operations Research
223M133154 Introduction to Mathematical Statistics I-II
223M140 Applied Statistical Design Theory
56M241 Operations Research
56M242 Mathematical Programming I

It is also recommended that the following be taken:
223M167168 Introduction to Stochastic Processes I-II
56M243 Mathematical Programming II

The M.S. degree may be earned under a thesis program in each of the areas in which a nonthesis M.S. degree may be earned. The course content of such a program would be almost the same as in a nonthesis program except that up to eight semester hours may be earned by writing a thesis. Each candidate for the M.S. degree will have a committee of three members appointed by the chairman of the Department, and one member will be designated chairman of the committee. This committee will have the responsibility of recommending action on the candidate's application for an M.S. degree. This recommendation is usually based on the results of two-hour examinations on the topics covered in the specified courses within each program.
Ph.D. Program

The Ph.D. program in statistics has certain auxiliary objectives, and the Department encourages doctoral students to relate their specializations to these objectives. The student should have the ability to use electronic digital computing equipment or to learn the language skills needed to read foreign scientific journals and to be able to respond in oral and written communication. In order to achieve these objectives, during the first year or two of the program, a doctoral student may wish to take a few courses or seminars to advance his or her understanding of the relationship between statistics and other disciplines, to learn computer programming or to increase facility with one or more foreign languages. Each doctoral student is required to include in the program a component which involves experience in either teaching or statistics consulting.

When a graduate student has accumulated approximately 40 to 50 semester hours of credit, of which at least 16 semester hours are in 200-level courses in the mathematical sciences, that student should request permission to take a preliminary examination for the Ph.D. degree. This examination assesses whether the student has mastered the basic concepts of probability and statistics; it consists of two parts, one of which is mandatory for all prospective candidates. The first part is a basic examination on probability and statistics. Essentially the topics covered are those studied in:

228:153–154 Introduction to Mathematical Statistics
228:164–165 Introduction to Probability I–II
228:170 Introduction to Nonparametric Statistics

This examination is usually divided into two three-hour sessions. For the second part of the examination the student may choose, according to his or her interests, either II (a) applied statistics (three hours) which basically covers the material in 228:158 Design and Analysis and 228:235 Analysis of Variance, 228:256 Multivariate Analysis or II (b) financial mathematics (three hours) which covers the material in 22M:210–211 Analysis I–II. The student interested in the area of probability or mathematical statistics should take part I (a). This examination is offered once in the fall semester and once in the spring semester. An examination committee transmits to the Department that the student be passed, passed with reservations or failed. In case of failure, this examination may be repeated once. This examination may be used in lieu of the master’s written examination.

After the student has passed the preliminary examination and obtained a thesis adviser, he or she and the adviser should prepare a plan of study. The student then seeks permission of the Department chairperson to take the Ph.D. oral comprehensive examination. This should be held approximately one semester after the preliminary examination and, in no case, more than a year later. The chairperson of the Department will appoint a five-member committee to conduct the examination, at least four of whom must be from the Department of Statistics. The purpose of this examination is to determine whether the student has a sufficient grasp of the necessary mathematical, statistical and probabilistic concepts to work on original problems. Clearly, the student must have the requisite tools which include the major ideas from the preliminary examination, but more than that is expected. For example, a student in applied statistics would be responsible for the mathematical concepts and techniques which are prerequisites for the advanced courses he or she has taken in statistics. Following the examination, the student’s Ph.D. committee will make the usual report to the Graduate College on the Ph.D. comprehensive examination. It is traditional that the doctoral program ends with an oral examination over the student’s dissertation.

Special Features

The development of high-speed electronic computers has had a big impact on statistics. Practicing statisticians and actuaries find the computer an indispensable tool in their daily work. Remote computer terminals are available in Main Quadrangle and are employed in Quantitative Methods and several other courses to give students experience using the computer.

Because statisticians are often served with other scientists in research projects, it is important that students gain experience in group efforts. In several courses the Department tries to provide this experience. For example, a team of students, with faculty supervision, recently performed an extensive analysis of the factors relating to highway deaths in Iowa.

Iowa’s Proud Tradition

Professor H. L. Rietz, who served The University of Iowa from 1918 until 1942, was a pioneer in mathematical statistics and actuarial science. Rietz was the first president of the Institute of Mathematical Statistics and served as a special actuarial advisor during the drafting of the original Social Security Act. He and his students have made significant contributions in each of these fields. Today the Department of Statistics carries on a much more varied program than was possible in those early days; however, the commitment to excellence is the same.


Courses Primarily for Undergraduates

No student who has received credit for a course offered by the Department of Statistics above 228:150 may receive credit for subsequently taking another course covered below 228:150.

228:54 Quantitative Methods I 4 s.h.
228:55 Quantitative Methods II 4 s.h.
228:57 Computer Programming 3 s.h.
228:68 Special Topics 3 s.h.
228:93 Elementary Probability and Statistics 3 s.h.
228:95 Probability and Statistics I 3 s.h.
228:96 Probability and Statistics II 3 s.h.
228:98 Probability and Statistics III 3 s.h.
228:99 Probability and Statistics IV 3 s.h.
228:99 Probability and Statistics V 3 s.h.
228:99 Probability and Statistics VI 3 s.h.
228:99 Probability and Statistics VII 3 s.h.
228:99 Probability and Statistics VIII 3 s.h.
228:99 Probability and Statistics IX 3 s.h.
228:99 Probability and Statistics X 3 s.h.
228:99 Probability and Statistics XI 3 s.h.
228:99 Probability and Statistics XII 3 s.h.
228:99 Probability and Statistics XIII 3 s.h.
228:99 Probability and Statistics XIV 3 s.h.
228:99 Probability and Statistics XV 3 s.h.
228:99 Probability and Statistics XVI 3 s.h.
228:99 Probability and Statistics XVII 3 s.h.
228:99 Probability and Statistics XVIII 3 s.h.
228:99 Probability and Statistics XIX 3 s.h.
228:99 Probability and Statistics XX 3 s.h.
228:99 Probability and Statistics XXI 3 s.h.
228:99 Probability and Statistics XXII 3 s.h.
228:99 Probability and Statistics XXIII 3 s.h.
228:99 Probability and Statistics XXIV 3 s.h.
228:99 Probability and Statistics XXV 3 s.h.
228:99 Probability and Statistics XXVI 3 s.h.
228:99 Probability and Statistics XXVII 3 s.h.
228:99 Probability and Statistics XXVIII 3 s.h.
228:99 Probability and Statistics XXIX 3 s.h.
228:99 Probability and Statistics XXX 3 s.h.
228:99 Probability and Statistics XXXI 3 s.h.
228:99 Probability and Statistics XXXII 3 s.h.
228:99 Probability and Statistics XXXIII 3 s.h.
228:99 Probability and Statistics XXXIV 3 s.h.
228:99 Probability and Statistics XXXV 3 s.h.
228:99 Probability and Statistics XXXVI 3 s.h.
228:99 Probability and Statistics XXXVII 3 s.h.
228:99 Probability and Statistics XXXVIII 3 s.h.
228:99 Probability and Statistics XXXIX 3 s.h.
228:99 Probability and Statistics XL 3 s.h.
228:99 Probability and Statistics XLI 3 s.h.
228:99 Probability and Statistics XLII 3 s.h.
228:99 Probability and Statistics XLIII 3 s.h.
228:99 Probability and Statistics XLIV 3 s.h.
228:99 Probability and Statistics XLV 3 s.h.
228:99 Probability and Statistics XLVI 3 s.h.
228:99 Probability and Statistics XLVII 3 s.h.
228:99 Probability and Statistics XLVIII 3 s.h.
228:99 Probability and Statistics XLIX 3 s.h.
228:99 Probability and Statistics L 3 s.h.
228:99 Probability and Statistics LI 3 s.h.
228:99 Probability and Statistics LII 3 s.h.
228:99 Probability and Statistics LIII 3 s.h.
228:99 Probability and Statistics LIV 3 s.h.
228:99 Probability and Statistics LV 3 s.h.
228:99 Probability and Statistics LVI 3 s.h.
228:99 Probability and Statistics LVII 3 s.h.
228:99 Probability and Statistics LVIII 3 s.h.
228:99 Probability and Statistics LIX 3 s.h.
Medical Technology

Directors: John A. Kepke (VA Hospital), Michael L. O'Connor (University Hospital)

Degree offered: B.S., B.S. (plus certification)

Medical technology is one of the newest and fastest-growing professions in medicine. Medical technologists perform laboratory tests upon which physicians rely for accurate diagnosis and proper treatment of disease. These skilled health team workers are in great demand in hospitals, private and government laboratories, clinics, physicians' offices, industrial medical laboratories, pharmaceutical and biological laboratories, and in medical research.

Medical technologists utilize a battery of complicated precision instruments in their work. Modern-day laboratory tests reveal the presence of abnormalities in blood composition and other bodily fluids as well as body tissues. Laboratory personnel performing these procedures must have the highly specialized skills acquired in the completion of a formal academic and clinical program.

The medical technology profession requires intelligence, accuracy and reliability in a high degree. As a general rule, students showing an aptitude for scientific subjects in high school will succeed in medical technology.

Advancement opportunities in medical technology depend to a large extent on the quality of education and the ability of the individual. There is a growing demand for medical technologists with advanced degrees to fill positions in supervision, education and administration.

The University of Iowa offers a program approved by the Council on Medical Education and Hospitals of the American Medical Association and by the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists. The program consists of three years of preclinical studies followed by a one-year clinical program which may be taken at the University of Iowa Hospitals, the Iowa City Veterans Administration Hospital or, by special arrangement, at another approved hospital school of medical technology.

After successful completion of the four-year program, the student is awarded a Bachelor of Science in Arts or Bachelor with a major in general science and medical technology. Also, a Certificate in Medical Technology is granted by the hospital in which the clinical training was conducted. The student is then eligible to take the examination of the Registry of Medical Technologists and thereby become a registered medical technologist, which entitles him or her to the designation M.T. (A.S.C.P.) —Medical Technologist (American Society of Clinical Pathologists).

Predoctoral Studies

In the predoctoral program, the medical technology student must satisfy the College of Liberal Arts proficiency requirements in rhetoric, physical education, mathematics and foreign language; must satisfy the College of Liberal Arts core requirements in literature, social science and the historical-cultural area; and must earn at least 36 semester hours of credit in science.

The credits in science must include 16 semester hours of credit in chemistry, including general chemistry (eight semester hours must be completed during the freshman year), quantitative analysis and organic chemistry; and 16 semester hours in the biological sciences, including zoology, microbiology and parasitology.

A course in general physics is strongly recommended but not yet required.

To enter a clinical hospital program, the student must have earned at least 94 semester hours of credit in preclinical studies, with a minimum 2.0 cumulative grade-point average.

Clinical Program
In the fourth year, students enroll in the 12-month clinical program at the University of Iowa Hospitals or at Iowa City Veterans Administration Hospital. After finishing one of these clinical programs, the University awards 30 semester-hours credit, thus completing all requirements for the Bachelor of Science in Arts degree in general science.

The clinical programs cover in depth the following disciplines: clinical hematology, clinical biochemistry, urinalysis, blood banking, clinical microbiology, virology and parasitology. Daily lectures, student laboratory work and rotation through all sections of the clinical pathology laboratories are included.

The Veterans Administration Hospital is approved for 15 students and the program begins in June of each year. University Hospitals is approved for 24 students and accepts a class of 12 students for June of each year and another class of 12 students in the fall of each year.

Because the clinical-year programs of The University of Iowa are limited to a total of 39 students, students may enroll in certain other approved hospital medical technology programs. In such cases, however, prior written approval of the University must be obtained if academic credit towards a bachelor's degree is to be granted upon completion of the clinical program.

Staff: UNIVERSITY HOSPITALS: professor Rooth, associate professor Rose; assistant professor Barrett; Nicholson, M. L.
O'Connell, Simmons; instructors Giehle, E. O'Conner, Platt, Scholtes; Winkel; VETERANS ADMINISTRATION hospital: Kopeck; assistant professors Abedi, Shackle; instructors Berglund, Oliver

Courses
See "General Science" for description

Microbiology

Department Head: J. R. Porter
Degree offered: B.S., M.S., Ph.D.

Microbiology is a science concerned with the identification, structure and activities of bacteria, yeasts and molds, protozoa, viruses and other organisms of microscopic and submicroscopic size, representing the borderline of life. Microbiology involves study of the distribution of microorganisms in nature, their relationships to each other and to other living things, their beneficial and harmful effects on man, animals and plants, and the physical and chemical changes they produce in the environment.

All branches of the science—general microbiology, food and dairy microbiology, soil microbiology, plant microbiology, water and sewage microbiology, medical and veterinary microbiology, dental microbiology, immunology, pharmacological microbiology, marine microbiology, geobiology—have expanded rapidly in recent years and offer rewarding career opportunities to qualified persons.

Microbiology is an excellent major for undergraduate students who want a good general education with emphasis on an important and interesting science. For the graduate of a bachelor's degree program in microbiology, positions are available in government, hospital, public health and industrial control, research and teaching laboratories.

Students who continue beyond the bachelor's degree have career opportunities in these same areas, plus college and university teaching, with greater responsibilities and commensurately higher salaries.

The Bachelor of Science Degree

An undergraduate student majoring in microbiology at Iowas must meet general College of Liberal Arts requirements in rhetoric, mathematics and physical sciences, in the literature, historical-cultural, and social sciences cores, and in a foreign language (German or a Romance language is recommended). Required courses for the microbiology major include:

1. Introduction to Botany
   2.1 Introduction to Botany
   3 s.h.
   or 11.1 Principles of Animal Biology
   3 s.h.
2. Principles of Chemistry
   4.1 and 4.2 Principles of Chemistry I-II
   6 s.h.
   or 4.5 Principles of Chemistry
   3 s.h.
3. Principles of Chemistry
   4.3 Principles of Chemistry
   3 s.h.
4. Chemistry of Organic Compounds
   4.6 Elementary Chemistry Laboratory
   6 s.h.
   or 4.11 Quantitative Analysis
   4 s.h.
5. Organic Chemistry I
   4.12-122 Organic Chemistry I-II
   6 s.h.

4.14 Intermediate Chemistry Laboratory I
   3 s.h.
4.15200 Chemical Laboratory Materials
   3 s.h.
5.12200 General Chemistry
   3 s.h.
2.1-2 College Physics
   8 s.h.
6.1152-155 Microbiology
   10 s.h.
22M.20 Elementary Functions
   3 s.h.
22M.25-26 Calculus I-II
   5 s.h.

(* Optional but recommended, especially for students planning to go on to graduate study)

The Honors Program

Open to seniors with grade-point averages of at least 3.0 overall and 3.2 in microbiology courses, the Honors Program in microbiology comprises an introduction to original research, directed readings, participation in a Departmental seminar, the identification and resolution of a special laboratory problem, a report on the laboratory work and an Honors examination. A student successfully completing Honors work receives six semester hours of credit and is awarded the bachelor's degree "with Honors."

For graduate programs, facilities, staff roster and course descriptions, see "College of Medicine."

Museum Training

Department Head: George D. Schrimer

The Department offers courses which give the student a comprehensive background in the conceptual, design and production phases of exhibit preparation and the general operational procedures of small science museums. Courses are offered during the summer session as well as the regular academic year. They are elective college work counting as credit toward the B.A. or B.S. degree. As graduate work, museum courses may be credited as a minor on a master's degree or Ph.D. A major in general science or science education is recommended for students preparing for professional museum careers.

Techniques presented in the Museum Laboratory are of value not only to those intending to pursue museum careers, but also to premedical, geology, zoology and anthropology students. Instruction is designed to meet the individual needs of each of these students. Advanced museum students are afforded the opportunity to gain practical working experience by participating directly in the Museum of Natural History exhibit program.

The museum field is expanding rapidly, and graduates of the University occupy positions of responsibility as directors, curators and exhibit specialists in museums throughout the United States and Canada.

Staff: curator and instructor Schrimer

Courses

(All registrants by consent of instructor)
24/114 Museum Techniques
1 or 2 s.h.
Collecting, preparing and exhibiting biological materials for museums, classroom teaching or repository use.
Music

School Director: Huong Van Tran


A primary element in any arts community of international repute, the University of Iowa School of Music has long been recognized as one of the excellent university-based schools of music in the United States.

The School's on-campus enrollment of 250 undergraduate and 175 graduate students majoring in music is at once large enough to sustain strong programs in all areas of specialization and small enough to ensure the individual attention essential to each student's development.

Approximately 90 percent of the School's undergraduate students earn certification if they wish. Most of those who earn certification do enter teaching.

More than 70 graduates of the School have become heads of music at other colleges and universities. In teaching, graduates of the School generally can find opportunities in continuous, top-rank interests in performing, composing and other related activities.

There is also a growing demand for qualified personnel in sales and administration, in music programs and other areas of the music industry, and in church music, music librarianship, and recording and broadcasting.

Alumni of the School play in major orchestras in Boston, Dallas, Cincinnati, Minneapolis and New Orleans, and in numerous other professional organizations.

The University of Iowa School of Music is a charter member of the National Association of the Schools of Music. At the undergraduate level, School of Music curricula offer all qualified high school graduates an opportunity for further study of music, either professional or avocational. At the graduate level, curricula provide advanced study, designed primarily for persons preparing for teaching careers in secondary schools or colleges and universities.

All music enrollments require School of Music approval.

Undergraduate Degrees

New undergraduate students planning to major in music are required to audition either in person or by tape recording in advance of registration; write to the director of the School of Music for details. In addition, all transfer students must take the Advisory Examination in music theory (see "Graduate Degree").

Curricula for the two undergraduate degrees are identical, except that candidates for the B.M. may vote more than 50 semester hours in music toward the 125-semester hours required for graduation in the College of Liberal Arts, while candidates for the B.F. may count more than 50 semester hours in music toward graduation in the College of Liberal Arts and, in addition, need only eight semester hours of credit in foreign language. Students who want a teaching certificate may select either degree, but the B.M. is preferred since the B.M. program allows the student to take more coursework in music.

Candidates for either degree must complete these music requirements:

25:1-2 Literature and Theory I, II
25:3-4 Ear Training and Sight Singing
25:5-6 Literature and Theory III, IV
25:7-8 Advanced Ear Training and Sight Singing
At least four semester hours must be earned from:

Four years of applied music (both solo and ensemble) Participation in band, orchestra or chorus required of all undergraduates; specific assignments at discretion of adviser and director of School of Music; as a minimum, wind and percussion majors must participate in band program during first two years in residence at the University, female students in concert band and male students in both marching and concert band; requests for adjustment of rules pertaining to performance in band may be submitted to reviewing committee.

Advanced electives in applied music, theory, composition, music education, music history and literature, or orchestration and conducting

Undergraduate Music Education Programs

For general requirements for teacher certification, see "College of Education.

In addition to B.A. or B.M. requirements in music, liberal arts and education, certification to teach music in Iowa schools requires satisfactory completion of:

Brass, Woodwind or Percussion Majors

25:104 Instrumental Techniques (Cornet, Clarinet and Percussion) 1 or 2 s.h.
25:105 Instrumental Techniques I, 2 or 3 s.h.
25:106 Instrumental Techniques I, 2 or 3 s.h.
25:107 Instrumental Conducting 2 s.h.

All brass, woodwind and percussion majors in music education must participate in concert band for eight semesters; men must also participate in marching band for four full semesters.

String Majors

25:103 Class Viola 0 to 2 s.h.
25:104 Instrumental Techniques (Cornet, Clarinet and Percussion) 0 to 2 s.h.

Minimum of one year on secondary string instrument (required); violin and viola majors elect one year of cello instruction; cello
and bass majors elect one year of violin; in addition, all violin majors are expected to elect one semester of Class Viola
25:107 Instrumental Conducting 2 s.h.
25:112 String Techniques and Methods 3 s.h.

Vocal and Piano Majors
Vocal majors must evidence satisfactory competence in piano; piano majors must evidence satisfactory competence in voice; either vocal or piano majors lacking such proficiency to continue applied music in appropriate area
25:109 Choral Methods and Conducting 3 s.h.
25:110 Choral Literature and Conducting 3 s.h.

Music Teaching Minor for Elementary Education Majors
Minimum of 24 semester hours required in this program

<table>
<thead>
<tr>
<th>Required Courses</th>
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<tbody>
<tr>
<td>7E:119 Methods: Basic Skills and Techniques in Music Education 3 s.h.</td>
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<tr>
<td>7E:120 Methods and Materials: Music for the Classroom Teacher (section for music minors) 3 s.h.</td>
</tr>
<tr>
<td>7E:192 Laboratory Practice in Elementary School 2 s.h.</td>
</tr>
<tr>
<td>Applied Music 2 s.h.</td>
</tr>
<tr>
<td>Participation in Music Ensembles 2 s.h.</td>
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</tbody>
</table>

Electives
Minimum of 12 semester hours to be selected from other music and advanced music education courses (7E and 79 course designations) with approval of adviser
25:115 Diction for Singers I 2 s.h.
25:116 Diction for Singers II 2 s.h.

Piano Majors-Novice Area
Piano majors who elect to teach in novice area must complete requirements in either brass, woodwind, and percussion or string area.

Methods and Materials: Student Teaching

Vocal Majors
7E:145 Methods and Materials: Elementary School Music 3 s.h.
7S:142 Methods and Materials: Secondary School General Music 3 s.h.

Instrumental Majors
7E:145 Methods and Materials: Elementary School Music 2 s.h.
7S:140 Methods and Materials: Secondary School Instrumental Music 4 s.h.

All Majors
7E:191 Observation and Laboratory Practice in High School 6 s.h.
7E:192 Laboratory Practice in Elementary School 6 s.h. (See "College of Education" for education course requirements)

Graduate Degrees
Each applicant must meet the general requirements for admission to the Graduate College (see "Graduate College"), take the Graduate Record Examination Aptitude Test and take the Advisory Examinations in music history and literature and in music theory (harmony, ear training, counterpoint), which are given six days on the two days (Sunday excluded) before registration. A bulletin describing the general requirements for these tests is available from the registrar's office. School of Music. Students expecting to major in performance must audition in person by submitting a tape recording representative of their current performance.

Master's Degrees

Master of Arts
The Graduate College requires a minimum of 30 semester hours of graduate credit, including at least 24 semester hours completed in residence. As soon as possible in the first semester of residence, the candidate should select a field of special interest and consult with the area head in that field who will act as his or her adviser. A plan of study approved by the adviser and the Departmental executive must be filed with the Graduate College during the semester in which the degree is to be granted. After or in the semester in which he or she expects to complete them, the candidate must present himself or herself for a final master's examination. This examination normally covers the areas of music theory, music history and the major area of concentration. Regulations of the Graduate College provide that, upon recommendation of the School of Music, students who are going on to the doctorate may substitute the comprehensive Ph.D. examination for the final master's examination. In such cases it is expected that the student's coursework be of high quality and sufficiently advanced to merit this recommendation.

Areas of concentration for M.A. degrees are composition, music history and musicology, music education, music literature, music theory and performance (including conducting). The requirements for the thesis and nonthesis programs are identical, except that under the thesis plan up to eight semester hours may be earned for the thesis. These are normally required in all areas except music education and may be included in the total required course of study or may be in the fields of performance, composition or instrumentation. For the thesis in performance (four semester hours maximum degree credit allowed), one full-length recital is required; degree credit will not be given for a recital graded lower than B. It is expected that original compositions shall be sufficiently tested by audition before being submitted as thesis. All curricula for the Master of Arts degree include:
25:321 Introduction to Graduate Study in Music
Any two of the following, to be taken only after any serious deficiencies revealed in advisory examination in music theory and ear training are remedied through 25:111 Review Theory:
25:145 Counterpoint Forms or satisfactory score on Advisory Examination
25:147 Tonal Forms or satisfactory score on Advisory Examination

One elective from analytical studies sequence (25:148-152) or equivalent
If satisfied from either 25:145 or 25:147 as a result of the Advisory Examination, student must take one from which
be or the was not excused, and an elective from analytical studies series if excused from both 25:145 and 25:147, only elective from analytical studies need be taken.

25:301–302 Advanced History and Literature of Music I-II or equivalent or satisfactory score on Advisory Examination If excused from either or both 301–302 as result of Advisory Examination, another course should be elected from music history sequence, 25:303 to 25:319, course 25:322 and 25:320 to 25:332; others occasionally offered by musicology staff may be elected in special cases with permission of musicology advisor.


Suitable courses in a candidate's area of concentration

Graduate programs for the M.A. in music education include all minimum requirements of the School of Music (see above), as well as 78:240 Supervision and Administration of Music, 78:441 Psychology of Teaching Music, 78:245 General Music in the Elementary School or 78:341 General Music in Secondary Schools, and two courses selected from the following:

25:108 Advanced Instrumental Conducting
25:172 String Instrument Literature
25:207 Advanced Choral Conducting I
25:308 Advanced Choral Conducting II
25:209 Advanced Instrumental Methods and Literature I
25:310 Advanced Instrumental Methods and Literature II
25:341 Advanced Choral Literature I
25:342 Advanced Choral Literature II
25:343 Advanced Choral Literature III

Master of Fine Arts

The M.F.A. is a degree normally requiring two years for students of superior ability in the areas of composition or performance (including conducting). It requires a minimum of 48 postbaccalaureate semester hours. In addition to the curricular requirements for the Master of Arts degree (see above), the student must also present at least two full-length recitals or programs. A Master of Arts degree may be earned while the student is working toward the Master of Fine Arts degree; but the student must meet all requirements for each degree separately, including two final examinations, with a minimum combined total of 60 semester hours of graduate credit (see "Graduate College").

Doctoral Degrees

The Graduate College requires a minimum of 72 semester hours of graduate credit for the doctorate; two semesters of at least nine semester hours each must be spent in full-time residence on campus at the University beyond the first 24 semester hours of graduate work. As soon as possible in the first semester of his or her residence, the candidate should consult with the head of the area of his or her field of interest for preliminary planning. A formal plan of study must be drawn up no later than the semester in which the comprehensive examination is to be taken, and a copy of the plan must be sent along with the Departmental request to the Graduate College for permission to take the examination. The comprehensive examination is intended to evaluate the candidate's knowledge of music theory, music history and his or her major area at or near the end of the formal preparation and prior to the completion of the dissertation. The student must be registered in the University at the time of the comprehensive examination, which must be passed not later than the session before the session of graduation. The examination may not be taken until the foreign language or other tool requirements (see below) set by the student's supervisor have been satisfied. The final examination, an oral defense of the dissertation, may not be held until the next session after passing the comprehensive examination (see "Graduate College" for further details).

All doctoral study in music includes:

- Minimum course requirements listed under the M.A. degree.
- One or more additional electives from the analytical studies sequence 25:148–152 or equivalent;
- One or more additional courses in the music history-musicology sequence (see Master's Degree);
- 25:179 Acoustics or equivalent;
- Reading proficiency in one foreign language (usually German) except for music education students, who may elect two courses in statistics; most areas require one or more additional languages for these further language requirements and levels of achievement expected, students should consult appropriate advisor; it is recommended that entering students register for a language continuously, unless or until they pass required proficiency examination.

All doctoral students shall be available for periodic large ensemble (25:182 Opera Workshop, 25:185 University Choir, 25:192 Oratorio Chorus, 25:194 Orchestra) during each term of registration, unless excused by advisor.

Doctor of Philosophy

Areas of concentration for this degree include composition, music history and musicology, music education, music theory and music literature (this designation is used for degree programs with a major emphasis in choral or instrumental literature, and for programs combining emphasis in more than one area, such as musicology and opera production; theory and organ literature, etc.). It is expected that original composition shall be tested by audition before being submitted as thesis.

Admission to the Ph.D. program in music theory includes the following requirements: satisfactory achievement on the advisory examination in music theory; demonstration of minimal piano proficiency; submission of a qualifying research paper; and satisfactory achievement on a qualifying examination. Details of these requirements may be obtained from the director's office, School of Music.

Basic requirements for Ph.D. programs in music education
include, in addition to the requirements for the M.A. in this field, two semester hours credit in both 76-444 and 76-445, and a minimum of eight semester hours in education. Additional course requirements in music and music education will be determined on the basis of the individual professional needs of each student. Admission to the Ph.D. program in music education, is based upon a satisfactory score on the Graduate Record Examination, demonstration of adequate musicianship, holding or qualified for a valid teaching certificate and evidence of successful teaching experience.

Doctor of Musical Arts

For the D.M.A. degree in performance and pedagogy, the candidate must meet all the general requirements for the Ph.D. in music with respect to residence, language requirements, total minimum hours, and written and oral comprehensive examinations. Instrumentalists and vocalists must offer satisfactory evidence of ability in their field of performance by means of an audition, preferably before their first registration or at the latest during the first semester in residence. Conductors shall provide evidence of previous successful professional experience and be auditioned before or during their first semester in residence before being admitted to the D.M.A. program.

The D.M.A. dissertation is the presentation of three full-length recitals or two recitals plus the performance of a concerto with orchestra or other appropriate ensemble. Vocalists may substitute the execution of one or more major roles in a large-scale work, e.g., opera or oratorio, for one of their recitals. Conductors will present three programs. D.M.A. candidates must give evidence of their ability to make a scholarly investigation of limited scope by means of a written essay. For further particulars concerning the Ph.D. and D.M.A. degrees in specific fields, the student should consult the director of the School of Music.

Graduate Awards

Qualified graduate students are invited to apply for fellowships and assistantships. Inquiries should be directed to the School of Music.

Music for Nonmajors

Students for whom music is an avocation rather than a vocation will find courses 25:159 Late 18th and 19th Century Composers, 25:160 Early 18th and 20th Century Composers or core courses 11:39-40 of interest in acquainting them with music as listeners; and they should consult music advisors regarding such courses in applied music (solo and ensemble) as may appeal to them. The requirements for performance with faculty approval, those with an elementary background in music may register for 25:1-2 Fundamentals and Harmony I-III, 25:91-92 Harmony of Music I-II and 25:161 Survey of Opera. Full elective credit for all music courses is available in the College of Liberal Arts for the general student as well as the prospective professional.

Private Lessons

The only special fees in music at Iowa are for private lessons. Semester rates for majors are currently $30.00 for weekly one-hour lessons in the student's major area and $25.00 for weekly half-hour lessons in the secondary area; and for nonmajors, $25.00 for a weekly half-hour lesson.

Opportunities for Performance

The School of Music faculty comprises highly-trained artist-teachers in each area of specialization. Private lessons are offered in all band and orchestra instruments, voice, piano and organ. Frequent recital appearances, including the required senior solo recital, help the student develop technical competence and poise. Participation in a variety of ensembles provides additional valuable training and experience.

All undergraduate students in music must participate in band, orchestra or chorus; wind and percussion majors must participate in band during their first two years at the University.

The University Symphony presents five concerts each year and performs with the University Chorus in Christmas and spring concerts.

The Chamber Orchestra performs the classical repertoire and the contemporary scores of student composers, accompanies student-performed concertos and some operatic productions and serves the practical needs of aspiring conductors.

Collegium Musicum (Instrumental) performs old and unusual music on old and unusual instruments.

The Symphony Band presents concerts on campus and on tour.

The Hawkeye Marching Band appears at all home football games and at one out-of-town game each fall.

The Hawkeye Concert Band presents concerts on campus and forms the nucleus of the basketball pep and ROTC parade bands.

Jazz Workshop/Stage Bands provide opportunities to study and perform various jazz styles, phrasings and concepts.

The Percussion Ensemble gives performances that opportunity to gain extensive experience in all facets of percussion performance.

The University Choir, comprising 65 voices, performs a repertoire including sacred and secular compositions from all periods, folk songs, spirituals and cantatas. In addition to campus appearances, it makes an annual tour.

Opera Workshop gives students ample opportunity to gain practical experience in the production and performance of operas. The year's activities range from single scenes to full-scale productions.

Oratorio Chorus specializes in the performance of choral-orchestral masterworks of the eighteenth, nineteenth and twentieth centuries. Major performances are the annual Christmas and spring concerts with the University Symphony Orchestra.

Collegium Musicum (Vocal) is a small group which performs difficult and interesting choral music of all areas.

The Center for New Music was established with a Rockefeller Foundation grant to provide an environment for innovative composition and a vehicle for the performance of new works. Its repertoire includes the works of little-known young composers and works using electronic sounds, as well as compositions by recognized modern composers.

The Center for the New Performing Arts, first facility of its kind to be funded by the Rockefeller Foundation, is an interdisciplinary unit linking the University's schools of Music and Art and its film, dance, theatre and creative writing areas.

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ter's basic purpose is to encourage talented young aca-ckades to develop their creative skills through multimedia and inter-media activities, projects and performances.

Facilities
With completion of the new Music Building (1970) and adjoining Harrischer Auditorium (1972), the University of Iowa College for the Arts has one of the nation's finest facilities for teaching and performance in music. In addition to class and seminar rooms, the Music Building includes 55 teaching studios, 73 practice rooms, a large library, an electronic music laboratory, completely soundproof car training and listening facilities, three chorus and orchestra rehearsal halls, ample solo and ensemble practice facilities, seven practice and recital rooms and a 720-seat recital hall. Harrischer Auditorium seats 2,600 persons for concerts, 2,400 for opera and other stage productions. Library resources include more than 40,000 volumes of music and books—increased at the rate of approximately 2,000 a year—and more than 1,200 rolls of microfilm, a microcard file of approximately 300 titles nearly 5,000 LP records and 150 periodicals in several languages. Its acquisition program gives particular attention to a strong reference collection, emphasizing the "bread and butter" resources of musical research and performance. The library's quarters in the new Music Building provide 24 study carrels, a microfiche room, a seminar and two books rooms, a large reading area with 50 listening posts and a separate area for the Goldstein Band Library, one of the world's most famous collections of band music.


Courses Primary for Undergraduates

Theory and Composition

281 Literature and Theory I 3 s.h.

Writing, with liberal use of content and form, of equal importance. Major emphasis on organization, development, and expression. Also accompanied by registration in 253, first semester.

382 Literature and Theory II 3 s.h.

Continuation of 281; must be accompanied by registration in 254; second semester.

383 Literature and Theory III 3 s.h.

Continuation of 282; must be accompanied by registration in 255; third semester.

384 Literature and Theory IV 3 s.h.

Continuation of 283; must be accompanied by registration in 256; fourth semester.

387 Advanced Ear Training and Sight Singing 1 s.h.

Two laboratory periods per week; both semesters.

388 Advanced Ear Training and Sight Singing 1 s.h.

Continuation of 387; both semesters.

3511 Review Theory or cr. acc.

Not for credit; both semesters and summer.

3515 Undergraduate Composition or cr. acc.

Prerequisite: permission of instructor; both semesters.

History and Research

2851 History of Music 3 s.h.

Prerequisite: music majors 252 or equivalent; minors, consent of instructor; first semester.

2852 History of Music II 3 s.h.

Continuation of 2851, but may be taken as independent study prerequisite same as above; second semester.

2877 Seminar in Music 1 to 4 s.h.

May be repeated for credit.

Courses for Undergraduates and Graduates

Music Education

Where dual numbers are indicated, subjects preparing for a Music Teacher Certificate should register under Education numbers.

28100 Class Voice 1 s.h.

Open to music majors for secondary music majors; by permission only.

28101 Class Piano 1 s.h.

Open only to music majors for secondary piano majors; by permission only.

28102 Class Piano II 1 s.h.

28103 Class Voice 0 to 3 s.h.

Open only to singing majors for secondary voice majors; by permission only.

28104 Instrumental Techniques (Cornet, Clarinet, Percussion) 1 or 2 s.h.

Second semester.

28105 Instrumental Techniques 1 to 3 s.h.

Same as Education 7143; for prospective teachers in public schools; fundamental wind instrumental skills; first semester.

28106 Instrumental Techniques 1 to 3 s.h.

Same as Education 7144; continuation of 2815; second semester.

28117 Instrumental Conducting 2 s.h.

Offered both semesters.

28119 Advanced Instrumental Conducting 2 s.h.

Offered only in spring semester.

28120 Methods of Teaching Elementary Music 3 s.h.

Same as Education 7145; first semester.

28121 Elementary Literature and Conducting 3 s.h.

Same as Education 7146; second semester.

28122 Advanced Literature and Conducting 3 s.h.

Same as Education 7147; continuation of 28121; may be repeated for credit; second semester.

28111 Choral Conducting 2 s.h.

Same as 28119 or 28120; but without chorus of conducting.

28112 Techniques and Methods 2 or 3 s.h.

Same as Education 7145, 7146, 7147.

28113 Methods of Teaching Piano 2 s.h.

Same as Education 7151; same as above.

28114 Strings Laboratory 2 s.h.

Same as Education 7142; same as above.

28115 Strings Laboratory 2 s.h.

Same as Education 7143; same as above.

28116 String for Singers II 2 s.h.

English and French.

28118 String for Singers I 2 s.h.

Continued with.

28117 Problems in Arranging and Orchestration or cr. acc.

28119 Arranging for Marching Band or cr. acc.

Second semester.

28140 Seminar: Percussion Methods, Materials, Performance Practices 1 or 2 s.h.

Prerequisite: consent of instructor; contemporary percussion literature and current style, notated, theoretical principles and performance and composition.

Theory and Composition

28149 Compositional Processes 3 s.h.

Writing for the student, to be prepared for 253 or 255; should be taken in.

28146 20th-Century Harmony and Counterpoint 3 s.h.

Lectures and composition, 253 or 255; equivalent; first semester.

28147 Tonal Forms 2 s.h.

Prerequisite: 252 or 255; equivalent; both semesters and summer.

28148 Analytic of Music Literature, 1800 to 1790 3 s.h.

Prerequisite: 251 or 255; equivalent; may be repeated for credit.

28149 Analytic of Music Literature, 1790 to 1825 3 s.h.

Prerequisite: 251 or 255; equivalent; may be repeated for credit; first semester.
23:150 Analyzy of Music Literature, 1250 to 1900 3 s.h.
Prerequiste: 23:11 or equivalent or 23:5 or equivalent; may be repeated; second semester
23:151 Analyzy of Music Literature, 1900 to Present 3 s.h.
Prerequiste: 23:15 and 23:5 or equivalent; may be repeated; second semester
23:152 Analyzy of Music Literature, Special Topics 2 s.h.
Survey and current center by instructor
22:154 Intermediate 3 s.h.
Serves as 23:150, Spring 23:150
22:158 Studies in Jazz 2 s.h.
Prerequiste: thorough knowledge of traditional harmony and counterpoint and at least profailable
22:168 Composition Seminar 2 s.h.
Prerequiste: advanced standing and permission of instructor
22:169 Orchestration 2 s.h.
Free seminar
22:177 Through Basa Realization I 2 s.h.
Practice in writing keyboard accompaniments in seventeenth and eighteenth-century music
22:178 Through Basa Realization II 2 s.h.
Practice in improving accompaniments as sighted on keyboards from figured bass; open to qualified students with sufficient keyboard proficiency

History, Literature and Research
22:135 Colography 5 or 1 s.h.
A systematic approach to special problems; lecture and discussion
22:136 Colography: Early and 19th-Century Composers 2 or 2 s.h.
22:137 Early and 13th- and 15th-Century Composers 2 or 2 s.h.
22:138 Early and 14th- and 18th-Century Composers 2 or 2 s.h.
22:139 Early and 19th- and 20th-Century Composers 2 or 2 s.h.
22:130 Historical study of opera (mcxers); free seminar and seminar
22:132 Interpretation of German Art Song 2 s.h.
22:133 Interpretation of German Opera 2 s.h.
22:134 History of Organ Building and Design 2 s.h.
22:135 History of Choral Music 2 s.h.
23:165 Church Service Planning I 1 s.h.
Study and practice planning; examination of choirs and choral music; and preparation of short two- and three-part hymnal introductions; may be repeated for credit; offered alternate years
23:166 Church Service Planning II 2 s.h.
Conduction of 15:165; may be repeated for credit; offered alternate years
22:167 Literature I 2 s.h.
22:168 Literature II 2 s.h.
22:568 Early and 19th-Century Composers 2 s.h.
22:569 Early and 19th- and 20th-Century Composers 2 s.h.
22:570 Early and 14th- and 18th-Century Composers 2 s.h.
22:571 Early and 13th- and 15th-Century Composers 2 s.h.
22:169 Orchestration I 2 s.h.
22:170 Orchestration II 2 s.h.
22:171 Orchestration III 2 s.h.
22:172 String Instrument Literature 2 s.h.
22:173 Woodwind Instrument Literature 2 s.h.
22:174 Instrument Literature 2 s.h.
22:175 Special Studies 2 s.h.
22:176 Advanced 2 s.h.
22:177 Advanced Organ Pedagogy 3 s.h.
Study of principles of organ teaching through examination of methods and literature of the organ; interwoven with improvisation and advanced levels; offered alternate years in spring semester

Courses Primary for Graduates
Music Education
22:165 Seminar: Contemporary Issues in Music Education 2 s.h.
22:175 Seminar: Research Problems 2 s.h.
22:201 Methods of Teaching Voice 2 s.h.
22:202 Methods of Teaching Voice 2 s.h.
26:321 Introduction to Graduate Study in Music 3 s.h.
Use of the music library; reference materials; bibliography; research problems and methods; with guest lectures from various musical subject areas; required of all graduate students.

26:322 Advanced Bibliography and Reference Materials 3 s.h.
Intensive bibliography; additional materials on student's major field of concentration; completion 25:321 or consent of instructor; second semester and alternate semesters.

45:323A Musical Notation 1 or 2 s.h.
Musical notation: transcription and analytical study of early vocal and instrumental compositions; may be repeated for credit.

26:325 Seminar: Musicology 2 or 3 s.h.
Bibliographical research, library resources, style analysis and criticism, and related fields; study of specific topics in groups and by individual investigation; may be repeated for credit; prerequisite: consent of instructor.

26:325A Performance Practice I: Medieval and Renaissance Music 3 s.h.
Problems of interpretation in early music.

26:326 Performance Practice II: 17th- and 18th-Century Music 3 s.h.
Interpretative aspects of music of Baroque and Classical periods.

26:325 Seminar: Wind Instrument Performance cr. arr.

26:325A Seminar: Music Research and the Computer 3 s.h.
Current applications of high-speed digital computers to research in music theory, history and composition.

26:325 Seminar: Operatic Literature cr. arr.
A study to detail of most important operatic scenes from standpoint of performer.


26:341 Advanced Choral Literature I 2 or 3 s.h.
Main, vocal and instrumental literature from Renaissance through nineteenth century; altos, tenors.

26:342 Advanced Choral Literature II 2 or 3 s.h.
Composers, harmonic and formal literature from Renaissance through twentieth century; altos, tenors.

26:343 Advanced Choral Literature III 2 or 3 s.h.
Twentieth-century choral music; altos, tenors.

26:344 Seminar: Choral Music cr. arr.

26:351 Survey of Song Literature I cr. arr.
Sung song before Schubert; altos, tenors.

26:352 Survey of Song Literature II cr. arr.
German art song from Schubert to present; altos, tenors.

26:353 Survey of Song Literature III cr. arr.
Nineteenth- and twentieth-century English, French, Italian, Scandinavian, Spanish and Russian songs, altos, tenors.

26:361 Special Topics: Opera Literature cr. arr.
Individual research in special aspects of opera literature; prerequisite for D.M.A. degree may be repeated for credit.

26:362 Readings in Music Theory cr. arr.

26:361 Readings in Music History cr. arr.

Thesis

26:400 Thesis (M.A.) cr. arr.

26:401 Thesis (M.F.A.) cr. arr.

26:402 Thesis (Ph.D.) cr. arr.

26:401 Composition (Ph.D. Thesis) cr. arr.

Both seminars


26:405 D.M.A. Recital cr. arr.

Music Education

See "College of Education" for course descriptions

76:120A Methods, Basic Skills and Techniques in Music Education 3 s.h.

76:120B Methods and Materials: Music for the Classroom 3 s.h.

76:145 Methods and Materials: Elementary School Music 3 s.h.

76:152 Music Workshop for Classroom Teachers and Elementary Music Teachers 5 or 1 s.h.

76:190 Laboratory Practice in Elementary Music 3 s.h.

76:241 General Music in the Elementary School 2 s.h.

76:149 Methods and Materials: Secondary School Instrumental Music 4 s.h.

75:123 Methods and Materials: Secondary School General Music 3 s.h.

75:121 Observation and Laboratory Practice in High School General Music 3 s.h.

75:140 Supervision and Administration of Music 3 s.h.

75:141 Music Education Workshop: Instrumental Music 3 s.h.

75:142A General Music in Secondary Schools 3 s.h.

75:142B Special Studies in Music Education 3 s.h.

75:144 Physiological and Laboratory Practice 3 s.h.

75:144A Music Education: Observation and Laboratory Practice 3 s.h.

75:144B Research in Music Education 2 s.h.

75:145A Psychological and Sociological Factors in Music Education 2 s.h.

Applied Music

For 50.00 per semester charged for each course in applied music in student's major field of concentration; course work limited to either individual or ensemble of individual and class lessons (minimum of one hour weekly) at option of instructor; students desiring two 50.00 courses in same semester must pay fee of 90.00; all music majors are expected to attend seminars of applied music courses for which they enroll. Limited number of applied music exceptions available in first and second semesters (but not in fall semester) to talented students who require all for performance, written to director.

26:31 Voice 1 cr. arr.

26:32 Piano 1 cr. arr.

26:33 Organ 1 cr. arr.

26:34 Harp 1 cr. arr.

26:35 Violin 1 cr. arr.

26:36 Violin 1 cr. arr.

26:37 Cello 1 cr. arr.

26:38 String Ensemble 1 cr. arr.

26:41 Woodwind 1 cr. arr.

26:42 Bassoon 1 cr. arr.

26:43 Percussion 1 cr. arr.

26:44 Vibraphone 1 cr. arr.

26:45 Piano 2 cr. arr.

26:46 Organ 3 cr. arr.

26:47 Piano 2 cr. arr.

26:48 Harp 2 cr. arr.

26:49 Violin 2 cr. arr.

26:50 Cello 2 cr. arr.

26:51 Double Bass 2 cr. arr.

26:52 Woodwind 2 cr. arr.

26:53 Bass 2 cr. arr.

26:54 Percussion 2 cr. arr.

26:55 Vibraphone 2 cr. arr.

26:56 Piano 3 cr. arr.

26:57 Organ 3 cr. arr.

26:58 Piano 3 cr. arr.

26:59 Organ 3 cr. arr.

26:60 Harp 3 cr. arr.

26:61 Violin 3 cr. arr.

26:62 Violin 3 cr. arr.

26:63 Cello 3 cr. arr.

26:64 Double Bass 3 cr. arr.

26:65 Woodwind 3 cr. arr.

26:66 Bass 3 cr. arr.

26:67 Percussion 3 cr. arr.

26:68 Voice 4 cr. arr.

26:69 Voice 4 cr. arr.

26:70 Voice 4 cr. arr.

26:71 Voice 4 cr. arr.

26:72 Voice 4 cr. arr.

26:73 Woodwind 4 cr. arr.

26:74 Bass 4 cr. arr.

26:75 Cello 4 cr. arr.

26:76 Double Bass 4 cr. arr.

26:77 Woodwind 4 cr. arr.

26:78 Bass 4 cr. arr.

26:79 Cello 4 cr. arr.

26:80 Double Bass 4 cr. arr.

26:81 Woodwind 4 cr. arr.

26:82 Bass 4 cr. arr.

26:83 Cello 4 cr. arr.

26:84 Double Bass 4 cr. arr.

26:85 Woodwind 4 cr. arr.
Nuclear Medical Technology

Instruction in student's minor field of performance or for academic majors offered for fee of $32.00 per semester, course consists of one one-half hour lesson or two hours of class (quarterly weekly) as option of instructor:

50:17 Viscose 0 to 1 s.h.
50:18 Piano 0 to 1 s.h.
50:19 Organ 0 to 1 s.h.
50:20 Voice 0 to 1 s.h.
50:21 Violin 0 to 1 s.h.
50:22 Piano 0 to 1 s.h.
50:23 Cello 0 to 1 s.h.
50:24 String Bass 0 to 1 s.h.
50:25 Woodwind 0 to 1 s.h.
50:26 Dance 0 to 1 s.h.
50:27 Percussion 0 to 1 s.h.
50:116 Algebra 1 s.h.
50:120 Geometry 1 s.h.
50:121 Trigonometry 1 s.h.
50:122 Analytical Geometry 1 s.h.
50:123 Trigonometry 1 s.h.
50:124 Algebra 1 s.h.
50:125 Algebra 1 s.h.
50:126 Algebra 1 s.h.
50:127 String Bass 1 s.h.
50:128 Woodwind 1 s.h.
50:129 Percussion 1 s.h.

Ensemble
No fee charged for ensemble courses may be requested for credit, offered each semester; prerequisites for each course of instruction:

50:176 The Carnegie Singers 1 s.h.
50:186 Band 0 to 2 s.h.
50:187 Band 0 to 2 s.h.
50:202 Orchestra Workshop 0 to 2 s.h.
50:120 Orchestra 0 to 2 s.h.
50:123 Chamber Ensemble 0 to 2 s.h.
50:124 Collegiate Museum 0 to 2 s.h.

Audition before registration is desirable:

50:185 University Choir 1 s.h.
50:186 Piano Accompaniment 0 to 1 s.h.
50:187 Piano Chamber Music 0 to 1 s.h.
50:188 String Chamber Music 0 to 1 s.h.
50:189 Woodwind Chamber Music 0 to 1 s.h.
50:190 Piano Chamber Music 0 to 1 s.h.
50:191 Oratorio Choir 0 to 1 s.h.
50:192 Vocal Quartet 0 to 1 s.h.
50:193 Marching Band 0 to 1 s.h.
50:194 Marching Band, Wind Ensemble, Concert Band 0 to 1 s.h.
50:195 Percussion Ensemble 0 to 1 s.h.
50:196 Jazz Workshop 0 to 1 s.h.

Prerequisite consent of instructor:

Summer Instruction
Children may enroll for applied music courses during eight-week summer sessions for total fees of $32.00 for one one-half hour lesson weekly or $52.00 for two lessons:

See "General Science" for description

Neurobiology
See "College of Medicine"

Nuclear Medical Technology
Program Coordinator: R. E. Peterson
Degree offered: B.S.

Nuclear Medical Technology is that portion of the allied health professions field which encompasses the techniques of using ra-
dio-nuclides in medicine. Due to the burgeoning of new tech-
niques for studying body processes and imaging organs and dis-
sese sites, the new medical specialty of nuclear medicine has
developed. Simultaneously, a wider variety of sophisticated
equipment unique to the field has come into use, along with an
increasing variety of radio-isotopes and radiopharmaceuticals.
The breadth of these specialized procedures, in addition to
volume demands, has led to the development of this new allied
health occupation and new training program. The role and sig-
nificance of the nuclear medical technologist have become well
established and are increasing as allied medical specialties come
to rely upon nuclear medicine and its trained personnel.

The Program at Iowa
Development of the curriculum and enrollment in the program
began in 1967. It has been facilitated by a five-year U.S. Public
Health Service development grant for new health manpower
personnel. It was the second baccalaureate program established
in the U.S., and has educated more nuclear medical technologists
than any other program in the country.

The original reasons for the program's establishment remain
valid and have encouraged its expansion: in the job market,
nuclear medical technologists are commonly paid as well as
school teachers; why not have them equally well prepared? A
good baccalaureate program facilitates the effort to develop the
most competent technologists and multiply the amount of good
patient care which the responsible physician can provide. Such
a program increases the capability to attract high-quality tech-
nologists candidates. And the baccalaureate program with a gen-
eral science major offers the nuclear medical technologist
something to build on, in terms of an educational ladder and
vocational mobility: science teacher, graduate school, medical
school, etc.

The program in nuclear medical technology at Iowa is accred-
ited by the Council on Medical Education of the American
Medical Association. Fulfillment of the requirements established
by the AMA Accreditation Board, involves three years of pre-
clinical work in the College of Liberal Arts and a minimum of
12 months of professional clinical experience, available in Iowa
City at the University Hospitals and Veterans Administration
Hospital.

The preclinical education of a nuclear medical technologist
comprises a well-rounded general science major curriculum
with special adaptations to the field. During the freshman year,
it is the same as for medical technology. During the sophomore
year and thereafter, the availability and number of recom-
mended prerequisites produces some deviation from the medical
technology program. Upon satisfactory completion of the 12-
month clinical program (the entire four-year program), students
are eligible to receive the Bachelor of Science degree with a
major in general science and nuclear medical technology, and
also be eligible for national certification as a nuclear medical
technologist.

All students in the College of Liberal Arts who designate
nuclear medical technology as a major are assigned to nuclear
medical technology advisors for guidance in the completion of
the preclinical courses of study.
Nuclear Medical Technology

Preclinical Program
The required course of study emphasizes the physical and biological sciences, which provide a basic background and which are prerequisites for the subjects and activities of the clinical year.

In addition to these science courses, the prospective student must complete the core course requirements for graduation from the College of Liberal Arts and the requirements for a general science major.

The following is a summary of the prerequisites for acceptance into the nuclear medical technology program:

- A thorough knowledge of certain physical, chemical, and biological sciences.
- A thorough knowledge of the principles of physics, which include calculus, linear algebra, and differential equations.
- A thorough knowledge of the principles of quantum mechanics, which include linear algebra, differential calculus, and differential equations.
- A thorough knowledge of the principles of nuclear engineering, which include calculus, linear algebra, and differential equations.
- A thorough knowledge of the principles of computer science, which include linear algebra, differential calculus, and differential equations.

Clinical Program
The clinical year of study is centered in the Veterans Administration and University Medical facilities. In terms of time allocation, equal emphasis is given to both didactic and clinical experiences. The didactic portion covers the depth and breadth of the clinical or technical specialties of physics of nuclear medicine, basic instrumentation, scanning instrumentation, radiology, radiopharmaceuticals, basic pedagogical techniques, electromagnetism, and heat transfer. The principles of nuclear technology are covered in the course of clinical administration, nuclear medicine, and medical ethics.

Other courses are offered in the following areas within the departments of clinical medicine at both medical facilities: in vivo radiation physics, clinical radiopharmaceutical laboratory, tracer techniques and research application, thyroid function studies, rectilinear and camera scanning, and in vivo kinetic analysis.

Orientation is established in the following areas within the departments of nuclear medicine at both medical facilities: in vivo radiation physics, clinical radiopharmaceutical laboratory, tracer techniques and research application, thyroid function studies, rectilinear and camera scanning, and in vivo kinetic analysis.

The following courses are prerequisites for the nuclear medicine technology program, and must be taken before entering the program of study. The program of study is designed to be flexible enough to accommodate the following list:

- Nuclear physics (recommended: 29:191-192)
- Nuclear reactor analysis and design (recommended: 52:253)
- Nuclear technology (recommended: 52:180, 52:134, 52:252)
- Chemistry (recommended: 4:170 or 4:201)
- Radiation biology (recommended: 77:05), lectures only; or 77:10)
- Elective advanced courses in chemistry, physics, mathematics, engineering, radiation biology, computers

Total (without thesis): 38 s.h.

Admission
To enter the program, a student must have a B.S. degree in nuclear engineering or a related field. The program encompasses 36 semester hours, which are required for a degree. The program is designed to be flexible enough to accommodate the following list:

- Nuclear physics (recommended: 29:191-192)
- Nuclear reactor analysis and design (recommended: 52:253)
- Nuclear technology (recommended: 52:180, 52:134, 52:252)
- Chemistry (recommended: 4:170 or 4:201)
- Radiation biology (recommended: 77:05), lectures only; or 77:10)
- Elective advanced courses in chemistry, physics, mathematics, engineering, radiation biology, computers

Total (without thesis): 38 s.h.
Philosophy

Department Chairman: Panayot Butchvarov
Degrees offered: B.A., M.A., Ph.D.

The Undergraduate Program
The undergraduate program in philosophy provides knowledge of the basic issues and the main developments in Western philosophy, and strengthens logical skills which are useful in a wide variety of fields. A major in philosophy can provide preparation for the advanced studies necessary for a career in religion or law, for example, as well as for positions in government and business which require a general education and a capacity for clear and systematic thinking. Advanced degree work is necessary for college teaching positions in philosophy.

Training in philosophy at the undergraduate level involves primarily discussion of the major philosophical problems. This discussion ordinarily takes place through a study of important traditional and contemporary philosophical works. The program also includes training in modern logic and the philosophy of science. Undergraduate majors are required to take at least 24 semester hours of courses numbered from 26:101 to 26:191, including the following:

26:101 Introduction to Philosophy
26:102 Introduction to Ethics
26:103 Introduction to Logic
26:104 Introduction to Philosophy of Science
26:111 Ancient Philosophy
26:113 Early Modern Philosophy

As undergraduate major may be permitted to substitute other philosophy courses for one or more of the courses listed above.

The Honors Program
The Department offers an Honors Program for undergraduate majors of superior ability. To be admitted a student must have a cumulative grade-point average of at least 3.0. Individual Honors programs are developed by the student in consultation with his or her advisor in the Department.

Graduate Program
The graduate program in philosophy is designed to train future teachers and scholars in philosophy. The main areas in the graduate curriculum are metaphysics and epistemology, history of philosophy, ethics, logic and philosophy of science. In addition, courses are offered in the philosophy of the social sciences, political philosophy and the philosophies of history, religion, law and literature. Students may also take courses in related areas offered by other departments.

The Master of Arts degree requires a minimum of 30 semester hours and may be taken with or without thesis. In addition, the student must pass a comprehensive examination ordinarily taken after three semesters of graduate work. The examination will cover the history of philosophy, logic and philosophy of science, metaphysics and ethics. There is no foreign language requirement for the Master of Arts degree.

The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours, but typically will take four years of graduate study to obtain. Candidacy for the doctoral program is determined in part by the master's comprehensive examination. In addition, the student must pass a doctoral comprehensive examination to be taken at or near the end of the third year of graduate study and after satisfaction of the foreign language requirement. The examination will cover the history of ancient and medieval philosophy, history of modern philosophy, logic and philosophy of science, metaphysics and epistemology, and ethics. For the doctoral degree mastery of French, German, Latin or Greek is required. For French and German the E.T.S. examinations are used. For Latin and Greek the Department arranges special examinations. The fourth year of graduate study is ordinarily spent in writing the doctoral dissertation.

Staff: professor Bergmann, Butchvarov, associate professor Addis, Cummings, Duerlinger, Gram; assistant professor Ozcimen, Scare

Courses for Freshmen and Sophomores Only

26:11 Elementary Ethics

Trends of thought and methods of argument on moral and social issues; both semesters

26:2 Elementary Logic

Elementary survey of valid and invalid reasoning; both semesters

26:22 Elementary Political Philosophy

Elementary philosophical study of law, government and the state; both semesters

26:2 Problems of Mind and Matter

3 a.

Elementary study of metaphysics and epistemology; both semesters

Courses for Undergraduates Only

26:32 Philosophies of Man

Some major philosophical theories of man and society from Plato to present; same in Core 112

26:33 Philosophies of Man

4 a.

Philosophical consideration of impact of key developments in scientific thought on man's conception of himself; same as Core 114

Courses for Undergraduates and Graduates

26:12 Introduction to Philosophy

3 a.

26:13 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.

26:12 Introduction to Ethics

3 a.
Physical Education for Men

Department: Health Sciences

Preparation for Teaching and Coaching

The program in teaching and coaching is designed specifically to prepare students for service in public schools. All students who complete this program must qualify for teaching certificates by completing appropriate courses in physical education and the required certification courses (see "College of Education"). The program leads to the B.S. degree in physical education. Graduation from the program requires at least a 2.2 grade-point average. Because physical education majors frequently have part-time jobs or participate in intercollegiate athletics, both of which take considerable time and effort, the Department offers this program in eight-, nine-, and 10-semester sequences. Pre-Doctorate Program

The pre-doctorate program, which is open only to superior students, is designed to prepare students for graduate work in physical education with emphasis on exercise physiology, adapted physical education, biomechanics or evaluation and statistics. The curriculum consists of a core of courses in physical education and selected courses in mathematics, the biological sciences, computer science, psychology, and the liberal arts. It can be concluded that the pre-doctorate program is designed to prepare students for graduate work in physical education with a focus on specific areas such as exercise physiology, adapted physical education, biomechanics, or evaluation and statistics. The coursework is intended to provide a solid foundation in the core areas of physical education while also allowing for the exploration of other disciplines. Given the rigorous nature of the program, students are expected to have a strong aptitude and dedication to the field. The program is designed to be completed in a specified number of semester hours, typically ranging from eight to ten semesters. Preparatory requirements and considerations, such as the completion of specific courses in mathematics and the liberal arts, are outlined to ensure that students are well-prepared for advanced study. The pre-doctorate program, therefore, serves as a bridge to graduate education, providing students with the knowledge, skills, and experience necessary for further academic pursuits in the field of physical education.
sciences and the physical sciences which are basic to advanced study in the area in which the student is interested. Because the student need not meet certification requirements for teaching in the public schools, this curriculum offers considerable latitude in the selection of electives to fit individual interests and needs. This curriculum leads to the B.A. degree with a major in physical education.

Endorsement for Coaching
The State Department of Public Instruction recently provided for the endorsement of certified teachers for the coaching of athletic teams in schools. This endorsement is intended for teachers who hold majors in subjects other than physical education but who wish to coach interscholastic athletics teams. The endorsement does not permit the teacher to teach physical education classes in the school.

Endorsement for Athletic Trainers
This endorsement is provided for students who want to be certified as trainers for athletic teams at the secondary school level as a minor part of their regular teaching duties.

Pre-Physical Therapy Program
The pre-physical therapy program capitalize on a unique juxtaposition of facilities at Iowa. Within a six-block radius are located the College of Medicine, the University Hospital, the Veterans Hospital, the School for severely-handicapped children, the Psychopathic Hospital, the Pine School for mentally-retarded children and the Field House, which houses the Department of Physical Education for men.

The proximity of these facilities, together with the close working relationships between the physical education faculty and the faculties of various departments in the College of Medicine, offer an ideal setting for a pre-physical therapy program. Because there is a rapidly-increasing demand for physical therapists who are willing to serve as athletic trainers for school, college and university teams, the pre-physical therapy program in physical education renders a valuable service to schools and colleges, as well as to the paramedical aspects of physical therapy.

Graduate Programs
M.A. without Thesis
The study program leading to the M.A. degree without thesis is designed as a terminal unit of advanced study for teachers of basic physical education for all students in schools, community colleges and four-year colleges, and for athletics coaches. Emphasis is placed on the application of research findings to the organization, teaching and evaluation of basic physical education programs for all students in schools and colleges, and to the coaching of intercollegiate and interscholastic athletic teams. Particular attention is given to the problems associated with teaching and coaching in the public schools and community colleges in Iowa. The curriculum is so organized and administered that rather large numbers of students can be accommodated with a minimum of facility.

M.A. with Thesis
The study program leading to the M.A. with thesis is designed primarily as the first step in a program of graduate study leading to the Ph.D. degree. There is particular emphasis upon techniques of research as applied to problems related to physical education and athletics. A secondary emphasis of this program is to provide advanced preparation for the teacher who wishes to teach—or who intend to teach—in programs for undergraduate majors in physical education in four-year colleges, but who do not plan to continue on to the doctorate.

An attempt is made to thoroughly acquaint the M.A.-with-thesis candidates with the nature and extent of research in all areas of physical education.

Ph.D. Program
The program for the Ph.D. in physical education is based on the concept that the successful candidate should have a broad knowledge of all areas in physical education; a working knowledge of the research techniques which may appropriately be applied to problems in physical education and athletics; and knowledge in depth in at least one of the accepted areas of specialization in physical education.

The accepted areas of specialization in physical education are Adapted Physical Education; Anatomy; Biomechanics; Curriculum; Supervision and Administrative Theory in Physical Education and Athletics; Exercise Physiology; History of Physical Education and Sports; Measurement and Evaluation in Physical Education; Motor Performance and Learning; Sociology of Sports; and Therapeutics.

A broad background in all areas of physical education, together with a working knowledge of appropriate research techniques, is provided through the required courses in the M.A.-with-thesis curriculum and the core of courses required for all Ph.D. candidates. With the exception of six semester hours of statistics, all of these courses are taught by members of the department faculty.

To ensure that each candidate becomes truly expert in one area of specialization, he is required to complete a minimum of 10 hours of graduate credit in his chosen area.

Most of the candidates in the areas of specialization are offered by departments other than the Department of Physical Education for Men. Professors from these departments participate in writing and evaluating the comprehensive examinations, serve on thesis committees for the initial presentation of the proposed problem and participate in the final examination, in which the candidate defends his thesis. In the case of exercise physiology, the candidate, in addition to writing a comprehensive examination in physical education, write a comprehensive examination in physiology which is prepared and evaluated by faculty members of the Department of Physiology and Biophysics in the College of Medicine. Such candidates graduate with minors in physiology.

Financial Aid
Student financial aid is available through tuition scholarships, teaching assistantships, research assistantships, NDEA fellowships in area of teaching, research or other area of specialization and EPDA fellowships for the Education Specialist degree.
Admission Requirements

M.A. with and without Thesis

Admission to the program of study leading to the M.A. degree with or without thesis is granted on the basis of the student's grade-point average on all undergraduate work attempted and his scores on the Graduate Record Examination (Aptitude Test). The student must have earned an average of 2.5 (A = 4) or higher to be admitted to regular status. Conditional admission to the M.A.-without-thesis program may be granted to students with grade-point averages as low as 2.0; however, such students must qualify for regular status within one semester of registration in the Graduate College, by attaining a grade-point average of at least 2.5.

Ph.D. Program

The student is admitted to the study program leading to the Ph.D. degree on the basis of his grade-point average on all work completed for the M.A. or M.S. degree and his score on the Graduate Record Examination (Aptitude Test). To be considered for admission, the student must have earned a grade-point average of 3.0 or higher on all graduate work undertaken.

Facilities

With the construction of a mammoth new Recreation Building, along with the recent refurbishing of the Field House, excellent facilities exist for use in the physical education program, both at the undergraduate and graduate instructional programs and for student participation in intramural sports, recreational activities and athletics.

Research laboratories for physiology of exercise, temperature-humidity control, motor performance and bio-mechanics are located in the Field House and provide excellent facilities for instruction and research at both the undergraduate and graduate levels.

Because of its cooperative efforts with other departments to facilitate special programs, the Department provides an opportunity for students to use additional special facilities in other departments on the campus.

The Faculty

Members of the faculty in Physical Education for Men are frequently sought as participants in programs at state, district and national professional meetings, and are elected to offices at all levels. Some have been invited to present papers as international symposia and congresses. They are also asked to serve on committees and state in many capacities. Several have received special recognition through honors and awards from numerous professional organizations.

One reason for the high quality of the faculty is the wealth of experience its members have had teaching at all levels in a variety of situations.

Members of the faculty are also productive researchers and prolific writers. Some have received funds for their research from governmental and private agencies, and all have made significant contributions to professional journals.

The Department has been ranked among the top few in the country. Although such rankings are based on several criteria—curriculum, publications, availability of research and library resources, scholarships and fellowships—the quality of the faculty is apparent as a major factor.


* Department of Athletics.

Courses Primary for Undergraduates

27.5 Elective Physical Education for Men or, or.
Elective for students who have satisfied requirements for physical education skills (or "Basic Skills"); both semester.

27.6 Elective Physical Education for Men or, or.
Continuation of 27.5; both semester.

27.7 Elective Physical Education for Men or, or.
Continuation of 27.6; both semester.

27.8 Elective Physical Education for Men or, or.
Continuation of 27.7; both semester.

27.11 Introduction to Physical Education 1 s.

27.12 Selected lecture on biological and educational aspects of physical education; 1 s.

27.13 Exercise, Sport of Dance 1 or 2 s.

27.21 Teaching of Intercollegiate Sports I 2 s.

27.22 Techniques and methods of teaching and organizing groups for participation; first semester.

27.23 Teaching of Intercollegiate Sports II 2 s.

27.25 Teaching of Gymnastics 2 s.

27.27 Teaching techniques of conditioning exercise; strengthening apparatus and calisthenic exercises; both semester.

27.28 Coaching and Gambades 2 s.

27.29 Practice: High school student experience or equivalent.

27.30 Coaching of Football 2 s.

First semester; prerequisite: high school student experience or equivalent.

27.31 Coaching of Track 2 s.

Second semester; prerequisite: high school student experience or equivalent.

27.32 Coaching of Track and Field Athletics 2 s.

First semester; prerequisite: high school student experience or equivalent.

27.33 Coaching of Wrestling 2 s.

First semester; prerequisite: high school student experience or equivalent.

27.41 Coaching of Tennis 2 s.

Prerequisite: high school student experience or equivalent.

27.42 Coaching of Track and Field Athletics 2 s.

First semester.

27.44 Coaching of Team Sports 2 s.

First semester.

27.45 Administration of Intramural Activities 2 s.

First semester.

27.46 Human Anatomy 2 s.

First semester.

27.50 Laboratory Practice in Special Physical Education 3 s.

Prerequisites: Psychology 17.13 and 27.55; laboratory experience required; physical fitness, psychology, and corrective therapy, both semester.

27.55 Laboratory Practice in Special Physical Education 3 s.

Continuation of 27.50; both semester.

27.56 Leadership Training I 1 s.

Counselor-in-training before semesters.

27.57 Leadership Training II 1 s.

Counselor-in-training before semesters.

27.58 Leadership Training III 1 s.

Counselor-in-training before semesters.
## Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/103</td>
<td>Administration of Physical Education and Athletics</td>
<td>2 or 3</td>
<td>2 or 3 a.h.</td>
<td>Each semester</td>
</tr>
<tr>
<td>27/105</td>
<td>Advanced Physical Education</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/110</td>
<td>Aerobics (27/110)</td>
<td>2 a.h.</td>
<td>27/105</td>
<td>All semester</td>
</tr>
<tr>
<td>27/128</td>
<td>Advanced Theory of Wrestling</td>
<td>1 or 2 a.h.</td>
<td>27/105, 27/106</td>
<td>Upper semester</td>
</tr>
<tr>
<td>27/130</td>
<td>Workshop Advanced Theory of Wrestling</td>
<td>1 or 2 a.h.</td>
<td>27/105, 27/106</td>
<td>Upper semester</td>
</tr>
<tr>
<td>27/131</td>
<td>Advanced Theory and Techniques of Swimming and Diving</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/132</td>
<td>Advanced Theory of Teaching Gymnastics</td>
<td>1 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/138</td>
<td>Physical Education for High Schools</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/140</td>
<td>Intramural Programs in Schools and Colleges</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/149</td>
<td>Elementary School Physical Education</td>
<td>2 or 3 a.h.</td>
<td></td>
<td>Each semester</td>
</tr>
<tr>
<td>27/153</td>
<td>Advanced Anatomy and Kinesiology</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/159</td>
<td>Techniques for teaching anatomy and kinesiology at undergraduate level</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/161</td>
<td>Instrumentation and Measurement in Physical Education</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/162</td>
<td>Exercises: Weekly Exercises</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/164</td>
<td>Laboratory: Artistic Analysis of Athletic Performances</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/166</td>
<td>Laboratory: Mechanical Analysis of Athletic Performances</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/168</td>
<td>Physical Education 'or Elementary Schools</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/176</td>
<td>Measurement and Evaluation in Physical Education</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/177</td>
<td>Fire: Basic</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/180</td>
<td>Scientific Foundations of Physical Education</td>
<td>4 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/181</td>
<td>Scientific Foundations of Physical Education</td>
<td>4 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/186</td>
<td>Mechanics and kinesiology: prevention and care of injuries, first aid, prehospital care</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/187</td>
<td>Laboratory in Athletic Training</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/188</td>
<td>Laboratory in Athletic Training 2</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/189</td>
<td>Continuation of 27/182 (served as needed)</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/199</td>
<td>Supervision of Physical Education for Boys</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/200</td>
<td>Same as Education 75/244</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Courses for Undergraduates

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/201</td>
<td>Research</td>
<td>cr.</td>
<td>27/105, 27/106</td>
<td>Research</td>
</tr>
<tr>
<td>27/203</td>
<td>Advanced Administration of Physical Education</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/302</td>
<td>History of Physical Education</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/306</td>
<td>Fire: Basic</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/308</td>
<td>Advanced Theory of Athletics</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/309</td>
<td>Advanced (option of coaching football, basketball, track and field athletics) for graduate students and grounded in coaching methods, second semester, only</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/317</td>
<td>Physical Education for Boys</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/335</td>
<td>Public School Curriculum: Physical Education</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/345</td>
<td>Same as Education 75/244</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/347</td>
<td>Professionalization in Physical Education</td>
<td>2 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/348</td>
<td>Clinical analysis of current undergraduates and graduates in physical education</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27/349</td>
<td>Scientific Principles of Physical Conditions</td>
<td>1 or 3 a.h.</td>
<td></td>
<td>Students who have completed 27/180 or equivalent register for one semester hour only; lower level principles and practical implications for teaching</td>
</tr>
<tr>
<td>27/367</td>
<td>Seminar: Mechanical Analysis of Human Movement</td>
<td>cr.</td>
<td>27/347</td>
<td>Seminar in human movement</td>
</tr>
<tr>
<td>27/368</td>
<td>Advanced Measurement and Evaluation in Physical Education</td>
<td>3 a.h.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Physical Education for Women

**Department Head:** M. Gladys Scott  
**Degrees offered:** B.A., B.S., M.A. Ph.D.

Physical education is a recognized profession for women, a profession which is becoming more and more varied in today's society. Elementary schools frequently hire the physical education specialist to work in one or more schools in a city system. The importance of physical education to the teacher's role is being recognized so that both pre-school and elementary school age children are receiving all the benefits of physical education trained personnel in their play activities and in planned developmental programs in motor skills.

At the secondary level the physical education teacher deals with a variety of activities, many of a recreational value with potential for lifelong use. There are expanding opportunities for coaching the high school girl in competitive sports or in some of the art forms of movement such as synchronized swimming, rhythmic gymnastics, equestrian and dance.

At the college level programs usually permit students to follow their own preferences and to experience the joy of movement and self-identity in motor accomplishment. The teacher of physical education is a counselor and guide in such learning.

When the physical education-trained woman assumes the role of mother and community leader, she has the benefit of knowledge about children, their development, interests and activity needs.

### Undergraduate Curricula

The Department of Physical Education for Women provides professional education in three curricula: teaching physical edu-
cation, dance and pre-physical therapy. The dance curriculum may be oriented to dance teaching or to the arts, depending upon electives. Graduates of the Department enter teaching positions in physical education or dance in public schools or at the college level, or positions in recreation; or they undertake advanced work in dance leading to a career in the theatre or advanced work in physical therapy, depending upon the curriculum elected.

Each student in the physical education curriculum elects a wide variety of activities, thus preparing for general public school teaching. These activities include team and individual sports, gymnastics, dance and aquatics. The activity options also permit advanced work in many activities, so that the student is also prepared to teach at advanced skill levels in that area or to go into coaching in a particular sport. If she chooses she may have coursework and practical experience in coaching a particular sport.

Theoretical background is provided through anatomical, kinesiological, physiological and health courses, with implications for the performance and teaching of activities. The emphasis is on preparation for teaching, but provision is made for entry in almost any graduate program of physical education if the student later wishes to undertake graduate work.

The student who plans to teach must meet certification requirements (see "College of Education"). The teaching curriculum leads to either the B.A. degree or the B.S. degree; the pre-physical therapy to a B.S. degree. The non-professional and dance curricula lead to the B.A. degree.

Each student must make application not later than the sophomore year for Departmental recommendation to the College of Education and professional education courses, as well as continuation in the physical education curriculum she has elected. Any student failing to maintain a grade-point average of 2.2, or having displayed marked inadequacies for teaching or a leadership role, may be dropped from the program. Transfer students coming into one of these programs are subject to all the requirements for students starting in the program.

The Department also administers a non-professional major in health and physical education, known as General Studies in Health, Physical Education and Recreation. The purpose of this program is to give a background in health, physical education and recreation, not as a preparation for a career but as a broad acquaintance with material relevant to personal and family recreation and healthful living. Each student's program is individually planned with an advisor following broad guidelines and oriented to the student's objectives in selecting this major.

Honors Program

The Honors Program is designed to serve the interests of the superior student. To be eligible for Honors, the student must have at least a B average at the beginning of the junior or senior year when Honors courses are taken. She must complete at least the B average throughout the remainder of her college work. This is an opportunity to get some experience in research and gain a perspective on certain aspects of graduate work.

Graduate Programs

Graduate work is offered in physical education, dance and recreation. Curricula lead to the M.A. in physical education, dance or recreation education and to the Ph.D. degree in physical education.

The curricula assume previous education in the respective fields. A program is then planned with the individual in light of her previous education and anticipated future career. Completion of the graduate degree usually leads to teaching, administration or supervision in the schools or in a university. Research preparation is provided for anyone who wishes to orient her career in that direction. All M.A. students do some type of research, though the options are highly variable.

The Department was one of the pioneers in graduate physical education programs for women. In the nearly half century of graduate work there has been a growing philosophy of education for women and many of the graduates of these programs have and are still playing leadership roles in the profession, in their institutions and their communities.

The outstanding characteristics of the graduate programs are flexibility of program planning for the individual student, and diversity of areas of research which are available to the student. Attendance at both summer sessions and the academic year is helpful in obtaining full opportunities for diversity of instruction.

The graduate student works primarily in the Department of Physical Education for Women, but the resources of the entire University are available, as needed, for the individual student. Work outside the Department provides a broader view and enrichment for the selected specialization of the doctoral candidate. The most common areas of specialization have been administration, measurement, motor learning, anatomy and biomechanics, physical education for preschool and elementary school age children, statistics and research, and adaptive individualized programs. Others are possible. Occasionally an internship is possible in the field. The student group is cosmopolitan and international in make-up.

A research laboratory is available in the Women's Gymnasium. It is equipped primarily for kinesiological and biomechanics research and motor learning, including equipment for electromyographic research. Other research is done on a cooperative basis. Complete computer service is available as needed for research.

Faculty

The faculty represents diversified background and specialization. Abilities and interest are complementary. Most faculty members hold advanced degrees. Several bring educational backgrounds from abroad. All are experienced teachers. Graduate faculty members all are experienced in research and writing and are available for the guidance of graduate students in their area of specialization.

Staff: professor Fox, Scott; professor emeritus Halley; associate professors, Samuel Gross, Walter S. Davis, June A. Todd, Clinton, Leslie Miller, Slaxon; assistant professor emeritus Taylor; instructors Brochu, Cole, Evans, Foor, Gibb, Green, Grant, Matisen, Ogden, Robinson, Thyser
28/172 Dance Theatre
By permission only
2 a.h.
28/175 Advanced Choreography
Emphasis on developing style
2 a.h.
28/176 Advanced Choreography
Sala, small and large groups leading to concert work
2 a.h.
28/177 Theory and Criticism of Dance
Philosophy of art and art as applied to dancer: Place to present day
3 a.h.
28/178 History and Criticism of Dance
Dance and culture in the 20th c: 1914 to present
2 a.h.
28/177 Laboratory
Theory and practice in the observation of movement
3 a.h.
28/178 Laboratory
Prop. 177: Lab equivalent

Courses Primarily for Graduates
28/201 Problems in Physical Education
or. arr.
Preparation of instruction
2 a.h.
28/253 Seminar: Current Education
2 or 4 a.h.
Problems in physical education and related areas
2 a.h.
28/254 Care of Athletic Injuries
2 a.h.
Accident prevention and care of injuries occurring in sports activities
2 a.h.
28/255 Techniques of Research
3 or 4 a.h.
Selecting and defining a problem: method and design of studies
28/256 Projects
3 a.h.
Comprehensive work in planning and conducting investigations
28/257 Advanced Corrections
3 a.h.
Organization and administration of corrective programs: practice in individualization of exercise program, techniques of rehabilitation: prerequisite: 28/251 or equivalent
28/258 Motor Learning for the Mentally Retarded
3 a.h.
Motor development and learning problems of retarded and trainable retarded; developmental and remedial drills desirable
28/259 Instructional Methods for Exceptional Children
3 a.h.
28/260 Instrumental and Extemporal Programs
3 a.h.
28/261 Design and Maintenance of Facilities
3 a.h.
Design, layout, control, maintenance of physical education facilities and areas
28/262 Seminar in Evaluation
3 a.h.
28/264 Analysis of Human Motion
3 a.h.
Advanced biomechanical study with application to teaching methods and problems in sports, group, body mechanics, conditioning
28/265 Advanced Coaching
2 a.h.
Reading and discussion covering coaching and officiating procedures in light of research and improvements in women's sports
28/266 Administrative Problems in Physical Education
3 a.h.
28/267 Motor Development of Children
5 a.h.
Nutritional, genetic, and physiological growth and development
28/268 Scientific Bases of Physical Education
3 a.h.
Health and safety aspects of physical education; research on health and nutrition; coordination of physical education and health programs; marriage, family, and recreation counseling; weight control and school and college fitness programs
28/269 Scientific Bases of Physical Education and Health 3 a.h.
28/274 Seminar: Health Education Program in High School
3 a.h.
Pacing and using opportunities in physical education for teaching of health
28/275 Supervision of Physical Education
2 a.h.
28/276 Seminar: Supervision
2 a.h.
Problems in supervision only in those with experience in supervision
28/277 Philosophy of Physical Education
3 a.h.
28/278 Athletic Training
3 a.h.
Role and meaning of organized sports and individual sport participation in primitive and modern society
28/278 Seminar: Improvement of Instruction in Elementary School Physical Education
3 a.h.

Texts as 28/4
28/244 Physical Education: The Nature of the Discipline
3 a.h.
28/251 Progressive Education
3 a.h.
Cooperative education of all adults and physical educators around the world
28/252 Individual Differences in Activity Classes
3 a.h.
Modification of activity curriculums in accommodates excepted students; include discussion of IQ 80+ in analyzing methods of teaching for low-motor individual and the physically disabled

28/255 Professional Writing
2 a.h.
Critical review of physical education and related writing of all types, individual or group: advising a high school girl
2 or 4 a.h.
28/257 Seminar in Research
2 a.h.
28/259 Advanced Kinesthetics
2 a.h.
Mechanical and electromyography analysis of sports
28/258 Biomechanics
2 a.h.
28/260 Thermodynamics
2 a.h.
Mechanical and electromyography analysis of sports
28/261 Neurosensorimotor Bases of Motor Function
2 a.h.
Research in perception and learning involved in motor learning and skilled performance
28/262 Seminar: Gross Motor Learning
2 a.h.
28/263 Thesis
Prop. consent of instructor

Physical Therapy
Physical Therapy Program Director: Tony R. Jones
Master of Arts Program Director: Gary L. Smith
Degree offered: M.A., M.A. (in addition to professional certification)

The physical therapy curriculum at Iowa is accredited by the Council on Medical Education of the American Medical Association and the American Physical Therapy Association.

The Certification Program
It is a two-year professional curriculum leading to certification in physical therapy.

A wide variety of career opportunities for professional practice is available in general or specialized hospitals, schools for crippled children, physicians' private offices and clinics, extended care facilities, nursing homes, community and government agencies, rehabilitation centers, the armed forces, foreign service, athletic programs and in universities offering educational programs leading to qualification in physical therapy.

Physical therapists participate in the evaluation of the capability of disabled patients, and they administer treatments to alleviate pain, correct or minimize deformity and improve the general health status of the individual.

Based on knowledge of the patient's conditions and the factors influencing them, the physical therapist develops a treatment program which may involve teaching a patient to walk or use an artificial limb; teaching exercises in order for the patient to gain strength or better coordination of movement; or administering forms of heat, cold, electricity, ultrasound or massage for the benefits resulting from these forms of therapy.

Physical therapy includes teaching the patient and his family or other personnel the procedures for the patient's continuing care. Physical therapists may delegate some functions to support-ive personnel who are prepared to assume these responsibilities.

Physical therapists receive referrals of patients from licensed physicians and maintain contact with them regarding the progressive care of the patient.

From the beginning of the physical therapy education program in 1942 until the adoption of the new program in 1969, the school graduated 380 physical therapists. One hundred are currently employed in Iowa.
Satisfactory completion of the professional curriculum qualifies candidates for the Professional Examination Service (P.E.S.) test for licensure in Iowa and most other states.

Classroom and laboratory instruction in physical therapy is presented in a manner intended to develop a sound basic knowledge of human anatomy, physiology, neurology, orthopedics, surgery, medicine and of the psychological aspects of human illness, as such knowledge may be applied to the treatment of disabilities through physical therapy procedures.

Orientation to all health professions and the responsibilities of each to provide optimum patient care is stressed throughout the program. The clinical education experiences provide the student with opportunities to develop skills in the evaluation of disabilities and in the preparation and execution of treatment programs.

Admission Requirements

The application deadline is February 1. Each new class begins in August.

The Graduate Record Examination must be taken during the senior year in order to register in the Graduate College for the second year of the professional program.

Students may enter the program upon completion of the junior year of college work, or the equivalent. The student who has not already done so must receive the bachelor's degree in his undergraduate major upon completion of his first year in physical therapy. It is essential that each student satisfy the requirements of a major department as well as the requirements of the College of Liberal Arts for a baccalaureate degree.

Minimum science prerequisites are two semesters (eight semester hours) of physics, chemistry, biology, or zoology, and six semester hours of anatomy, chemistry, physics, biology, or zoology courses which include laboratory work. As the quality of work in the general sciences is basic to success in physical therapy, the admissions committee gives special attention to grades in science courses.

The student must have and maintain at least a 2.5 grade-point average on a 4-point system.

Application must be made to the Director of Admissions, The University of Iowa. Personal interviews may be required. Applicants will be contacted for the appointment of required interviews.

Preprofessional Program

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>101/1-2 Rhetoric</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>107-108 Physical Education Skills</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>107-108 History-cultural core course(s)</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>41 and 4 Principles of Chemistry I-II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>4-6 Elementary Chemistry Lab</td>
<td>2 s.h.</td>
</tr>
</tbody>
</table>

Sophomore Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature course(s)</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>Foreign language (for equivalent proficiency)</td>
<td>8 s.h.*</td>
</tr>
<tr>
<td>Social science core course(s)</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>37-3 Principles of Animal Biology</td>
<td>5 s.h.</td>
</tr>
</tbody>
</table>
Because the program is designed to increase the student's knowledge and problem-solving ability in the areas of evaluation and treatment, the program includes research as well as teaching. The four major components of the program are the acquisition of tools to solve a problem; learning advanced techniques in evaluation of neurological disorders, electro-diagnosis and biomechanics; learning communication skills in teaching and administration; and learning through participation in several problem solving endeavors. The program is sufficiently flexible to accommodate elective pursuits commensurate with the student's ability and interest.

Admission
To be considered for admission to the master's degree program, the applicant must be a graduate of an approved professional program in physical therapy, meet the requirements of the Graduate College, successfully complete the professional examination test for physical therapists and take a Graduate Record Examination Aptitude Test.

Traineeships
A traineeship grant from the National Institutes of Health is awarded to each student in the program.

Program Requirements
A total of 30 semester hours of graduate work must be completed beyond the basic professional training, and a thesis is required.

Recently a Ph.D. program especially for physical therapists has been approved by The University of Iowa. This program is intended to produce professionals with advanced training to fulfill positions of leadership in the physical therapy profession and to assume positions in graduate and basic professional education.

The master's degree program is based in Children's Hospital at the Medical Center on its main University campus. It is in the same general area of Children's Hospital as the Physical Therapy Clinic. The professional program is approximately five miles away. Personnel associated with the master's degree program in physical therapy are at liberty to use the space and equipment in the orthopedic-biomechanics laboratory, and another biomechanics laboratory is available in the College of Engineering. These laboratories are equipped with instrumentation—electrogoniometers, force plate, high-speed cameras, motion analyzer, accelerometers and force table—needed to solve problems of force and motion associated with the human in the normal and abnormal state.

The graduate program is an integral part of a collaborative study of medical problems with orthopedics and engineering. The master's degree program and the Physical Therapy Clinic are interrelated in terms of rehabilitation, staff conferences and consultation for patient care. Interaction with the basic profession program consists primarily of teaching preclinical by advanced degree candidates to students in the basic professional program.

Required Courses
- 63.161 Statistical Methods in the Biomedical Sciences
- 101.275 Analysis of Selected Neurological Disorders
- 101.213 Seminar: Physical Therapy
- 101.320 Biomechanics
- 72.102 Physiology of Exercise
- 27.241 Scientific Principles of Physical Conditioning

Recommended Courses
- 101.290 Advanced Electrotherapy and Electrodiagnostics
- 101.280 Practicum: Teaching Methods and Design
- 68.235 Principles of Organization and Management
- 101.324 Independent Study
- 3.120 Fundamentals of Laboratory Instrumentation
- 7H.162 Designing Learning Programs for Health Careers Education
- 7P.342 Data Processing
- 7V.101 Operation of Audiovisual Equipment
- 7V.110 Selection and Utilization of Educational Media
- 27.312 Seminar: Motor Learning II
- 31.123 Psychology of Learning

Elective Courses
- 76.212 Indications Conference
- 70.139 Orientation to the Rehabilitation of the Hand-impared Child
- 59.223 Mechanics of Solids
- 59.21 Computational Methods
- 5.100 Child Development
- 7H.211 Problems in College Teaching
- 6A.114 Accounting
- 6A.130 Budgeting

Staff: professor emeritus W. Paul; assistant professor emeritus Furr; assistant professor Jones, Morrissey, Rambo, Seid; clinical assistant professor D. Paul; instructors Donovits, Skovby, Lee, Soper

Medical adviser for professional program: Merlin P. Scottsmann
Medical adviser for master's degree program: Richard C. Johnston

Consultants: professors Palt, Fossett; assistant professors Stawell, Schettl (Orthopedics); professor Miller, associate professor Holloway (Education); professor Kim, associate professors Andrews, Chao (Engineering); professor Mccall (Anatomy); associate professor Tipton (Physiology); professor Van Allen

Courses
- 101.191 Principles of Medicine
- 101.292 Principles of Medicine II

Lectures, demonstrations, case-presentations of medical disorders from standpoint of diagnosis, clinical signs and symptoms, treatment and prognosis, prerequisites: 100.101
Undergraduate majors who plan to pursue graduate study in physics are advised to:

- Take 29:171, 172 Methods of Theoretical Physics.
- Acquire reading facility in either Russian or German, and
- Go beyond the minimum requirements listed above to the greatest feasible extent.

Undergraduate Major in Astronomy

Astronomy includes the subdisciplines of astrophysics, classical astronomy, radio astronomy and space astrophysics. A balanced and integrated program of study in astronomy, physics and mathematics course is required for the Bachelor of Arts degree in astronomy. The purpose of this program is to prepare the student for a career or advanced study in astrophysics, radio astronomy or space astronomy.

The following courses or their equivalents are required for the Bachelor of Arts degree with a major in astronomy:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>22M35-38</td>
<td>Engineering Mathematics I, II, III, IV</td>
<td>16 s.h.</td>
</tr>
<tr>
<td>29:17, 18, 19</td>
<td>Introductory Physics I, II, III</td>
<td>12 s.h.</td>
</tr>
<tr>
<td>29:61</td>
<td>General Astronomy</td>
<td>8 s.h.</td>
</tr>
<tr>
<td>29:119, 120</td>
<td>Introduction to Stellar Astrophysics I, II</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:125, 130</td>
<td>Electricity and Magnetism</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:132</td>
<td>Intermediate Laboratory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>29:137</td>
<td>Astronomical Laboratory</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>29:191</td>
<td>Atomic Physics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22M130, 131</td>
<td>Elementary Theoretical Mechanics I, II</td>
<td>6 s.h.</td>
</tr>
</tbody>
</table>

Undergraduate majors in astronomy who plan to pursue graduate study in astrophysics are advised to:

- Go beyond the minimum requirements listed above to the greatest feasible extent;
- Take 29:117 Optics
- 29:118 Kinetic Theory and Thermodynamics
- 29:171, 172 Methods of Theoretical Physics and
- Acquire reading facility in one or more of the following languages: Russian, German and French

Honors

Selected junior and senior majors take six to eight semester hours of 29:99 Honors Thesis and prepare an undergraduate thesis as part of their program for the degree Bachelor of Arts with a major in Physics or the Astronomy.

For the general requirements of the College of Liberal Arts, see "College of Liberal Arts."

Graduate Program

Two advanced degrees are offered in physics, the Master of Science with or without thesis and the Doctor of Philosophy; and one in astronomy, the Master of Science (with or without thesis). A student who wishes to pursue a program in astronomy beyond the M.S. level must qualify for admission to a graduate program in Astronomy at the University of Maryland. The New School of Astronomy at the University of Maryland offers both the Master of Science and the Doctor of Philosophy degrees in astronomy. The Department of Physics and Astronomy cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences ("Graduate College").

An interdisciplinary program leading to the M.S. and Ph.D. degrees in chemical physics is also available.

Each entering graduate student is assigned to a faculty adviser who will assist him or her in preparing a plan of study and in guiding the student's progress. A graduate student becomes a candidate for an advanced degree in physics or astronomy only after passing a qualifying examination in all principal areas of the subject at the level of advanced undergraduate work. The examination is given during the first week of the second semester each year and must be taken by all first-year graduate students. Ordinarily, a candidate for any advanced degree should begin research in a chosen specialty during the second year of residence. The thesis or essay adviser then becomes the candidate's general adviser and the chairman of his or her final examination committee.

For the general admission and degree requirements, see "Graduate College."

Master of Science Degree in Physics

The M.S. degree is offered with thesis or without thesis. Either degree may be an intermediate step toward a Ph.D. degree, or it may be a terminal degree. The final examinations in either case are an oral one conducted by a committee of three members of the graduate faculty appointed by the dean of the Graduate College.

The program for the M.S. degree with thesis requires 30 semester hours of graduate work and a thesis based on an original experimental or theoretical investigation by the candidate. No more than six of the minimal 30 semester hours may be for research (29:241).

The program for the M.S. degree without thesis requires 30 semester hours of graduate work, an independent study of the literature on a chosen topic and the preparation of a critical essay on that topic. No more than four of the minimal 30 semester hours may be for the critical essay (29:220). Up to one-third of the graduate program may be in related scientific fields other than physics and mathematics, e.g., chemistry, astronomy, engineering, etc.

The candidate for either of the M.S. degrees must have satisfactorily completed the following courses or their equivalents as an undergraduate or a graduate:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>29:117</td>
<td>Optics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>29:118</td>
<td>Kinetic Theory and Thermodynamics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>22M130, 131</td>
<td>Elementary Theoretical Mechanics</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:125, 130</td>
<td>Electricity and Magnetism</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:131</td>
<td>Advanced Laboratory</td>
<td>4 s.h.</td>
</tr>
<tr>
<td>29:171, 172</td>
<td>Methods of Theoretical Physics</td>
<td>6 s.h.</td>
</tr>
<tr>
<td>29:191</td>
<td>Atomic Physics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>29:92</td>
<td>Nuclear Physics</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>29:193</td>
<td>Introductory Solid State Physics</td>
<td>3 s.h.</td>
</tr>
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</table>
Physics and Astronomy

The student's plan of study should provide for as much advanced work as aptitude and previous preparation permit.

Master of Science Degree in Astronomy

The M.S. degree is obtained with thesis or without thesis. The requirements for the two degrees are the same as for the corresponding degrees in physics (see above), with these changes:

**Delete:**

- Advanced Laboratory 4 s.h.
- Nuclear Physics 3 s.h.
- Introductory Solid State Physics 3 s.h.

**Add:**

- Introduction to Stellar Astrophysics I, II 6 s.h.
- Solar System Astrophysics 3 s.h.
- Advanced Laboratory 2 s.h.
- Astronomical Laboratory 2 s.h.

If the student intends to continue for a Ph.D. in physics with an astrophysics specialization he or she should take the following courses as soon as possible:

- Radio Astronomy 3 s.h.
- Theoretical Astrophysics I, II 6 s.h.
- Stellar Structure and Evolution 4 s.h.
- Special Topics in Planetary and Space Science 2 s.h.
- Seminar: Astrophysics 1 cr. arr.

Doctor of Philosophy Degree in Physics

The program of study for the Ph.D. degree with major in physics includes:

- Thorough coursework in both classic and modern theoretical physics for all candidates, whether their specialized research is to be in an experimental or a theoretical area;
- Comprehensive examinations;
- Participation in advanced seminars;
- Original research in experimental physics, theoretical physics or astrophysics; and the preparation of a written dissertation based on this work; and
- Successful defense of the dissertation in a final oral examination conducted by a committee of five members of the Graduate Faculty appointed by the dean of the Graduate College.

Emphasis is on the capabilities developed and knowledge gained rather than on the particular courses taken, credits acquired or other aspects of the means to the end. Although no specific courses are required, the following are recommended as preparation for the comprehensive examinations:

- Atomic Physics, Nuclear Physics and Introductory Solid State Physics 29:191, 192, 113
- Classical Mechanics 29:205
- Statistical Mechanics I 29:212
- Classical Electrodynamics 29:213, 214
- Quantum Mechanics I, II 29:245, 246

Advanced mathematics, such as the theory of functions of a complex variable and vector and tensor analysis, is used freely in these courses. An introduction to these fields is given in 28:171, 172 Methods of Theoretical Physics. The selection of less advanced courses will depend on the adequacy of the student's preparation for graduate work; the student's choice of more advanced and specialized courses will depend on the direction in which his or her interests develop.

Before a Ph.D. candidate is admitted to the comprehensive examinations, he or she must demonstrate a reading competence in French, German or Russian by receiving a grade of 500 or better in the Educational Testing Service foreign language examination or by passing the reading examination administered by the appropriate language department; or by having satisfactorily completed 12 or more semester hours of college course work (or the equivalent) in any one of the above three foreign languages. Students whose native language is not English will be considered as special cases.

A candidate for the Ph.D. degree will not be recommended for the degree until he or she has written the dissertation in proper form for formal publication and has submitted it, with the approval of the research adviser, for publication to a standard scientific journal of wide distribution.

Research

The Department has an excellent library and a number of well-equipped laboratories and observatories. An IBM 360/65 digital computer and the associated facilities of the University Computer Center are available for research by students and staff of the Department. Several other smaller computers are available within the Department. The central machine shop is fully equipped and staffed with skilled instrument makers and machine shops, and there are several electronics and machine shops for the use of advanced students and the research staff.

Experimental research is conducted in the fields of nuclear structure physics, ionospheric and space physics, astrophysics, solar and planetary physics, chemical physics and solid state physics.

Theoretical research is directed to atomic and nuclear theory, quantum field theory, statistical mechanics, plasma physics, theory of solids, theory of elementary particles, solid state theoretical physics and astrophysics.

Exceptional opportunities are available for experimental research in space physics.

Persons qualified for graduate study are invited to apply for fellowships and assistantships. Inquiries should be directed to the head of the Department.

Staff: professors: Carlson, Frisch, Montgomery, Nelson, Norbeck, Oden, Professors Emeriti: Tyndall, Wylie; associate professors: Carpenter, Garnett, Herschkowitz, Kink, Knorr, McLintock, Neff, Savage, assistant professors: Fix, Joyce, Payne, Schlesinger, Schwinger, Shawan; visiting associate professors: Daniel W. Swett; research assistant professor: Enemark

Courses

Physics

Prerequisites and courses specified as guides and may be waived by instructor; students may not repeat for either credit or quality points any introductory course if they have already completed higher level course for which elementary course, or its equivalent, is prerequisite; core courses: 28:1, 2 College Physics, eight semes-
Quantum Mechanics I

Nonrelativistic quantum mechanics. Schrödinger wave mechanics, Heisenberg space method; quantum mechanics; wave functions, spin and angular momentum; identical particles, relativistic applications; introduction to introductory theory; prerequisite: 291A, 291B, 295.

Quantum Mechanics II

Continuation of 294A.

Advanced Nuclear Physics

Filled volume of nuclear physics and radiative processes; significance of nuclei; nuclear models, shell models, collective models; y i ra y s , n u c l e a r reactions and other topics; prerequisite: 291A, 291B and 295.

Advanced Nuclear Physics

Continuation of 294A.

Seminar in Physics

Discipline of current research.

Seminar in Theoretical Physics

Discipline of current research.

Seminar in Space Science

Discipline of current research.

Seminar in Nuclear Physics

Discipline of current research.

Special Topics in Nuclear Physics

Advanced lecture course on core of current research: theoretical lectures and demonstrations on recent topics in solid nuclear structure, nucleosynthesis, and other nuclear topics.

Theoretical Solid State Physics

Central principles of quantum theory, solid-state dynamics, electronic properties, thermal properties, crystallography, magnetism, and solid-state response; emphasis on methods of recent developments; prerequisite: 291A, 245, 246.

General Astronomy

Continuation of 291B, 295.

Relativistic Formulations of Electrodynamics and General Relativity

Introduction to general relativity and cosmology; general relativity in vacuum.

Statistical Mechanics II

Advanced lecture course on recent developments in statistical mechanics; may vary from year to year.

Special Topics in Quantum Mechanics

Course content varies from year to year; may vary from year to year.

Solar-Terrestrial Physics

Planetary atmospheres; meteorology and aeronomy; observational astronomy; meteor and aurora; ionospheric physics; magnetospheric physics.

Solar-Terrestrial Physics

Planetary atmospheres; meteorology and aeronomy; observational astronomy; meteor and aurora; ionospheric physics; magnetospheric physics.

Research in Physics

Prospective course on general research.

Physics and Chemistry of the Upper Atmosphere

Physics of sound and交通安全; atmospheric electricity; radiosonde; atmospheric electricity in relation to meteorology; ionosphere and atmospheric structure; ionosphere; flux and waveguide system; microwave and radioastronomy; magnetospheric physics; auroras; and auroral phenomena.

Advanced Plasma Physics I

Statistical mechanics of plasma; plasma processes; plasmas; magnetohydrodynamics; plasma instabilities; microwave and radioastronomy; magnetospheric physics; auroras and auroral phenomena.

Advanced Plasma Physics II

Continuation of 294B.

Astronomy

See corresponding sections under Physics series.

Primarily for Undergraduates

General Astronomy

Open to freshmen, descriptive textbook and study of astronomical techniques and of astrophysical observation; introductory level; sun, earth, moon, planets, asteroids and meteoroids, comets, comets, comets, interstellar dust, and interstellar matter; prerequisite: 291A, 291B, 295.

Continuation of 294B which, however, is not a prerequisite; stellar astronomy, cosmology, and space navigation; prerequisite: 291A, 291B, 295.

Introduction to Stellar Astrophysics


Introduction to stellar astrophysics and cosmology; fundamentals of stellar astrophysics, onstructure and evolution, nucleosynthesis, and nucleosynthesis and energy balances; prerequisite: 291A, 291B, 295.

Introduction to Stellar Astrophysics


Planetary Systems: Formation and Evolution

Theory of planet formation; observational evidence; spectroscopy; and laser spectroscopy; emphasis on topics of current interest.

Special Topics in Planetary and Space Science

One or more of following topics: solar system, geophysics, spectroscopy, and geophysical problems; emphasis on topics of current interest; prerequisite: 291A, 291B, 295.

Seminar in Astrophysics

Discussion of current research.

Research in Astrophysics

Prospective course on general research.
Political Science
Department Chairmen: Russell M. Ross
Degrees offered: B.A., M.A., Ph.D.

The program in political science deals with general principles of human behavior and organization which enable one to understand and explain political situations, events and problems in the world around us. Both the undergraduate and graduate programs in political science emphasize broad and comprehensive study, rather than narrow specialization on restricted aspects of the subject. The facilities of the Department's Laboratory for Political Research and the Regional Social Science Data Archive afford a unique opportunity for both undergraduates and graduate students to come to grips with real problems through the analysis of real data, and, particularly at the graduate level, the methodological segments of the Department's program provide opportunity for acquiring expertise and experience which are matched by very few other institutions.

At the undergraduate level the program is general and not vocational. Undergraduate political science majors often enter careers in law, public service or teaching; but many also enter careers in business, journalism, medicine and other fields. At the graduate level the Department emphasizes the general Ph.D. program, which is particularly appropriate for students planning a scholarly career. It is also suitable for entry into the executive ranks of the civil service of federal, state and city governments. There is a special M.A. program in municipal administration, designed to prepare students for careers as city managers. The general M.A. program frequently leads to careers in civil service and in municipal or other governmental research bureaus, as well as to careers in teaching.

Undergraduate Programs
The Department offers a standard major (Plan A) and a special teaching major (Plan B). The special major is for those who seek a public school teaching certificate.

Plan A: Standard Major
Undergraduate seeking a standard major must meet the following requirements:
A. Complete 34 semester hours of work in political science, including:
   30.1 American, Politics
Two of these introductory courses:
30.10 Introduction to Political Behavior
30.11 Introduction to Political Theory
30.12 Introduction to Comparative Politics
30.13 Introduction to World Politics

Twelve or more semester hours of work in political science offerings numbered above 100.
B. Complete at least 12 semester hours of work (not including core courses) in at least four of the following departments: Economics, Geography, History, Philosophy, Psychology, Sociology, Anthropology, European Literature and Thought. If the student earns all 12 semester hours within one of these departments, the selection of courses need not have the prior approval of his or her adviser. But if the student wishes to combine work from two departments, prior approval must be obtained. Completion of the above requirements fulfills the College of Liberal Arts social science core requirement.
C. A grade-point average of at least 2.0 in all political science courses, and in all courses in related Departmental area of concentration of 12 semester hours or more, selected as referred to in B above. Majors must take all courses in political science and related field on a grade basis.

Plan B: Teaching Major
Undergraduates seeking a teaching major must meet these requirements in a program as preparation for high school teaching in the social sciences with an emphasis on political science:
A. At least 20 semester hours of work in political science, including requirements A. 1-2 in Plan A, and eight or more hours of work in political science offerings numbered above 100.
B. At least 16 semester hours, not including core courses or courses taken in lieu of them. The 16 semester hours may include eight semester hours in survey courses in American history; and eight semester hours in twelve courses offered by the Economics, Geography, Sociology and Anthropology departments.
C. Completion of the sequence of professional education courses leading to certification.

Honors in Political Science
Honors sections of some courses are scheduled for limited groups of outstanding students. Those interested should consult the appropriate instructor at the time of registration or before. In addition, the Department has a program for majors in political science leading to a B.A. degree with Honors. It is open to a limited number of students with a minimum general grade-point average of 3.5. A student in good or major honors standing once he or she has completed 12 semester hours of work in political science, he or she must have a grade-point average in political science of at least 3.2 in addition to a general grade-point average of at least 3.0. For graduation with honors the student must maintain the grade-point average just indicated; complete at least two semesters of work in the advanced Honors Seminar (30187, 188) with a grade of B or better each semester; and satisfactorily pass a comprehensive examination over the field of political science, at the end of the junior year.

Students interested in seeking a B.A. degree with Honors should see the Departmental Honors adviser prior to the beginning of the junior year.

Graduate Programs
Graduate students in political science must meet the general requirements of the Graduate College. In addition they are expected to be familiar with, and be held responsible for, the specific Departmental requirements set forth in the Guide to Graduate Study in Political Science, available in the office of the Department chairman.

Admission requirements are fixed by the Graduate College. The normal Departmental requirements include an acceptable Graduate Record Examination score and a 3.0 minimum under-
graduate cumulative grade point. To be eligible for candidacy for a graduate degree, students must be in good standing. The student seeking the award of an M.A. degree must maintain a grade-point average of at least 3.0; the student seeking a Ph.D. degree must show promise of scholarly distinction and achievement beyond that indicated by a grade-point minimum of approximately 3.4.

Graduate study consists of work in courses, seminars, reading and research. Graduate students in political science may take for credit only those Departmental courses offered specifically for graduate students, i.e., those courses numbered 30-200 and above.

M.A. Programs
To obtain a master's degree with thesis, the student must complete at least 30 semester hours with a grade-point average of at least 3.0. The master's degree without thesis requires 36 semester hours of graduate credit. The Department also offers an M.A. degree in political science under a joint program with the College of Law (see Graduate College requirements for the maximum hours of work allowed). In addition, the student must meet the following specific Departmental requirements:

Normal Load
At the master's level, a normal load is 12 semester hours of credit each semester. The student may register for six to eight semester hours in the summer session and complete the 30 semester hours of work for the M.A. degree in a 12-month period.

Courses Outside the Department
A master's student may take only one course or seminar outside of the Department for each semester or summer session, except where special Departmental programs (e.g., municipal administration) specify otherwise. The student may, of course, register only for Departmental courses or seminars.

Master's Thesis
The student beginning graduate work in the fall will begin planning the thesis during the spring semester, in consultation with an adviser and will ordinarily register for six semester hours of credit during the ensuing summer or fall session to complete the thesis, provided that he or she is admitted to candidacy. If the student has begun in the summer, he or she will ordinarily register for one course (four semester hours) and six semester hours of 30:582 Master's Thesis during the spring semester.

Final Examination
Satisfactory performance in a final oral examination, covering both thesis and coursework, completes the requirements for the M.A. degree. The thesis examining committee must, if the student desires to continue to do Ph.D. work, make a recommendation as to whether or not the student may proceed. Under no circumstances will more than eight semester hours of credit for thesis preparation be counted in satisfying the 30 semester-hour minimum requirement.

M.A. in Municipal Administration
Master's degree of students who complete the program in this field carry the special designation M.A. "in municipal administration." The program, which does not require a thesis, gives both an academic and professional training. While strongly oriented toward cities with the council-manager form of government, it is not exclusively concerned with it. It is designed to prepare students for the municipal administrator's role of coordinating the physical, fiscal and social aspects of community development. The program normally requires two years to complete and includes an internship of from nine to 12 months. The B.A. or B.S. degree is required for admission. Undergraduate concentration in social sciences, engineering or accounting is helpful but not required. The normal curriculum for the M.A. in municipal administration includes the following courses:

- 30:101 Municipal Government and Politics
- 30:120 Introduction to Public Administration
- 30:121 Municipal Administration
- 30:221 Financial Administration
- 30:323 Problems in Public Administration
- 30:421 Urbanization
- 30:155 Environmental Health
- 102:101 Introduction to Planning
- 31:154 Personal Psychology
- 30:383 Internship

Total 38

Ph.D. Program
A student seeking a Ph.D. degree is expected to complete at least three academic years in residence in a graduate college, including the work for an M.A. degree, which is normally prerequisite to work toward a Ph.D. Students who transfer from other colleges and universities will not be considered Ph.D. candidates unless they have completed M.A. degrees elsewhere. The student may apply to the adviser for a waiver of the requirement for an M.A. degree; the adviser will present the application to the student's examining committee, which will examine the student as it sees fit and make recommendation to the departmental chairman.

Thesis Requirements
The student seeking a Ph.D. degree must demonstrate command of one foreign language or other tool of research, selected with the approval of the doctoral committee. If a foreign language is selected, the student must give proof, through a special examination, of a reading knowledge adequate for research purposes. If something other than a foreign language is selected as the tool (e.g., statistics), the student's doctoral committee will specify the criteria determining whether the requirement has been met; a minimum of six semester hours will be necessary. The tool requirement must be met before the student takes the comprehensive examinations.

Comprehensive Examinations
The student must pass comprehensive examinations in four fields of study, at least three of them in political science. Within the first month after the appointment of the Ph.D. examining committee, the student must also consult with the other members
of the committee concerning his or her work in their fields. There are seven fields of study in political science, divided into three

Group A: American Government and Politics; Public Administration

Group B: Political Theory; Comparative Government; International Relations

Group C: Philosophy of Political Research; Methods of Political Research

A student must offer at least one field in both Groups A and B.

Teaching and Research Training

Each Ph.D. candidate in political science must acquire at least one semester of special supervised training in teaching and one in research. This instruction is normally given in association with the student’s service as a teaching or research assistant. A student seeking a Ph.D. degree should apply for admission to candidacy by filling a plan of study with the Graduate College before taking its comprehensive examinations. Students are expected to take comprehensive examinations after the completion of the second full year of graduate work.

Doctoral Dissertation

The student must write a doctoral dissertation. Not more than 30 semester hours of credit are granted for the preparation of dissertations, and students may not register for credit for reading or research solely for the purpose of direct work on their dissertations.

Special Facilities

The Laboratory for Political Research was begun in 1963 with the primary function of facilitating training in research methods in political science. The Laboratory assists faculty members in utilizing empirical data and the computer in their undergraduate instruction. This assistance is provided primarily to the faculty of the Department of Political Science and to a broad range of social scientists at the 10 institutions that make up the Regional Computer Center. The Laboratory is an integral part of graduate education in the Department and is involved at every level of graduate training. Publications produced in the Laboratory for Political Research include a newsletter for social scientists at the schools making up the Regional Computer Center and a report series comprising substantive or methodological papers. The facilities of the Laboratory include three tape punch machines, a counter/sorter, two communications terminals and a card reader/line printer.

Special Faculty Strengths

The American Council on Education’s recent ranking of political science departments offering graduate studies placed the Iowa Department of Political Science eighteenth among the several hundred departments in the nation. For the last 30 years the Department has ranked high in every study made. For example, Iowa ranked behind only Harvard, Chicago and Columbia (1936-1942) in the number of political science doctorates produced during that time period.

The Department definitely feels there is a proper role for the

members as individuals to play in the political process. Family

members have served in congress, as members of congressional

committees, as executive assistant to a governor and as mayor of a municipality; as members of city councils, regional

planning commissions and community school boards; and in other public offices.

Unlike many political science departments, this department has organized and staffed itself to integrate teaching, research and service in an overall program through the Laboratory for Political Research.

Staff: professor Boynton, Davis, Johnson, Kulas, Loewenberg, Murray, Patterson, Rose, Schmaubauer, Snow, Van Dyke, Wahlke, professor emeritus Porter; associate professors Kim, McCrone, Welsh, assistant professors Cary, Green, Irwin, McClosky, Peterson; instructor Madsen

Introductory Undergraduate Courses

101 Introduction to American Politics 4 s.h.

Politics, focusing on American political system; direction of national politics in institutional setting; 301 Iowa local government requirements; open to freshmen and sophomores only

102 Introduction to Political Behavior 4 s.h.

Patterns and bases of political attitudes and behavior in public, organizational and institutional settings; laboratory exercises in elements of political behavior research

111 Introduction to Political Theory 4 s.h.

Discrete problems, theories and analytic techniques common in the study

121 Introduction to Comparative Politics 4 s.h.

Comparison of several European or Asian or Latin American systems of government (depending on semester); emphasis on similarities and differences among political parties, interest groups, legislative and executive institutions, policy-making processes and patterns of voting behavior and citizen participation

131 Introduction to World Politics 4 s.h.

Major world regions and contemporary problems of international relations

Advanced Undergraduate Courses

100 The Presidency 3, 5 or 4 s.h.

Political behavior of American individuals and groups and institutional structure of political parties; fulfills Iowa social studies requirement; open to juniors, seniors, non-political science graduate students; no one who has had 101 may enroll

1011 Municipal Government and Politics 3 s.h.

Institutional politics relating to the activities of local government; the legal and administrative structure of local government; city elections, campaigns and voter behavior; role of pressure groups

1021 Iowa Government and Politics 2 or 5 s.h.

Iowa’s political parties, political campaigns; representation, election laws, legislative process, judicial politics; role of Iowa governor

1031 Comparative Government Politics 3 s.h.

Approaches to comparative analysis of political behavior in America and foreign state governments, with emphasis on culture, values, business, politics, processes, issues

300 Public Policy: Power, structure and function of political parties in United States; development of institutions, organizations, political parties and political party systems throughout American history

301 The Presidency 3 s.h.

Office, powers, function of American presidency; recruitment and multiple roles of executive officers, party, Congress, Department of Justice, judicial institutions

302 American Public Policies 3 s.h.

Functions and policies of national government; emphasis on economic policy-making, impact of public policy

303 American Constitutional Law and Politics 3 s.h.

Role of Federal Supreme Court in American political system; particular emphasis on analysis of Supreme Court cases

3051 Introduction to Public Administration 3 s.h.

Administrative and organizational theory and behavior; techniques of management; relations between administration and other branches in federal and state governments, administrative policies
30:121 Municipal Administration  3 or 4 a.h.
  Problems and principles of municipal administration, including tax problems, per-
  sonnel matters, budgeting, planning and functional operations of city adminis-
  tration, including: fin. tax problems, personnel, social welfare services and
  education.

30:122 Financial Administration  3 or 4 a.h.
  Organization, reorganization, structure, functions and administrative process of
  state governments, emphasis on administrative acts in education, social welfare,
  labor, business, agriculture and public works; staff functions, such as personnel,
  planning, purchasing, budgeting and tax administration study.

30:123 Financial Administration  3 or 4 a.h.
  Survey of budgetary and administrative aspects of governmental financial oper-
  ations at national, state and local levels: formulation, enactment and execution of
  governmental budgets; sources of revenue, data administration, intergovernmental
  fiscal relations; preparatory: winter session.

30:131 Foundations of Political Theory  3 a.h.
  Major writers and intellectual trends in political thought from pre-Byzantine to
  Reformation period: 30:11 or junior standing is prerequisite.

30:132 Modern Political Theory  3 a.h.
  Major writers and intellectual trends in political thought from Renaissance to
  nineteenth century; prereq.: 30:11 or junior standing is prerequisite.

30:133 Contemporary Political Theory  3 a.h.
  Contemporary thought concerning democracy and related problems.

30:143 Government and Politics of Western Europe  3 a.h.
  Political institutions and processes of selected Western European countries, includ-
  ing Great Britain, France, Germany, Switzerland, for specific country or countries
  under consideration, course schedule for each quarter is open. New course begins
  each quarter.

30:144 Introduction to the Government and Politics of the Soviet
  Union  3 a.h.
  Internal system of government, political, economic and social order from Revolu-
  tion of 1917 to present.

30:145 Government and Politics of the Soviet Union and Eastern
  Europe  3 a.h.
  Soviet political system, emphasizing changes in post-Stalin period, with compar-
  isons to East European systems.

30:146 Government and Politics of the Far East  3 a.h.
  Functions and institutions of government in countries of the Far East, with
  special attention given to social, economic and political environment which
  conditioned them; same as 30:138.

30:147 Introduction to Latin American Government  3 a.h.
  Governmental institutions and major internal groups in Latin America; general
  survey upon which country or countries under consideration, must be selected
  by the student.

30:148 Major States of Latin America  3 a.h.
  Concepts of political systems of selected major states in Latin America, each
  country or countries under consideration, must be selected by the student.

30:154 Voting Behavior and Elections  3 a.h.
  Determinants of voting behavior, candidate and political participation and political
  parties; political socialization processes and norms and function of elections.

30:156 The Legislative Process  3 a.h.
  Comparative legislative-processes and behavior, focusing especially upon legislative
  processes analysis, legislative institutionalization, legislators and their environment,
  organizational constraints on legislative behavior, recruitment of legislators, web
  of horizontal and vertical linkages, legislative voting behavior.

30:157 Internet Law and Policy  3 a.h.
  Role of courts, lawyers, judges, Internet groups in American and selected foreign
  legal systems.

30:158 Problems of Comparative Politics  3 a.h.
  Problems of comparative politics, including comparative analyses of structures,
  functions and behaviors of different political systems, for specific countries or
  areas. Course credit may be repeated with consent of instructor.

30:159 International Politics  3 a.h.
  Concepts, problems and analyses of international politics; forms and determinants
  of interaction of states.

30:161 The Legislative Process  2 or 3 a.h.
  Development, structure and function of U. S. Congress; emphasis on decision-
  making processes of U. S. and major international countries.

30:162 American Foreign Policies  3 a.h.
  Role of public opinion, measurement, and public opinion as influenced by United
  States in relation to other states and with international organizations: prerequisite:
  30:13 or consent of instructor.

30:163 Inter-American Relations  3 a.h.
  Development and application of Monroe Doctrine, especially with regard to se-
  lection of Latin American nations; examination of organization and functioning of
  Organization of American States and current United States policy toward Latin
  America.

30:164 International Legal Relations  3 or 4 a.h.
  Selected topics in analysis of international politics; for specific countries or
  areas. Course credit may be repeated with consent of instructor.

30:165 Human Rights  3 a.h.
  Historical and contemporary human rights, their legal and legal basis, their prom-
  otion and protection through government and international organizations, compro-
  mises and international analysis of equality and gender discrimination.

30:166 Independent Study  0 or 3 a.h.
  Individual research special projects, exploration permitted only with consent of
  facility member concerned.

30:177 Foreign Seminar  0 or 3 a.h.
  Intensive examination of major ideas and problems of particular area of political
  science; open to honors candidates in political science and others with consent of
  instructor.

30:180 Foreign Seminar  0 or 3 a.h.
  Continuation of 30:177.

Core Graduate Courses

30:200 Introduction to Political Analysis  5 a.h.
  Conceptual problems of political analysis; type of models employed in contemp-
  orary political science.

30:201 Introduction to Political Science  5 a.h.
  Introduction to methods of research and content literature; use of qualitative and
  quantitative data prerequisite.

30:206 Administrative Theory and Behavior  3 a.h.
  Administrative theory and behavior.

30:207 Literature and Research on Organizational and administrative theory, behavior,
  politics

30:210 Political Theory  3 a.h.
  Literature of prescriptive political theory, emphasis on relevance for understanding
  and evaluation of contemporary politics.

30:240 Comparative Politics  3 a.h.
  Introduction to current approaches to comparative analysis of political systems;
  special attention to conceptual and other methodological issues.

30:250 American Political Systems and Behavior  3 a.h.
  Review and analysis of major American political sciences, concerning compara-
  tive social and behavioral issues.

30:260 International Politics  3 a.h.
  Comparative analysis of various approaches to study of international politics.

Elective Courses

30:300 Philosophy of Political Inquiry  4 a.h.
  Purpose and methods in study of politics.

30:301 Advanced Research Methods  4 a.h.
  Research design, data collection, measurement, including data reduc-
  tion and reliability and validity of data; principles for preparing data for analysis
  and reduction.

30:350 Women's Studies  3 a.h.
  Social and economic status of women, subordination and liberation, relationship of
  model to hypothesis in women; may be repeated with consent of instructor.

30:355 Administrative Theory and Behavior  3 a.h.
  Literature of political theory, political and organizational behavior, and organiza-
  tions which they apply to study of administrative agencies of government.

30:360 Systems Analysis of Government  2 or 4 a.h.
  Bureaucratic and administrative aspects of governmental functions at na-
  tional, state and local levels; formulation, measurement and execution of govern-
  mental budgets; sources of revenue, data administration, intergovernmental
  fiscal relations.

30:390 Administrative Management  4 a.h.
  Problems and issues in public administration at various levels of government;
  influence operating on administrators in shaping content and execution of public
  policy.

30:392 Problems in Public Administration  3 a.h.
  Selected topics in public administration; may be repeated with consent of instruc-
  tor; same course 70:392 ( Numerator).

30:395 Problems in Political Theory  3 a.h.
  Selected problems of prescriptive and explanatory political theory; may be repeated
  with consent of instructor.
Psychology

31:136 Operant Analysis of Behavioral Deviants
31:160 Research in Personality
31:161 Current Theories of Schizophrenia
31:163 Abnormal Psychology
31:164 Introduction to Clinical Psychology
31:166 Introduction to Behavior Disorders in Children
31:168 Applications of Psychological Tests

Group B (social)
31:15 Introduction to Social Psychology
31:104 Experimental Social Psychology
31:106 Attitude Change
31:107 Contemporary Social Problems

Group C (general experimental and physiological)
31:119 Human Memory, Learning and Conceptual Processes
31:123 Psychology of Learning
31:124 Mathemetic Approaches in Psychology
31:125 Brain Function and Learning
31:126 Physiological Psychology
31:127 Drugs and Behavior
31:172 Motivation
31:135 Perception
31:135 Operant Behavior Analysis
31:137 Sensory Processes
31:141 Differential Psychology

The Bachelor of Arts Degree

In addition to satisfying the general graduation requirements of the College of Liberal Arts, including at least two years of a foreign language, the B.A. student must take 25 semester hours of credit in psychology. At least the last nine hours must be earned in the Department of Psychology at Iowa, and must include either 31:134 Current Elementary Psychology or 31:135 General Psychology, and either 31:143 Psychological Measurement or 31:120 Experimental Psychology I and 31:143 Introduction to Statistical Methods, or they must include one course each from Groups A, B and C.

The Bachelor of Science Degree

In addition to meeting the general College of Liberal Arts graduation requirements, the B.S. student must take at least 25 semester hours of coursework in the Department of Psychology, including 31:114, 31:123, 31:431, 31:120 and 31:127 Experimental Psychology I, and at least one 100-level course from Groups A, B and C.

In addition, the B.S. student must take either one year of chemistry, one year in physics or one semester each in chemistry and zoology, and at least one semester of calculus equivalent and at least eight semester hours of a foreign language, or at least one year of college algebra and analytic geometry or equivalent and at least two years of a foreign language.

Honors in Psychology

The Department of Psychology has an Honors Program open to all students with at least a 3.3 grade-point average in psychology courses and 3.0 over all. The Honors Program includes research seminars and individual research collaboration with faculty members. Interested students should consult the Department's Honors advisor before the beginning of the junior year.

Graduate Programs

Graduate study in psychology is designed to provide training which will enable the student to make original contributions as a scholar, investigator and teacher, and to apply psychological knowledge to the solution of important practical problems. The clinical program emphasizes laboratory research both on clinical problems and service activities.

Master of Arts Programs

The Master of Arts degree with thesis is required for all students who want to earn the Ph.D. degree at Iowa. A few students will complete their professional training at the M.A. level.

This program prepares the student for service and administrative positions in various industrial, clinical, medical, government, or educational-psychological facilities, under the general supervision of a senior psychologist or personnel director. The student is expected to achieve competence in the professional skills required for an intermediate level of responsibility. The minimum of 38 semester hours of credit comprises 17 hours of basic required courses and at least 21 hours of electives. The required courses are selected from the core program. Electives are chosen in light of the student's vocational objectives and in consultation with the advisor.

Action on the student's application for the M.A. degree without thesis will be taken after completion of the specified course work with a minimum grade-point average of 2.7 and satisfactory performance on a written and/or oral examination covering the area of specialization.

Ph.D. Programs

The Department provides supervised training leading to the Ph.D. degree in general experimental psychology, physiological psychology, social psychology and clinical psychology and personality. The curriculum is designed to enable students to offer the student comprehensive training flexibly tailored to encompass a wide spectrum of individual interests and abilities. Opportunities exist for a variety of sub-specialty programs within and between the major areas of specialization.

All students desiring to receive the Ph.D. degree at Iowa generally obtain an M.A. degree with thesis after four semesters. Four years (or five years in the case of clinical students electing a pre-doctoral internship) is generally required to complete the Ph.D.

Courses are designed to provide an up-to-date summary of fundamental knowledge regarding behavioral processes, research methods, psychological theories, statistical tools and quantitative techniques. The knowledge gained from these courses is then enriched in the more informal atmosphere of seminars concerned with selected topics relevant to the student's area of specialization. These seminars provide opportunities for extensive discussion and expression of individual views regarding theoretical issues, the formulation of research problems and current developments in the research literature. Seminars also give the student valuable practice in the review, theoretical articulation and presentation of research literature. In addition to
courses and seminars, the Department invites nationally and internationally eminent psychologists to appear as guest speak-
ers throughout the year. Usually there are opportunities for students to meet informally with these speakers.

Training in the laboratory is an integral part of the student's work. The acquisition of the appropriate skills for the analytic investigation of behavioral phenomena is regarded as unparal-leled in importance and is an indispensable component of gradu-
ate training at Iowa. The student begins laboratory training soon
after arrival in the Department. Initially, research experience is gained through participation in an on-going project in a col-
laborative-tutorial relationship with a faculty member. Later, as
the student's interests become clearly defined and research skills develop, he or she is encouraged to initiate and pursue independ-
ent research. Many of our students publish papers in recognized psychological journals by the time they earn the Ph.D.

Admission Requirements

It is recommended that students who plan to take graduate work in the Department have solid undergraduate training in psy-
chology, including experimental psychology and statistics, and
extensive work in the natural sciences, mathematics and the
social sciences.

A foreign language is not required. Admission decisions are
based upon a composite consideration of the applicant's under-
graduate academic achievement, letters of reference and per-
formance on the verbal and quantitative portions of the Graduate Record Examination.

Special Facilities

The Department has excellent laboratory and library facilities for graduate work in psychology. Special equipment and laboratories are available for research in the fields of animal and human learning, motor skills, emotions, motivation, sensation and perception, physiological processes, clinical, and personality and social psychology.

The Kenneth W. Spence Laboratories of Psychology are de-
gined and used exclusively for teaching and research in psy-
chology. The laboratories are among the most outstanding in the field. They contain a number of systems for automated control of experiments, as well as a rapid and precise gathering of data. Facilities include small laboratory computers; several observa-
tion suites equipped with closed-circuit TV and audio monitor-
ing equipment for use in clinical and social psychological experimentation; and three animal colonies, soundproof rooms, two 
surgery, a laboratory of histology, a darkroom, electro-physiological recording rooms, conditioning laboratories, service shops and a number of additional specialized and general laboratories. Students have easy access to computer facilities within the Department and in the University Computer Center.

Also of major importance for specialized training programs is the availability of such related facilities as the Psychology Clinic; University's General, Psychiatric and Children's Hos-
itals; Iowa City Veterans Administration Hospital; University Speech and Hearing Clinic; and University Counseling Center.

Special Faculty Strengths

For more than 70 years, the Department has ranked at or near the top nationally in the number of professional psychologists it has trained at the doctoral level. Since the first national evalua-
tion of graduate programs, its faculty has ranked among the

fifteen in the country.

Other Unique Aspects of the Iowa Program

Each of the past several years, about a dozen junior and senior students showing exceptional promise have been selected to par-ticipate in a 10-week summer program of full-time research of

their own design, for which they have been paid from National
Science Foundation funds. Continuation of this specific program depends on the availability of non-University funds. However, opportunities for similar research experience without financial support are available through special arrangements with the

Honor's adviser.

Program participants receive two semesters of rigorous prepa-
ration in an Honors seminar, usually conducting a pilot study
and acquiring the skills they will need for their summer work.

Completion of the program is roughly equivalent to a year of graduate study. Often the work of these participants has been of such scope and quality that it has been published in leading professional journals.

Staff: professors Bechtoldt, Benson, Bergmann, Brown, Fox,
Gonzalez, Harvey, Reubenbaum, Schultz, Simon, Simson, Smillie,
Stall; professors emeriti Lewis, Stroud; associate professors Cot-

Affiliated Staff: research assistant Knott; clinical assistant Can-
ter; clinical associate professor O'Connor, clinical assistant profes-
sors Boudewyns, Dray, research associate Beut.

Librarian-in-Charge, Psychology Library: Anne G. Evans

Courses for Undergraduates Only

Each 314 or 315 is prerequisite to other courses in psychology, except 3117 and 3113, which may be taken without previous course work.

1 s.h.

3113 Elementary Psychology

Recommended for B.S. major in psychology and reading major B.S. or B.B. degree with majors other than psychology; basic principles in study of behavior and elementary principles of behavior.

3 s.h.

3116 General Psychology

Required of students planning to major in psychology. Also open to all

Honor's students and students who have permission of instructor; some topics in 3113 but with additional discussion materials and greater emphasis on research methodology and principles.

3 s.h.

3117 Educational Psychology and Measurement

Basic principles of psychology; in relation to development, assessment and modifi-
cation of personality adjustment.

3 s.h.

3117 Introduction to Social Psychology

Research in McGraw-Hill's guide to undergraduate psychology in social behavior and motivation, attitudes and behavior, research in social psychology.

3 s.h.

3119 Psychology in Business and Industry

Principles of industrial psychology and principles of personal selection and training, industrial fatigue, worker efficiency.
Psychology

1511 Child Development 3 a.h.

1515 Educational Psychology 3 or 4 a.h.

1517 Exceptional Children 3 a.h.

1520 Education in Elementary Schools 3 a.h.

1555 Human Engineering 3 a.h.

1558 Psychology in Management 3 a.h.

1562 Application of psychological principles to human relations and supervisory functions of industrial and educational administrators 3 a.h.

Clinical Psychology and Personality

1510 Personality 3 a.h.

1511 Introduction to the Field of Clinical Psychology 3 a.h.

1513 Clinical Assessment and Testing 3 a.h.

1515 Computerized Assessment and Testing 3 a.h.

1517 Introduction to Clinical Psychology 3 a.h.

1519 Introduction to Psychology 3 a.h.

1521 Research Approaches and Methods in Clinical Psychology 3 a.h.

1523 Research Design and Methodology 3 a.h.

1525 Personality and Social Psychology 3 a.h.

1527 General Psychology 3 a.h.

1529 History of Psychology 3 a.h.

1531 Introduction to Psychology 3 a.h.

1533 Behaviorism 3 a.h.

1535 Psychology of Personality 3 a.h.

1537 Social Psychology 3 a.h.

1539 Developmental Psychology 3 a.h.

1541 Abnormal Psychology 3 a.h.

1543 Educational Psychology 3 a.h.

1545 Psychology of Learning 3 a.h.

1547 Psychology of Personality 3 a.h.

1549 Psychology of Social Psychology 3 a.h.

1551 Psychological Assessment 3 a.h.

1553 Psychological Measurement 3 a.h.

1555 Psychological Testing 3 a.h.

1557 Psychological Testing and Assessment 3 a.h.

1559 Psychological Testing and Assessment 3 a.h.

1561 Psychological Testing and Assessment 3 a.h.

1563 Psychological Testing and Assessment 3 a.h.

1565 Psychological Testing and Assessment 3 a.h.

1567 Psychological Testing and Assessment 3 a.h.

1569 Psychological Testing and Assessment 3 a.h.

1571 Psychological Testing and Assessment 3 a.h.

1573 Psychological Testing and Assessment 3 a.h.

1575 Psychological Testing and Assessment 3 a.h.

1577 Psychological Testing and Assessment 3 a.h.

1579 Psychological Testing and Assessment 3 a.h.

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1595 Psychological Testing and Assessment 3 a.h.

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1599 Psychological Testing and Assessment 3 a.h.

1601 Psychological Testing and Assessment 3 a.h.

1603 Psychological Testing and Assessment 3 a.h.

1605 Psychological Testing and Assessment 3 a.h.

1607 Psychological Testing and Assessment 3 a.h.

1609 Psychological Testing and Assessment 3 a.h.

1611 Psychological Testing and Assessment 3 a.h.

1613 Psychological Testing and Assessment 3 a.h.

1615 Psychological Testing and Assessment 3 a.h.

1617 Psychological Testing and Assessment 3 a.h.

1619 Psychological Testing and Assessment 3 a.h.

1621 Psychological Testing and Assessment 3 a.h.

1623 Psychological Testing and Assessment 3 a.h.

1625 Psychological Testing and Assessment 3 a.h.

1627 Psychological Testing and Assessment 3 a.h.

1629 Psychological Testing and Assessment 3 a.h.

1631 Psychological Testing and Assessment 3 a.h.

1633 Psychological Testing and Assessment 3 a.h.

1635 Psychological Testing and Assessment 3 a.h.

1637 Psychological Testing and Assessment 3 a.h.

1639 Psychological Testing and Assessment 3 a.h.

1641 Psychological Testing and Assessment 3 a.h.

1643 Psychological Testing and Assessment 3 a.h.

1645 Psychological Testing and Assessment 3 a.h.

1647 Psychological Testing and Assessment 3 a.h.

1649 Psychological Testing and Assessment 3 a.h.

1651 Psychological Testing and Assessment 3 a.h.

1653 Psychological Testing and Assessment 3 a.h.

1655 Psychological Testing and Assessment 3 a.h.

1657 Psychological Testing and Assessment 3 a.h.

1659 Psychological Testing and Assessment 3 a.h.

1661 Psychological Testing and Assessment 3 a.h.

1663 Psychological Testing and Assessment 3 a.h.
Recreation Education

Program Chairman: John Heath
Degrees offered: B.S., M.A.

Study programs in recreation education are sponsored jointly by the departments of Physical Education for Men and Physical Education for Women.

As our society becomes increasingly leisure oriented and government becomes increasingly responsive to needs for leisure activity, career opportunities for professional recreation leaders become more numerous and diverse. There are opportunities for directors, supervisors and specialists in public recreation at all levels, local to national, in the therapy programs of hospitals, nursing homes and other health care institutions; in industrial recreation; in such youth-serving agencies as the Boy and Girl Scouts, Boys' and Girls' Clubs, and YMCAs and YWCAs; in civilian programs for the armed forces; in college and university student activities; and in correctional institutions, church organizations, athletic clubs and other institutions and agencies where recreation programming is an important function.

The Bachelor of Science Degree

A student seeking the Bachelor of Science degree must satisfy the College of Liberal Arts general graduation requirements. Those include interdisciplinary mathematics skills; core studies in literature, social science, natural science and the historical-cultural area; and at least eight semester hours, or equivalent proficiency, in a foreign language. Course requirements for the major are:

Courses in Recreation

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>28:20</td>
<td>Social Forms of Dance</td>
</tr>
<tr>
<td>27:21-22</td>
<td>Teaching Recreational Sports</td>
</tr>
<tr>
<td>27:37</td>
<td>Techniques of Swimming Instruction (or equivalent)</td>
</tr>
<tr>
<td>104:60</td>
<td>Foundations in Recreation</td>
</tr>
<tr>
<td>104:61</td>
<td>Recreation Leadership</td>
</tr>
<tr>
<td>104:62</td>
<td>Social Recreation</td>
</tr>
<tr>
<td>104:63</td>
<td>Recreational Crafts</td>
</tr>
<tr>
<td>104:110-111</td>
<td>Field Work in Recreation</td>
</tr>
<tr>
<td>104:129</td>
<td>Administration of Recreation</td>
</tr>
<tr>
<td>104:134</td>
<td>Recreation Program</td>
</tr>
<tr>
<td>104:140</td>
<td>Principles of Outdoor Recreation</td>
</tr>
</tbody>
</table>

Courses in Related Areas

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>36:33</td>
<td>Public Speaking</td>
</tr>
</tbody>
</table>

34:120 Principles of Social Psychology
65:126 Written Communications in Business

Foundations in Recreation reviews the history and philosophy of recreation and provides career orientation. 104:61 Recreation Leadership is designed to develop leadership abilities in games, team sport, and music.

In Recreation Program the student is given a real problem and develops a program to solve it. 104:140 Principles of Outdoor Recreation examines the roles of various levels of government and the needs and demands of the public in outdoor recreation.

Administration of Recreation covers budgeting, management, personnel relations and other administrative aspects of recreation. 104:110-111 Field Work gives the senior student preprofessional work experience in an agency setting appropriate to his or her best career interest.

With the general College and program requirements, the student must also develop an area of concentration and an area of skills emphasis. The student may choose from these areas of concentration:

Recreational Supervision and Administration
Designates for students preparing for positions with responsibility for organizing and administering recreation programs, facilities and departments, including positions in municipal recreation, youth-serving agencies, settlement houses and programs for armed forces.

Therapeutic Recreation
Focuses on organizing, planning and leading recreation programs in treatment and non-treatment settings for ill, deprived, handicapped or disabled persons.

Outdoor Recreation/Education
Focuses on organizing, planning, directing and administering programs in outdoor recreation and education on city, county and state levels; emphasis placed on developing cooperative, interpretative programs with schools, youth agencies and conservation districts.

The student may choose from these areas of emphasis:

Art
Music
Outdoor Recreation
Dance
Sports
Drama

Recreation Minor
Recreation Education is an excellent minor for students majoring in elementary or special education.

Honors
For admission to the Honors Program in recreational education, the student must make formal application; must have completed 30 semester hours of coursework at The University of Iowa; must have earned 11 of the 32 semester hours of credit required for the recreation education major; and must have at least a 3.0 grade-point average on all college work attempted and on all work attempted in recreation education.

To graduate with Honors in recreation education the student
must have successfully completed six semester hours of Honors work at The University of Iowa and must successfully take an Honors examination at the completion of his or her Honors work. The Department offers two Honors courses—106.1905 Problems in Honors, 106-192S Seminar: Recreation Education Research. With the permission of the chairman of his or her Honors committee, the student may take three semester hours of Honors work in another department.

Programs Leading to M.A. Degree
Programs are provided leading to the Master of Arts degree with or without thesis. Admission to these programs is granted on the basis of the student’s grade-point average on all undergraduate work attempted and score on the Graduate Record Examination Aptitude Test. To be considered for admission, the student must have earned a grade point average of 2.3 or higher on all undergraduate work attempted.

M.A. with Thesis
The program leading to the Master of Arts degree with thesis is primarily designed as the first step in a graduate program of study leading to an advanced degree. Particular emphasis is placed on techniques of research.

Undergraduate Prerequisites
The undergraduate courses listed below (or equivalents), together with elective courses in recreation and related areas sufficient to complete 30 semester hours, are required. Prerequisite credit may be given for experience and competence in techniques when such competence is demonstrated by examination.

Undergraduate Courses

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Administration of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Recreation Program</td>
<td>3</td>
</tr>
<tr>
<td>Recreation Leadership (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>Skills Area (three of the following)</td>
<td></td>
</tr>
<tr>
<td>Outdoor Recreation-Education</td>
<td>2</td>
</tr>
<tr>
<td>Social Recreation (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>Arts and Crafts (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>Recreational Sports and Games (or equivalent)</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

Any or all of the courses listed above may be taken after the student has been admitted for graduate study in recreation. They should, however, be taken at the earliest opportunity.

Requirements
The specific courses listed below, together with elective courses sufficient to complete 30 semester hours in recreation and related areas, are required for the Master of Arts degree with thesis.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.205 Techniques of Research</td>
<td>4</td>
</tr>
<tr>
<td>36.111 Elementary Social Statistics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>77.143 Introduction to Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>104.230 Seminar: Recreation Administration</td>
<td>3</td>
</tr>
<tr>
<td>104.231 Philosophy and Trends in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.401 Seminar: Thesis I</td>
<td>1</td>
</tr>
<tr>
<td>104.402 Seminar: Thesis II</td>
<td>2</td>
</tr>
</tbody>
</table>

M.A. Without Thesis
The study program leading to the Master of Arts degree without thesis is designed primarily as a terminal unit of advanced study in preparation for the administration or supervision of recreation programs.

Undergraduate Prerequisites
These are the same as for Master of Arts degree with thesis in recreation.

Requirements
The specific courses listed below, together with elective courses sufficient to complete 30 semester hours in recreation and related areas, are required for the Master of Arts degree without thesis.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>104.230 Seminar: Recreation Administration</td>
<td>3</td>
</tr>
<tr>
<td>104.231 Philosophy and Trends in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>104.301 Research in Recreation</td>
<td>3</td>
</tr>
<tr>
<td>34.110 Methods of Social Research</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>28.205 Techniques of Research</td>
<td>4</td>
</tr>
</tbody>
</table>

Staff: associate professor nephew, assistant professors Givens, Lindsay, instructor Higginbotham, Lester Lough

Courses for Undergraduates

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>104.096 Foundations of Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Basic philosophical, historical, scientific foundations and development in leisure and recreation; function and utilities of recreation facilities and survey of organizations and agencies concerned with recreation</td>
<td></td>
</tr>
<tr>
<td>104.477 Recreation Leadership</td>
<td>3</td>
</tr>
<tr>
<td>Leadership principles and techniques: program activities</td>
<td></td>
</tr>
<tr>
<td>104.322 Social Recreation</td>
<td>2</td>
</tr>
<tr>
<td>Practical application of techniques in planning, demonstrating, conducting activities and programs designed for broad variety of social groups</td>
<td></td>
</tr>
<tr>
<td>104.330 Mental Health and Recreation</td>
<td>2</td>
</tr>
<tr>
<td>Comprehensive</td>
<td></td>
</tr>
<tr>
<td>104.332 Creative Recreation and Leisure</td>
<td>2</td>
</tr>
<tr>
<td>Creative recreation and leisure activities</td>
<td></td>
</tr>
<tr>
<td>104.340 Acquired Recreational Crafts</td>
<td>2</td>
</tr>
<tr>
<td>Creative recreation and leisure activities</td>
<td></td>
</tr>
<tr>
<td>104.380 Hut Leadership</td>
<td>2</td>
</tr>
<tr>
<td>Hut leadership and ownership</td>
<td></td>
</tr>
<tr>
<td>104.391 Camp Leadership</td>
<td>2</td>
</tr>
<tr>
<td>Camp leadership and ownership</td>
<td></td>
</tr>
<tr>
<td>104.420 Survivorship and Techniques for Camp Counselor</td>
<td>2</td>
</tr>
<tr>
<td>Survivorship and techniques for camp counselor</td>
<td></td>
</tr>
<tr>
<td>104.440 Orientation to Rehabilitation Settings</td>
<td>2</td>
</tr>
<tr>
<td>Orientation to rehabilitation settings</td>
<td></td>
</tr>
<tr>
<td>106.101 Institutional and Community Recreation</td>
<td>3</td>
</tr>
<tr>
<td>Comprehensive course for first-year master's students in recreation and related areas</td>
<td></td>
</tr>
</tbody>
</table>

Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>104.101 Readings in Leisure</td>
<td>3, 4</td>
</tr>
<tr>
<td>Concentrated readings, conference and written reports related to specific problems of interest to which the student has special interest</td>
<td></td>
</tr>
<tr>
<td>104.110 Field Work in Recreation</td>
<td>3, 4</td>
</tr>
<tr>
<td>Field experiences arranged to include direct leadership, project planning and administrative procedures: prerequisites: 104.103 and permission of instructor</td>
<td></td>
</tr>
</tbody>
</table>
Area A: Jewish and Christian Scriptures
1. Old Testament
2. New Testament
3. Post-Biblical Judaism

Area B: History of Christianity
4. Early Christianity (to 1600)
5. Medieval (since 1500)
6. America

Area C: Theology and Ethics
7. Jewish
8. Roman Catholic
9. Protestant

Area D: World Religions
10. History of Religions
11. Intensive Study of Religion in India, China or Japan

Area E: Religion and Personality Development
12. Religion and Health

Master of Arts Degree
A student must have a reading knowledge of either French or German. The student may substitute another foreign language if it is related to his or her field of study and is approved by an advisor.

The formal course requirement is four courses or seminars at the 100-level or above, in each of three areas. For a total of at least 10 hours in each area and 30 hours altogether. Four hours of thesis research may be counted toward the total of hours and courses required in a manner determined by the advisory committee for each case. To the three areas, the student will be responsible for only one faculty member who will advise him or her on courses in that area. The three faculty members have the student's advisor's committee. By the second semester in this program, a student should have decided upon an area of concentration. By this time, too, the committee should have been formed.

This committee conducts the master's examination, written and oral, in the student's fourth semester of study, and intended as an examination on the 12 courses or seminars taken.

A thesis is also required. It must be approved by the advisory committee but will normally be written under the supervision of only one of the three members. It will not be formally defended except in cases where the advisory committee considers it desirable.

If his or her work shows sufficient competence, a student who has completed the master's degree may continue in the Ph.D. program by petitioning for admission to the degree objective. In such a case the student will be expected to take and pass the qualifying examinations and to meet the other requirements for the degree.

Doctor of Philosophy Degree
The particular program of each student will be designed with an advisor in areas of the student's interest in order to represent both a broad and a specialized knowledge within the field of religion and to enable the student to satisfy the following requirements.

In qualifying examinations, the student will be examined in three of the five areas listed above. For this purpose there will be three major written examinations.

After passing all three qualifying examinations (not counting the summer session), the student and adviser will set up a three-member committee for comprehensive examinations. The committee will determine two subjects for the comprehensive examinations. The student will be expected to write a dissertation in one of the three subject fields in which he or she takes the comprehensive examinations.

The student's plan of study for comprehensive examinations will include 15 hours of coursework at the 100-level or above outside the School of Religion with grades of A or B; 10 hours of coursework in one of the fields of religion other than his or her major field of interest with grades of A or B, and not more than three papers which indicate the student possesses the necessary skills required for Ph.D.-level work in his or her special subject.

A reading knowledge of French and German is required in all areas. Since these languages are tools for basic research, students are advised to acquire them as early as possible in their courses of study. Before taking the qualifying examinations, students must have passed the Graduate School Foreign Language Tests in both of these languages. If the nature of a student's specific program of study warrants it, and the faculty permits it, another language may be substituted for French or German. In addition to French and German, several areas have special language requirements. Students in New Testament, for example, must satisfy Departmental requirements in Greek. All students should consult with their advisers as early as possible concerning the special requirements entailed in their field of study.

A dissertation is also required, and not more than 12 semester hours of credit are allowed for it. An oral examination on the dissertation and related materials will be conducted by a committee of five or more members.

A student whose grade-point average is graduate study is in law falls below 3.0 will be placed on probation. If the student fails to bring that average up to 3.0 within one semester, ordinarily he or she will be disqualified from further graduate study in the School of Religion.

Faculty and Facilities
The School of Religion remains unique in the quality of its undergraduate and graduate studies in religion within the context of a state university. Its faculty members have received national and international recognition. Beyond the immediate faculty of the School itself, students in religion have access to related faculty in other departments of the College of Liberal Arts and in other colleges of the University. Lists of these faculty are so closely related that they are listed below as assistant, associate, or full professor. Besides comprehensive library collections in the areas studied in the School of Religion, there are several special collections in aspects of Judaism and Reformation studies. The library and its staff give excellent cooperation in helping religion students to obtain materials essential to their research.

Staff professors: Belknap, Boccelli, Meek, Schulte, Spalding; associate professors: Baird, Kates, Hix, Nicholls, Pachow; assistant professors: Boyd, T. Gittelsohn, Holstein, Paterson.
Reserve Officers Training Corps (ROTC)

There are two ROTC departments at The University of Iowa: Army (Military Science) and Air Force (Aerospace Military Studies). They are academic departments, and credits earned in them may count toward any degree the University offers. Neither department offers a degree, but both offer second lieutenant commissions. The commission is comparable to a degree in that it follows an academic standard in leadership and management, it is a requisite for entry into the military profession as an officer and is an important indicator of potential to employers.

Undergraduate Program

The purpose of the ROTC department is to educate cadets to be officers in the United States Army or Air Force. The subjects which do provide service background, professional skills, ethics, standards and duties, and stress military leadership and management. Cadets who are commissioned serve one year on active duty at a current starting salary of at least $4,660 per year. They serve in any one of 15 Army branches or 19 Air Force functional areas. That commissioned military service is invaluable leadership experience in other fields is borne out by the fact that a remarkably large number of men in key leadership positions of government and industry have ROTC backgrounds.

The curriculum consists of a series of variable-length, interrelated subcourses which must be taken in a controlled sequence. Most of the curriculum is open to the general college student, but some courses are limited to cadets. A student who wants cadet status must follow cadet regulations, be physically fit, not be a conscientious objector and not have any court convictions (v cautioned).

The Two-Year Program

The ROTC curriculum normally spans five years; it can be completed in three or four and a half by corpsmen using two years' coursework into one year, or two semesters' coursework into one semester, with approval of the Department head. The program also can be completed in two years, if the student attends a six-weeks' summer training camp at a military installation before beginning the last two years of the regular ROTC curriculum. No University credit is given for summer camp attendance. Priority for summer camp assignment is given by the Army to community college students, and by the Air Force to pilot or navigator candidates.

Students interested in the two-year program should consult the appropriate department at least two and a half years before their University graduation.

Service Commitment

ROTC is completely voluntary. There is no commitment to enter the military services until enrollment in the first semester of the third year. University rules apply for enrolling, adding and dropping ROTC courses. The first two years of ROTC at Iowa or the basic summer camp are a "free" look at the Army or the Air Force. Entry into the last two years of ROTC's competitive and entails a commitment to serve two years as an Army officer or four years as an Air Force officer. Cadets taking Army or Air Force flight training incur an additional one-year commitment. All recipients of ROTC scholarships accept a four-year commitment.

Advanced Placement

Service veterans and men with other ROTC experience can get full credit towards commissioning (not graduation) for some ROTC courses by providing proof of this background to the appropriate Department head.

Financial Assistance

ROTC scholarships provide tuition, books, laboratory fees and a $100-per-month tax-free subsistence allowance are available to high school seniors, ROTC cadets and qualified two-year program applicants. (See "Scholarships and Loans." ) All cadets in the last two years of ROTC receive $100 monthly as a tax-free subsistence allowance. Students attending the summer camps are paid while there and receive travel expenses. Uniforms and books for classes taught by military faculty are furnished, and a $100 uniform allowance is provided for commissions.

Cadets using National Defense Education Act loans have 12.5 percent of the loan canceled for each of the first five years of commissioning active duty service.

Commissioning

Cadets are commissioned as second lieutenants when they successfully complete ROTC and receive their bachelor's degree. Normally, they report to active duty shortly after commissioning. Officers who wish to obtain a graduate degree may delay reporting to active duty for that purpose. Cadets or officers who are accepted in the colleges of Medicine or Dentistry can com-
pilots their education and go on active duty as doctors or dentists. Cadets who pass a state bar examination can apply for a commission in the Judge Advocate General Corps. Doctors, dentists and JAG officers enter active duty as captains.

**Graduate Programs**

ROTC does not have a graduate program; however, graduate students can enter the two-year program and receive all financial benefits except scholarships.

**Special Activities**

The military departments sponsor several special activities, which contribute to cadre and university life. The Pershing Rifles, Black Berets and Arnold Air Society are military fraternal organizations engaging in military inter-collegiate competitions and service activities. The Coedellers and Angel Flight are women's organizations auxiliary to Pershing Rifles and Arnold Society and participate with them in many activities. The department also sponsors a small-bore rifle club.

ROTC cadets compete for individual national and local awards presented for outstanding achievement in leadership, academics, citizenship, athletics and military proficiency. These awards are formally presented at appropriate ceremonies. (See "Awards, Honors and Prizes").

The department sponsors ceremonial and social activities throughout the year. The primary ones are the Military Ball, Joint Awards Ceremony and Governor’s Day.

**Aerospace Military Studies**

Department Head: Lt. Col. Raymond B. Marquess

The normal sequence of courses required for successful completion of the Air Force ROTC program includes courses from other departments in communication skills, history and political science. Variations in the program outlined below may be approved by the Department head.

**First Year**

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace Military Studies</td>
<td>s.b.</td>
</tr>
<tr>
<td>23:11</td>
<td></td>
</tr>
<tr>
<td>23:96-97 AFROTC Training</td>
<td></td>
</tr>
<tr>
<td>10.1, 2 or 3 Rhetoric Skills</td>
<td>4</td>
</tr>
</tbody>
</table>

**Second Year**

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>30:13 Introduction to World Politics</td>
<td>4</td>
</tr>
<tr>
<td>23:96-97 AFROTC Training</td>
<td>0</td>
</tr>
<tr>
<td>23:11 Aerospace Military Studies</td>
<td>1</td>
</tr>
<tr>
<td>Cadets who pass qualification tests and are selected on a competitive basis attend summer field training session between third and fourth years. Those successfully completing field training may continue into last two years of Air Force ROTC.</td>
<td></td>
</tr>
</tbody>
</table>

**Third Year**

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>23:81 Growth and Development of Aerospace</td>
<td>3</td>
</tr>
<tr>
<td>23:96-97 AFROTC Training</td>
<td>0</td>
</tr>
</tbody>
</table>

Third-year cadets required to take one of select group of 100-level history or political science courses during second semester.

**Fourth Year**

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>23:33-84 Air Force Leadership and Management</td>
<td>6</td>
</tr>
<tr>
<td>23:97-97 AFROTC Training</td>
<td>0</td>
</tr>
<tr>
<td>23:50 Flight Instruction</td>
<td>2</td>
</tr>
</tbody>
</table>

Flight ground school course requires for fourth-year cadets in flight instruction program.

**Special Facilities and Equipment**

Throughout the academic year, classroom instruction is supplemented with one- or two-day visits to air force bases. Most cadets have the opportunity to make at least one visit each semester. Travel is generally to Air Force aircraft flown by AFROTC instructors. Briefings and tours by base personnel with further explanation by the AFROTC instructor who accompanies each group give added dimension to these trips.

**Faculty**

All Air Force ROTC instructors are professional Air Force officers who are assigned for a three-year tour of duty with the required approval of the dean of the College of Liberal Arts. It is Air Force policy to nominate only outstanding officers with advanced degrees to AFROTC instructor duty. Normally at least one officer is pilot or navigator rated. All AFROTC instructors must complete the comprehensive Air Force Academic Instructor Course.

**Unique Program Attributes**

Before a cadet begins his junior year of Air Force ROTC, he attends a four- or six-week camp session offered at Air Force bases across the country. This field training includes courses in cadre orientation, survival training, junior officer training, aircraft and aircrane indoctrination, physical training, organization and function at an Air Force base, career orientation, small arms familiarization and first aid.

Staff: AS-100 and AS-200 and flight program instructor Major Cody; commandant of cadre and AS-400 instructor Captain Brown; AS-300 Instructor Captain Woodchill

**Military Science**

Department Head: Colonel Robert S. Kuhly

Variations in the following normal military science curriculum may be permitted by the Department head. Only cadets may take courses above 23:90

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>24:10-20 Fundamentals of Leadership and Management</td>
<td>3</td>
</tr>
<tr>
<td>23:96-99 Leadership Laboratory</td>
<td>0</td>
</tr>
</tbody>
</table>

**Second Year**

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>23:34-44 Applied Leadership and Management</td>
<td>4</td>
</tr>
<tr>
<td>23:98-99 Leadership Laboratory</td>
<td>0</td>
</tr>
</tbody>
</table>
Cadets passing qualification tests and selected on a competitive basis may enter advanced courses:

**Third Year**
23-15-96 Advanced Leadership and Management 5
23-59-99 Leadership Laboratory 0
Between third and fourth years all cadets attend six-week summer camp or nine-week ranger school and may volunteer for three-week parachute school; participants paid approximately $600 or $600 and travel expenses.

**Fourth Year**
23-87-88 Theory and Dynamics of the Military Team 4
23-99-99 Leadership Laboratory 0
Cadets in advanced course must take at least one course in Department of History or Department of Political Science; qualified fourth-year cadets may volunteer for 23/95 Army Flight Instruction

**Special Courses**
The military science faculty conducts seminars for cadets as arranged (for no credit) on such military subjects as advanced map utilization, mortar and artillery fire direction, communications, physical training, orienteering, large unit tactics, war gaming, racial problems in the military, chemical and nuclear weapons employment, field sanitation, cold weather survival techniques and mine warfare.

**Special Facilities and Equipment**
The Department utilizes the Coyville Reserve Training Area, two farms near Iowa City, and Polkwood Park for practical field problems. A variety of military equipment such as helicopters, PM radio and minis is used in the practical leadership exercises and to support the Pershing Rifles.

**Faculty**
All faculty members are Army officers who were nominated to and accepted by the University prior to assignment. All have at least five years of commissioned service and are among the top third of all Army officers. They average two years of command experience, one and a half years of combat experience, one and a half years of teaching experience and one and a fourth years of postgraduate professional education, and are qualified in at least one military technical specialty area.

**Unique Program Aspects**
The Department annually conducts an all-day field exercise in the fall and a six-hour command post exercise in the spring. Military equipment is used in both exercises.

**Staff commands of cadets Ll. Col. Collins (field artillery); chief instructor of advanced course Maj. Broch (infantry); advanced course instructor Maj. Pratt (corps of engineers); Capt. Mitchell (armor); chief instructor of basic course Capt. Jackson (infantry); basic course instructor Capt. Komar (field artillery)**

**Aerospace Military Studies Courses**

**General Military Education Program**

**Freshmen Year**

**Aerospace Military Studies Courses**

**General Military Education Program**

**Freshmen Year**

**Aerospace Military Studies Courses**

**General Military Education Program**

**Sophomore Year**

**Aerospace Military Studies Courses**

**General Military Education Program**

**Junior Year**

**Aerospace Military Studies Courses**

**General Military Education Program**

**Senior Year**

**Aerospace Military Studies Courses**

**General Military Education Program**

**Military Science Courses**

**1010 Military Science I**

**Introduction**

**1010 Military Science I**

**Introduction**

**1200 Military Science I**

**Introduction**

**1200 Military Science I**

**Introduction**

**2200 Military Science I**

**Introduction**

**2200 Military Science I**

**Introduction**
Russian

2244 Military Science II
1 s.h.
Introduction to small unit tactics and operations; mission and organization of basic military unit; the principles of offensive and defensive tactics concerning formations, maneuvers, communications; troop-leading procedures, principles of combat intelligence; and reconnaissance

2 s.h.
Case studies in military leadership; study of psychological and sociological factors affecting human behavior among military personnel; analysis of small unit tactics and military training principles, including fundamentals of education psychology, techniques in planning, organizing and conducting instruction, leadership of Army and military leadership, application of leadership principles and management techniques to tactical environment, including principles of war and fundamentals of offensive and defensive operations, troop-leading procedures, combat orders and poste of duty

2245 Military Science III
2 s.h.
Continuation of 2244

2247 Military Science IV
2 s.h.
Factual data of staff organization, mission and organization, coordination and control techniques and functions, Army administration and logistics; military law from viewpoint of unit commander, ethics, ethics, and responsibilities of officers

2248 Military Science V
2 s.h.
Coordination of 2247

2249 Army Flight Instruction
2 s.h.
Flight instruction for qualified, voluntary cadre, 36 hours of ground school, including navigation, weather instruction; flight phase includes 30 to 70 hours of flight instruction by Iowa City Flying Service, operation of course qualifies student to take examination for FAA private pilot's license; all expenses paid by U.S. Army

For All Cadets

2249 Leadership Laboratory
8 s.h.
Course planned and conducted by officer cadet wing, under supervision of military science faculty, small unit tactics, drill, drill, drill team, leadership, and drill team, small unit tactics and leadership; all cadets in platoon level; number of leadership exercises vary

2249 Leadership Laboratory
8 s.h.
Coordination of 2249

Russian

Department Chairman: Norman Luxenburg

Degree offered: B.A., M.A.

The purpose of the Russian program is to provide students training in both the written and spoken Russian language and in Russian literature. An important secondary objective of the program is to encourage an appreciation of Russian literature. Students study of Russian is seldom and as in itself but rather a means to some other vocation. The Department encourages all of its beginning students to pursue a joint major and to develop their Russian in other fields.

Many students find a need for Russian in their work in natural sciences, humanities, library science and the social sciences. Others take Russian because they are curious about another culture, some intend to use the language while traveling. Some students major in Russian before going into law or another profession—some as preparation for graduate work in comparative literature, English or social sciences. Russian majors with the B.A. and the required education courses may teach, but the number of teaching jobs in secondary schools is small; in Iowa, 11 high schools offer Russian.

Jobs for Russian majors in government are available, but not plentiful. Translation work is available for outstanding students, but jobs for translators are not easy to find.

Bachelor of Arts Program

Students who major in Russian must meet the general requirements for a degree in Liberal Arts and earn at least 34 semester hours of credit in advanced Russian courses:

241:105-206 Second Year Russian 8 s.h.
241:112-113 Third Year Russian 8 s.h.
241:113 Advanced Composition and Conversation 3 s.h.
248:151 Russian Literature in Translation (1800-1860) 3 s.h.
2 of 241:152 Russian Literature in Translation (1860-1917) 3 s.h.
241:181 Readings in Soviet Literature 3 s.h.
241:171-172 Readings in Russian Literature 6 s.h.
241:191 Russian Civilization 3 s.h.

For a more complete area background, Russian majors are urged to include related courses in economics, geography, history or political science among their elective courses.

The requirements for a minor in Russian can be fulfilled by eight semester hours of second- and third-year Russian.

The major emphasis of the graduate program at Iowa is literary, though improvement and refinement of the students' Russian is not neglected. Graduate students therefore study the development of Russian literature, both as a national phenomenon and as a part of European literature, and are expected to analyze writers' styles, perceive literary devices, recognize literary influences and develop the ability to sound criticism of form, content and language of works in all genres. All Master of Arts degree candidates are responsible for having read the works on the Department's master's reading list of Russian literature.

Candidates for the master's degree must have completed the equivalent of the undergraduate major in Russian. Deficiencies in previous training may be removed by taking appropriate courses.

Candidates for the master's degree are required to complete a minimum of 30 semester hours of graduate work, with or without a thesis. This program consists of courses over and above those which constitute an undergraduate major in Russian and should include courses in related fields such as comparative literature, history, philosophy and other languages. Four to eight semester hours may be received for thesis preparation. The candidate must pass a written and oral examination; they must also demonstrate a reading knowledge of either French or German.

The program for the M.A. must include the following courses or their equivalents:

241:113-114 Advanced Composition and Conversation 6 s.h.
241:211-212 19th Century Russian Literature 6 s.h.
241:231 Soviet Literature 3 s.h.
241:249 Prosemen, Research Methods 2 s.h.
241:261 History of the Russian Language 3 s.h.
or 241:263 Old Church Slavonic 3 s.h.

Two seminars and one course in pre-nineteenth century Russian literature.

The Department offers introductory courses in the Russian language for students who have specific language requirements.
Science Education

There are special reading courses designed to give students from other fields an opportunity to acquire a reading proficiency of Russian in either the social or natural sciences. A second-year scientific Russian course is offered for students in sciences who need to develop reading ability for research purposes.

Some classes are open to University students from all departments and are offered in English. These include survey courses in Russian literature and civilization, readings in Soviet literature and a class on Tolstoy.

Special Activities
Each year the Department presents several guest lecturers and sponsored films. Students sometimes put on Russian plays and belong to Russian Circle, an organization of graduates and un-
dergraduates for social activities. The Department also provides a coffee room where students have the chance to practice speaking and improving their Russian with other members of the Department.

The Language Laboratory
The University Language Laboratory provides facilities for lan-
guage learning, teaching and research. Equipment in the lab includes standard and short wave radios, tape recorders, record players, soundproof recording rooms and drill rooms. An elec-
tronic classroom, a soundproof workroom and a library of tape and disc recordings are also available.

Study Abroad
Students who wish to broaden their education through study abroad are encouraged to do so. The Department assists qual-
ified students in selecting foreign study programs and institutions best suited to their educational objectives. Frequently, students from Iowa have studied at a summer language institute in Munich, Germany, where an Iowa faculty member is on the staff.

The Honors Program
Russian majors of junior or senior standing with a grade-point average of at least 3.0 both in Russian and overall may enroll in the Honors Program in Russian. An extensive reading pro-
gram with discussions, regular reports and a semester paper comprise each work unit of two semester hours. Students may take up to eight semester hours of Honors in Russian. A compre-
hensive examination is given in the senior year.

Staff: professor Scribner, Luxembourg; assistant professor Weber; instructors Parrott, Gifford

Courses for Undergraduates and Graduates

41101 Elementary Russian 4 sh.
41102 Elementary Russian 4 sh.
Prerequisites: 41101 or equivalent
41103 Second-Year Scientific Russian 4 sh.
Emphasis on reading scientific and technical Russian material; for students, espe-
cially those requiring in sciences, who want primarily to develop reading ability for their major study as well as to satisfy the language requirement for B.A. degree and desiring further training in active use of the language; prerequisites: 41102 or equivalent
41104 Second-Year Scientific Russian 4 sh.
Prerequisites: 41103 or equivalent
41105 Second-Year Russian 4 sh.
Standard second-year course recommended for students satisfying their foreign language requirement for B.A. degree and desiring further training in active use of the language; prerequisites: 41102 or equivalent

41106 Second-Year Russian 4 sh.
Prerequisites: 41105 or equivalent
41107 Supplemental Russian Reading 2 sh.
Prerequisites: 41105 or equivalent and consent of instructor
41108 Special Readings 2 or 3 sh.
Prerequisites: 15 semester hours of language instruction
41111 Intermediate Composition and Conversation 4 sh.
41113 Intermediate Composition and Conversation 4 sh.
Prerequisites: 41105 or equivalent
41114 Intermediate Composition and Conversation 3 sh.
Prerequisites: 41113 or equivalent
41130 Teaching Methods, Russian 3 sh.
Sem 19-20
41322 Russian Pronunciation 1 sh.
41323 Russian Pronunciation 1 sh.
41501 Russian Literature in Translation (1800-1860) 3 sh.
Conducted in English with as 186-111
41502 Russian Literature in Translation (1860-1917) 3 sh.
Conducted in English, same as 186-112
41508 Tolstoy 3 sh.
Conducted in English
41508 Dostoevsky 3 sh.
Conducted in English
41711 Readings in Representative Russian Literature 3 sh.
Conducted in Russian, prerequisite: 41202 or equivalent
41712 Readings in Representative Russian Literature 3 sh.
Conducted in Russian, prerequisite: 41202 or equivalent, continuation of 41711, 14 credits
41811 Readings in Soviet Literature 3 sh.
Conducted in English
41812 Russian Civilization 3 sh.
Conducted in English
41819 Honors Program Russian 3 sh.
May be repeated to maximum of eight semester hours, prerequisite consent of Department

Courses Primarily for Graduates

41201 18th-Century Russian Literature 2 sh.
41202 19th-Century Russian Literature 2 sh.
41206 Old Russian 2 sh.
41207 Medieval Russian 2 sh.
41216 19th-Century Russian Literature 3 sh.
Continuation of 41115 but may be taken as independent unit
41290 Russian Drama 3 sh.
41291 Soviet Literature 3 sh.
41294 Literature and Criticism 3 sh.
41295 Possenhofer, Research Methods 2 sh.
41297 Sentner, Slavonic, Scandinavian 2 sh.
41298 Sentner, Tolstoy 2 or 3 sh.
41299 Sentner, Pushkin 2 or 3 sh.
41294 Sentner, 20th-Century Literature 2 or 3 sh.
41398 Sentner, Turgeniev, Goncharov 2 sh.
41399 Sentner, Emile and Russian Literature 2 sh.
41397 Sentner, Russian Drama 2 sh.
41391 History of the Russian Language 3 sh.
41393 Old Church Slavonic 3 sh.
41406 Special Work 3 sh.
41510 Reader's Thesis 3 sh.

Science Education

Coordinator: Robert E. Yegge

The fundamental purpose of the various plans of study in science education is to improve science teaching by strengthening the content backgrounds and professional competence of the stu-
dents enrolled. There is concern for science instruction at all
academic levels—kindergarten through graduate programs—as well as research in science education. The Department is the center for several institutes on the campus, curriculum committees and professional societies.

Current research being carried on at the Science Education Center includes philosophical and historical perspectives of science education, learning theory and science education, evaluation of current programs in science education, science curriculum design in the elementary school, science curricula at all education levels, teacher characteristics and student learning, and teaching approaches and their effects on learning. The graduate programs are sponsored jointly by the College of Liberal Arts, the College of Education and the Graduate College. The general requirements regarding grade-point averages for admission to the Graduate College apply.

Master of Arts in Teaching Degree

The M.A.T. degree assumes no previous work in education and is primarily designed for persons who want to become teachers after they have completed the bachelor's degree. Courses in general psychology and American government should have been completed before applying for such degree candidacy. Eighteen semester hours are required in earth, life or physical sciences. Credit for 91:128 Meeting of Science and 91:130 History of Science must be included in the 18 semester hours, unless equivalent courses were a part of the undergraduate program of the candidate. Credit in mathematics can be approved by the advisor. In education, 21 semester hours are required for those who have completed three or more semester hours of undergraduate education courses.

Master of Science Degree without Thesis

The nonthesis program is the one which is most appropriate for teachers who plan to continue in teaching. A total of 38 semester hours is required for the nonthesis program. The program consists of 26 semester hours of graduate work in at least two science areas chosen from astronomy, biochemistry, botany, chemistry, earth science, microbiology, physics, physiology, zoology, geology and radiation research. A minimum of 10 semester hours must be completed in each of two areas. Twelve semester hours of professional education courses are required.

Master of Science Degree with Thesis

The thesis program is the appropriate one for candidates who plan to continue for the specialist degree or the Ph.D. A total of 30 semester hours is required for the thesis program. It consists of 18 semester hours of graduate level science courses from the departments mentioned in the nonthesis program. Two areas of science must be selected where no less than eight semester hours are completed in any one field. Ten semester hours of professional education courses are required. The thesis may carry two to four semester hours of the 10 semester hours of science or science education, and may be counted as part of the 20 semester hours of science or the 10 semester hours in education.

Comprehensive written examinations are required in all three master's programs. The written examination consists of examinations in the fields in which the candidate has distributed his work. These are intended to be comprehensive examinations and are submitted by staff members in the fields in which the candidate is concentrating on his work. An oral examination may be required by the examining committee. For those persons in the thesis program, an oral defense of the thesis must be scheduled and approved by three members of the graduate faculty.

Specialist Degree

The Ed.S. is an intermediate degree between the master's and the Ph.D. program. It is recommended for supervisors, state, regional or local, as well as for instructors in community colleges and for small four-year liberal arts colleges. The degree consists of 60 semester hours of work beyond the bachelor's degree, of which 28 semester hours are in supportive sciences, 10 semester hours in related fields and 22 semester hours in science education, including research and internship credit. The comprehensive consists of a three-hour examination in a science area, a three-hour examination in a supporting field and a three-hour examination in science education. The graduate committee must be composed of the science education adviser, a professor from a science area, a professor from a related area and a professor from a second science area or from science education. An oral defense of the research project must be scheduled with and approved by three professors from the graduate faculty.

The Doctor of Philosophy Degree

The candidate for the Ph.D. in science education is expected to have demonstrated ability in scientific or educational research by the completion of a master's thesis. Previous teaching experience is assumed for all students and additional teaching experience are generally incorporated into the degree program. The student should have a general knowledge of the fundamentals of at least one science area, as evidenced by the completion of a general concentration in one of the science areas. Each candidate will have at least the equivalent of a master's degree in education as well as in one area of science. Both educational and scientific research competencies are to be demonstrated by a study which could result in a publication. The Ph.D. dissertation will be a scholarly work which will be the culmination of the candidate's principal research effort. Minimum requirements beyond the master's degree include:

- Twenty-eight semester hours in one of the following areas: biological sciences, physical sciences or earth sciences; should not emphasize the same area as that of the past training of the candidate, unless the candidate is preparing himself or herself specifically for college teaching in one field in science.
- Sixteen semester hours in another field of science: botany, chemistry, geology, mathematics, physics, astronomy, zoology, archeology, history and philosophy of science, radiation research, physiology, microbiology.
- Two semester hours of special research in science.
- Twenty-eight semester hours of education, including science education and educational research.
There are no specific skill requirements such as foreign language; however, the student and advisor plan a program to provide competency in educational statistics and mathematics.

The comprehensive examinations consist of a four-hour examination in science education, a three-hour examination in a major area of science and a three-hour examination in a minor area of science.

Financial Aid

Provision is made for advanced graduate students in science education to serve as laboratory instructors in some University science courses and as instructors in the College of Education. Several research and teaching assistantships are offered in the field of science education. These are in addition to financial aid available to University students generally (see "Scholarships and Loans" and "Graduate College").

Staff: Professor Yager; associate professor Cowman, Phillips; assistant professor Townsend, Sharp

Advisory Committee: Hubbarry (Botany), Duke (Chemistry), Glenister (Geology), Van Allen (Physics and Astronomy), Jones (College of Education), Stau (College of Liberal Arts), Yager (General Science Program)

Courses

Specialization in science education are described in the College of Education. 71, and 75 credits. The following general science courses may also be included in the program.

87/103 Laboratory and Field Study in Earth Science or.generally.
Primary for seniors with minimum entrance in earth science, brief systematic review of principles of geological emphasis laboratory and field work dealing with rocks, fossils, hazards, and polar land geology.

87/105 Laboratory Study in Botanical Science or. genera.
Specifying design for graduates in botany students with modern theories of ecology, helpful consideration made of new material in Botanical Science Curriculum Study.

87/104 Laboratory Techniques in Biology or. general.
Specifically designed for laboratory experiments, including solution, culture, and organization.

87/106 Seminar in Comparative Physiology or. general.
Provide background for understanding of modern physics, especially important in secondary school, reference made to 1972 national progress in physics and related fields.

87/107 General Science Education or. defendant.
Prepares background for understanding of modern physics especially important in secondary school, reference made to 1972 national progress in physics and related fields.

87/108 Modern Concepts in Chemistry or. general.
Up-date and encourage current backgrounds of the student, attention given to new concepts especially in chemical bonding.

87/109 Teaching Methods in Science Education or. defendant.

Review of research in field special reference to applicability in teaching.

87/110 Techniques or. defendant.

87/111 Field Study in Science Education or. defendant.

87/112 Problems in Integrating the Teaching of Environmental Science 3 a.h.

First-semester course in conservation of natural resources, emphasis on the development of the environmental awareness of the student.

87/110 History of Science 2 or 3 a.h.

Second half of the course will include a study of the development of science in ancient civilizations.

87/110 Problems in Teaching Science 2 or 3 a.h.

Instruction in chemistry classroom design in science education, identification of research problems, assistance with planning projects, required of all M.S. candidates and Ph.D. candidates. If not out of M.S. program, must be 70/120.

Social Studies Education

Chairman: John W. Neaver
Degrees offered: B.A., M.A., Ph.D.

Undergraduate Program

The major in social studies introduces the student to social science on our campus. Standing by itself, it is a broad, interdisciplinary, well-rounded course providing an excellent foundation for careers in law, social work, religious, urban planning and development, and government service at all levels. Graduates of the program are usually successful in positions of responsibility.

The program's major purpose, however, is to provide a broad, yet comprehensive background for those preparing to teach in secondary education. Together with the professional requirements of certification, the major meets the standards established by the North Central Association of Colleges and Secondary Schools.

There is a wide field of feasibility in the program, and in consultation with an advisor, it can be tailored to the needs and interests of the individual student. All of the coursework is taken within the seven cooperating departments: Anthropology, Economics, Geography, History, Political Science, Psychology, and Sociology.

The B.A. in Social Studies consists of a total of 52 semester hours distributed as follows: 12 semester hours in history, including a minimum of eight semester hours in the history of the United States; eight semester hours each in the Departments of Economics, Political Science, Sociology, and Geography; and eight semester hours of elective work which may be done in anthropology or psychology or may be distributed among one or more of the seven departments.
Students pursuing a social studies major will be engaged in survey courses introducing them to the various social sciences. But many of the departments offer independent study and readings as alternatives to formal classes. There is no separate Honors Program in social studies. Students who qualify are encouraged to do their Honors work in the social science department. In which they wish to concentrate their work.

Admission Requirements

Students wishing to major in social studies must have the permission of an advisor. Transfer students must have earned a minimum grade-point average of 2.5 on all work done in the subjects of the seven cooperating departments in order to be admitted to the program. Approval of candidacy for the bachelor's degree will be granted only to students who have a 2.5 grade-point average in all college work undertaken in the cooperating departments.

Graduate Programs

Master of Arts

The inter-disciplinary nature of the Master of Arts in Social Studies Education degree is of special interest to classroom teachers in secondary education, to instructors in junior and community colleges, and to educators wishing to concentrate in social studies curriculum and instruction.

Graduates of this program are at work as classroom teachers and chairmen of social studies departments in junior and senior high schools. Some are serving as curriculum consultants for school districts, while others are staff members in community colleges. A few have found the degree excellent preparation for their professional work in various correctional and penal institutions.

For a small number the master's program has provided access to civil service positions at various levels of government.

In the master's program the candidate may elect to take the degree with or without thesis. A minimum of 38 semester hours is required under either plan. These 36 semester hours may be distributed in one of two ways.

In Plan A the candidate does his or her work in three of the seven cooperating departments: Anthropology, Economics, Geography, History, Political Science, Psychology, and Sociology. A minimum of 10 semester hours is required in each of the three fields chosen. The remaining eight semester hours may be taken in one of the three fields or distributed among them.

In Plan B the candidate may elect to take the degree with or without thesis. Under this plan the student takes a minimum of 10 semester hours in each of the two social sciences he or she has chosen, and a maximum of 10 semester hours in education. The remaining eight semester hours may be taken in one of the social science fields or be distributed between them.

Under either plan, a minimum of nine semester hours must be taken in graduate courses bearing a number of 200 or over. It is intended that at least one such course be taken in each of the three fields included in the program.

Comprehensive written and oral examinations are required of the candidate. The written portion consists of a six-hour examination over the fields in which the candidate has distributed his or her work. These are intended to be comprehensive, not course examinations, and are submitted by staff members from the fields in which the candidate is concentrating. The oral portion is conducted by the candidate's committee.

Candidates in this program may have a wide variety of educational experiences, depending on the fields of study chosen. Small group instruction, seminar work, independent study and reading, experience with computers, internships and laboratory work are among the possibilities.

Admission Requirements

A student wishing to major in social studies for a master's degree must present a minimum of 20 semester hours of credit in the area of social studies earned as an undergraduate in an accredited institution. The transcript of the applicant must show a minimum grade-point average of 3.0 on all work undertaken in the social studies up to the time of application. After having declared a social studies major, a student must maintain a 2.5 grade-point average in all work undertaken.

Doctor of Philosophy

Graduates with a doctorate in social studies education can be found in a variety of professional positions. Some have gone into administration in institutions of higher education and are serving as presidents, provosts or deans of faculty or graduate schools. Some are department chairmen in colleges of education or curriculum directors in large school districts. Many are engaged in in-service education programs in colleges and universities. Quite a few are college instructors in their areas of academic concentration.

As is true of the bachelor's and master's degrees, the doctorate is an interdisciplinary program administered through the College of Education. The emphasis is on broad but thorough grounding in two of the academic areas chosen from history and the social sciences, and specialization in some aspect of professional education.

The program consists of a minimum of 90 semester hours of coursework and dissertation credit beyond the bachelor's degree and exclusive of tool requirements established by the College of Education. These credits are to be distributed among two of the cooperating disciplines—anthropology, economics, geography, history, political science, psychology and sociology—and in the field of professional education. Depending upon the background and needs of the candidate, work in the two disciplines chosen will consist of between 45 and 55 percent of the 90-semester hours; work in education, between 25 and 40 percent of the total.

Depending upon the areas of study chosen by the candidate, there will be opportunity for regular class work, small group instruction, internship, independent study, field work, and laboratory and computer experience. Seminar and advanced work in courses numbered 200 or above is required in each of the three areas chosen for study.

After most of the coursework has been completed, a qualifying examination of approximately nine hours—three hours in each of the fields chosen for study—is required. When the dissertation has been completed, an oral examination in its defense will be conducted by the committee as a whole.

The research problem may be in either of the two academic
fields chosen for study, or it may be related to social studies education.

Admission Requirements
Candidates for the doctorate in social studies education must have completed a bachelor's degree in history or one or more of the social sciences at an accredited institution. A master's degree in history, a social science or education is also required. It is expected that performance on the Graduate Record Examination be satisfactory, and that the academic record of the candidate will give promise of scholarly success.

Special Facilities
The cooperating departments and the College of Education are recognized as strong academic divisions, and candidates in social studies education have access to departmental and College staff and facilities. Special agencies and services are also available, such as the University Hospital School, the Iowa Center for Education in Politics, the Bureau of Educational Research, the Institute of Public Affairs, the Iowa Educational Information Center, the Curriculum Laboratory, the Statistical Laboratory, the Reading Clinic and other facilities.

The faculty members who serve as social studies education advisors and coordinators are experienced classroom teachers whose advanced degrees have been earned in history, the social sciences and education. All are active in professional organizations, in consultative work and in working with students in curricular revision.

Staff: professor Haeftner; associate professor Flisch; assistant professor Olmo

The Committee on Social Studies Education consists of the chairman of the cooperating department—Anthropology, Economics, Geography, History, Political Science, Psychology and Sociology—or their designated representatives.

Course Descriptions
Coursework undertaken for social studies education degrees consists largely of offerings in comparing fields—anthropology, economics, geography, history, political science, psychology and sociology—and the College of Education. However, candidates for advanced degrees are encouraged to elect one or more courses labeled in the area of social studies education.

M/A/201 Individual Instruction in Social Studies Education 0-6 cr. Individualized instruction, field studies and individual project; focus in history and social science or in problems of professional education; may be repeated; prerequisite: consent of instructor.

M/A/301 Social Studies Education 0-6 cr. Reading and discussion on significant developments in history, social science and social studies education; elementary or secondary; research paper required; prerequisite: consent of instructor

Social studies staff members also teach courses in College of Education

Social Work
Acting Director of School Ralph E. Anderson
Degrees offered: B.A., M.S.W.

Social work practice is characterized by variety. Most positions involve working with individuals, groups, organizations and communities, with wide differences in mixture and emphasis. Likewise, the scopes of practice are quite varied. All levels of government, from local to international, employ social workers, as do a range of nongovernmental agencies. Social work practice is found in settings where the function is predominantly social work service and also in settings where the central function is mainly other than social work (e.g., medicine or education). There is also some private practice.

The School is affiliated with the graduate and undergraduate sections of the Council on Social Work Education, and is approved by the Council's Commission on Accreditation.

Undergraduate Program
The undergraduate program in social work is primarily intended to provide a broad general education along with basic preparation for those desiring to enter social work practice directly. Several groups of student goals are encompassed—employment in the social welfare field (where the B.A. degree is sufficient for entrance into such fields as public welfare, family and childrens services, corrections, certain group-serving organizations); providing a base for graduate study especially in social work; providing knowledge for employment in allied helping professions; and basic preparation for informed citizenship activities. The program is a four-year course of study. With the exception of the social service courses taught by the social work faculty, it consists of regular courses in other departments of the University.

Advisory Service
The student may declare the major in social work when enrolling as a freshman or at any later time when completion of the major remains feasible. This declaration should be made to the Liberal Arts Advisory Office, whereupon the student will be assigned to an undergraduate advisor on the faculty of the School of Social Work.

Honors in Social Work
The School of Social Work has an Honors Program leading to a Bachelor of Arts with Honors in Social Work. Students interested in such a program should contact the School of Social Work.

Requirements
Undergraduate students majoring in social work must satisfy the general College of Liberal Arts basic skills, core and foreign language requirements, excluding the social science core. The following courses are required for the major:

300:01 Introduction to American Politics or 300:100 American Political System 4 s.h.
31:1 Elementary Psychology 4 s.h.
31:3 General Psychology 4 s.h.
34:1 Introduction to Sociology: Principles 4 s.h.
6E:1 Principles of Economics or 6E:2 or 6E:106 4 s.h.
42:168 The Field of Social Work (same as Sociology 141) 4 s.h.
42:171 Social Welfare Policy I 4 s.h.
42:176 Introduction to Social Work Methods 4 s.h.
42:193 Field Experience 3 s.h.
A minimum of 15 semester hours of coursework is required in one department from the 12 listed below. Most students select either sociology or psychology for this purpose. One of the above specifically required social science courses can be applied toward this requirement if the choice for the 15 hours is in a department of the social sciences. At least six hours are required from one or more departments in the other group.

Social Science
- Economics
- Geography
- Political Science
- Psychology
- Sociology
- Anthropology

Humanities
- American Civilization
- English
- European Literature and Thought
- History
- Philosophy
- Religion

Graduate Program

The primary objective of the School is to have each student achieve a foundation for entering and growing in professional service. Students are expected to master basic knowledge and skill underlying the profession and become self-sufficient practitioners able to assume responsibility for their continued education throughout a lifetime. This implies a sensitivity and responsiveness to changes occurring in our world, and particularly to the changes arising from these changes in both their personal and social aspects. The School emphasizes the diversity of role performance of the social worker and the common and differential use of knowledge. It recognizes that social work practice requires competency in working with individuals, groups, and communities.

The School has several distinguishing characteristics. It is one of a limited number of schools which has a 16-month program encompassing the summer months. Each student is assigned to a single practicum base which takes place within the context of the community with teaching-learning experiences drawn from a wide range of resources in that community. A student's practicum base may be in one of the community agencies or in a Training Center, located in one of three geographical areas and administered by the School through its own faculty members.

Individualization of students' needs and interests is provided through the option available in the development of his or her educational program as he or she fulfills the basic requirements of the School and through provision for electives within the School and the University.

The student begins the program late in August and completes it in late December of the second year. All students are on the Iowa City campus during the first semester of the first year, spending full time in classroom courses. Beginning the spring semester of the first year and continuing until late October of the final semester, the student is in the practicum and has concurrent classroom courses. The latter part of that semester is used for completion of the comprehensive requirement and coursework. Educational Centers are maintained in Iowa City and Des Moines. After the fall semester of the first year, classes meet in these Centers and each student attends one or more of his or her practicum placement requirement.

The graduate curriculum is organized into four interdependent sequences of courses: Social Work Practice, Social Welfare Policy, Human Behavior in the Social Environment, and Practicum. All students take courses in each of the sequences, and each student selects areas for special study. A program of study is organized to meet the requirements of the School and to accommodate the educational goals of the individual student. A student may be waived out of required courses by satisfactorily completing the testing procedures administered by the director of the respective course instructors. Required courses are indicated in the course descriptions by an asterisk. The research requirement, in addition to the basic course, is met through a seminar in social work research, participation in ongoing research or completion of an individual or group project. In addition, during the second year students are required to complete at least one unit of study in social welfare policy, social work practice and human behavior, and one unit in each of the following human systems: individual, family, group, organization, and community.

Requirements

A minimum of 52 semester hours of credit* is required in graduate courses approved by the School, with:

- At least 24 of the semester hours earned in residence at The University of Iowa;
- A minimum cumulative grade-point average of 2.50 on a 4.0 scale;
- Satisfactory completion of all required coursework, including the research requirement;
- No credits by correspondence; and
- A final comprehensive requirement late in the second year of study.

Upon faculty recommendation, a student who has completed a clearer equivalent of part or parts of the M.S.W. program during the junior and senior undergraduate years may be permitted to qualify for the degree with less than 51 semester hours of graduate credit, but in no case with less than 40 hours. Any student who may wish to omit a specific course can, upon written request, have opportunity for a precourse examination.

Admission

Applications for admission are accepted after October 1 for entrance the following August, which is the only starting time for the full M.S.W. program. Early application is recommended; admissions may have to be closed shortly after January 1.
Courses Primarily for Undergraduates

46202 Elementary Statistical Concepts 3 h. a.r. Rationale and use of various descriptive statistical models, including measures of central tendency, variability and correlation; introduction to selected inferential statistical concepts and social work research.

46205 Theory of Social Work 4 h. a.r. Social welfare in social institutions; historical development; systems of social work practice; problems of mental health; race and sociology 30–315.

46216 Introduction to Social Work Methods 4 h. a.r. Processes of social contact used by social workers with individuals, groups and communities; philosophy and principles fundamental to social work practice; preceptory 4146; when concurrent with CS 192, acceptance with consent of instructor.

46219 Individual Study 3 h. a.r. Project related to student’s interest carried out under direction of faculty member, supervisory instructor, or director of social policy program. 46219 Hours in Social Work 3 h. a.r. Supervised individual project; prerequisite: admission to Human Policy Program in social work.

46229 Field Experience 3 h. a.r. Supervised observation and experience with problems of selected social welfare agencies and organizations; require approximately 20 hours in agency participation. 46229 Hours in Social Work 3 h. a.r. Supervised individual project; prerequisite: admission to Social Policy Program in social work.

Courses for Graduate Students

46231* Human Behavior in the Social Environment 4 h. or arr. Involves one to three meetings with individuals to understand human behavior. The social systems framework is used to organize course content; changing character of social work practice and administration; interprofessional and interagency collaboration; processes of personality growth, developmental tasks and modes of adaptation. 46232* Human Behavior in the Social Environment II 3 h. or arr. Major principles and social norms; scope and flexibility of social work in changing social work practice and administration. 46231 Social Work Policy 1 4 h. or arr. arr. Social work policy and practice selection for/selection of policy measures; policy formulation; and initiative. 46237 Social Work Policy II 4 h. or arr. Social work policy and practice selection for/selection of policy measures; policy formulation; and initiative.

* Required in the M.S.W. program.
Sociology

Department Chairman: James L. Price
Degree offered: B.A., B.S., M.A., Ph.D.

Undergraduate Programs

The undergraduate program provides sociology courses as a means of promoting a liberal arts education. No attempt is made to prepare undergraduate majors for specific careers. However, an undergraduate major in sociology provides three types of direct assistance in career preparation. First, some careers which require no graduate education have as a prerequisite social science knowledge which sociology is especially well equipped to provide; an example of such a career is social science teaching in high school. Second, some careers which require graduate education have traditionally found considerable benefit from an undergraduate major in sociology; social work is an example. Third, teaching and research in sociology in colleges and universities is usually preceded by an undergraduate major in sociology.

Undergraduate majors who are primarily interested in career preparation should plan their programs in joint consultation with the sociology advisor and an adviser representing the career into which entrance is sought.

Undergraduates who are not majoring in sociology take sociology courses in their career preparation. Most of these students come from business administration, elementary education, and nursing. Undergraduate students interested in careers in the physical, biological or social sciences are advised to seek the Bachelor of Science degree. A minimum of 26 semester hours is required within the Department for either degree. In addition, the general requirements of the College of Liberal Arts must be fulfilled.

Both the Bachelor of Science and Bachelor of Arts majors require 34.1 Introduction to Sociology: Principles, 34.2 Introduction to Sociology: Problems and 11-11 Theory, Research and Statistics. The student should take the two courses in theory, research and statistics as soon as possible to increase his or her capacity to benefit from additional coursework in sociology. Courses for the other 12 hours in sociology may be freely chosen by the student.

Additional requirements for the Bachelor of Science degree include 25-H103 Introduction to Logic or 25-H104 Introduction to Philosophy of Science, either 25M-2 Mathematical Techniques I and 25M-30 Elementary Functions, or 25C-7 Introduction to Computer Science with Concepts and 250-17 Computing with PL/1; and 225-25 Elementary Probability and Statistics 225-24 and Calculus I-11 may be substituted for either of the mathematics options by students who have had the equivalent of 22M-2 Mathematical Techniques I or 22M-30 Elementary Functions in high school.

In addition to the requirements, all undergraduate majors are advised to take six semester hours in anthropology, economics, geography, political science or psychology, and to include in their programs at least one basic course in history or philosophy. Students who plan to prepare for high school teaching should note that eight hours are required for certification in an allied field.

In most cases, it is advisable to choose departmental electives for a general major, leaving the more specialized courses for graduate study. Honors students who wish to graduate with Honors must include 34-190 Development of Modern Social Theory and 34-07 Honors Research in their programs. Each candidate for Honors must have an Honors advisor and take an examination at the end of the senior year.

Graduate Programs

The graduate training program in Sociology is career-oriented. Major attention is directed toward the education of professional sociologists, most of whom will teach and do research in colleges and universities.

The Department also provides professional training in the area of deviance-control. Students interested in this type of professional training enroll in one of two programs, the Master of Arts with concentration in criminology or the Master of Arts with concentration in law enforcement and corrections.

With few exceptions, admission into the graduate program requires a minimum undergraduate grade-point average of 3.0 and a combined score of 1100 on the Graduate Record Examination. (The score of 1100 refers to the combined scores of the quantitative and verbal sections of the Graduate Record Examinations.)

The Master of Arts degree in sociology may be obtained in a 30-hour program with thesis or in a 38-hour program without thesis. With the exception of the thesis, the two programs are essentially the same. The program without thesis is intended for persons who want a terminal degree and for whom a wider range of course content in sociology is appropriate. All candidates for the Master of Arts degree must take 34-201 History of Sociological Theory, 34-209 Sociological Theory, 34-214 Elementary Statistics and Data Analysis, and 34-215 Sampling, Measurement and Technical Techniques. Those few required courses must be passed with a grade of B or better.

The Doctor of Philosophy degree in sociology is awarded to students who have completed approximately 90 hours of work at the graduate level, pass a post-M.A. set of courses in methodology-statistics (34-255 Intermediate Statistics and Data Analysis, 34-117 Theory and Research Design, and 34-218 Advanced Statistics and Data Analysis), complete the comprehensive examinations and prepare a dissertation.

All candidates for the Doctor of Philosophy degree are expected to be competent in the basic tools of the sociologist—theory, history of theory, methodology and statistics. In addition, each candidate is examined over one major and one minor area chosen from among the areas currently represented on the faculty. Examples of current areas are social psychology, criminology, psychology, deviant behavior, family, stratification, political sociology, community, organizations and the basic tools. A student's major and minor areas cannot both be in basic tools. A detailed statement of regulations for graduate study is available upon request. Prospective doctorate candidates should carefully examine this statement.

The M.A. with Concentration in Criminology

The M.A. of Arts degree with concentration in criminology is a 10-semester-hour program with thesis. An internship for
which research credit may be obtained may be arranged during the semester in a correctional institution or agency. Students who are awarded this degree may be eligible for continued work toward the Ph.D. in sociology.

The M.A. program with concentration in criminology provides the student with the latest information regarding the nature of crime and delinquency, their causes and treatment, and with an opportunity to gain insights into some of the problems which will confront him or her in the future work. Arrangements have been made to utilize Iowa's penal institutions, training schools and correctional agencies as laboratories for graduate instruction. Persons applying for admission to this program should have the equivalent of an undergraduate major in sociology, including a first course in criminology or juvenile delinquency.

These additional courses are required:
34:143-144 Crime and Justice 6 s.h.
Two of the following:
34:142 Probation and Parole 2 s.h.
34:145 American Prison Systems and Their Administration 2 s.h.
34:146 American Police Systems and Their Administration 2 s.h.
34:147 Prevention of Crime and Delinquency 2 s.h.
Two of the following:
34:240 Seminar: Criminological Theories 2 or 3 s.h.
34:241 Seminar: Theory of Criminal Law 2 or 3 s.h.
34:242 Seminar: Sociology of Law 2 or 3 s.h.
34:243 Seminar: History and Theory of Penalties 2 or 3 s.h.

The remainder of the student's program will be composed of courses selected to meet particular needs and goals.

M.A. with Concentration in Law Enforcement and Corrections

Successful completion of this program requires a minimum of 45 graduate credits and a Thesis at the M.A. degree in Law Enforcement and Corrections without a thesis. Students who obtain this degree will be qualified for a variety of positions in law enforcement and correction. The program provides the student with a broad education in the social and behavioral sciences; knowledge of criminal law and procedure; and the administration of justice; an understanding of the administration and operation of correctional agencies and institutions; familiarity with the field of community organization and welfare services; and training and experience in interviewing, counseling, investigation and case recording. The program is founded on the conviction that the sociology can make important contributions in the field of law enforcement; therefore, corrections and sociological orientations are emphasized.

As for the M.A. program with concentration in criminology, arrangements have been made to utilize Iowa's penal institutions, training schools and correctional agencies as laboratories for graduate instruction.

To be admitted to the program, the student must have a B.S. or B.A. degree and a minimum grade-point average of 2.75, and must have completed these courses or equivalents:

31:1 Elementary Psychology 3 s.h.
31:163 Abnormal Psychology 3 s.h.
34:1 Introduction to Sociology: Principles 3 s.h.
34:214 Elements of Statistics and Data Analysis 3 s.h.
34:215 Sampling, Measurement and Observational Techniques 3 s.h.
34:120 Principles of Social Psychology 3 s.h.
34:126 Collective Behavior 3 s.h.
34:140 Criminology 3 s.h.
34:141 Juvenile Delinquency 3 s.h.

Special Facilities

The Department maintains IBM unit record machines, electronic calculators and computer terminals for research and teaching activities. Also available for faculty and students are the facilities of the Center for Research in Interpersonal Behavior (CIRIB), a data archives unit and the Iowa Urban Community Research Center (UICRC).

CIRIB was established in 1968 as a laboratory for research in social psychology. The basic facility is a five-room small-groups laboratory complex with audio, video and interactive process recording equipment.

The data archives unit houses the results of numerous survey studies which are made available for teaching and research purposes to faculty and students.

UICRC was established in 1958 and maintains a research library, data bank and laboratory.

Staff: professors Caldwell, Moffett, Price, Saunders, Staff, Weimer, associate professors Duggan, Price, Stratton, assistant professors Cox, Kin, Robert, Westing, Woodworth, instructors Krais, Lawer, Stimpson; affiliate staff Jacobson, Johnson.

Courses for Undergraduates Only

Note: All sociology majors required to take 34:1, 34:2, 34:10 and 34:11

34:1 Introduction to Sociology: Principles

4 s.h. Introductory course in the study and interpretation of culture and social organization. May be repeated 2 times; may be taken in partial fulfillment of social science core requirement.

34:240 Seminar: Criminological Theories

4 s.h. Analysis of selected topics of criminological and sociological concern: prerequisites: 34:1, may be taken in partial fulfillment of social science core requirement.

34:121, 11 Theory, Research and Statistics 3 s.h.

Year-long introduction to basic concepts, theoretical thinking, statement of measurable propositions, data, meaning of proof as a rule for research in social science; involves designing research problem; integrates with designing social research, including problems of sampling and measurement, producing and processing research data, and interpreting research findings through elementary methods of statistical data, measures of central tendency and variability, and meaning of association and statistical significance: prerequisites: 34:1, 34:2 and declared major in sociology.

34:185 Honors Seminar

2 s.h. For undergraduate students with superior academic record. Selected topics of current sociological and methodological interest: prerequisite: sociology major or consent of instructor.

34:685 Honors Research

2 s.h. For students in Sociology, required for special research project, chosen after consultation with honors adviser; may be repeated.
Advanced Courses

Social Theory

34/190 The Development of Modern Social Theory
Conservation on selected works of major nineteenth-century theorists and several representative contemporary sociologists, recommended for sociology majors and required for Theory majors; prerequisites: 34.1 and junior standing

34/201 History of Sociological Theory
Survey of major twentieth- and twentieth-century social thinkers; Marx, Weber, Durkheim, Russell, Freud; prerequisite: graduate standing or consent of instructor

34/202 Sociological Theory
34/203 Seminar: Sociological Theory
Seminar in sociological theory which requires writing; prerequisites: 34/201 and 34/202 or consent of instructor

34/204 Sociology of Knowledge
34/205 Seminar: Contemporary Social Theory
34/206 Social Theory: Methodology
Comparative and cumulative study of selected contemporary sociological approaches and systems of thought; a research seminar; prerequisite: graduate standing and consent of instructor

34/207 Seminar: General Systems Theory
Relocation of some system concepts to social sciences; changing conception of idea of "system"; Parsons, Perrow, Beckwith, cybernetics, and ideas of control, closure, openness, morphogenesis, and internal evolution; problems of structure transformation; other control concepts; general systems model as integrating paradigm for all sciences; alternative to concepts of social structure and social organization in sociology, and in concepts of interaction and behavior in social psychology; prerequisites: graduate standing or permission of instructor

Statistics and Methods of Research

34/111 Nonparametric Statistics in Social Research
Techniques which do not make numerous stringent assumptions about nature of population from which data drawn; emphasis on application to rank-order and classification data in small samples; prerequisite: 34/214 or equivalent

34/112 Mathematical Sociology
Review of mathematical tools essential to analysis of social systems and survey of structural, quantitative, and relational models; prerequisite: graduate standing and consent of instructor

34/216 Intermediate Statistics and Data Analysis
Preparation of drawing theoretical inferences from data in studies using basic design, measurement techniques, and sample analysis, choice of optimal parametric or nonparametric techniques for specific analysis; choice of methods to test hypotheses and solve real-world problems; prerequisite: 34/215

34/217 Theory and Research Design
Theory building and problem formulation; operationalization and measurement; statistical and other research techniques; choice of research design; development and testing causal models; prerequisite: 34/215

34/218 Advanced Statistics and Data Analysis
34/219 Social Psychology

34/220 Principles of Social Psychology
Basic concepts and principles of social psychology; personality, interpersonal and group processes; prerequisite: 34/1

34/221 Research Methods in Social Psychology
Methods, means and interpretations of social psychology of mental health and mental illness and of psychiatric hospital as social institution; prerequisite: 34/218

34/222 Media Communication
Problems of conceptualization and measurement of opinion process; influence of mass media, reference groups and socialization, interpersonal relations, personality factors, sense of Isolation; prerequisites: 34/1 and 34/218

34/223 Small Group Analysis
Study of small group as fundamental unit in structure of larger social organizations; each group must be selected by students; prerequisites: 34/21 and psychology 34/1 or graduate standing and consent of instructor

34/224 Social Cognition
Credibility and behavior; social movements treated as flow of social change; prerequisite: 34/1

34/227 Interaction Processes
Various aspects of study of interpersonal processes in both laboratory and field settings; special emphasis given to problems of measurement and interaction; students expect experience in observing, coding and analysis of social interactions; prerequisites: 34/1 and 34/12

34/228 Field Methods in Social Psychology
Field experiences, quasi-experiments and various natural observation techniques; open to advanced undergraduates and graduate students; enrollment by permission of instructor; prerequisite: 34/12

34/230 Culture and Personality
Principles and techniques for the psychological variables in understanding behavior; cross-cultural differences and explanations in personality and socialization; prerequisite: 110/130 or 115/120 or Sociology 34/1

34/239 Group Organization and Leadership
Principles and techniques for the psychological variables in understanding behavior; interpersonal relations in small groups, process of group formation and change social functions of leadership; prerequisite: 34/1

34/239 Contemporary Approaches to Social Psychology
Review and critical analysis of current theoretical approaches and issues of social psychological analysis; prerequisites: 34/12 and Developmental Staging as major or developmental major in social psychology; open to students by consent of instructor

34/231 Seminar: Topics in Social Psychology
Selected theoretical and methodological issues, prerequisites: advanced graduate standing and consent of instructor; may be repeated

34/240 Seminar in Small-Group Analysis
Seminars, problems, prerequisites: advanced graduate standing and consent of instructor; may be repeated

34/241 Seminar in Collectivist Behavior
Seminars, problems, prerequisites: advanced graduate standing and consent of instructor; may be repeated

34/242 Seminar in Deviant Behavior
Seminars, problems, prerequisites: advanced graduate standing and consent of instructor; may be repeated

34/243 Seminar in Group Behavior
Seminars, problems, prerequisites: advanced graduate standing and consent of instructor; may be repeated

34/244 Seminar in Research Methods
Seminars, problems, prerequisites: advanced graduate standing and consent of instructor; may be repeated

34/245 Seminar in Social Psychology
Seminars, problems, prerequisites: advanced graduate standing and consent of instructor; may be repeated
of historical, survey and symbolic types of method and analytic presuppose: graduate standing 3 a.h.

34:223 Social Stratification 3 a.h.
Historical and comparative approaches to social stratification, through examination of major systems of social stratification and impacts on political order; emphasis upon major theoretical perspectives on social stratification as social facts of political order and object of political resistance; graduate standing required. 34:223 or 34:233 3 a.h.

34:224 Methodology 3 a.h.
Methodological techniques and issues in study of social stratification; presuppose: 34:223 3 a.h.

34:225 Seminar: Social Stratification 3 a.h.
Issues of current and substantive issues in social stratification; presuppose: 34:223 or consent of instructor 3 a.h.

34:226 Seminar: Medical Sociology 3 a.h.
Theory and research on health limitations in modern society; social roles of disease; sociological components in treatment, hospital organization and medical practice; sociology of medical services; presuppose: graduate standing and consent of instructor 3 a.h.

34:228 Seminar: Prejudice and Intergroup Relations 3 a.h.
Research and theory on prejudice and intergroup behavior; presuppose: 34:128 or 34:166 or consent of instructor may be required 3 a.h.

34:244 Seminar: Deviant Behavior 3 a.h.
Deviant behavior: factors related to family formation, research on social norms, deviant subcultures, deviant groups; emphasis upon the sociological approach to understanding deviant behavior; presuppose: graduate standing and consent of instructor 3 a.h.

34:286 Seminar: Theory and Research in the Family 3 a.h.
Examination of contemporary theory and research in family; emphasis on theory building and research design; presuppose: consent of instructor 3 a.h.

34:287 Seminar: Schizophrenia Organization 3 a.h.
Preparation in research methods in theory, research, and presentation 3 a.h.

34:288 Seminar: Occupational Structure and Social Mobility 3 a.h.
Role of institutions of work in modern urban industrial society; sociological theory and research methodology as related to occupational structure; recent empirical studies; presuppose: graduate standing and consent of instructor 3 a.h.

34:290 Seminar: Selected Topics in Family Sociology 3 a.h.
Sociological and methodological issues, presuppose: advanced graduate standing and consent of instructor; may be repeated 1 a.h.

Community and Population
34:170 Population 3 a.h.
Factors and processes determining population size, composition and distribution; relations of population to social organization and social change; recent trends in population with resulting policies, problems and programs; presuppose: 34:1 or 34:2 3 a.h.

34:171 The Urban Scene 3 a.h.
Sociological interpretation of origins and spread of urban settlements in world; current trends and future of major urban social situations; historical development of cities and urban areas; their place in modern societies, both Western and non-Western; presuppose: 34:1 or consent of instructor 3 a.h.

34:172 Urban Planning 3 a.h.
Processes of urbanization and conditions of urban life; nature of urban social relations and organization of city life, urban ecological patterns and demographic conditions, and regional influence of micropolitical centers; presuppose: 34:1 or 34:2 3 a.h.

34:174 World Population 3 a.h.
World population trends and problems; their causes and consequences, by coun-
try and world regions; trends in international relations and population phenomena; standards of living and technological change; cultural contrasts in migration patterns and family structures; presuppose: 34:1 or 34:2 3 a.h.

34:176 Techniques of Population Analysis 3 a.h.
Obtaining information from population data; research procedures and their nu-
terogeneity; selected applications to world and national demographic data; presuppose: 34:170 or its equivalent 3 a.h.

34:179 Problems of Community Organization 2 or 3 a.h.
Practical organizations, informal groups, volunteer associations and relations to urban pattern of community life; presuppose: 34:1 3 a.h.

34:270 Seminar: Community Amenity 3 a.h.
Point of view of human ecology and similar empirical applications; implications for policy of social organization, projects and community goals 3 a.h.

34:271 Seminar: Community Redevelopment 3 a.h.
Development of plans of rehabilitation and design for community study, reference to project plans of Iowa Urban Community Research Center; presuppose: consent of instructor 3 a.h.

34:274 Seminar: Community Surveys 3 a.h.
Examination of community study project, in conjunction with activities of Iowa Urban Community Research Center; presuppose consent of instructor 3 a.h.

34:277 Seminar: Community Theories 3 a.h.
Survey of theories and writings relevant to understanding of social institutions; includes study of writings of Durkheim, Park, Radcliffe, Warner and others; presuppose: graduate standing and consent of instructor 3 a.h.

34:224 Anthropology 3 a.h.
Problems growing out of interest in urban population and relative decline in rural population; emphasis on Iowa and the Middle West; presuppose: graduate standing and consent of instructor 3 a.h.

Social Problems
34:123 Sociology of Aging 3 a.h.
Aging problems of older adults; communication breakdowns and changing value structures with regard to values of society; presuppose: 34:1 3 a.h.

34:123 The Social Psychology of Alcohol Use and Community Problems 3 a.h.
Social and cultural factors in definition and use of beverage alcohol; social psycho-
logical analysis, public definition and reactions to alcoholism; presuppose: 34:120 or 34:119 3 a.h.

34:129 Criminology 3 a.h.
Description: "Criminology and Penology" 3 a.h.

34:141 Juvenile Delinquency 3 a.h.
Description: "Criminology and Penology" 3 a.h.

34:151 Social Problems of Underdeveloped Areas 3 a.h.
Description: "Social Institutions and Social Change," same as 34:151 3 a.h.

34:165 Race and Ethnic Relations 3 a.h.
Multidisciplinary study of intergroup relations, special emphasis given to histori-
cal, sociological and psychological issues in study of American minority groups; presuppose: 34:1 3 a.h.

34:179 African Social Structure and Social Change 3 a.h.
Development problems in relation to stratification systems, ethnicity, power struc-
ture and urbanization in tropical Africa; presuppose: 34:1 or 34:2 or 34:230 or 34:151-121; same as Anthropology 112-121 3 a.h.

34:284 Seminar: Deviant Behavior 3 a.h.
Description: same as "Social Institutions and Social Change" 3 a.h.

Individual Reading and Research Projects
34:283 Independent Study 3 a.h.
34:284 Research 3 a.h.
34:285 Thesis 3 a.h.

Spanish and Portuguese
Department Chair: Oscar Fernandez Degree offered: B.A., M.A., Ph.D.

The Department provides coursework for undergraduate and graduate majors in Spanish or Portuguese, for satisfaction of foreign language requirements for baccalaureate and advanced degrees in other fields and for satisfaction of the second language requirement for undergraduate majors in English and in Letters. The Department works closely with the departments of Soci-
ology and Anthropology, which offer certification in Latin American Studies; with the University's several other foreign language departments; and with the School of Letters and depart-
ments of Political Science, History and English. Knowledge of foreign language and culture is indispensable in many career areas. Students majoring in Spanish or Por-
tuguese may find opportunities in such fields as transportation, industry, journalism, international broadcasting and publishing, as well as research, library work and translating.
Undergraduate Programs in Spanish

There are two programs for undergraduate majors in Spanish. First-year and second-semester courses interrelate the four performance objectives—understanding, speaking, reading, and writing—through a four-skill format and a policy of frequently testing these skills. Students thereby acquire broader bases on which to diagnose their strengths and weaknesses and to calculate and plot their progress in preparation for future work.

Third- and fourth-semester courses are conducted on a dual-track basis, allowing students to enroll in sections having either an oral or written orientation or an emphasis on reading, writing, and content analysis.

Upper-level courses are scheduled to enable students to arrange their schedules so that they are to complete contact with the language four or more consecutive hours on given days.

The undergraduate major in Spanish requires these courses beyond the second-year level:

**Language**
- 35:27-28 Third-Year Composition and Conversation
- 35:105 Fourth-Year Composition and Conversation

**Literature**
- 35:101 Renaissance and Golden Age Literature
- 35:102 Modern Spanish Literature
- 35:103 Contemporary Spanish-American Literature
- 35:104 Spanish-American Poetry and Literature

**Spanish Teaching Minor**
The Spanish teaching minor requires 35:27-28, 35:105 and 35:123-124 Spanish Pronunciation and Diction. Students preparing for certification to teach at the secondary level should elect additional courses in pronunciation and civilization.

**Honors in Spanish**
Admission to the Honors Program in Spanish requires a 3.0 minimum grade-point average overall and a 3.2 in Spanish. Graduation with Honors in Spanish requires six semester hours earned in 35:123-124 Honors Literature, 35:121-122 Honors Language, 35:123-124 Honors Literature, an Honors essay in Spanish and/or an oral discourse in Spanish.

**Undergraduate Program in Portuguese**
The first-year Portuguese program employs a shared-teaching technique in which sections usually are taught three days a week by one teacher and two by another. This gives students exposure to different teaching techniques, voices and accents in a core-related program which provides a wider base of experience as preparation for future study of the language.

The undergraduate major in Portuguese requires 24 semester hours of credit in courses beyond the second-year level.

Offerings for Nonmajors

Undergraduate students pursuing Bachelor of Arts or Bachelor of Science degrees in other disciplines may meet part of the College of Liberal Arts literature competency requirement with English-translation reading courses the Department offers.

A senior seminar, The Concept of Revolution in Twentieth-Century Spanish-American Writing, and a course on Cervantes are also conducted in English. All other Spanish literature courses are conducted in Spanish.

The Department's Portuguese division offers Brazilian Civilization and Portuguese Civilization in English; the two courses provide a broad overview of the two cultures.

The Department's English-language courses in Hispanic literature are crosslisted with those for the newly-established major in letters, and further interdepartmental development of this kind is anticipated.

**Graduate Programs**

**Master of Arts**
Candidates for the M.A. degree must complete 36 semester hours of coursework without thesis, including 35:208-209 Graduate Composition and Conversation, 35:210 Studies in Style and prescribed literature courses covering the Middle Ages, the Golden Age (Cervantes and one other aspect), the modern era and Spanish America.

Candidates for the M.A. must have completed the equivalent of the undergraduate major. Deficiencies may be remedied with the appropriate coursework.

**Doctor of Philosophy**

All prospective Ph.D. candidates must apply to the Department in writing. The degree requires at least three years of graduate study—at least one of them at Iowa—and the passing of a comprehensive examination, preparation of a dissertation and oral defense of the dissertation. Candidates must demonstrate early an ability to conduct independent investigation, by completing two research projects.

Two doctoral programs are available.

One provides for intense specialization in Spanish and Spanish-American literature. Before his or her comprehensive examination the candidate must become well acquainted with another Romance language and literature (a Portuguese-Brazilian program is especially recommended), complete the equivalent of a year of college Latin and demonstrate a reading knowledge of another approved foreign language.

The other doctoral program provides for specialization in Spanish language and literature with emphasis on philology. Before his or her comprehensive examination, the candidate must complete a course in general linguistics, complete the equivalent of three semesters of college Latin and demonstrate a reading knowledge of another approved foreign language.

In both programs, coursework and individual reading must be designed to give the candidate a thorough knowledge of the history of the Spanish language, its literature and related civilizations, from pre-Columbian to modern times; provide adequate experience in a second Romance language; and develop the student's capability for critical analysis of literary texts.

All candidates with M.A. degrees will demonstrate their general knowledge through a qualifying examination and through seminar papers which are evaluated by a Departmental committee. If the committee concludes that the candidate is unable to present the results of his or her scholarly work clearly, logically
Spanish Courses

Spanish Courses

**Spanish Courses for Undergraduates**

361: Elementary Spanish 
4.0 h.

363: Elementary Spanish 
1.0 h.

Preparation: 256 or equivalent

363: Beginning Conversational Spanish 
2-3.0 h.

Cannot take to fulfill minimum foreign language requirement

364: Contemporary Latin American Narratives
3.0 h.

Preparation: 256 or equivalent

365: Introduction to Contemporary Latin American Literatures 
3.0 h.

Preparation: 251 or equivalent

366: Spanish Pronunciation
1.0 h.

May be taken in conjunction with 35.11, 35.27, 35.28; majors should take in conjunction with 35.11; cannot be taken to complete minimum foreign language requirements

367: Third-Year Composition and Conversation 
4.0 h.

Preparation: 35.12 or equivalent

368: Third-Year Composition and Conversation 
4.0 h.

Preparation: 35.27 or equivalent

Preparation: 35.11 reading Spanish

For Ph.D. language requirement and for other degrees needing knowledge, cannot be taken to fulfill minimum foreign language requirement

3663: Special Work 
1-3 h.

3610: Advanced Elementary Spanish 
4.0 h.

**Spanish Courses for Undergraduates**

35.101: Renaissance and Golden Age Literature
3.0 h.

Preparation: 25.12 or equivalent

35.102: Modern Spanish Literature 
3.0 h.

35.103: Contemporary Spanish-American Fiction 
3.0 h.

Preparation: 35.12 or equivalent

35.104: Contemporary Spanish-American Poetry and Drama 
3.0 h.

Preparation: 35.12 or equivalent

35.105: Fourth-Year Composition and Conversation 
4.0 h.

35.106: Fourth-Year Composition and Conversation 
4.0 h.

Preparation: 35.50 or equivalent

35.107: Third-Year Composition and Conversation 
4.0 h.

Preparation: 35.12 or equivalent

35.108: Third-Year Composition and Conversation 
4.0 h.

35.109: Third-Year Composition and Conversation 
4.0 h.

Preparation: 35.12 or equivalent

35.112: Contemporary Latin American Novel and Short Story 
3.0 h.

35.113: Spanish Women's Writing 
3.0 h.

35.114: Spanish Civilization 
3.0 h.

35.115: Spanish Civilization 
3.0 h.

35.116: Spanish Civilization 
3.0 h.

35.117: Latin American Civilization 
3.0 h.

35.118: Latin American Civilization 
3.0 h.

35.119: Latin American Civilization 
3.0 h.

35.120: Latin American Civilization 
3.0 h.

35.121: Latin American Civilization 
3.0 h.

35.122: Latin American Civilization 
3.0 h.

35.123: Latin American Civilization 
3.0 h.

35.124: Latin American Civilization 
3.0 h.

35.125: Latin American Civilization 
3.0 h.

35.126: Latin American Civilization 
3.0 h.

35.127: Latin American Civilization 
3.0 h.

35.128: Latin American Civilization 
3.0 h.

35.129: Romance Linguistics 
3.0 h.

35.130: Methods in High School Modern Foreign Languages 
3.0 h.

Preparation: 35.102 or equivalent; ordinarily offered as section 70.115

35.131: Language Laboratory Procedures 
1.0 h.

Same as 35.132 and 39.131

Spanish and Portuguese

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and with a certain degree of distinction, the candidate will not be discouraged to continue preparing for the comprehensive examinations. Comprehensive examinations are offered during the first four weeks of the fall and spring semesters. Candidates intending to take the examination must apply in writing for departmental approval no later than January 1 for the spring semester examination and no later than May 1 for the fall semester examination.

Special Facilities

The Language Laboratory provides facilities for language learning, teaching, and research. These include standard and short-wave radios, tape recorders, record players, soundproof recording rooms, two drill rooms with 68 dual-channel tape recorders providing a simultaneous master duplicate and student record, an electronic classroom, a soundproof work room, 16-mm and 8-mm projection equipment and facilities, and a library of tape and disc recordings. The Department offers to its majors a specific course in language laboratory procedures. The Department sponsors a regular 20-minute variety program, “Sucesos en español” (“Happenings in Spanish”), over University radio station WSBU.

The Spanish-Portuguese Players, a group of volunteer student actors, provide dramatic programs in Spanish for students and others in the local area, and on request go to other campuses in the state.

Faculty

Of 16 full-faculty members, nine devote their teaching and research interests primarily to literature. Within this field are represented the analysis and interpretation of the literatures of medieval Spain, the Golden Age (sixteenth and seventeenth centuries), eighteenth-century Spain, the contemporary period, colonial Spanish America, Spanish America of the sixteenth and seventeenth centuries (including coping innovations in theatre, poetry and fiction), Portugal and Brazil. Seven of our faculty members give primary research to language teaching methods and preparation of pedagogical materials in Spanish and Portuguese for use by undergraduate and graduate students. Their endeavors produce innovations in methodology and new textual and laboratory materials.

Several of our staff members have held or still hold committee chairmanships in the Modern Language Association and the American Association of Teachers of Spanish and Portuguese. Several have been listed in international directories of scholars. Some also serve on consulting and editorial boards for literary serials and other publications.

Appointments

Teaching, research and laboratory assistantships are available to qualified graduate students, as are a number of NDEA Title IV fellowships in Spanish, and University scholarships and fellowships, the latter including four-year teaching-research appointments.

Staff: professor David de Cota, Ferrandos, Martinez-Barra, King, professor emeritus Daniel, De Mello, Dobran, Douglass, Ferreira-Barros, Jeffers, Serratos, assistant professors Frank, Skinner, instructors Feinherz, Santerio Laboratory Director: Winton J. Reese
36:167 Spanish Pronunciation and Dictation 3 a.h.
Prior approval: 36:28 or equivalent

36:168 Spanish Pronunciation and Dictation 2 a.h.
Prior approval: 36:167 or equivalent

36:177 Supervision of Foreign Languages 3 a.h.

36:178 Special Work 1-3 a.h.

Primary for Graduates

36:298 Graduate Syntax, Lexicology and Composition 4 a.h.
Prior approval: 35:105 or equivalent

36:299 Graduate Syntax, Lexicology and Composition 4 a.h.
Prior approval: 35:208 or equivalent

36:310 Studies in Style 3 a.h.
Prior approval: 35:095; introduction to literary theory and method, explication of texts

35:211 Research Methods and Bibliography 2 a.h.

35:14 Advanced Grammar for Teachers 3 a.h.

35:17 Literary Theory and Explication of Texts 2 or 3 a.h.
Prior approval: 35:230

36:18 Advanced Lexicology and Syntax 3 a.h.

36:239 18th Century Spanish Novel and Essay 3 a.h.

36:221 18th Century Spanish Poetry and Drama 3 a.h.

36:223 History of Literary Criticism in Spain 3 a.h.

36:233 20th Century Spanish Poetry and Drama 3 a.h.

36:234 20th Century Spanish Novel and Essay 3 a.h.

36:235 Drama of the Golden Age 3 a.h.

36:236 Don Quixote 3 a.h.

36:239 Lyric Poetry of the Golden Age 3 a.h.

36:239 Contemporary Spanish-American Novel 3 a.h.

36:291 Spanish-American Drama 3 a.h.

36:292 Spanish-American Essayists and Thinkers 3 a.h.

36:283 Seminar in College Teaching 1 a.h.

Ordinarily elected as 36:223 2 a.h.

36:223 18th Century Spanish Literature 3 a.h.

36:299 19th Century Spanish Literature 3 a.h.

36:293 Spanish-American Literature of the 19th Century 3 a.h.

36:294 Spanish-American Colonial Literature 3 a.h.


36:295 The Spanish-American Short Story 3 a.h.

36:296 Novel of the Modern Revolution 3 a.h.

36:297 History of Medieval Literature 3 a.h.

36:298 Old Spanish and Medieval Literature 3 a.h.

36:282 Seminar in 17th Century Literature 1-2 a.h.

36:283 Historical Spanish Grammar 3 a.h.

36:294 Historical Spanish Grammar and Syntax 3 a.h.

36:295 Epic and Ballad 3 a.h.

36:299 The Golden Age 3 a.h.

36:293 The Renaissance of the Golden Age 3 a.h.

36:295 The Renaissance of the Golden Age 3 a.h.

36:289 Middle Ages 3 a.h.

36:291 Medieval Spanish Writings 2 or 3 a.h.

36:289 Old Spanish 2 a.h.

36:288 The Return of Realism 2 a.h.

36:298 The Reformation 2 a.h.

36:277 Thesis 0 or 2 a.h.

36:299 Special Work 2 or 3 a.h.

36:299 Types of Modern Criticism: Phenomenological and Structuralist Theory 2 a.h.

Spanish: 48:225 and 48:44

36:259 Seminar in the Libro de Buen Amor 2 a.h.

36:260 Seminar: La Vega and the Golden Age 2 a.h.


36:263 Seminar: The Golden Age 2 a.h.


36:265 Seminar: Spanish-American Drama 2 a.h.

36:266 Seminar: Contemporary Spanish Novel 2 a.h.

36:267 Seminar: Benjamin J. Roca 2 a.h.

36:268 Seminar: Tense and Aspect of the Spanish Verb 2 a.h.

Portuguese Courses

36:291 Portuguese Courses 4 a.h.

36:291 Elementary Portuguese 4 a.h.

36:291 Intermediate Portuguese 3 a.h.

36:12 Intermediate Portuguese 4 a.h.

36:13 Intermediate Portuguese 3 a.h.

36:283 Seminar in 19th Century Portuguese 3 a.h.

36:283 Three-Year Composition and Conversation 4 a.h.

36:283 Third-Year Composition and Conversation 4 a.h.

36:28 Special Work 0 or 2 a.h.

36:10 Intermediate Portuguese 4 a.h.

36:12 Intermediate Portuguese 3 a.h.

36:19 Portuguese Civilization 3 a.h.

36:15 Portuguese civilization 3 a.h.

36:030 Seminar: Machado de Assis 2 a.h.

36:11 Portuguese Civilization 3 a.h.

36:17 Special Work 1-3 a.h.

36:278 Special Work 0 or 2 a.h.

36:330 Seminar: Machado de Assis 2 a.h.

Speech and Dramatic Art

Department Chairman: Samuel L. Baskin
Degrees offered: B.A., B.M.A., Ph.D.

The Department is concerned with communication as a means of personal expression and development, with communication as the major means by which men adjust themselves to their society and their society to themselves, with communication as the essential process for the operation of any society, especially the highly technological society, with artistic communication as well as functional communication. These concerns with communication are manifested in two ways: faculty attempts and the attempts of the Department's students to better understand communication processes, and joint attempts to help improve abilities to communicate effectively, whether as actors or directors, community leaders, supervisors, participants in a group, film-makers, broadcast technicians, playwrights, teachers, spouses or parents. The Department has six major divisions, whose emphases and distinctive courses are described below individually under the headings "Interdivision Courses," "Speech and Dramatic Education," "Dramatic Art," "Rhetoric and Public Address," "Communication Research," and "Broadcasting and Film."

Departmental Requirements for the General B.A.

- A minimum of 24 semester hours, including at least one course in the Dramatic Art division, at least one course in the Broadcasting and Film division and at least one course in the Rhetoric and Public Address or Communication Research division.
- A minimum of eight semester hours of production/performance courses and a minimum of eight semester hours of nonproduction courses in the Department.
- The student may specialize at the undergraduate level in rhetoric and public address, dramatic art, broadcasting and film, or speech education. The additional requirements for these majors are cited in the division sections.
Departmental Requirements for the M.A.

- A minimum of 30 semester hours including Introduction to Research or its equivalent
- A research thesis or, for the nonthesis degree, a graduate seminar in which significant original research is done
- Successful completion of a six-hour written examination, the scope of which is determined by the candidate’s division and his or her graduate committee

Departmental Requirements for the M.F.A. in Dramatic Art

- A minimum of 48 semester hours and six semesters in residence
- Demonstration of outstanding artistic talent and achievement in theatre

Departmental Requirements for the Ed.S. (for Junior College Teaching)

- A minimum of 60 semester hours, including Introduction to Research, a course in the teaching of speech, an approved seminar and at least 19 semester hours completed in the College of Education’s graduate program in higher education
- Successful completion of a research report
- A semester’s internship in an assigned teaching position
- Satisfactory performance on a nine-hour written examination over areas of learning agreed upon by the student and his or her graduate committee
- Successful completion of such additional requirements as are specified by the division of Speech and Dramatic Art in which the student’s work is concentrated

Departmental Requirements for the Ph.D.

- A minimum of 72 hours of graduate credit, exclusive of research tools and dissertation
- At least one course, or equivalent, in introduction to research, dramatic theory, rhetorical theory and others as determined by the student in consultation with his or her advisor and graduate committee
- Successful completion of one qualifying examination and demonstrated competence in one’s research area
- Substantial scholarly dissertation

Staff: professors Becker, Bowes, Bryant, Cordier, Dasinger, Hitchcock, MacCann, Schall, Seabury, Thayer; professors emeriti: Bero, Gillam, Honeck, Krill, Wockenfuss

Intervarsity Courses

3402 The Design of Speeches: Voice and Pronunciation 3 s.h.

3407 Oral Interpretation of Literature I 3 s.h.

3408 Oral Interpretation of Literature II 3 s.h.

3409 Introduction to Research 3 s.h.

3410 Problems in Speech and Dramatic Art 3 h. or cr. arr.

3411 Oral Interpretation of Literature III 3 s.h.

3412 Critical analysis and oral presentation of more complex works of fiction, modern, poetry, film drama

3415 Special Studies 3 s.h.

3420 Introduction to Research 3 s.h.

Required of all new graduate students in speech and dramatic art except those enrolled for degree of Master of Fine Arts; problems of selecting and developing speech programs, study and application of representational methods and techniques of research, lecture, discussion, readings, papers and reports, guidance in research

3435 Master’s Thesis 3 s. or arr.

3455 Ph.D. Dissertation 3 s. or arr.

Broadcasting and Film

Professors in Charge: Hugh V. Coster, J. Dudley Andrew Degrees offered: B.A., B.A. with Emphasis in Broadcasting and Film

A minimum of 24 semester hours in the Department of Speech and Dramatic Art is required for a major in broadcasting and film. The program is intended for the student who seeks an understanding of the nature of the broadcast and film media and their relationship to the larger field of communication arts. The program is offered within the context of a liberal education and is not regarded solely as preparation for a professional career. Students may emphasize either broadcasting or film in their selection of elective courses, but minimal requirements will lead all students to exposure to historical and evaluative courses in both broadcasting and film and to experience in the production of materials for broadcast and film media.

Requirements for the Major:

- 36B:50 Introduction to Broadcasting (lecture, two semester hours; laboratory, one semester hour)
- 36B:51 Survey of Film (lecture, two semester hours; laboratory, one semester hour)
- At least six additional hours of advanced production/performance courses within the division
- At least six additional hours of advanced historical/critical/technical studies in the division
- Courses in other divisions of the Department as required of all majors

M.A. or Ph.D. in Broadcasting and Film

The M.A. candidate is expected to offer a plan of study which balances the artistic and scholarly aspects of the broadcast and/or film fields. The major emphasis of the Ph.D. programs in broadcasting and film is the development of research competence.

For basic requirements, see “Graduate College” and section above on graduate degrees in speech and dramatic art.
Courses
38820 Intro: Evolution to Broadcasting 2-3 s.h.
38821 Elementary Media: Communication forms,恋人和 class discussion, explores historical development of radio and television; emphasizes in programming and production, media, intercultural experience in radio and television production
38825 Survey of Film 2-3 s.h.
38826 Introduction to Motion Picture History, theory and criticism, including study of representative films to other art forms; intercultural experience in radio and television production
38830 Radio Production 3 s.h.
38845 Laboratory-laboratory emphasis on practical and theoretical aspects of contemporary radio production and programming, prerequisites: 38820
38846 Radio Workshop 2 s.h.
Independent creative work for students who have completed and demonstrated competence in 38825; registration by permission
38847 Television Production I 3 s.h.
Theoretical and practical aspects of television production, responsibilities of writer-producer, director and other production roles; laboratory practice, prerequisites: 38820
38848 Television Production II 3 s.h.
Integration of elements: production emphasis on intercultural experience in production and television production, prerequisites: 48827
38849 Television Workshop 4 s.h.
Independent creative work for students who have completed and demonstrated competence in 38825; registration by permission
38851 Film Production I 3 s.h.
Intermediary in emerging production emphasis on film structure and techniques, editing equipment and necessary skills provided for exercises and final project, prerequisite: 38820
38852 Film Production II 3 s.h.
Advanced production practices, sound editing, camera and recording techniques, class discussion of student work, emphasis on theoretical and aesthetic expertise, prerequisites: 38821 and consent of instructor
38853 Film Workshop 4 s.h.
Independent creative work for students who have completed and have shown outstanding work in 38851, registration by permission
38858 Broadcasting and Film Writing 3 s.h.
Exercises in visualization and scripting, origins and adaptations, research, development and editing documentary, dialogue, characterization and structure in fiction for film, broadcast programming or film courses and advanced work in television production
38860 History of Broadcasting 3 s.h.
Study of the social and cultural development of broadcast media, major events in the development of broadcasting media and motion pictures in United States, emphasis on FCC policies and broadcast regulations
38865 Contemporary Issues in Broadcasting 3 s.h.
38871 History of the Sound Motion Picture 3 s.h.
Study of the social and cultural development of broadcast media, current problems, major events in the development of broadcasting media and motion pictures in United States, emphasis on FCC policies and broadcast regulations
38872 Social Impact of Broadcasting and Film 3 s.h.
The social and cultural impact of radio and television on society, emphasis on the social implications of radio and television on society
38875 Television Series Production 3 s.h.
Interactive and critical study of documentary as reportorial, experimental and personal media, emphasis on the role of the media in shaping public attitudes
38877 Mass Media in Crisis: United States 3 s.h.
Development of American film, emphasis on Griffith, Chaplin, Keaton, Lubitsch, Ford, Welles, Hitchcock, Hawks, Kubrick and other contemporary directors; traditions within commercial studio and contemporary independent systems
38878 European Film History 2-3 s.h.
Masters is European veeratt in history, silent cinema of Sweden, Germany and Russia, films of France in the 19th, 20th, Indian cinema
38879 French Cinema (1900-1990) 3 s.h.
Study of the evolution of French cinema, emerging and analysis of French films, and the development of French cinema in the world, across the world, and in the world of the cinema, areas of French: 5879
38880 Film Criticism and Analysis 3 s.h.
Study of the processes, presuppositions and rules of film criticism, major theoretical positions related to various areas of film criticism, theoretical dimension relevant to writing of analysis in the course
38881 Film Theory 3 s.h.
Introduction to major theoretical positions, Derrida and Deleuze, and those who have been influenced by them
38882 Literature and Film 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38885 Seminar in Film History 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38886 Seminar in Film History 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38887 Seminar in Film History 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38888 Seminar in Film History 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38889 Seminar in Film History 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38890 Seminar in Film Criticism 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38891 Seminar in Film Theory 3 s.h.
Focus on a particular period, genre, director or comparison of creative contributions to film and literature
38892 Seminar in History of Broadcasting, international telecommunications and broadcasting regulation
38895 Seminar in Mass Communication Research 2-4 s.h.
Critical review of theories and studies on behavior of broadcasting systems and its outcomes, individual research project
38896 Problems in Television, Film and Radio 2-4 s.h.
Registration by permission only

Communication Research
Professor in Charge: John W. Bowers
Degrees offered: M.A., Ph.D.

This is a graduate program only, leading either to the M.A. or the Ph.D. degree. Programs designed for individual students are the background for experimental research on interpersonal communication, group communication, mass media or theory. Students are expected to take work in related social sciences in addition to the general requirements of the Department of Speech and Dramatic Art and appropriate courses selected from those listed below. In general, Ph.D. candidates in this program must complete the statistics sequence in the Department of Psychology or in the College of Education and take philosophical problems of the social sciences in the Department of Philosophy. Work in advanced statistics and computer science may be used to fulfill the research tool requirements of the Department. Opportunities for varied research in addition to that required for thesis or dissertation projects are available in the Department's Communication Research Laboratory. Several original studies in preparation for dissertation and later research are required of doctoral candidates.

Courses
38105 Introduction to Language and Communication 3 s.h.

Note: Analytical emphasis on language as process of interpersonal communication, internal research projects appropriate to introductory course
36:134 Group Communication
3 s.h.
Survey of small-group research and theory
36:205 Quantitative Methods in Speech Research
2 s.h.
Principles and methods of designing and conducting experimental research in speech and dramatic art
36:225 Research Methods in Communication
3 s.h.
Principles and methods of designing and conducting experimental research in communication
36:232 Seminar in Linguistics
2 s.h.
Seminar in Linguistics 101-102
36:288 Acoustics of Communication Behaviors
3 s.h.
Research and theory on acquisition of functional communicative behaviors, including language behavior; original research may be required
36:311 Seminar: Problems in Group Communication
3 s.h.
Focus on problem area in small group research; problem area changing from term to term; original research required.
36:322 Seminar: Communication Research
2 or 3 s.h.
Focus of seminar changes from term to term; among other topics to which seminar devotes semester are language variation and methodology issues; original research required; see 36:23179.

Dramatic Art
Professor in Charge: David Thayer
Degrees offered: B.A., M.A., M.F.A., Ph.D.

B.A. with Emphasis in Dramatic Art
The requirements are:

- 11.51-32 Drama in Western Culture (to satisfy the historical-cultural core requirement);
- A minimum of 30 semester hours of credit for courses taken within the Department, or a combination of courses from this department and equivalent courses from other colleges or universities;
- A distribution of courses among the divisions of the Department as indicated in item 2 of the general requirements for the B.A. degree;
- A minimum of 12 semester hours of credit for production/performance courses in the Department (or equivalent departments); and
- A minimum of 12 semester hours of credit for nonproduction/performance courses in the Department (or equivalent departments).

Students with sufficient talent and dedication may specialize in one or more production areas. Admission to second and third years of the production sequences is limited to students of superior ability. Work in all production and content areas is desirable for personal and professional advancement. Students in history, literature, philosophy, social studies, art, music, dance and religion are encouraged. There is particular stress on choosing courses which will fulfill graduate department entrance requirements for those expecting to take advanced degrees. Students expecting to apply for a teaching certificate should choose courses to satisfy Departmental and state requirements.

M.A. in Dramatic Art
This is a general program for high school and junior college teachers and for students who want to earn an intermediate degree before proceeding to the doctorate. The program of 30 or more semester hours is selected by the student and his or her adviser within the following guidelines:

- Introduction to Research (36:300)
- Courses in theory and criticism
- Courses in theatre history
- Courses in dramatic literature
- Courses in theatrical production

A thesis or graduate seminar in history, theory or criticism of drama or theatre is required.

M.F.A. in Dramatic Art
Students who demonstrate exceptional ability in playwriting, directing, design, acting or technical direction may apply for admission to the program of study and production leading to the M.F.A. Admission is dependent on recommendations and appropriate demonstrations of ability. Six semesters in residence and 48 semester hours are required, and students must reapply for admission each year. Substantial creative work of high quality is expected of all candidates.

Ph.D. in Dramatic Art
The program for the Ph.D. is made to suit individual backgrounds and requirements. The principal purpose of the program of study and research leading to the Ph.D. degree is to give the candidate a mastery of a major field of learning, including a working command of its significant literature and research methods and of the professional skills appropriate to it.

Courses for Undergraduates

**INT 10 Shakespeare**
3 s.h.
Same as English 87:22

**INT 101 Drama in Western Culture**
3 s.h.
Same as core course 11:51; required of all dramatic arts majors

**INT 102 Drama in Western Culture**
4 s.h.
Concentration of INT 102; same as INT 11:15; required of all dramatic arts majors

**INT 103 Advanced Drama**
3, 4 s.h.
Same as English 10:3 and 10:8.

Courses for Undergraduates and Graduates

One-hour concurrent registration required for all courses marked with asterisk (*).

**INT 105 Dramatic Art Laboratory**
Core, or,

**INT 101 Acting I**
3 s.h.
Readings, improvisation and some study developing actor's psychological techniques; emphasis on enhancing concentration of attention, observation, imagination and sensory magnetism.

**INT 103 Stage Movement**
2 s.h.
Basic movement training for actor; development of awareness and control of body is stressed; emphasis is on skeletal movement.

**INT 104 Acting Workshop**
3 s.h.
Advanced technique and some work; concurrent registration in INT 105 required and consent of admission committee.

**INT 105 Voice Laboratory**
1 s.h.
Vocal development for stage; open only to students registered in INT 105.

**INT 106 Movement Laboratory**
1 s.h.
Individual instruction in movement technique and experience; open only to students registered in INT 105.

**INT 107 Musical Theatre**
2 s.h.
Department, movement, movement, and representative dance from Medieval period to present; focusing on typical musical and the concert stage.

**INT 110 Introduction to Theatrical Design**
3 s.h.
Analysis of objects for theatre designers and technicians; mechanical drawing for scenic design of scenery, costumes, lighting and makeup; prior or concurrent registration in INT 107 required
Speech and Dramatic Art

Rhetoric and Public Address

Professor in Charge: Donald C. Bryant
Degrees offered: A.B., M.A., Ph.D.

The Bachelor of Arts Program

This major is recommended for students preparing for active participation in public affairs or teaching. It is intended to serve as an effective focus for a sound liberal education.

Requirements include at least 24 and no more than 36 semester hours in the Department. The program aims at a reasonable balance between doing and knowing—between courses and extra-curricular activities emphasizing informed and guided improvement in oral performance, and courses devoted to theoretical, critical and historical study of the principles and practice of public address, and the interpretation of public address and theatre, film, radio, television and other arts of communication. Further, the student concentrating in public address is expected to pursue substantial study beyond the general graduation requirements of the College of Liberal Arts. Programs for majors include:

- 36.31 The Bases of Speech: Voice and Pronunciation
- One of the following:
  - 36.32 Rhetoric
  - 36.33 Public Speaking
  - 36.34 Group Discussion
- 36.32 Rhetoric
- 36.32 Intercultural Communication
- 36.32 Parliamentary Procedure
- 36.57 or 36.151 Oral Interpretation of Literature
- One of the following:
  - 36.125 Theory and Practice of Persuasion
  - 36.129 Theory and Practice of Argumentation
  - 36.130 Interview and Conference Techniques
- One of the following:
  - 36.85 Speeches of the Western World
  - 36.86 Theories of Rhetoric
  - 36.87 Rhetoric of Agitation and Control
  - 36.106 Greek and Roman Public Address
  - 36.131 Contemporary Public Address
- 36.134 Group Communication
- Selected courses in drama and theatre, and in radio-TV-film
- At least 15 semester hours beyond the liberal arts graduation requirements in literature, history, psychology, philosophy, foreign language and/or social sciences, including a course in expository or argumentative writing

The Master of Arts Program

The course of study is intended to build a strong foundation for teaching in high schools and junior colleges and/or for proceeding to the doctorate. The program may include the preparation of a thesis, according to the decision of the student and advisor. All programs will include:

- Introduction to Research (36.800)
- At least 15 hours of courses in rhetoric and public address including a seminar;
- At least six hours of courses in other divisions of this or related departments;
- A course in the bases of speech (voice and phonetics) or evidence of adequate previous training; and
- A comprehensive examination

The Doctor of Philosophy Program

The program leading to the Ph.D. degree is designed to give the candidate a mature grasp of the field of learning and to provide guided experience in research resulting in a significant dissertation.

Courses

36.80 Principles of Speech Communication

- Instruction and guided practice in fundamentals of oral communication; satisfies University requirement in speech for students not offering courses 36.1 and 2.10 (or equivalent); requirement may be satisfied also by two sections in beginning of each semester by Rhetoric Program, and for qualified students by passing Speech 36.80. See open for credit to students who have had or are taking Rhetoric 36.10 and 2.20, Speech 36.10 or equivalent.

36.80 Public Speaking

- Intermediate course in speechmaking;formerly advanced coursework (36.1 and 36.20 or equivalent) or other experience in basic principles and practice of oral communication; equalizer for public concerns; study and experience in more complex forms of argumentative and persuasive speaking; frequent speechmaking, analysis and criticism of speaking and speaking audience analysis in need and writing and critical analysis of public address lectures and pronunciation.

36.80 Group Discussion

- Principles and practical application of group problem-solving techniques; leadership and group participation; projects in social decision and action.

36.80 Intercultural Communication

- Readings, exercises and projects in static and small-group analysis, involving cross-culture and application of personal perceptions, interpersonal attraction, emotional factors, feedback and evaluative context.

36.80 Perforomance Procedures

- Sale of oration for conduct of business in meetings of assemblies, state and national organizations, practice in writing and debating motions from floor and in preparing over representative versions.

36.80 Speeches of the Western World

- Notable speeches from classical Greece and Rome, modern Europe, and Britain and United States, studied as dynamic events in historical context and as important works of rhetorical art.

36.80 Theories of Rhetoric

- Examinations of influential theorists of orals and written prose discourse of past and recent periods, theses, essay, critical and history seminars toward understanding instrumental communicators; same as English 36.84

36.80 Principles of Agitation and Control

- Principles and practical application of group problem-solving techniques; leadership and group participation; projects in social decision and action.

- Writing and public speaking classes developing theories for analyzing agitation involving radical social change and response to this agitation; in small groups students participate in one session of agitation and control and proper short paper
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>36:80</td>
<td>Theory and Practice of Argumentation</td>
<td>3 s.h.</td>
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<tr>
<td>3:15</td>
<td>Introduction to Speech and Hearing</td>
<td>3 s.h.</td>
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<td></td>
<td>Processes and Disorders</td>
<td>3 s.h.</td>
<td></td>
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<tr>
<td>36:82</td>
<td>Interpersonal Communication (required)</td>
<td>3 s.h.</td>
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<tr>
<td>36:53</td>
<td>The Basics of Speech: Voice and Pronunciation (required)</td>
<td>3 s.h.</td>
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<tr>
<td>36:57</td>
<td>Oral Interpretation of Literature I</td>
<td>3 s.h.</td>
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<tr>
<td>36:110-</td>
<td>Plan C. Theatre Emphasis</td>
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<td>36:32</td>
<td>Introduction to Theatrical Design I-II</td>
<td>6 s.h.</td>
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<tr>
<td>36:101</td>
<td>Acting I</td>
<td>3 s.h.</td>
<td></td>
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<tr>
<td>36:140</td>
<td>Directing I</td>
<td>3 s.h.</td>
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<tr>
<td>36:100</td>
<td>Drama and Theatre</td>
<td>4 s.h.</td>
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<tr>
<td>36:149</td>
<td>Childre's Theatre and Creative Dramatics</td>
<td>3 s.h.</td>
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<tr>
<td>36:50</td>
<td>Introduction to Broadcasting</td>
<td>3 s.h.</td>
<td></td>
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<tr>
<td>36:51</td>
<td>Survey of Film</td>
<td>3 s.h.</td>
<td></td>
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<tr>
<td>36:107</td>
<td>Educational Forms</td>
<td>3 s.h.</td>
<td></td>
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<td>or</td>
<td></td>
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<tr>
<td>36:110</td>
<td>Speech for Educators</td>
<td>3 s.h.</td>
<td></td>
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<tr>
<td>3:15</td>
<td>Introduction to Speech and Hearing</td>
<td>3 s.h.</td>
<td></td>
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<tr>
<td></td>
<td>Processes and Disorders</td>
<td>3 s.h.</td>
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Students are advised to complete a minimum of 20 semester hours as a minor in English (with some work in dramatic literature), social studies or other tangential fields to strengthen their major, and to accumulate a record of achievement in University forensics, broadcasting and film, and theatre activities.

**Sequential Requirements in Education**

Statutory: American history or American government 2 s.h.

**Junior Year**

76:100 Introduction to Secondary Teaching 2 s.h.
75:91 Pro-Education Practicum (PREB) 2 s.h.
76:75 Educational Psychology and Measurement 3 s.h.

**Senior Year**

76:160 Methods: High School Speech 3 s.h.
76:170 Methods in minor or three-semester-hour course in education in lieu of second methods course 3 s.h.
76:191-192  Observation and Laboratory Practice in Teaching Speech in High School 12 s.h.

For detailed information about teacher certification, see "College of Education."

**Courses**

<table>
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<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>36:60</td>
<td>Methods for High School Speech</td>
<td>2 s.h.</td>
<td></td>
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<tr>
<td>36:80</td>
<td>Theory, planning, and organizing evaluative and remedial forensics problems</td>
<td>3 s.h.</td>
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**Speech Pathology and Audiology**

Department Chair: Kenneth L. Wolf
Degrees offered: B.A., B.S., M.A., Ph.D.

The courses and degree programs of the Department of Speech Pathology and Audiology are planned to meet the needs of students preparing to work in a wide variety of opportunities. These include clinical, service, and university teaching, and research concerned with speech, language, and hearing processes and disorders. The offerings also include courses for students with vocational and professional goals in other fields, such as psychology, education, speech and dramatic arts, dentistry and medicine, whose preparation may be enriched by the study of speech and hearing processes and their disorders.

Graduates in this field provide clinical services for persons with speech, hearing or language problems in hospitals, clinics, speech therapy clinics, rehabilitation facilities and elementary and secondary schools; teach in colleges and universities; and/or carry out research in laboratories concerned with communication processes and disorders.

All professional programs of the Department leading to the M.A. degree are accredited by the Education and Training Board of the American Board of Examiners in Speech Pathology and Audiology.

**Undergraduate Curricula**

Since the master's degree or equivalent is the minimal level of preparation for persons seeking professional careers in this program in speech; designed for independent study; class meeting on four Saturdays; days arranged.

36:110 Speech for Educators 3 s.h.

To aid teachers and others interested in teaching; relationships between teacher and student; awareness of the student, awareness of self, interaction between teacher and student; emotional communication; analysis of student's potential in becoming effective teacher, opportunity for student in an supervised, teacher and observer.

36:171 Workshop in Teaching Dramatics, Forensics and Speech or, art.

Methods, materials, and techniques in planning, evaluation and supervising students in courses and activities; observation and interpretation for evaluation; demonstration and practice in teaching voice and speech development, dramatic art, and interpretation, radio and television, and individual speech, dramatics, and forensics; same as Education 76:50.

36:250 Teaching Freshmen Rhetoric 2 s.h.

Letter-discourse course exploring literature and problems involved in teaching composition, public speaking and reading; same as English 8:00.

36:251 Foundations of Speech Education 2 to 4 s.h.

Origin, early periods, psychological bases, and theories and principles of teaching speech, related courses, teaching and writing by early contributors; speech education from Pub-Latin to English London; speech education in works of Aristotle, Quintilian, Asisius, B. Augustus, Rava, English teachers and writers.

36:302 Modern Speech Education 2 to 4 s.h.

Modern speech education, beginning with works of Ranne and English teachers and ending with contemporary developments in teaching, research and theory; same as Education 76:00, 76:01, 76:02, and methods and materials as created by existing literature and problems related to planning, organizing and evaluating speech program in secondary schools.
field, the undergraduate curricula leading to B.S. or B.A. degrees in speech and hearing science have as a primary purpose the preparation of students for graduate work. Hence, the undergraduate program emphasizes the normal processes of speech, hearing, and language. These undergraduate programs may be taken, of course, by persons who wish to gain a degree in the College of Liberal Arts but who do not desire a career in this field.

Students may qualify for the B.S. degree or the B.A. degree with a major in speech and hearing science by completing, in addition to the general requirements prescribed by the College of Liberal Arts, the undergraduate Departmental program given below:

Required Departmental Courses

3:15 Introduction to Speech and Hearing Processes and Disorders 3 s.h.
3:20 Phonetics of American English 3 s.h.
3:110 Anatomy of the Speech and Hearing Mechanisms 3 s.h.
3:112 Fundamentals of Speech Science 3 s.h.
3:113 Introduction to Hearing Science 3 s.h.
3:114 Children's Language Development 3 s.h.
3:17 Introduction to Psycholinguistics or 3 s.h.
103:100 Introduction to Linguistics 3 s.h.

Required Courses in Related Areas

29:113 Physics of Sound and Music 3 s.h.
33:143 Statistical Analysis I 3 s.h.
33:11 Elementary Psychology 4 s.h.
33:13 General Psychology 4 s.h.

Minimum of nine semester hours completed by one course from Group 1 and one course from Group 2, as listed below, and one additional course selected from fields of psychology, anthropology or sociology.

Group 1

5:100 (31:111) Child Development 3 s.h.
5:151 (31:144) Introduction to Child Psychology 4 s.h.

Group 2

33:13 Psychology of Adjustment 3 s.h.
33:122 Personality 3 s.h.
33:163 Abnormal Psychology 3 s.h.

Other Requirements

Students majoring in speech and hearing science must also complete or have had the equivalent of college algebra and trigonometry, college physics dealing with light and sound, and a college course in the biological sciences.

Honor Program

The senior year program leading to the B.S. degree with Honors in speech pathology and audiology is open to students who at the beginning of the senior year have completed at least 10 semester hours of coursework that can be counted toward a major in the Department, and must have earned at least a 3.0 grade-point average on all major courses and over all. For graduation with Honors, the student must complete the requirements for a major in this department; complete two semesters of study in residence after entering the senior year; Honors program; maintain a minimum overall grade-point average of 3.0, a minimum grade-point average of 3.0 for all courses in the major, and a minimum grade-point average of 3.0 in the required six semester hours of Departmental Honors course for seniors (Honors Seminar and Honors Thesis), and be recommended for graduation with Honors by the Honors thesis adviser and the Departmental Honors advisor.

Students who are eligible and who are not already classified as Honors students should contact the departmental Honors advisor before the beginning of the senior year. At any time during undergraduate study, studies who have earned a minimum grade-point average of 3.0 and have entered the University as Honors students may apply for Honors classification in the College of Liberal Arts and in this department by recommendation of the Departmental Honors adviser.

Advanced Degrees in Speech Pathology and Audiology

More specific details on the requirements for advanced degrees can be obtained by consulting the Graduate College and/or contacting the office of the Department of Speech Pathology and Audiology.

A graduate student is accepted as a candidate for an advanced degree by recommendation of the Departmental staff based upon a review of the student's previous academic record and scores on the Aptitude Test of the Graduate Record Examination, if available. In certain cases a student may be admitted for graduate study with acceptance as a degree candidate reserved until the student has demonstrated his ability to perform satisfactorily in graduate courses during one or more semesters of residence at Iowa.

The M.A. program in speech pathology and audiology may be a professional program to prepare the student for immediate placement in clinical service positions, or it may be a general program of graduate study leading to additional study for the Ph.D. degree. The various programs for the professional M.A. students are necessary to determine that upon graduation the student will meet the requirements for immediate professional placement. The general M.A. program allows greater flexibility of individual program plans. It is presupposed that the student has a background of undergraduate courses in speech and hearing, science, development of oral communication and psychology of human behavior which is essentially equivalent to an undergraduate major in this field.

The Ph.D. program provides for comprehensive training for the scholar and researcher in speech and hearing processes and their disorders and also for more intensive specialization in particular clinical problems in which the student may have special interest.

The full academic load for all regular graduate students is 12 semester hours of course registration per semester and six semester hours in summer session. In addition, as an integral part of the training program all full-time degree candidates are given
part-time professional training assignments of a research, teaching or clinical nature. The assignment for each student in any semester is based on his or her particular professional goals and on the type of activity which contributes most to professional growth and development. Time required for such activities will be approximately 15 hours per week. No registration is required for these training assignments and no academic credit is given. The training assignments are in no way connected with or related to financial assistance.

The Department of Speech Pathology and Audiology cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences (see "Graduate College").

**Master of Arts Degree**

All entering M.A. degree candidates are required to take preliminary comprehensive examinations covering coursework in speech and hearing that is considered prerequisite to graduate study. The results of these examinations are to be considered diagnostic in nature, providing the student and faculty advisor with a basis for developing an appropriate plan of study. These examinations are ordinarily taken during the first semester of residence. Portions of the examinations may be waived if the student chooses to take appropriate courses.

**Professional Program**

The professional M.A. program is designed to prepare clinicians in speech pathology and audiology who will be fully competent to function independently in a variety of clinical settings. Persons completing a professional M.A. program meet all academic requirements for clinical certification by the American Speech and Hearing Association. Four different curricula are provided. Each includes basic studies listed below under A, the requirements listed under one of the four other sections (B, C, D or E) and elective electives. The student should choose one of these four curricula in relation to career objectives and interests.

A total of 38 semester hours of graduate work is the minimum required for a master's degree in this department. It has been found that students usually require at least three semesters and one summer term to become fully qualified for their career objectives. Candidates for the professional M.A. degree are not required to present a thesis. However, students demonstrating research aptitude and interest are encouraged to do so. All candidates for the professional M.A. degree without thesis are required to take final written comprehensive examinations.

**Requirements for the Professional M.A. Degree**

- **A. All Majors**
  - **3116** Neural Processes of Speech and Language 3 s.h.
  - **3120** Clinical Procedures in Speech Pathology and Audiology 2 s.h.
  - **3182** Articulation Disorders 3 s.h.
  - **2185** Hearing Loss and Audiometry 4 s.h.
  - **3214** Clinical Procedures for Language Habilitation 3 s.h.
  - **3264** Aural Rehabilitation 3 s.h.
  - **7C199** Counseling for Related Professions 2 or 3 s.h.

Two advanced seminars or theses 4 s.h.

* Equivalent undergraduate course will be accepted as meeting requirements.

Additional semester hours of practicum registration sufficient to meet supervised, direct clinical experiences requirements for Certificate of Clinical Competence of the American Speech and Hearing Association and to provide broad supervised experience are required.

**B. Speech Pathology, General Clinical Emphasis**

Courses listed under A and

- **3183** Stuttering 3 s.h.
- **3212** Voice Disorders 2 s.h.
- **3225** Neuropsychopathologies of Speech and Language 3 s.h.
- **3237** Clinic Practice 2 s.h.

Practicum, research and elective courses to bring total to at least 38 semester hours

**C. Speech Pathology Major, Emphasis on Clinical Work in Elementary and Secondary Schools**

Courses listed under A and

- **3183** Stuttering 3 s.h.
- **3212** Voice Disorders 2 s.h.
- **3235** Neuropsychopathologies of Speech and Language 3 s.h.
- **3237** Clinic Practice 2 s.h.

**7E104** Remedial Methods in Speech and Hearing 3 s.h.

**7E192** Laboratory Practice in Elementary School 5 s.h.

Practicum, research and elective courses to bring total to at least 38 semester hours

**D. Audiology Major, General Clinical Emphasis**

Courses listed under A and

- **3120** Fundamentals of Laboratory Instrumentation 3 s.h.
- **3241** Advanced Audiometry 4 s.h.
- **3243** Conservation of Hearing 3 s.h.
- **3243** Hearing Aids 3 s.h.
- **3244** Auditory Rehabilitation (in addition to A above) 3 s.h.
- **3254** Auditory Testing and Special Auditory System 3 s.h.

**7E104** Remedial Methods in Speech and Hearing 3 s.h.

**7E192** Laboratory Practice in Elementary School 5 s.h.

Practicum, research and elective courses to bring total to at least 38 semester hours

**E. Auditory Major, School Hearing Clinician**

Courses listed under A and

- **3241** Advanced Audiometry 4 s.h.
- **3243** Conservation of Hearing 3 s.h.
- **3243** Hearing Aids 3 s.h.
- **3244** Auditory Rehabilitation (in addition to A above) 3 s.h.

**7E104** Remedial Methods in Speech and Hearing 3 s.h.

**7E192** Laboratory Practice in Elementary School 5 s.h.

Practicum, research and elective courses to bring total to at least 38 semester hours

Students preparing for clinical positions in public schools must meet the certification requirements of the states in which they plan to work. Completion of the following courses, in addition to those previously listed, will meet the requirements of most states.

- American Government or American History 2 or 3 s.h.
- Introduction to Elementary Teaching 2 s.h.
- Children's Literature 3 s.h.
- Educational Psychology and Measurement 3 s.h.
- Exceptional Children 2 or 3 s.h.
General Program

The M.A. program for the student planning to continue to the Ph.D. degree is individually planned in consultation with the student's advisor. It usually includes a substantial portion of the courses previously listed for the professional M.A. program. Certain of the courses, however, may be omitted, deferred, or replaced by other courses when appropriate for the student's plan of study leading to the Ph.D. degree. Students planning to continue to the Ph.D. degree are required to present a thesis as part of the M.A. program and successfully complete a final oral examination.

Doctor of Philosophy Degree

The Ph.D. program is designed to give the student with the opportunity to attain a comprehensive and thorough knowledge of subject matter both in the area of speech pathology and audiology in general and also in the area of his or her own particular specialization. Consideration is given to special interests and goals whenever possible in arranging the details of the student's Ph.D. program.

The Ph.D. program is usually planned with specialization in speech pathology, audiology, speech science or hearing science. Within each area the candidate and advisor may provide for special emphasis through suitable selection of advanced seminars and research areas. Most students will find that their special interests lie in one or more of the four listed areas. The establishment of prescribed programs for these areas is not intended to circumscribe the graduate curriculum of the Ph.D. candidate who has specialized goals or interests which are not adequately met by these programs. Individual programs designed to meet special interests and goals are encouraged, provided only that the student's purposes are clearly defined and that he or she presents an adequate plan of study for their accomplishment.

Courses beyond those included in the Departmental listings are not included in the plans of study. Approval of the emeans, statistics, physics, psychology, anatomy and physiology.

The Ph.D. comprehensive examinations are ordinarily taken after approximately two years of graduate study. The examinations are written and oral and include a general review of the student's qualifications and performance in graduate training. Candidates whose earlier training has not included a master's thesis are not eligible to take the comprehensive examinations until they have demonstrated aptitude for research by completing a suitable research project and presenting a paper summarizing its results. This project is to be of a magnitude appropriate for a master's thesis. The Ph.D. candidate must also successfully complete a dissertation based upon original research in the area of specialization.

Recommended Courses

A. All areas of specialization
Courses, or their equivalents, required for M.A. degree and following additional courses:
3:120 Fundamentals of Laboratory Instrumentation
3:220 Advanced Laboratory Instrumentation
3:250 General Experimental Phonetics
3:251 General Experimental Phonetics Laboratory
3:500, 591 or 592 Research
Statistics beyond introductory course
Courses in computer science
Courses in psychology (physiological, learning, motivation, personality)
B. Speech pathology
Courses listed under A and
Seminars in areas of interest
Clinical practicum
C. Audiology
Courses listed under A and
3:254 Psychacoustics
3:255 Psychacoustics Laboratory
3:256 Physiology of Hearing
3:257 The Pathological Auditory System
Seminars in areas of interest
Clinical practicums
D. Speech and language science
Courses listed under A and
3:254 Psychacoustics
3:255 Psychacoustics Laboratory
Seminars in areas of interest
Courses in linguistics and psycholinguistics
Courses in biological and physical sciences and mathematics
E. Hearing science
Courses listed under A and
3:254 Psychacoustics
3:255 Psychacoustics Laboratory
3:256 Physiology of Hearing
3:127 Sensory Processes
Seminars in areas of interest
Courses in biological and physical sciences and mathematics
Students following programs in speech and language science or hearing science are normally expected to register for research credit during each semester of residence
Training Facilities
The student of speech pathology and audiology at The University of Iowa is provided with a broad range of opportunities to acquire experience in both clinical and research areas.
Clinical Facilities
The clinical training program derives great benefit from the fact that Iowa City is the health center of the state and that those health service facilities are located so that they may be fully utilized in the clinical training of students in speech pathology and audiology.
The University of Iowa Speech and Hearing Clinic serves the University and the general public. Included in its services are outpatient evaluations and rehabilitation programs for speech, hearing and language problems. Included is a six-week summer residential program for children. These clinical programs are planned for the training of students through supervised clinical experience with a wide variety of speech, hearing and language disorders. This training is enhanced by the use of the new and
modern facilities of the Wendell Johnsson Speech and Hearing Center, which include audiometric testing suites, diagnostic and therapy suites, a closed-circuit television system and modern equipment for diagnosis and therapy. In addition to the clinical training in the University Speech and Hearing Clinic, each training may also be acquired in supervised clinical practice with elementary school children, by arrangement cooperative with the local schools and the special education programs of Johnson and adjacent counties, in supervised clinical practice in speech and hearing services provided by the Department of Otolaryngology and Maxillofacial Surgery, Department of Pediatrics, Iowa State Services for Crippled Children, University Hospital School and Iowa City Veteran Administration Hospital, and in internships and conservative programs with the Iowa School for the deaf, Iowa Lighthouse and Sight Saving School, hospitals and schools for the mentally retarded, and other state institutions.

Public and private departments and programs in addition to those mentioned above often contribute to the cooperative professional training, research and service programs.

Research facilities

Research facilities in the Wendell Johnson Speech and Hearing Center include a number of fully-equipped laboratories for the study of the basic processes of speech, hearing and language, and disorders of these processes. Included are laboratories and equipment for acoustic, physiological and perceptual study of speech and for audiologic, psychophysical and psychophysical studies of hearing. Well-equipped mechanical and electronic shops and trained technical personnel are available for assistance in research instrumentation.

Cooperation of various departments of the University Hospitals and the College of Dentistry makes it possible to utilize additional laboratory facilities for the investigation of a wide variety of research problems. Research opportunities are materially broadened by the active participation and cooperation of specialists from the fields of psychology, child development, education, engineering and medicine.

Staff: professors Curtis, Hardy, Mott, Morris, Small, Sprinstra- beech, Williams, professors Gemmell, Sherman; associate professors Anderson, Lilly, D. R. Van Denmark; assistant professors Batt, Bledsoe, Davis, Emge, Lobato, Trembly, Wernick; clinical as- sociates Hall, Willie, staff research assistant professors Emeren Reger; associate professor Smith; clinical assistant professors Forder, A. A. Van Denmark.
Urban and Regional Planning

Urban and Regional Planning is a multidisciplinary program that focuses on the planning, design, and development of urban environments. It addresses the social, economic, and environmental aspects of urban and regional development, including land use planning, transportation, housing, and community development. The program prepares students for careers in a variety of fields, such as city planning, real estate development, and urban policy analysis.

Statues

“See ‘Division of Mathematical Sciences’”

Urban and Regional Planning

Program Chairmen: James F. Hsu

Urban and Regional Planning is a graduate professional program concerned with the improvement and orderly development of urban and regional areas.
Joint Programs
A joint program with the College of Law is offered, leading to the degree, Juris Doctor and Master of Arts in Urban and Regional Planning, after approximately four years of study. This represents an overall minimum of credits sufficient to reduce the time required from five to four years. A joint-degree program is also offered in urban transportation. The Center for Urban Transportation Studies is located in the Institute of Urban and Regional Research and offers a multidisciplinary training and research program. Other joint-degree programs are also possible; inquiry regarding such are advised well in advance of the start of the academic year.

Thesis Requirement
A thesis for six semester hours credit is included; this may be expanded to warrant additional credit. Variety is encouraged in the form of the thesis, to include design/physical planning projects, multimedia presentations and other approaches. An alternative to the thesis is offered: a shorter paper or project for three or more credit hours plus a comprehensive exam.

Internship Employment
For the summer between the two academic years, each student is advised to secure employment in an operating planning agency, community organization or private firm involved in consulting with the faculty. Emphasis is made upon finding opportunities in large metropolitan areas or in agencies undertaking experimental programs. If meaningful internship work is unavailable, there are options such as a systematic program of volunteer work or agency observation throughout the second year. A brief paper concerning the nature of internship or optional work is also required.

Options
Within the two-year sequence options have been designed to provide choices as to general direction as described above. During the year 1971–1972, the Department offered these options through a major revision of curriculum on an experimental basis. The new program continues for 1972–1973. Should there be any major changes, applicants will be informed. The two-year sequence is as follows:

First Semester
A 13-credit "omnibus" course is required of all students. It is taught by three faculty members and three teaching assistants. Its purpose is to demonstrate the generalist approach and teach some fundamentals of planning.

Second Semester
Each student will take a four-credit course which combines the materials 102:206 Planning Analysis and Techniques and 210:210 Quantitative Methods in Planning which were not covered first semester. Secondly, all students will take four credits in a series of course modules. In this content four short courses of three to five weeks' duration can be selected among approximately 10 offerings. The modules will cover subareas of planning such as housing, land-use controls, transportation, regional de-
velopment and social planning. Thirdly, all students will take two hours of independent study which, in conjunction with the course module, should represent an extension of the first semes-
ter work. There is also one three-credit elective. The general
purpose of the semester is to introduce students to possible con-
centrations or specializations available to them.

Third and Fourth Semesters
The thesis or major paper is required during the second year.
At least one credit hour of thesis or major paper should be taken
in the third semester in order to develop a research design. During
the second year students decide whether they wish to pursue a
generalized, concentrated generalist or specialist education, and
develop a suitable program with their advisor.

Choices for electives often are selected from outside the De-
partment. They include a wide range of courses in the depart-
ments of Geography, Political Science, Sociology, Anthrop-
ology, Civil Engineering, Economics and Statistics, the School of
Social Work and the College of Law.

Omnibus
The major element of the revised curriculum is a 13-credit "om-
nibus" course which all entering students take in their first
semester. This course is taught jointly by three faculty members
and essentially combines four courses listed in the Catalog:
102:201 Environmental Planning and Design
102:203 Metropolitan Planning
102:204 Planning Analysis and Techniques
102:207 Theory of Planning

Omnibus is an effort to promote the learning of planning funda-
mentals through the initiatives of students. Faculty members
are asked for student experiences with planning practice and prob-
lems. Questions raised by students will be the basis for further
discussion by the faculty.

The objectives of Omnibus are of two types. Process objectives
refer to promoting work habits conducive to learning and hu-
moristic procedure; content objectives refer to the specific
nature of the problems of American society to which planners
can contribute.

To allow students the widest possible latitude to determine
for themselves the nature of the problems of American

To work and learn in a cooperative manner by pooling re-
dent work on the basis of their problems;

To equip students to cope with frustration and change, both
which are characteristic of planning practice.

The other type of objectives are those relating to content.

Generally the purpose is to provide an introduction to the field.
Specifically the content objectives for Omnibus are:

To provide the opportunity for a critical examination of the
relationship between various social theories and contempo-

To provide tools of analysis such as system analysis, scien-
tific method, social science philosophy and urban design;

To provide an understanding of the nature of contemporary
planning; and

To introduce students to the nature and use of certain quan-
titative skills.

Field Studies Program
From time to time there are opportunities for second-year stu-
dents to get academic credit for field work in the planning area.
In the past students have worked with low-income residents of
Des Moines and Waterloo. If extensive enough, such work can
be carried out in residence. A special program is planned for
sponsoring a regular field studies option in Chicago. If this is suc-

successful, field work opportunities will become a regular option in
the curriculum.

Joint Program in Urban Planning and Law
The Joint Program in Urban and Regional Planning and Law
is offered to educate individuals for active involvement in the
resolution of major social, economic and political problems. The
Program is composed of required work in law and planning, and
electives which permit some flexibility of purpose and design.

The Program is best suited to persons with broad interests and
experience, capable of interdisciplinary study and seeking to
prepare themselves for defense investigation and advocacy for
neglected groups and interests of society.

The College of Law requirement for the degree Juris Doctor
is 90 semester hours. In the joint program, 12 semester hours of
work in planning are accepted for credit toward the law degree.
The requirement for an M.A. in Urban and Regional Planning is a
minimum of 48 semester hours. Two courses (six to seven semester hours) in law may be credited toward
the planning degree.

Joint Program in Urban Transportation
The graduate program in urban transportation consists of a
multidisciplinary approach to research and training in urban
transportation. The training and research program is conducted in
a broad urban context with emphasis on the interaction of
special academic disciplines to adequately define the scope of
urban transportation problems as they relate to social, economic,
political and physical elements of the urban environment.

This broad approach is illustrated by the various Disciplinary
tracks existing at The University of Iowa through the Institute of
Urban and Regional Research, which is the parent organisation for the graduate program in
urban transportation. The urban transportation program can be
part of a Departmental master's or doctoral program. The
graduate program in urban transportation does not grant de-
grees; degrees are granted by participating departments and pro-
grams, such as civil engineering, economics, geography, in-
dustry and management engineering, political science, soci-
ology and urban and regional planning.

In essence the training program will consist of a set of core
courses which will be required of all students in the urban trans-
portation program. Students will also have to meet degree re-
quirements within their respective departments. The research
program to be pursued in this program covers a broad scope of
activities. Specific research efforts to be conducted are in urban
planning is small metropolitan areas, trip generation and travel
behavior in metropolitan areas, urban change detection and the
continuing plan of urban transportation planning, network
analysis, and corridor analysis design team.

Students should submit duplicate copies of application and
letters of recommendation, along with a statement indicating
their interest in urban transportation and how it relates to their main field.

Staff: associate professor Doeker, Harris, Ramney; assistant

Participating faculty from other disciplines: professors Ross

Participating faculty from other disciplines: professors Ross

Urban and Regional Planning

102:120 Introduction to Planning 3 a.h.

Historical perspectives on development of urban systems and planning history; analysis of current urban environmental problems; lecture and seminar discussions; field trips for students outside planning program.

102:122 Urban Politics 3 a.h.

Political dimensions of urban problems and issues; analysis of political behavior and public decision-making, relative to normative models, solutions to urban problems; strategies for political change.

102:123 Urban Workshop 2 a.r.

Individual study with faculty member, designed for advanced undergraduate students. Focus of study will be selected to improve understanding of specific urban problems.

102:124 Readings in Planning 2 a.r.

Individual study with faculty on urban studies; emphasis on reading material selected by student and faculty.

102:201 Urban Planning and Design 4 a.h.

Environmental and urban design; lecture and seminar; focus on urban design issues and principles of urban design and planning; emphasis on urban design and planning of communities and neighborhoods; emphasis on urban design and planning of communities.

102:205 Urban Planning and Design 4 a.h.

Comparative survey of contemporary urban design; focus on urban design issues and principles of urban design and planning.

102:211 Environmental Planning and Design 4 a.h.

Lecture and seminar; preparation of student's capabilities for understanding of environmental issues and their effects on urban design; emphasis on urban design issues and principles of urban design and planning.

102:212 Theory of Planning 3 a.h.

Evolutionary analysis of planning thought, theories, and practice; analysis of planning thought, theories, and practice.

102:213 Urban Housing 3 a.h.

Lecture and seminar: research and practice in urban design and planning; urban design and planning issues and principles of urban design and planning; emphasis on urban design and planning of communities.

102:214 Planning Legislation 4 a.h.

Survey of city, county, and state laws affecting urban and regional planning in the United States and other urban planning activities; urban design and planning issues and principles of urban design and planning.

102:215 Quantitative Methods for Planning 4 a.h.

Mechanical and statistical techniques useful in urban design and planning; introduction to computer and computer programming.

102:280 Principles of Urban Design Theory 3 a.h.

Principles of urban design theory; principles of urban design and planning; principles of urban design and planning; principles of urban design and planning.

102:281 Principles of Urban Design Theory 3 a.h.

Principles of urban design theory; principles of urban design and planning; principles of urban design and planning.

102:282 Principles of Urban Design Theory 3 a.h.

Principles of urban design theory; principles of urban design and planning; principles of urban design and planning.

102:284 Principles of Urban Design Theory 3 a.h.

Principles of urban design theory; principles of urban design and planning; principles of urban design and planning.


Principles of urban design theory; principles of urban design and planning; principles of urban design and planning.

102:286 Principles of Urban Design Theory 3 a.h.

Principles of urban design theory; principles of urban design and planning; principles of urban design and planning.

102:287 Principles of Urban Design Theory 3 a.h.

Principles of urban design theory; principles of urban design and planning; principles of urban design and planning.
Women's Studies

urban context, with an emphasis on the interaction of several academic disciplines to define adequately the scope of urban transportation problems as they relate to social, economic, political and physical elements of the urban environment. This broader framework exists at The University of Iowa through the Institute of Urban and Regional Research which is the parent organization for the Graduate Program in Urban Transportation.

The urban transportation program is taken in conjunction with a Departmental masters or doctoral program. The Graduate Program in Urban Transportation, which is housed in the Institute of Urban and Regional Research, does not grant degrees, nor are the degrees in urban transportation per se; rather degrees are granted by participating departments and programs, such as Civil Engineering, Economics, Geography, Industrial and Management Engineering, Law, Political Science, Sociology, and Urban and Regional Planning. An appropriate notation will be made on a student's transcript when completing the urban transportation requirements.

The training program consists of a set of core courses which are required of all students in the Urban Transportation Program. Students also have to meet degree requirements within their respective departments. The research to be pursued in this program covers a broad scope of activities. All supported students are expected to participate in research projects. The emphasis is on policy related research projects. Presently, research is being conducted in transit analysis and planning, trip generation and travel behavior, urban change detection in the continuing phase of urban transportation planning, network analysis, transportation corridor analysis, transportation safety research and transport investment analysis.

Students should submit duplicate copies of application and letters of recommendation, along with a statement indicating their interest in urban transportation and how it relates to their main field.

Curriculum

Students working toward a master's degree or a Ph.D. in any one of the following departments may find the Urban Transportation Program attractive and related to his or her interests:

Civil Engineering
Economics
Geography
Industrial and Management Engineering
Law
Political Science
Sociology
Urban and Regional Planning

Students participating in the Graduate Program in Urban Transportation must satisfy the requirements of their departments as well as the core courses specified in the Urban Transportation Program. The core courses of the Urban Transportation Program are subdivided into two separate option sets. One option focuses on Transportation Policy Analysis and the other on Transportation Systems Analysis. Each option requires six core courses with two courses common to both options. In addition to the core requirement, students enrolled in the program may elect other courses.

Depending on the nature of the student's department or program of origin a combined master's program may be of one, two or three years duration. Generally speaking the Urban Transportation Program will add one or two semesters to a student's program depending on the degree to which core courses could apply to the main program.

Core Courses

The following courses are common to both the Transportation Systems Analysis option and the Transportation Policy Analysis option:

102:211 Social, Economic and Institutional Impacts of Urban Transportation
53:272 Urban Transportation Planning

The following are core courses for the Transportation Policy Analysis Option:
68:135 Introduction to Regional and Urban Economics
44:137 City Growth and Development
30:101 Municipal Government and Politics
30:353 Community Political Systems
34:150 Political Sociology
102:226 Seminar: Urban Transportation
102:102 Urban Politics
44:116 Political Ecology

The following are core courses for the Transportation Systems Analysis option:
53:— (Proposed) Transportation Analysis
102:226 Seminar: Urban Transportation Issues
44:236 Travel Behavior in Urban Areas
44:137 City Growth and Development
102—(Proposed) Research Methodology
56:248 Integer Programming and Network Flows
56:141 Introduction to Operations Research
56:241 Operations Research

Student Support

Both fellowship support and research assistantships are available for qualified students in the Graduate Program in Urban Transportation. Generally, fellowships will be awarded to first-year students and research assistantships to second-year students.

Women's Studies

Advisory Subcommittee Chair: Patricia Audia

In response to a conscious need of women to examine their social, psychological and political positions, the University has begun the development of a Women's Studies Program. Several departments and programs now offer courses consid-
ering particular aspects of the roles, status and/or image of women. While these courses do not constitute a comprehensive program, they do offer undergraduate and graduate students an opportunity to focus on material previously neglected, and in some cases to participate in innovative classroom situations. Among these courses are:

7F:140 Sex Stereotyping and Socialization in Education  2-3 s.h.
8:139 Representative British and American Women Writers: 1800 to Present  2 s.h.
16:187 Studies in the History of Women: The United States  3 s.h.
42:125 Child Care Centers: Development and Administration  2 s.h.
45:2 American Civilization II  3 s.h.
45:145 Social and Cultural Concepts of Women in Literature to 1940 (same as 8:174 and 108:375)  3 s.h.

In addition to approved University courses, a number of courses are offered in the Action Studies Program, some for University credit, and a number of nonacademic skills courses for women are offered through the Women's Center.

Zoology

Department Chairman Jerry J. Kolbret Degrees offered B.A., M.S., Ph.D.; also M.S. in biology jointly with Botany Department

Undergraduate Program

Majors are required to have a modest background in physics, mathematics and chemistry in order to prepare them for understanding biological phenomena at the various levels of organization, from the molecular, cellular and organismic through those of the population, species and ecosystem. Graduates of the Department need to have completed requirements in the health sciences, or they may continue into graduate programs leading to teaching (high school, community college, college and university), service and research in various professional areas (e.g., parasitological fields, parasitology, environmental sciences, etc.).

The basic courses offered in the Department serve both its own majors and those planning to enter medicine, dentistry or related professions. They also serve students in fields such as psychology, anthropology and sociology. The Department is developing additional courses for the nonmajor—that is, the major in the humanities, social sciences, business administration, etc. The Departmental experience is based upon an introductory course which stresses principles. Each student is further required to take courses in genetics (which give emphasis to traditional basic approaches, and to current materials in molecular genetics, and some acquaintance with other genetic disciplines) and in cell physiology (the cell cycle, cell structure and function, energetics, intermediary metabolism, regulation, membrane phenomena and mechanisms of action of nerve and muscle). Beyond these coursework students are given certain choices from a restricted block of courses: entomology, invertebrates, vertebrates, evolution, ecology (at least eight hours) and free choices from nearly all of the other undergraduate level courses (12 hours), or a total of 31 semester hours in zoology. To emphasize the concern of the Department with breadth of training, and desirability of background in related disciplines, students may substitute four hours of work in botany, microbiology, biochemistry or mathematics (calculus) for four hours of work in zoological courses.

Required courses for the B.A. degree are:

37:3 Principles of Animal Biology  5 s.h.
37:110 Fundamental Genetics  4 s.h.
37:105 Cell Physiology  4 s.h.

Eight hours are to be selected from the following list:

37:102 Principles of Modern Entomology  4 s.h.
37:107 Animal Kingdom I (Invertebrates)  4 s.h.
37:108 Animal Kingdom II (Vertebrates)  4 s.h.
37:131 Evolution  4 s.h.
37:132 Ecology  4 s.h.

Twelve hours are to be selected from any other undergraduate courses in zoology numbered 102-199, except that no more than two semester hours may be accumulated from courses 37:172, 180, 182, 196, 198, 199. One may not elect 37:103 if 37:108 has been taken. Four of these 12 hours may be earned in botany (any course), calculus, general biochemistry (59:165) or microbiology (61:157).

Requirements for the B.A. degree are under review and may be modified. Write the Department for current details.

Other courses in physical sciences and mathematics required of undergraduate majors are:

22:4 Elementary Functions  3 s.h.
41:4 and 4:4 Principles of Chemistry I and II  6 or 7 s.h.
4:5 Principles of Chemistry  3 s.h.
4:6 Elementary Chemistry Laboratory  2 s.h.
4:121 Organic Chemistry I  3 s.h.
4:122 Organic Chemistry II or Biochemistry 99:120  3 s.h.
4:141 Intermediate Chemistry Laboratory  2 s.h.
29:17 and 18 College Physics  8 s.h.

For general degree requirements see "College of Liberal Arts." Supplementary courses in botany, chemistry, geology, microbiology, mathematics and physics are recommended.

Honors

Honors candidates in zoology fulfill the College-wide requirements by completing at least six semester hours of work in 37:102, 172, 174, 197 and 198, followed by a comprehensive examination. The Departmental program offers membership in a small, active group of undergraduates with common interests, and association with one of the Department's research groups. Experiments, running discussions of current research, the study of specialized topics and attendance at research lectures are practices in pursuing students to which the students are introduced. An introduction to research activities can be obtained either in or outside the scope of the honors program and may be pursued in summer as well as during the academic year.

Graduate Programs

The various graduate programs of the Department, leading to M.S. or Ph.D. degrees, are designed to prepare students for
various kinds of professional activities, including teaching at various levels, participation in research in private, educational or government laboratories, or other kinds of professional service, frequently involving some planning or administrative functions. Over 80 percent of the doctors of the last two decades have, at one time or another, been engaged in college or university teaching. A substantial number of students completing their training at an M.S. degree have obtained technical or professional positions, some of which require assumption of independent responsibility in performance or planning.

Each of the members of the Department carries out research. Programs in cell biology, developmental biology, genetics, molecular biology, neurobiology in its various aspects, ecology, behavior, physiology and parasitology are included in the Department, and most of these have auxiliary aspects which are served through work in other departments, sometimes with joint sponsorship of faculty in the other departments. For purposes of student advising, these programs have been classified into four general areas: developmental biology, ecology and behavior, genetics, physiology. Each student selects one of these areas as a specialty, and is thereafter advised by the faculty of that area. His or her progress toward meeting the requirements of the advanced degree program are monitored by the faculty of that Departmental area.

The faculty area committee can specify courses which must be taken or audited. It can recommend that particular teaching or research experiences be sought. It has the obligation of offering advice and counsel. It is responsible for producing the M.S. examination, administering it and providing faculty members for the formal committees which oversee M.S. theses and evaluate the examinations. Once a student has been approved for continuation toward a Ph.D. degree, he or she selects an advisory committee of five (one from outside the Department), and that committee is thereafter responsible for advising and monitoring the student's progress.

Admission

Applicants for admission to the graduate programs should have a cumulative undergraduate grade point average of 3.0 or higher. Graduate Record Examination scores (verbal and quantitative) ought preferably to be above 1100 (level 2 on each section summed). Under special circumstances students with a grade point average below 2.8 may be considered for conditional admission.

Although the Department prefers applicants with an undergraduate program much like its own, it is open to students with other backgrounds, such as biology, biochemistry, chemistry, etc. All new students, except for those who are registered in other University departments, must matriculate in August, submit themselves to a diagnostic examination covering topics in developmental biology, genetics, physiology with an emphasis on cell physiology, evolution and ecology. On the basis of examination results students are excused from further work on one or all of these fields, or are required to take specific courses to enhance their background in the area. These requirements are made in order to ensure breadth of background prior to engaging upon more specialized graduate work. Any deficiencies in mathematics, chemistry or physics are to be made up during the first semester. Applicants with a degree other than biology or zoology may request modification of certain of the area requirements; this matter is the province of the student's degree committee.

The M.S. Degree in Zoology

The M.S. degree with thesis requires 34 semester hours of graduate credit and a thesis based on original research. Ordinarily six to eight semester hours are assigned to thesis research and writing. The remaining hours are to be selected in consultation with the student's advisory committee, and the choice of courses will be tailored to the student's background and career goals. Credit received in courses at the 100-level or above, with the exception of 37-103 and of courses in zoology required to make up deficiencies revealed by the diagnostic examination (see above), may be included in the 34-hour minimum if approved by the advisory committee. After the thesis is accepted, the candidate must pass a written examination covering his or her graduate program in zoology, with emphasis on the area related to the student's research. This is followed by an oral examination concerned mainly with the work reported in the thesis.

The M.S. degree without thesis requires 34 semester hours of graduate credit and a library research report. No more than four semester hours of credit may be granted for the research report. Credit may be earned in graduate courses in zoology or cognate sciences. These courses must be determined in consultation with the student's thesis committee and tailored to fit the student's background and career goals. Credit received in courses at the 100-level or above, with the exception of 37-103 and courses in zoology required to make up deficiencies revealed by the diagnostic examination (see above), may be included in the 34-hour minimum if approved by the advisory committee. On completion of the hours requirement and acceptance of the research report by the student's faculty sponsor, the student must pass a written examination covering his or her graduate program in zoology, including the area of the student's report.

The Ph.D. Degree in Biology

Thirty semester hours of graduate credit are required of all students who earn this degree with thesis. Ordinarily six to eight semester hours are assigned to thesis research and writing, eight to twelve semester hours to graduate courses in zoology, eight semester hours to graduate courses in botany, and the remaining semester hours to free electives. Following acceptance of the thesis, the candidate must pass a written examination covering graduate programs in botany and zoology. This is followed by an oral examination based mainly on the work reported in the thesis. The Botany and Zoology departments are now considering the offering of a 34-semester hour program leading to the M.S. in biology, without thesis.

The Ph.D. Degree in Zoology

For each Ph.D. degree candidate a Departmental committee is formed, of which the candidate's faculty sponsor is chairman. The committee's charged with establishing those formal course or proficiency requirements which the candidate must meet. The background of the candidate, and his or her current and prospective research interests, are taken into consideration. The committee also establishes that portion of the formal coursework or particular proficiencies (such as ability to read certain modern
foreign languages) which will be demanded of the student before admission to the comprehensive examination. In this examination the candidate is expected to demonstrate knowledge of the fundamentals of zoology and mastery of one or two specialized fields. Usually the student has demonstrated some ability in research through the M.S. thesis, or through equivalent research work. In his or her research, which culminates in the doctoral dissertation, all of the requirements for a scholarly piece of work will be demanded. The acceptance of the thesis by the Department will be followed by the final oral examination over the thesis itself and the specialized field which it represents.

Special Facilities

The Zoology Department is housed in five buildings, a cluater, the two newest being wings of the original unit. One of these, which doubled available research space, was occupied in 1965, and the most recent, which is somewhat larger, was occupied in 1971. The buildings house the Department fully, so far as teaching, office and research facilities are concerned. The buildings also house a Departmental library which provides adequate study space as well as the books and journals for nearly all of the teaching and research needs of the Department.

Many of the laboratory courses in the Department use live caring animals heavily, and the Department is provided with animal care facilities for mammals, birds, reptiles, amphibians, fish, insects and invertebrates of various sorts, including protozoa. Special facilities exist for research with viruses, fruit flies and marine organisms. At least 12 walk-in and reach-in environmental chambers are provided for special culture or animal care needs.

There are four transmission electron microscopes, including one for teaching and student research purposes, and one with high resolution capabilities. The Department also houses the scanning electron microscope facility of the University.

The Department is equipped to carry out research in all areas in which graduate teaching is conducted. Light microscopes of a variety of types are available, including those with phase contrast and Nomarski optics. Centrifuges of various sorts, including refrigerated, high speed and ultra high speed models are available.

Other special equipment includes electrophoresis and chromatography apparatus; electron amplifying and recording equipment; a spectrophotometer; a microprocessor; a Beckman spectrophotometer; two polarimeters; a quartz cell for measuring optical density; a spectrophotometer-radiometer; a Barco T-1230 computer; a Wang calculator; and other desk top computers for general use. A variety of gas chromatographs are available for analysis of gases and vapors. The Department has a complete range of ion chambers for measuring various types of radioactivity, including those for measuring bone density and for measuring the optical density of solutions. A variety of standard equipment is available for recording UV and visible spectrophotometers; densitometers; Coulter counters; instruments and a field vehicle for field work in physical geography; water tables; aquaria and "instant oceans"; microrooms; Vacuums; tissue culture rooms and ovens; and cold rooms. Laboratories are otherwise equipped for advanced work which calls for specialized biochemical, biophysical, cytological or serological techniques.

Special Faculty Strengths

Nearly every faculty member has received special recognition, through awards of special postdoctoral support (fellowships, re- search grants, travel grants), or, in the case of senior faculty members, through election to honorary societies, election to off- ficerships and boards in professional societies, by selection or election to editorships or positions on editorial boards, and to appointment or election to review groups of societies, of the National Science Foundation, the National Institutes of Health or the National Institute of Mental Health. A number are mem- bers of managing boards of scientific organizations. Most per- form ad hoc reviewing of professional manuscripts and research grant applications. All have published.

The Department, as a whole, has been reviewed by granting agencies and has on five different occasions been awarded funds for new buildings or significant remodeling, both on campus and at the Lakeside Laboratory. The Zoology Department was the largest benefactor of the NSF's "Biological Sciences Develop- ment" award, made in 1967, with a supplement in 1971. Fellow zoologists, participating in a survey by the American Council on Education, have rated it superior in the quality of its faculty and its graduate training program, placing it among the "num- bered" departments.

Graduate Student Awards and Aid

Qualified graduate students are invited to apply for awards and aid. At present some support is obtained by at least 80 percent of the graduate students in the Department. The largest amount of support is obtained by teaching assistantships (all Ph.D. candidates are required to assist in several courses), by partial tuition scholarships in the academic year and full-tuition scholarships in the summer session, and by research assistantships, provided either through Graduate College support or from individual research grants administered by faculty members. The Department has several NSF trainees, some NSF predoctoral fellows, several NIH trainees in developmental biology (in a Departmental training program), several NIMH trainees in neurobiology (in an interdepartmental program), some NDEA predoctoral trainees, and several postdoctoral fellows or trainees supported by funds from the NSF and the NIH. One NIMH predoctoral fellowship is available.

The Department also participates in the university-sponsored program of teaching-research fellowships. Students who apply for any Departmental award may be considered for others, if the reviewing committee considers them eligible. The Department provides some support for each student for summer work who arrange for training at marine laboratories on the coast, or at other appropriate summer stations. Most assistantship and other ap- pointments for the following academic year are filled by April 1, but opportunities occasionally exist for appointments at other times, including the beginning of the second semester. Requests for appointments should include clear statements of research in- terest, if such interest is defined at the time of application.

Iowa Lakeside Laboratory

Courses in field biology and aquatic biology extend the on-camp- us work in ecology. See "De~cription of Extensive and University Services."
Instruction in business administration and economics began at The University of Iowa before 1900. A School of Commerce was organized in 1914, and was granted college status in 1921. In 1949 its name was changed to College of Business Administration.

The College offers the degrees Bachelor of Business Administration; Master of Business Administration; Master of Arts in Accounting, Business Administration and Economics; and Doctor of Philosophy in Business Administration and Economics. These undergraduate and graduate programs are fully accredited by the American Association of Collegiate Schools of Business. Each program is administered by an academic program committee with both faculty and student membership. The College comprises four departments—Accounting, Business Administration, Business Education, Economics—and a Center for Labor and Management.

Facilities

The College is located in Phillips Hall, an air-conditioned, high-rise building designed especially for the programs of the College. Completed in 1963, the building contains several seminar and conference rooms, an auditorium, a student lounge, and the business and economics library, in addition to a wide range of classroom facilities. Extensive research materials for business and economics are maintained in the Main Library, and the facilities of the University Computer Center are available to all students.

Center for Labor and Management

As a major continuing education arm of the College, the Center for Labor and Management provides relevant information to management, labor and government representatives in Iowa and the Midwest region. Current administrative and industrial relations knowledge is disseminated through on- and off-campus conferences and through a research-oriented publication series. Organizational research and development projects give students experience in research and teaching as well as the opportunity to discuss current societal problems with private and public-sector labor and management officials.

General Information: Undergraduate Study

The College offers the Bachelor of Business Administration degree in all four of its departments.

The B.B.A. student completes background studies either in the College of Liberal Arts at Iowa or in another institution and usually enters the College of Business Administration as a junior.

Admission requires at least sophomore standing. Unconditional admission requires at least a 2.25 grade-point average (A=4) in all college-level courses undertaken, all courses undertaken at Iowa, all business and economics courses, and all business and economics courses undertaken at Iowa.

The applicant must also have satisfied the U of 1 College of Liberal Arts' rhetoric skills requirement and either its historical-cultural, literature, social science or natural science core requirement.

No more than 60 semester hours, or equivalents, of transfer credit will be accepted for a student transferring from a two-year institution. Transfer credit for business and economics courses taken during the freshman and sophomore years is counted toward the B.B.A. degree only if such courses are normally offered at lower division courses at Iowa.

Fulfillment of the minimum requirements does not assure admission. The College's admission committee reviews all applications and selects the applicants who appear best qualified. Students who have minor deficiencies in meeting grade-point requirements may be granted conditional or probationary admission.

Pass/Fail Grading

Of the total semester hours required for a B.B.A. degree, up to 33 may be taken on a pass/fail basis with the consent of the advisor and instructor. However, a student may not count more than 16 semester hours of pass/fail credit in his or her last 60 semester hours of coursework. Courses used to satisfy the common business requirements which carry a 6A, 6B or 6R prefix may not be taken pass/fail nor may courses in the student's major area or areas of concentration. Registration on a pass/fail basis must be completed during the first three weeks of a semester or the first two weeks of a summer session.

Maximum Schedule

Course schedules of more than 18 semester hours for a semester or nine for a summer session require the assistant dean's approval.

Graduation Requirements

Iowa's new B.B.A. curriculum reduces from 125 to 120 the number of semester hours required for graduation; and, while requiring at least 48 hours in business courses, it also requires at least 48 hours in nonscience courses. Thus the student must develop a breadth in his or her program than he or she would acquire in a traditional business program, and is encouraged to
develop a great deal of breadth. Yet if the student chooses he or she may develop some measure of specialization. Also, in most instances the student will be able to complete the new program a semester or summer session sooner than the old.

At least 24 semester hours of credit in courses offered by the College of Business Administration, and at least eight semester hours of credit in the student’s major or area of concentration must be earned at Iowa.

To graduate, the B.B.A. candidate must have at least a 2.0 grade-point average on all coursework attempted, all coursework attempted at Iowa, all business and economics coursework attempted, all business and economics coursework attempted at Iowa, all coursework attempted in the major or area of concentration and all coursework attempted at Iowa in the major or area of concentration.

The last 30, or 45 of the last 60, semester hours of credit must be earned in residence at Iowa following admission to the College of Business Administration.

If the quantitative methods, accounting and economics requirements are not satisfied when the student is admitted to the College, they must be undertaken in his or her first enrollment and continued until successfully completed. In general, all common requirements should be completed by the end of the student’s junior year.

Required Courses
Each candidate for the B.B.A. degree must satisfy the following minimum common requirements:

- Rhetoric-Communications 6 s.h.
- Historical-Cultural 6 s.h.
- Literature 6 s.h.
- Natural Sciences 3 s.h.
- Sociology or Psychology (two courses in either area) 6 s.h.
- Quantitative Methods 8 s.h.
- Accounting 6 s.h.
- Economics 6 s.h.
- Finance 3 s.h.
- Legal Environment 3 s.h.
- Management 3 s.h.
- Marketing 3 s.h.

In addition to the common requirements listed above, a student must complete a major area of study or two areas of concentration. The requirements for a specific major are established by the departments of the College. The two areas of concentration are selected by the student and must be approved by the academic advisor. Each area must consist of three courses (nine semester hours), and two courses in each area must be offered by the College of Business Administration.

General Information: Graduate Study

Admission
An applicant to any advanced degree program must be admitted to the Graduate College (see "Graduate College").

In addition to a baccalaureate degree from an accredited college or university, a satisfactory grade-point average and three letters of recommendation, an applicant to the advanced degree programs in business administration, excepting economics, must achieve satisfactory scores on the Admission Test for Graduate Study in Business (ATGSB). No admission decision will be made until the ATGSB score is on file with the Director of Graduate Studies in Business. An applicant to the economics programs must attain a satisfactory score on the Graduate Record Examination (GRE).

Details concerning the examinations may be obtained directly from Educational Testing Service, Box 966, Princeton, New Jersey 08540, or from University Evaluation and Examination Services, 330 Jefferson Building, Iowa City, Iowa 52240.

Interdepartmental Programs

Master of Business Administration

The Master of Business Administration (M.B.A.) program is designed for individuals preparing for professional administrative careers primarily in business. The program gives the individual a means of enhancing career opportunities and at the same time provides industry and government with the professional personnel required in a dynamic economy.

The curriculum is designed for candidates whose undergraduate majors were in liberal arts, science, engineering and other nonbusiness areas, as well as for graduates of schools or colleges of business administration. For the student who has taken no undergraduate business administration courses, 54 semester hours of coursework are required. For the student holding an undergraduate degree in business administration, certain of the requirements will normally be waived. However, in all cases, a minimum of 30 semester hours of graduate work is required.

Curriculum—The following courses, totaling 24 semester hours, are normally required of the nonbusiness undergraduate major.

Some of these courses are also required of the student who has majored in business but who was not exposed to one or more of these courses. This work is normally taken in the first year.

- 6A:114 Financial Accounting 3 s.h.
- 6B:154 Human Resource Management 3 s.h.
- 6B:181 Quantitative Methods in Economics and Business 3 s.h.
- 6B:182 Statistics for Business Decisions 3 s.h.
- 6B:215 Financial Management 3 s.h.
- 6B:231 Marketing Management 3 s.h.
- 6B:335 Organization and Management Theory 3 s.h.
- 6E:106 Price and Employment Theory 3 s.h.

Since the M.B.A. student uses the computer, any student not having computer programming capabilities is expected to enroll in a credit or noncredit programming course at The University of Iowa.

The M.B.A. Core—The student who has previously met the requirements of the courses listed above will enter directly into the M.B.A. core. In the M.B.A. core the student has the opportunity to continue the broad study begun in the sequences of courses listed above and pursue in greater depth the special interests associated with his or her own career objectives.

In addition to courses required of all students, each individual decides upon an area of concentration and, with the assistance
of the faculty, selects six hours of work. Examples of areas of concentration which might be taken are:

<table>
<thead>
<tr>
<th>Accounting</th>
<th>Operations Research</th>
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<tbody>
<tr>
<td>Finance</td>
<td>Organizational Theory</td>
</tr>
<tr>
<td>Industrial Relations</td>
<td>Quantitative Methods</td>
</tr>
<tr>
<td>International Business</td>
<td>Risk Management and Insurance</td>
</tr>
<tr>
<td>Marketing</td>
<td>Systems Management</td>
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</tbody>
</table>

Following are the core-course requirements totaling 30 semester hours:

6A:214 Managerial Accounting 3 s.h.
6B:203 Managerial Economics 3 s.h.
6B:205 Business and Society 3 s.h.
6B:242 Operations Research in Business 3 s.h.
6B:261 Organizational and Individual Behavior 3 s.h.
6B:278 Simulation Exercise 1 s.h.
6B:279 Administrative Policy 2 s.h.

As an alternative to 6B:279, the student may take 6B:291.
6B:291 M.B.A. Seminar 2 s.h.
6B:202 National Income Analysis 3 s.h.
Area of Concentration 6 s.h.
Elective 3 s.h.

Doctor of Philosophy in Business Administration

The doctoral program is intended for individuals preparing for faculty positions in university or collegiate schools of business administration and for business or government careers as research directors, staff specialists and consultants.

The Ph.D. program includes requirements which are considered essential preparation for all students, yet is sufficiently flexible to accommodate specialization according to the student's interests, background and objectives. In all phases of the program, doctoral students can demonstrate proficiency through qualifying area examination and are encouraged to do so.

Basic Areas—The purpose of the basic areas is to develop competency in research methods and to provide knowledge needed for study in any later phase of more specialized courses. Ideally, the student should complete all requirements in the basic areas before proceeding to the elected and specialized areas. The requirements in the basic areas may be satisfied by passing a qualifying examination or by successfully completing each course.

The basic areas and required courses are:

<table>
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<tr>
<th>Economic Theory</th>
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<tr>
<td>6B:214 Income and Employment Theory 3 s.h.</td>
</tr>
<tr>
<td>Statistics and Quantitative Analysis</td>
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<tr>
<td>6B:242 Decision Making 3 s.h.</td>
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<td>6B:243 Business 3 s.h.</td>
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<td>6B:244 Behavioral Sciences 6 s.h.</td>
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<tr>
<td>6B:261 Behavioral Science and Business Organization I 6 s.h.</td>
</tr>
<tr>
<td>6B:264 Behavioral Science and Business Organization II 6 s.h.</td>
</tr>
<tr>
<td>Social Environment 3 s.h.</td>
</tr>
<tr>
<td>6B:259 Social Environment of Industry 3 s.h.</td>
</tr>
</tbody>
</table>

Elective Areas—Each student elects two areas for intensive study. With the approval of the adviser and the director of graduate studies in business administration, the student chooses two "300-level" graduate courses in each of two areas. The elected area requirements may be satisfied by comprehensive examinations, but this is unusual. Any student who, in any elective, does not attain a scholastic level of achievement deemed essential for a Ph.D. student, may be required to take a comprehensive examination, in addition to successfully completing the course.

One of the elected areas must be, and both may be, in business administration. The business administration elected areas may be such areas as accounting, finance, information theory, organizational behavior, marketing, industrial relations and insurance. However, no attempt is made to restrict the elected areas to traditional classifications. The elected areas may be in the behavioral sciences, social environment or an area which combines economic theory, statistics and quantitative analysis.

The requirements of one of the elected areas may be satisfied outside of the College of Business Administration by successful completion of two graduate-level courses. For example, two psychology courses would be acceptable, provided the student's adviser and the director of graduate studies in business determine that the courses are relevant to the student's total academic program.

Specialized Areas—As a preparation for dissertation research, the student selects two areas for specialization and takes two graduate-level courses in each. One or both specialized areas may be a continuation of the coursework taken in the elected areas. They also may be from three of the student's four basic areas: economics (i.e., economic theory, manpower economics, etc.) or statistics and operations research or the behavioral sciences.

Assuming good scholastic attainment, it is possible for a student to move through the basic and elected areas without taking a comprehensive examination, but all students must pass written comprehensive examinations in both of their specialized areas. In neither specialized area is the examination limited to the two courses in that area, but the examination assumes that the student has completed the requirements which give him or her mastery over the field which is being examined.

Following completion of all areas, and after passing written comprehensive examinations over the specialized areas, the student must sit for an oral comprehensive examination. The successful completion of these requirements permits the student to work full time on the dissertation.

Dissertation Research—The doctoral dissertation is intended to provide written evidence of the candidate's ability to conduct scholarly research in his or her chosen specialized areas. Normally the original investigation, plus the writing and defense of the dissertation, will require full-time effort for at least one year. Upon submission of the completed dissertation, the candidate is required to take an oral dissertation defense examination. This dissertation defense is held before dissertation committee members and any faculty members of The University of Iowa who may wish to attend. Success in the examination completes the final requirement for the degree of Doctor of Philosophy in Business Administration.
Accounting

Department Chairman: Louis T. Bigoniot
Degrees offered: B.B.A., M.A.

Accounting is the systematic recording, classifying and interpretation of the economic facts of a business or other entity, to permit effective management and to provide information for investors, creditors and the general public. Many educators consider training in accounting an ideal preparation for a business career because it offers a view of all aspects and phases of business organization. A bachelor's degree in accounting offers entry into a specialized field at the professional level.

The demand for industrial accountants has increased greatly; accounting graduates in industry may advance to executive positions. Many state and federal governmental agencies employ accountants. The demand for certified public accountants is increasing. A CPA may work for one of many regional, national, or international firms, or he or she may establish an independent practice. Approximately 30 percent of all accounting graduates take the CPA examination.

B.B.A. Requirements

All students in the undergraduate program in accounting must complete a basic core of accounting courses—income tax accounting, accounting for management analysis and control, financial accounting (assets and equities), financial accounting (special topics), and auditing concepts and procedures—and must elect either cost analysis and budgeting, advanced tax accounting, or advanced and contemporary accounting.

A special program of financial aids provides annual awards to students in accounting through contributions from several major industrial firms and from public accounting firms. In addition to courses required of all candidates for the degree, Bachelor of Business Administration, the undergraduate major in accounting requires a basic core of accounting courses totaling 18 semester hours as follows:

6A:113 Income Tax Accounting
6A:130 Accounting for Managerial Analysis and Control
6A:131 Financial Accounting: Assets and Equities
6A:145 Auditing Concepts and Procedures
6A:145 Senior Seminar in Accounting

In addition, the student may elect one or more of these courses:

6A:141 Advanced Tax Accounting
6A:148 Professional Accounting Problems
6A:170 Special Topics in Accounting

A maximum of 27 semester hours of credit in accounting courses may be counted toward the B.B.A.

M.A. Requirements

The Master of Arts degree is awarded upon successful completion of a minimum of 30 semester hours of graduate study. A minimum of 15 semester hours must be earned in 200-level courses. A total of 12 semester hours must be earned in these accounting courses:

6A:220 Accounting Literature and Research I
6A:221 Accounting Literature and Research II
6A:222 Contemporary Accounting Issues
6A:223 Contemporary Accounting Issues II

The remaining study will be in courses tailored to the student's background, interests, and career objectives. The candidate has the option of writing a thesis for which three semester hours credit may be received, or a nonthesis option may be elected. In practice, the candidate will be examined orally in the fields included in the program of study. This examination will be arranged by the adviser near the end of the student's program.

Staff: professor Barlow; professor emeritus Burney, Maynard; associate professors Bigoniot, Kimsey, Smith; assistant professors Bailey, Kennedy, King, Rinn, Lambke

Courses Specifically for Undergraduates

6A:115 Introduction to Accounting 3 s.h.
Survey and analysis of contemporary accounting information systems emphasizing external reporting by firms to its investors, creditors, and shareholders and their relations to investor decisions; prescriptive analysis of accounting information systems. 6A:115 Accounting for Managerial Analysis and Control 3 s.h.
Concepts and methods used in internal financial information systems, qualitative and behavioral dimensions of organizational analysis and systems and their implications for accounting information are major areas of discussion. Prerequisite: 6A:115 or equivalent.

6A:100 Financial Accounting: Assets and Equities 3 s.h.
Concepts and methods of corporate internal reporting; theoretical basis of current reports; analysis of financial statements of large organizations dealing with the basic accounting concepts and methods applied in preparing financial statements. Prerequisite: 6A:115.

6A:130 Financial Accounting: Information Flows 3 s.h.
Concepts and methods of corporate internal reporting; theoretical basis of current reports; analysis of financial statements of large organizations dealing with the basic accounting concepts and methods applied in preparing financial statements. Prerequisite: 6A:115.

6A:145 Auditing Concepts and Procedures 3 s.h.
Principles and standards concerning the preparation of a plan for an audit; types of audit evidence; methods of audit; reports on tax deficiencies; and examination of audit reports. Prerequisite: 6A:115.

6A:145 Senior Seminar in Accounting 3 s.h.
Study of major topics in accounting; topics toward the development of an audit, accounting, budgeting, and systems design; financial reporting for special entities, such as non-profit organizations; and approaches to tax decisions through planning and research. Prerequisite: 6A:115, 6A:130, 6A:132 and senior standing.

6A:148 Professional Accounting Problems 3 s.h.
Preparation for professional accounting practice through consideration of problems.
abilities, other advanced topics, intensive study of topics covered in previous and current courses with the exception of presentation and critical thinking skills. Prerequisites: MATH 1220, MATH 1220-N or equivalent.

6A:170 Special Topics in Accounting or Business Administration

6A:170 Special Topics in Accounting 3 cr.
Eligible for seniors majoring in accounting. Advanced topics in accounting covered in greater depth and normally dependent upon senior and faculty interest. Multiple sections offered if more than one topic offered. Prerequisite: consent of instructor.

Courses Required for Graduates

6A:316 Accounting for Management 3 cr.
Internal financial information systems; accounting information systems; importance of an internal control system, the control objectives and control activities. Multiple topics covered at a high level in audit and display of accounting data. Prerequisites: 6A:114 or equivalent.

6A:315 Financial Information for External Users 3 cr.

6A:329 Accounting Literature and Research I 3 cr.
Major concepts and problems in accounting as reflected in current literature and research; topic selected as a senior project. Topics include: causes of accounting changes, research by individuals and associations, comparative and quantitative methods in accounting, current research in accounting, research in finance and accounting. Prerequisites: 6A:25 and 6A:315 or equivalent.

6A:321 Accounting Literature and Research II 3 cr.
Continuation of 6A:320. Special topics on accounting issues. Prerequisites: 6A:315 or equivalent.

6A:322 Contemporary Accounting Issues 3 cr.
Major concepts and problems in accounting as reflected in current applications and in the basis of financial statements. Emphasis on understanding of accounting theory in current and relevant applications. Topics selected as a senior project. Topics include: accounts receivable and sales, tax regulations and audit issues, ethics and fraud, auditing and fraud, and financial analysis. Prerequisites: 6A:315 or equivalent.

6A:323 Business in Accounting Thought 3 cr.
Six to ten seminar discussions of current economic and business issues. Topics include: current economic and business issues, ethical dilemmas, and legal issues. Prerequisites: 6A:315 or equivalent.

6A:324 Contemporary Issues in Business Administration 3 cr.
This course provides an introduction to current issues in business administration. It is designed for students who are interested in the application of accounting and business administration principles to current economic and business issues. Prerequisites: 6A:315 or equivalent.

This course provides an introduction to the management of financial resources. It is designed for students who are interested in the application of accounting and business administration principles to current economic and business issues. Prerequisites: 6A:315 or equivalent.

6B:111 Investments 3 cr.
Students also must elect either 6B:115 or 6B:116 and select six additional semester hours from the following courses:
6B:112 Security Analysis 3 cr.
6B:126 Real Estate and Urban Land Economics 3 cr.
6B:135 Investments 3 cr.
6B:166 Long-Term Financing 3 cr.
At least two semester hours of courses beyond the basic core are also required.

Requirements for the Major in Business Administration

6E:117 Money and Banking 3 cr.
6E:119 Public Finance 3 cr.
6E:171 Industrial Organization 3 cr.
6E:111 Investments 3 cr.
6E:134 Commercial Banking 3 cr.
6E:103 Managerial Economics 3 cr.
6E:103 Micro-Economics 3 cr.

Requirements for the Major in Insurance

6B:20 General Insurance 3 cr.
6B:131 Property and Casualty Insurance 3 cr.
6B:122 Life and Health Insurance 3 cr.
In addition, students must select at least one, but no more than two, courses from the following:
6B:120 Mathematics of Insurance 3 cr.
6B:123 Social Insurance 3 cr.
6B:24 Risk Management 3 cr.
6B:29 Independent Study 3 cr.
Six additional hours of courses are specified by the student's adviser.

Requirements for the Major in Industrial Relations

6B:150 Minority Rights in an Industrial Society 3 cr.
6B:153 Labor-Management Relations and Public Policy 3 cr.
6B:154 Human Resources Management 3 cr.
One of the following:
6E:111 Labor Economics
34:165 Occupational Sociology
31:154 Industrial Psychology
31:156 Industrial Psychology
6E:155 Employee Relations in the Public Sector

Requirements for the Major in Marketing
At least four, but no more than five, courses must be selected from:
6E:135 Promotional Concepts
6E:132 Marketing Institutions and Channels
6E:137 Advertising Theory and Planning
6E:134 Marketing Information
6E:128 Advertising Communications
6E:147 Marketing Management
6E:141 Senior Seminar in Marketing

Staff: professors Baumberg, Hartlow, Klassen, Kovarsky, Mar-
berry, Schoderbek, Solodky, Vaughan, Venkatram, professors amonti, Daykin, Hills, Leh, Partington, Phillips, associate profes-
sors Bailey, Jennings, Kottas, Miller, Schoen, Sintorpi, Stev-
ensson, Weigelt; assistant professors Barone, Baxter, Birch, Bee, Decey, Eskin, Hunt, Murray, Nelson, Riem, Rose, Stone, Wick-
lund, faculty lecturers Curry, Simmons

Courses Primarily for Undergraduates
6E:100 Quantitative Analysis
3 s.h.
Quantitative models and applications to decision-making; matrices, linear program-
ning, matrix algebra, game theory and other related operations research tech-
niques
6E:111 Statistical Analysis
3 s.h.
Fundamental principles of business evaluation; study of framework for solving
managerial problems involving uncertainty or risk; discussion of basic tech-
niques of data
6E:12 Computer Methods
3 s.h.
Functions of computer; emphasis on use in problem-solving; computer applica-
tions of quantitative models for decision-making using theory matrices and pro-
grams written by student; programming includes only to prepare student to use
computer
6E:16 Financial Management
3 s.h.
Financial planning and management of money-capital in business firms; security
market analysis; risk in capital and investment; accounting SA2 and Economics 6E:12
6E:20 General Insurance
3 s.h.
Insurance principles, underwriting, management of insurance companies,
insurance underwriting, finance; types of insurance; principles of insurance,
insurance law; insurance industry; reinsurance; basic features of selected insurance
contracts; prerequisites: Economics 6E:2
6E:31 Introduction to Marketing
3 s.h.
General introduction to structures of marketing, market environment of organi-
ization and its strategies against its market. Selected case studies recommended.
buyer behavior, management of marketing decisions
6E:47 Introduction to Law
3 s.h.
General history and structure of law; law's action in guiding changing economic
and social conditions; principles of law; Economics 6E:3 or junior standing
6E:55 Administrative Organization
3 s.h.
Overview of technical, economic and human problems encountered by both
managerial and nonmanagerial members of task-oriented organizations; basic dis-
plays of management structures for comprehensive understanding of organization and
management; fundamentals of technical problem analysis and decision methods
introduced as encountered in organizational environment
6E:58 Production Management
3 s.h.
Organization and management of manufacturing enterprise; production design
and process planning, plant layout and materials handling, work simplification and
measurement, production and inventory control, quality assurance, plant location,
maintenance of plant and equipment, cost and budgetary control; prerequisites: Economics 6E:2

Courses for Undergraduates and Graduates
6E:101 Directed Readings in Business Administration
3 or. arr.
Individually-guided readings in selected topics in business
6E:103 Managerial Economics
3 s.h.
Economic analysis applied to basic problems encountered in marketing, finance
and production; provides foundation for more specialized work in these fields
6E:111 International Marketing
3 s.h.
Activities involved in selecting among alternative financial assets from viewpoint
of individual; present value, security markets, industry developments
6E:113 Security Analysis
4 s.h.
Valuation of corporate securities; financial statement analysis; security and
regulatory environment
6E:114 Commercial Banking
3 s.h.
Banking structures and functions; money market and liquidity management; lend-
ing policies and portfolio management; banking competition and regulation; prerequisites: 6E:12
4 s.h.
Case problem approach; methods of analyzing and planning current position of
firm; management of all types of debt and equity capital structure planning;
underwriting of security issues; issue of capital and capital budgeting; prerequisites: 6E:12 or consent of instructor
6E:119 Selected Topics in Finance
3-5 s.h.
In-depth study of selected topics in finance not covered by regular courses; credit
hours and course content determined by instructor; prerequisite consent of instruc-
tor
6E:120 Mathematical Economics
3 s.h.
Elements from probability and mathematics of finance developed and applied to
problems in determination of insurance premiums, benefits and reserves; same as Economics 228:50
6E:121 Property and Liability Insurance
3 s.h.
Business and individual needs for insurance; fire, marine insurance and allied
lines; public liability, automobile, other property and casualty coverages; insurance
contracts and underwritings; prerequisites: 6E:20
6E:122 Life and Health Insurance
3 s.h.
Life, health and accident contracts from viewpoint of the individual, business,
government and insurance companies; policy types; rate making, investments, 
regulation, group insurance, estate planning; prerequisites: 6E:20
6E:125 Social Insurance
3 s.h.
Governmental activities in creating economic security and alleviating poverty;
issues of social security, current progress including OASDI, Unem-
ployment Comp., AFDC, etc. potential problems such as national health insur-
ance and social insurance
6E:126 Risk Management
3 s.h.
Applied study of insurance and selected management devices for dealing with
risks; avoidance, acceptance, transfer and reduction of risk; risk management
principles and techniques of risk reduction; loss; principles of reinsurance; reinsurance
prerequisites: 6E:20 and 6E:22 or senior standing
8E:141 Management of Risk and Uncertainty
3 s.h.
Risk analysis and planning; nature of real estate market and current trends
Affecting its growth and structures of cities; timing of events and techniques of
management; real estate finance and insurance; prerequisites: Economics 6E:2
6E:12 Distribution Channels
3 s.h.
Structures of distribution and management's role in selection of channels of distrib-
ution. Nature of market, observations of prices, non-price factors determining
6E:124 Marketing Information
3 s.h.
Market research distribution and methods of marketing information as
management tool in decision-making; prerequisites: 6E:21 and introductory
marketing management
6E:135 Promotional Concepts/Buyer Behavior
3 s.h.
Studies in behavioral aspects of advertising and personal selling; discussion of
influences on buying behavior, including learning, perception, decision, imagery,
dispersion, social and family, self role, life style, reference groups, values, social
class and family; strategy of persuasive communications in marketing; prerequisites:
6E:21 or consent of instructor
6E:135 Advertising Theory and Planning
3 s.h.
Advertising as promotional force; emphasis on theory, planning, resulting
strategic and tactical decisions that advertising execution makes; same as Journalism 15:120;
6E:136 Audience Research
3 s.h.
Survey of techniques of collecting and analyzing data. Laboratory situations designed
to investigate consumer creative experience; same as Journalism 15:125; prerequisites: 6E:137 or Journalism 15:120
6E:138 Advertising Communications
3 s.h.
Theories of communication in human behavior as applied to advertising copy
and layout, laboratory situations designed to investigate consumer creative experience; same as Journalism 15:125; prerequisites: 6E:137 or Journalism 15:120
teaching at the secondary, junior college or university levels, and provides a broad educational experience in the field of business administration.

The Undergraduate Program

The business education undergraduate program primarily for persons who want to become business teachers at the secondary level.

The program has three areas of concentration—secretarial education, office education and basic business education—from which the undergraduate student selects an area of emphasis. Secretarial education prepares the student to teach typing, shorthand, accounting and other information-processing techniques. Office education gives the student the background necessary to teach typing, accounting and general business courses. Basic business education prepares students to teach in broader economic business, consumer economics, business law, economic geography and accounting.

Students majoring in business education must complete the general requirements for the Bachelor of Business Administration degree in addition to courses required for the Iowa Professional Teaching Certificate.

Business education majors receive a broad foundation in business administration courses, as well as specialized professional courses in business education to prepare them for their first teaching experience. Student teaching in an accredited high school in cooperation with an experienced business teacher is the capstone of the undergraduate program.

These courses are required of all business education teaching majors:

65:2* Business Typewriting
65:35 Office Calculating Machines
65:125 Administrative Communication
65:155 Business Data Processing
65:191 Principles of Business Education

* For teacher certification, students must take a terminal course at the University of Iowa.

In addition, the student must choose from one of these three teaching options:

Secretarial Education Option
65:237* Transcription (required) 3 s.h.
65:36 Office Services (required) 3 s.h.
plus six semester hours from:
65:24 Executive Secretarial Procedures 3 s.h.
65:126 Written Communication in Business 3 s.h.
65:140 Office Machines 3 s.h.
65:144 Practicum: Office Problems 1 or arr.
65:156 Data Processing Systems 3 s.h.
or other electives as approved

* For teacher certification, students must take a terminal course at the University of Iowa.

Office Education (Nonsecretarial) Option
65:36 Office Services (required) 3 s.h.
plus nine semester hours from:
65:126 Written Communication in Business 3 s.h.
65:145 Office Management 3 s.h.
65:148 Practicum: Office Problems or arr.
65:156 Data Processing Systems 3 s.h.
or other electives as approved

Basic Business Education Option
65:145 Office Management (required) 3 s.h.
plus nine semester hours beyond the required coursework in:
Accounting
Administrative Behavior
Economics
Finance and Insurance
Marketing and Advertising

Two areas of concentration in business education consisting of a minimum of three courses (nine semester hours each) can be arranged for students pursuing a non-teaching degree in business administration.

M.A. Program

This nonthesis program in business education is designed for the graduate student who holds a bachelor's certificate and has either a major or a minor teaching area in business education.

Sufficient flexibility is provided in the program to meet individual needs for upgrading professional competence in teaching the business subjects. In order to achieve this desired flexibility, coursework from three areas is included in the program, with an approved freedom of choice within each area:

* Business Administration: to provide improvement in specific content areas in business
* Professional Business Education: to emphasize the improvement of teaching and philosophy of business education; and
* Professional General Education: to emphasize general aspects of teaching.

A minimum of 32 semester hours must be included in the program, with an approximate distribution of hours among the three areas of study as follows:

* Business Administration: 12 to 15 semester hours of courses must be selected in business administration content, with the approval of the advisor; available areas: accounting, administrative management, advertising, economics, financial economics, financial management, industrial relations, insurance and marketing.

* Business Education: nine to 12 semester hours must be selected from professional business education courses with the approval of the advisor; and

* Education: six to nine semester hours must be selected from professional education courses with the approval of the advisor; available areas: adult education; educational administration; educational media; educational psychology; measurement and statistics; higher education; social foundations and comparative education; and special education.

Three two-hour examinations or two three-hour examinations are required in business administration, business education or secondary education. An area is defined as six semester hours or more in related courses.
M.A.T. Program

The M.A.T. program is a 38-semester-hour nonthesis course of study. It is designed for superior liberal arts graduates who have had few or no education courses. The program enables the student to enrich his or her background by completing graduate courses in a substantive area and graduate education courses which constitute professional preparation for secondary school teacher certification. Individuals who have not obtained certifications are eligible if they have completed accredited bachelor's degree programs with majors in academic areas commonly included in high school curricula and have attained a minimum grade-point average of 2.5 (A=4). Most advisors require students to maintain a 3.0 in graduate work once they are accepted into the program. While students may be admitted before taking the Graduate Record Examination, this requirement should be met before the next registration date.

Two semesters and an academic year of two semesters are usually necessary to complete the program. The certification sequence consists of 24-27 semester hours of graduate coursework as follows:

- One elective course in education: 3
  - Audiovisual Teaching Method
  - Social Development of the School-Age Child
  - Principles of Guidance
  - Construction and Use of Classroom Tests
  - Preprofessional Seminar

- Education Psychology 3
- Philosophy of History of Education
- Methods (credit arranged) 3-6
- Observation and Laboratory Practice 12
- Candidates for the M.A.T. degree must pass comprehensive final examinations in business education and in education. These examinations are taken at the end of the session in which the candidate expects to receive the degree.

Ph.D. Program

Due to the flexible nature of this program, the candidate may place emphasis in both colleges (Business Administration and Education), although primary emphasis normally will be given to the various programs in business with particular attention to business education.

Admission Requirements
- Admission to The University of Iowa Graduate College
- Evidence of satisfactory performance on the Graduate Record Examination
- Evidence of good academic preparation to undertake doctoral work in business education

Degree Requirements
- Two tools to be chosen from: foreign language, applied statistics, two areas of advanced mathematics, computer programming, scientific method or other appropriate research tool to be approved by the adviser

Areas of study:
- A. Major area—business education
- B. Related area in business
- C. Minor or collateral area in education (such as adult education, educational administration, educational psychology, guidance and counseling, or higher education)
- D. Completion of at least 90 semester hours beyond the bachelor's degree, including the dissertation
- Comprehensive examinations: three hours in each of the areas mentioned above
- Dissertation proposal: to be submitted to doctoral committee
- Defense of the dissertation

The plan of study will be developed by the student and an advisor in accordance with individual needs. In each area of study there must be at least nine semester hours of doctoral-level coursework approved by the advisor.

Facilities

Modern office machines and equipment as well as secretarial listening laboratories are housed in the new air-conditioned College of Business Administration building, Phillip Hall.

Faculty

All full-time faculty members of the Business Education Department have doctoral degrees, teaching experience at the high school level and extensive work experience in private industry. In addition, the entire faculty has an enviable record in publishing, from textbooks and monographs to articles written for leading publications in business education. The staff has engaged in both private and governmental research, as well as business and industrial counseling.

Staff: professors Gusta, Kallaus, associate professor Nollermoe; assistant professors Emms, Zubier

Courses Primarily for Undergraduates

3491 Basic Typewriting
- Basic organization and operation of modern-day communication media, integrating techniques and fundamental business letters, forms and forms, open only to students with 0.0 or 0.0 in foreign language

3492 Business Typewriting
- Subject development and integration of skills and knowledge necessary in production of letters, forms, manuscripts, tables and other written business communications; required for business teachers; prerequisite 3415 or equivalent

3493 Beginning Shorthand
- Shorthand theory and development of skill through business dictation; prerequisite 3491 and consent of instructor; open to students with one year of high school shorthand in equivalent

3494 Advanced Shorthand
- Shorthand theory and review; skill development and transcriptions; prerequisite 3415 or 3431 or equivalent; second semester only

3502 Transcription
- Beginning transcription; advanced skill in transcription; prerequisite 3415 or equivalent; no 2.0 or equivalent; required for secretarial education majors; first semester only

3496 Executive Secretarial Procedures
- Development and integration of knowledge, skill and related qualifications necessary for high-level intermediat or administrative assistant positions, with teaching implications for business education majors; prerequisite 3415 or 3431 or equivalent, 63.1 or equivalent, and junior standing; second semester only
69.25 Office Calculating Machines 2 a.h.
Provide operating, layout of keypunching, adding, tabulating, and data processing equipment for computer based mathematical operations and statistical measurement computer, and in commercial applications.

69.26 Office Services 2 a.h.
Process and install necessary for efficient transmission of written information: production typewriting emphasis on design of table, special reports and letters; basic office experience on spirit, iron, offset and electronic equipment; prerequisite: 69.23.

69.125 Administrative Communication 3 a.h.
Interdisciplinary study of communication processes in business including organizational, psychological and language processes (both verbal and nonverbal), communication skills, theories and techniques: prerequisite: satisfaction of rhetoric requirement or equivalent and junior standing.

69.126 Written Communication in Business 3 a.h.
Communication theory as it affects written business communication, general principles of business writing, psychological approach to business writing situations: preparation of business letters and reports; prerequisite: satisfaction of rhetoric requirement or equivalent and junior standing.

69.15 Office Management 4 a.h.
Office management and planning, management of information, conceptualizing and controlling functions, as well as basic human relations factors and methods used in managing information; prerequisite: junior standing.

69.155 Practical Business Office Problems 2 cr. ar.
Research on standards and performance in office work applied to secondary business education: comprehensive and final study of office supervision and operation; for seniors and M.A. students in business education.

69.155 Business Data Processing 3 a.h.
Information needs of management, data processing systems orientation; programming business problem, management and business teacher education considerations in data processing: prerequisite: junior standing.

69.156 Data Processing Systems 3 a.h.
General systems concepts, data processing systems analysis and design: integrating data processing systems through class project plan; prerequisites: junior standing and 69.155 or equivalent.

69.191 Principles of Business Education 3 a.h.
Principles, practices and problems of business education with particular emphasis on secondary school and community college.

69.192 Methods of Business Subjects 2 cr. ar.
Study of objectives, content and teaching methods for business education curriculum development; several courses required totaling three to six semester hours credit from the following subjects: accounting, economics, business law, English, business education (non-semester hour), bookkeeping, accounting, business organizations for teacher certification in business education, only for each method counted: prerequisite: completion of major requirements or consent of instructor; sophomore standing.

69.156 Organization and Administration of Cooperative Programs 4 a.h.
Objectives, operations and coordination of vocational programs: office and distributive education programs, required for teacher certification of office education programs, summer session only.

69.104 Teaching Aid Instructional Techniques 2 a.h.
Problems of correlating classroom instruction with on the job training in office and distribution areas emphasis on office programs; required for teacher certification of office education programs; summer session only.

69.105 Use of Textbooks and Other Educational Techniques 2 a.h.
Study of vocational education programs with special emphasis on curriculum development: principles of analysis and classifying vocational educational planning; analysis after course selection. emphasis on the teacher as a leader and counselor, methods of teaching of business education, required for teacher certification of office education program.

69.199 Business Education Workshop 0 to 1 a.h.
Ongoing workshop necessary.

Courses Primarily for Graduates
69.250 Seminar: Basic Business and Economic Education 2 to 3 a.h.
Techniques and materials: evaluation, behavioral objectives, and implications of research for teaching in business and economic education.

69.264 Seminar: Career Counseling 3 a.h.
Accounting principles and analytic skills: compensation, career counseling, and personal counseling applied in analyzing causes, analysis of motivation, personal and social counseling: primary for high school and community college career teachers: methods of career counseling, analyzing and data processing sub-jects.

69.269 Seminar: Secretarial Education 2 to 3 a.h.
Research findings and experimental evidence applied to areas of secretarial education including office procedure and communications; psychological applications to English teaching.

69.210 Supervision of Business Education 3 a.h.
Principles, problems and practices of business education at supervisory level, designed for business education administrators and those who wish to prepare for, or improve, supervisory roles in business education; same as Education 70.210.

69.220 Post-Secondary Business Education 3 a.h.
Philosophy, organization and administration; principles and problems; curriculum development and teaching processes in post-secondary business education programs including four-year colleges.

69.255 Seminar: Administrative Communication 3 a.h.
Communication theory applied to organization and administrative processes, communication in esteem system: emphasis on selected areas of business; prerequisites: 69.155 or equivalent.

69.256 Seminar: The Developing Business Education Professional 3 a.h.
Philosophy and objectives of business education program and in role in secondary and higher education.

69.240 Seminar in Business Education 2 or 3 a.h.
For advanced graduate students only; current issues in business education and business teacher training; prerequisite: consent of instructor.

69.244 Seminar: Administrative Management 3 a.h.
Organizational behavior: basic information concepts; current and potential developments in information management and administrative services: applications to selected areas of business, industry and government: prerequisites: 65.145 or equivalent and graduate standing.

69.245 Directed Readings 2 or 3 a.h.
Individualized guided studies in business education, data processing, communication or office management; prerequisite: graduate standing and consent of instructor; may be repeated to maximum of six semester hours.

69.375 Research Seminar: Business Education 2 a.h.
Analysis of research methods and design; formal research within total framework of business education, including business teacher education, office management, secondary education and data processing.

69.375 Research: Business Education 2 ar.

69.380 Seminar: Business Education Policy 3 a.h.
Required of, and limited to, doctoral students in business education: advanced analysis and synthesis of business education policy involving usual framework of business education; prerequisite: 69.375.

69.380 Thesis: Business Education 2 a.h.
Economics
Department Chairman: Gerald Bernard
Degrees offered B.B.A. and M.B.A.
See also "College of Liberal Arts"
Economics is the study of how people determine what they will produce, consume, buy and sell. It is also concerned with the coordination of activities between individuals and groups within and across societies. Economics examines such problems as unemployment, economic growth and development, inflation, the balance of trade and economic welfare.

Undergraduate Requirements
In addition to the common requirements for students in the College of Business Administration, the major in economics for the Bachelor of Business Administration degree requires 18 semester hours in 100-level economics courses, including one in microeconomics and one in macroeconomics. Alternatively, a student may meet the requirements for the degree by meeting the common require-
ments in the College of Business Administration and completing two areas of concentration, each consisting of at least three courses (nine semester hours), two of which must be offered by the College of Business Administration. A student may select courses from those offered by the Department of Economics to fulfill the areas of concentration requirement. The two areas of concentration must be approved by the student's advisor.

Undergraduate offerings have been designed to allow the student maximum selection in pursuit of his or her degree.

Graduate Programs

Admission Requirements and Procedures

The general admission requirement is a bachelor's degree from a college or university in good standing. The minimum overall grade-point average for admission is 2.5 (A=4) for the M.A. program and 2.7 for the Ph.D. program. Each applicant also must submit scores from the Graduate Record Examination (GRE) Test and three letters of recommendation. Minimum prerequisites for entry into the Ph.D. program also will normally include two semesters of calculus and one semester of linear algebra. The linear algebra course may be taken during the summer preceding entry into the Ph.D. program. Knowledge of this material will be presupposed throughout the Ph.D. program.

Master of Arts

The M.A. degree is designed as a terminal degree. Incoming students who feel that they wish to earn the Ph.D. but who are initially undecided are advised to enroll in the Ph.D. program so that both degrees remain open to them.

Terminal M.A. Program

There are four distinct areas to be satisfied: economic theory, economic history, quantitative economics and a field area. Courses in these areas are

Theory
6E201 National Income 3 s.h.
6E202 Price Theory 3 s.h.

History
6E207 History of Economic Thought I 3 s.h.
6E262 Economic History of North America 3 s.h.

Quantitative Economics
6B181 Quantitative Analysis 3 s.h.
6B112 Business Statistics 3 s.h.

Field
Three electives 3 s.h. each
by 4 s.h. each
four electives 3 s.h. each
two seminars and papers 3 s.h. each

The program requires a total of 30 semester hours and a thesis, or 36 hours in the nonthesis program. An oral defense of the student's M.A. thesis is required of those choosing the thesis option. Those choosing to do two seminars and papers will be given oral examination over that material.

Doctor of Philosophy

The Ph.D. program has three components, a coordinated sequence of core courses, a set of major area courses and the writing of a dissertation. The core areas are microeconomic theory, macroeconomic theory, mathematical economics and econometrics. The core itself is comprised of 10 courses designed to be taken in a specific sequence. The academic loads of nine to ten semester hours in this sequence presuppose that the student is employed as a research or teaching assistant. Those who are not may carry additional courses. The Graduate College requires 72 semester hours of graduate credit for a Ph.D.

Ph.D. Core Sequence

First semester
6E205 Microeconomics I 3 s.h.
6E211 Mathematical Economics I 3 s.h.
6E212 Multivariable Calculus, e.g., 22M.28 22M.28 may be taken for three semester hours graduate credit under the number 22M.159 4 s.h.
6E200 Topics in Economics 1 s.h.

Second semester
6E204 Macroeconomics I 3 s.h.
6E212 Mathematical Economics II 3 s.h.
225.120 Probability and Statistics 4 s.h.

Third semester
6E205 Microeconomics II 3 s.h.
6E221 Econometrics I 3 s.h.
Field course 3 s.h.

Fourth semester
6E206 Macroeconomics II 3 s.h.
6E221 Econometrics II 3 s.h.
Field course 3 s.h.

Incoming students who have multivariable calculus may replace this course with a field elective in their first semester. Those with aspirations for a major in econometrics should take 225.153 Introduction to Mathematical Statistics I and in their second semester replace Statistics 225.120 with 225.154 Mathematical Statistics II.

Major Area Courses

Each student must have a major area of study in addition to the core courses. A major area consists of a minimum of 21 semester hours of coursework comprising an intensive study of a field (e.g., money and banking, trade) and additional courses which both supplement the major field and provide the student with sufficient breadth to understand the relationship between his or her own specialty and other related fields. The major area must include at least one course (three semester hours) in either economic history or the history of economic thought.

The set of seven field courses chosen by each student under
faculty direction must be approved by the faculty (through the graduate director in consultation with the graduate advisory committee). The student must maintain a 3.2 grade-point aver-
age or better in the field courses. A student earning a low grade in a field course may repeat the course the next time it is offered and have the grade recorded the second time replace his or her earlier grade for Departmental purposes.

Examination Sequence and Dismissal Procedure

The qualifying examination is given following the end of the first spring semester and again one week before fall semester of the second year and takes six hours to complete.

The written qualifying examination will cover economic theory, mathematical economics and statistics. The purpose of the examination is to determine which students may continue for the Ph.D. degree and which students should complete a terminal M.A. program. A student who fails will be asked to complete separations for a terminal master's degree. A student with a grade of "marginal" will be asked to retake the exam the following fall, to pass or to fail.

Comprehensive Core Examinations

Comprehensive core examinations are given two weeks after the end of the spring semester in the second year, and one week before fall semester of the third year. It, too, is a six-hour exam.

The written comprehensive core examination covers the core areas of economic theory, mathematical economics and econometrics. A student who fails will be asked to complete qualifications for a terminal master's degree. A student with a grade of "marginal" will be asked to sit for the complete set or various parts of the exam the following fall, at which time he or she may receive a grade of pass or fail.

Comprehensive Examination

A thesis seminar will be held in which students who are working on their dissertations will participate. This seminar will not be a numbered course but an aperiodic forum convened as required.

The student will complete the oral comprehensive examination by presenting a thesis proposal before this seminar to the satisfaction of a committee of five members of the faculty appointed for the occasion by the graduate director. Successful completion of this seminar, of the core examinations and of the major area courses with an acceptable grade average would result in the student's admission to candidacy for the Ph.D. degree.

Dissertation Examination

An oral examination in defense of the dissertation research is required.

Teaching and Research

Teaching and/or directed research are a required part of the graduate program. The program is designed to bring all students to a uniform high level of technical competence through the core sequence and then to allow them, under faculty guidance, to design a personalized sequence of courses within their major area.

Staff: professors Costantini, Krause (Murray Professor), Lloyd, Morgan, Nordquist, Pack, Wu; professors emeritus Olson; associate professors Abrecht, Balch, Bernard, Jeffers, Pogue, Ruffin, Siebert, Spatz, Swanson, assistant professors Desj, Joseph, Re- dius, Waisel, Williamson

Courses Primarily for Undergraduates

Note: 651 and 652 may be taken in either order or they may be taken simultaneously.

651 Principles of Economics

Organizational and working of modern economic system; role of markets, prices and competition in promotion of economic welfare; regulation of business and labor, provisions of public goods (health, education, security, poverty and distribution of wealth, economic factors in total environment, alternative economic sys-
tems, prerequisites satisfaction of University economic requirement.

653 Principles of Economics

National income and output, employment and prices, money and credit, govern-
ment finance, monetary and fiscal policy, economic growth and development, international relations, economic system, problems satisfaction of University economic requirement.

Economics Analysis and Policy

6-12 Microeconomics

Some 46-103, with additional prerequisite of one semester of calculus.

6-130 Microeconomics

Economic theory of consumer behavior; producer behavior, and role of markets in coordinating economic decisions, conditions for efficient resource allocation by market mechanisms; prerequisites: 651 and 652 or senior standing.

6-134 Microeconomics

Some 46-103, with additional prerequisite of one semester of calculus.

6-140 Macroeconomics

Measurement, theory and control of aggregate economic activity; prerequisites: 651 and 652 or senior standing.

6-104 Price and Employment Theory

Some 46-103.

Role of markets and price determination under various conditions; national income analysis, employment, growth and economic policy; alternative economic systems; not open to students with previous economics covering prerequisite senior or graduate standing.

6-111 Labor Economics

Some 46-103.

Impact of industrialization on labor markets analysis of resulting problems; wages and working conditions, wage and price determination, relative wages and fringe benefits, work-
ing hours and conditions, and economic transactions, role of labor market institu-
tions in economic performance; prerequisites: 651 and 652 or senior standing.

6-119 Economics of Human Resources

Some 46-103.

Readings in recent applications of economics to human behavior considered as eco-

domic resources, principal emphasis upon explanation of poverty in relation to econom-
ics, manpower, prerequisites: consent of instructor.

6-117 Money and Banking

Some 46-103.

Institutions, theory, practice and policy; prerequisites: 651 and 652 or senior standing.

6-119 Economics of the Government Sector

Some 46-103.

Economic functions of government actions, economic decisions-making in government, budgetary process, effects of government expenditures and taxation upon allocation of resources, distribution of income, and economic growth and stability; prerequisites: 651 and 652 or consent of instructor.

6-123 International Economics

Some 46-104.

Foreign exchange and balance of payments; international monetary arrangements and policy; policies of international trade; effects of tariffs and restrictions on functioning of economic and international economy; prerequisites: 651 and 652 or senior standing.

6-113 Microeconomics

Some 46-103.

Charges, social and political motivations in theory of development; changes in industrial countries, major proposals for speeding up development; prerequisites: 651 and 652 or senior standing.

6-123 Economic Growth and Environmental Decay

Some 6-113.

Causes and consequences of economic growth in more developed countries; clie-
economy growth theory; critical forces; population, labor force, technology, health and education, role of government and other institutions; elements of planning; growth rates; 6E/155 Introduction to Regional and Urban Economics 3 s.h.
Theory of location and regional development; factors influencing location of pro-
duction, city location and morphology; land-use patterns, and measurement and change in regional economic activity; public policy issues in regional and urban development; prerequisites: 6E/151 and 6E/123 or senior standing
6E/157 Problems in Urban Economics 3 s.h.
Application of economic analysis to urban problems: evaluation of role of city, and urban economy; problems areas examined include immigration, inner city, and poverty; the development of urban renewal; the role of public policy for urban development; prerequisites: 6E/151 and 6E/123 or senior standing
6E/161 Industrial Organization 3 s.h.
Structure of major American industries and effectiveness of public policy; develop-
ment of oligopolistic laws and theories of market behavior; prerequisites: 6E/151 or senior standing
Economics History, Systems and Ideologies 6E/150 Entrepreneurial and Organizational History 3 s.h.
Individual accomplishments in systems of large-scale organization, with reference to responsibil-
ity for economic change; discussion consider entrepreneurship in both corporate and noncorporate sectors of economy; prerequisites: 6E/151 and 6E/123 or senior standing
6E/161 American Economic History 3 s.h.
Analysis of American economic past on basis of theoretical model and in terms of frame-
work of economic growth and development; special emphasis placed on deter-
minants of production, formulation, and development of American economic theory; prerequisites: 6E/151 or senior standing
6E/161 History of Economic Thought 3 s.h.
Economic concepts and theories examined against background of evolving urban-
industrial society; classical, institutional, Keynesian and modern economic thought; prerequisites: 6E/151 and 6E/123 or senior standing
6E/162 Orthodoxy and Radical Thought 3 s.h.
Conceptualization and classification in economics; correspondence between fact and
theory; historical interplay between orthodox and radical thought and policy; critical consciousness on shortcomings of economic thinking and new left thinking in providing explanations and prescriptions for problems bearing on economic and social development; prerequisites: 6E/151 or senior standing
6E/163 Comparative Economics Systems 3 s.h.
Economic systems performed by all economic systems; origins and structure of some
economic systems; economic systems; and the systems of economic development; and new industrial stage; prerequisite:
6E/151 and 6E/123 or senior standing
6E/165 Comparative Labor Movements 3 s.h.
Historical and economic analysis of labor movements in selected industrial na-\ntions; pre-1870 America; Italian, Russian, Spanish, British, and French; expan-

des of labor movement theory; economic and political impacts of labor unions and
collective bargaining; prerequisites: 6E/151 or senior standing
6E/166 Quantitative Techniques 3 s.h.
Introduction to techniques of economic analysis; development of simple tool of

tests of economic hypotheses; elements of econometric theory; tests of economic
hypotheses; applications; prerequisite: 6E/151 and 6E/123 or senior standing
Courses for Advanced Undergraduates 6E/197 Senior Thesis in Economics cr. arr.
Primary for seniors preparing for graduate study; course credit varies with the require-
ments of thesis; prerequisite: consent of instructor
6E/198 Senior Seminar in Economics cr. arr.
Primary for seniors preparing for graduate study; course credit varies with the require-
ments of seminar; prerequisite: consent of instructor
6E/199 Readings and Independent Study in Economics cr. arr.
Qualified students permitted in work in courses listed for graduate students with
consent of the instructors
Courses Primarily for Graduates 6E/200 Topics in Economics 3 cr.
Course topics vary; course credit varies with the requirements of thesis; prerequisite: 6E/151 or senior standing
6E/211 Econometric I 3 s.h.
Foundation of macroeconomic thinking: contemporary theory with respect to aggregate demand, consumption, investment, employment and output; econometric forecasting; economic policy for stable growth; prerequisites: 6E/151 and 6E/123 or senior standing
6E/212 Econometric II 3 s.h.
Theory of demand, principles of production; cost analysis; theory of firms; market
structure and pricing
6E/213 Macroeconomics I 3 s.h.
Assistance of consumer behavior with some discussion of uncertainty; representation of
preferences by utility function, revealed preference, theory of demand; theory of

corn exchange; theory of production, theory of markets, theory of distribution, general equilibrium and Pareto optimality; problems throughout
6E/214 Macroeconomics II 3 s.h.
National income accounting; classical economics vs. Keynesian economics; simple
closed housing models; middle-term growth models; role of accumula-
tion; taxonomies of labor market adjustments
6E/215 Microeconomics I 3 s.h.
Competitive equilibrium, existence and stability; Pareto optimality and core of
competitive equilibrium; growth and income distribution in two-sector model; stabil-
ity; capital and market development in welfare economics
6E/216 Microeconomics II 3 s.h.
Capital and current theory; framework of monetary economy; full employment implications of aggregate model of Keynesian and Walrasian money theory; disequilibrium: inflation versus unemployment; post-Keynesian contribu-
tions of Friedman, Mundell and Polak
6E/223 History of Economics I 3 s.h.
Economic doctrines and social and political background influencing development of

economic thought; assistance and medieval economics, mercantilism, physiocracy,

classical economics, mathematical and social doctrine; economic content of

6E/224 History of Economics II 3 s.h.
Development of neoclassical and Keynesian thought; American econ-


eomic thought including institutional economics; variation of socialist economics;
ultrastructural traditions; prereq: consent of instructor
6E/226 Theory of Choice 3 s.h.
Individual choice under uncertainty, in modern idiom; individual choice under uncer-
tainty; utility and subjective probability; Borchardt, Vines, MacRae and Ferguson,

econometrics; social choice; group decision-making and social welfare; arrow

principles; prerequisites: 6E/151 or senior standing
6E/227 Consumer Sets and Functions 3 s.h.
Properties of technology sets and growth and marginal profit rates; prerequisites: 6E/151 or senior standing
6E/228 Mathematical Economics I 3 s.h.
Theory of linear programming and related topics; duality of linear inequalities and
generation of convex sets, separation theorems, fundamental duality theorem; linear
programming and duality; applications of duality; theory of general linear
programming and duality; exceeding capacity for nonconvex model; Von Neumann's duality; choice

6E/229 Mathematical Economics II 3 s.h.
Linear programming and related topics; duality of convex inequalities; and gen-


eration of convex sets, separation theorems, fundamental duality theorem; linear
programming and duality; applications of duality; theory of general linear
programming and duality; exceeding capacity for nonconvex model; Von Neumann's duality; choice

6E/230 Mathematical Economics III 3 s.h.
Extrapolation, linearization, stability and instability (Lyapunov) for systems of differential equa-
tions; systems of growth with and without general equilibrium; classical solutions of variations of optimal control (Pontryagin); dynamic pro-
going applications to the optimization of harvests in simple growth model; prerequisite:
6E/211
6E/231 Econometrics I 3 s.h.
Marxism in statute through quadratic form; study of single equation linear models; classical regression analysis of methods, generalized regression, multi-

linear hypothesis on coefficients, autocorrelation, specification error, univariate

anomaly; vector autoregressions; prerequisite: 6E/151 or senior standing
6E/232 Econometrics II 3 s.h.
All aspects of simultaneous equations; prerequisite: 6E/211
Economics

E6233 Econometrics III 3 a.h.
Advanced single-equation models, linear regression, random coefficients, dummy variables, Bayesian models, nonlinear models, functional form.

E6251 Economic Development I 3 a.h.
Theory of economic development in underdeveloped countries; emphasis on theories of development; prerequisite: consent of instructor.

E6252 Economic Development II 3 a.h.
Principles of economic development in underdeveloped countries; emphasis on policy alternatives in development; prerequisite: consent of instructor.

E6253 Economic Development in Latin America 3 a.h.
Economic development in Latin America; emphasis on current issues and problems, and on approaches to solving prerequisite consent of instructor.

E6241 International Economics I 3 a.h.
Theory of foreign trade, trade policy, and trade; causes of economic growth; prerequisite consent of instructor.

E6242 International Economics II 3 a.h.
Theory of foreign exchange, balance of payments adjustment, safeguards; exchangeability, international investment, prerequisite consent of instructor.

E6245 Monetary Theory I 3 a.h.
Microeconomics of monetary theory, classical monetary theory; money and employment; prerequisite consent of instructor.

E6246 Monetary Theory II 3 a.h.
Historical evolution of monetary theory, non-Euro and recent aggregative models, variables of the connection between the monetary and real sectors; money in economic growth, recent empirical studies of monetary forces.

E6281 Labor Economics and Relations 3 a.h.
Economics of labor market; involving wage theory, models of institutional behavior in labor market, economic impacts of collective bargaining, employment conditions at union; consideration of alternative systems of labor relations.

E6293 Comparative Labor Movements 3 a.h.
Origin, growth and economic role of labor movements in selected industrial nations: England, Australia, Scandinavia, Germany, France, Italy. Several countries are chosen for labor movements; prerequisite consent of instructor.

E6285 Health Economics 3 a.h.
Health care financing, delivery of health care services; alternative to current allocation; medical decision-making and reimbursement; hospital insurance, insurance, hospital, and public health, hospitalization, medical care, health care production; organizational and formal organizations and their implications for national health care planning; prerequisite consent of instructor.

E6291 Economic Development of the North American Economy 3 a.h.
Analysis of long-term growth patterns of American economy with reference to special theories of economic development; discussion of recent research on demographic development, population, transportation, physical capital, income formation, and trade relations; prerequisite consent of instructor.

E6292 Industrial Development of Western Europe 3 a.h.
Review of economic growth since industrial revolution; emphasis on changes in productivity and institution changes; nature of economic structure; U.S. this historical period is setting for testing of formal economic hypotheses of community, family and financial markets; prerequisite consent of instructor.

E6293 Industrial Development of the United States 3 a.h.
Examination of modern theory of business firm and market structure; detailed analysis of patterns of market structure; U.S., type and size of firm; for content, of buyers and sellers and ultimate market performance; prerequisite consent of instructor.

E6272 Industrial Organization II 3 a.h.
Public policy issues in industrial organization; appraisal and critique of antitrust laws; regulation of public utilities and transportation in U.S.; prerequisite: E6265 or consent of instructor.

E6281 Economics of the Government Budget Process 3 a.h.
Role and effects of taxation in modern economy; effects of major taxes upon allocation of resources, distribution of income, and economic growth and stability; deficit spending in alleviation of tax burden; prerequisite consent of instructor.

E6285 Economics of the Government Budget Expenditures 3 a.h.
Economics functions and effects of government spending: economic function of government; alternative means of exerting on government functions; domestic and foreign; effects and dimensions of government expenditures; international inter-country relations; international governmental financial regulations; prerequisite consent of instructor.

E6260 Federal Tax Policy 3 a.h.
Effects of federal tax policy on resource allocation, income and wealth distribution and economic stability; analysis of policies for changes in federal tax system; prerequisite consent of instructor.

E6304 State and Local Government Finance 3 a.h.
Economic functions of governments; purpose and problems of multilevel, multiunit government; state-local-government finance in practice; descriptive, evaluative, and prescriptive for change; prerequisite consent of instructor.

E6284 Regional Economics 3 a.h.
Evolution of economic theory, analysis, planning and policy in regional context; study of processes of local, state and national government policies in practice; descriptive, evaluative, and prescriptive for change; prerequisite consent of instructor.

E6305 Urban Economics 3 a.h.
Analytical aspects of urban economics; emphasis on urban growth in context of economic development, impact of public housing decisions on patterns of growth; discussion of public access to urban resources and transportation in metropolitan areas; prerequisite consent of instructor.

E6306 Advanced Urban Economics 3 a.h.
Prerequisite: consent of instructor.

E6301 Thesis in Economics 3 a.h.
Prerequisite: consent of instructor.

Courses in Advanced Graduate Seminars

E6310 Seminar in Economic Theory 3 a.h.
Prerequisite: consent of instructor.

E6391 Seminar in Econometrics 3 a.h.
Prerequisite: consent of instructor.

E6340 Seminar in International Economics 3 a.h.
Prerequisite: consent of instructor.

E6335 Seminar in Monetary Economics 3 a.h.
Prerequisite: consent of instructor.

E6355 Seminar in Labor Economics 3 a.h.
Prerequisite: consent of instructor.

E6355 Seminar in Health Economics 3 a.h.
Prerequisite: consent of instructor.

E6390 Seminar in Economic History 3 a.h.
Prerequisite: consent of instructor.

E6390 Seminar in the Economics of the Government Sector 3 a.h.
Prerequisite: consent of instructor.

E6390 Seminar in Urban and Regional Economics 3 a.h.
Prerequisite: consent of instructor.
College of Dentistry

Administrative Staff

Dean Donald J. Galgano
Dean Emeritus: George S. Easton
Associate Dean and Coordinator of Research: Jess Haydan, Jr.
Coordinator at Clinical: C. Frederick Park
Coordinator, Student Affairs: and
Director, Continuing Education: Ralph C. Appley
Librarian: Mary G. Beattie

The College of Dentistry is both administratively and physically an integral part of the University. It draws upon and contributes to the University's diverse resources, and its students enjoy all the advantages and privileges enjoyed by the general student body. The College benefits particularly from its cooperative relationship with the colleges of Medicine, Nursing and Pharmacy in the University Health Center, whose teaching, research and service activities have earned international recognition.

Basic Program in Dentistry

The basic educational program leading to the degree, Doctor of Dental Surgery (D.D.S.), occupies three years of preprofessional study and four years of study in the College of Dentistry. The dental curriculum consists of the basic units:

Basic Sciences
- Gross, general radiographic and developmental anatomy; neuroanatomy; biochemistry; general microbiology; physiology; general pathology; oral pathology; pharmacology; microbiology; clinical pathology; oral biology

Restorative Dental Sciences
- Gross, microscopic and radiographic dental anatomy; dental materials; endodontics; operative dentistry; fixed partial prosthetics; removable prosthesis

Oral Medicine
- Physiology of mastication; introduction to diagnosis and therapy; preventive dentistry; oral diagnosis; dental radiology; anatomy, histology, and pain control; oral surgery; periodontology; internal medicine; therapeutics; bioclinical conference

Specialty Dentistry
- Ethics; history of dentistry; biometry and the scientific method; research design and planning; epidemiology; nutrition; preventive dentistry and community health; principles of human behavior; dental economics; dental jurisprudence; practice management

Pediatric Dentistry
- Facial growth and development; periodontics and orthodontics

To achieve a close correlation of the basic sciences with clinical disciplines, the student is introduced to actual clinical work during the freshman year.

The sophomore program includes comprehensive training in the elective coordination of auxiliary personnel. Classroom instruction in this area is followed by practical experience offered in conjunction with the dental hygiene program.

Junior dental students rotate through a series of "blockships" which give them meaningful exposure to each of the eight clinical disciplines.

Senior dental students are involved in the delivery of comprehensive dental care in an environment which closely simulates conditions in private dental practice. Seniors also are exposed to various extramural health programs at state and University Hospitals and the State Department of Health.

The curriculum provides a summer practicum in which senior dental and dental hygiene students assist in selected dental offices throughout Iowa. The practicums expose students to facets of dentistry usually not observable in an academic setting, such as practical business management procedures, appointment-seating control, the dynamics of presenting treatment plans to private patients and the relationship of the dentist to the community.

Special Programs

Enrichment Program
A dental student may satisfy departmental requirements by examination in lieu of course participation. The student gains may be used for participation in the College's enrichment program. A student who qualifies for the program must maintain a satisfactory level of achievement to retain in the program. An enrichment program may consist of electives taken for credit, advanced clinical training, research or any combination of these activities. It may also provide a means to fulfill some Graduate College requirements, if the student's objective is a combined Dentistry-Graduate College degree.

Teacher Training
In close cooperation with the Graduate College and the colleges of Education and Liberal Arts, the College of Dentistry offers one of the few programs preparing dentists to become professional educators. The program combines graduate-level coursework in dentistry, education and the liberal arts, with supervised teaching experience and research in the College of Dentistry. It leads to a master's degree in education or a master's degree in education. Each student's course of study is tailored to individual abilities and interests. The student may elect to emphasize coursework and supervised practice teaching in any of the dental sciences and
by choose among four areas of development in education—educational psychology, higher education, educational media, or student personnel.

Facilities
The new Dental Science Building, a major unit in an expanded Health Center, enables the College to double its enrollment and accelerate its research activities, and facilitates the development of interdisciplinary communication in Health Center teaching, research and patient-care activities. The Health Center campus includes a new Basic Sciences Building, a new Health Sciences Library and a new College of Nursing. The Health Sciences Library will house all of the University's special health science holdings, including the College of Dentistry's collection of more than 10,000 volumes on dentistry and allied scientific subjects, and the more than 283 professional journals the College currently receives.

The Dental Science Building comprises separate but connected four-story wings located on either side of a mall. The south wing will be devoted to clinical teaching, with various Departmental clinic facilities, support laboratories, clinical research space, offices, mechanical rooms, and an automated learning center. The north wing will house a variety of teaching, administrative and research facilities, including teaching laboratories, research laboratories, administration area, an audiovisual production center and the program in community dentistry.

Admission
The closing date for applications and credentials is February 15 for the class entering the College of Dentistry the following September. Applicants are urged to file the completed application and the necessary official transcripts as soon as possible after July 1 of the year preceding the year in which they wish to enter.

The prospective dental student is encouraged to complete a program leading to a standard bachelor's degree before entering dental school to consider a combined program which enables him or her to earn a standard bachelor's degree upon completion of the freshman year in dentistry. Preference will be given to applicants who have a bachelor's degree or who have completed requirements for the degree in a combined program.

General Basis for Admission
The college curriculum outlined below meets the basic academic requirements for admission to the College of Dentistry. Each applicant must submit to the Office of Admissions the completed application form and official transcripts from all colleges attended.

College Credit
The college curriculum should include at least three academic years of accredited work comprising at least 96 semester hours and including these required courses:

Rhetoric
Satisfactory accomplishment in English composition and speech commensurate with the academic requirements for a bachelor's degree of the college attended

Physics
One year (equivalent to eight semester hours), of which one-fourth must be laboratory work

Chemistry
Two years (equivalent to 16 semester hours), including one year (equivalent to eight semester hours) of organic chemistry, with appropriate laboratory work in all courses, of which one-fourth must be laboratory work

Biology
One year (equivalent to eight semester hours); this requirement may be satisfied by a one-year course in either general biology or zoology and botany (not botany alone), but in all cases one-half of the credit must be for laboratory work

Electives
Additional courses to total at least 96 semester hours; chosen electives should give the applicant a well-rounded educational background; they should be selected from courses in the social sciences, philosophy, psychology history, foreign languages, higher mathematics or chemistry

The Dentistry admissions committee may waive or reduce some of the above requirements when the candidate for admission is considered outstanding in other respects. In exceptional circumstances, candidates with fewer than three years of college work will be considered for admission if the applicant's performance and potential for dental profession are considered outstanding. These candidates will be required to take the Graduate Record Examination Aptitude Test as well as the Dental Admission Test. In these instances, assessment of the candidate's performance on the Graduate Record Examination will be included in the evaluation by the admissions committee of the applicant's credentials for entrance in the College of Dentistry. The applicant should have a cumulative grade-point average of at least 2.5 (A=4). Since the quality of coursework in preclinical science is basic to success in dentistry, the admissions committee gives special consideration to such coursework.

Interview
Personal interviews may be required of applicants for admission to the College of Dentistry.

Required Dental Admission Test
All applicants must complete the Dental Admission Test sponsored by the Council on Dental Education of the American Dental Association

Tests are given three times annually, and The University of Iowa is a testing center. Applicants for admission to The University of Iowa College of Dentistry are urged to complete the examination in the previous October to enable the admissions committee to begin its selection in December. Applicants who have completed more than one year of preclinical work are urged to take the examination in the preceding April.

All applicants for admission to the College of Dentistry should obtain application forms for the required test from the the Uni-
University or the American Dental Association. Test applications should be submitted well before the test deadline.

Deposit by Accepted Applicants
An accepted applicant must submit the required $50.00 deposit within 30 days after notification of favorable action on his or her application. This deposit is not refundable unless credit is refused after the first test payment. An applicant who fails to make the deposit within the time specified forfeits a place in the entering class.

Physical Examination
Applicants accepted for admission are required to submit a satisfactory physical examination report to the University Student Health Service within two weeks following notification of acceptance.

Advanced Standing
Applications for admission with advanced standing are considered on the basis of their individual merit and availability of space in a given class.

Combined Liberal Arts-Dentistry Course
The provision for acceptance by the College of Liberal Arts of 30 semester hours of elective credit earned in any other college of the University makes it possible for the student who enters the College of Dentistry to obtain the bachelor's degree from the College of Liberal Arts upon successful completion of the freshman year in dentistry. To take advantage of this plan, the student must fulfill all specific requirements for the bachelor's degree, including the requirements for a major in some department or area of concentration. The successful completion of the last 30 hours in the College of Liberal Arts preceding enrollment in the College of Dentistry satisfies the College residence requirement.

Additional Admission Considerations
Fulfillment of the specific requirements listed for admission does not guarantee admission to the College of Dentistry. From the applicants meeting minimum requirements, the admissions committee selects those who appear best qualified for the study and practice of dentistry. The committee considers applicants' academic averages, the scores on the required Dental Admission Test and several other factors.

Since the available places in the freshman class of the College of Dentistry are limited, preference will be given to applicants who are residents of Iowa under the University's regulations on residence. If it is found possible to consider a limited number of applicants who are nonresidents of Iowa, preference will be given to nonresident applicants having the highest scholastic standing.

Graduation Requirements
Promotions and Graduation
Student promotions and graduation are determined by the respective class performance committee appointed by the dean from among faculty members involved is coursework offered during a given academic year. A minimum cumulative grade-point average of 2.0 is required for promotion and graduation. However, the performance committee may recommend that a student withdraw from the College of Dentistry or repeat an academic year, regardless of his or her grade-point average, when the student is deemed generally unfit to be promoted or to enter the dental profession.

Committee on Appeals
This ad hoc committee is appointed by the dean from the faculty of the College and is chaired by the dean or his designated representative. The committee considers such matters as student scholastic achievement, promotions, absences and general fitness to enter the dental profession. The decision reached by the committee is final.

State Boards of Examination
All states require an examination before a board of dental examiners prior to issuance of a license to practice. Iowa law provides for two examinations yearly by the Iowa State Board of Dental Examiners. These are given on dates coinciding with the time of graduation.

Expenses
Students are given an opportunity to rent most of their dental instruments from the College of Dentistry. The rental fee amounts to $300 per year. In addition, charges are assessed for expendable laboratory supplies, averaging approximately $150 per year for the first two years, and a $100 breakage for which is refundable upon graduation or termination of enrollment.

Financial Assistance
Under the Health Professionals Scholarship and Loan Programs, eligible dental students may borrow up to $5,000 each year of their undergraduate professional studies. Eligible students may also apply for federal scholarships. Preference is given to students who would not otherwise be able to finance their professional schooling. Loans are issued at low interest rates and are repayable over an extended period of time after the recipient concludes the course of study. There are also provisions for forgiveness of portions of the loan in consideration of the graduate's selection of location of service in an area where there is a shortage of dentists.

A number of short-term loans are available from the American Dental Association, the Iowa Dental Association, the Kellogg Foundation, the Iowa Dental Achievement Fund and other sources, to help students in emergency situations. Dental students are also eligible for much of the assistance provided through the University's Office of Student Financial Aids. This includes opportunities for part-time employment.

For further information on financial assistance available to dental students, see the "Scholarships and Loans" section of the Counseling or direct an inquiry to the Office of Student Financial Aids.

Student Organizations
All dental students automatically have membership in the American Student Dental Association. Students who rank in the...
upward 12 percent of the senior class are eligible for Omicron Kappa Upsilon, national scholastic honorary dental society. Two national dental professional fraternities, Delta Sigma Delta and Psi Omega, have chapter houses at Iowa, and both house women's auxiliaries. There is also a Dental Student Wives Club.

Admission to Graduate and Postgraduate Study

Programs of study leading to the Master of Science degree are offered by the College of Dentistry's departments of Fixed Prosthodontics, Dental Hygiene, Preventive Prosthodontics, Operative Dentistry and Endodontics, Oral Diagnosis, Oral Pathology, Oral Surgery, Orthodontics, Pedodontics and Periodontology. Admission to any of the graduate programs requires satisfaction of all requirements for admission to the Graduate College, possession of the Doctor of Dental Surgery degree or its equivalent, and departmental approval.

Departments also offer postgraduate programs of study designed as preparation for clinical specialty practices. These programs are one year or more in length, but do not lead to an academic degree. Prerequisites for admission to the postgraduate programs are the same as for graduate programs. A certificate is awarded upon satisfactory completion of the postgraduate program.

Preclinical Sciences

Courses

Following are required science courses offered by departments in college other than dentistry for undergraduate dental students.

17:145 The Science of Nutrition 2 s.h.
Principles of human nutrition; special reference to oral health; practical Biochemistry 95:101 General Chemistry 1 Laboratory Physics 72:151: 8 s.h.
10:161 General Anatomy for Dental Students 4 s.h.

Students who plan to go on to graduate work are encouraged to take a full year of general chemistry, college physics, college biology, and calculus. These courses are designed to acquaint students with the type of coursework which can be expected in graduate and professional schools.

81:102 Dental Microbiology (Bacteriology) 5 s.h.
Lectures, laboratory, and clinical work; sophomore year.
82:203 General and Systems Pathology for Dental Students 4 s.h.
Lectures, conferences, dissections, laboratory, use of current surgical and surgical materials; sophomore year.
71:171 Pharmacology for Dental Students 6 s.h.
Lectures, conference, laboratory, chemistry, pharmacological sciences and therapeutic uses of drugs; emphasis on those of special interest in dentistry; sophomore year.
72:181 Introductory Physiology 6 s.h.
Lectures and laboratory, general principles and detailed treatment of various systems; 136 clock hours; sophomore year.
56:161 Biochemistry 4 s.h.
Chemical principles and reactions of living matter; 144 clock hours; junior year.

Dental Hygiene

See "College of Liberal Arts"

Fixed Prosthodontics

Department Head: Kerri E. Thayer
Degree offered: M.S.

The primary purpose of the Master of Science program is fixed prosthodontics is to train and prepare dentists for careers in College of Dentistry/Fixed Prosthodontics/Residency education and/or dental research. It is also acceptable for individuals wishing to further prepare themselves for private practice in fixed prosthodontics. The program satisfies the formal training requirements for eligibility for the American Board of Prosthodontics examination.

The graduate student, in cooperation with the head of the Department and/or the advisor, constructs an individual curriculum for his or her program which best fulfills personal interests, goals and desires while meeting all of the minimum requirements of the Department of and the Graduate College necessary for the awarding of the master's degree. This type of individual attention is possible since two graduate students are normally accepted into the program each year.

Admission

The minimum requirements for admission into the program correspond to the minimum requirements for admission to the Graduate College of the University. In addition, the student must hold a D.D.S. or D.M.D. degree or its foreign equivalent. No advanced GRE is required.

Degree Requirements

A research project and thesis are required for the master's degree in fixed prosthodontics. The major emphasis of coursework is in fixed prosthodontics theory and treatment along with similar courses in other specialties of dentistry. A course in research methodology as well as a course in statistics or elementary statistical inference in medicine is required. Some coursework in the general area of education or in one of the basic science areas is also required. Oral and/or written exams are given during the regularly scheduled graduate degree exam period each year.

Any student who is unable to maintain the minimum 2.5 grade-point average during the first year of the program, or those individuals who elect to terminate their program after one year, will be considered for issuing of certificate of attendance. Each student will be required to submit a manuscript suitable for publication in a nationally recognized professional journal, based upon the student's research and/or thesis topic. He or she will be required to prepare one additional manuscript for publication on another topic.

Staff: professor Thayer, professor emeritus Herrick, associate professor emeritus Kerri, assistant professor Pratte, Kracht, Sware

Courses

81:001 Dentistry 2 s.h.
An overview of the disciplines and their interrelations.
81:002 Fixed Prosthodontics Techniques 2 s.h.
Lectures covering the techniques of crown and bridge dentistry, including casting, materials, and techniques used in the fabrication of various types of metal and porcelain crowns and wrought metal fixed prosthodontics.
81:003 Fixed Prosthodontics Techniques Laboratory 4 s.h.
Technical procedures required in construction of fixed prostheses.
81:101 Dental Materials 1 s.h.
Review of basic physical and clinical properties that apply to materials used in dentistry; relationship of metal and nonmetal structural components to physical and mechanical properties.
81:102 Fixed Prosthodontics 3 s.h.
Review of fixed prosthodontics. Emphasis on metal and porcelain restorations in clinical applications supplemented by individual supervision and demonstration.
Operative Dentistry and Endodontics

Department Head: Wallace W. Johnson

Degree offered: D.D.S.

Undergraduate Study

Undergraduate courses in this department are part of the total dental curriculum and are designed to be taken at specific times during the student's academic training.

In endodontics the student studies pathological conditions of the dental pulp and learns to diagnose and treat these conditions to the patient's benefit. In operative dentistry the student learns the methods and materials used to restore decayed and injured teeth to health, function and esthetics. After introductory courses in the laboratory, the student begins training in the patient clinics.

M.S. Program In Endodontics

The program in endodontics is designed to provide a level of training which will lead to a career in research, teaching and/or specialization in the clinical practice of endodontics. Applicants must be graduates of recognized dental schools, and foreign students must demonstrate proficiency in the use of English. Unless the preparatory training of the candidate includes sufficient work in mathematics and chemistry, it will be necessary to complete these studies through differential calculus, statistics and quantitative analysis before undertaking a research project.

Completion of the program will usually entail two calendar years of full-time effort. The applicant must be financially prepared to pursue studies without interruption.

In compliance with basic Graduate College regulations for programs in Dentistry, these degree requirements must be met:

A. 30 semester hours in the major field of clinical endodontics and selected courses offered by the departments of the College of Dentistry

B. 10 semester hours in a minor field of biochemistry, physiology or microbiology

C. 10 semester hours in the contributing areas of microchemistry, mathematics, statistics and analytical chemistry

- Preparation of an acceptable thesis based on original research; not more than 16 semester hours of research credit and eight semester hours of thesis preparation credit may be counted in satisfying the 48 semester hour minimum for the degree

- Satisfactory performance in a comprehensive written and oral examination which is a functional character and does not duplicate semester examinations

The director of the degree program will act as the student's adviser and as chairman of the examining committee.

M.S. Program in Operative Dentistry

The program in operative dentistry is designed to prepare the student for a career in teaching and research. Since operative dentistry is not a specialty area of dentistry, course arrangement of the graduate program can be quite flexible. The student has considerable freedom to pursue courses of advanced study of particular personal interest. Excellent courses of study have been arranged in the biological sciences, material sciences and education.

An applicant for this program must be a graduate of a recognized school of dentistry and must comply with the requirements for admission to the Graduate College of the University. An interview with the applicant may be requested.

In addition to Graduate College requirements for advanced degree programs, these Departmental requirements must be met:

- Satisfactory completion of 48 semester hours of graduate-level courses. These may be distributed as follows:
  A. 20 semester hours of graduate-level courses in the College of Dentistry; these may include clinical dentistry and practice teaching
  B. 20 semester hours of graduate-level courses in other areas of the University; these should include courses in statistics and education
  C. Eight semester hours in original research and thesis preparation

- Preparation of an acceptable thesis based on original research. The student should plan to furnish his or her own financial support for the research and thesis.

- Formal defense of thesis and examination of the candidate by an examining committee. The director of the degree program will act as adviser to the student and as chairman of the examining committee.

Staff: professor Byers (director, Endodontics), Johnson (director, Operative Dentistry), professor Emeritus Wiss, associate professor Cain, Knousah, associate professor Denesy, Fuller; instructors Lueke, H. T., Ross, Leuck

Teaching assistant staff associate professor Kilby, assistant professor Lewis, Logan
Endodontics
92:110 Endodontics 2 a.h.
Lectures, seminars, laboratory projects designed to give understanding of basic principles, operative and technical procedures necessary for treatment of endodontic problems in human teeth.
92:115 Clinical Endodontics Practice 1 a.h.
Clinical endodontic practice; clinical symptoms and discussion of treatment of each individual case followed by student’s practical application on simple suitable cases; prerequisite 92:110; third year.

Primarily for Graduates
92:200* Endodontic Literature Review 1 a.h.
Assigned readings and preparation of abstracts.
92:205* Research in Endodontics 6 a.w.
Required of all students working toward advanced degree; may be taken only on consent of course director.
92:254* Seminar in Endodontics or ar.
Conferences and discussions of current literature; specific assignments reviewed and reported upon by student.
92:255* Practice Teaching Endodontics or ar.
For students wishing in order field of dental education; assigned teaching obligations by advisor; prerequisite Education TP 231.
92:300* Thesis Preparation in Endodontics or ar.
Prepares for publication of a narrative article on assigned research project, utilizes with graphic illustration, charts, photographs.
92:305* Advanced Endodontics 1 a.h.
92:305* Advanced Clinical Endodontics or ar.
Clinical demonstrations and assigned surgical and necrotic endodontic cases.

Primarily for Graduates
92:320 Dental Anatomy 2 a.h.
Lectures on various concerned dental procedures. Detailed anatomy, external and internal anatomy of human primary and permanent dentures. First year.
92:310 Dental Anatomy Laboratory 4 a.h.
Hands-on study of human teeth Anatomical morphology and functions utilizing wax replacement method and various models of teeth. First year.
92:420 Dental Anatomy 2 a.h.
92:435 Dental Anatomy Laboratory 4 a.h.
Study and application of procedures involving the placement of human teeth to receive dental restorations. Students prepare all phases of crown and crown structure of teeth. First year.
92:420 Dental Thermoplastic for Dental Hygienists 1 a.h.
Survey of drugs used in dentistry; pharmacology. Dissect a human.

Oral Biology
92:105 Operative Dentistry Lab (Hygienist) 3 a.h.
92:107 Operative Dentistry 3 a.h.
Lectures, seminars, clinical demonstrations correlated with supervised practical experience for third-year students involved in operative procedures for restorative treatment of teeth. Focuses on restorative treatment of teeth. Third year.
92:108 Clinical Operative Dentistry (Hygienist) 5 a.h.
Lectures and clinical demonstrations correlated with supervised practical treatment of dental hygiene students in dental hygiene. Students prepare the external area of operative restorations for restorative patients and gain understanding of pharmacology and aesthetic requirements of restorative treatment to patients. Focuses on restorative treatment of teeth. Third year.
92:207 Advanced Dental Therapeutics or ar.
Study of pharmacology and application of drugs used in dentistry.

Teacher Education
92:207 Curriculum Development for Dental Education or ar.
Analysis of educational issues common to primary health curriculum. Philosophy of teacher of health. Graduate and continue education developed from survey of educational trends.
92:252 Design and Evaluation of Research in Dental Education or ar.
Opportunity to order a research process into meaningful sequence permitting practical written format for dental education research. Longitudinal evaluation of selected issues.
92:253* Research Experience in Dental Education or ar.
Problems related to the development, production, design, and distribution of educational materials. Selected practical aspects of dental education research. Research and technical procedures.
92:204 Organization and Administration of a Dental College or ar.
Exploration of present-day administrative theory and modern management as related to organization and function of dental college problem-solving intermediate course in educational or industrial administration.
92:295* Educational Innovation in Dental Education or ar.
92:295* Action Research in Dental Education or ar.
Designed to give graduate students or beginning teachers guided experience working with dental educators on short-term behavior research problems. Student's research proposal, research design, data gathering, not related to these proposals; preparation, analysis, education, psychology, and research design.

Oral Biology
Acting Department Head: Narendar M. Bhat

The Department offers summer research fellowship programs.
to undergraduate students in dentistry, and operates a laboratory fully equipped for heat-tissue research.

Staff: professor Soni; associate professor Weber; assistant professor Mackinnon, Sarah

Courses

93:101 Oral Biology 2 s.h.
Recent advances in oral biology; dynamic processes of immune system; prevention of oral diseases; fluoride and its use in dentistry

93:103 Oral Biology 2 s.h.
Lecture, seminar; laboratory, physiology of oral cavity; speech pathologist; clinical evaluation

93:103 Problems 3 or 4
Small research projects pertaining to recent developments in oral biology

For Graduates

93:291 Mineral Metabolism and Dental Caries 2 s.h.
Structure in relation to disease and metabolism of inorganic substances in relation to normal and abnormal dental diseases

93:202 Periodontics and Structure of Bone 2 s.h.
Histology, physiology, pathology of bone; reference to health and mandible, development, growth, maintenance, functional integration of bone in physiological state such as development of discoloration, inflammatory dysfunction, dislocation of maxilla, oromaxilla

53:003 Topics In Oral Biology 3 s.h.
Seminar on recent developments in oral biology

93:204 Research Techniques In Oral Biology 2 s.h.
Includes theory and practice of preparation of basic for light microscopy, preparation of embedding; histology and techniques used in research

93:205 Research in Oral Biology 3 or 4
Seminar in oral and maxillofacial surgery

93:206 Research in Periodontology 2 s.h.
Lectures and seminars on research

93:207 Practice Teaching 3 or 4
Supervised practical experience in clinics and laboratory teaching

Oral Diagnosis

Jolting Division Head: J. D. Whitecross
Degree offered: M.S.

The primary objective of the Division of Oral Diagnosis is to provide basic instruction for dental students and other health profession students in methods of completion of an oral diagnosis and preparation of an adequate treatment plan for the patient. These objectives are met through a system of lecture, seminars and clinical instruction beginning with the extended summer program of the freshman year and continuing through the junior clinical year of the dental curriculum.

In addition to the didactic and clinical program for freshmen, sophomores and junior students in oral diagnosis, the Division is responsible for the Bioclinical Conference course, whose objective is to enable the student to solve problems arising in the course of oral pathology in the dental office situation. This provides training for the student in a situation similar to those encountered if he or she is admitted for staff privileges in any recognized hospital program.

At the present time oral diagnosis is not recognized as a specialty in the field of dentistry. However, the master's degree program is structured so that oral diagnosis becomes recognized as a specialty in dentistry at a later date, all candidates who have completed the Master of Science degree program in the Division will meet the requirements which may be anticipated in a specialty program.

In addition to serving the institutional needs in undergraduate and graduate programs, the Division serves as a screening and diagnostic area for all patients entering the College of Den-
Oral Pathology

Department head: Allen K. Fisher
Title offered: M.B.

The main objectives of the Department of Oral Pathology are to provide basic instruction of oral and other health professional students on diseases affecting oral tissues, advanced instruction in this subject for graduate-level students from health science and related fields, and preparation of especially qualified students for careers in teaching and research.

A program leading to a Certificate in Oral Pathology is offered to graduates of dental schools desiring clinically-oriented train-

ing in preparation for specialized practice of oral pathology. The M.S. program is a longer and more comprehensive one, and includes research training.

The laboratory diagnostic service which the Department of Oral Pathology provides for the clients of the College of Dentistry contributes extensively to all phases of the Departmental educational effort. The laboratories are well equipped for work in histologic anatomy, hematology, and selected in-vitro procedures of clinical chemistry. Special facilities for studies in histocompatibility and pathologic tissue metabolism are used mainly for graduate student and staff research. Additional training, particularly in histologic and histochemical analysis, is available in the College of Medicine Department of Pathology in which the Department of Oral Pathology faculty members hold joint appointments.

Admission Requirements

The size of the Departmental staff and facilities limits the number of applicants who can be accepted for programs leading to the Certificate in Oral Pathology and the Master of Science degree. Therefore, it is necessary that each prospective applicant for advanced training discuss his or her opportunity for accep-
tance with the Departmental executive prior to submission of an application for admission to the Graduate College. Minimum requirements for admission to either program are a cumulative grade-point average of 2.70 and satisfactory scores in the Graduate Record Examination Aptitude Test and in the Advanced Test on either biology or chemistry. Final decision on acceptance of any applicant meeting the minimum requirements for admission will rest with the Departmental staff.

Certificate in Oral Pathology

This program combines academic studies with extensive labora-
tory practice of oral pathology under supervisory supervision, and requires a minimum of 24 months of full-time work for completion. Qualifications for the certificate include completion of all required courses with a passing grade, demonstration of satisfactory competence in the practice of oral pathology and a satisfactory grade in a final comprehensive oral examination before an examination committee composed of members of the graduate faculty in the departments of Pathology and Oral Pathology.

Although additional courses may be elected if circumstances permit, the required courses in this program are:

Oral Pathology

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<tr>
<th>Course</th>
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<tr>
<td>69.203</td>
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Master of Science Degree with Thesis

Candidates for the Master of Science degree are expected to develop substantial research skills necessary to the mechanics of proof-of-concept disease and should anticipate that considerable effort will be devoted to completion of an assigned research project and the thesis which will be based upon it.
The nature of the research project, and some of the courses which constitute the tools for research and for the informed practice of oral pathology, dictate prerequisites in mathematics, quantitative analysis and physical chemistry. When students are admitted to this program without these prerequisites they will be required to complete mathematics through calculus and at least one semester of physical chemistry set later than 18 months after beginning the program. Applicants who have not earned doctorates in health sciences are also required to show evidence of equivalent training in the sciences contributory to pathology. Minimum requirements for completion of this program are 56 months of full-time work and 50 semester hours of acceptable graduate credit.

The required courses are:

- 4:111 Analytical Chemistry 3 s.h.
- 6:203 General and Systematic Pathology 4 s.h.
- 6:204 Oral Pathology 4 s.h.
- 37:211 Cytology 4 s.h.
- 37:155 Fundamental Genetics 4 s.h.
- 68:200 Basic Otolaryngologic Science 4 s.h.
- 228:189 Biostatistics 3 s.h.
- 99:165 General Biochemistry 3 s.h.
- 99:167 Experimental Biochemistry 3 s.h.
- 99:263 Clinical Biochemistry 3 s.h.
- 61:166 Diagnostic Microbiology 5 s.h.
- 85:206 Advanced Oral Pathology 6 s.h.
- 85:207 Advanced Clinical Pathology 8 s.h.
- 85:208 Research in Oral Pathology 10 s.h.

Evaluation of the qualifications of candidates for the Master of Science degree or for that degree and the Certificate in Oral Pathology will be determined by the comprehensive oral examination in accordance with the rules of the Graduate College. The examination committee will be composed of members of the graduate faculty from the departments of Pathology and Oral Pathology and one additional member of the graduate faculty representing the science other than pathology which provided the major emphasis of the research component of the thesis. The examination will relate to the candidate's knowledge of basic pathological processes and to the thesis. It will also cover the practice of oral pathology if the candidate is to be considered for the Certificate in Oral Pathology. Staff: professors Fisher, Yale, assistant professors Shaik, Hammond.

Courses

- 80:050 Pathology for Dental Hygienists 3 s.h.

Description of routine examination of clinical diseases of oral and maxillary and other tissues and general understanding of basic principles involved in histologic diagnosis of routine, subject matter include degenerative, infective, inflammation, vascular, development, abnormalities, trauma, pregnancy, and dental caries.

- 89:103 Clinical Pathology 4 s.h.

Concurrent study and practice of diagnosis of medical diseases by laboratory methods and selected principles of pathologic examination. Instruction limited to small group of students under qualified conditions emphasis placed on those procedures adaptable to office-throw practical experience provided by in-service assignments in Clinical Laboratory.

- 88:004 Oral Pathology 4 s.h.

Lecture, conference, demonstrations, laboratory course devoted to diagnosis, involving oral and maxillary diseases of malignant, infectious, parasitic, inflammatory, lymphatic and vascular structure, salivary glands, gastrointestinal abnormalities, traumatic tissue proliferations, neoplasms, e.g., specific infections, allergic and inflammation.

- 82:200 Advanced Oral Pathology 4 s.h.

Prerequisite: Further and more intensive study of oral diseases involving complex tissues; courses in oral biology, immunology and histology essential.

- 80:207 Advanced Clinical Pathology 4 s.h.

Prerequisite for graduate in dentistry requiring intensive training in diagnosis by laboratory methods; guidance provided through critical analysis and sundry other advanced staff experience developed by participation in operations of Clinical Laboratory, pathologyalse, immunology and clinical chemistry em- ployment.

- 85:106 Research in Oral Pathology 2 s.h.

Regulation of the course provides means of earning academic credits for certi- fied staff. Standard preparation of thesis required for candidates for Master of Science degree and may be open to other qualified students whose interests coincide with available departmental research facilities.

Oral Surgery

Department Head: Merle L. Hale
Degree offered: M.S.

The Department of Oral Surgery is involved in both undergraduate and graduate education of dental students. It combines clinical and didactic training in an individual basis to the interests, abilities and development of the student. The undergraduate program is based in the College of Dentistry, with some clinical assignments in the Department of Oral Surgery and Dentistry at University Hospitals. Graduate study is based primarily in the Residency Training Program at University Hospitals. The facilities of the University's Health Center complex provide an appropriate environment for graduate training in oral surgery.

The graduate program takes an individual approach, encouraging and directing the student to obtain fundamental concepts in a basis not only for specialty training but as preparation for investigation, teaching and consultant service through professional growth.

Staff: professor Hale; associate professor Higa, Thatcher; assistant professor Wolcott; instructor McCoy; nurse clinician Goodwin.

Courses

- 89:102 Anaesthesia 1 s.h.

Principles and application of anaesthesia for surgical procedures; 12 clock hours, one semester.

- 89:104 Oral Surgery I 1 s.h.

Basic principles of oral surgery; indications and contraindications for extractions; evaluation of conditions which result in oral surgery; 12 clock hours, sophomore year, second semester.

- 89:105 Oral Surgery II 1 s.h.

Technique of minimization and minor oral surgery procedures; 16 clock hours, clinical experience function as first assistant in oral surgery clinic; 8 clock hours, junior year.

- 89:107 Oral Surgery III 1 s.h.

History, consideration, diagnosis and treatment of diseases and traumatic injuries of the mouth; 16 clock hours, senior year, first semester.

- 89:109 Oral and Maxillofacial Surgery 1 s.h.

Clinical application of principles of oral surgery, Surgery Clinics of Chicago, University of Chicago, University of Illinois.
Orthodontics

Department: Head: George P. Andreasen
Degree offered: M.S. (Certificate of Orthodontics also offered)

Undergraduate Program
The purpose of the undergraduate program in orthodontics is to enable the general practitioner of dentistry to recognize, diagnose, and treat with competence simple malocclusions of the teeth.

Lecture courses guide the student in the learning of basic concepts of dental and facial growth, as well as treatment-oriented subject matter. In a laboratory course, diagnostic records are taken and evaluated and treatment appliances are fabricated. A volunteer program of clinical treatment of selected patients is supervised by the Department.

Opportunities exist for research and independent study in the Department.

The Graduate Program
The purpose of the graduate program in orthodontics is to educate specialists capable of diagnosing and treating with skill any malocclusion of the teeth requiring comprehensive care. The specialist should be familiar with and able to critically analyze biologic, biomechanic, diagnostic and treatment concepts in orthodontics. The majority of graduating specialists are self-employed in urban communities; a few are employed by the government and in education.

Satisfactory completion of a 24-month period of intensive study, including lecture courses, seminars, clinical practice and a research paper qualifies a student for the Certificate of Orthodontics. If a student satisfactorily completes a thesis based on an original research project, he or she will qualify for an M.S. degree in addition to the Certificate of Orthodontics.

Opportunities are available for research and independent study in the Department.

Admission requires the D.D.S. degree, or its equivalent, and satisfaction of Graduate College requirements.

Special facilities for research in biomechanics and craniofacial growth are available. Interaction with other departments provides learning and research opportunities in surgical orthodontics, sleep lip and palate treatment, speech pathology, animal experimentation and human growth.

Such departments include: orthodontic professors Andreasen, Kremenak; assistant professors Bihara, Saley; assistant clinical professors DeKock, Thorburn, Haneman.

Courses

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<tr>
<th>Course Code</th>
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<tr>
<td>88:105</td>
<td>Orthodontic Treatment</td>
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<tr>
<td>88:106</td>
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<tr>
<td>88:107</td>
<td>Orthodontic Treatment</td>
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Pedodontics

Department: Head: Fred M. Puttke
Degree offered: M.S. (Certificate also offered)

The Department of Pedodontics is concerned with the prevention and treatment of dental diseases of children. A program of instruction combining didactic, laboratory and clinical experiences is offered to dental and graduate students. Special consideration is given in reviewing the current literature and managing the dental problems of handicapped children. Efficient treatment through the proper utilization of dental auxiliary personnel and record management is also emphasized.

Clinical and laboratory research projects are in progress, with financial support from federal agencies and other sources. Sig-
nificant contributions have been made in the areas of fluoride action and child behavior management. Faculty members hold numerous national and state offices, committee memberships, consultations and honors. They serve as reviewers for several professional journals and federal granting agencies. They also participate regularly in continuing education programs for dentists and other health science personnel.

Staff associate professors Parkins, Full, Johnson, Wit, Brown; assistant professor Walker

Courses
90-151 Pediatric Dentistry and Treatment 2 s.h.
Conception of growth and development, behavior management and preventive care in the oral patient
90-152 Pediatric Dentistry 1 s.h.
Basic Pediatric Dentistry performed in laboratory
90-154 Clinical Pedodontics 2 s.h.
Comprehensive clinical management of pediatric patient
Primers for Graduates

Pedodontology
Department (no. 122) C. M. Franklin
Degree offered: M.S. (clinical training for certification also offered)

Master of Science Program
The Master of Science program is designed primarily to provide training for research, teaching and/or specialization in the clinical practice of periodontology.

The applicant must be a graduate of a recognized dental school. Unless the candidate's preparatory training includes sufficient work in mathematics and chemistry, it will be necessary to complete these studies through differential calculus, statistics and quantitative analysis before undertaking a research project.

Completion of the course will usually extend 24 calendar months of full-time effort. The applicant must be financially prepared to undertake a research project uninterrupted. Qualified persons may apply for postgraduate fellowships from the National Institutes of Health or the National Science Foundation. However, these fellowships should be received prior to enrollment.

In compliance with the basic regulations of the Graduate College for programs of higher education in dentistry, these requirements must be met:
- Satisfaction of a minimum of 30 semester hours of all graduate level courses, to be divided as follows:
  A. 35 hours in the major field of periodontics and selected courses offered by the departments within the College of Dentistry
  B. 12 semester hours in a minor field of biochemistry, physiology or microbiology
  C. 13 semester hours in the contributing areas of microanatomy, mathematics, statistics and analytical chemistry
- Preparation of an acceptable thesis based on original research; not more than 15 semester hours of research credit; and eight semester hours of thesis preparation credit may be counted in satisfying the 60-semester hour minimum for this degree
- A comprehensive written and oral examination which is of functional character and does not duplicate semester examinations

The head of the Department serves as the student's advisor and examining committee chairman.

Certifying Program
This program is designed to meet all requirements of the American Board of Periodontology for eligibility for certification. The program provides a sound foundation for the clinical practice of periodontics.

All students register in the Graduate College. Upon satisfactory completion of 30 semester hours of coursework in periodontology and related fields, they receive the certificate from the College of Dentistry. Admission requirements are 2.5 grade-point average (A = 4) or better, two letters of recommendation and a D.D.S. or D.M.D. degree or equivalent.

Admission requirements are for part-time study: assistant professor Bolding; instructors Collins, Cooper

Courses
90-151 Periodontics 2 s.h.
Primary responsibility to teach students that plaque control has the basis of dental prophylaxis, biography and technology of the periodontal and oral physiology and problems in periodontology.
02:14 Periodontal Methods 3 s.h.
Practical survey of etiology and methods of periodontic practice; in-class lecture topology.

02:16 Periodontics 3 s.h.
Lectures, demonstrations, clinical practice in diagnosis and treatment of periodontal disease. 150 clinic hours; junior, senior.

02:18 Periodontics for Dental Hygienists 2 s.h.
Clinical practice in diagnosis and treatment of periodontal disease; registration limited to junior dental hygiene students.

02:19 Dental Periodontia for Senior Dental Hygiene Students 2 s.h.
Senior; clinical practice in diagnosis and treatment of periodontal disease; registration limited.

02:18 Advanced Periodontics for Senior Dental Hygiene 5 s.h.
First semester: seminar, demonstrations and clinical practice in managing advanced inflammatory diseases of the supporting structures; prerequisites 02:14, 02:17.

02:17 Advanced Periodontics for Senior Dental Hygiene Students 2 s.h.
Second semester: seminar, demonstrations and clinical practice in managing advanced inflammatory diseases of tooth-supporting structures.

Graduate Courses
02:217 Periodontology 3 s.h.

02:227 Periodontics 3 s.h.

02:237 Periodontics 3 s.h.

02:247 Research: Periodontology 2 s.h.

02:257 Methods of Instruction in Periodontology 2 s.h.

02:257 Periodontal Literature Review 2 s.h.

02:257 Practice Teaching in Periodontics 2 s.h.

02:257 Research Advances in Periodontics 2 s.h.

02:267 Periodontology Pedagogy Seminar 2 s.h.

Preventive and Community Dentistry
Department Head: W. Philip Phair
Degree offered: M.S.

Programs in preventive and community dentistry have been designed to provide dental students with experiences to increase their awareness of oral health needs and to encourage students to develop and implement approaches to alleviate these needs. Extramural programs provide students with opportunities to interact with dental health care teams and members of communities in Iowa.

Upon graduation, students are able to observe and participate in a variety of activities intended to make the student aware of the societal obligations he or she must assume in order to practice effectively.

A recent addition to the Department's resources is a five-unit mobile dental van which will be operated throughout Iowa and provide senior dental students an experience which will closely simulate a community dental practice.

Graduate Program
A proposal for a Master of Science program in Preventive and Community Dentistry has recently been submitted to the Graduate College and to the Board of Regents. This new program utilizes a broad interdisciplinary approach.

The program will be individualized to meet the needs of graduate students preparing careers teaching preventive and community dentistry in dental colleges, administering dental health programs and researching in the field of preventive and community dentistry.

Staff: Professor Phair, assistant professors Palacios, Henderson; instructor Skeele
Affiliated staff: Goodrich, Souch, Henderson, Beals; preventive nursing Valday

Courses
11:1202 Preventive and Community Dentistry 3 s.h.
A survey and discussion of the relationship of social factors to oral health; the dental team and community problems;

11:1204 Community Dentistry Field Trains 3 s.h.
(5) In met., two or three, students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1206 Oral Health Classes 2 s.h.
Two or three hours per day spent in dental clinic and two or three hours per day spent in various units of the College of Dentistry.

11:1207 Community Dental Health 2 s.h.
Involves a study of the social aspects of preventive and community dental health, and the role of the dental health care team.

11:1208 Oral Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1209 Community Dental Hygiene Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1210 Community Dental Health Field Trains 1 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1212 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1213 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1214 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1215 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1216 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1217 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1218 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1219 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1220 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1221 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1222 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1223 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1224 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1225 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1226 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1227 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1228 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1229 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1230 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1231 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1232 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1233 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1234 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1235 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1236 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1237 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1238 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1239 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1240 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1241 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1242 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1243 Community Dental Health Clinics 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.

11:1244 Community Dental Health Field Trains 3 s.h.
(3) In met., students spend one week as externs in independent practice. Other weeks are spent in community practice.

11:1245 Community Dental Health 2 s.h.
Provides opportunities to gain clinical experience and to develop skills necessary for successful operation of community dental health programs.
Removable Prosthodontics
Acting Department Head: Keith E. Thayer
Degree offered: M.S.

The Master of Science degree in the removable prosthodontics program satisfies the formal training requirements for eligibility for the American Board of Prosthodontics examination. Minimum requirements for admission into the program correspond to the minimum requirements for admission to the Graduate College. In addition, the student must hold a D.D.S. or D.M.D. degree or its foreign equivalent. No advanced GRE is required.

It is intended that the advanced training program in removable prosthodontics be flexible to the extent that the goal of the individual student may be realized. The head of the Department or his designated representative will be the student's adviser. The Department takes into consideration that one set program is not in the best interest of all students nor of the profession. The requirements are considered flexible to the extent that an endeavor is made to fill the needs of each individual student. This is possible since normally not more than two students will be accepted each year for advanced training in the Department.

The degree candidate will be required to pass an oral and/or written examination. The candidate's adviser will serve as chairman of the examining committee. The candidate will be required to meet all the requirements for the master's degree as outlined in the "Manual of Rules and Regulations of the Graduate College."

Courses
8433R Removable Prosthodontic Technique Lecture 2 a.h.
8513R Removable Prosthodontic Technique Laboratory 4 a.h.
8630R Removable Prosthodontic Technique Laboratory 5 a.h.

Subjects and clinical experience:clinical examination, diagnosis, prognosis and functions in design and construction of complete and removable partial dentures.

Primarily for Graduates
8420R Literature Review: Removable Prosthodontics cr. arr.
8421R Clinical Aspects of Removable Prosthodontics cr. arr.
8422R Advanced Clinical Prosthodontics cr. arr.
8423R Research in Removable Prosthodontics cr. arr.
8424R Seminar Removable Prosthodontics cr. arr.
8425R Practice Teaching: Removable Prosthodontics cr. arr.
8426R Thesis Preparation: Removable Prosthodontics cr. arr.

Proposed in accordance with guidelines of Graduate College

* May be taken during any semester with permission of Department Head
College of Education

Administrative Staff
Dean: Howard R. James
Dean Emeritus: Victor T. Peterson
Associate Dean: Lauren A. Van Dyke
Assistant Dean Emeritus: Henry C. Delkino
Assistant Dean: Stuart G. Gray, Roy A. Whitney, Owen L. Springer
Principal, University Hospital School: Paul B. McKinnon
Director, Iowa Testing Program: William R. Delkino
Director, Iowa Center for Research in Education and Social Science: William D. Hawk
Director, Iowa Information Center: Pamela D. Browning
Director, Iowa Testing Program: William G. Halbert
Educational Psychology Librarian: Anne G. Davis
Curriculum Laboratory Librarian: Grace M. Boulage

Division Chairmen
Division of Social Foundations, Adult Education, Higher Education and Educational Media: Gaye Anderson
Division of Educational Administration: William R. Lane
Division of Elementary Education: Jerry N. Kuhn
Division of Educational Psychology, Measurement and Statistics: Paul J. Blommer
Division of Secondary Education: John E. McAllan
Division of Counselor Education: Albert R. Hoard
Division of Special Education: Archie McAllan

The first permanent college-level department of education in the United States was established at The University of Iowa in 1872. The department became the School of Education in 1907; and the College of Education, structured in the basic pattern which governs it today, was founded in 1913. The growth of the College has corresponded to the growth of the University.

The College has seven divisions: Social Foundations, Adult and Higher Education, and Educational Media; Educational Administration; Elementary Education; Educational Psychology; Measurement and Statistics; Secondary Education; Counselor Education; and Special Education.

The University is accredited by the National Council for Accreditation of Teacher Education (NCATE) for the preparation of elementary education teachers and other professional school personnel, with the doctorate the highest degree approved.

Faculty
Members of the College of Education faculty are productive in research and writing and are well qualified by preparation and experience. Ninety-seven percent of the members of the faculty with academic rank hold earned doctorate in their teaching fields, and 93 percent have had teaching or administrative experience in the public schools.

A major strength of the college is close working relationship with the College of Liberal Arts. With few exceptions, professors on the College of Education faculty also hold academic rank in the College of Liberal Arts. A majority of the professors who teach secondary school methods have doctorates in their teaching disciplines, as well as preparation in education, and hold academic rank both in their academic departments and in education.

The faculty has a strong commitment to teaching and to the applications of new methods and media in their own classes. Most members employ modern audiovisual media; and field practicum experiences are emphasized in such areas as teacher education, counseling, special education, curriculum and administration.

In addition to independent research by individual faculty members, several studies are being pursued with the support of foundation and federal grants awarded to divisions and individual staff members. Most members of the faculty are active in professional societies, and several recently have held or now hold key offices in such organizations at the national level.

Facilities
The University Hospital School
This facility contains two unique sections within the same complex, the Children's Rehabilitation section and the Pine School section. In cooperation with the University Hospital School, the College of Education studies and develops curricular procedures and materials for both sections of the Hospital School.

Children's Rehabilitation
This section has three main functions: the education, care and treatment of children who can be educated but who are so severely involved physically that they cannot attend or progress optimally in the regular schools; specialized training for workers and teachers in all areas concerned with handicapped children; and clinical research pertaining to causes and prevention of handicapping conditions in children and to management of handicapped children.

Pine School
This section provides special help on a day school basis for selected preschool and elementary school children in the Iowa City area who are mentally retarded. Educational research, teacher education and broad services are the main functions of this section. Opportunities for student teaching and supervised clinical practice is available.

Basic and clinical research is ongoing in the Children's Research unit of the University Hospital School. This research pertains to mental retardation and related conditions. Such projects are carried on mainly by the Department of Pediatrics in the College of Medicine.

School Program for Emotionally Disturbed Children
This program is located in the child psychiatry unit of the University's Psychiatric Hospital. Children attending this school are residential patients in the child psychiatry unit. The program
is supported by the Psychopathic Hospital and directed by the College of Education. Opportunities are available for student teaching and practicum in school psychological services.

**Reading Clinic**
The Reading Clinic makes possible investigation into the fundamental causes of reading deficiencies and experimentation with methods of overcoming these deficiencies. It provides opportunity for observation and practice in the diagnosis and teaching of severely-hindered readers.

**Curriculum Laboratory**
The Laboratory provides materials for student teachers and students of curriculum problems. It brings into a convenient central location approximately 15,000 elementary and secondary school textbooks, reference books, courses of study, bibliographies, special pamphlets, teaching aids such as tapes and games, other materials needed in curriculum development, and it administers the University Youth Collection of approximately 10,000 volumes.

**Educational Media Instructional Area**
A variety of instructional equipment and materials are contained in this area. Laboratory facilities provide opportunities in developing skills in the design and production of instructional materials and in the operation of instructional equipment of all types.

**Statistical Laboratory**
The Laboratory contains a variety of calculating equipment. It provides experience in the application of such equipment to the analysis of statistical data, and it provides facilities for the analysis of research.

**Iowa Center for Research in School Administration**
In combination with the Iowa Educational Information Center this research activity conducts studies of trends in Iowa schools, publishes special research reports, conducts some local school surveys, develops management information systems services, and provides consultation and services in the field of computer applications in education.

**Education-Psychology Library**
With approximately 91,000 volumes, the Library is located on the west second floor of East Hall. It offers periodicals, films, ERIC microfiche, books, reference books, a reserve room and seating space for students of education psychology and child behavior.

**University Counseling Services**
The facilities of the University Counseling Services are available to students in counseling psychology for research and practicum purposes.

**The Iowa Testing Programs**
The Iowa Testing staff develops standardized educational tests, such as the widely-used Iowa Tests of Basic Skills and Iowa Tests of Educational Development, for use in elementary and secondary schools. This division also conducts research studies in educational measurement and evaluation, publishes brochures, sponsors lectures and symposia and provides consultative services to school systems.

**Certification and Degree Programs**

**General Information**
The College of Education offers teacher-education programs in elementary, secondary and special education. These programs have a number of common characteristics.

**General Liberal Arts Requirements**
The bachelor's degree requires 124 semester hours of credit, whatever program the student elects to pursue, and this total must include the general College of Liberal Arts requirements in rhetoric and physical skills, mathematics, and the literature, social science, natural science and historical-cultural core areas.

**State Requirements**
Certification to teach in Iowa requires completion of two semester hours in American history or American government.

**The Professional Semester**
The final phase of the teacher-education programs in all three areas is the professional semester—a full semester devoted to supervised student teaching and observation in a variety of situations. Periodic seminars provide for discussion and evaluation of student teachers' programs. Student teachers usually live in the communities in which they have their student-teaching assignments.

**Certification**
Though each state has its own teacher-certification requirements, a majority of state certification agencies have entered into an agreement to issue certificates to applicants who have completed approved teacher-education programs in institutions accredited by the National Council for Accreditation of Teacher Education. The University of Iowa teacher-education programs have been approved by the Council.

Students planning to teach in special education are advised to be certain they will be eligible for certification if they plan to teach in a state other than Iowa.

**Admission Requirements**
To be admitted to a teacher-education program the student must:

- Be admitted to the University as a degree candidate;
- Complete the American College Test; and
- Be free of any health impairment or physical handicap which precludes success in teaching.
Application Deadline
With some exceptions, applications for admission to a teacher-education program must be submitted by May 15 prior to the academic year in which the applicant wishes to enter the program. Generally the student will enter the program in the junior year.

Elementary Education
Elementary teachers guide children in experiences with music, art, movement, stories and plays, and introduce them to science, math, history and social studies. Elementary teachers usually work with one group of children and teach several different subjects. However, teachers in the upper grades may teach only one or two subjects to several different groups.

Among the most important qualifications for elementary school teaching, in addition to an enjoyment and understanding of children, are patience, self-discipline and high standards of personal conduct.

Preparation for elementary teaching involves study of the selection and content of curricular material suitable for school-age children, and of the methodology procedures most appropriate for presenting these materials. Study in the program is rigorous. It involves wide reading, creative planning and application of knowledge in the classroom.

Currently, the demand for teachers has been sharply reduced.

As a result, competition for positions is very great, and young people seeking their first positions may find schools placing great emphasis on their academic work and the quality of their training. However, outstanding graduates are finding jobs, and many of these positions are quite good.

The elementary-education program is designed specifically to prepare students to teach kindergarten through sixth grade. A special sequence is also available for selected students seeking the master's degree in early childhood education in addition to elementary certification.

Students interested in teaching in such areas as art, music or physical education at the elementary level should consult their advisors regarding special certification requirements.

Students interested in dual certification for elementary and special education should note the requirements for admission to each of these programs. Students interested in this combination must make a separate application to each program and these applications will be considered independently.

Professional Requirements
Elementary-teacher certification at The University of Iowa requires successful completion of a preparatory program approved by the Iowa Department of Public Instruction and the National Council for the Accreditation of Teacher Education. These certification patterns are available—the Bachelor of Arts, Bachelor of Science and Bachelor of General Studies.

In the B.A. and B.S. programs the professional courses constitute a major, in the B.G.S. program they do not. The professional requirements are the same in all three programs; the differences are in the general College of Liberal Arts requirements.

The student must have been admitted to the preteacher-education program to be eligible to enroll in the foundation courses, which should be completed before the junior year.

College of Education

Required Foundation Course
7E:00 Introduction: Elementary Teaching
2 s.h.
7E:01 Pre-Education Practicum
2 s.h.
(Must be taken concurrently with 7E:100; students with prior equivalent experience may file application for exemption from 7E:91)
7T:75 Educational Psychology
3 s.h.
7V:101 Operation of Audiovisual
1 s.h.

The Junior-Senior Sequence
Students must have been admitted to the teacher-education program to be eligible to enroll in this sequence, which must be completed during the two semesters and/or summer session preceding student teaching.

7E:160 Methods: Elementary-School Language Arts
2 s.h.
7E:161 Methods: Elementary-School Social Studies
2 s.h.
7E:162 Methods: Elementary-School Science
2 s.h.
7E:163 Methods: Elementary-School Mathematics
2 s.h.
7E:164 Methods: Elementary-School Reading
2 s.h.

Student Teaching Experience (Senior Year)
Fifteen semester hours of credit are given for successful completion of the semester of student teaching (7E:193 or 195 Observation and Laboratory Practice).

Areas of Specialization
The student selects an area of specialization from an approved list. It takes approximately 24 semester hours of credit approved by the student's advisor to meet this requirement. Most of this coursework is completed in the College of Liberal Arts.

Areas of specialization in elementary-education majors are: elementary music, elementary physical education, elementary art, elementary reading, early childhood education, elementary language arts, elementary science, elementary social science, elementary mathematics, elementary generalist and special education.

Admission to Preservice Education
All entering freshmen who indicate on the University admission application form that they wish to pursue an elementary-education program will be admitted to the preservice-education program if they meet minimum requirements (see "General Information").

University of Iowa students not admitted to the program as freshmen, and transfer students not admitted to the program at the time of their initial application to the University, must submit formal applications for admission to the program. In addition to minimum requirements for entering freshmen, they must have completed at least 28 semester hours of college coursework, with at least a 2.2 grade-point average (A = 4) for all college coursework attempted.

Admission applications for the preservice-education program may be submitted by May 15 or December 15 of the semester in which the applicant achieved the 18-hour minimum.

Students who are accepted into the preservice-education program and have attained sophomore standing are eligible to enroll in the foundation level of the elementary education program.
Admission to Teacher Education (Junior-Senior Sequence)

Students who have completed the foundation portion of the elementary-education program, have completed at least the sophomore year and wish to continue into the junior-senior sequence must apply for admission to the sequence. This application, the final step in gaining formal admission to the elementary-teacher education program, must be on file by May 15 preceding the academic year in which the applicant wishes to enroll in the junior-senior sequence.

Minimum requirements for admission are:
- Successful completion of at least 35 semester hours of college coursework;
- Successful completion of all foundation courses;
- At least a 2.2 cumulative grade-point average for all college coursework attempted;
- Recommendation by a review committee, based on the applicant's total record, a personal interview and the applicant's record in the pre-education practicum (78:91).

Late transfer students at the junior level or above will be considered for admission if they have satisfied the foundation course requirements and have applied for admission to the junior-senior sequence by December 15 of the junior year.

Graduate students are subject to the same application deadlines, selection procedures and admission and course requirements as undergraduates, except that their grade-point average must meet the requirements for admission to and continuation in the Graduate College.

A student who does not complete the student teaching portion of his or her program with the class to which he or she is admitted must reapply for admission to a new teacher-education program class.

Number of Admissions

Due to limitations in the number of sections for student teachers in cooperating schools, and to limitations in the number of faculty members, it may be necessary to limit the number of students admitted to the junior-senior sequence in elementary education. In that case, the best-qualified applicants will be admitted.

Secondary Education

Secondary school teaching requires an understanding and appreciation of adolescent children, a sound background in the liberal arts, an open attitude toward contemporary society and its problems, and an enthusiasm for the subject taught.

Junior and senior high-school teachers usually specialize in a particular subject. They teach several classes each day, either in their main subject, in related subjects or in both. The most frequent combinations are English and history or other social sciences; mathematics and general science; and chemistry and biology or general science. Teachers of home economics, agriculture, driver education, music, art, industrial arts and business-oriented subjects less frequently conduct classes in other subjects.

Although classroom instruction is a large portion of their work, secondary teachers additionally plan and develop teaching materials, originate and correct tests, keep records and make out reports, consult with parents, supervise study hall and perform other administrative duties. The growing use of teaching machines, programmed instruction and teacher aide helps eliminate many routine tasks.

Many teachers are also involved in supervision of student activities, including clubs and social functions, and become involved in nonacademic affairs as interested members of the community where they teach. Maintaining good relations with parents and the local community is an important aspect of the teaching profession.

At least one year of professional education beyond the bachelor's degree and several years of successful classroom teaching are required for most supervisory and administrative positions in secondary education.

Some experienced teachers are assigned as part- or full-time guidance counselors, or as teachers of handicapped or other special groups of children. Usually additional preparation and a special certificate are required for these assignments.

Program Requirements

The student must complete a sufficient number of courses (30-54 semester hours) to satisfy the requirements for a teaching major in a department of the College of Liberal Arts or the College of Business Administration. In most cases the completion of an academic major will satisfy this requirement.

It is strongly recommended that students earn sufficient credits (18-24) in a field outside the major to qualify to teach in the second field.

The student must complete this foundation program of professional courses during the sophomore and junior years:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>75:100 Introduction: Secondary-School Teaching</td>
<td>2</td>
</tr>
<tr>
<td>75:91 Pre-Education Practicum</td>
<td>2</td>
</tr>
<tr>
<td>(To be taken concurrently with 78:100; students with prior equivalent experience exempt from 75:91 upon recommendation of director of student teaching)</td>
<td></td>
</tr>
<tr>
<td>77:75 Educational Psychology and Measurement</td>
<td>3</td>
</tr>
</tbody>
</table>

Graduate students permitted to substitute appropriate graduate courses for 77:75 and 78:100.

Juniors who expect to do their sophomore of student teaching in the fall semester of the senior year must take methods courses during either the preceding academic year or the summer session. Majors in art, music and physical education must earn credit in elementary and secondary special methods and in elementary and secondary student teaching.

Professional Semester

Senior students may enroll for the professional semester (78:191 Observation and Laboratory Practice) in either the fall or spring semester. In some major fields, students will be expected to enroll in both 78:191 and 78:192. The basic amount of credit for Observation and Laboratory Practice will be 12 semester hours. To register for Observation and Laboratory Practice, the student must have:
- Been formally admitted to the Program in Secondary-Teacher Education;
- Attained senior standing;
- Satisfactorily completed courses 78:75, 75:91 and 78:100 or their equivalent;
• Maintained a cumulative grade-point average of not less than 2.2 if an undergraduate student or 3.5 if a graduate student (2.7 if an M.A.T. candidate), on all college work attempted, all college work attempted at The University of Iowa and all work attempted in the teaching major;

• Filed application for an assignment by May 15 preceding the academic year during which student teaching is desired; and

• Consulted with and been recommended by the appropriate special methods instructor and the Coordinator of Student Teaching.

Students who want or need more than 12 semester hours in the Professional Semester may elect one of these options:

7E.190 Individual Field Projects in Laboratory Practice 1–3 s.h.

7E.187 Seminar in Student Teaching 2 s.h.

Curriculum and Instructional Problems (special sections in English, Social Studies, Mathematics, etc.) 2 s.h.

7V.110 Selection and Use of Educational Media 2 s.h.

Effective education or content courses in a major or minor teaching field, if offered on Saturdays or late afternoons when student teachers can attend 2–3 s.h.

The CUTE Program

Concerned students who feel they may better further their education through student teaching in an inner-city situation, and who are interested in working with disadvantaged people, may apply through the Center for Urban Teacher Education (CUTE) program.

This program is a federal project and one of the many Midwestern Regional Education Laboratories. Iowa is one of 40 institutions which place selected students in the Kansas City inner-city system.

This program is open to any student who meets the general requirements in the College of Education.

Admission

A freshman interested in a teaching career in secondary education may declare this interest at the time he or she applies for admission to the University, but is not eligible to elect professional courses in education until attaining sophomore standing.

To be admitted to the program in secondary teacher education, the student must meet the basic requirements (see "General Information") and must have attained sophomore standing (at least 28 semester hours of credit) with at least a 2.2 cumulative grade-point average on all college coursework attempted.

Transfer students must satisfactorily complete at least one semester or summer session in residence at Iowa, earning at least eight semester hours of credit.

A graduate student seeking admission to the program in secondary teacher education must meet requirements for admission to the Graduate College, have at least a 3.5 cumulative grade-point average (2.7 for the M.A.T. student) and have completed at least one semester or summer session at Iowa, in which he or she earned at least eight semester hours of credit.

Tentative admission may be granted to transfer students with advanced standing (56 semester hours) and to graduate students, prior to fulfillment of the residence requirement; but final admission and the student's teaching assignment must await satisfaction of the residence requirement.

Special Education

The Department of Special Education expects its graduates to continue to find opportunities as teachers of special classes in the public schools or as consultants and resource persons for teachers working with handicapped children in regular classrooms. Opportunities in the latter area reflect the trend in special education toward the accommodation of handicapped children in regular classrooms with supplemental help, rather than the segregation of handicapped children in special classes.

The student who wishes to maximize career opportunities in special education should plan to pursue advanced degree work. The Iowa program in special education aims to give the student a knowledge of the characteristics of exceptional children, educational programs currently provided for exceptional children and methods of teaching exceptional children.

Upon completion of the Bachelor of Arts, Bachelor of Science or Bachelor of General Studies programs, the student may be certified to teach either mentally-retarded or physically-handicapped children at the elementary and/or secondary levels.

A student majoring in special education has two options: to qualify for certification in special education only, and not as an elementary- or secondary-school teacher in other than a special education program, or to qualify for regular certification in elementary or secondary education as well as certification in special education.

The Division of Special Education recommends the dual program because it enhances the student's employment opportunities and provides a more comprehensive training for teaching. However, completion of the dual major may require attending summer sessions if the student wants to graduate in four years.

The special education major requires a minimum concentration of 20 semester hours of coursework in the student's chosen area of teaching—either the mentally retarded or the physically handicapped. The program also requires one semester of student teaching, usually taken during the senior year.

The program is enriched by team teaching, guest lectures, audiovisual aids, field trips, the use of observation techniques and laboratory experiences.

Certification in Elementary Education and Elementary Special Education with Emphasis in Mental Retardation

Coursework required by Special Education:

7U.30–31 Introduction to and Observation of Exceptional Children 1–2

7U.32–33 Instructional Methods and Procedures in Special Education 1–2

7U.135 Mental Retardation

7U.192 Laboratory Practice in the Education of the Mentally Retarded Child (night course at the elementary level)

Coursework required by Elementary Education:

7E.91 Exploratory Experience in Teaching (or equivalent)
Introduction: Elementary Teaching

Educational Psychology and Measurement

Operation of Audiovisual Equipment plus any five of the following:

Methods: Elementary-School Language Arts
Methods: Elementary-School Social Studies
Elementary-School Science
Elementary-School Mathematics
Elementary-School Reading
Elementary-Childhood Education II

Special-education majors satisfy the area of specialization requirement for elementary education by completing the special-education coursework.

Certification in Elementary Education and Elementary Special Education with Emphasis in the Physically Handicapped

Coursework required by Special Education:

Introduction to and Observation of Exceptional Children I-II
Instructional Methods and Procedures in Special Education I-II
Orientation to Rehabilitation of the Physically Handicapped Child
Introduction to Speech and Hearing Processes and Disorders
Laboratory Practice in Education of the Physically Handicapped Child (eight weeks)

Coursework required by Elementary Education:

Same as for emphasis in Mental Retardation

Certification in Elementary Education Only, with Emphasis in Mental Retardation

Coursework required by Special Education:

Introduction to and Observation of Exceptional Children I-II
Instructional Methods and Procedures in Special Education I-II
Mental Retardation
Laboratory Practice in the Education of the Mentally-Handicapped Child (one semester)
Methods: Elementary-School Language Arts
Methods: Elementary-School Mathematics
Methods: Elementary-School Reading
Educational Psychology and Measurement
Socialization of the School-Age Child
Operation of Audiovisual Equipment
Selection and Utilization of Educational Media
Psychology of Adjustment
Introduction to Social Psychology
Abnormal Psychology

Coursework required by Elementary Education:

Same as preceding programs

Certification in Secondary Special Education (Mental Retardation) with a Major in Psychology

Coursework required by Special Education:

Introduction to and Observation of Exceptional Children I-II
Instructional Methods and Procedures in Special Education I-II
Mental Retardation
Vocational Resources for Exceptional Children
Laboratory Practice in the Education of the Mentally-Handicapped Child (one semester at the secondary level)

Coursework required by Psychology:

Principles of Guidance
Methods: Elementary-School Language Arts
Methods: Elementary-School Reading
Educational Psychology and Measurement
Socialization of the School-Age Child
Introduction to Secondary-School Teaching
Operation of Audiovisual Equipment
Selection and Utilization of Educational Media
Introductory Psychology: Principles
Juvenile Delinquency

Admission

Because of limited facilities, the Division of Special Education limits enrollment in its undergraduate program. If the number of applicants exceeds its enrollment limit, the best qualified applicants will be admitted.

A student who wants to be admitted to the special-education program must make formal application.

Students applying before or during the first semester of the freshman year must meet the general requirements for admission to a teacher-education program.

Students who apply after completing one semester or more of college-level study must meet the general requirements, and must have at least a 2.2 grade-point average on all coursework attempted and on all coursework attempted at the University.

Students planning to complete additional majors in elementary or secondary education must be admitted to and meet the requirements of these programs.

Advanced Study

General Information

Graduate study in the College of Education is guided by the general regulations of the Graduate College, with certain additional requirements imposed by the faculty of the College of Education. Graduate students in education register in the Graduate College and receive their degrees from that college.

The College of Education offers graduate programs leading to the Master of Arts (M.A.), Master of Arts in Teaching (M.A.T.), Educational Specialist (Ed.S.) and Doctor of Philoso-
Master of Arts

Master of Arts programs are offered on both a thesis and nonthesis basis. Nonthesis M.A. programs provide more specialized professional preparation than the traditional M.A. thesis programs. Nonthesis programs are not necessarily terminal programs, but students who expect to continue on to doctoral work are urged to select an M.A. thesis program, which offers more intensive experience in research procedures. Students who complete a nonthesis M.A. program and are admitted to a Ph.D. program are required to submit evidence of writing and research skills to their adviser and to the College of Education during the early part of their doctoral program.

Master of Arts in Teaching

The M.A.T. program is a 38-semester-hour (minimum) nonthesis course of study designed for superior liberal arts graduates who have few or no professional-education courses on their undergraduate programs. The program leads to a master's degree and certification as a secondary teacher in such fields as art, business, English, foreign languages, mathematics, music, science and social studies. A grade-point average of 2.7 is required for admission.

Educational Specialist

This degree is granted upon the completion of a prescribed two-year, postbaccalaureate program designed for students preparing themselves professionally in such fields as teaching, administration and supervision and special services.

Doctor of Philosophy

The Ph.D. degree is the highest earned academic degree awarded by the College and is conferred upon students who have demonstrated superior scholarship and mastery of research skills in coursework as well as in the preparation and defense of a dissertation.

Adult Education

Master's Program (with or without thesis)

Purpose: To provide basic understanding of adult learning theory, instructional methodology and adult group processes in preparation for careers as professional adult educators or in areas that involve working with adults in such areas as schools, businesses, extension, public health and community development programs.

Doctoral Program

Purpose: To prepare for teaching, research and advanced leadership positions in the field of adult education; emphasis given to a broad background with crossdisciplinary relationships.

Educational Administration

Master's Program (with or without thesis)

Purpose: To prepare individuals for appointments as elementary- or secondary-school principals, or for certain positions with state departments of education or the U.S. Office of Education.

Educations Specialist Program

Purpose: To prepare students for appointments as superintendents of schools or in state departments of education or the U.S. Office of Education, to assist school principals in upgrading their administrative skills.

Doctoral Program

Purpose: To prepare students for positions at all levels of administration in the public schools or to teach educational administration at the college level.

Educational Media

Master's Program (with or without thesis)

Purpose: To prepare coordinators, producers or consultants for educational media; to provide those who have met the state requirements for a professional teaching certificate with the competence necessary to qualify them for state certification as educational-media specialists; thesis recommended for students who are planning doctoral study or who wish to do a thorough investigation of an approved topic.

Educational Specialist Program

Purpose: To provide specialized training for coordinators, consultants or producers of educational media at a level beyond that attained in the M.A. program.

Doctoral Program

Purpose: To prepare teachers, researchers, instructional designers and program directors for positions in educational media.

Educational Psychology

Master's Program (with or without thesis)

Purpose: To provide the student with an introductory overview of educational psychology at the graduate level; thesis intended for students who plan to continue graduate study in educational psychology beyond the M.A.

Doctoral Program

Purpose: To prepare students to teach and to conduct research in educational psychology; emphasis placed on developing the individual student's particular area of interest.

Educational Measurement and Statistics

Master's Program (with or without thesis)

Purpose: To provide minimal training for the student seeking to qualify for a position in a school system, state department of
public instruction, test publishing organization or research cen-
ter which calls for some special competence in educational mea-
surement and research methodology; also appropriate for the
student seeking to broaden knowledge of measurement and re-
search methodology as much for the sake of personal develop-
ment as for professional improvement; intended primarily for the
student planning to continue advanced work in measurement
theory and statistical methods at the Ph.D. level

Doctoral Program
Purpose: To prepare students for high-level professional posi-
tions in the fields of educational measurement and statistical
methods in colleges, universities, state department of public
institute, large school systems, test publishing firms, or re-
search centers

Reading Disability
Master's Program (without thesis)
Purpose: To prepare resource teachers in the area of reading
disability at elementary, junior-high and secondary levels; em-
phasis on supervised clinical practice in the diagnosis and in-
struction of children with reading disability whose intellectual
functioning is within the normal range

Elementary Education
Master's Program (with or without thesis)
Purpose: To prepare students in such areas of specialization as
children's literature, early childhood education, language arts,
mathematics, reading, science and social studies; completion of
this program pattern, together with four years successful teach-
ing experience, qualifies the student for the permanent profes-
sional certificate with endorsement as an elementary-school
supervisor; most appropriate for those who intend to continue
in classroom teaching or who are interested in a supervisory or
curriculum development position

Master's Program in Developmental Reading
Purpose: To prepare students for positions as reading specialists
in kindergartens and grades 1–14; also valuable for students who
want to specialize further in the area and eventually to teach in
a college or university; qualifies the student for the reading-
specialist certificate endorsement and, after four years successful
reading teaching experience, for the permanent professional
certificate and endorsement as an elementary-school supervisor

Master's Program in Elementary School Administration
Purpose: To prepare students for positions as elementary-school
principal; planned both as a terminal one and as the first year
in a two-year sequence leading to the educational specialist de-
gree, together with four years successful teaching experience, qualifies the student for the permanent professional certificate with elementary-school supervision and elementary-
school administration endorsements

Educational Specialist Degree
Purpose: To equip potential educational leaders with the knowl-
edge and skill necessary for positions in which the administrator
assumes responsibility for a number of elementary-school at-
tendance units; it is also anticipated that many elementary-
school principals may wish to increase their competence by
completing this program

Doctoral Program
Purpose: To prepare students for college teaching and adminis-
trative positions, or for research, curriculum, supervisory or
administrative positions in large consolidated and urban school
systems

School Guidance and Counseling
Master's Program (with or without thesis)
Purpose: To provide graduate-level instruction necessary for
school counseling positions

Educational Specialist Program
Purpose: To provide advanced specialization in counseling and
guidance for M.A. graduates who seek to increase professional
competence in supervision and administration at the school
and/or state levels

Doctoral Program
Purpose: To prepare individuals for leadership and research posi-
tions in counseling and guidance, most often as counselor educa-
tors in colleges or universities, or as directors of guidance
programs in large-city school systems or at the state and national
levels

Rehabilitation Counseling
Master's Program (with or without thesis)
Purpose: To develop basic competency for counseling-type in-
teraction with the vocational problems of the physically, men-
tally and culturally handicapped; graduates are equipped to
perform as rehabilitation counselors with public agencies,
rehabilitation centers, hospitals and sheltered workshops; stu-
dents intending doctoral study or wanting to emphasize rehabilitation
skills should follow the thesis program

Doctoral Program
Purpose: To prepare individuals for research, counseling and
teaching positions, as counselor educators in universities and as
directors of vocational services in hospitals, rehabilitation cen-
ters and other settings

College Student Personnel
Master's Program (with or without thesis)
Purpose: To prepare candidates for such positions as admissions
officers, activities directors, financial aid advisers, union direc-
tors, residence directors and foreign student advisors; and with
experience, as student deans, college counselors and teachers, and director of admissions or placement

Ed.S. Program
Purpose: To provide specialized professional training in college student-personnel administration beyond the master's level for persons not planning to enter doctoral study; to prepare students for such positions as dean of men or women, dean of women in a small college or director of admissions or director of student activities at any level

Doctoral Program
Purpose: To provide training in depth through an academic, research-oriented curriculum which draws heavily upon the field of counseling psychology; prepare individuals to serve competently in such positions as dean of men or women, dean of students, college counselor or teacher, director of admissions, placement director or counselor educator; generally planned as a four-year program in which the M.A. is conferred sometime during the second year; students entering with an M.A. take three years, including dissertation

Counseling Psychology
Doctoral Program
Purpose: To prepare doctoral-level counseling psychologists for positions primarily in higher education, usually with academic appointments in counselor education or psychology and service assignments in counseling and vocational psychology; and to conduct their own research and direct that of their students, supervise counselor trainees and counsel with other student service personnel

Higher Education
Master's Program (without thesis)
Purpose: To prepare students for entry-level staff and administrative positions such as assistant dean of instruction, in two-year and four-year colleges

Educational Specialist Program
Purpose: To provide the advanced graduate education needed by instructors at the undergraduate level in two- and four-year colleges and by administrators in higher education not planning to continue for the doctorate; the Specialist degree may be awarded upon completion of a joint program in higher education and an academic discipline comprising a minimum of 60 semester hours of graduate work or upon completion of a higher education sequence following a master's degree program

Doctoral Program
Purpose: To prepare professional personnel for teaching, research and supervision in higher education

Secondary School Administration
Master's Program (with or without thesis)
The master's degree in secondary school administration is offered in the Division of Educational Administration

Doctoral Program
Purpose: To prepare students for positions as secondary school principals, directors of secondary education and college teaching in secondary education

Secondary School Curriculum
Master's Program (with or without thesis)
Purpose: To prepare teachers and administrators for positions as counselors, directors and coordinators in the field of secondary-school curriculum development

Doctoral Program
Purpose: To prepare students for leadership positions in the field of curriculum for public schools, state departments and college teaching

Art Education
Master's Program
Purpose: To prepare highly-qualified teachers of art for public schools, junior colleges and small liberal arts colleges; the strong academic emphasis assists teachers who are themselves creative artists to become highly literate in the history and language of art; administered by the School of Art and Art History with the cooperation of the College of Education

Doctoral Program
Purpose: To prepare college teachers and researchers in art education and supervisors of art in state departments of education and school systems; to provide an opportunity for continuing inquiry and creative work in art history and in studio; administered by the College of Education with the cooperation of the School of Art and Art History

Business Education
Master's Program (without thesis)
Purpose: Designed for the graduate student who holds a teacher's certificate and has either a major or a minor teaching area in business education; coursework from three areas is included in the program with an approved freedom of choice within each area:

Business administration content, to provide improvement in specific business content areas

Professional business education, to emphasize improvement of teaching techniques and philosophy of business education

Professional general education, to emphasize general aspects of teaching

Doctoral Program
The Business Education Program (leading to the Ph.D.) is offered on a joint basis by the colleges of Education and Business Administration; the candidate may place emphasis in both colleges, although primary emphasis normally will be given to the various programs in business, with particular attention to business education.
English Education

Master's Program
Purpose: To prepare teachers and supervisors of English for secondary schools and junior colleges

Doctoral Program
Purpose: To prepare supervisors, teacher-training personnel, college teachers and researchers in English education

Mathematics Education

Master's Program (with or without thesis)
Purpose: To provide students not intending doctoral study with advanced specialization in mathematics as a better foundation for teaching at the secondary level

Doctoral Program
Purpose: To prepare qualified persons for careers in mathematics education at the university level or as supervisors of secondary- and elementary-school mathematics in large educational enterprises

Music Education

The music education programs are administered by the School of Music in cooperation with the College of Education.

Master's Program
Purpose: To provide students with deeper insights into music, the theory and practice of music education and the role of music in the school curriculum

Doctoral Program
Purpose: To prepare students for teaching, research or administrative functions in (a) college positions—teachers of music education classes and activities; band, chorus and orchestra directors; administrators of music departments and schools of music; and in (b) public-school positions—music supervisors, research and curriculum consultants, and directors of city- or district-school music programs

Physical Education for Men

This program is administered by the Department of Physical Education for Men.

Master's Program (with or without thesis)
Purpose: To prepare students for the administration, supervision, or teaching of physical education in schools; thesis program designed primarily as the first step in graduate study leading to the Ph.D. degree; particular emphasis is placed upon techniques of research

Educational Specialist
Purpose: To prepare graduate students for teaching physical education in community colleges

Doctoral Program
Purpose: To prepare graduates to teach graduate courses in their area of specialization and to conduct and direct research in that area

Physical Education for Women

This program is administered by the Department of Physical Education for Women.

Master's Program (with thesis)
Purpose: To prepare women for leadership in physical education as teachers, administrators or supervisors

Doctoral Program
Purpose: To prepare women for teaching, administration or research in physical education

Science Education

Master of Arts Program in Science Teaching
See section on M.A.T. Program

Master of Science Program (without thesis)
Purpose: Designed for students who plan to continue in teaching

Master of Science Program (with thesis)
Purpose: Designed for candidates who plan to continue study toward the Specialist or Ph.D. degree

Educational Specialist
Purpose: Recommended for supervisors (state, regional or local), as well as for instructors in community colleges and/or small four-year liberal arts colleges

Doctor of Philosophy
Purpose: Available for qualified candidates who aspire to college and university positions as science educators; major supervisory posts in national, state and local systems; instructors of general-education science courses and areas of major colleges; or positions as research directors in science education

Social Studies Education

Master's Programs
Purpose: To provide an opportunity for interdisciplinary work in history and the social sciences for classroom teachers, high-school department chairmen and supervisors, as well as others interested in acquiring greater competency in the social sciences and a greater proficiency in teaching and supervision

Doctoral Program
Purpose: To prepare secondary departmental chairmen, supervisors, curriculum directors, teacher-education personnel and college instructors in the social sciences and pedagogy
Social Foundations and Philosophy

Master's Program

Purpose: Although a master's degree in social foundations or philosophy of education is inadequate by itself, the program is designed for students who intend to pursue the Ph.D. in the area of social foundations of education and who enter the program without a master's degree and want one.

Doctoral Program

Purpose: To prepare college-level instructors in the fields of history and philosophy of education, comparative education, and educational sociology.

Special Education and School Psychology

Master's Program (without thesis)

Purpose: To prepare teachers, supervisors, and consultants in special education at elementary- and secondary-school levels; within the field of special education the student may emphasize preparation to work with the following kinds of exceptional children: mentally retarded; emotionally maladjusted; physically handicapped; deaf and hearing impaired; specific master's degree programs are offered in mental retardation and in behavior disorders; programs in mental retardation is geared to two groups: major group comprises individuals who have a background in mental retardation and some experience; other group represents persons who are entering the training program at the M.A. level with no previous experience in the field; latter group is required to complete selected courses from the undergraduate sequences as prerequisites to their M.A. program; behavior disorders program emphasis preparation to work with children who have primarily affective, but may also have cognitive and psychomotor dysfunction.

Educational Specialist

Purpose: To provide sufficient training and experience to enable graduates to be competent directors of local, regional and state special education programs; successful completion qualifies the graduate for certification in Iowa to serve as a director of special education; provides for specialization in administration of special education programs, mental retardation and behavior disorders; Ed.S. granted upon completion of a prescribed two-year, postbaccalaureate program; designed primarily for practitioners who want additional professional preparation beyond the M.A. degree but do not choose to develop the more specialized research skills required for the Ph.D. degree.

Doctoral Program in Mental Retardation

Purpose: To prepare students for positions in teaching, research and consultative work.

Doctoral Program in Administration of Special Education

Purpose: To provide sufficient training and experience to enable graduates to be competent directors of local, regional and state special education programs; usual practice is for the student to take coursework and practicum in a second area of specialization.

College of Education

Master's Program in School Psychology (without thesis)

Purpose: To provide basic graduate-level preparation for school psychologists; the first phase of preparation in the training program for school psychologists at The University of Iowa; the second phase, consisting of a second year of full-time study, leads to the Ed.S. degree; students must complete the full two-year sequence to qualify for the University's recommendation for certification as a school psychologist.

Educational Specialist in School Psychology

Purpose: To provide advanced study beyond the master's degree and the minimum level of training required for the University's recommendation for certification as a school psychologist; emphasizes the development of practical, highly specialized professional skills at a level of accomplishment beyond the master's degree, but less than that required by the Ph.D. degree.

Admission Procedures and Academic Requirements

Approved by the College of Education as well as the Graduate College is necessary before a student can be admitted; approval by the College of Education is obtained when a faculty review committee representing the faculty in which the applicant wishes to do his or her major work is willing to accept the student in a program.

(Note: For detailed program requirements and special admission requirements, see the College of Education publication, Admissions Standards and Graduation Requirements, or contact the Graduate College section of the Catalog.)

College of Education

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A. Elementary School
B. Junior-Senior High School
C. Senior High School
D. Community College
E. Other Setting

RC62 Session: The Human-Personality 2.5 h.
Study of personality as it applies to normal development of personality in coping with key life-tasks and problems at different life stages; such life-tasks include integrative vocational, self-achievement development, role-assimilation in social context, etc. Seminar focus on implications of normal personality for counselor behavior and interaction.

RC63 Session: Introduction to Student-Personnel Work 5 h.
History, philosophy and scope of student-personnel services; emphasis on role and impact of personnel in planning, placing and decision making.

2C61 The College Student 1 h to 3 h.
Psychological and sociological characteristics of college students and institutions; for higher education; information relevant for college personnel in advising first-year college students; hour credit for each semester hour of credit.

2C62 Session: Student-Personnel Work 2 h.
Intensive study and seminar presentation of current issues, problems and solutions related to college areas of student-personnel administrators in higher education. May be repeated; permission of instructor.

2C63 Practicum in Personnel Services 2 ar. or.
Practicum in college student-personnel agency; practicum is subject to availability of opportunity for the student.

2C64 Seminar: College Student-Personnel Research 1 or 3 h.
Leadership, decisions and assortment of college student-personnel research topics may be repeated; permission of instructor.

2C65 Seminar: Psychological Aspects of Disability 1 h.
May be repeated.

2C66 Practicum in Rehabilitation Procedures 3 h.
May be repeated; permission of instructor.

2C67 Practicum in Special Education 3 h.
Full-time work taken on regular regional basis; practicum of content is instructor.

2C68 Personal-Adjustment Counseling 3 h.
Survey and application of counseling techniques with personal and interpersonal problems. 2C68C, 2C68P.

2C69 Group Counseling and Group Approaches in Counseling Research 2 or 3 h.
Application of experimental methodology and laboratory procedures to study of group counseling and group approaches in counseling research.

2C70 Counseling Processes and Outcomes 3 h.
Group counseling, group process research on counseling and psychotherapeutic processes; helps students understand the theoretical models of counseling and psychotherapy and practical applications of these theories.

2C71 Research Seminar in Counseling and Psychopathology 3 h.
or.
Survey of recent developments in counseling and psychological literature, theory and research; practical and theoretical integration of research topics and research experience on group counseling and psychotherapy.

2C72M Thesis in Counseling Education 2 or 3 h.
Practicum in content of counseling.

2C73M Advanced Practicum in School Counseling 2 or 3 h.
Supervised practicum in counseling area of concentration; for advanced graduate students enrolled in school-counseling education program.

2C74 Seminar in Behavior Modification 3 h.
Facilitates the education of graduate students with knowledge of behavior therapy; emphasis on practical applications, although enough theory presented to make various programs related to the appropriate level of practitioner.

2C75M Thesis in School Counseling Education 2 or 3 h.
Practicum in content of counseling.

2C76M Advanced Special Research in Counselor Education 2 or 3 h.
Practicum in content of counseling.

7C434J Practicum in Vocational-Educational Counseling 2 or 3 h.
Practice in counseling offered with vocational and educational programs under supervision in vocational and educational settings. Examination of procedures, responsibilities of counselor and student, and purposes and techniques of counseling in these settings.

7C453P Practicum in Personal-Adjustment Counseling 2 or 3 h.
Practice in counseling offered with personal and interpersonal problems under supervision in personal and interpersonal settings. Examination of procedures, responsibilities of counselor and student, and purposes and techniques of counseling in these settings.

7C459J Research in Counseling 2 or 3 h.
Practicum in content of counseling.

7C463J Thesis in Vocational-Educational Education 2 or 3 h.
Practicum in content of counseling.

7C501J Foundations of School Administration 3 h.
For majors in school administration, emphasis on personnel functions in all phases of educational administration; conceptual framework for administration of education and use of academic research to real current issues, social decision making and organizational behavior.

7C503J Computer Applications in Education 2 or 3 h.
Principles of advanced data-processing and application of mathematics in educational administration; instruction and computer applications.

7C504J Internationale Systeme-Analyse and Operations- Research 2 or 3 h.
Application of systems analysis and operations research methods to educational planning and decision making; methods include linear programming, queueing, decision models, inventory, graphs and network models.

8C301M Supervising the Counseling Process 3 h.
Responsibility for the principal for scheduling, assignment and evaluation of teaching personnel, records and reports, counseling faculty, guidance, discipline, business administration, personnel, supervision, curriculum, instructional organization.

8C303J Elementary/School Principalship 3 h.
Organizations, supervision and administration of elementary schools, curriculum development, instruction, pupil activity and selection, pupil life and discipline.

8C305J School and Community Organization 3 h.
Organizational approach, with specific emphasis on interactional changes in emerging patterns of leadership growth in instructional programs.

8C309J Current Issues in the Structure and Governance of Education 3 or 3 h.
Organization and structure of role of educational administration at local, state, federal and international levels.

8C501M School Health Education 3 h.
Relationships between public school and social institutions and community; basic concepts, development of physical education programs, impact on society.

8C509J Administration of Professional Personnel 3 h.
Problems encountered in the management of instruction, staff development, salary and welfare policies influencing professional personnel of schools.

8C511M Development of School Buildings and Sites 3 h.
Designing of design, construction, finance, magnitude and maintenance of school buildings and sites, and development of standards for evaluation.

8C512M Educational Administration 3 h.
Survey of theory of education; administration; integration of educational theory with practical strategies and research on group counseling and psychotherapy.

8C516M Practicum in Educational Administration 3 or 3 h.
Practicum in content of counseling.

8C519J Data and field Research in Public Education 3 or 3 h.
Economic implications of public education; determination of policy and practice in financing of public schools; comparison of state, local and federal agencies; development of principles of efficient expenditures and enabling state system of support for public services.

8C522M Financial Management of Local School Systems 3 h.
Theory, practice, application and implementation techniques, budgeting, procedures and consideration of data retirement problems; practicum content of instruction.

8C701J Research in Administration 2 or 3 h.
Administrative process, leadership and organizational behavior in administration; applications of development theoretical constructs to the analysis, synthesis and evaluation of educational systems.

8C709J Legal Aspects of Educational Administration 3 or 3 h.
A case derived from court decisions and constitutional provisions affecting education; legal status, power and responsibilities of school board, superintendents, principals, teachers and pupils.
70391 Seminar: Urbanization 1 to 4 s.h.
Problems of urban centers related to residence, city government, institutions, small urban area research (proposed by students) in practical urban problems as resource people
70394 Seminar: Elementary Supervision and Administration 2 or 3 s.h.
For experienced supervisors and administrators. Intensive study of issues of major significance to elementary school organizational and instructional problems; evolution of theories of school organization and supervision; interactions (70394) or equivalent and consent of instructor
70395 Seminar: Problems in Public Administration 2 or 3 s.h.
Exploration of structure and functions of local government and central government, status and trend of intergovernmental relations, predicting forces generating improved school government relationships; model building
70396 Seminar: Computer Applications in Education cr. or. cr.
Research and practice in application of computer to educational administration, instruction and research, prerequisites: 70393 and 70394
70399 Seminar: School Business Management 1 to 3 s.h.
Provisions of school business management explored - emphasis on contemporary issues; student should be able to conduct self-studies in local school districts as a major portion of work involved
70397 Seminar: Research Design 1 to 4 s.h.
For graduate students working toward degrees, developing dissertation topic and proposals, analyzing proposals, methods of data gathering, design, language, form 70394 Research Practicum cr. or. cr.
Small-scale research project guided in difficulty of development and assigned; supervised experience in planning, design, management, analysis and reporting of research activities; student assumes major responsibility; existence for current and general faculty research projects; permission of instructor
70375 Educational Administration Practicum cr. or. cr.
Supervised experience in working with educational administration problems including organization, planning, evaluation and decision-making required of 70394. Determination in residence
70377 Seminar: Organizational Theory and Educational Administration 3 s.h.
Student select work of particular theoretical orientation and develop papers for presentation and discussion, prerequisites: 70390, 70391, 70392, consent of instructor and consent of instructor
70382 Seminar: Value Problems in the Administration of 3 s.h.
Analysis of philosophical and sociological ideas for their implications on the questions of human relations, American affairs and for their implications on the questions of human relations, American and world affairs
70380 Seminar: Recent Developments in School Administration cr. or. cr.
Student in charge of student administration and submit research. Group work and projects, prerequisites: 70393, 70394, and consent of instructor
70381 Seminar: Case Studies in School Administration 2 or 3 s.h.
Administrative problems, issues and experiences in actual school situations; concentration on the research of theory and practice, open to people who have studied one or two courses in administration or who have had some administrative experience
70383 Field Service Project in Educational Administration cr. or. cr.
Progressive intern in Educational Administration cr. or. cr.
70385 Educational Research in Educational Administration cr. or. cr.
Progressive intern in Educational Administration cr. or. cr.
70386 Pract. Theses in Educational Administration cr. or. cr.
Progressive intern in Educational Administration cr. or. cr.
70387 Pract. Theses in Educational Administration cr. or. cr.
Progressive intern in Educational Administration cr. or. cr.
70491 Pre-Doctoral Examination 3 s.h.
To be taken concurrently with 70390, involves observing and evaluating elementary school students and examining teachers in performance data tables for at least six hours per week; objective to help university assistants assess own potentialities and interest in teaching as a profession
70492 Introduction: Elementary Teaching 3 s.h.
Meet requirements for elementary certification; opportunities, requirements and responsibilities in teaching
70493 Nutrition with Children 1 s.h.
Same as Home Economics 170, prerequisites: 70492 or consent of instructor
70494 Remedial Methods in Speech and Hearing 3 s.h.
Emphasis on elementary school children. Taken in conjunction with 70192, which provides approximately 20 hours of supervised clinical practice in elementary school speech and hearing problems, permission of instructor
70495 Methods, Skills and Techniques in Music Education 3 s.h.
Development and improvement of music background; skills and techniques for effective music teaching in elementary school; required of all music majors in elementary education program
70496 Methods and Materials in Music for the Classroom Teacher 3 s.h.
Basic singing, part singing, music reading; rhythmic activities and instruments, sour- keys, materials, teaching, supplying in music for elementary grades; teaching and organization of elementary school music program; for elementary education majors;
70191 Elementary School Physical Education 3 s.h.
Methods and materials, evaluation of performance skills; primarily for elementary school majors; prerequisites: 70496, 70439, 70423, 70427, and 70430
70192 Methods and Materials for the Classroom Teacher 2 or 3 s.h.
Comprehensive: music and music anxiety. Same as 70495. Teacher 2 or 3 s.h.
70293 Children's Literature cr. or. cr.
General overview of literature intended for children; discussion of children's literature: possibilities and reading programs, history and criticism of works for children, instruction in methods of study and reading trends in use of literature, etc., 70295
70298 Theory of Arithmetic cr. form 226-00
70195 Geometry for Elementary Teachers cr. or. cr.
Enrollment limited to candidates for elementary teaching certificates or elementary teachers; study of plane, line and plane, properties of geometric figures, measurement, coordinate geometry and transformational geometry; same as 226-00
70390 Practicum: Environmental Education or. en.
70411 Methods and Materials: Elementary-School Physical Education 3 s.h.
For physical education majors only, same as Physical Education for Women 281-00
70412 Methods and Materials: Elementary-School Physical 3 s.h.
Sports: same as Physical Education for Women 281-00, prerequisites: 70411 or consent of instructor
70413 Methods and Materials: Elementary-School Physical 3 s.h.
Sports: same as Physical Education for Women 281-00, prerequisites: 70411 or consent of instructor
70414 Methods and Materials: Elementary-School Physical 3 s.h.
Sports: same as Physical Education for Women 281-00, prerequisites: 70411 or consent of instructor
70415 Methods and Materials: Elementary-School Music 2 or 3 s.h.
For music education majors only, choral majors may for junior semester hours, 70415 may be taken for secondary music, both high school and elementary- school packages for teaching certificates
70107 Methods: Early-Childhood Education 3 s.h.
An introduction to a curriculum, exposure to the area of early childhood education, emphasis on understanding of educational theory and instructional materials in the beginning years; open to junior and senior elementary education majors and graduate students enrolled in both education and elementary education programs
70190 Observation and Participation in Preprimary Education cr. or. cr.
Observation and participation in preprimary classrooms, open to junior and senior elementary education majors and graduate students enrolled in both education and elementary education programs
70192 School: Elementary-School Language Arts 3 s.h.
Methods and materials for teaching science through the use of development of effective oral and written communication, handwriting, spelling, grammar, usage, pronuncia- tion, vocabulary, reading and functional writing, speaking, listening and observing, techniques developed through discussion of methods and materials and through observation
7E-151 Methods of Elementary-School Social Studies 2 a.h.
Objective: Content for grades kindergarten through sixth, development of study skills.

7E-152 Methods of Elementary-School Science 2 a.h.
Principles and concepts of science instruction in elementary school for providing instruction in physical-education majors; emphasis on techniques which characterize new science in science.

7E-153 Methods of Elementary-School Mathematics 2 a.h.
Methods used in building and usage of math through sixth grade, teaching number concepts and arithmetic operations; manipulatives.

7E-154 Elementary-School Reading 2 a.h.
Basic methods, trend, recent methods and crucial issues in reading programs of kindergarten, primary and upper elementary grades.

7E-157 Methods of Early-Childhood Education II 2 a.h.
Emphasis on various educational standards to all nursery school specialists in addition to emphasis on educational theory and to instructional materials for kindergarten, first and second grades.

7E-171 Reading Clinical Teaching 3 to 5 a.h.
Supervised teaching of reading to grades kindergarten through fifth grade with written evaluations submitted to instructor.

7E-173 Reading Clinical Teaching 3 to 5 a.h.
Guidance of TEL 171 or may be taken as a separate credit; supervised reading instruction.

7E-277 Workshop: Kindergarten Instruction 2 or 3 a.h.
Experiments in new recent developments in curricula techniques and improving focal area; application to these materials and development in selected areas for specific instructional situations; includes direct observation of children; emphasis on performance.

7E-282 Music Workshop for Classroom Teachers and Elementary Music Teachers 0 or 1 a.h.
Objective: selection and grade placement of lessons, course procedures and evaluation of music; lesson plans utilized by the teacher; subject materials; ethical and legal.

7E-285 Elementary Art Workshop 2 a.h.
Curriculum content for elementary art; emphasis on: media, procedures, new methods and materials including basic laws; field trips; demonstrations, observations.

7E-286 Curriculum Foundations 2 or 3 a.h.
Elementary and secondary background in curriculum; designations, historical implications, implications of numerous new, modes, learning theorems, directions of development and development; some in TEL 176.

7E-288 Laboratory Practice in Elementary Education 2 a.h.
Experiential course designed to acquaint art educators with the standards, opportunities and deadlines for students. Study sub merses within framework of general classroom related to other subject matter; emphasis on 4 a.h.

7E-289 Literature and Storytelling for Younger Children 2 a.h.
Survey of sources, methods, techniques appropriate for preschool and primary grades students, emphasis on storytelling and related techniques for presenting literature to younger children, same as Liberal Science 51019; prerequisites: TEL 283.

7E-291 Theories and Interpretations of Literature for Secondary Education 2 a.h.
Development of critical skills and understanding the appropriate use of literature in secondary school; although an emphasis on techniques which demonstrate and resources in multilingual education to literature (Tel 172).

7E-293 Physical Education for Elementary-School Children 5 or 6 a.h.
Same as Physical Education for Min. 172; particularly for grades and secondary students, classroom and administrators. Literature of the program development, methods techniques (including recreation education), physical activity, evaluation of recreation and recreation procedures.

7E-295 Supervision and Curriculum Development in Art 2 a.h.
Problem and responsibilities of art supervisor including curriculum, facilities, supervision, evaluation, in-service training and reporting. Study of factors influencing art curriculum decisions. Curriculum analysis, selection, organization, preparation and evaluation; same as TEL 343 and 10143.

7E-296 General Music in the Elementary School 2 a.h.
Theory of curriculum development and instructional永远, analysis of current teaching techniques for elementary music educators.

7E-297 Problems of Research in Science Instruction by the Elementary School 2 a.h.
Special research projects whose activities utilized in experimental design, evaluation, field studies and techniques of research in science instruction of young and middle grades students. Interpretation of research and written communication to students for kindergarten through grade six.

7E-298 Supervision of Elementary-School Social Studies 2 a.h.
Current content used by consideration of modern classroom procedures; cooperative problem solving. Prerequisite: for individual differences and functional development of study skills.

7E-299 Advanced Techniques in Teaching Science in the Elementary School 3 a.h.
Theories of teaching science at elementary-level; emphasis upon procedures which guide implementation of modern philosophies characterizing elementary-school science education; primarily for elementary teachers progressing to administrative positions who have not had significant experience in science education: may also include consideration of these areas of vision.

7E-301 Supervision of Elementary-Mathematics 2 or 3 a.h.
Methods of instruction, course of arithmetic principles, number systems, testing of use of skill, drill, research, guidance and grading of arithmetic contents.

7E-304 Supervision of Primary-Grade Reading 2 a.h.
For supervisors, professional classroom teachers, construct research, specific teaching materials, current test materials, organization for instruction and use of reading in other curricular areas.

7E-306 Supervision of Intermediate-Grade Reading 3 a.h.
For teachers, principals and supervisors teaching with comprehension, guidance for individual differences, reading in reading, extension of skills in both primary and secondary grades.

7E-306 Test Scoring Learning in Elementary-School Mathematics 3 a.h.
Study of skills utilized for the achievement of standards in number and general; emphasis on standards, testing of computational skills, procedures of computational algorithms, diagnosis of pupil error, developing effective teaching strategies, methods including learning to appropriate mathematical concepts, research and more.

7E-307 Improvement of Instruction in Primary Education 2 a.h.
Crucial and current problems in instruction and organization of curriculum and in methods of teaching to primary and intermediate educational levels.

7E-308 Supervision and Curriculum Development in Intermediate School 2 a.h.
History and trends, current problems and instructional materials for nursery-

7E-309 Observation and Field Experience in Intermediate School 2 a.h.
Teaches the observation and field experience in the development of curricula; field experiences in supervisory and observational techniques.

7E-310 Individual Instruction in Education Education 0 or 1 a.h.

7E-312 Elementary-School Curriculum 4 a.h.
Major focus on student selection, student work, and student organization; major of student teaching, student teaching, student leadership and student performance in curriculum development.

7E-314 Personal Supervision in Elementary Education 2 a.h.
Theory and research in education and related fields pertinent to development of early-childhood programs, teaching and performance coordination with observations.

7E-316 Science Curriculum in the Elementary School 2 or 3 a.h.
Analysis of major areas and curriculum materials, national, regional and pre-service studies for use in curricular programs; sample programs experienced by observation, demonstrations and use in classroom for graduate students interested in supervision, administration or college teaching.
7F/385 Economic Sociology and Social Change in American Education 3 a.h.
7F/560 Social Foundations of American Education 3 a.h.
7F/585 Teaching and Administration of Physical Education 3 a.h.
7F/600 Comprehensive Program in American Higher Education 3 a.h.
7F/650 Comprehensive Program in American Higher Education 3 a.h.
7F/655 Comprehensive Program in American Higher Education 3 a.h.
7F/675 Comprehensive Program in American Higher Education 3 a.h.
7F/690 Comprehensive Program in American Higher Education 3 a.h.
7F/700 Comprehensive Program in American Higher Education 3 a.h.
7F/710 Comprehensive Program in American Higher Education 3 a.h.
7F/715 Comprehensive Program in American Higher Education 3 a.h.
7F/720 Comprehensive Program in American Higher Education 3 a.h.
7F/725 Comprehensive Program in American Higher Education 3 a.h.
7F/730 Comprehensive Program in American Higher Education 3 a.h.
7F/735 Comprehensive Program in American Higher Education 3 a.h.
7F/740 Comprehensive Program in American Higher Education 3 a.h.
7F/745 Comprehensive Program in American Higher Education 3 a.h.
7F/750 Comprehensive Program in American Higher Education 3 a.h.
7F/755 Comprehensive Program in American Higher Education 3 a.h.
7F/760 Comprehensive Program in American Higher Education 3 a.h.
7F/765 Comprehensive Program in American Higher Education 3 a.h.
7F/770 Comprehensive Program in American Higher Education 3 a.h.
7F/775 Comprehensive Program in American Higher Education 3 a.h.
7F/780 Comprehensive Program in American Higher Education 3 a.h.
7F/785 Comprehensive Program in American Higher Education 3 a.h.
7F/790 Comprehensive Program in American Higher Education 3 a.h.
7F/795 Comprehensive Program in American Higher Education 3 a.h.
7F/800 Comprehensive Program in American Higher Education 3 a.h.
7F/805 Comprehensive Program in American Higher Education 3 a.h.
7F/810 Comprehensive Program in American Higher Education 3 a.h.
7F/815 Comprehensive Program in American Higher Education 3 a.h.
7F/820 Comprehensive Program in American Higher Education 3 a.h.
7F/825 Comprehensive Program in American Higher Education 3 a.h.
7F/830 Comprehensive Program in American Higher Education 3 a.h.
7F/835 Comprehensive Program in American Higher Education 3 a.h.
7F/840 Comprehensive Program in American Higher Education 3 a.h.
7F/845 Comprehensive Program in American Higher Education 3 a.h.
7F/850 Comprehensive Program in American Higher Education 3 a.h.
7F/855 Comprehensive Program in American Higher Education 3 a.h.
7F/860 Comprehensive Program in American Higher Education 3 a.h.
7F/865 Comprehensive Program in American Higher Education 3 a.h.
7F/870 Comprehensive Program in American Higher Education 3 a.h.
7F/875 Comprehensive Program in American Higher Education 3 a.h.
7F/880 Comprehensive Program in American Higher Education 3 a.h.
7F/885 Comprehensive Program in American Higher Education 3 a.h.
7F/890 Comprehensive Program in American Higher Education 3 a.h.
7F/895 Comprehensive Program in American Higher Education 3 a.h.
7F/900 Comprehensive Program in American Higher Education 3 a.h.
7F/905 Comprehensive Program in American Higher Education 3 a.h.
7F/910 Comprehensive Program in American Higher Education 3 a.h.
7F/915 Comprehensive Program in American Higher Education 3 a.h.
7F/920 Comprehensive Program in American Higher Education 3 a.h.
7F/925 Comprehensive Program in American Higher Education 3 a.h.
7F/930 Comprehensive Program in American Higher Education 3 a.h.
7F/935 Comprehensive Program in American Higher Education 3 a.h.
7F/940 Comprehensive Program in American Higher Education 3 a.h.
7F/945 Comprehensive Program in American Higher Education 3 a.h.
7F/950 Comprehensive Program in American Higher Education 3 a.h.
7F/955 Comprehensive Program in American Higher Education 3 a.h.
7F/960 Comprehensive Program in American Higher Education 3 a.h.
7F/965 Comprehensive Program in American Higher Education 3 a.h.
7F/970 Comprehensive Program in American Higher Education 3 a.h.
7F/975 Comprehensive Program in American Higher Education 3 a.h.
7F/980 Comprehensive Program in American Higher Education 3 a.h.
7F/985 Comprehensive Program in American Higher Education 3 a.h.
7F/990 Comprehensive Program in American Higher Education 3 a.h.
7F/995 Comprehensive Program in American Higher Education 3 a.h.
8F/000 Comprehensive Program in American Higher Education 3 a.h.
8F/005 Comprehensive Program in American Higher Education 3 a.h.
8F/010 Comprehensive Program in American Higher Education 3 a.h.
8F/015 Comprehensive Program in American Higher Education 3 a.h.
8F/020 Comprehensive Program in American Higher Education 3 a.h.
8F/025 Comprehensive Program in American Higher Education 3 a.h.
8F/030 Comprehensive Program in American Higher Education 3 a.h.
8F/035 Comprehensive Program in American Higher Education 3 a.h.
8F/040 Comprehensive Program in American Higher Education 3 a.h.
8F/045 Comprehensive Program in American Higher Education 3 a.h.
8F/050 Comprehensive Program in American Higher Education 3 a.h.
8F/055 Comprehensive Program in American Higher Education 3 a.h.
8F/060 Comprehensive Program in American Higher Education 3 a.h.
8F/065 Comprehensive Program in American Higher Education 3 a.h.
8F/070 Comprehensive Program in American Higher Education 3 a.h.
8F/075 Comprehensive Program in American Higher Education 3 a.h.
8F/080 Comprehensive Program in American Higher Education 3 a.h.
8F/085 Comprehensive Program in American Higher Education 3 a.h.
8F/090 Comprehensive Program in American Higher Education 3 a.h.
8F/095 Comprehensive Program in American Higher Education 3 a.h.
8F/100 Comprehensive Program in American Higher Education 3 a.h.
8F/105 Comprehensive Program in American Higher Education 3 a.h.
8F/110 Comprehensive Program in American Higher Education 3 a.h.
8F/115 Comprehensive Program in American Higher Education 3 a.h.
8F/120 Comprehensive Program in American Higher Education 3 a.h.
8F/125 Comprehensive Program in American Higher Education 3 a.h.
8F/130 Comprehensive Program in American Higher Education 3 a.h.
8F/135 Comprehensive Program in American Higher Education 3 a.h.
8F/140 Comprehensive Program in American Higher Education 3 a.h.
8F/145 Comprehensive Program in American Higher Education 3 a.h.
7P1148 Statistical Method in Educational Research I 3 a.h.
Introduction to Bayesian and regression methods, applications in analysis of educational data, conditional probability, Bayes theorem, analysis of potential duration, bivariate distribution, mean, standard deviation and correlation, scatter diagrams, cross tabulation, regression analysis, correlation analysis, analysis of variance, regression analysis, multiple regression analysis, correlation ratio, sampling theory, 3P1149 or equivalent.

7P1149 Statistical Method in Educational Research II 3 a.h.
Contiguity of 7P1148, model of ANOVA, classical test theory, Bayes theorem with classical models, multiple and multiple regression in many groups, propositional analysis of covariance, analysis of variance, emphasis on guidance technology, same as 3P1150, 232A, 232B, 232C, 232D, 232E.

7P1150 Measurement for the Classroom Teacher 3 a.h.
Interpretation and use of standardized test results, development of classroom tests and evaluation of pupil achievement, elementary statistical concepts relating to interpretation of test scores.

7P1170 Psychology of Reading 3 a.h.
Psychological and linguistic analysis of reading process, implications for teaching methods and materials, factors related to reading performance.

7P1173 Reading Clinic: Diagnosis 3 a.h.
Evaluation of diagnostic tools of reading ability, clinical practice in diagnosis, interpretation of test, reading pedestrian, 7P1173.

7P1173P Testing Clinic: Diagnosis 3 a.h.
Review of contemporary theories of learning, application of learning principles to classroom setting.

7P1180 Cognitive Processes in Classroom Learning 3 a.h.
Theories of cognitive development, forgetting, problem solving, styles and strategies of thinking, application of cognitive theories to classroom learning.

7P1185 Motivation in Education 3 a.h.
Theory of motivation, application to education, evaluation of current research trends.

7P1188 Group Processes in Education 3 a.h.
Theories and research in group dynamics; application to education; evaluation of techniques for assessing interaction processes.

7P1189 Special Readings and Projects 3 a.h.
Supervised individual study, prerequisite senior standing and consent of instructor.

7P1190 Adult Learning 3 a.h.
Designed for individuals whose interest and professional responsibilities involve teaching older students, theories of teaching and learning, classroom applications as considered, readings in literature on teaching, opportunity for small group interaction and individual project.

7P1192 Advanced Reading for Educators 3 a.h.
Survey and critical review of current views of programming of instruction, primary emphasis on educational technology, introduction to educational programming.

7P1195 Project Methods 3 a.h.
Principles and practice of instructional methods, theory into practice, introduction to educational programming, introduction to educational psychology, 7P1192 or equivalent, completed.

7P1200 Research Seminar in Educational Psychology 3 a.h.
Introduction to teaching of educational psychology, design of experimental educational research, design of experiment in education, research and interpretation of data, analysis of variance, research and interpretation of data, analysis of variance, 7P1149, 7P1150.

7P1201 Theories and Conditions of Classroom Learning 3 a.h.
Theories of cognitive development, forgetting, problem solving, styles and strategies of thinking, application of cognitive theories to classroom learning.

7P1202 Motivation in Education 3 a.h.
Theory of motivation, application to education, evaluation of current research trends.

7P1205 Group Processes in Education 3 a.h.
Theories and research in group dynamics; application to education; evaluation of techniques for assessing interaction processes.

7P1206 Special Readings and Projects 3 a.h.
Supervised individual study, prerequisite senior standing and consent of instructor.

7P1211 Adult Learning 3 a.h.
Designed for individuals whose interest and professional responsibilities involve teaching older students, theories of teaching and learning, classroom applications as considered, readings in literature on teaching, opportunity for small group interaction and individual project.

7P1212 Advanced Reading for Educators 3 a.h.
Survey and critical review of current views of programming of instruction, primary emphasis on educational technology, introduction to educational programming.

7P1215 Project Methods 3 a.h.
Principles and practice of instructional methods, theory into practice, introduction to educational programming, introduction to educational psychology, 7P1192 or equivalent, completed.

7P1220 Research Seminar in Educational Psychology 3 a.h.
Introduction to teaching of educational psychology, design of experimental educational research, design of experiment in education, research and interpretation of data, analysis of variance, research and interpretation of data, analysis of variance, 7P1149, 7P1150.

7P1221 Theories and Conditions of Classroom Learning 3 a.h.
Theories of cognitive development, forgetting, problem solving, styles and strategies of thinking, application of cognitive theories to classroom learning.

7P1222 Motivation in Education 3 a.h.
Theory of motivation, application to education, evaluation of current research trends.

7P1225 Group Processes in Education 3 a.h.
Theories and research in group dynamics; application to education; evaluation of techniques for assessing interaction processes.

7P1226 Special Readings and Projects 3 a.h.
Supervised individual study, prerequisite senior standing and consent of instructor.

7P1231 Adult Learning 3 a.h.
Designed for individuals whose interest and professional responsibilities involve teaching older students, theories of teaching and learning, classroom applications as considered, readings in literature on teaching, opportunity for small group interaction and individual project.

7P1232 Advanced Reading for Educators 3 a.h.
Survey and critical review of current views of programming of instruction, primary emphasis on educational technology, introduction to educational programming.

7P1235 Project Methods 3 a.h.
Principles and practice of instructional methods, theory into practice, introduction to educational programming, introduction to educational psychology, 7P1192 or equivalent, completed.

7P1240 Research Seminar in Educational Psychology 3 a.h.
Introduction to teaching of educational psychology, design of experimental educational research, design of experiment in education, research and interpretation of data, analysis of variance, research and interpretation of data, analysis of variance, 7P1149, 7P1150.

7P1241 Theories and Conditions of Classroom Learning 3 a.h.
Theories of cognitive development, forgetting, problem solving, styles and strategies of thinking, application of cognitive theories to classroom learning.

7P1242 Motivation in Education 3 a.h.
Theory of motivation, application to education, evaluation of current research trends.

7P1245 Group Processes in Education 3 a.h.
Theories and research in group dynamics; application to education; evaluation of techniques for assessing interaction processes.

7P1246 Special Readings and Projects 3 a.h.
Supervised individual study, prerequisite senior standing and consent of instructor.

7P1251 Adult Learning 3 a.h.
Designed for individuals whose interest and professional responsibilities involve teaching older students, theories of teaching and learning, classroom applications as considered, readings in literature on teaching, opportunity for small group interaction and individual project.

7P1252 Advanced Reading for Educators 3 a.h.
Survey and critical review of current views of programming of instruction, primary emphasis on educational technology, introduction to educational programming.

7P1255 Project Methods 3 a.h.
Principles and practice of instructional methods, theory into practice, introduction to educational programming, introduction to educational psychology, 7P1192 or equivalent, completed.

7P1260 Research Seminar in Educational Psychology 3 a.h.
Introduction to teaching of educational psychology, design of experimental educational research, design of experiment in education, research and interpretation of data, analysis of variance, research and interpretation of data, analysis of variance, 7P1149, 7P1150.

7P1261 Theories and Conditions of Classroom Learning 3 a.h.
Theories of cognitive development, forgetting, problem solving, styles and strategies of thinking, application of cognitive theories to classroom learning.

7P1262 Motivation in Education 3 a.h.
Theory of motivation, application to education, evaluation of current research trends.

7P1265 Group Processes in Education 3 a.h.
Theories and research in group dynamics; application to education; evaluation of techniques for assessing interaction processes.

7P1266 Special Readings and Projects 3 a.h.
Supervised individual study, prerequisite senior standing and consent of instructor.

7P1271 Adult Learning 3 a.h.
Designed for individuals whose interest and professional responsibilities involve teaching older students, theories of teaching and learning, classroom applications as considered, readings in literature on teaching, opportunity for small group interaction and individual project.

7P1272 Advanced Reading for Educators 3 a.h.
Survey and critical review of current views of programming of instruction, primary emphasis on educational technology, introduction to educational programming.

7P1275 Project Methods 3 a.h.
Principles and practice of instructional methods, theory into practice, introduction to educational programming, introduction to educational psychology, 7P1192 or equivalent, completed.

7P1280 Research Seminar in Educational Psychology 3 a.h.
Introduction to teaching of educational psychology, design of experimental educational research, design of experiment in education, research and interpretation of data, analysis of variance, research and interpretation of data, analysis of variance, 7P1149, 7P1150.

7P1281 Theories and Conditions of Classroom Learning 3 a.h.
Theories of cognitive development, forgetting, problem solving, styles and strategies of thinking, application of cognitive theories to classroom learning.

7P1282 Motivation in Education 3 a.h.
Theory of motivation, application to education, evaluation of current research trends.

7P1285 Group Processes in Education 3 a.h.
Theories and research in group dynamics; application to education; evaluation of techniques for assessing interaction processes.

7P1286 Special Readings and Projects 3 a.h.
Supervised individual study, prerequisite senior standing and consent of instructor.

7P1291 Adult Learning 3 a.h.
Designed for individuals whose interest and professional responsibilities involve teaching older students, theories of teaching and learning, classroom applications as considered, readings in literature on teaching, opportunity for small group interaction and individual project.

7P1292 Advanced Reading for Educators 3 a.h.
Survey and critical review of current views of programming of instruction, primary emphasis on educational technology, introduction to educational programming.

7P1295 Project Methods 3 a.h.
Principles and practice of instructional methods, theory into practice, introduction to educational programming, introduction to educational psychology, 7P1192 or equivalent, completed.

7P1296 Research Seminar in Educational Psychology 3 a.h.
Introduction to teaching of educational psychology, design of experimental educational research, design of experiment in education, research and interpretation of data, analysis of variance, research and interpretation of data, analysis of variance, 7P1149, 7P1150.

7P1297 Theories and Conditions of Classroom Learning 3 a.h.
Theories of cognitive development, forgetting, problem solving, styles and strategies of thinking, application of cognitive theories to classroom learning.

7P1298 Motivation in Education 3 a.h.
Theory of motivation, application to education, evaluation of current research trends.

7P1299 Group Processes in Education 3 a.h.
Theories and research in group dynamics; application to education; evaluation of techniques for assessing interaction processes.

7P1300 Special Readings and Projects 3 a.h.
Supervised individual study, prerequisite senior standing and consent of instructor.
75:190 Individual Projects in Laboratory Practice
1 to 3 s.h.
Projects concerned with correlation and instruction related to progress of students in which student teaching does, under direction of university supervisor of student teaching, write short report or paper.

75:191 Observation and Laboratory Practice in the Secondary School or arr.
Affords student teachers opportunities in secondary school to observe and study teacher-relations, methods and practices used in teaching of secondary school material in junior and senior high schools.

75:192 Observation and Laboratory Practice in the Secondary School or arr.
Continuation of 75:191; prerequisite consent of instructor.

75:193 Literature for Adolescents
3 s.h.
Reading and evaluation of literature suitable for junior and senior high school students; same as Literature 21-219 and English 8/198.

75:194 Methods: Reading in Secondary School
2 or 3 s.h.
Methods and materials used in developing reading instruction in junior and senior high schools.

75:197 Aesthetic Education
3 s.h.
Introduction to course designed to acquaint education students (and other interested education students) with aesthetic model for education. Study will involve arts viewed within framework of general values related to various subject matter; understandings will be aimed at broadening aesthetic experience and enhancing aesthetic perception and appreciation.

75:200 Professional Seminar (M.A.T.)
2 s.h.
Research for M.A.T. candidates only prior to internship or student teaching.

75:210 Seminar: Problems in Junior-High-School English
2 s.h.
Consideration of current approaches to teaching English at this level.

75:220 Supervision of Foreign Language
2 s.h.
Research and practice in methods and materials of instruction in foreign languages at secondary school level; same as Spanish 33.177.

75:250 Supervision of Mathematics
2 s.h.
Same as Mathematics 226:195, prerequisite: 226:193 or equivalent or consent of instructor.

75:260 The Teaching of Geometry
2 s.h.
Current developments in teaching of secondary school geometry and selected topics of interest.

75:270 Teaching Mathematics in the Junior High School
2 or 3 s.h.
Survey of methods, materials and current developments for junior high school mathematics, including teaching of comparison, problem solving, introductory algebra and informal geometry.

75:280 Teaching Mathematics in the Secondary School
2 or 3 s.h.
Mathematics for the secondary-school teacher; preparation for teaching mathematics in junior and senior high schools.

75:290 Supervision and Administration of Schools
2 or 3 s.h.
Supervision of schools and school activities with consent of instructor.

75:341 Music Education Workshop: Instrumental Music in the Elementary School
6 to 9 s.h.
Same as Music 25:320.

78:150 Philosophy, Curriculum Development in Art Education or arr.
Problems and responsibilities of art supervisor including curriculum development, financial administration, supervision of students and reporting. Study of factors influencing art curriculum development: curriculum objectives, selection, organization, preparation and evaluation; same as 70:241 and 160:241.

77:240Supervision and Administration for Boys
3 s.h.
Designed primarily for administrators and experiment teachers who wish to better understand secondary school functions and problems. Emphasis on the role of supervising and the improvement of instruction; various types of teacher education and supervision may be required; same as 77:250.

77:250 Problems of Science Education or arr.
In-depth critical evaluation of research, design, implementation, and interpretation of programs in science education; major works in the field will be discussed.

77:291 Construction of Teaching Materials for Science Instruction or arr.
Preparation of special laboratory materials for instruction in new elementary, junior-high and high-school science courses or in other teaching materials for science instruction. Materials may be presented in individual or in small groups at academic level of most students, same as 75:250.

78:240 Advanced Methods Science Teachers
3 s.h.
In-depth critical evaluation of problems of science teaching; experience with science teaching as inquiry. Major sub-technical trends offered in current secondary and college teaching; required of all graduate students in science education; same as 95:352.

78:250 The Science Curriculum
3 s.h.
National programs at secondary and college levels; observation and involvement with parts of programs of similar or similar institutions; trends toward national level science curriculum development; same as 70:346 and General Science 95:224.

78:341 Supervision of Science
3 s.h.
Practicum and observations in school systems to develop practical capability in instruction, with emphasis on techniques characterizing practiced in science supervisions and their application to problems of classroom and secondary school science courses; practicum will involve observation of special problems in the teaching of science; same as 70:356 and General Science 95:224.

78:355 Structure of Sciences and the Application in Science Teaching or arr.
Relationship between nature of science and science teaching: primary purpose to bring science into certain specific situations within which facts and ideas of science fit; emphasis upon how this information affects methodology, curriculum, structure, and specific courses; required of all P.L. candidates in science education; practicum previous work in philosophy of science.

78:381 History of Science and Its Role in Science Instruction or arr.
Deals with science teacher's knowledge of science history and ability to apply that knowledge in designing and teaching science courses, continuing trends and origins of science and great thinkers in science with a minimum consideration of the development of theory of science. Emphasis will be placed on the historical development of scientific papers, case studies and biographical materials in teaching and course construction; requires of all P.L. candidates in science education; practicum previous work in history or philosophy of science.

78:382 Workshop in Teaching Speech arr.
Same as Speech 36:178.

78:370 Instructional Development in the Social Studies or 2 or 3 s.h.
For school administrators, curriculum specialists and experienced social-studies teachers major areas include present status of social-studies curricula, trends growing out of curricular research and development in past decades; problems involved in curricular development and supervision; investigative study required.

78:271 Building Resources and Teaching Units in the Social Studies or 3 s.h.
For inservice teacher who wishes to build resource or teaching units; graduate and graduate credit for building resource or teaching units; special emphasis placed on interpretation of recent developments.

78:275 Current Issues, Approaches and Materials in Social Studies Teaching or arr.
Explores inquiry techniques for instructional teachers who wish to observe participants in and create inquiry episodes. Techniques include case stating, role-playing, brainstorming, literature surveys and value clarification.

78:280 Workshop: "Ways to a Course of Study" or arr.
Designed to produce a course of study from a given assignment (e.g. From Modern to Modern) utilized in courses such as 15:502, 25:552, 33:500 and 43:550. Emphasis placed on development of effective teaching procedures.

78:375 Advanced Techniques of Supervision in the Social Studies or 2 or 3 s.h.
For the supervision and administration of social studies; for students majoring in social studies; special emphasis on preparation for improving teaching effectiveness.

78:260Junior-High-School and Middle-School Organization and Administration or 2 or 3 s.h.
History of junior high school and development of middle school; organization of departments, course work and curriculum, co-curricular activities and early student activities; organizing program of studies; curriculum reorganization and reorganization for junior high school and middle school; objectives and content in various subject areas; current trends; curriculum planning.

78:281 Junior-High-School and Middle-School Curriculum or 2 or 3 s.h.
Comprehension of problems in junior high school and middle school: objectives and content in various subject areas; current trends; curriculum planning.

78:361Upgrading Instructional Program and Co-ordination of Special Interdisciplinary Problems in Junior High or 3 s.h.
Upgrading instructional program and coordination of special interdisciplinary problems in junior high school; problems in juvenile delinquency and drug addiction.

78:301Secondary-School Curriculum or 3 or 4 s.h.
Theory and development of secondary school curriculum; analysis of curriculum; study and discussion of problems in various subject areas.

78:291 Professional Seminar in Instruction or arr.
Prerequisite consent of instructor.

78:200 Introduction to Research in Art Education or 2 or 3 s.h.
Study of methods of inquiry used for research in art education and related disciplines; emphasis on the nature, significance, and application of the principles of design, descriptive preparation and evaluation of research proposals; methods of research design; same as 75:356.
78/207 Seminar: Aesthetic Education 2 or 3 a.h.
Theorists of aesthetics as related to teaching, instructional, and learning media; nature of aesthetic experience in visual and related arts; aesthetic models as related to other disciplines in educational context of multi-media education programs; same as 78/301; may be repeated.

78/210 M.A. Seminar: English Education 2 a.r.
Discussion of significant developments in English education from primary and college levels; prerequisites: consent of instructor; same as English 5280.

78/331 Workshops for Secondary-School Journalism Teachers 2 a.r.
Workshop-type experiences based on analysis of current and most recent trends in journalism and news media, emphasis on photography, editorial content, curriculum development, mass communication media, basic journalism techniques and other related journalistic activities; same as Journalism 5110.

78/335 Seminar: Mathematics Education 2 a.r.
Prerequisites: consent of instructor.

78/336 Problems in Mathematics Education 2 a.r.
Review of recent trends in teaching of mathematics, K-12, including examination of teaching of algebra and geometry, grade placement of content and methodology; same as Math 5230.

78/341 General Music in Secondary Schools 2 a.r.
Analysis of musical arts, artistic and humanistic approach to curriculum development, including selection of appropriate musical materials and teaching techniques.

78/342 Special Studies: Music Education 2 a.r.
Prerequisites: consent of instructor.

78/344 Multi-Subject Education Workshop: General and Choral Music 2 a.r.
In the Secondary School 1 a.h.

78/346 Public School Curriculum in Physical Education 2 a.h.
Biological, social and psychological factors influencing curriculum in physical education; current trends, same as Physical Education for Men 5377.

78/350 Seminar: Science Education 2 a.h.
Reprints of research projects presented in recent years in program of research at M.E. and Ph.D. levels; group discussions; analysis of individual presentations; required of all Ph.D. candidates each semester; for registration required of all master’s candidates, same as 59/328.

78/351 Special Problems in Science Education 2 a.h.
Open to graduate students enrolled in educational science; advanced science teacher in need of specialized help in developing course in new area of science instruction.

78/352 Special Problems in Mathematics Education 2 a.h.
For graduate students in need of specialized help in developing course in new area of mathematics instruction.

78/353 Problems in Supervision 2 a.r.
Prerequisites: consent of instructor.

78/355 Student Teaching 2 a.h.
Prerequisites: consent of instructor.

78/356 Field Service Project in Secondary Education 2 a.r.
Prerequisites: consent of instructor.

78/382 Curriculum and Instruction 2 a.r.
Prerequisites: consent of instructor.

78/383 Problems in Curriculum Planning 2 a.r.
Prerequisites: consent of instructor.

78/386 Research in Education 2 a.r.
Prerequisites: consent of instructor.

78/441 The Psychology of Teaching Music 2 a.h.
Specialists in education and in the fine and performing arts, including clinicians, music educators, special needs children, children with hearing impairment, and children with multiple disabilities, will present segments of their research projects, seminars, and personal experiences in the classroom and performing arts settings.

78/442 Research in Music Education 2 a.h.
Identifiers of problems and development of plans for conducting and reporting research of music activities.

78/450 Ph.D. Thesis 2 a.r.
Prerequisites: consent of instructor.

Special Education
78/010 Introduction to and Observation of Exceptional Children 1 a.h.
Various types of exceptional children and their educational problems, includes practices of four hours per week, observing and working with children with various types of disabilities, required in major in special education; to be taken in first semester of sophomore year; offers the student the possibility of being a special education major.

78/113 Special Education; in the Fine and Performing Arts 2 a.h.
Prerequisites: consent of instructor.

78/116 Special Education: Identification of problems and development of plans for conducting and reporting research of music activities.

78/205 Instructional Methods and Procedures in Special Education 1 a.h.
Broad course continues student’s level of course of instruction with two to four hours of practice each week; designed to operate in grades and special education major in special education; same as Psychology 5117.

78/225 Teaching the Exceptionally Gifted 3 a.h.
Prerequisites: consent of instructor.

78/235 Teaching the Physically Handicapped Child 3 a.r.
Survey of exceptional children and school programs; for transfer students and seniors in special education; same as Psychology 5117.

78/241 Teaching the Mentally Retarded Child 3 a.h.
Selection of pupils, organization of program; management of trainable child; curricular content; specific materials and methods for instructing trainable children; for seniors in special education.

78/348 Methods of Education of the Physically-Handicapped Child 3 a.h.
For teachers in special education; emphasis on learning and emotional problems of physically handicapped, comparison with trainable and mental; prerequisites: 78/113 or consent of instructor; offered only in winter semester.

78/410 Orientation to Rehabilitation of the Physically-Handicapped Child 2 a.r.
Medical, therapeutic and educational aspects; several professionals involved in evaluation, medical, rehabilitation, educational, and social work aspects of various handicapping conditions, causes and special considerations of each.

78/415 Vocational Resources for Exceptional Children 2 a.h.
Prerequisites: involved in developing programs for all students who need or want job experience at high school level; job analysis, intake, assessment of various problems and various community agencies, graduate student permission of instructor.
prerequisite consent of instructor and completion of M.A. program in behavior disorders.

75:238 Seminar: Advanced Problems in Teacher Education for Prospective Teachers of Children and Youth with Behavior Disorders. 3 s.h.

75:244 Research Practicum in Special Education. 3 s.h.

75:338 Summer School Psychological Services. 3 s.h.

75:344 Seminar: Program Development in Special Education. 3 s.h.

Educational Media

7V:101 Operation of AV Equipment 1 s.h.

7V:102 Theory and Practice of Educational-Communication Systems 3 s.h.

7V:128 Laboratory on Problems in Problems of Learning.
Administrative Staff
Dean: Hunter Rosse
Associate Dean: Donald N. Methuen
Assistant Dean: Marvin L. Batterley
Coordinator, Placement and Special Projects: Thomas Farrell
Librarian, Engineering Library:

The College of Engineering comprises six departmental subdivisions. Programs are offered leading to the Bachelor of Science, Master of Science and Doctor of Philosophy degrees in chemical, civil, electrical, industrial and management, and mechanical engineering, and to the M.S. and Ph.D. degrees in mechanics and nuclear engineering. Any of the undergraduate programs may be combined with the Bachelor of Arts in the five-year option, and any department may sponsor the general Bachelor of Science degree in engineering for the student electing to pursue interdisciplinary studies of a broader nature. Such flexibility of program arrangement is one feature of the engineering curriculum at Iowa. First implemented in 1969, this curriculum consists of four stems extending through all four years of undergraduate study. The four stems are socio-humanistic studies, mathematics, basic and applied science, and analysis and design. The analysis and design sequence begins with introductory engineering in the first semester of the freshman year and terminates with departmental specialization in an interdisciplinary combination in the senior year. Undergraduate students in engineering at Iowa take more than one-third of their instruction in common with students in other colleges, and interdisciplinary interests are encouraged. The College is accredited by the Engineers Council for Professional Development.

Degree Requirements
Baccalaureate Degrees
The Bachelor of Science degree in engineering requires at least 128 semester hours of credit. The candidate must be enrolled in the College of Engineering for at least the last 30 semester hours or 45 of the last 60 semester hours.

All undergraduate students in engineering must complete a social science sequence totaling at least six semester hours of credit in courses chosen from the departments of Anthropology, Economics, Geography, Journalism, Political Science, Psychology, Social Work or Sociology. All undergraduate students in engineering must also complete the College of Liberal Arts historical-cultural core requirement, or complete a historical-cultural sequence totaling at least six semester hours of credit in courses chosen from the departments of American Civilization, East Asian Languages and Literature studies, Classics, English, History, Linguistics, Philosophy, Speech and Dramatic Arts or the schools of Art, Music or Religious. Advanced courses in any foreign language department will also satisfy the historical-cultural requirements. Studio courses in art and music are not acceptable.

Departmental course and hour requirements in engineering are designated in the curriculum outlines of each department.

The Combined Program
In response to an increasing demand for engineers with strong backgrounds in the humanities, social sciences and languages, Iowa offers a combined program leading to the Bachelor of Arts degree in the College of Liberal Arts and the Bachelor of Science degree in engineering or in a designated department of engineering. By proper scheduling of coursework in consultation with advisors from the College of Liberal Arts and Engineering, the student in the combined program can meet the baccalaureate degree requirements of both colleges in five academic years.

Professional Registration
Admission to practice professional engineering is governed by the laws of each state and requires registration. The minimum standards include graduation from a recognized engineering curriculum of at least four years, followed by at least four years of practical experience. The Iowa Board of Engineering Examiners has adopted the plan of admitting College of Engineering graduates to the rating “Engineer-in-Training” by an examination on engineering fundamentals given at the University near the time of graduation. Completion of registration as a “Professional Engineer” requires an advanced examination following professional experience.

Faculty
Because the College recognizes the value of interchange between faculty and students, core courses are taught largely by senior faculty. Recognizing that a university faculty has a responsibility for the production as well as the dissemination of knowledge, the College seeks to achieve a balance between teaching and research. Members of the faculty in Engineering represent a wide range of practical, instructional, research and consulting experience and have made significant contributions to the professional literature in their areas.

Facilities
The Engineering Library
The Engineering Library is the center of College activity. Its collection includes 32,000 books and 750 periodicals. It is equipped with microfilm and microfiche readers.

Chemical Engineering Laboratories
The Department of Chemical Engineering is located in the Chemistry-Physiology Building. Its main laboratories include pilot-
plant equipment for the study of industrial evaporation, distilla-
tion, drying, fluid flow and heat transfer. A section of the labora-
tory devoted to nuclear technology contains a subcritical nuclear
reactor, a pulsed neutron generator and a reactor simulator.
Laser laboratories have recently been added for biomaterials research.
Small laboratory research areas are provided for investigations of plastics
and other engineering materials. Laboratories for individual re-
search are available to graduate students; these are equipped
with chromatographs, analog computers and other instruments.

Electrical Engineering Laboratories
The instructional laboratories of the Department of Electrical
Engineering include dynamic systems, digital systems and
control systems laboratories, and a general-purpose laboratory for
special projects. Research laboratories are equipped for investi-
gations in plasma physics, signal analysis, electronic circuits and
devices, and digital systems. A computer laboratory is provided
for undergraduate and graduate student use for study and re-
search in analog, digital and hybrid computation and simulation.

Environmental Engineering Laboratories
Facilities for environmental engineering teaching and research are
located in the Phillip F. Morgan Sanitary Engineering
Laboratory, University Water Treatment Plant and the Depart-
ment of Preventive Medicine and Environmental Health of the
College of Medicine. Research in water pollution abatement is
conducted primarily in the Morgan Laboratory located at the
Iowa City University wastewater treatment plant. This labora-
tory is especially equipped for pilot-plant projects and contains
a full-scale activated sludge aeration tank, as well as an activated
sludge pilot plant. The wastewater treatment plant is used as a
full-scale system for research. Water quality control and limno-
logical research are conducted at the New University Water
Treatment Plant.

Industrial Engineering Laboratories
The Department has laboratories equipped for research in the
principal areas of materials and processing, including materials
science, powder science, metal casting, cutting and processing.
Human factors laboratories are equipped to investigate basic
motor capabilities and the effects of static and environmental
variables. Unique equipment for the measurement of human
factors includes electronic timing, force sensing, recording
and computation equipment.

Mechanical Engineering Laboratories
The Mechanical Engineering laboratories contain instruments
and equipment for experimental investigations in a variety of
fields. These fields include thermodynamics, thermal systems,
heat transfer, gas dynamics, behavior of materials, control sys-
tems and machine dynamics. The laboratories provide educa-
tional experience in all important scientific areas on which
mechanical engineering is based and valuable experience in mod-
ern methods of measurement and analysis including use of mod-
computers.

Structural and Materials Testing Laboratories
These laboratories are equipped for the determination of physi-
cal properties of materials of engineering construction, such as
soils, aggregates, concrete, metals, timber and plastics. Included
are a compression testing machine, a universal testing machine,
and an axial testing machine, along with mechanical and elec-
tronic instrumentation and photocell equipment for the ac-
accurate measurement of deformations under load. The structural
laboratory also contains a prestressed concrete structural mem-
bers. A humidity control room and curing rooms are also available.
A soils laboratory contains consolidation and triaxial testing
equipment of the latest design. Special equipment is available for
negative pore water pressure studies and model flooding tests.

Hydraulics Laboratory
Located on the west bank of the Iowa River at the end of the
University dam, this laboratory houses the latest facilities for
undergraduate and graduate laboratory instruction, and for
basic and applied research by staff and students in the area of
hydraulics and fluid mechanics. The equipment includes an IBM
1850 data acquisition and control system for online analysis of
experimental data, a 330-foot towing tank, several flumes and
wind tunnels, a low-temperature flow facility for investigation of
ice phenomena, a dispersion frame and a wave tank.

Computer Services
Services of the University Computer Center are used extensively
by students and faculty of the College, under the auspices of the
College computer committee. The College itself maintains
remote terminals for conversational access to the University
computer and key-punch equipment for computer cards.

Placement Services
Students and alumni can avail themselves of the placement serv-
cices provided by the College of Engineering. Interview rooms
and a placement library of informational material are located in
the Engineering Building. Assistance is available for arranging
employment opportunities on job opportunities.

Institute of Hydraulic Research
The Institute of Hydraulic Research has earned international
recognition for its research and educational activities in the area
of fluids engineering since it was organized in 1931. Current
research is oriented toward problems related to environmental
pollution, bioengineering, naval hydrodynamics, and instrumen-
tation and data handling for fluids research. Student participa-
tion in all research and consulting activities characteristics the
Institute's operation.

Student Organizations and Activities
The entire College of Engineering staff body is organized as
the Associated Students of Engineering.

Engineering students publish a monthly periodical, the Iowa
Prairie.

Student branches of the American Institute of Chemical Engi-
neers, the American Institute of Industrial Engineers, the
American Society of Civil Engineers, the American Society of
Mechanical Engineers, and the Institute of Electrical and Elec-
tronic Engineers are active at Iowa.
The U of I chapter of Tau Beta Pi, an honorary engineering
society, gives special recognition to superior students in their
junior and senior years. Senior and graduate engineering stu-
dents who have special ability in research are eligible for election
to Sigma Xi, Phi Lambda Upsilon, honorary chemistry and
chemical engineering fraternity; Chi Epsilon, honorary civil en-
genring fraternity; Eta Kappa Nu, honorary electrical engi-
neering fraternity; and Pi Tau Sigma, honorary mechanical
engineering fraternity, recognize the work of outstanding stu-
dents in their respective fields.

Admission
- To qualify for admission to the College of Engineering,
an applicant must have:
  - Completed the American College Tests with a composite
    standard score of 24 or above and a standard score of 24
    or above in the mathematics battery;
  - Successfully completed at least one and one-half units
    of algebra and one unit of plane geometry; and
  - Ranked in the upper one-half of his high school graduating
    class.
High school physics and chemistry are recommended for all
applicants.

After reviewing the records of an applicant who does not meet
minimum admission requirements, the Director of Admissions
may admit the applicant unconditionally, admit him or her on
probation, require a summer session trial enrollment or deny
admission.

Undergraduate Transfer
The applicant must submit a formal application and official tran-
script of all college work. Each applicant should have:
- Completed at least analytic geometry or its equivalent;
- Maintained a cumulative grade-point average of at least 2.25
(C-9), based on a 4-point marking system; and
- Attained satisfactory scores on the American College Tests.

A maximum of 66 semester-hours credit (or the equivalent)
from a junior college will be accepted for a baccalaureate degree.
The Director of Admissions will review individual records of
applicants who do not meet recommended requirements, and
may offer probationary admission.

Graduate Students
Applicants for admission to postgraduate study in any college
of the University must meet the general requirements for admis-
sion to the Graduate College.

General Engineering Courses
- 611 Introduction to Engineering I
- 8 or 4 s.h.

- 612 Introduction to Engineering II
- 2 or 4 s.h.

- 613 Introduction to Engineering III
- 2 or 4 s.h.

- 614 Introduction to Engineering IV
- 2 or 4 s.h.

- 615 Introduction to Engineering V
- 2 or 4 s.h.

- 616 Introduction to Engineering VI
- 2 or 4 s.h.

- 617 Introduction to Engineering VII
- 2 or 4 s.h.

- 618 Thermodynamics I
- 3 s.h.

- 619 Thermodynamics II
- 3 s.h.

- 620 Thermodynamics III
- 3 s.h.

- 621 Thermodynamics IV
- 3 s.h.

- 622 Thermodynamics V
- 3 s.h.

- 623 Thermodynamics VI
- 3 s.h.

- 624 Thermodynamics VII
- 3 s.h.

- 625 Thermodynamics VIII
- 3 s.h.

- 626 Thermodynamics IX
- 3 s.h.

- 627 Thermodynamics X
- 3 s.h.

- 628 Thermodynamics XI
- 3 s.h.

- 629 Thermodynamics XII
- 3 s.h.

- 630 Thermodynamics XIII
- 3 s.h.

- 631 Thermodynamics XIV
- 3 s.h.

- 632 Thermodynamics XV
- 3 s.h.

- 633 Thermodynamics XVI
- 3 s.h.

- 634 Thermodynamics XVII
- 3 s.h.

- 635 Thermodynamics XVIII
- 3 s.h.

- 636 Thermodynamics XIX
- 3 s.h.

- 637 Thermodynamics XX
- 3 s.h.

- 638 Thermodynamics XXI
- 3 s.h.

- 639 Thermodynamics XXII
- 3 s.h.

- 640 Thermodynamics XXIII
- 3 s.h.

- 641 Thermodynamics XXIV
- 3 s.h.

- 642 Thermodynamics XXV
- 3 s.h.

- 643 Thermodynamics XXVI
- 3 s.h.

- 644 Thermodynamics XXVII
- 3 s.h.

- 645 Thermodynamics XXVIII
- 3 s.h.

- 646 Thermodynamics XXIX
- 3 s.h.

- 647 Thermodynamics XXX
- 3 s.h.

- 648 Thermodynamics XXXI
- 3 s.h.

- 649 Thermodynamics XXXII
- 3 s.h.

- 650 Thermodynamics XXXIII
- 3 s.h.

- 651 Thermodynamics XXXIV
- 3 s.h.

- 652 Thermodynamics XXXV
- 3 s.h.

- 653 Thermodynamics XXXVI
- 3 s.h.

- 654 Thermodynamics XXXVII
- 3 s.h.

- 655 Thermodynamics XXXVIII
- 3 s.h.

- 656 Thermodynamics XXXIX
- 3 s.h.

- 657 Thermodynamics XL
- 3 s.h.

- 658 Thermodynamics XLI
- 3 s.h.

- 659 Thermodynamics XLII
- 3 s.h.

- 660 Thermodynamics XLIII
- 3 s.h.

- 661 Thermodynamics XLIV
- 3 s.h.

- 662 Thermodynamics XLV
- 3 s.h.

- 663 Thermodynamics XLVI
- 3 s.h.

- 664 Thermodynamics XLVII
- 3 s.h.

- 665 Thermodynamics XLVIII
- 3 s.h.

- 666 Thermodynamics XLIX
- 3 s.h.

- 667 Thermodynamics L
- 3 s.h.

- 668 Thermodynamics LI
- 3 s.h.

- 669 Thermodynamics LII
- 3 s.h.

- 670 Thermodynamics LIII
- 3 s.h.

- 671 Thermodynamics LIV
- 3 s.h.

- 672 Thermodynamics LV
- 3 s.h.

- 673 Thermodynamics LVII
- 3 s.h.

- 674 Thermodynamics LVIII
- 3 s.h.

- 675 Thermodynamics LIX
- 3 s.h.

- 676 Thermodynamics LX
- 3 s.h.

- 677 Thermodynamics LXI
- 3 s.h.

- 678 Thermodynamics LXII
- 3 s.h.

- 679 Thermodynamics LXIII
- 3 s.h.

- 680 Thermodynamics LXIV
- 3 s.h.

- 681 Thermodynamics LXV
- 3 s.h.

- 682 Thermodynamics LXVI
- 3 s.h.
Chemical Engineering

Bachelor of Science

Department Head: Karl Kuhnert
Degree offered: B.S., M.S., Ph.D.

Undergraduate Programs

The undergraduate programs provide the basis for professional training in engineering, particularly that which deals with matter undergoing chemical change. Most chemical engineering graduates are employed in the chemical industry or in the plastics, rubber, synthetic fiber, pharmaceutical and petroleum industries. With the B.S. in chemical engineering, the engineer is prepared to do engineering work in design, supervision, development and sales.

To prepare the student for the chemical engineering profession, the curriculum includes extensive training in chemistry as well as a practical training in design. In addition to the basic engineering core of mathematics, engineering design, engineering sciences and humanities.

Undergraduate Curriculum

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>1st</th>
<th>2nd</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Principles of Chemistry I, II</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Elementary Chemistry</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Literature and Composition</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Introduction to Engineering I</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>22M, 35, 36</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mathematics I, II</td>
<td>5</td>
<td>5</td>
<td>10</td>
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<td>51, 11, 2</td>
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<tr>
<td>Laboratory I</td>
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<td>18</td>
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<td>41, 4</td>
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<td>3</td>
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<td>41, 44</td>
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Sophomore Year

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<tbody>
<tr>
<td>Organic Chemistry I, II</td>
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<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Advanced Chemistry Laboratory I</td>
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<td>2</td>
<td>4</td>
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Junior Year

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Physical Chemistry I, II</td>
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<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Advanced Chemistry Laboratory I</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Physics I</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Principles of Design I</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Electromagnetic Theory</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Mechanics of Fluids and Trimmer Processes</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Design for Energy and Momentum Transfer</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Survey of Chemical Industry</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Socioeconomic Elective</td>
<td>3</td>
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Senior Year

<table>
<thead>
<tr>
<th>Course</th>
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<th>2nd</th>
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</thead>
<tbody>
<tr>
<td>Structure of Materials</td>
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<td>6</td>
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<tr>
<td>Chemical Reaction Kinetics</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Mass Transfer Operations</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Unit Operations</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Economics I</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Socioeconomic Electives</td>
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<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Graduate Programs

The programs leading to the M.S. and Ph.D. are more flexible than the undergraduate program. The emphasis is on research, and graduates are employed in research and development of chemical manufacturing processes. About one-third of the program is devoted to research projects, and a thesis is required for each degree.

The principles of chemistry, physics, equilibrium and rate processes which are fundamental to chemical engineering have wide application, and this has resulted in interdisciplinary research involving biomedical problems, dental materials and envi-
Courses Primarily for Undergraduates

52191, 82, 83, 84 Professor Seminar 1 or 2 h.
Lectures and discussions on topics of current interest in chemical engineering. Required of juniors and seniors in chemical engineering: prerequisite: Junior standing.

52194 Chemical Reaction Kinetics 1 h.
Chemical reaction rate theory; reviewed and applied to design of reactors for engineering chemical reactions on large scale; prerequisites: 52.140, 141; 52.50, Chemistry 4.124

52195 Process Calculations 1 h.
Application of laws of conservation of mass and energy to solution of industrial problems; topics: distillation, energy balance; numerical balance; methods of computer calculation; three lectures; prerequisites: Mathematics 225.46, 53.06, 53.16; Chemical Engineering 5.142

52196 Structure of Materials 2 h.
Principles of chemical and physical analysis of principal chemical industries, process descriptions, flow charts, descriptions of types of instrumentation and control used in processes; two lectures; prerequisite: Chemistry 4.146

52197 Chemical Reaction Engineering Laboratory 1 h.
Laboratory course in experimental bases of chemical engineering processes in chemical engineering courses; two laboratory periods; prerequisites: 52.140, 141

52198 Heat Transfer 2 h.
Theory and calculation of heat transfer in chemical engineering devices; two lectures; prerequisites: 52.142, 143, 52.145

52199 Separations Processes 1 h.
Comprehensive theory of developing separation processes; applications to separations in chemical and petroleum engineering: two lectures; prerequisites: 52.140, 141, 52.145

52205 Chemical Engineering Thermodynamics 1 h.
Applications of the laws of thermodynamics to chemical engineering problems; two lectures; prerequisite: 52.150

52206 Kinetics of Chemical Reactions 1 h.
Linear and non-linear models for the design and optimization of chemical processes, photochemical processes, photobiological processes. A survey of methods for the solution of chemical engineering problems, and the development of new methods. Three lectures; prerequisite: 52.150

52207 Chemical-Engineering Power Design 1 h.
Integrative course in design of chemical processes and process equipment, requiring application of process synthesis, thermodynamics, and operations theory; senior; two lectures; prerequisite: 52.142, 143, 145

52208 Survey of Chemical Industry 1 h.
Field trips to leading chemical plants at St. Louis or Chicago. Four days of inspection, and an oral examination; two lectures; prerequisite: 52.140, 141

52211 Introduction to Nuclear Science and Engineering 2 or 3 h.
Introduction to nuclear science and nuclear engineering. Three lectures; prerequisites: 52.140, 141

52212 Special Problems 1 h.
Prerequisite: consent of instructor.
Civil Engineering

Department chairman: Harrison Kane
Degrees offered: B.S., M.S., Ph.D.

Undergraduate Program

Civil engineering is the engineering of constructed facilities: buildings, bridges, tunnels and dams; of harbors and airports; of waterways, railways and highways; of water power, irrigation, drainage and water supply; of sewerage and waste disposal and environmental-health systems.

In fact, if something is one of a kind, if it is large, if it is important in the daily lives of a great many people, the chances are that it was planned, designed and constructed by civil engineers.

The course of study in civil engineering at Iowa builds on the new College of Engineering curriculum and provides the basis for further depth of study in areas of specialization such as structural and foundation, environmental or transportation engineering.

Topics of study include transportation systems, water quality and air pollution control, solid-waste management, structural analysis and design and soil mechanics. Additional specialization, or greater breadth, may be achieved through the selection of appropriate technical electives.

Undergraduate Curriculum

Freshman Year

4:1 Principles of Chemistry I 3
4:6 Elementary Chemistry Laboratory 2
6:5.6 Literature and Composition I-II 8
32M:35,36 Mathematics I-II 10
51:12 Introduction to Engineering I-II 8
51:8 Statics 2
33

Sophomore Year

22M:37,38 Mathematics III-IV 6
51:6 Thermodynamics I 4
51:11,12 Dynamic Systems Analysis I-II 6
51:13 Materials Science 3
51:9 Dynamics 3
51:18 Mechanic of Fluids and Transfer Processes 4
51:19 Mechanics of Deformable Bodies 3
51:108 Sociohumanistic Electives 3
32

Junior Year

22B:329 Probability and Statistics for Engineering 3
51:251 Principles of Design I-II 6
51:35 Structural Analysis I 4
51:41 Civil Engineering Design I 3
51:61 Flow Systems in Environmental Engineering 3
51:81,82 Professional Seminar 0
51:165 Principles of Environmental Engineering 3
51:173,174 Transportation Engineering I-II 6
3

Total 129

Senior Year

29:42 Physics I 3
51:25 Electromagnetic Theory 4
51:83,84 Professional Seminar 0
51:165 Civil Engineering Design II 3
51:180 Senior Seminar 1
51:184 Soil Mechanics 3
3

Sociohumanistic Electives 9
Total Technical Electives 9
32

Graduate Programs

Work is offered in the general areas of environmental engineering and environmental science, structural engineering and foundations, traffic engineering and transportation planning, public works engineering, and water resources engineering. The environmental-engineering and science program is an approved interdisciplinary graduate program carried out cooperatively with the Department of Preventive Medicine and Environmental Health in the College of Medicine.

Admission Requirements

The prerequisite for admission to candidacy for the master's degree is normally the earning of a baccalaureate degree in civil engineering or a physical science, with a cumulative grade-point average of 2.5 (A = 4). Candidates who do not have an engineering degree or whose grade-point averages are slightly lower are invited to correspond regarding admission possibility. Undergraduate degrees in chemistry or the biological sciences are especially suitable for advanced studies in the environmental engineering program. For admission to candidacy for the doctorate, the minimum grade-point average is 3.2, based upon previous graduate work.

The student must meet the general admission requirements of the Graduate College (see "Graduate College").

Master of Science

There is considerable flexibility in the curriculum for the master's degree. The plan of study must include a minimum of 30 semester-hour credits, with or without thesis as determined by the candidate and his or her graduate committee.
Doctor of Philosophy
The doctoral degree is granted primarily on the basis of achieve-
manship and has no prescribed curriculum. The candidate will nor-
tually need at least three years of full-time work beyond the
undergraduate degree. He or she must pass written and oral
comprehensive examinations and must prepare and defend a dis-
sertation which contributes to knowledge in his or her field.
No foreign language is required.
The Department cooperates in interdisciplinary doctoral pro-
grams with the Program in Applied Mathematical Sciences (see "Graduate College").

Financial Aid
A number of fellowships, traineeships, assistantships or other
forms of aid are available. Selection of recipients is usually based
on scholastic achievement and research interest.

Staff: professors Bronson, Kane, McCuskey, associate professors
Davey, McGoff, McDonald, Meyers, O'Mara, Paulson; adjunct
associate professor Willis; associate professors Fisher, Wilson; in-
terdepartmental faculty (Preventive Medicine and Environmental
Health) Berry, Long, Powell, McMullen

Courses Primarily for Undergraduates
53:22 Surveying I 3 s.h.
Theory of measurements, methods and computations; mapping; route
surveying; geodetic surveying; photography and astronomy
3 or 4 s.h.
Shore and marine; trades and plane surveying; influence lines; simultane-
ous surveys; techniques; selection of routes by method of survey, Canoga's Theor-
em; monuments, conjugate beams, analysis of statically indeterminate
structures by methods of superposition, moment distribution; prerequisite: engineering 51:19
53:41 Civil Engineering Design I 3 s.h.
Basic statics and kinematic behavior of structural elements; design of reinforced
concrete beams, slabs, column design of steel tension members, compression
members, beams, connections, applications to design of structures prerequisite: engineering 51:39
53:61 Elementary Bio-Engineering 3 s.h.
Principles of basic biology; emphasis on application to problems in engineering
53:81 Flow Systems in Environmental Engineering 3 s.h.
Application of knowledge in thermodynamics and hydrodynamics to
water, wastewater, geologic flow systems; consideration of water and air travel
through biosystems. prerequisite: engineering 51:39
53:92, 93, 95 Professional Seminar no cr.
Lectures and discussions on topics of current interest; in civil engineering required
of juniors and seniors in civil engineering, prerequisite junior standing

Courses for Undergraduates and Graduates
53:100 Civil Engineering II 3 s.h.
Principles of civil engineering design and application in either environmental
(Env.) or general (Gen.) civil engineering (Env.) engineering
5 or 4 s.h.
53:105 Technology and Society 2 s.h.
Sociology in Engineering 51:35 and American Civilization 45:110
53:110 Special Studies 2 to 3 s.h.
Departments may authorize special studies selected by student subject to approval
53:155 Man and His Environment 3 s.h.
Application of civil engineering principles to control of air-water-land
environment for health and well-being of mankind; course includes air and
water resources, solid wastes management, environmental health, legal and pro-
cess aspects
53:211 Structural Analysis II 3 s.h.
Modern theory of reciprocal displacements, Blackman-Branson principle, conjugate
beams, moment equalities and shock deflection methods including transcendental
products and strain methods; temperature stress introduction to structural
analysis by computer. prerequisite: 53:21
53:320 Computer Applications In Structural Analysis 3 s.h.
Analysis of structures by use of digital computer; slope deflection, moment dis-
placements, boundary value problems in structural analysis, prerequisite: 53:21
53:325 Structural Design II 3 s.h.
Design of reinforced and prestressed concrete beams and slabs; finite element,
finite strip methods; design of reinforcement; deflections and stresses in
beams; use of computer; simple prestressed concrete structures
53:327 Environmental Engineering-Dissertations 3 s.h.
Propriety of engineering environmental special emphasis on wet and concrete; rotation
of physical and chemical properties to physical properties; prerequisite: can be taken
for credit
53:345 Structural Design I 3 s.h.
Free and forced vibration design; composite design, high rise building design,
load analysis and plastic design, yield-line theory of slabs, foundations and design of
simple and multi-story structures; presentation of structural courses, essential roof de-
sign; prerequisite: permission of instructor
53:347 Computer Applications In Structural Design 3 s.h.
Design of structural systems using static and modal dynamic theories; prerequisite:
53:21, 53:325
53:349 Prestressed Concrete 3 s.h.
Analysis and design of statically indeterminate and load-carrying members and
structures; field review of current literature and specifications; prerequisite:
53:347
53:351 Environmental Microbiology 3 s.h.
Elements of microbiology for environmental engineers; applications to water quali-
city, control; lectures and laboratory; prerequisite or computer: 53:116, course in
biology or consent of instructor
53:352 Environmental Toxicology 3 s.h.
For engineers and others who desire knowledge of toxic, metabolistic, ecological
effects of toxic substance in environment; prerequisite; course in biology or consent
of instructor
53:358 Environmental Health 3 s.h.
Lectures covering major problems of environmental health concern in modern
society; governmental regulations of food and drink, air pollution, waste disposal,
noise, occupational health, controls, communicable disease, etc., stressing
theoretical and practical aspects; prerequisite: computer: 53:21, 53:93, 53:347
53:359 Laboratory of Environmental Health 2 s.h.
Lectures covering application of general, qualitative, analytical, organic, physical,
chemical, biologic, and radiological in environmental engineering
53:357 Environmental Chemistry II 3 s.h.
Chemical and physical principles applied to water quality control, air pollu-
tion control, solid wastes systems
53:358 Environmental Engineering Laboratory 2 s.h.
Laboratory study of standard methods for examination of water and wastewater
and applications in control of water and wastewater treatment operations; prereq-
usite: 53:357
53:361 Principles of Environmental Engineering 2 s.h.
Physical, chemical, biological principles applied to water quality control, air pollu-
tion control, solid wastes control
53:362 Environmental Engineering I 3 s.h.
Lectures and laboratory on principles of design and control of water quality,
clean water systems
53:363 Environmental Engineering II 3 s.h.
Lectures and laboratory on principles of design and quality water control systems; prerequisite: 53:140
53:365 Environmental Engineering III: Air Pollution and Solid
Wastes 3 s.h.
Analysis and design of air pollution and solid waste control systems, sources and
characterization of air pollutants and solid wastes, need for control to protect total
environment
53:366 Solid-Waste Technology 2 s.h.
Principles of design and operation of solid waste collection and disposal systems;
determination of solid waste characteristics, analysis of solid wastes disposal
issues, identifying landfill, incineration, incineration and utilization of
wastes, transportation, conservation, and pollution of resources, prerequisite: 53:358 or consent of instructor
53:369 Water Quality 2 s.h.
Chemical, physical, biological characteristics of natural waters, emphasis on rela-
tionships between bio-physicale aspects of aquatic environment
53:371 Transportation Engineering 2 s.h.
Formulation of traffic flow models; application of statistical theory in traffic;
laboratory, programming of traffic systems; prerequisite or computer Edu-
cation 70:47 or Industrial and Management Engineering 56:150 or consent of instructor
53:375 Transportation Engineering I 3 s.h.
Location and design of route of transportation; measurements and geometry of
traffic and hydrological factors, photography and air photo interpretation;
networks and diagrams; property rights and acquisition
Electrical Engineering

52:174 Transportation Engineering II 3 s.h.
Methods and systems of transportation; transportation in United States economy, regulation and control; financing, taxation, subsidy and public policy, traffic study, present design concepts
52:175 Transportation Safety 2 or 3 s.h.
Safety aspects of various modes of transportation; emphasis on motor vehicle safety aspects and gravity of transportation accident situation and consideration of countermeasures for prevention of accidents and reduction of accident severity
52:176 Accident Analysis 3 s.h.
Analysis of accidents, physical forces in accident events; resultant injuries to persons, animals and infrastructure to materials and structures; prerequisites: 52:174
52:177 Traffic Engineering I 3 s.h.
Operation of road and street systems, design and improvement, including control of traffic for safety and efficiency; elective for civil engineering seniors and graduate students
52:178 Safety Aspects of Transportation Vehicles 3 s.h.
Analysis and design of transportation vehicles with safety as prime concern; emphasis on highway vehicles, but airplanes, trucks, other transportation vehicles also considered; responsibility of vehicle to humans and its adaptability to humans included; design considerations: prerequisites: consent of instructor
52:184 Soil Mechanics 3 s.h.
Engineering properties of soils; subsurface exploration; natural soil deposit; laboratory testing; prerequisites: Engineering 51:19
52:185 Advanced Soil Mechanics 3 s.h.
Steady state and transient flow through soil; stress-strain behavior, strength theory, shear strength of soil; prerequisites: 52:184 or consent of instructor
52:186 Foundations of Structures 3 s.h.
Application of soil mechanics to foundations of buildings; bearing capacity and settlement analysis; stability of earth slopes; earth pressure and retaining walls; breast cut; prerequisites: consent of instructor
52:189 Measurement of Soil Properties 1 s.h.
Advanced laboratory techniques including permeability, consolidation, triaxial tests; stress distribution and behavior changes measurement
52:191 Project Organization, feasibility considerations, financing methods, reports, negotiations, contract documentation; elective for seniors and graduate students

Courses Primarily for Graduates
52:310 Advanced Structural Mechanics 3 s.h.
Special topics or investigation of selected problems by advanced students subject to permission of Department
52:320 Seminar: Civil Engineering 2 or 3 s.h.
Research and research subjects. Advanced civil engineering by advanced students, faculty and visiting engineers
52:354 Advanced Theory of Structures 3 s.h.
Statics analysis of structures: general stiffness, direct stiffness, feasibility methods to advanced level of design of elements including beams, frames, frames, unitary two-dimensional continua by finite element techniques; prerequisites: consent of instructor
52:364 Advanced Structural Analysis by Numerical Methods 3 s.h.
Finite difference and finite element methods applied to beams, plates, plates, elasticity problems, partial differential equations problems, stiffness method, deflections and strength of structures, solutions of numerous practical problems applied to elastic and inelastic structures; practical procedures applied to elastic and inelastic structures; theoretical basis of structural stability; problems, elastic and plastic methods, combinations of these for problems and consistent assumptions; solution of practical problems, nonlinear analysis; use of digital computers; prerequisites: consent of instructor
52:380 Research: Civil Engineering 3 s.h.
Experimental and analytical investigations of approval problem in civil engineering
52:393 Model Analysis and Experimental Methods 3 s.h.
Similarity requirements for direct, indirect, distorted models elastic and isotropic modeling for reinforced concrete structures; general research techniques for experimental investigation: determination of design and interpretation of data; prerequisites: consent of instructor
52:416 Advanced Structural Design 3 s.h.
Advanced design is of steel, aluminum, concrete structures; concrete shell design; prerequisites: consent of instructor
52:247 Stability of Structural Systems 3 s.h.
Stability analysis, theory of structures, finite element, information theory, variational methods, beams, plates, rigidity beam and buckling behavior; plastic buckling; same as Mechanics and Hydraulics 72:247; prerequisites: consent of instructor
52:320 Seminar: Environmental Engineering 0 or 1 s.h.
Reports and discussion of research and recent advances in environmental engineering by students, faculty, guest lecturers
52:347 Environmental Chemistry 3 s.h.
Lecture and laboratory dealing with advanced instrumental methods of analyzing water and wastewaters: prerequisites: 53:327
52:350 Environmental Engineering Systems Laboratory 3 s.h.
Laboratory study and analysis of physical, chemical, biological systems utilized in environmental systems-engineering projects; prerequisites: consent of instructor and consent of instructor
52:354 Industrial Water-Quality Control 3 s.h.
Application of modern and wastewater treatment systems; water quality needs for various industrial uses; soil operations to achieve required water sources and characteristics of industrial wastes and soil operations applied to control of industrial wastes: prerequisites: 53:157, 163, 164
52:358 Applied Ultrasonics 3 s.h.
Practical application of ultrasonic techniques to streams analysis and water quality investigations; prerequisites: 53:148
52:366 Environmental Systems Engineering: Special Topics 3 s.h.
Selected study of selected topics in water quality control, air pollution sources, solid waste disposal, evaluation of current research reports and advances in environmental engineering practice, may be repeated for credit; prerequisite consent of instructor
52:473 Urban Transportation Planning 3 s.h.
Application of city-planning techniques and traffic engineering models towards solution of urban transportation problems; travel characteristics, forecasting methods, traffic generation, distribution and assignment modeling; prerequisite: consent of instructor
52:571 Transportation Systems I 3 s.h.
Design, construction, operation of urban and interregional transportation systems and terminal and exchange facilities; prerequisites: consent of instructor
52:586 Earth Pressures and Retaining Structures 3 s.h.
Earth pressures and earth stability; experimental studies of earth pressures and stability in soils; theoretical and empirical basis for design of retaining walls, earth fills and reinforced earths. Same as Civil Engineering 76:586; prerequisites: 53:191 or consent of instructor
52:594 Seminar: Water Resources Development 3 s.h.
Interdisciplinary seminar on sociological, economic, engineering aspects of water resources development; same as Mechanical and Hydraulics 72:594; prerequisite approval of Department

Electrical Engineering

Department Chairman: Earl E. Zuman
Degree offerings: B.S., M.S., Ph.D.

Undergraduate Program

The undergraduate program provides the basis for professional training in engineering, particularly that which deals with the electronics of instrumentation, communications systems, comput- ers, and electric power generation and distribution. Electrical engineers are employed in space satellite, semiconductor, air- craft, radio, television, computer and power industries. With the B.S. in electrical engineering, the engineer is prepared to do engineering work in design, development, manufacturing, sales, market analysis, consulting, field service and management.

To prepare the student for the electrical engineering profes- sion, the curriculum provides a strong background in circuits, control systems, electromagnetics, communication theory, elec- trronics and design. In addition to the basic engineering core of mathematics, engineering design, engineering science and humanities, Technical electives and advanced programs are offered in active and passive network synthesis, switching theory, and the design of digital systems, plasma physics, electromagneti- c field theory, and stochastic systems and control theory.
Graduate Programs
The programs leading to the Master of Science and the Doctor of Philosophy are more flexible than the undergraduate programs. Both thesis and nonthesis M.S. programs are available and either may be followed by a Ph.D. program of study.

The breadth of study in electrical engineering, having a wide application and this has resulted in interdisciplinary research areas such as computer simulation in biomedical problems. Graduate students are encouraged to take courses in several interdisciplinary areas. Opportunities are available for the graduate student to choose his or her own interests and participate in a creative effort. Some financial aid is available for the qualified student.

The College of Engineering's Guided Self-Study Program enables students in neighboring cities to take courses while employed full time. Research can be carried out by these students during the summer and through the independent study sessions.

Admission Requirements
The normal admission requirement of the Department is at least a 2.7 grade-point average on all courses in electrical engineering, mathematics, and physics for M.S. students. 3.0 for Ph.D. students. An M.S. student with a grade-point average less than 2.7, but better than 2.3 on courses in electrical engineering, mathematics, and physics, may be admitted on a probationary status. Each application is reviewed on an individual basis. Exemptions in circumstances may permit deviations from the normal standards.

Master of Science
Both thesis and nonthesis programs are available. The degree requires at least 30 semester hours of credit in an approved, coherent program acceptable to the advisor and the graduate committee. This must include at least 12 semester hours of coursework in electrical engineering, not including courses required for electrical engineering undergraduates, and at least nine semester hours of coursework in electrical engineering, ordinarily from mathematics and physics. With thesis, up to eight semester hours of the 30 semester hours may be research credit. Without thesis, at least three semester hours of 50-123 Independent Study are required in addition to the 12 semester hours. This Independent Study is to be a special project completed under the supervision of the student's program advisor.

The student must also pass the M.S. level in the electrical engineering graduate qualifying examination. Thesis students must also successfully complete a final examination consisting of an oral defense of the thesis.

Doctor of Philosophy
The Ph.D. degree implies a research degree. It is not awarded for successfully passing a number of courses or examinations alone, but is also based on high-quality research. Requirements other than those stated in the University's graduate manual are:

• Selection of a program advisor and filing of a tentative plan of study with the Department; done in the first year
• Qualification at the Ph.D. level in the electrical engineering graduate qualifying examination

• Successful completion of the Ph.D. comprehensive examination
• Successful completion of a research program
• Successful completion of a final oral defense of the thesis

Financial Aid
A number of fellowships, traineeships, assistantships, scholarships, and industrial grants are available to graduate students who qualify. These are awarded on a competitive basis.

Special Facilities
The Department has laboratories for microcircuits, plasma physics, dynamic systems, logic and digital systems, control systems, hybrid computer and a laboratory for special projects. All students have access to remote terminals connected by telephone to the Computer Center IBM 360/65.

Staff: professors Epley, Lymar, professors emeriti Kurtz, Manzer, Ware, associate professor Altman, Chiang, Huauo, Levy, Loh, Longren, Malk, Robinson, Reddy

Courses Primarily for Undergraduates

5831 Logic and Digital Systems
Introduction to switching, combinational circuits, AND-OR-INVERT, positive and negative feedback, introduction to digital computer hardware, design, organization and operation; study of subsystems and device; 3 hours, lecture; prerequisites: 5123.

5832 Electrical Circuits II
3 hours
Physical properties of solid state electronic devices; circuit analysis; introduction to digital computer hardware, design; course must be supplemented; 3 hours, lecture; prerequisites: 5123.

5833 Electromagnetic Theory
3 hours
Topics in electromagnetic theory, wave propagation, boundary conditions, time and frequency domain properties of transmission lines, microwave techniques, waveguide and cavity resonators, lattice theory, ferrite; 3 hours, lecture; prerequisites: 5832.

5851 Control and Communication I
3 hours
Linear system analysis; design of analog and digital control systems; 3 hours, lecture; prerequisites: 5833.

5852 Control and Communication II
3 hours
Nonlinear system analysis; design of analog and digital control systems; 3 hours, lecture; prerequisites: 5832.

5853 Electrical Engineering Materials and Devices
3 hours
Study of electrical and magnetic properties of materials, semiconductor electronics, physics, plasma physics, semiconductors; prerequisites: Physics and Astronomy 30-60.

5854 Principles of E.E. Design I
3 hours
Introductory design course; 3 hours, lecture; prerequisites: 5832.

5855 Principles of E.E. Design II
3 hours
Introductory design course; 3 hours, lecture; prerequisites: 5832.

5871 Principles of E.E. Design III
3 hours
Introductory design course; 3 hours, lecture; prerequisites: 5832.

5880 Professional Seminar
3 hours
Introductory design course; 3 hours, lecture; prerequisites: 5832.

5881 Topics in Electrical Engineering
1 to 3 hours
Special topics in electrical engineering, 1 to 3 hours; prerequisites: permission of instructor.
Industrial and Management Engineering

Industrial and Management Engineering

Department chairman: Harry L. Soehekkers
Degree offered: B.S., M.S., Ph.D.

Undergraduate Program

The general nature of industrial engineers' work is the design and implementation of productive systems involving optimal use of resources—human, material, and financial. The systems involved may range from extremely large ones to small subsystems. In arriving today and tomorrow for the conservation and improvement of this world's environment, the importance of such optimal systems design can hardly be overemphasized. The abilities of the industrial engineer provide, therefore, unique capability for significant contribution to the welfare of the world.

Employment opportunities for the industrial engineer are among the most varied of any of the engineering fields. The industrial engineer may hold a staff position advising management in an organization. He or she may be in line units participating directly in management decisions and may work with other professionals as a member of a team. The work may be for a manufacturing firm, for a service company such as an airline, railroad, bank or hospital, or for a government agency. Because of his or her vital participation in management decisions, the industrial engineer has many opportunities for advancement.

Undergraduate students become directly involved in the design of real world's systems. Recent upper-level students have completed projects for a number of organizations, including hospitals, Goodwill Industries, printing companies, banks and wholesalers, and a variety of manufacturing industries.

The undergraduate curriculum in industrial engineering requires a strong foundation in management science, mathematics, design and socio-humanistic studies. Departmental electives include operations research, statistics, computer science, materials processing and physical metallurgy.

Undergraduate Curriculum

Freshman Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Principles of Chemistry I</td>
</tr>
<tr>
<td>46</td>
<td>Elementary Chemistry Laboratory</td>
</tr>
<tr>
<td>55-56</td>
<td>Literature and Composition I-II</td>
</tr>
<tr>
<td>51M-51</td>
<td>Mathematics I-I</td>
</tr>
<tr>
<td>51M-51</td>
<td>Introduction to Engineering I-II</td>
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</tbody>
</table>

Sophomore Year

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>22M-27-28</td>
<td>Mathematics III-IV</td>
</tr>
<tr>
<td>51M-11-12</td>
<td>Dynamic Systems Analysis I-II</td>
</tr>
<tr>
<td>51M-15</td>
<td>Materials Science</td>
</tr>
<tr>
<td>51M-17</td>
<td>Mechanics of Solids</td>
</tr>
<tr>
<td>55-56</td>
<td>Materials Processing I</td>
</tr>
<tr>
<td>56-107</td>
<td>Management Engineering Science</td>
</tr>
<tr>
<td>56-128</td>
<td>Materials Science II</td>
</tr>
<tr>
<td>32</td>
<td>Sociohumanistic electives</td>
</tr>
</tbody>
</table>

Junior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>22S-25</td>
<td>Probability and Statistics for Engineering and Physical Sciences</td>
</tr>
<tr>
<td>29-92</td>
<td>Physics I</td>
</tr>
<tr>
<td>51M-6</td>
<td>Thermodynamics I</td>
</tr>
<tr>
<td>51M-21-22</td>
<td>Principles of Design I-II</td>
</tr>
<tr>
<td>51M-25</td>
<td>Electromagnetic Theory</td>
</tr>
<tr>
<td>56-81</td>
<td>Professional Seminar</td>
</tr>
<tr>
<td>56-132</td>
<td>Engineering Statistics</td>
</tr>
<tr>
<td>56-130</td>
<td>Technical elective</td>
</tr>
<tr>
<td>56-130</td>
<td>Sociohumanistic electives</td>
</tr>
</tbody>
</table>

Senior Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Professional Seminar</td>
</tr>
<tr>
<td>56-141</td>
<td>Introduction to Operations Research</td>
</tr>
<tr>
<td>56-144</td>
<td>Information Systems Design</td>
</tr>
<tr>
<td>56-141</td>
<td>Design of Methods and Measurement Systems</td>
</tr>
<tr>
<td>23</td>
<td>Materials elective</td>
</tr>
<tr>
<td>23</td>
<td>Sociohumanistic electives</td>
</tr>
<tr>
<td>23</td>
<td>Technical elective</td>
</tr>
<tr>
<td>23</td>
<td>Science core elective</td>
</tr>
</tbody>
</table>

Total—128
Strongly recommended a-blobassistmatic electives include:
31.1 Elementary Psychology
31.155 Human Engineering
31.156 Psychology in Management
Some Core Electives:
59.83 Physics II
51.18 Fluids and Transfer Processes
51.19 Mechanics of Deformable Bodies or a biological science course

Graduate Programs
The purpose of the industrial and management engineering graduate programs at both M.S. and Ph.D. levels is to provide a modern, highly flexible curriculum for graduate studies. As far as feasible, each student’s course of study will be based on individual background and career objectives. Course selections suitable for emphasis in engineering management, human factors, operations research, applied statistics, materials and processing, or quality assurance are available.

Research carried out by graduate students is frequently an interdisciplinary nature involving, for instance, environmental improvement, health and educational systems and corporate planning. In addition to research for the M.S. and Ph.D. programs, students may participate in a research project by registering for an individual investigation course. Research can also be carried out during the summer sessions.

Financial support is available through a limited number of scholarships, fellowships, traineeships, loans, and assistantships. Stipends vary from a full scholarship of $410 to a fellowship that might amount to over $5,000 for a calendar year of graduate study. Awards are based on the student’s academic record, financial need and upon an assessment of the student’s potential contribution to the Department’s program and to the profession.

Master of Science
Students may be admitted to accredited baccalaureate curricula in any field having discipline and the mathematical or physical sciences with a minimum grade-point average of 2.5 (A = 4) or an acceptable score on the Graduate Record Examination Aptitude Test (minimum 450 Verbal, 600 Quantitative). Students may be considered for conditional admission with a 2.3 grade-point average. Students may also be considered for admission from biological or social science programs.

The minimum M.S. program requires 30 semester hours of coursework and research. Thesis and nonthesis programs are available. Most students, however, are encouraged to obtain the master’s degree with thesis. Each student’s plan of study is determined individually through consultation with his or her adviser and is approved by the degree committee.

Entering students will find some background in computer programming, probability and statistics, engineering economics, human factors, and quality assurance helpful preparation. Compensating coursework may be required for students with nonengineering background. Each program will be evaluated on an individual basis.

To be eligible for the M.S. degree the student is required to maintain a minimum grade-point average of 2.75 on a minimum of 30 semester hours of graduate work.

Industrial and Management Engineering

The nature of the final examination will be specified by the examining committee. It may comprise both written and oral parts. The examination will explore further the student’s course preparation and/or the student’s defense of his or her thesis or appropriate individual investigation.

Doctor of Philosophy

Students may be admitted from accredited baccalaureate curricula in any engineering discipline and the mathematical and physical sciences with a minimum grade-point average of 3.0 or an acceptable score on the Graduate Record Examination Aptitude Test (minimum 500 Verbal, 700 Quantitative). Students may also be admitted from biological or social science programs on an individual basis. A qualifying examination may be required.

Admission to degree candidacy will require a minimum grade-point average of 3.25 on relevant graduate work and the demonstration of capability for individual achievements. No foreign language is required.

Upon completion of the coursework specified by his or her committee and upon recommendation by the major advisor, the student will be admitted to the comprehensive examination. During this examination (both written and oral) the student will be examined over the advanced coursework in his or her program. Part of this examination will usually include the presentation of a dissertation proposal so that the comprehensive committee can evaluate the student’s academic preparation in the light of the research to be performed.

Having satisfactorily completed this examination, the student is a full candidate for the Ph.D. and normally has only to complete and defend the dissertation.

Graduate students interested in law or transportation can participate in dual programs, which incorporate either a number of legal and industrial engineering courses or a number of courses in transportation and industrial engineering.

Laboratories of the Department of Industrial and Management Engineering include various human factors and materials processing laboratories, a systems design laboratory and a computer laboratory. Excellent supporting facilities and staff also exist in computer sciences, statistics, psychology and other engineering disciplines.

In cooperation with the Quad Cities Graduate Study Center, the Department offers a full extension program in Engineering Management and Industrial Engineering in the Quad Cities Area.

In addition, the Department has a guided self-study program available to students on and off campus.

Staff: professors Dorgan, Leone, Littschwager, Simon; associate professors Bedlow, Beemakker, Melnik, Ramberg; assistant professor Kiffy

Courses Primarily for Undergraduates

56.24 Materials Processing 1 3 or 4 a.h.
Promotion of initially imperfect materials by casting, welding, forging, hot-working, non-production tools and techniques, elemental control, planning of manufacturing operations.
58.94 Professional Seminar 4 or 5 a.h.
Guest lecturers, student reports and seminars, required of senior students in Industrial and Management Engineering.
58.95 Professional Seminar 4 or 5 a.h.
Guest lectures, student reports and seminars, required of senior students in Industrial and Management Engineering.
Courses for Undergraduates and Graduates

56:191 Introduction to Industrial and Management Engineering 4 a.h.
Methods of estimation and engineering economics elements developed in the study of process, systems, product, project, and process: justifying the investment.

56:195 Engineering Administration 5 a.h.
Human and economic factors, typical social science research, management of human resources, economic factors, and quality issues.

56:197 Engineering Management Science 3 a.h.
Aspects of management sciences focusing particularly suitable for management and administration of engineering functions, including an overview of engineering, manufacturing, and management science research, one effectiveness analysis.

56:199 Individual Study 2 to 5 a.h.
Prerequisites: Departmental permission

56:228 Project Introduction 1 a.h.
An examination of the application and design, with design constraints, of a scientific study, particularly for engineering students, focusing on senior standing.

56:230 Statistics II 3 to 4 a.h.
Selection of research and development of statistical methods, analysis of engineering data, statistical estimation, analysis of design data, selection of design data, statistical estimation, design of experiments, and hypothesis testing.

56:239 Operations Analysis in the Health-Care Profession 3 a.h.
Introduction to the product-state analysis of medical and health organizations, source material, and research on demand.

56:248 Probability and Statistics for Engineering and Physical Sciences 3 a.h.
Probability models, random variables, functions of random variables, expectations, joint distributions, estimation, hypothesis testing, regression, probabilistic mathematics.

56:250 Engineering Statistics 3 to 4 a.h.
Introduction to the product-state analysis of medical and health organizations, source material, and research on demand.

56:263 Quality Control and Reliability 3 a.h.
Basic control charts, process capability, control charts, control charts, correlation, correlation, regression, and correlation analysis.

56:266 Computer-aided Manufacturing 3 a.h.
Introduction to computer-aided manufacturing, including the design of computer-aided manufacturing systems, and the design of computer-aided manufacturing systems, including computer-aided manufacturing systems.

56:270 Digital-Signal Processing System 1 a.h.
Simulation of operating characteristics of complex systems using expert systems, digital communication systems, and expert systems.

56:297 Analysis of Information Systems Design 3 a.h.
Systems design, information operations, managing information systems, managing information systems, and managing information systems.

56:299 Human Engineering 1 a.h.
Design of systems for the design of systems for the human work environment, with an emphasis on applying principles of behavioral science and sensory and perceptual principles, with an emphasis on applying principles of behavioral science and sensory and perceptual principles.

56:555 Health Care Management 5 a.h.
Application of psychological principles to human resources and manpower decisions, motivation, leadership, communication, group processes, and other topics, same as Psychology 15:155.

56:557 Design of Methods and Measurement Systems 4 a.h.
Problem-solving techniques, design of experiments, fundamentals of human factors, psychology, and other topics, same as Psychology 15:155.

56:561 Industrial Engineering Laboratory 2 to 4 a.h.
Theory and management of manufacturing systems, including magnetic particle, dielectric, ultrasonic, radiographic, and other methods of inspection.

56:563 Industrial Engineering Laboratory 3 a.h.
Analysis, design, testing of materials processing systems, pure materials science.

56:571 Materials Processing II 2 to 4 a.h.
Introduction to the product-state analysis of medical and health organizations, source material, and research on demand.

56:572 Materials Science II 3 to 4 a.h.
Materials science and engineering, manufacturing, and materials science.

56:590 Materials Science I 3 to 4 a.h.
Materials science and engineering, manufacturing, and materials science.

56:151 Probability and Statistics for Engineering and Physical Sciences

56:152 Probability and Statistics for Engineering and Physical Sciences

56:153 Engineering Statistics

56:154 Project Introduction

56:155 Statistic Introduction

56:248 Project Introduction 1 a.h.
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56:571 Materials Processing II 2 to 4 a.h.
Introduction to the product-state analysis of medical and health organizations, source material, and research on demand.

56:572 Materials Science II 3 to 4 a.h.
Materials science and engineering, manufacturing, and materials science.
56:361 Quantitative Investment Analysis I 3 s.h.
Measuring benefits and costs of investments; establishment of criteria and procedures for investment decisions; coverage includes investment for capacity expansion, new location and site planning; for graduate engineering, business, computer sciences and mathematics students; prerequisite: 56:341 or equivalent.

56:362 Mathematical Programming I 3 s.h.
In-depth treatment of optimization topics and mathematical programming applied to decision problems; coverage includes gradient and Lagrangean methods, linear and nonlinear programming, prerequisite: graduate standing and knowledge of matrix algebra.

56:363 Mathematical Programming II 3 s.h.
Continuation of 56:362, coverage includes large scale mathematical programming aspects of duality theory and other current topics in field; prerequisite: 56:362.

56:364 Software Systems for Management Science 3 s.h.
Advanced concepts of computer systems as applied to management sciences; study of feasible optimization, operating system concepts, data file structures; analysis of available programming systems useful in study of management systems, including general information storage, retrieval, data analysis systems; single, database, parallel processing, data sharing systems, account; design and implementation of computer software systems; prerequisite: computer programming experience, e.g., Fortran.

56:365 Stochastic Service Systems I 2 to 4 s.h.
Stochastic processes in finite and infinite systems, generalized renewal, other service systems; prerequisite 56:310, Statistics 229:39 or equivalent.

56:366 Stochastic Service Systems II 2 to 4 s.h.
Study of dynamic probabilistic models; operations research and management science, prerequisite: 56:310 or Statistics 229:39.

56:385 Integer Programming and Network Flows 3 s.h.
Study of algebraic and linear programming problems in which variables are restricted to be either zero or one; includes cutting plane, enumeration, branch and bound, dynamic programming, graph theory algorithms; special structures of network problems studied, algorithms derived; network flow applications to transportation, assignment, and similar areas included; prerequisite: 56:342 or equivalent.

56:399 Digital Systems Simulation I 2 to 4 s.h.
Construction of digital systems I/O using advanced language such as Siemens, additional topics include methods for analyzing simulation programs and Miller-Cort焛 methods.

56:406 Quantitative Investment Analysis II 3 s.h.
Theory and structure of credit and securitization markets; specific applications of economic techniques to research in securities; includes real estate, consumer, and corporate finance, economics, corporate security, investment banking, management, etc.

56:407 Material Processing III 3 to 4 s.h.
Review of theory of elasticity and plasticity, survey of structures and methods of deformation of solids, mechanical evaluation of materials, plastic forming processes.

56:409 Powder Science 2 to 4 s.h.
Properties and processing of particulate materials of interest to the seeking understanding of broad range of industrial activity and opportunity to apply mathematical, statistical and computer techniques to variety of significant powder problems; specific topics include physicochemical effects, production, characterization, identification, and application of particulate systems, use of engineering, economic and other analyses, mechanical, chemical, physical, testing, etc. Particular emphasis on solids characterization, agglomeration, structure, processing and properties of powders.

56:446 Mobile-Construction Techniques 3 s.h.
Mobile-Construction Techniques. Introduction of the theory and applications to linear scale models, financial planning and management of portable equipment and geographic positioning in capital investment problems and site, current topics to field; capital structure and risk, and long-term financing techniques, for graduate engineering, business, computer science and mechanics students, prerequisite: 56:341 or equivalent.

56:447 Quantitative-investment Analysis II 3 s.h.
Further topic to the investment included in price theory and applications to investment decisions, financial planning and management of equipment, geographic positioning in capital investment problems and site, current topics to field; capital structure and risk, and long-term financing techniques, for graduate engineering, business, computer science and mechanics students, prerequisite: 56:341 or equivalent.

Mechanical Engineering

Department Chairman: Robert G. Heling
Degrees offered: B.S., M.S., Ph.D.

Undergraduate Programs
The undergraduate program in mechanical engineering prepares the student for a career in engineering with an emphasis on the technical areas of thermal energy systems and the conversion of thermal energy to mechanical and electrical energy, mechanical systems and machines, and design and control of these systems.

Mechanical engineers may become members of enterprises such as manufacturing organizations, research organizations, federal government and state agencies, and private consulting organizations. The area of work may include product design, facilities planning, plant operation, research and development, and sales. After attaining experience, the mechanical engineer may be asked to apply his or her analytical ability and technical background to broader problems, including management of resources and general planning.

The undergraduate curriculum provides a substantial number of electives in both the technical and socio-humanitarian areas. In consultation with his or her advisor, a student can plan to develop capabilities to meet individual goals within the framework of the curriculum. All upperclassmen are strongly encouraged to undertake individual projects involving either an experimental or analytical design solution to a current problem.

Undergraduate Curriculum

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>s.h.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1</td>
<td>3</td>
</tr>
<tr>
<td>2/1</td>
<td>2</td>
</tr>
<tr>
<td>6/12-6</td>
<td>4</td>
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<tr>
<td>6/14-12</td>
<td>4</td>
</tr>
<tr>
<td>6/18</td>
<td>2</td>
</tr>
<tr>
<td>6/18</td>
<td>2</td>
</tr>
</tbody>
</table>

Sophomore Year

| 22M17-38 Mathematika I-IV | 3    |
| 51/11-12 Dynamic Systems Analysis I-II | 3 |
| 51/15 Materials Science | 3    |
| 51/18 Dynamics | 3    |
| 15/19 Mechanics of Fields and Transfer Processes | 3 |
| 51/16 Thermodynamics | 4    |
| 51/30 Thermal Systems | 3    |

| 16 | 16 | 32 |

Preliminary course of instruction
Mechanical Engineering

Senior Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>225.39</td>
<td>Probability and Statistics for Engineering and Physical Sciences</td>
<td>3</td>
</tr>
<tr>
<td>29.82</td>
<td>Physics I</td>
<td>3</td>
</tr>
<tr>
<td>51.21–22</td>
<td>Principles of Design I–II</td>
<td>3</td>
</tr>
<tr>
<td>51.25</td>
<td>Electromagnetic Theory</td>
<td>4</td>
</tr>
<tr>
<td>58.52</td>
<td>Experimental Engineering</td>
<td>4</td>
</tr>
<tr>
<td>58.62</td>
<td>Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Sociotechnic Electives</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>128</strong></td>
</tr>
</tbody>
</table>

Graduate Program

Graduate programs leading to the Master of Science, both with and without thesis, and to the Doctor of Philosophy degrees are available to qualified students. General degree requirements are specified in the “Graduate College” section of this catalog. No explicit requirements beyond those specified by the Graduate College are imposed by the Department in keeping with the belief that the student’s program can best be developed individually within the framework of the College requirements. It is felt that both the appropriateness of the student’s program and his or her depth of achievement in it is adequately assured by the advisor and through a review by the examining committee. As soon as possible after admission, each student should select a Department faculty member who by mutual agreement will serve as major advisor to the student. The major advisor will assist the student in planning all aspects of his or her graduate program and usually will serve also as the research advisor.

The Department of Mechanical Engineering cooperates in interdisciplinary doctoral programs, including the Program in Applied Mathematical Sciences (see “Graduate College”).

Admission Requirements

The minimum requirements for admission to a graduate program in mechanical engineering are the same as those for the Graduate College.

Although graduate students in mechanical engineering will ordinarily have a baccalaureate degree in mechanical engineering or a closely related field students who are interested in interdisciplinary programs may be admitted, if a careful review of their qualifications and objectives finds them suitable.

Master of Science

The Master of Science degree with thesis requires a minimum of 30 semester hours of academic credit, including not more than eight semester hours of credit for thesis work. Completion of a thesis and satisfactory performance in a final oral examination are required. A Master of Science degree without thesis is also available but only to certain well-qualified students who have the approval of their faculty advisor.

Doctor of Philosophy

The Doctor of Philosophy degree is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit. However, the candidate is normally expected to have completed three academic years of residence, or two years if he or she already holds a Master’s degree. The candidate must pass a written and oral comprehensive examination and a final examination which is a defense of the thesis.

Financial Aid

A limited number of fellowships, trainships, assistantships and scholarships are available to graduate students who qualify. Some are awarded on the basis of competition, others are the results of appointments.

Facilities

All undergraduates use the mechanical engineering laboratories in regular coursework, as well as in doing their individual project assignments. These laboratories are equipped with general-purpose engineering instrumentation, as well as specialized equipment for experimentation in heat transfer, compressible flow, fatigue behavior of materials, automatic control and analog computer. The College of Engineering shop is available to construct special apparatus such as may be needed for graduate thesis.

Staff: professors Anderson, Hering, Leno, Mados, Stephens, Trummler; associate professors Chen Chius, Schois, Spencer; assistant professor Smith

Courses Primarily for Undergraduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.34</td>
<td>Design of Dynamic Systems for Transfer Students</td>
<td>3</td>
</tr>
<tr>
<td>3.18</td>
<td>Series in Engineering I</td>
<td>3</td>
</tr>
<tr>
<td>3.19</td>
<td>Series in Engineering II</td>
<td>3</td>
</tr>
<tr>
<td>3.20</td>
<td>Series in Mechanical Engineering I</td>
<td>3</td>
</tr>
<tr>
<td>3.21</td>
<td>Series in Mechanical Engineering II</td>
<td>3</td>
</tr>
<tr>
<td>3.22</td>
<td>Series in Mechanical Engineering III</td>
<td>3</td>
</tr>
</tbody>
</table>

Courses for Undergraduates and Graduates

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>56.101</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
</tbody>
</table>

A limited number of topics vary from basic theory to design and evaluation of materials.
used as thermal elements, temperature and its measurement, power generation and refrigeration, prerequisite course of instructor.

50:105 Analyzing Methods in Mechanical Engineering 3 a.h.

50:106 Thermodynamics 3 a.h.

Demonstrate use of various analytical devices and methods for analysis of mechanical elements and systems, prerequisite course of instructor.

50:106 Thermodynamics 3 a.h.

Fundamental principles of flow applied to aeroelastic equations of fluid motion, Bernoulli equation, variable flow, lift and drag, prerequisite: 50:101, Multivariate Calculus and 20:152.

50:109 Heat and Mass Transfer 3 a.h.

Principles of heat transfer by conduction, convection, radiation, principles of mass transfer and general principles of solution of engineering problems, prerequisite: 50:105 or consent of instructor.

50:110 Intermediate Mechanics of Fluids 3 a.h.


50:110 Intermediate Heat Transfer 3 a.h.


50:110 Control Systems Analysis 3 a.h.

Fundamentals of linear systems analysis and synthesis with applications, integral control using both frequency and time domain techniques implemented; sensitivity advantages of Laplace transforms and state variable formulations illustrated by means of real physical problems, same as Electrical Engineering 55:180, prerequisite: senior standing or consent of instructor.

50:110 Kinetics and Dynamics 3 a.h.

Characteristics of connected mechanical systems; kinematic analysis of links and linkages in the analysis of dynamic equations; introduction to principles of linkage geometry; use of computer techniques in both analysis and synthesis.

50:113 Mechanical Vibrations 3 a.h.


50:114 Nuclear Reactor Extraction 3 a.h.

Principles and techniques of heat from fission power reactor thermal of temperature distributions, thermal stress, heat transfer, fluid flow through the reactor core and control devices of nuclear shielding and safety, with design to defect problems, prerequisite: 50:120.

50:116 Psychrometric Analysis 2 or 3 a.h.

Methods for determination of thermophysical properties of materials and systems; review of psychrographic analysis and treatment conditions, prerequisite: 50:126.

50:118 Computational Fluid Dynamics Laboratory 2 a.h.

Experimental study in fluid flows; subsonic and supersonic; flow instrumentation and measurement; fundamental aerodynamics, wind tunnel and shock tube experiment.

50:120 Boundary Layer I 3 a.h.

Fundamentals of energy of inviscid flow, equations of motion for incompressible viscous flow, general properties of Navier Stokes equations and exact solution techniques, boundary layer theory; prerequisite: 50:111.

50:120 Computational Fluid Dynamics 3 a.h.

Basic computational fluid dynamics; equations of perfect gas and shock waves, method of characteristics and Riemann method, subsonic, supersonic, transonic, compressible laminar and turbulent flows, same as Mathematics and Hydraulics 50:030, prerequisite: 50:121 or equivalent.

50:126 Computational Thermodynamics 3 a.h.

Introduction to statistical mechanics, non-idealizing classical and quantum-mechanical systems with applications for idealizations of kinetic theory, Fermi-Dirac distribution, equilibria properties of interacting systems; introduction to nonequilibrium statistical mechanics, prerequisite: 50:114 or equivalent.

50:129 Engineering Analysis 3 a.h.

Analytical approach to engineering problems; emphasis on rigorous and logical analysis with wide variety of problems, prerequisite: senior standing.

50:151 Control Systems Synthesis 2 or 3 a.h.

Continuation of 50:150, emphasis on synthesis as well as on analytical techniques, prerequisite: 50:120.

50:152 Control Systems Laboratory 2 or 3 a.h.

Correlation between theory and practice obtained through investigation of component and overall system behavior, specification and design of complex systems, prerequisite: 50:120, 50:121, 50:122, 50:151, prerequisite: 50:150 and consent of instructor.

50:172 Flight Mechanics 2 a.h.

Fundamentals concepts of flight and propulsion of flight, experimental evidence concerning lift and drag, influence of complex stress waves, damage without failure, surface, size, temperature effects, design improvements and applications, prerequisite consent of instructor.

50:170 Theory of Failure 3 a.h.

Classification of basic propagation processes, theoretical analysis of important characteristics of each class, design considerations, prerequisite: 50:111.

50:180 Modern Topics in Mechanical Engineering 2 to 4 a.h.

Identification of areas of modern mechanical engineering technology sufficiently recent to current and forecasting needs of society, analysis of needs with applications of existing design methodology toward acceleration of needs, suitable current topics include energy resource, thermal energy and noise in the environment, vehicle reliability.

50:190 Seminar: Mechanical Engineering 1 to 3 a.h.

Presentation reports and discussions on recent advances in the field of mechanical engineering, prerequisite: senior standing.

Courses Primarily for Graduate Students

50:200 Kinetics of Gases 2 to 3 a.h.

Fundamental principles of kinetic theory of gases include: Boltzmann, collision equation, ergodic hypothesis, Maxwell's equations, kinetic mechanisms of special solution techniques, applications, prerequisite: 50:146 or equivalent and consent of instructor.

50:201 Advanced Thermodynamics 3 a.h.

Advanced thermal analysis, prerequisite: 50:144 or equivalent.

50:202 Mechanical Design 3 a.h.

Advanced design and synthesis, prerequisite: 50:144 or equivalent.

50:203 Advanced Heat Transfer 2 to 6 a.h.

Selected topics in heat transfer, prerequisite: 50:126 or equivalent.

50:204 Advanced Atmospheric Dynamics 3 a.h.

Advanced course for graduate students with background in thermodynamics, gas dynamics, flight mechanics, advanced topics in thermodynamics, prerequisite: 50:144.

50:205 Advanced Mechanical Vibrations 2 to 6 a.h.

Wave form analysis and synthesis for many classes of systems, infinite dimensional systems, matrix vibrations, prerequisite: 50:133.

50:214 Boundary Layer II 2 a.h.

Infinite boundary layer, laminar boundary layer, method of characteristics, boundary layer flow, normal shock waves, and circumferential shock waves, prerequisite: 50:114.

50:216 Magnetoelasticity and Viscous Flow Phenomena 3 a.h.

Basic magnetoelasticity systems and associated governing equations, plasma properties and stability criteria, electromagnetic flow, boundary layer flow, magnetoelasticity and viscous flow waves, prerequisite: 50:146.

50:220 Convective Heat Transfer 2 to 6 a.h.

Solution to general conduction equation by separation of variables, by integral transforms, methods of lines, boundary-value problems and essential solutions.

50:271 Convective Heat Transfer 3 a.h.

Layer boundary layer and integral equation approach, momentum and heat transfer for lubricants and heated surfaces, cylindrical tubes and over exfoliated surfaces, temperature-dependent fluid properties, convection at high velocities, mass transfer formulations and solutions.
Mechanics and Hydraulics

Advanced Engineering Analysis

Electrical Engineering

Mechanics and Hydraulics

Acting Department Chairman: Kwan Rim

Degrees offered: M.S., Ph.D.

The Department of Mechanics and Hydraulics also cooperates in interdisciplinary doctoral programs with the Program in Applied Mathematical Sciences (see "Graduate College").

The Department is associated with the Iowa Institute of Hydraulic Research, whose laboratory is world-renowned. The major staff members of the Institute are professors in the Department and devote about half their time to teaching. The Institute has unusually sophisticated instrumentation with strong emphasis on electronic observation and processing of data. The mechanics of solids program has good laboratory facilities, including equipment for frequency and magnitude of load applications, equipment for electronic observation, and photographic equipment, in addition to the usual testing machines.
Courses Primarily for Undergraduates

[Course descriptions and enrollment numbers are listed.]

Courses for Undergraduates and Graduate Students

[Course descriptions are listed.]

Courses Primarily for Graduate Students

[Course descriptions and enrollment numbers are listed.]
Mechanics and Hydraulics

58:231 Continuum Mechanics
3 s.h.
Foundations of general (classical) theories of continuum mechanics. Introduction to tensors, theory of differentials and notions of continuity, arms of principal of Cauchy, basic principles of classical mechanics, general treatment of relations of continuum mechanics. prerequisites: 90:12

58:233 Three-Dimensional Boundary Layers
3 s.h.
Equations of motion and turbulent motion in perfectly geometric configurations, boundary layers, boundary layer equations, review of two-dimensional theory; general boundary layers, development of continuity equation and boundary layer thickness, integral equations and their solutions, differential variational and their solutions by numerical methods, continuity equation (laboratory and experimental practices, applications, prerequisites: 38:126 or 38:130

58:239 Fluid Control
3 s.h.
Fluid motion characteristics, damage determinants, fluid behavior or protection, economic considerations, prerequisites: 38:131

58:454 Optimization of Structural Systems I
3 s.h.
Finite-dimensional optimization (1967) applied to optimal structural design and other complex design problems in the fields of solid dynamics, strength, displacement control, in-plant structural design; optimization methods developed; prerequisite: Mechanic 32A:105

58:455 Optimization of Structural Systems II
3 s.h.
Combination of 58:455 to solve dimensional problems, determination of optimal control distribution of material in structural systems, existence of finite-dimensional design; prerequisites: 58:454

58:247 Stability of Structural Systems
3 s.h.
Stability criteria, theory of buckling, information theory, variational methods; beams, plates, right homogeneous, postbuckling behavior; plastic buckling, survey in Civil Engineering 58:461; prerequisites: 58:127 or consent of instructor

58:248 Mechanics of Sediment Transportation
3 s.h.
Laws governing fluid velocity, applications to particulate motion; design of fixed structures, right homogeneous, postbuckling behavior; plastic buckling, survey in Civil Engineering 58:461; prerequisites: 58:127 or consent of instructor

58:200 Environmental Conservation Processes
3 s.h.
Review of chemical diffusion theories, dispersions of inorganic and particulate matter in groundwater; sediment flow, solid topics including mechanics of erosion and thermal pollution; prerequisite: 58:103 or equivalent

58:261 Wave Mechanics
3 s.h.
Analysis of wave propagations phenomena in continuous media, engineering applications; prerequisite: 58:20 or consent of instructor

58:253 Surface Waves in Fadels
3 s.h.
Theory of surface waves, wave motion, wave motion equations, numerical solution of wave equations, solution of special boundary problems, boundary conditions, wave behavior in bounded basins; initial value problems

58:255 Coastal Hydrometereology
3 s.h.
Water waves, tides, harbor conditions, coastal structures, salinity intrusions and sediment transport in estuaries, beach processes and evolution

58:261 Theory of Shells
3 s.h.
General theory of thin shells, membrane analysis, general analysis of cylindrical and spherical surfaces; prerequisite: 58:135

58:275 Plasticity
3 s.h.
Continuum model of plasticity; boundary value problems, torsion, general theory of plane strain; finite analysis and extremum principles; prerequisites: 58:125

58:276 Theory of Viscoplasticity
3 s.h.
Laminar flow in viscous fluid, solutions of the Navier-Stokes equations, solutions of the Navier-Stokes equations, solutions of the Navier-Stokes equations; prerequisite: 58:135 or equivalent

58:291 Advanced Numerical Analysis
3 s.h.
Partial differential and integral equations of linear type; existence, unicity and uniqueness; applications to engineering problems; emphasis on numerical methods; examples of practical boundary value problems, complex variables, differentiation, integration, numerical methods, wave propagation, Sturm-Liouville problems, numerical solution of ordinary differential equations, and numerical solution of partial differential equations

58:295 Seminar: Water-Resources Development
2 s.h.
In-depth individual study in hydrology, engineering mechanics of water resources development; prerequisite: approval of Department, survey in Civil Engineering 58:295
Graduate College

Administrative Staff

Dean: Duane C. Sprinzenbach
Dean for Advanced Studies: Aviva H. Staff
Associate Dean: James F. Jacobson, Charles M. Mason
Graduate Registrar: Sally L. Boley

Members of the Graduate Council: William C. Arnes (Mechanics and Hydraulics), Eric E. Bergsten (Law), Thomas M. Condon (Biochemistry), Lloyd J. Filer (Pedestrians), Albert H. Henningsen (Economics), Frank J. Koeller (Mathematics), James F. McCor (Pharmacy), William R. Savage (Physics), Waldo J. Tomassi (Art); Donald P. Rieser (Graduate Student Senate), Patrick A. Wilson (Graduate Student Senate)

The University of Iowa has been a leading center of advanced study for three-quarters of a century. Presently, one-fourth of its enrollment is in the Graduate College. This unusually high ratio reflects the breadth of the University’s graduate programs and resources, the strength of a graduate faculty with a long tradition of personal and professional concern for students, and the opportunities afforded graduate students for involvement, recognition and support.

Graduate courses are offered in all colleges of the University, both professional and nonprofessional. The Graduate College provides the framework through which graduate degree programs are supervised and coordinated.

The Graduate College is responsible for the review and approval of proposals for new graduate programs and for the periodic survey and evaluation of existing programs. Through its administration of scholarship, fellowship and research funds, the Graduate College encourages research and strengthening of departments. It offers extensive assistance to individual faculty members in finding the resources necessary for research projects. The Graduate College works with the departments and other colleges of the University in the formulation of policies concerning selection and in the supervision and support of graduate students.

Faculty

The graduate faculty comprises University faculty and administrative personnel in the ranks of associate, assistant and full professor. An 11-member Graduate Council, elected from and by the graduate faculty, is the executive committee of that body and is advisory to the dean of the Graduate College.

Advanced Degree Programs

The University offers graduate programs leading to the Master of Arts, Master of Science, Master of Business Administration, Master of Arts in Teaching and Master of Comparative Law degree; the two-year degree, Master of Fine Arts, Educational Specialist and Master of Social Work; and the Doctor of Philosophy and Doctor of Musical Arts degree.

The University offers advanced degrees in the following areas:
- Accounting—M.A.
- American Civilization—M.A., Ph.D.
- Anatomy—M.S., Ph.D.
- Anthropology—M.A., Ph.D.
- Applied Mathematical Sciences—Ph.D.
- Art—M.A., M.F.A., Ph.D.
- Astronomy—M.S.
- Biology—M.S.
- Biometry—M.S., Ph.D.
- Biochemistry—M.S., Ph.D.
- Business Administration—M.A., M.B.A., Ph.D.
- Business Education—M.A., Ph.D.
- Chemical Engineering—M.S., Ph.D.
- Chemical Physics—M.S., Ph.D.
- Chemistry—M.S., Ph.D.
- Child Behavior and Development—M.A., Ph.D.
- Chinese—M.A., Ph.D.
- Classical Languages and Literatures—M.A., Ph.D.
- Comparative Literature—M.A., Ph.D.
- Computer Science—M.S., Ph.D.
- Computer Science—M.S., Ph.D.
- Cultural Anthropology and Linguistics—Ph.D.
- Dental Hygiene—M.S.
- Dentistry—M.D.
- Drama—M.A., M.F.A., Ph.D.
- Economics—M.A., M.T., Ed.S., Ph.D.
- Electrical Engineering—M.S., Ph.D.
- English—M.A., M.F.A., Ph.D.
- Environmental Engineering—M.S., Ph.D.
- French—M.A., Ph.D.
- Geography—M.A., Ph.D.
- Geology—M.S., Ph.D.
- German—M.A., Ph.D.
- Greek—M.A.
- History—M.A., Ph.D.
- Home Economics—M.A., M.S.
- Hospital and Health Administration—M.A., Ph.D.
- Industrial and Management Engineering—M.S., Ph.D.
- Journalism—M.A.
- Latin—M.A.
- Law Enforcement and Corrections—M.A.
- Library Science—M.A.
- Linguistics—M.A.
- Mathematics—M.S., Ph.D.
Mechanical Engineering—M.S., Ph.D.  
Mechanics and Hydraulics—M.S., Ph.D.  
Microbiology—M.S., Ph.D.  
Nuclear Science and Technology—M.S.  
Nutrition—M.S.  
Nutrition—M.S., Ph.D.  
Obstetrics and Gynecology—M.S.  
Occupational Therapy and Disabili- 
ty—M.S.  
Ophthalmology—M.S.  
Oral Diagnosis—M.S.  
Oral Pathology—M.S.  
Pharmacology—M.S.  
Physical Education—M.A., Ph.D.  
Physical Education for Women— 
M.A., Ph.D.  
Physical Therapy—M.A.  
Physiology—M.S.  
Physiology and Biophysics—M.S., 
Ph.D.  
Political Science—M.A., Ph.D.  
Preventive Medicine and Environmen- 
tal Health—M.S., Ph.D.  
Psychology—M.A.  
Psychology—M.S.  
Radiation Biology—M.S., Ph.D.  
Religious Education—M.A.  
Religion—M.A., Ph.D.  
Renal—M.A.  
Science Education—M.S., Ph.D.  
Social Studies—M.A.  
Social Work—M.S.W.  
Sociology—M.S., Ph.D.  
Speech—M.A., Ph.D.  
Speech Pathology and Audiology— 
M.A., Ph.D.  
Statistics—M.S.  
Surgery—M.S.  
Urban and Regional Planning—M.A., 
M.S.  
Zoology—M.S., Ph.D.  

Research Resources  
The many and diverse research activities of the University are centrally administered by the Office of the Vice-President for Educational Development and Research, which has an inter- 
locking relationship with the Graduate College. For further in- 
formation on the research resources of the University, see 
“Research Activities.”

Financial Assistance  
Approximately half of the University’s graduate students receive 
some form of University-administered financial assistance. 

Eligibility requirements and application procedures are set 
forth in “Section VII. Graduate Appointment” in “Rules and 
Regulations of the Graduate College.”  
These are the primary sources of assistance:

Teaching and Research Assistantships  
Available in most departments; stipends range between $3,000 and 
$3,750 for half-time assistants; assistants also eligible for 
tuition scholarships; nonresident assistants’ (one-quarter-time or 
more) tuition and fees reduced to resident rates

University Teaching-Research Fellowships  
For doctoral students and first-year graduate students entering 
dentistry programs; typical stipends of $4,000 a year on a year-
round basis, for as many as four years; recipients have teaching 
and research assignments, but may carry full course loads at the 
same time; out-of-town of four and all summer; recipients have 
time to pursue studies, research or writing

Scholarships  
Up to full tuition and fees

Graduate Fellowships  
$3,000 for the academic year

NDEA Title IV Fellowships  
For prospective college teachers pursuing the doctorate; 
provides stipends of $2,400–2,800, which include summer study, 
plus $500 for each dependent and full tuition

NSF Traineeships  
For students interested in social, biological or physical science; 
provides stipends of $2,400–2,800, which include summer study, 
plus $500 for each dependent and full tuition

EPDA Part-Time Fellowships, College-Teacher Program  
Designed to prepare college or community-college instructors; 
provide 12-month stipend of $2,400 for the first year and $2,600 
for the second year, plus full tuition and $500 annually for each 
qualified dependent

The provisions are subject to change. 

University and National Defense Education Act loans are 
available through the University’s Office of Student Financial 
Aids.

Many departments offer additional support through trainees-
hips, part-time employment in research or part-time teaching 
appointments. The Office of the Vice-President for Educational 
Development and Research maintains a library of information 
on public and private agencies which provide funds for research 
and graduate study. A considerable amount of material has been 
collected concerning awards for overseas study.

Graduate Student Senate  
The Graduate Student Senate is the University graduate student 
body’s representative organization. Representatives are elected
annually from each department of the University having a
graduate degree program. The Senate's primary purpose is to
serve the interests of the graduate student body in matters affect-
ing its welfare. The senate advises the graduate dean on matters
pertaining to the Graduate College.

Rules and Regulations of the Graduate College

The Academic Program

Section 1. Admission the Graduate College

A. Application Procedure

All students seeking to register for the first time in the Graduate
College of The University of Iowa must secure a formal admiss-
ion statement from the Director of Admissions. Applicants may
obtain the proper forms from the Director of Admissions, The
University of Iowa, Iowa City, Iowa 52240.

In addition to these forms, the official transcripts from each
undergraduate and graduate institution attended must be sub-
mitted to the Director of Admissions by the designated deadline
prior to the session in which admission is expected. Admission
applications must arrive no later than July 15 for first-semester
enrollment, December 15 for second-semester enrollment or
May 1 for summer-session enrollment.

B. Graduate Record Examination

All applicants prior to consideration for admission should take
the Aptitude Test of the Graduate Record Examination (GRE)
or, for applicants to graduate programs in business administra-
tion, the Admission Test for Graduate Study in Business
(ATGSB). Applicants for whom admission data are complete,
with the exception of scores on the GRE or the ATGSB, may
be admitted if they meet all other requirements. The GRE, or
the ATGSB, must be taken within one semester after registra-
tion. The test is given several times a year at test centers estab-
lished under the direction of Educational Testing Service,
Princeton, New Jersey. The judgment of acceptable levels of
performance on this test and its weight in the decision on admis-
sion of a student is left to the departments. Some departments
in fields where GRE Advanced Tests are available require these
to be in addition to the Aptitude Test. Inquiries about the Aptitude
Test may be directed to University Evaluation and Examina-
tion Service, and inquiries about the requirements of the Advanced
Test should be addressed to the executive of the department in
which the applicant is interested.

C. English for Foreign Students

Prior to consideration for admission, foreign students applicants
whose native language is other than English must take and pass
TOEFL (Test of English as a Foreign Language), unless they
have received a degree from an accredited college or university
in the United States, the United Kingdom, Canada (except Que-
bec), Australia, or New Zealand. The examination is given at
various times of the year and at many centers throughout the
world. Inquiries should be addressed to the Director, TOEFL,

Foreign students transferring from unfinished degree pro-
grams of other universities in the United States who have not
taken this examination, or who have received a grade lower than
the minimum established by the Graduate dean, must take the
TOEFL examination and receive a passing grade prior to consid-
eration for admission.

The Graduate College will advise the departments of those
students rarely passing the TOEFL test. Individual departments
may require such students to take and pass a course at The
University of Iowa in English usage designed especially for for-
eign students.

D. Early Admission

A student who is within four semester hours of having satisfied
all the requirements for the bachelor's degree at The University
of Iowa or any other accredited college may be given conditional
admission.

E. Candidacy

Admission to the Graduate College is not the equivalent of
acceptance as a candidate for an advanced degree, which must
be earned through work successfully completed at The Univer-
sity of Iowa. (See "Section X. Master's Degrees," and "Section
XII. Doctor's Degrees.")

F. Declaration of Major and Degree

Every applicant for admission must indicate on the application
form the department or degree program or certificate program
of his or her major interest and the degree, certificate or pro-
fessional objective he or she intends to pursue. The only exceptions
to this regulation are the limited number of applicants registered
as "special students." (See definition of "special status" in next
paragraph.) Changes in the major or degree status may be made
in the course of a student's graduate study with the approval of
the department to which the transfer is proposed. To initiate
such action the student must file a change of major or degree
status in the Office of Admissions.

G. Status upon Admission

All students upon admission fall into one of the following catego-
ries:

1. Regular—Students who have met the minimum require-
ments for admission and who have been accepted by a depart-
ment, or interdepartmental degree program, for work leading to
a graduate degree or certificate or stated professional goal.

2. Conditional—Students who are interested in working to-
ward a graduate degree or certificate but who are required by
a department to demonstrate their ability to do satisfactory
graduate work before being admitted to regular status. To be
admitted on a conditional basis, the student must be recom-
manded by a department, which will assume responsibility for
advising him or her. (See minimum grade-point requirements,
"Section I. H."). The student on conditional status must achieve
regular status within two sessions of registration in the Graduate
College by obtaining a grade-point average of at least 2.50 and
acceptance by the major department, or be dismissed.

3. Special—Students in receipt of a valid bachelor's degree
who wish to register for no more than two courses at a time and who are not planning to become candidates for a graduate degree or certificate. These students, relatively few in number, must obtain special permission to register from the Director of Admis-
sions. Special graduate students are not eligible for a graduate degree or for a certificate in a certificate program.

4. Summer Session—Students with a valid bachelor's degree and at least a 2.3 grade-point average may register only for one summer session without being accepted by a department or col-
lege. (See “Section 16” below.) The deadline for application for admission to the summer session will be determined by the direc-
tor of the summer session and the Director of Admissions. Before admission to any subsequent session, including another summer session, the student must file an application and be admitted to regular or conditional status.

II. Minimum Requirements for Admission

Graduate of any college or university accredited by regional accrediting associations may be admitted to the Graduate Col-
lege, if their academic records meet the required standards. At the master's level, a minimum grade-point average of 2.3 is required for admission to conditional status. A minimum of 2.5 is required for admission to regular status. The grade-point aver-
age is computed on graduate work if the student has com-
pleted at least 12 graduate hours. If the student has not completed 12 graduate hours, the grade-point average is com-
puted upon the undergraduate and graduate work completed. In cases in which a student applying for admission has a grade-
point average below the minimum required, but has a Graduate Record Examination score above a point to be designated by the Graduate dean, his or her papers shall be forwarded to the department concerned for examination and decision.

Students applying for admission to a doctoral program must meet a minimum GPA of 2.7 based on completed graduate work, or the entire record of collegiate work if the student has less than 12 semester hours of graduate credit.

Departmental, or committees in charge of interdepartmental degree programs, may, and often do, set higher minimum admis-
sion requirements than those set forth above for the University as a whole. Information concerning departmental or program requirements must be obtained directly from the executive of the department concerned.

For State Board of Regents' formal admission requirements, see "Appendix" of the Catalog.

Section II. Registration

A. Standard Schedule

Students registered in Graduate College may register for no more than 15 semester hours of credit in graduate courses. In a schedule of mixed graduate and undergraduate courses, two hours of an undergraduate credit may be substituted for one hour of graduate credit, with registration limited to a credit total of 18 semester hours. This applies to the calculation of academic load only. Graduate credit is not given for courses numbered under 100. The maximum for the eight-week summer session is eight semester hours, or nine semester hours if two or more semester hours of undergraduate work are included. Nine semes-
ter hours in the regular session constitutes full-time registration. (Follows are required to carry at least nine semester hours during a semester as a condition of their appointment.) One-quarter-
time and one-third-time appointees are permitted to register for the maximum 15 semester hours during the fall semester and eight semester hours during the eight-week summer session.

B. Courses not Included in Total Registration

In addition to a full schedule, a graduate student may register for courses printed in the Schedule of Courses as carrying no semester hour credit.

C. Change in Announced Credit

Graduate students may not register for more credit in any course than that printed in the Schedule of Courses, but may register for less credit, or no credit, by permission of the instructor. The number of courses a graduate student may take for limited or no credit is subject to the consent of the adviser and the approval of the dean of the Graduate College.

D. Reduced Schedules for Teaching and Research Assistants and Other Appointees

1. One-half-time appointees may register for not more than 12 semester hours during a semester or six semester hours during the eight-week summer session.

2. Five-eighths-time appointees may register for not more than 10 semester hours during a semester or five semester hours dur-
ing the eight-week summer session.

3. Two-thirds- and three-quarter-time appointees may register for not more than nine semester hours during a semester or five semester hours during the eight-week summer session.

4. Seven-eighths-time appointees may register for not more than seven semester hours during a semester or four semester hours during the eight-week summer session.

5. Students applying for teaching or fellowships may register for not more than six semester hours during a semester or three semester hours during the eight-week summer session.

E. Restriction on Credit to Faculty

Persons who hold faculty rank of assistant professor (including asistent clinical professor) or above at The University of Iowa may earn no credit toward an advanced degree at this institution.

F. Retroactive Registration

No form of retroactive registration is permitted.

G. Registration for Part of a Semester

A graduate student may register at any time during the semester or the summer session for not more than one semester hour of credit for each of the remaining weeks of classes (not including the examination period) in the term. The total registration may not exceed the 15 semester hours permitted for a semester and the eight semester hours permitted for a summer session. Regis-
tration after the last day of the third week of a semester or the third day of the second week of a summer session is permitted only in courses involving special projects, readings, individual
study, thesis or research, with the signed approval of the instruc- 
tor concerned and the Graduate dean.

H. Extramural Registration
Registration for work done off campus is accepted for residence 
credit under the following circumstances:
1. Traveling Scholar Program of the Committee on Institu- 
tional Cooperation (see "Section III.");
2. Research at approved locations under the direction of mem- 
ers of the graduate faculty at The University of Iowa;
3. Field work as part of a regularly scheduled course or re- 
search program;
4. Courses taught off campus by members of the graduate 
faculty; (see "Section X. D." and "Section XII. C." for minimum 
semester hours required on campus for the master's and doctor's 
degrees);
5. Residence graduate credit from another Iowa Regents' Uni- 
versity (see "Section V. B."); and
6. As many as nine semester hours of graduate work taken 
at the Quad-Cities Graduate Center from faculty other than 
faculty of the Iowa Regents' Universities, provided the work is 
acceptable by the student's major department for the specified 
degree.

Extramural registration does not count toward residence 
credit in the following circumstances:
1. Coursework transferred from another institution; and
2. Correspondence courses.

I. Extramural Fees and Privileges
Students registered for extramural courses for graduate resi- 
dence credit must apply for admission to regular status (see 
"Section I. G.") and pay established fees. (See "Section XII. F.") 
for special fees applicable to post-comprehensive registration, 
which should not be confused with extramural registration for 
residence credit.)

J. Correspondence Courses
Correspondence study credits do not count as residence credits. 
Graduate correspondence study credit earned prior to a stu- 
dent's acceptance as a degree candidate at The University of 
Iowa may be counted toward an advanced degree upon the 
approval of the appropriate college or department. Not more 
than nine semester hours of graduate correspondence work can 
be accepted for credit for an advanced degree. Such credit must 
be acceptable for the student's Plan of Study and must be earned 
after the student has attained graduate status. A student enrolled 
for residence credit may not register for correspondence courses 
without the approval of the executive of his or her major depart- 
ment and of the Graduate dean.

K. System of Course Numbers
Courses primarily for graduate students are numbered 200 or 
above in each department. Courses open to and carrying credit 
for both graduate and undergraduate students are numbered 
from 100 to 199. Courses below 100 are not accepted for gradu- 
ate credit.

L. Auditing of Courses
In special cases, and upon the recommendation of the instructor 
and the adviser, the dean of the Graduate College may grant 
permission to graduate students to audit courses for no credit. 
Auditing is permitted only to a student who is currently regis-
tered.

M. Dropping of Courses
All graduate students who drop courses after the deadline date 
established by the dean of the Graduate College for each session 
and published by the Registrar shall receive the grade of "F" unless 
the entire registration is canceled. This regulation may be waived 
only by the Graduate dean on the recommendation of the Stu-
dent Health director or the Student Counseling Service. If a 
student cancels registration after the deadline date, he or she 
must obtain permission from the dean of the Graduate College 
before he or she is permitted to re-register.

Section iii. Traveling Scholar Program

A. Purpose
The program under the auspices of the Committee on Institu-
tional Cooperation representing 11 universities in the Midwest 
will enable a graduate student to take advantage of special re-
sources available on another campus but not available on his or 
her own campus: special course offerings, research opportunities, 
unique laboratories and library collections.

B. Procedure
1. A CIC Traveling Scholar first must be recommended by 
his or her own graduate adviser, who will approach an appropri-
ate faculty member at the possible host institution in regard to 
a visiting arrangement.
2. After agreement by the student's adviser and the faculty 
member at the host institution, graduate deans at both institu-
tions will be fully informed by the adviser and have the power 
to approve or disapprove.
3. A CIC Traveling Scholar will be registered at the home 
university and fees will be collected and kept by that institution.
4. Credit for the work taken will be recorded at the home 
university.
5. Those desiring additional information should inquire at the 
office of the Graduate College.

C. Conditions
CIC Traveling Scholars will normally be limited to one semester 
or two quarters on another campus. Each university retains its 
full right to accept or reject any student who wishes to study 
under its auspices.

Section iv. Academic Standing, Probation and Dismissal

A. Master's, Specialist or Certificate Students
A student on regular status shall be placed on probation if, after 
completing eight semester hours of graduate work, his or her 
cumulative grade-point average on graduate work done at The
University of Iowa falls below 2.50. If, after completing eight
more semester hours of graduate work at this University, his or
her grade-point average remains below 2.50, he or she shall be
denied permission to register; otherwise, the student shall be
restored to good standing.

B. Doctoral Students
For a doctoral student the minimum required grade-point aver-
age on graduate work at The University of Iowa is 2.70. A
doctoral student whose performance falls below this level will be
placed or probation. If, after completing eight more semester
hours of graduate work at this university, the cumulative grade-
point average remains below the required level, the student shall
drop from the program and denied permission to register
unless he or she applies and is accepted for another degree
or certificate program. If the condition of probation is met, the
student is returned to good standing.

C. Departmental Regulations
In addition to the above Universitywide requirements, depart-
ments may establish higher requirements, which then determine
the individual student's standing with regard to probation and
dismissal. Whenever departments raise standards, the new regu-
lations will apply only to new students and not retroactively
to the disadvantage of those already in the degree program. Depart-
ments must notify the student, the Graduate dean, and the Reg-
istrar of actions affecting a student's standing.

D. Restriction on Students on Probation
A student on probation shall not be permitted to take compre-
hsive or final examinations leading to any degree or certificate,
nor may the student receive any graduate degree or certificate.

Section V. Credits
A. Transfer of Graduate Credit
Graduate work at other institutions will be entered on the stu-
dent's permanent record by the Registrar and a report of this
action will be sent to the student, his or her major department
and the dean of the Graduate College. Credit for theses courses
toward an advanced degree at Iowa must have the approval of the
major department and the dean of the Graduate College.

B. Residence Transfer Credit
Residence graduate credit from another Iowa Regents' Univer-
ity may be counted as residence credit in this institution; pro-
vided each work is acceptable by the student's major department
on the basis of the department's determination of its applicability
ward the degree. (See "Sections X. D" and "XII. C" for mini-
mum semester hours required on campus for the master's and
doctor's degrees.)

C. Reduction in Credit
For courses or seminars in independent study, thesis and re-
search an instructor may report less credit than the number of
semester hours for which a student is registered.

D. Graduate Credit for Veterans
Credit may be granted for studies pursued in war and military
situations under such regulations as may be formulated by the
national educational agencies and under such adaptations of
standing rules as the Graduate council may authorize from time
to time to meet group or individual situations. The value of such
credit in satisfying requirements for a degree will be determined
by the major department with the approval of the dean.

E. Cancellation of Registration and Propositional Credit for
Students Entering Military Service
1. Students who leave within the first six weeks of the semester
receive no credit.
2. Students who leave within the period of seven to nine weeks
receive one-half credit.
3. Students who leave within the period of 10 to 12 weeks receive
two-thirds credit.
4. Grade reports for the one-half and two-thirds credit peri-
ods: (a) instructors report grades only as Pass or Fail; (b) credit is
to be assigned on the basis of total registration minus thesis
and seminar; (c) courses are to be counted toward specific degree
requirements only after the student returns and then only with
the department's approval.
5. Students who complete the twelfth week receive full credit.
6. Grade reports for the full credit period: (a) grades are to
be reported only at the end of the semester; (b) credit is to be
reported in specific courses.
7. In each instance the instructor reports the student's credit,
grade and date of cancellation. No credit is granted unless the
student's work is satisfactory at the time of leaving.
8. The amount of credit in thesis and research registration is
reported to the Registrar by individual instructors on the
above basis except that less or no credit may be assigned.

Section VI. Marking System
A. Marks Carrying Advanced Degree Credit
These are A, B, C and S—satisfactory.
B. Marks Carrying No Credit for Advanced Degrees
These are D—poor, F—failed, I—incomplete, W—withdrawn;
without credit, R—registered and U—unsatisfactory.
C. Audit
R is assigned when a student registered for no credit attends as
an auditor throughout the course; if the student drops the course
before the close of the term, W is assigned.
D. Incomplete
The grade of I is to be used only when a student's work during
a session cannot be completed because of illness, accident or
other circumstances beyond the student's control. In registra-
tions for thesis, research or independent study, the S/U grades
may be applied. (See next paragraph, "E.") Students who receive
the mark of I must remove that mark within the first session of
registration after the closing date of the session for which it is
given, or else the grade becomes F, except that students with F's
from the spring semester are exempt from completing the course during the succeeding summer session.

Specific deadlines for the submission of student work to the faculty and for the faculty’s report on grades to the Registrar will be set by the Graduate dean for each session and printed in the academic calendar. Courses may not be repeated to remove deficiencies; removal of an I is accomplished only through the completion of the specific work for which the mark is given.

E. Thesis, Research, Readings, Independent Study and Special Projects

Grades of S and U may be used for registrations in thesis, research, readings, independent study and special projects. S—satisfactory means that the student receives credit for the work; U—unsatisfactory means that he or she receives no credit. Neither S nor U is used in computing grade-point averages. At a later date, the instructor may change the S to a letter grade. In addition, departments may request the Graduate dean for permission to use grades of S and U as described above for courses which, because of their special or experimental nature, are judged to be more appropriate for such grading. In general, these requests may be granted for no more than one semester and must be reviewed by the Graduate council before being granted for longer periods. The type of grading system to be used in the above cases should always be mutually understood by the instructor and student.

F. Grades of S and U

S and U may be used for courses taken by a graduate student outside the major department or interdepartmental degree program provided that the instructor of the course and the student’s departmental adviser approve the registration. Arrangements for S/U grading in these courses are accomplished by filing a card with appropriate signatures in the Registrar’s office at the time of registration, or no later than the last day of the third week of a semester or the third day of the second week of a summer session. No changes from letter grades to S/U grades or vice versa will be allowed after these dates.

G. Computed Grade-Point Average

This is based only upon graduate work graded A, B, C, D and F. (A = 4, B = 3, C — 2, D = 1, F = 0)

Section VII. Graduate Appointments

A. Scholarships

Scholarships are competitive and are awarded on merit.

1. Eligibility for graduate scholarships and fellowships will include: (a) registration in the Graduate College; (b) cumulative grade-point average of at least 3.0; (c) a GRE score or an ATGSB score above a point to be designated by the Graduate dean; (d) a satisfactory rate of progress in completing the program.

2. Preference will be given to candidates for the doctoral degree.

3. Recommendations for graduate scholarships may be made to the Graduate College by the appropriate department executive, director or dean. A graduate scholarship may be awarded whether or not a student holds an assistantship. The amount of scholarship for the academic year may vary, but in no case exceed the comprehensive fee assessed. Scholarships will be credited to the student’s University account.

B. Graduate College Fellowships

Fellowships are awarded by the Graduate College upon recommendation by departments to students with outstanding academic records. Fellowships must be registered as full-time students. The primary purpose of the awards is to permit an advanced student to complete his or her dissertation or creative project and complete the degree. Other terms of the award will be established by the Graduate dean in consultation with the Graduate council.

C. Faculty Research Assistantships

Faculty research assistantships are awarded to qualified graduate students and serve two purposes: (a) to provide research service to professional members of the academic staff and (b) to provide apprenticeship experience for graduate students who are in training in research. Not more than 20 hours of service per week are required of a half-time assistant. Other part-time service is specified in proportion, and a limited academic schedule is permitted (see “Section II. D”). Appointments are ordinarily made for the nine-month academic year, but appointments may be made for other periods of time by special arrangement. Stipends vary with the qualifications of the appointee and the amount of service rendered. Faculty research assistants appointed by the Graduate college pay their own fees. Graduate appointments beginning in September are usually made by the Graduate dean upon recommendation of the various departments in March of each year, although applications may be considered at any time. Applications should be made on the form provided by the Graduate College, and should be accompanied by recommendations and/or a letter summarizing the student’s qualifications.

D. Graduate Assistantships

These assistantships serve two purposes: (a) assistance in the instructional program of the University and (b) the preparation of future college teachers. In order to achieve both aims, scholastically-nominated graduate students who show exceptional promise as teachers are selected for graduate assistantships. All appointments are made by the dean of the appropriate college on recommendation of the department.

E. Eligibility for Scholarships, Fellowships and Research Assistantships

Scholarship, fellowship and faculty research assistantships in the Graduate College budget must be registered as regular students in good standing in order to hold such appointments. Appointments will be terminated when the student changes courses and/or student status is terminated. No instance may a student be permitted or tendered an appointment until after approval for admission to the Graduate College by the Director of Admissions.
I. Loans

Graduate students requiring financial assistance may apply for loans at the Office of Student Financial Aids. See "Scholarships and Loans" section of the Catalog.

II. Other Forms of Support

Many departments offer financial assistance in the form of teaching, part-time employment on research programs or part-time teaching. Grants are generally not directed to the major department.

Section VIII. Advanced Programs Offered in the Graduate College

The subject areas in which the Graduate College offers degree programs are listed under "Advanced Degree Programs" in the forepart of the "Graduate College" section of the Catalog.

Section IX. General Requirements for Advanced Degrees

A. Application for Degree

The student must file an application for an anticipated degree with the Registrar not later than 10 weeks after the start of the semester or one week after the start of the summer session in which the degree will be conferred. The student must have the application signed by his or her adviser. Failure to file the application by that date will result in the termination of the student's candidacy and subsequent graduation.

B. Enrollment in Final Semester

The student must be enrolled during the semester in which the degree is to be conferred. Students who are away from the University campus during the final semester may meet this requirement by registering for independent study or research or thesis according to the practices in the various departments. Doctoral candidates who have completed all work except the final examination, the postcomprehensive examination described in "Section XIII. F" will suffice. For master's candidates who have completed all work except the final examination, a registration fee equivalent to the "postcomprehensive registration" will be charged. Registration in a correspondence course will not satisfy this requirement.

Section X. Master's Degrees

A. Kinds of Degrees

Master's programs requiring a minimum of 30 semester hours lead to the Master of Arts degree, Master of Science degree, Master of Business Administration degree, Master of Arts in Teaching degree and such other master's degrees as are approved by the Graduate faculty.

B. Plan of Study

The applicant for a master's degree must file a plan of study approved by the adviser and the departmental executive with the Graduate College within the semester in which the degree is to be granted and by a date to be established by the Graduate dean. The plan shall meet the requirements for the degree approved by the Graduate faculty and set forth in the University Catalog for each department.

C. Major and Related Fields

The plan of study should provide for reasonable concentration in the major field of interest and, subject to the approval of the major department, may include related subjects from other departments.

D. Residence Requirement

Of the minimum of 30 semester hours required for the degree, at least 24 semester hours must be completed in residence at this University, of which eight semester hours on campus are required. (See "Section XII. H. Extramural Registration.")

E. Reduction of Old Credits

Credits for a master's degree dating back more than 10 years from the semester in which the degree is to be conferred are not counted toward fulfillment of degree requirements. This rule may be waived by the dean in cases affected by military service.

F. Limit on Law, Medical or Dental Courses

Work taken by a student in the College of Law or in basic science courses in the colleges of Medicine or Dentistry while enrolled as a candidate for a professional degree may be counted on a graduate program of study leading to a master's degree, provided such course was taken after the student had satisfied the requirement for the bachelor's degree, or work equivalent to the bachelor's degree at The University of Iowa. The work accepted from a professional college must be directly related to the student's major field of study in the Graduate College and be approved as a part of the plan of study by the student's adviser and the major department. Work completed while registraions for a professional degree in the colleges of Law, Medicine or Dentistry will be counted as part of the residence requirement for nondoctoral degrees in the Graduate College only when the student is registered in an appropriate joint degree program.

G. Two Master's Degrees

The granting by this University of two master's degrees simultaneously or in succession requires the satisfaction of all require-
ments for each degree separately, including two theses, where the thesis is required, and two examinations, with a minimum combined total of 60 semester hours of graduate credit.

H. Master’s Degree with Thesis
Not more than eight semester hours of credit for thesis prepara-
tion shall be counted as part of the 30-credit minimum require-
ment. The thesis may be a scholarly study or an artistic produc-
tion. One copy of the thesis, in typescript manuscript or print, must be
presented to the Graduate College for a check of formal charac-
teristics not later than four weeks before the convocation at
which the degree is to be conferred. (See Graduate College publi-
cation: Requirement for Graduate Theses.) After approval by
the Graduate College and by the thesis committee, a final copy
of the thesis must be deposited with the Graduate College not
later than 30 days before the convocation.

The thesis committee shall consist of at least three members
of the Graduate faculty and may or may not be identical with
the final examination committee. (See “K. Examining Commit-
tee.”)

I. Master’s Degree Without Thesis
A master’s degree without thesis, consisting of at least 30 semes-
ter hours of graduate study, may be awarded upon the comple-
tion of a curriculum prescribed by a department and approved
by the Graduate Council.

J. Final Examination
The requirements for all master’s degrees include a final exami-
nation, which, at the discretion of the major department, may
be written or oral or both. Such an examination will not duplic-
ate course examinations. It will be evaluated by the examining
committee as satisfactory or unsatisfactory with two unsatisfac-
tory votes making the committee report unsatisfactory. The re-
port of the final examination is due in the Graduate College not
later than 48 hours after the date of the examination or, in the
case of those departments giving a general examination rather
than a thesis examination, not later than the last day of the
graduate examination period.

If the examining committee so recommends, a candidate who
fails the examination may present himself or herself for reexami-
nation, but not sooner than the next regularly scheduled exami-
nation period in the following term (semester or summer
session).

The examination may be repeated only once.

Upon recommendation of a department, the comprehensive
examination for the Ph.D. degree may be substituted for the
master’s examination.

K. Examining Committee
The examining committee for the master’s degree consists of at
least three members of the Graduate faculty, appointed by the
Graduate dean upon recommendation of the major department
or program, at least two of whom are from the major depart-
ment. If the examination covers work in another department,
one member of the committee must be from that department.

Upon recommendation of the major department, the dean may
appoint additional qualified persons (not necessarily members
of the Graduate faculty) to serve as voting members of the
examining committee, and at his or her discretion the Graduate
dean may add a member to the committee.

Section XI. Two-Year Degrees

A. Master of Fine Arts Degree
This degree is awarded for creative work in the visual arts,
drama, music, and literature. It is designed for students
preparing themselves professionally in such fields as painting,
design, mural decoration, sculpture, playwriting, acting, produc-
ing, stage design, musical performance, composition, instrumen-
tation, poetry, fiction and translation. Central to the program,
the thesis may consist of a novel, paintings, a play, a musical
composition or any other approved artistic accomplishment.
The program for the Master of Fine Arts requires at least two
years of residence credit in a graduate college. This requires a
minimum of 48 semester hours of graduate credit, at least 24 of
which must qualify for residence credit at this University. A
Master of Arts degree may be earned while the student is work-

ing toward the Master of Fine Arts degree, but the student must
meet all requirements for each degree separately, with a mini-
mum combined total of 60 semester hours of graduate credit.

For other requirements see “Section X. B. Plan of Study”; “C.
Major and Related Fields”; “D. Reduction of Old Credits”; “E.
Master’s Degree with Thesis”; “F. Final Examination”; and “K.
Examining Committee.”

B. Specialist in Education Degree
This degree is granted upon completion of a prescribed two-year,
postbaccalaureate program designed for students preparing
themselves professionally in such fields as teaching, administra-
tion, supervision and special services.

Of the minimum of 60 semester hours required for the degree,
at least 24 semester hours must be completed in residence at
this University of which 15 semester hours must be earned while
the student is on campus within one 12-month period or during
two summer sessions.

Twenty-eight of the 60 semester hours are prescribed in the
area of specialization. The others are in cognate fields, supervised
experience and electives. Four semester hours of research culmi-
nate in a written report.

Courses successfully completed 10 or more years prior to the
final examination or those completed by the major department
in order to determine the amount of credit that shall be allowed
for such work. Evaluation of such old credits will be reported
to the Graduate College by the departmental executive at the
time of submission of the plan of study.

Other requirements and regulations applicable to the educa-
tional specialist degree are the same as prescribed for the one-
year master’s degree in “Section X. B. Plan of Study”, “C.
Major and Related Fields”; “F. Limit on Law, Medical or Dental
Courses”; “J. Final Examination”; and “K. Examining Commit-
tee.”

A master’s degree may be earned while in residence for the
educational specialist degree provided the student meets all the
requirements for the master’s degree in question.
C. Master of Social Work Degree

The M.S.W. degree is conferred by the University upon those students who give evidence of knowledge and competence in the professional practice of social work by meeting the following requirements:

1. A minimum of 24 semester hours in residence at the University of Iowa.
2. A total of at least 52 semester hours in graduate social work, including a research project; and
3. A final comprehensive examination, written or oral or both, covering all work for the degree.

The curriculum is organized into four general areas: social work practice, human growth and behavior, the social services, and research. During the two-year graduate program, classwork is combined with field experience in social agencies or social work departments. Since classwork and field practice are arranged sequentially, students can enter the School of Social Work only in September.

For other requirements, see "Section X. B. Plan of Study"; "E. Reduction of Credit"; "F. Limit on Law, Medical, or Dental Courses"; and "K. Examining Committee."

Section XII. Doctor's Degrees

A. Character of Degree

The University awards two doctorates, the Doctor of Philosophy and the Doctor of Musical Arts. The Doctorate is the highest degree awarded by the University. The Doctor of Philosophy degree indicates marked excellence in research or other creative work, and superior comprehension in the discipline. The Doctor of Musical Arts degree indicates marked excellence in performance and pedagogy.

B. Prerequisite

The candidate must present evidence of having completed a satisfactory amount of undergraduate work in the subject proposed for investigation or, in the case of deficiency, must register for prerequisite courses.

C. Residence Requirement

The doctorate is granted primarily on the basis of achievement rather than on the accumulation of semester hours of credit; however, the candidate is expected to have completed at least three years of residence in a graduate college. At least part of this residence must be spent in full-time involvement in one's discipline, at this University, beyond the first 24 semester hours of graduate work; this requirement can be met either by: (1) enrollment as a full-time student (nine semester hours minimum) in each of two semesters or (2) enrollment for a minimum of six semester hours in each of three semesters during which the student holds at least a one-third-time assistantship or fellowship of the department as contributing to the student's doctoral program. For purposes of record and assessment of fees, student registration should reflect accurately the amount and kind of work undertaken in the Graduate College. All doctoral programs, including acceptable transfer credit, must contain a minimum of 72 semester hours of graduate work.

D. Plan of Study

The development of a plan of study at the doctoral level is the special responsibility of the student working together with his or her advisor. A formal plan of study must accompany the departmental request to the Graduate College for permission to conduct the comprehensive examination. The plan will provide a listing of all graduate courses taken which apply toward the degree, a listing of courses in progress or to be completed after the comprehensive examination, and the tools of research in which competence has been certified.

E. Reduction of Credit

Courses taken 10 or more years prior to the comprehensive examination will be evaluated by the major department in order to determine the amount of credit that shall be allowed for such work. Evaluation of such old credits will be reported to the Graduate College by the departmental executive at the time of submission of the plan of study.

F. Limit on Professional Courses

Work taken by a student in the college of Law or in basic science courses in the colleges of Medicine or Dentistry, while he or she is enrolled for a professional degree, may be credited to a graduate program leading to a doctoral degree if it is taken after the student has satisfied the requirements for a bachelor's degree at this University. The work accepted from the professional college must be directly related to the student's major field of study in the Graduate College, and the plan of study must be approved by the student's advisor and the major department. Work completed while registered for a professional degree in law, medicine or dentistry will not be counted as part of the one academic year which must be spent in residence as a doctoral student on the campus of this University.

G. Joint Program for Master's and Doctoral Degrees

Those students who expect to continue their training through the doctoral degree may file a joint program for the master's and doctor's degree. The master's examination may be combined with the comprehensive examination for the doctorate for these candidates. The examining committee will file separate reports of its actions on the final examination for the master's degree and for the comprehensive examination. Upon recommendation of the department and approval of the Graduate dean, students who are well qualified by previous training may submit a plan of study that leads directly to the doctoral degree without earning the master's degree as an intervening part.

H. Requirement in Foreign Languages

There is no Graduate-College-wide requirement in foreign languages. Those departments which do require proficiency in one or more foreign languages establish standards as to the extent and level of competence, as well as methods of testing. Specific requirements will be found in the University Catalog under the doctoral programs of each department. Departmental executive officers are responsible for reporting completion of requirements to the Registrar for entering on the student's record. Specifications of departmental requirements in foreign lan-
guages are filed in the Graduate College office and may be changed upon the initiative of the department.

I. Comprehensive Examination
The candidate must pass a comprehensive examination, consisting of written or oral parts or both at the discretion of the major department. Admission to the comprehensive examination is granted upon the recommendation of the major department, the filing of the plan of study, and the approval of the dean of the Graduate College. A student must be registered in the University at the time of the comprehensive examination, which must be passed not later than the session prior to the session of graduation. This examination, administered only on campus, is intended to be an inclusive evaluation of the candidate's mastery of the major and related fields of study, including the tools of research in which competence has been certified.

The comprehensive examination is not a deferred qualifying examination. It is intended to evaluate the candidate's mastery of his or her subject at or near the end of his or her formal preparation and prior to the completion of the dissertation. The comprehensive examination and the final examination, which is concerned chiefly with defense of the thesis and related subjects, are the two principal examinations for the doctoral degree.

The comprehensive examination will be evaluated by a convened meeting of the committee and reported as satisfactory, satisfactory with reservations or unsatisfactory to the Graduate College office within 14 days after the completion of the examination. Two "unsatisfactory" votes will make the committee report unsatisfactory. The report of a satisfactory examination should contain the name of the supervising professor for the candidate's dissertation.

In the event of a report with two or more votes of "unsatisfactory with reservations," the exact stipulations of the committee should be recorded in the report form. If the stipulations involve further examination in a particular area of study, the statement should specify the area, in required additional courses or other procedures, and in specifying the time and method of satisfying the stipulation. The candidate will not be admitted to the final oral examination until such stipulations have been satisfied. The executive of the major department should promptly send a written report to the Graduate College giving the date of removal of "reservations."

In case of a report of unsatisfactory in a comprehensive examination, the candidate must gain the consent of his or her supervising professor to present himself or herself for reexamination not sooner than four months after the first examination. The examination may be repeated only once, at the option of the department.

II. Postcomprehensive Registration
The student is required to register each semester after passing the comprehensive examination until the degree is awarded. He or she must register for the courses, research and dissertation necessary to complete the plan of study. If, after having completed all such registrations, the student is not ready to submit the dissertation and take the final examination, he or she may request the continuing registration by paying a special minimum fee for each semester, it being understood that no registration for the summer session is required unless the student is taking a degree at the end of that session. If a student fails to register, he or she may not be readmitted to candidacy until he or she has submitted an application and been approved by an advisor, the departmental executive and the Graduate dean.

K. Dissertation for the Doctoral Degree
Two copies of the dissertation must be presented at the office of the Graduate College not later than four weeks before the completion of the dissertation at which the degree is to be conferred and deposited therein in final form 10 days before commencement.

Regulations regarding preparation of the dissertation copy shall be promulgated by the dean of the Graduate College. Dissertations will be microfilmed and thus made available on a permanent basis. An abstract of the dissertation, not to exceed 600 words of text, is to be deposited with the dissertation. The abstract must be approved and signed by the dissertation advisor. The abstract is published in the journal of Dissertation Abstracts. One copy of the dissertation typescript is bound and indexed at the University Music Library.

If the dissertation is in some nonprint form (e.g., painting, statue, performance or music) the librarian in charge of these will help the student and faculty advisor work out an appropriate method of preparing the accompanying manuscript, if such help is needed. Once the manuscript is accepted, it is treated the same as any other.

Written dissertations shall be made available to all members of the examining committee not later than two weeks before the date of the examination.

L. Dissertation Fee
A nonrefundable dissertation fee is charged each candidate to cover the cost of the above processing of the dissertation and abstract.

M. Final Examination
The work for the degree culminates in a final oral examination administered on campus. This examination should include: 1) a critical inquiry into the purposes, methods and results of the investigation—not a mere recapitulation of the procedures followed; 2) intensive questioning on areas of knowledge constituting the immediate context of the investigation. The final examination may not be held until the next session after passing the comprehensive examination. A final examination can never be scheduled nor can it be held later than five years after passing the comprehensive examination. Failure to meet this deadline will result in a reexamination of the student to determine his or her qualifications for taking the final examination. The procedures to be followed are the same as those for the comprehensive examination. (See "XII. I. Comprehensive Examination.")

Final examinations for the doctorate are open to the public. Members of the faculty of the Graduate College are especially invited to attend and, subject to the approval of the chairman, to participate in the examination.

The report of this final examination is due in the Graduate College office not later than 48 hours after the date of the examination. The final examination will be evaluated as satisfactory or unsatisfactory.
factory. Two unsatisfactory votes will make the committee report unsatisfactory. In case of a report of unsatisfactory in the final examination, the candidate may not present himself or herself for reexamination until the next semester. The examination may be repeated only once, at the option of the major department.

N. Examining Committees
The comprehensive and final examinations are conducted by committees of no fewer than five members of the Graduate faculty appointed by the Graduate dean upon recommendation of the major department, except that departments may request the dean for permission to replace one of the five members of the

Graduate faculty by a recognized scholar of professorial rank from another academic institution. A member of the Graduate faculty from outside the major department is required in those cases where a related field outside the major department is included in the comprehensive examination. For the final examination one member of the committee must be a member of the Graduate faculty from outside the major department.

Upon recommendation of the major department, the Graduate dean may appoint additional qualified persons (not necessarily members of the Graduate faculty) to serve as voting members of the examining committee, and at his or her discretion the Graduate dean may add a member to the committee.
College of Law

Administrative Staff
Dean: Lawrence R. Stade
Dean Emeritus: Mason Ladd
Associate Dean: Donald L. Carlson
Assistant Dean: Thomas G. Sermonoff

The University of Iowa College of Law is one of 27 charter members of the Association of American Law Schools and has long been recognized and approved by the American Bar Association's Council of Legal Education and Admission to the Bar.

The degree, Juris Doctor (J.D.), is the degree normally conferred by the College.

The Curriculum
Iowa's law program is distinctive in its first-year approach. There is a freshman seminar in which small groups of students have opportunities for more individual expression, closer faculty relationships, the writing of several research papers and a closer approach to graduate-level instruction.

Each first-year course has a specified function in helping students develop analytical ability and place the legal process in its social context. All first-year students are introduced to legal reasoning through written assignments, as well as instruction in legal method and in legal bibliography.

During the second year, all students are required to take torts and a course in appellate advocacy. Before they graduate, all must also take a second course in constitutional law and a course in criminal procedure. All other second- and third-year courses are elective.

Students are encouraged to sign up for independent research with faculty members. Additionally, the College has instituted a second-year empirical research project.

Students may also take courses in other colleges of the University. To receive credit for such a course, the student must obtain prior permission of the dean of Law, and earn a grade of C or above in the course.

The Joint Program
In addition to its regular program leading to the Juris Doctor degree, the College offers a joint program leading to the J.D. degree and an advanced degree (M.A. or Ph.D.) from a participating department of the University of Iowa Graduate College.

Under this program, if a student takes a course which is relevant to both degrees, the course can perform "double duty" and be counted toward the semester-hour requirements for both degrees. In addition to reducing the time required to obtain both degrees, it is hoped that students will be able to contribute to one discipline the insights he or she has gained in the other.

Applications for this program must meet admission requirements of the Graduate College, in addition to those of the College of Law.

Master of Comparative Law (M.C.L.)
The degree Master of Comparative Law may be granted to selected foreign law school graduates who complete a program of satisfactory study for two consecutive semesters and one summer session, and who submit an acceptable thesis. Applicants must meet admission requirements of the Graduate College. In addition, the admissions committee may require them to complete the Law School Admission Test.

Summer Session
A six-week summer session, offering a limited number of courses, is available to students who have completed at least one year of law school at Iowa or elsewhere. The session runs from early June to mid-July. Students may enroll for up to six semester hours of coursework. To be eligible, an applicant from another school must submit a statement from the dean of that school, indicating the applicant is in good standing and eligible to continue there.

The Independent Study Unit permits qualified graduate students or law students to the University facilities for further study following the close of the summer session. Advance permission is required by the College of Law in order to undertake an independent study project.

Related Activities
The Iowa Law Review
Published five times a year and circulated to more than 5,000 subscribers, the Review is managed and edited by College of Law students, who also write much of its material. Its editorial staff is selected from students showing exceptional ability in legal writing.

The Advocate
Written, edited and published by law students, The Advocate provides a vehicle for College of Law students, faculty, and guests to express their opinion and profiles of College faculty members and guests.

Community Legal Assistance
The College has arranged with several eastern Iowa agencies for clinical programs in which students have opportunities to relate their legal knowledge to actual problems by interviewing clients, drawing pleadings and other documents, conducting legal and other research, and, in some instances, appearing in court. Stu-
Student Organizations
Law student organizations at Iowa include the Order of the Coif, a national honorary whose membership is drawn from the top 10 percent of the senior class; the Iowa Society of International and Comparative Law; Phi Delta Phi and Phi Alpha Delta, national law fraternities; Kappa Beta Phi, national law society; and the Black American Law Students Association. All students are members of the Iowa Student Bar Association, whose functions include placing students as voting members on faculty committees.

Facilities
The Law Building contains a library and air-conditioned classrooms. With its collection of approximately 190,000 bound volumes, the law library is an outstanding research facility. A broad open-stack policy makes it readily available to students.

Agricultural Law Center, created by the State Board of Education, is nationally and internationally respected. It conducts legal-economic research with Iowa State University and the United States Department of Agriculture.

Tuition and Expenses
In addition to regular tuition and fees, books and supplies average about $300 per year. Housing costs and personal expenses will vary with individual circumstances.

Financial Aid
The College requires all students to enroll for a full schedule and discourages their taking outside employment. It has developed a comprehensive financial aid program which enables most students to meet expenses without outside employment. In addition to the awards listed in the "Scholarships and Loans" section of the Graduate and Undergraduate Catalog, the College offers research assistantships with substantial stipends. Assistantships are awarded to high-ranking third-year students who have demonstrated ability for research and scholarship. About one-third of the student body holds scholarships.

Placement
A wide variety of placement opportunities is available upon graduation from the College of Law. These include opportunities to work in government, as clerks to judges, with corporations and in private practice, both in the very large law firms in the great urban areas of our country and in small firms throughout the country. There are many law opportunities to practice law in Iowa, and in recent years approximately half of the graduating law students have availed themselves of these opportunities. Each year numerous law firms, corporations and government agencies visit the University to recruit students from the College of Law.

Admission
Prove Studies
No pre-nursed program of undergraduate study is required for admission to the College of Law at Iowa. The student should pursue a program adapted to his or her own personal interests. However, the objectives of the program should include increased capacity for verbal comprehension and expression, increased understanding of human institutions and values, and increased facility of thought.

Admission Requirements

Beginning students may enter the College of Law only in the fall semester.

Except for good cause shown, a student must apply for admission by May 1 preceding the fall semester in which he or she wishes to enter. The applicant is responsible for seeing to it that, before the final date for submitting applications, each college or university he or she has attended has sent an official transcript to the University, or, if the student has registered with it, has sent the request for information forwarded from the Law School Data Assembly Service, Princeton, New Jersey.

An application fee of $10.00 must accompany application from those who have not completed their undergraduate work in residence at The University of Iowa.

The applicant must present a baccalaureate degree from an approved college or university prior to beginning work in the College of Law.

To be considered for admission, the applicant should have attained a cumulative grade-point average of at least 3.0 on all college work undertaken (N = 6).

Each applicant for admission must complete the Law School Admission Test administered by the Educational Testing Service, Princeton, New Jersey, and have his or her score forwarded to the College of Law. Except upon a showing acceptable to it, the admissions committee will not consider applications from students who fail to take the test by April of the year they intend to enroll.

Fulfillment of the specific requirements for admission listed above does not assure admission to the College of Law. From the applicants meeting the minimum requirements, the admissions committee will select those who appear to be best qualified for the study and practice of law. The admissions committee may require personal interviews of applicants. The College participates in the University's Educational Opportunity Program and considers applicants from disadvantaged backgrounds on an individual basis.

Advanced Standing

A transfer student may be eligible for admission if he or she has attended a school which is a member of the American Law Schools, is in good standing at the time of withdrawal (evidenced by a letter from the dean of the school from
which he or she is transferring), meets the admission require-
ment for entering students at this school and has done substan-
tially above-average work in the law school to which he or she
was admitted. No more than two semesters of residence credit
and no more than 30 semester hours may be transferred from
another school. Where an applicant has completed more than one year of law,
advanced standing will be permitted only in exceptional cases,
and no more than one year's credit will be granted.

Accepted applicants are required to make an advance non-
refundable deposit of $500 by April 1. Applicants who are
accepted after April 1 must make the deposit within two weeks
after being notified of favorable action on their applications.
For those who enroll, the deposit is credited toward the first University
bill. An applicant who fails to make the deposit within the
time specified forfeits his or her place in the entering class.
The $500 fee will be refunded if an applicant cannot enroll because
of circumstances beyond the student's control. A student who
is admitted but is forced to give up his place in the class because
of a service obligation will be automatically be readmitted upon
 timely application at the conclusion of his service.

Applicants who are accepted and who are now to The Univer-
sity of Iowa must submit a satisfactory physical examination
report to the University Student Health Service.

Graduation Requirements

Residence Requirements

To satisfy residence requirements, a student must enroll for a
minimum of 26 semester hours of credit for each of three aca-
demic years, the academic year being defined to exclude summer
sessions. Satisfaction of the residence requirements during any
single semester of the academic year requires a student to enroll
for at least 12 hours of credit. A student wishing to register for
more or fewer semester hours of credit during any one semester
must have special permission from the dean.

Scholastic Requirements

Numerical grades may be translated into letter grades for pur-
poses of comparison as follows:

100-88 = A 79-75 = B 69-65 = C 59-50 = F
84-80 = A- 74-70 = B- 64-60 = D

A first-year student who fails to maintain a cumulative weighted
average of 65 after registering for 24 or more semester
hours of work shall be ineligible to continue in the College of
Law. All other students must maintain a cumulative weighted
average of 65 to be eligible to continue in the College.

Students whose cumulative weighted average is below 65 for
the first two semesters, but whose weighted average is 65 or
better during the second semester, will be reinstated on proba-
tion for the third semester. They must achieve a cumulative
weighted average of 65 by the end of the third semester or be
ineligible to continue further.

Any upperclass student whose weighted average is below 64 for
the full academic year shall be dropped from the College of
Law.

Graduation Honors

The J.D. degree may be granted with special honors as follows:
With Highest Distinction—cumulative weighted average of 85 or
more; With High Distinction—cumulative weighted average of
80-84; With Distinction—cumulative weighted average of
75-79.

Staff, professors Bayne, Berglund, Blonski, Bondfield, Boyd, Buss,
Crisson, Davidson, Doel, Eells, Fahm, Heine, Meeks, Neidheuster,
Vernon, Wesley, Winkle, professor emeritus Updiggay, associate
professor Baldwin, Hopkins, Massa, Meyer, Palmer, Polaski, Sess, associate professors Bartsch, Hunches, Schaeffer,
Wallace, Ward, research professor Harris; instructors Lanne, R. Neimers, Phelan, Tucker, library assistants Huesman; associate li-
brarian Crittenden foreign law librarian Sess

Clearances

81198 Civil Procedure I 3 s.h.
Problems relating to jurisdiction of persons, jurisdiction of subject matter and
venue of both federal and state courts, pleadings, motions, summary
judgment, rule making and evidence are presented to current practitioners.

81198 Civil Procedure II 3 s.h.
Defense and discovery issues, pre-trial motions, presenting and arguing evidence,
written and oral argument, depositions, interrogatories, summary judgment,
judgment on the pleadings, motions to dismiss, motions for summary
judgment, pre-trial motions, discovery, motions, oral argument, depositions,
interrogatories, summary judgment and judgment on the pleadings.

81195 Criminal Resolution 3 s.h.
Process and institutions development to resolve disputes. Negotiation, mediation,
resolution and adjudication by judges and juries; related theories, such as impact
of adversary system, relationship of expert in decision making, effect of appellate
review on decision making; social consequences which have resulted or are in
process of development or application in new contexts.

81168 Constitutional Law I 3 s.h.
Allotment of governmental powers according to constitutional provisions; federal
government, state government, powers delegated to local government; present
interests in taking role of judicial function in attaining unity within which society
operates; institutional development of legal system and relationships among
several institutions within state.

81169 Contracts and Sales Transmarg 3-4 s.h.
Purposes, development, scope of subject matter, agreements as modified by
legislation, immunities of contracts, performance, constructive and express
representation; tender, acceptance, open breached, as well as the
remedies for breach, including measures for assuring enforcement of agreement
under rules of law in extending reasonable arrangements, indemnities be-
cause of errors and savings of legal technicalities.

81155 Criminal Law 3 s.h.
Prohibitions of desert behavior deemed as detrimental to society as
same as to be characterized as criminal. What actions shall be considered as
what crimes can be taken to deal most effectively with; endeavors deemed criminal; role
of law in altering such behavior; substantive law of homicide and theft; impor-
tance of distinguishing social and economic law and to maintain nearly vital legal systems.

81168 International Law 3 s.h.
Past, present, and future role of law in preserving world public order among
other states' interests of participants engaged in wide variety of scholars across national and
other international boundaries; development of international law from an analysis of
questions of authority in legal systems which usually operate in absence of "police force"
and "agreement".

81159 Property I 2 s.h.
Concepts of ownership as one of basic foundations of law; acquisition of property
and its limitations; use and disposition, in conjunction with traditional common
law methods of acquiring; action of possession and of public recording of owner-
ship; need for continuity and stability in property relationships, historical
development of the law.
51880 Poverty and the Law Seminar
Lecture-oriented treatment of poverty and the law, including an emphasis on the legal and political aspects of poverty. 3 cr.

51904 Student Rights Seminar
Lecture-oriented treatment of student rights and liberties, with a focus on the legal principles underlying these rights. 3 cr.

51964 Corporations and Corporate Law Seminar
Lecture-oriented treatment of corporate law, with an emphasis on the legal principles underlying corporations and the rights of shareholders. 3 cr.

51966 Environmental Law Seminar
Lecture-oriented treatment of environmental law, with an emphasis on the legal principles underlying environmental protection. 3 cr.

51968 Taxation Seminar
Lecture-oriented treatment of taxation law, with an emphasis on the legal principles underlying taxation. 3 cr.

51969 International Law Seminar
Lecture-oriented treatment of international law, with an emphasis on the legal principles underlying international relations. 3 cr.

51970 Civil Procedure Seminar
Lecture-oriented treatment of civil procedure, with an emphasis on the legal principles underlying civil lawsuits. 3 cr.

51971 Criminal Procedure Seminar
Lecture-oriented treatment of criminal procedure, with an emphasis on the legal principles underlying criminal investigations. 3 cr.

51972 Legal Writing Seminar
Lecture-oriented treatment of legal writing, with an emphasis on the legal principles underlying legal communication. 3 cr.

51973 Legal Research Seminar
Lecture-oriented treatment of legal research, with an emphasis on the legal principles underlying legal research. 3 cr.

51974 Legal Ethics Seminar
Lecture-oriented treatment of legal ethics, with an emphasis on the legal principles underlying professional ethics. 3 cr.

51975 Alternative Dispute Resolution Seminar
Lecture-oriented treatment of alternative dispute resolution, with an emphasis on the legal principles underlying alternative dispute resolution. 3 cr.

51976 Intellectual Property Seminar
Lecture-oriented treatment of intellectual property law, with an emphasis on the legal principles underlying intellectual property. 3 cr.

51977 Antitrust Seminar
Lecture-oriented treatment of antitrust law, with an emphasis on the legal principles underlying antitrust. 3 cr.

51978 Bankruptcy Seminar
Lecture-oriented treatment of bankruptcy law, with an emphasis on the legal principles underlying bankruptcy. 3 cr.

51979 Taxation Seminar
Lecture-oriented treatment of taxation law, with an emphasis on the legal principles underlying taxation. 3 cr.

51980 Intellectual Property Seminar
Lecture-oriented treatment of intellectual property law, with an emphasis on the legal principles underlying intellectual property. 3 cr.

51981 Environmental Law Seminar
Lecture-oriented treatment of environmental law, with an emphasis on the legal principles underlying environmental protection. 3 cr.

51982 Corporate Law Seminar
Lecture-oriented treatment of corporate law, with an emphasis on the legal principles underlying corporations and the rights of shareholders. 3 cr.

51983 Civil Procedure Seminar
Lecture-oriented treatment of civil procedure, with an emphasis on the legal principles underlying civil lawsuits. 3 cr.

51984 Criminal Procedure Seminar
Lecture-oriented treatment of criminal procedure, with an emphasis on the legal principles underlying criminal investigations. 3 cr.

51985 Legal Writing Seminar
Lecture-oriented treatment of legal writing, with an emphasis on the legal principles underlying legal communication. 3 cr.

51986 Legal Research Seminar
Lecture-oriented treatment of legal research, with an emphasis on the legal principles underlying legal research. 3 cr.

51987 Legal Ethics Seminar
Lecture-oriented treatment of legal ethics, with an emphasis on the legal principles underlying professional ethics. 3 cr.

51988 Alternative Dispute Resolution Seminar
Lecture-oriented treatment of alternative dispute resolution, with an emphasis on the legal principles underlying alternative dispute resolution. 3 cr.

51989 Intellectual Property Seminar
Lecture-oriented treatment of intellectual property law, with an emphasis on the legal principles underlying intellectual property. 3 cr.

51990 Antitrust Seminar
Lecture-oriented treatment of antitrust law, with an emphasis on the legal principles underlying antitrust. 3 cr.

51991 Bankruptcy Seminar
Lecture-oriented treatment of bankruptcy law, with an emphasis on the legal principles underlying bankruptcy. 3 cr.

51992 Taxation Seminar
Lecture-oriented treatment of taxation law, with an emphasis on the legal principles underlying taxation. 3 cr.

51993 Intellectual Property Seminar
Lecture-oriented treatment of intellectual property law, with an emphasis on the legal principles underlying intellectual property. 3 cr.

51994 Environmental Law Seminar
Lecture-oriented treatment of environmental law, with an emphasis on the legal principles underlying environmental protection. 3 cr.

51995 Corporate Law Seminar
Lecture-oriented treatment of corporate law, with an emphasis on the legal principles underlying corporations and the rights of shareholders. 3 cr.
Administrative Staff

Dean, John W. Estes
Associate Deans: Robert Barker, John C. MacQueen, Wendrow W. Moore, Paul W. Beaman
Assistant Dean, Student Affairs: James L. Baker
Assistant Dean, Continuing Education: Richard M. Caplan
Assistant Dean, Medical Education: Broadmoore Hospital, Des Moines
Sidney L. Sands
Assistant Dean, alumni Health and Coordinator of Community Health
Cline Programs: A. Wilton Hornaday
Assistant Dean, Veterans Hospital Affairs: Richard G. Rothardt

The University of Iowa is the only institution in Iowa offering the degree Doctor of Medicine. Its College of Medicine, which marked its centennial year in 1970, was one of the first university-based centers of medical education established in the Midwest. It has earned international recognition for its pioneering contributions to medical science and for its general excellence. The College of Medicine is accredited by the American Medical Association and the Association of American Medical Colleges. The College meets the requirements of all state licensing boards; its diploma admits the holder to all privileges granted to graduates of all medical colleges before such boards. The College is both physically and administratively an integral part of a major university, its students have opportunities to pursue a full range of academic and cultural interests. At the same time, the College contributes significantly to the strength of the University; for example, more than 1,500 non-medical students enroll each semester in basic science courses administered by the College of Medicine.

The M.D. Program
The Doctor of Medicine program which the College introduced in the fall of 1969 differs in several significant ways from the traditional format of medical education. Its two-year introductory phase comprises three semesters of basic medical science and one semester of preclinical orientation in clinical medicine. The third year comprises a summer session and two semesters of clinical clerkships, in which the student participates in patient care under supervision of staff physicians. The fourth year is devoted to an Intensive Study Program in which the student focuses on what he or she finds to be the most fascinating facet of medical education best relates to his or her professional interests.

Combined M.D.-Graduate Programs
Students who wish to pursue the M.D.-degree in combination with the M.S., M.S. or Ph.D. degree program may do so by gaining admittance both to the College of Medicine and to the Graduate College, and making detailed arrangements with the graduate department chairman and the associate dean for Medical Student Affairs of the College of Medicine.

Graduate Programs
Programs leading to graduate degrees through the Doctor of Philosophy are offered in anatomy, biochemistry, microbiology, nutrition, pharmacology (including toxicology), physiology and biophysics, preventive medicine and environmental health science, and in radiation biology. In addition, graduate degree programs leading to the Master of Science degree are offered in ophthalmology, orthopedic surgery, otolaryngology, pathology, psychiatry and surgery.

Faculty
All members of the medical faculty have full-time appointments; their work in practice and research is part of, not apart from, their work in teaching. Many have earned national and international honors and are listed in Who’s Who in Medicine or American Men of Science.

Facilities
The College of Medicine is housed in the U of I Health Center, which also includes the colleges of Dentistry, Nursing and Pharmacy. An $85-million expansion program begun in 1969 will make this one of the most advanced, comprehensive health science centers in the United States. Its present and projected facilities include:

General Hospital
The 810-bed General Hospital provides facilities for teaching all major medical specialties and for full programs of internship training and residency in all major specialties. More than 30,000 inpatients are admitted, and more than 110,000 outpatients are seen annually.

Children’s Hospital
Children’s Hospital houses orthopedic surgery, physical medicine and rehabilitation, dermatology, a rehabilitation center; and the University’s physical therapy training unit. It has a 165-bed capacity.

Psychiatric Hospital
With clinical and research laboratories in neuropsychology, biochemistry and psychology, Psychiatric Hospital has facilities for complete study of patients. It has 60 beds for adults and 35 beds for children. Four hundred inpatients are admitted annually and more than 9,500 outpatients are seen. The electroencephalographic laboratories serve the entire Health Center.

Hospital School
The Hospital School for Severely Handicapped Children provides educational opportunities for 60 physically handicapped and educable mentally-retarded children on both a residential
and a day-school basis. Its interdisciplinary program involves professional personnel from medicine, psychology and educational psychology, social work, nursing and therapy in activities which involve patient care with research and professional training.

The Oakland Campus
The 525-acre Oakland campus is located seven miles northwest of the Health Center. Its 385-bed hospital houses the state tuberculosis treatment center, an alcoholism treatment unit, medical technology training laboratories and classrooms, and toxicology laboratories. Also on the Oakland campus are pediatrics research laboratories, the offices and laboratories of the Institute of Agricultural Medicine's accident prevention section and Health Center research animal-care facilities. A Model Clinic for Family Practice was opened in 1972 to serve the rural community adjacent to the campus and to provide a teaching base for the Department of Family Practice.

The Veterans Administration Hospital
The 440-bed Iowa City Veterans Administration Hospital is an integral part of the Health Center. Interns, residents and medical students may receive much of their clinical training here. Several of the major facilities of the Health Center are based in the VA Hospital, including laboratories for the transplantation program, highly-specialized laboratories in nuclear medicine and special units for the study of metastatic and gastrointestinal diseases. The VA Hospital also offers unique training opportunities in the fields of clinical pharmacology, gastroenterology, cardiology, nephrology and applied immunology.

The Health Sciences Library
Scheduled for 1973 completion, the new Health Sciences Library building will permit consolidation of the basic collections of the University's health-science colleges. Architecturally innovative, the new building will include a 24-hour study area and group-study areas. Now numbering approximately 65,000 volumes, the College of Medicine collection covers all branches of medical sciences. In addition the College subscribes to more than 1,200 periodicals.

Other Facilities
The new Basic Sciences Building houses five departments of the College of Medicine. Other teaching facilities are located in the Medical Research Center and in the Medical Laboratories Building, which also houses the State Hygienic Laboratory.

Admission
Applications are accepted beginning July 1 of the year preceding the beginning of the class for which application is being made. Prospective students are urged to apply as early as possible. The closing date is December 15.

A fee of $10.00 must accompany applications from those who have not completed work in residence at The University of Iowa. This fee is not refundable except to residents of Iowa who are denied admission.

Purification of the specific requirements for admission does not assure admission to the College of Medicine. From the applicants meeting the requirements, the admissions committee of the College of Medicine will select those who appear to be best qualified for the study and practice of medicine.

Each applicant must file with the Office of Admissions the completed application form and an official transcript from each college he has attended since graduation from high school. Applicants who have completed the baccalaureate degree and required courses five or more years before seeking admission to the College of Medicine will be considered by the admissions committee only under exceptional conditions.

The applicant must have completed at least three years (96 semester hours) of college study, including the following specific courses or subject areas with appropriate laboratory:

- **Physics**: complete introductory course;
- **Mathematics**: college algebra and trigonometry; or advanced college mathematics, if the student completed college algebra and trigonometry in high school;

Chemistry: at a minimum, a complete introductory course in organic chemistry, which would ordinarily follow a complete introductory course in modern general chemical principles;

Biological science: a complete introductory course in the principles of animal biology, or zoology and botany (but not botany alone), and one introductory course in biology.

To be considered for admission, an applicant must have attained a grade-point average of at least 2.5 (A = 4) for all college work undertaken. Because the quality of work in premedical science is basic to success in medicine, special attention will be given by the admissions committee to grades in science. Where the College offers an option to take courses on a pass-fail basis it is expected that applicants will take the required science courses on a graded basis.

Preference will be given to applicants with high scholastic standing who are residents of Iowa, but consideration will also be given to outstanding nonresidents. Applicants for admission are required to take the Medical College Admissions Test administered by the American Medical Colleges. Applicants are required to complete this test in May or October of the year preceding that for which they are applying for admission. Students may make arrangements to apply for this examination through the University's Evaluation and Examination Services.

Personal interviews will be arranged as desired by the admissions committee. Accepted applicants must make a $50.00 deposit within two weeks after notification of favorable action on the application. This deposit will not be refunded but is credited toward the first fee payment.

Applicants accepted for admission are required to submit a satisfactory physical examination report to the University Student Health Service within two weeks after notification of acceptance. Applicants must also complete, through Student Health Service, an X-ray film of the chest and successful vaccination against smallpox prior to registration.

Admission to Advanced Standing
A transfer student may be eligible for advanced standing if he or she meets the admission requirements for students entering
Unqualified Students

Applicants for admission to the College of Medicine who are not degree candidates but who wish to register for special subjects will be admitted to any lecture or laboratory course only upon complying with all the regular requirements for admission to such a course, or by action of the faculty upon recommendation of the professor in charge of the course.

Academic Advancement

Promotions committees appointed by the dean and consisting of designated members of the faculty under whom the courses have been taken will, at the close of the academic year, review the accomplishments of the students and determine their eligibility for advancement. In making their decisions the committees will consider the attainment of the student as evidenced by the grade received in each subject which should reflect the consensus of the Departmental staff, his or her seriousness of purpose, his or her conduct and general fitness for entering the medical profession.

Graduation Requirements

The Doctor of Medicine degree candidate's time of study must include attendance during at least four years of instruction. At least one year must be taken at The University of Iowa. A passing grade in each of the branches of the curriculum must have been attained, and all other requirements of the College satisfied.

Financial Aid

The College of Medicine currently awards approximately $141,000 in full-resident tuition scholarships to approximately 175 students each year. These scholarships are usually distributed equally among the four College classes. Most are awarded on the basis of need, although, in accord with the donors' wishes, some are awarded on the basis of merit. These scholarships vary in value from $500 to $1,500.

Annual summer research fellowships are awarded on the recommendation of the sponsoring faculty members.

Loans are available to medical students on the basis of their need, and to the extent that loan funds are available. Most of these loans come from the United States Public Health Service's Health Professions Student Loan Program, as do most of the need-based scholarships. Smaller and shorter-term loans are usually available through the office of the College of Medicine.

The College is fully committed to the Educational Opportunity Program, both academically and in terms of financial aid.

Nondepartmental Courses

98:199 Genetics for Medical Students

Course for medical students, normally taken during second semester; review of general genetics (variably independent) and progress study and classification of genetic and congenital manifestations as seen in clinical medicine.

98:198 Illustrations and Scientific Methods (Sophomore Level)

Individualized, progressive review of basic scientific methods; emphasis on analytical concepts required to critically evaluate medical literature; topics include descriptive statistics, probability, populations and sampling, interpretation of statistical significance tests, regression and correlation, professionalism and discipline with clinical faculty cover basic principles and examples of epidemiology and clinical skills.

98:170 Neuroanatomy and Behavior

Introduction to the study of nervous system, its anatomy, and function in health and disease.

98:111 Introduction to Clinical Medicine

Freshman course devoted to the presentation of basic sciences necessary for the diagnosis and treatment of common diseases.

98:181 Designing Learning Programs for Health-Careers Education

Emphasis placed on development and evaluation of educational programs, design of learning experiences and special applications geared toward establishment of workable relationships with ongoing educational program, activities individualized to meet various backgrounds, needs and objectives, areas as Education 700:141.

98:161 Learning Strategies for HealthCareers Education

Role of health professional as teacher examiner; variety of learning strategies explored through discussions, observations, micro-experiences and experiences within actual learning environment; activities individualized to meet various backgrounds and needs, areas as Education 700:162.

98:202 Facilitating Learning in HealthCareers Education

Role of health-care educator as teacher and learning facilitator explored in detail. Student experiences with variety of learning strategies through readings, discussions, observation, micro-experiences and actual classroom activities, prerequisites: graduate standing or permission of instructor.

98:205 Health-Careers Education and the Health-Service Industry

Comprehensive overview of health service industry, particularly as related to both initial preparation and continuing education of health-care personnel.

Anatomy

Interim Coordinating Committee (Chairman: R. E. Heintz)

Degrees offered: Ph.D. (M.S. only to students with primary orientation in medical sciences.

The Ph.D. in anatomy is a function in recognition of original work done in experimental biology, usually with an emphasis on structure-function relationships and often with a more immediate applicability to human biology than is the case of similar work in zoology.

Candidates will be required to have proficiency in the three basic anatomical areas—gross anatomy, microscopic anatomy, neuroanatomy. Usually they will also take courses in such related fields as physiology, biochemistry and endocrinology. The course listed under such titles as "Advanced Human Anatomy," "Problems" and "Research" involve semi-independent, in-depth work on selected topics, including the methodology of teaching anatomy.

Special Faculty Strength

Members of the Departmental faculty possess expertise in areas such as histology, endocrinology, neurobiology, biology of cancer and calcified tissue, electron microscopy. The faculty has done innovative work and shows special interest in modern techniques used in the teaching of various aspects of anatomy.
Admission

Work leading to an advanced degree in anatomy in the Graduate College may be taken by properly qualified students. For admission procedures, see "Graduate College." 

Courses

401 Elementary Human Anatomy 4 s.h.

Primary for students of nursing and dental hygiene

402 Microanatomy for Dental-Hygienic Students 3 or 4 s.h.

Cells, primary tissues and organs; emphasis on oral and related structures; includes clinical embryology.

403 Human Gross Anatomy for Dental Students 6 s.h.

Regional dissections of entire body with major emphasis on head and neck. Includes cranial and spinal nerve roots, essentially to graduate students with consent of instructor.

404 Microscopic Anatomy for Dental Students 8 s.h.

Cells, primary tissues and organs; emphasis on oral and related structures; includes clinical embryology. Pre-requisites: must have consent of instructor.

405 Gross Anatomy for Medical Students 7 s.h.

Regional dissections of entire body, head and thorax, and brain. Post-mortem material, anatomy laboratory. Consent of instructor.

406 Microscopic Anatomy for Medical Students 4 s.h.

Cells, primary tissues and organs; emphasis on oral and related structures; includes clinical embryology. Consent of instructor.

410 Functional Anatomy and Histology 3 s.h.

Anatomy, physiology, functional anatomy, histology and embryology. Consent of instructor.

412 Medical Physiology 3 s.h.

Basic and physiological principles of health, disease and therapy. Consent of instructor.

415 Neurology and Behavior 5 s.h.

Interdisciplinary study of elements, organization and functions of central nervous system; behavior, consciousness, abnormalities and degenerative processes in patients. Consent of instructor required for all 400 level students and 611, 710-21 and 710-12.

502 Special Microscopic Anatomy 4 s.h.

Selected topics of microscopic anatomy of human tissues. Consent of instructor.

503 Human Laboratory 3 s.h.

Laboratory work, data collection, analysis and interpretation of data obtained in the human laboratory.

504 Human Anatomy 4 s.h.

Consent of instructor required for all 400-level students and 611, 710-21 and 710-12.

505 Human Anatomy and Neuroanatomy 2 s.h.

Consent of instructor.

506 Human and Comparative Anatomy, Which is a prerequisite.

509 Human Development 3 s.h.

Emphasis on the development of the human organism from the fertilized egg to the adult human being.

601 Sallance Human Anatomy 3 s.h.

Emphasis on the development of the human organism from the fertilized egg to the adult human being.

602 Medical Physiology 3 s.h.

Basic and physiological principles of health, disease and therapy. Consent of instructor.

603 Teaching Workshop in Anatomy 2 s.h.

Practical application of educational psychology in teaching of anatomy: formulation of course objectives, teaching methodology, test construction and evaluation of tests.

606 Problems 2 s.h.

Problems of Department head.

607 The Vernier Nervous System 3 s.h.

Anatomical and physiological study of the central nervous system, emphasizing the central and peripheral nervous system.

6302 Review of Anatomical Neurology 3 s.h.

Importance of human nervous system, applied anatomy on clinical and physiologic basis. Consent of instructor.

6305 Radiology 3 s.h.

Radiology is the examination of the human body with the use of ionizing radiation. Consent of instructor.

6316 Endocrinology for Medical Students 1 s.h.

Selected topics in endocrinology. Consent of instructor.

6325 Electron Microscopy—Theory and Technique 4 s.h.

Lectures and laboratory course offered each fall semester for non-meds. Consent of instructor.

6326 Microscopic Anatomy for Dental Students 4 s.h.

Light microscopy and fine structure of cell, tissue and organ, teeth and oral structures. Consent of instructor.

6327 Cell Ultrastructure Seminar 3 s.h.

Lectures, discussions and demonstrations on the structure and functional correlation of cells as revealed by electron microscopy. Consent of instructor.

Anesthesia

Department Head: Jack Meyers

For nearly 60 years medical students at The University of Iowa have received clinical instruction in the administration of anesthesia and other related activities of the Department. Moreover, it is probable that the country's first residency-training program in anesthesia was established at Iowa in 1922. The program is approved by the American Board of Anesthesiology and has graduated well over 200 specialists. About 20 percent of these former residents are in academic medicine, and 16 have served as heads of academic departments of anesthesia.

The teaching, service and research activities of the Department have traditionally had, as their background, the administration of anesthetic agents for the relief of pain during the thousands of surgical procedures performed every year in the University Hospitals. During the last 20 years or so, however, activities outside the operating room have received increasing emphasis. Among them are diagnostic and therapeutic procedures for relief of severe and intractable pain; consultations involving problems of sedation, airway management and cardiopulmonary support; and substantial participation in the activities of the Recovery Room and Intensive Care Unit.

Undergraduate and junior medical students are introduced to this specialty; helps to develop in the junior student some concepts and techniques related to anesthetic agents, the use of the endotracheal tube and other patients; and offers the senior student those intense study in an and all phases of the Department. Wide clinical experiences, well-designed seminars and teaching conferences, and ongoing research activities develop in the postgraduate student, or resident, the intellectual depth and skills required of a specialist in anesthesia.

Staff: professors Bouton, Meyers, associate professors Dallacker, Sokol, assistant professors Bannister, Gerga, Ghenelos, Hodick, Koedam, Urgo, clinical assistant professor Thakecher.
cluded are clinical anesthesia seminar, basic science seminar, and morbidity and mortality conferences; four students; subscription time: four to eight weeks; offered all year.

116-011 Intensive Care
Student internships involved in evaluation and treatment of critically ill patients in Intensive Care Unit; artificial ventilation, evaluation of pulmonary function and monitoring of mechanisms; 12 students; subscription time: 16 or 22 weeks; offered September to June.

116-010 Clinical Anesthesiology

116-012 Clinical Anesthesiology Seminar
1 to 3 a.h.
One-hour evening seminar discussing various problems encountered in clinical anesthesia; conferences mixed between clinical anesthesia and disease states; 10 students; subscription time: 16 or 22 weeks; offered September to June; provided annual.

116-014 Nsaid and Central Nervous System
4 to 8 a.h.
Participation in research on effects of drugs and substances which alter central nervous system; laboratory studies only; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

116-015 Anesthesiology Research: Neuronic and Pharmacology
4 to 8 a.h.
Participation in research on drugs effects on neurotransmitter and action potential generation utilizing microelectrode techniques; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

116-016 Anesthesiology Research: Cardiovascular System
4 to 8 a.h.
Participation in research on effects of anesthetics on cardiovascular activity of human; laboratory studies; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

116-017 Anesthesiology Research: Respiratory System
4 to 8 a.h.
Participation in research on effects of anesthetics on respiratory system of human; laboratory studies; one student; subscription time: four to eight weeks; offered September to June; prerequisite consent of instructor.

116-031 Behavioral Genetics
4 to 8 a.h.
Selected classical genetics, gene, chromosome and gene maps; pathways and control of nucleic acids; DNA and protein synthesis; primary and secondary structure of DNA and RNA; isomers of DNA, RNA and protein; interactions of proteins and nucleic acid synthesis and transcriptional and translational control of protein synthesis; molecular biology of differentiation; principles: Biochemistry 99-120 and 99-122; Zoology 171-172 or equivalent, with consent of instructor.

116-032 Physical Biochemistry
4 a.h.
Theory and interpretation of physical chemical measurements which relate to biochemical systems; topics include thermodynamics, acid-base equilibria, multiple rate processes; condensation reactions, kinetics, enzyme catalyzed reactions, emulsions, electrophoresis, kinetics and spectrophotometry; theory; one semester: Biochemistry 116-031; Mathematics 2340-35; 24 and Chemistry 4-112. 116-031 Laboratory Techniques
3 to 5 a.h.
For graduate students and advanced undergraduates in biochemistry and other sciences; qualitative and quantitative analysis of biochemical substances; methods and techniques for separation, chromatography, electrophoresis, centrifugation and isolations; experimental design and interpretation explanation of quantitative and qualitative laboratory period per week: Applied Biochemistry 99-120 and Chemistry 4-121. 116-031 Laboratory Techniques
3 a.h.
Designed to accompany or follow 116-032 Physical Biochemistry; includes ultracentrifugation, viscosity and diffuseness measurements; ORD, CD, NMR, IR, UV, visible and fluorescence spectrometry; prerequisites: Biochemistry 99-130; registration in Biochemistry 99-132.
99:150 Applied Biochemistry 3 s.h.
Lecture, sections. Designed to accompany general, physiological, and agricultural chemistry. Prerequisites: 99:120.

99:160 Basic Research, Independent Study (Honors) 2 to 6 s.h.
Students pursue courses of independent study in those areas of current interest to them arranged by students. Prerequisites: approval of instructor. Consent of students is required for honors students.

99:161 Biochemistry 4 s.h.
Course designed for dentistry and pharmacy students in professional colleges who have not had equivalent biochemistry courses. Course content, conferences and examinations are designed to provide essential biochemical information for students in the health sciences. One hour of class per week is required for dentistry and pharmacy students.

99:165 Biochemistry 4 s.h.
Course designed for graduate students; other students admitted with consent of the instructor.

99:190 Biochemistry 2 s.h.
Organic and inorganic chemistry and medicinal and organic chemistry and medicinal applications of biochemistry. Prerequisites: Biochemistry 99:133.

99:191 Biochemistry of Subcellular Structures 3 s.h.

99:192 Enzyme Catalysis 2 s.h.
The physical chemical nature of active centers of enzymes, mechanical analysis of enzyme structure, enzymes of the usual metabolic pathways, and enzymes catalyzing specialized reactions. Prerequisites: Biochemistry 99:191, consent of instructor.

99:194 Bio-Organo-Mechanics 3 s.h.
Organic chemical basis of enzyme-substrate transformations, their role in autolysis, denaturation, degradation, etc. Chemistry of active site, chemical properties of enzyme catalysis, inorganic and organic substances, enzymes, etc., chemistry of active site, chemical properties of enzyme catalysis, inorganic and organic substances, enzymes, etc., chemistry of active site, chemical properties of enzyme catalysis, inorganic and organic substances, enzymes, etc. Prerequisites: consent of instructor.

99:200 Clinical Biochemistry 3 s.h.
Students of medical and biological science will be provided with a comprehensive understanding of the clinical applications of biochemical knowledge. Prerequisites: Biochemistry 99:133, 99:140 or consent of instructor.

99:201 Spectroscopy of Biological Materials 3 s.h.
Theories and practice of classical and molecular spectroscopy. Emphasis on applications used for measurement of biological materials. Infrared, ultraviolet, visible, and Raman spectra of biological materials will be studied. Prerequisites: Biochemistry 99:133, 99:140 or consent of instructor.

99:202 Enzyme Mechanology 3 s.h.
Physical and chemical aspects of enzyme biochemistry, chemical reactions and transformation of enzyme reactions, enzyme kinetics, and the relationship of enzyme catalysis to other aspects of molecular biology. Prerequisite: Biochemistry 99:133 or consent of instructor.

99:203 Neurobiochemistry 3 s.h.
Structural and functional aspects of the nervous system and their relation to biochemistry. Prerequisites: Biochemistry 99:133 or consent of instructor. Consent of instructor required.

99:204 Research Techniques 2 s.h.
Course covers design, execution, and interpretation of research studies. Application of basic techniques in the study of enzyme mechanism and other biochemical techniques. Prerequisites: Biochemistry 99:133, 99:134 or consent of instructor.

99:205 Biochemistry Laboratory 2 s.h.
Course covers design, execution, and interpretation of research studies. Application of basic techniques in the study of enzyme mechanism and other biochemical techniques. Prerequisites: Biochemistry 99:133, 99:134 or consent of instructor.

99:206 Biochemistry 3 s.h.
Only graduate students in biochemistry, minimum of 99:201, which is required. Prerequisites: four lectures, discussions and assigned readings; second semester.

99:207 Seminar 1 s.h.
Reserved for graduate students in biochemistry. Weekly presentation of reading and seminar in biochemistry.

99:208 Research 2 s.h.
Course arranged with individual faculty member. Open only to registered students in biochemistry.

Dermatology and Syphiology/Family Practice

Department Head: Robert E. Fakult

The aims of the Department of Dermatology are the teaching of medical students and training of residents, care of patients with skin diseases, and research in the field of dermatology. This is one of very few dermatology programs in the country with a required rotation for medical students; each junior student spends two weeks in the clinic and attends nine to one-hour lectures.

A good cross section of patients is available, due to the mixture of private and clinic patients, including a large number referred from the Student Health Service. Various electives are available during the senior year, including further clinical experience, dermatopathology and dermatologic research.

Staff: professor Caplan, Carney, Radcliffe; associate professor Fritch; assistant professor Zandhike.

Courses

60:1 Dermatology Clerkship 3 s.h.
Introductory course in dermatology; junior, senior students; case presentations.

60:2 Dermatology Elective 3 s.h.
Senior students may spend two to five weeks in advanced clinical experience, dermatologic surgery and special assignments.

60:5 Dermatopathology 2 s.h.
Each senior student spends two weeks full time in dermatology clerkship.

60:999 Special Studies 2 s.h.

Family Practice

Department Head: Robert E. Fakult

Courses appropriate to the field of family practice are included throughout the four-year medical curriculum. In the senior year a variety of elective is available, intended to trace the student in the skills of family medicine. These electives include rotations at Bay Area Paul County Hospital, Deaconess; Mercy Hospital, Mason City; St. Luke's Mercy Hospitals, Cedar Rapids; University Hospitals and the Oakdale Family Practice Model Office, Iowa City; and preceptorships with selected family physicians throughout the state. There is also ample opportunity for independent study during this year.

The Department offers a three-year residency program, graduate students which are eligible for certification by the American Board of Family Practice. The program concentrates on the training of physicians to provide continuing and comprehensive care to the total family unit. Residents are trained in the basic concepts of family care, this concept integrates the patient, all health
Human Nutrition

prohibitives and the physician in providing comprehensive family-oriented care. The program is intentionally flexible to allow each resident freedom to tailor his or her training to in- 
dividual particular interests and needs and includes a broad 
expertise to internal medicine, pediatrics, obstetrics and gynecol- 
ogy, psychiatry, medical and surgical subspecialties and commu-
nity medicine.

Two major elements of training are utilized—the Family 
Practice Model Office and hospital-based clinical experience. 
The Family Practice Model Office is located on the Oakland 
campus and is designed to facilitate as closely as possible private 
physicians' offices in the community. Here each resident devel-
ops a model office practice and sees patients by appointment. He 
or she is responsible for the continuing care of patients who 
select him or her as their family physician, and the student 
maintains total responsibility for the care of these patients 
throughout the three years of training. Within the unit, the 
student learns the principles of practice management by par-
ticipating in the organizational and administrative decisions 
required to manage a private office.

The hospital-based clinical experience is a unique combination 
of exposure to practice in the University Hospitals in Iowa City 
and Mercy Hospital in Mason City. Rotations are specifically 
designed to provide a breadth of experience in more than one 
setting.

Staff: professor Rakel; associate professor Brey; clinical assistant 
professors Martin, Moeenner, Parker, Widmer

Courses

Senior Electives

115/101 Family-Practice Clerkships: Broadlawns Polk County Hospital, Des Moines 4 to 8 h.

Four- to eight-week course, available all year, involving assignment to clinical 
service of Internal Medicine, Pediatrics, Obstetrics and Gynecology, and Surgery; 
problem-oriented where possible; supervised by faculty practice residents 
and physicians in charge of service

115/102 Emergency Room: Broadwinds Polk County Hospital, Des Moines 4 h.

Four-week course, available all year, involves participation in care of patients seen 
in emergency room and urgent clinic care. Course follows hospital-based patient 
intake service and continues to participate in his or her own patients 
referral to patients seen on service; supervised by faculty practice resident 
and physicians

115/103 Ambulatory Care: Ambassador Unit, Oakland 4 h.

Student participates in management of care and rehabilitation phases of alcohol-
ism and drug abuse problems in a community health center

115/104 Emergency Room: Cedar Rapids 4 h.

Assignments to emergency room of either St. Luke's or Mercy Hospital under 
supervision of family practitioner on call; resident is expected to be in attending 
residents at time of problem inititiation; available all year

115/105 Community-Hospital Clerkship 4 h.

Resident opens community medicine and breadth of inpatient family medicine 
with local hospital and community; student works as an of any small community

hospitals in Iowa under supervision of staff family physicians and participates in 
clinical care of patients on all services; four-week course; available all year

115/106 Team Approach to Health Care 4 h.

Teaches maximum utilization and effective coordination of health care personnel 
working in Oaklaid Model Office with social workers, nurses; involves 
clinical aspects of community medicine. Available all year; student works 
under the supervision of social worker; available also; this course is only in admission 
preparation for their skills as a medical assistant in the practice on which they are 
trained.

115/108 Independent Study 2 h.

Student works with approval of Department in investigative study of his or her 
choice in area of family medicine, community medicine, health care delivery, 
health economics or similar area; available all year, with subscription time of two 
weeks which may be extended in four weeks for four semester hours of credit

115/111 Family Practice: Mason City 4 h.

Rotation on variety of services in Mercy Hospitals, or with family physicians, 
selected by student to represent skills and breadth of experience required for the 
provision of comprehensive medical care; supervised by teaching staff at Mercy 
Hospital; four-week course; available all year; may be repeated

115/112 Special Study: Family Practice 2 h.

For students wishing to arrange special clerkships, which may include foreign 
clerkships, with prior approval from Department, completed Summary of Individu-
ally-arranged Experience (here available in dean's office) must be submitted 30 
days prior to beginning of rotation; allows minimum of 30 days in complete form; 
subscription time and other details to be arranged

Genetics

See "College of Liberal Arts"

Hospital and Health Administration

See "College of Liberal Arts"

Human Nutrition

Administrator: Thomas A. Anderson

Head Resident: David F. Kline

Degrees offered: M.S., Ph.D. (qualification for American Dietetic As-

sociation membership also offered via internship)

The program in human nutrition is administered by a College of Medicine-Graduate College advisory committee.

Lecturers, thesis advisors and seminar participants are se-
lected from the faculties of the college of Medicine, Education, 
Business Administration and Engineering, and the Department of 
Home Economics.

The Dietetic Internship

The Dietetic Internship prepares the student for American Diet-
etic Association membership, establishes a base for study to-
ward the M.S. or Ph.D. degrees and encourages cultural internships.

Applicants must meet requirements of the American Dietetic Association, 620 North Michigan Ave., Chicago 60611, and the 
U of I Graduate College.

The intern earns a minimum of 12 semester hours of graduate credit in nutrition seminar, clinical nutrition and hospital dietary 
administration. Opportunities are readily available for the pur-
suit of individual interests in clinical, metabolic and administra-
tive research and study. University Hospitals pay interns a 
stipend which partially covers educational expenses.
The Master of Science Degree

There are opportunities for the M.S. graduate in teaching at the junior college level and above; in hospital, school and company food service administration; in public health; in clinical and hospital patient service; in clinical research; and in consulting.

The M.S. requires at least 30 semester hours of planned graduate credit (including thesis) and satisfactory performance in oral and written examinations.

The student's course of study depends on his background and interests. These may include biochemistry, physiology, microbiology; public health, child welfare, psychol ogy, education, marketing, computer science, statistics, labor and personnel management, and food service.

The Master of Science student may choose to emphasize with a thesis or in-depth study one of these areas of professional practice:

Clinical Dietetics

The student develops and practices skills necessary for the nutritional care of patients and clients. He or she practices as a member of a team of health professionals. Specific skills include recognition of individual differences in patients' nutritional needs and methods of meeting those needs; effective communication; and acceptance and/or delegation of authority and responsibility. Learning experiences occur primarily in the hospital setting. Time is also spent determining and providing nutritional needs to well infants, pregnant women, the aged and groups seen in a clinical setting.

Dietetic Administration

The student develops and practices skills necessary for direction and supervision of a large group feeding operation which meets the consumers' nutritional needs. Skills include application of problem-solving techniques in personnel and plant management, and food production and service. The hospital is the "laboratory," but nonhospital facilities are also observed.

Nutrition Education

Practice is provided in teaching patients, colleagues, physicians, medical students, personnel and special interest groups. Innovative teaching methods are encouraged. The emphasis is on the development of behavioral objectives as a basis for content and evaluation.

Nutrition Research

Metabolic and/or physiologic processes are investigated. At the M.S. level, the research is usually part of a larger study conducted by a senior investigator. The student has a variety of choices of topics and advisors.

Supplemental Activities

Students are encouraged to attend medical grand rounds, pediatric grand rounds and special lectures and conferences.

Supplemental opportunities are provided by affiliated agencies, such as the Iowa State Department of Health, Iowa Hospital Schools, Head Start Program, Iowa Diabetic Association and Iowa Model Rural Health Center.

Special programs

Independent study (projects) are available to out-of-Department students. Biannual, one-day conferences are held to present the latest findings in nutrition—"Diet Therapy, U.S.A."

The Doctor of Philosophy in Human Nutrition

The graduate program leading to the Ph.D. degree may be undertaken by students who have completed the master's degree or who will combine the Ph.D. program with the M.D. or D.D.S. requirements. The doctoral student may be allowed to complete work for the Ph.D. and bypass the master's degree. The program usually requires three years to complete and is designed to prepare the student for careers primarily in research and teaching. It is directed by the Nutrition Advisory Committee of the Graduate College.

Prerequisites include mathematics through calculus, physics, organic chemistry, analytical chemistry, physical chemistry, biochemistry and physiology. Courses in foods and microbiology are highly desirable. Each student must select a particular speciality in which he or she can concentrate studies and research. Areas of research may include both animal and human nutrition in healthy or sick adults and children, with emphasis on metabolic processes. The individual field of specialization may relate to any of a wide variety of subjects, including epidemiology, ecology, food chemistry, metabolic, errors, etc.

During the first year or two, a doctoral student may take a number of lecture courses and seminars, after which he or she qualifies for candidacy for the doctoral degree. Research is usually begun early in the program.

The actual program of instruction includes courses in nutrition, coursework in other areas to support the research problem and future professional goals, research—usually in a laboratory—and research tools. The degree candidate will have opportunities to assist in the teaching of students as part of his or her overall experience.

Advisory Committee: professor Bean, Connor (Internal Medicine); Fisher, Read (Pediatrics); Dryer (Biochemistry), Osborn, Osman (Home Economics), Lawrent (Preventive Medicine), Mason (Surgery); associate professor Anderson (Pediatrics), Crowley, Hubel, Brown (Internal Medicine), Ross (Pathology), Bryan (Family Practice), Segjin (Biochemistry and Pediatrics); assistant professor, (Internal Medicine), Spector (Biochemistry), Healy (Pediatric); instructor Burmester (Preventive Medicine)

Courses

65201 Nutrition Seminar 1 a.h.
65202 Nutrition Seminar 1 a.h.
65203 Clinical Nutrition 3 to 4 a.h.
65205 Research in Nutrition 2 to 4 a.h.

Nutritional aspects of disease and illness, emphasizing therapeutic role of food presented by medical and allied staff. Lectures, demonstrations, bedside rounds, conferences and discussions.

Consideration of NURS, but may be taken as an independent unit
65205 Projects in Nutrition 2 a.h., or, 3 a.h., or, 4 a.h.

Nutritional science, clinical nutrition, research in nutrition

65206 Projects in Nutrition 2 a.h., or, 3 a.h., or, 4 a.h.

65207 Projects in Nutrition 2 a.h., or, 3 a.h., or, 4 a.h.

65208 Projects in Nutrition 2 a.h., or, 3 a.h., or, 4 a.h.

65209 Projects in Nutrition 2 a.h., or, 3 a.h., or, 4 a.h.
Internal Medicine

Department Head: James A. Clifton

The Department of Internal Medicine is concerned with the diagnosis, prevention and treatment of diseases of adults. Members of the Department with special interests are organized in divisions: allergy-immunology, cardiology, clinical pharmacology and oncology, gastroenterology, hematology, infectious disease, renal and hyperensive disease and rheumatology.

Undergraduate Program

Members of the Department bear a major share of the teaching of second-year students in the course ‘Introduction to Clinical Medicine’ in which students begin to learn the pathophysiology, signs, symptoms, complications, prevention and treatment of diseases. Students are taught to obtain histories, to perform physical examinations and to plan a rational approach to diagnosis and treatment. In the third year, students are assigned for nine weeks to medical services at University and Veterans hospitals, under the guidance of the house staff and Department members, and actively participate as members of the ward team in diagnosis and treatment. In the fourth year, students may select a clinical experience to fit their own plans from among 47 courses offered by general medicine and the specialties.

Graduate Program

The Department offers straight and mixed internships and an approved residency program of high quality. In addition, many specialty divisions offer clinical and research fellowships for periods of one to two years. These permit the development of special knowledge and skill relevant to the specialty. Candidates for internship are accepted from approved medical schools. Post-doctoral fellows who have obtained their Ph.D.s are also accepted for programs in which the major focus is laboratory research.

Facilities

Teaching occurs on the medical services and in the laboratories of the University hospitals in Iowa City, and the Veterans Administration hospitals in Iowa City and Des Moines.


Courses

78/79 Clinical Medicine for Junior Medical Students 8 h
78/79 General Medicine Diagnostic Clinic 2 or 4 h
78/79 General Medicine Diagnostic Clinic 2 or 4 h
78/79 Assignment for first days week in diagnostic clinic; clinical evaluation of medical problems; emphasis on diagnosis and management of common medical problems prevalent in interns in practice, as well as approach to management of office practice, focusing on patients and consultation in out-patient health care; six students, subscription time two to six weeks, offered 42 yr
78/79 Diagnostic Medicine Consultation Service 2 h
78/79 Emphasis on development of ability to recognize and report signs for hospitalization and outpatient patients while using in consultation time visits, two students, subscription time two weeks, offered all year
78/79 Clinical Allergy Immunology 2 or 4 h
78/79 Experience in diagnosis and treatment of patients with allergic and immunologic problems; emphasis on manner in which a patient with a disease of this type is treated; nine students, subscription time four weeks, offered all year
78/79 Research in Medicine in University Hospitals 12 or 15 h
78/79 Pediatric Internship Clinic 2 h
78/79 Performs in pediatric clinical training; students from three-month minimum; one student; consultation 15 appropriate internship required for registration
78/79 Cardiology University Hospitals 4 h
78/79 Development of techniques in advanced diagnostic and therapeutic procedures concurrent in clinical medicine; participation in evaluation and treatment of patients seen in Coronary and Intensive Care Units, consultation and instruction in cardiology-related research; five students, instructional time four weeks, offered every second year
78/79 Clinical Cardiology VA Hospital 4 h
78/79 Emphasis, as well as in 78/79 Clinic in breadth and depth in diagnostic and therapeutic procedures emphasized in clinical cardiology; six students, instructional time four weeks, offered every second year, one student; consultation time four weeks, offered every year
78/79 Diagnostic Cardiac Catheterization Laboratories 4 h
78/90 Working up patients admitted for cardiac catheterization, personal involvement in use of interchangeable methods in the recognition of cardiovascular disorders and in
Neurobiology

Committee Chair: L. S. Van Orden

Neurobiology is an interdepartmental program comprising these courses:

50:110  Neurobiology and Behavior  5 s.h.
Same as 60:107, 71:207, 72:110  cr. arr.
60:207  The Visceral Nervous System  cr. arr.
60:208  Review of Anatomical Neurology  cr. arr.
99:203  Neurobiochemistry  3 s.h.
72:281  Advanced Neurophysiology (Muscle)  cr. arr.
72:282  Advanced Neurophysiology (Biophysics of Excitable Membranes)  3 s.h.
72:283  Advanced Neurophysiology (Sensory Physiology)  3 s.h.
72:284  Advanced Neurophysiology (CNS, Control of Locomotion and Posture)  3 s.h.
31:125  Brain Function and Learning  3 s.h.
31:177  Sensory Processes  3 s.h.
31:227  Introduction to Physiological Psychology  3 s.h.
31:228  Neuroendocrinology and Behavior  3 s.h.
31:229  Neural Mechanisms and Learning  3 s.h.
31:230  Biochemistry and Behavior  3 s.h.
31:271  Psychoneurotics  3 s.h.
Same as 3:254  3 s.h.
31:272  Psychoneurotics Laboratory  2 s.h.
31:320  Behavioral Pharmacology  3 s.h.
31:321  Seminar: Chemical Influences on Behavior  2 s.h.
31:335  Seminar: Brain Mechanisms and Behavior  2 s.h.
31:336  Seminar: Physiological Psychology  2 s.h.
31:337  Seminar: Neurophysiology  2 s.h.
31:342  Seminar: History of Neuropsychology  2 s.h.
3:256  Physiology of Hearing  4 s.h.
3:714  Comparative Physiology  4 s.h.
Neurology

Department Head: Adolph L. Saha

Neurology is a segment of medical science concentrating on organic disorders of the brain, spinal cord and peripheral nervous system, their diagnosis and management. Medical student teaching and postgraduate training in this field carefully integrated with patient care, has long been a significant function of the Department.

Dr. Saha is a past president of the American Neurological Association and the American Academy of Neurology, is one of the authors of a leading textbook in the field and sees the pace for a Department whose greatest strength is clinical management of patients with neurological disease.

The Department is the Central Registry for the International Cooperative Anycosurgn Project, funded by the National Institute of Neurological and Communicative Disorders and Stroke, and collaborates with the Department of Ophthalmology in supporting the Neurosurgical Center, which is supported by the National Institute of Neurological Diseases and Stroke. The Neurosurgical Center is concerned with research in pathophysiology of the nervous system and the eye.

Members of the Department also contribute regularly to the neurologic literature.

The Department offers clinical and research training to junior and senior medical students, contributing to the Doctor of Medicine degree. In addition, an active three-year residency program in all facets of the neurological sciences is pursued, leading to board certification in neurology for those trainees. In conjunction with the Department of Psychology, the Department of Neurology also offers appropriate clinical training contributing to the degree of Doctor of Philosophy in Psychology.

The activities of the Department include clinical training in neurology, electrophysiology and, in conjunction with other departments, pediatric neurology, psychology, electromyography and neuropathology. A well-equipped neurochemistry laboratory is available for research and clinical studies in epilepsy and, in cooperation with the Department of Physiology and Biophysics, the Department operates an active muscle physiology laboratory.

Staff: professors Saha, Van Allen, associate professor Fincham; assistant professors Taylor, Nibelle; Joint Appointments: professors McCormick (Neurophysiology), Beaton (Psychology-Neurology), Knott (Electroencephalography-Neuropathology), associate professors Bell (Pediatrics-Neurology), assistant professors Diekert (Psychology-Neurology), Lorkovic (Neurology-Physiology), Sylt (chief of Nervous Service, Iowa City VA Hospital) research associate Schustein (Neurology-Physiology)

Courses

646 Lectures to Junior Medical Students 2 a.h.
647 Clinical Neurology for Junior Medical Students 2 a.h.
Ward teaching and bedside examinations in small groups, or management of orthopedic patients junior year.
648 Lectures to Occupational Therapists 2 a.h.
649 Foundations of neurology as applied to occupational therapy; second semester.
650 Advanced Basic Neurology 2 a.h.
Special lectures and demonstrations in basic neurology, particularly neurophysiology, to medical students and limited number of senior students.
64707 Neurology-Neurosurgery Conference 2 a.h.
Review of patients presenting diagnostic problems common to both departments.
65113 Principles of Neurology 2 a.h.
Lectures, demonstrations and case presentation of neurological disorders usually treated by therapy; anatomy of nervous system reviewed and methods of electrical rating of brain injuries demonstrated.
65230 The Apheresis Disorders 2 a.h.
Analysis of suprarenaline, classification and autoimunological mechanisms, same as 33172.
65302 Clinical Neuropsychology 2 a.h.
Concepts of brain-behavior relationship in man, analysis of behavioral disturbances associated with central disorders; current application of psychological test methods for determining central states same as 33165.
65451 Advanced Clinical Neurology 2 a.h.
Intensive period of experience dealing with diagnosis and management of patients with neurological disease; either inpatient or outpatient area may be elected, but not simultaneously; student performs initial assessment of patient and, through close consultation with staff, surface management, interpreter becomes responsible for the patient; Departmental conferences daily; one study for each ward; course period: one month, offered all year.
65511 Research Projects in Clinical Neurology 12 a.h.
Student plans and carries on, with instructor, original projects of clinical interest. Each project is independent in nature and is designed to apply the clinical, experimental or neurosurgical approach to the study of some disease or neuromuscular disease; research of appropriate quality submitted for publication, advanced arrangements must be made for course; credit research must be so as to be determinant as study project included; one course; course period: one month, offered all year.
65620 Electrophysiology in Neurology 2 a.h.
Daily ordeals in invasive EMG in performing electromyographic procedures; patients referred from all areas of hospital make wide range of unusual neurological disorders requiring operation for spinal surgery work, by arrangement, may be combined with other clinical; one student; course period: three months, offered all year.
65730 Neurology Seminar 1 a.h.
Weekly, one-hour sessions on various topics in neurology, proceeded by neurological residents and discussed by staff; 10 students; course period: 16 weeks, offered all year.
65840 Neuropsychology 4 a.h.
Specific problem areas of biological chemistry as related to neurological disease; selected demonstrations of laboratory techniques; one student; course period: one month, offered all year.
Nuclear Medical Technology

See "College of Liberal Arts."

Obstetrics and Gynecology

Department Head: W. G. Kastelich

The Undergraduate Program

The courses in obstetrics and gynecology are designed to provide a comprehensive survey of female reproductive problems. This is done through a series of didactic lectures, laboratory and outpatient assignments, ward rounds, teaching seminars and special elective courses.

The Undergraduate Course (6604) gives the student a core of information he or she will need to be prepared to care for women no matter what his or her career choice may be. In the senior year a variety of electives is available, intended to train the student in the skills of obstetrics and gynecology in a private hospital setting or in a multispecialty clinic. These electives include rotations at Badlands Park County Hospital, Des Moines; McLaren Clinic, Ames; Medical Associates, Des Moines; St. Mary's Hospital, Denver; Methodist Hospital, Des Moines; and The Gunderson Clinic, La Crosse, Wisconsin.

Graduate Education

The Department offers a three-year residency. Graduates are eligible, after passing a written and oral examination, to be certified as specialists by the American Board of Obstetrics and Gynecology.

During the three years, the residents rotate through the various divisions of the Department and care for both hospital inpatients and outpatients. Additional training is obtained in prnmatl clinics in Waterloo, Cedar Rapids and Des Moines. During the senior year, the resident spends time at Methodist and Broadlawns hospitals in Des Moines. In the third-year rotation, the resident is trained in normal and abnormal obstetrics, advanced gynecologic surgery, office gynecology, endocrinology, oncology, family planning, and endocrine procedures. Advanced specialty training after the completion of the residency is available in endocrinology and oncology.

Staff: Professors: Bradford, Gepler, Kettel, Prikola, White, Yaminski; associate professors: Wurthman, Chubey, Hughes, Kretzschmar, Van Orden; assistant professors: de Prose, Galask

Courses

6601 Clinical Obstetrics and Gynecology for Juniors

Clinic designed to provide opportunity for each student to become proficient in clinical history taking and physical examination of the gynecologic and obstetric patient, as well as concepts of diagnostic techniques and therapy. Special attention is given to gynecology, family planning and techniques for first trimester abortion. Information in reproductive gynecologic and psychologic aspects of women's lives is stressed. Concepts of normal labor and delivery and selected gynecologic complications are presented.

6605 Advanced Obstetrics Clerkship Iowa City

Students work in labor-delivery suite. Students during the second and third years are taught in intensive clinics, continuing normal and abnormal labor, and gynecologic aspects of obstetrics. They are taught the fundamentals of clinical management of women, gynecology, and psychologic aspects of women's lives. The emphasis is on intensive teaching and the practical aspects of obstetrics and gynecology. The students rotate through hospital and clinic services and learn the principles of patient care.

6606 Advanced Gynecologic Clerkship

Work in gynecologic ward, performance of diagnostic and therapeutic measurements, responsibility for pre- and postoperative evaluation and management, attendance on a variety of gynecologic operative procedures. Some of which is performed on students.

6607 Gynecologic Oncology

6608 High-Risk Obstetrics

6609 Pediatric Obstetrics

6610 Ob-Gyn and Obstetrics

6611 Public-Health Aspects of Obstetrics and Gynecology

6612 Family Planning

6613 Gynecologic Endocrinology (Clinical)

6614 Advanced Obstetrics Endocrinology (Clinical)

Students interested in fields of obstetrics or endocrinology are recommended for this program. It should be of particular interest to those planning to become obstetricians or gynecologists. The program is designed to provide a background in endocrinology and obstetrics and to acquaint students with the current status of the field of endocrinology and obstetrics.
Ophthalmology

Department Head: President C. Broidi

Degrees offered:

- Bachelor of Science
- Doctor of Medicine

Ophthalmology is a medical and surgical specialty concerned with research, diagnosis, and treatment of diseases of the eye and its adnexa, including correction of refractive errors.

The teaching program at the School of Medicine includes instruction of medical students and resident physicians but is also available to graduates of the undergraduate medical education program.

Clinical facilities are available at three sites besides University Hospitals. The clinical training programs in ophthalmology are supervised by the Department of Ophthalmology.

The Master of Science degree is not offered as a primary professional objective but is limited to specialization in laboratory skills applicable to ophthalmology. The degree program can be pursued concurrently with the clinical training program, or independently of it. The usual requirements for the Master of Science degree are: A thesis has to be defended.

The Department maintains several research laboratories, and research projects are supported by the National Institutes of Health. Research projects supported include basic research, clinical research, and research in ophthalmology, and in addition support is provided by the National Institutes of Health. The Department supports the research of several scientists who are engaged in the study of the structure, function, and pathology of the eye.

The Department supports the research of several scientists who are engaged in the study of the structure, function, and pathology of the eye.

Courses

87-100 Elective in Ocular Pathology 1 s.h.
87-102 Elective in Ocular Physiology 1 s.h.
87-103 Elective in Ocular Anatomy 2 s.h.
87-104 Elective in Ocular Biophysics 2 s.h.
87-105 Elective in Ocular Pharmacology 2 s.h.
87-106 Elective in Ocular Genetics 2 s.h.
87-107 Elective in Ocular Immunology 2 s.h.
87-108 Elective in Ocular Endocrinology 2 s.h.
87-109 Elective in Ocular Microbiology 2 s.h.
87-110 Elective in Ocular Microchemistry 2 s.h.
87-111 Elective in Ocular Microanatomy 2 s.h.
87-112 Elective in Ocular Microphysiology 2 s.h.
87-113 Elective in Ocular Microsurgery 2 s.h.
87-114 Elective in Ocular Microtherapy 2 s.h.
87-115 Elective in Ocular Microsensory 2 s.h.
87-116 Elective in Ocular Microdiagnosis 2 s.h.
87-117 Elective in Ocular Microtherapy 2 s.h.
Oral Surgery

Department Head: Marie L. Hale
Degree: D.M.D., M.B.A.

(For information about undergraduate study, see “College of Dentistry”)

The aim of the graduate program in oral surgery is to provide preparation for specialty practice. The program is designed to combine clinical and didactic teaching on an individual basis.

Every effort is made to adapt the program to the interests, abilities and development of the individual student; however, it is essential to meet certain fundamental requirements.

The recommendations of the Council on Dental Education of the American Dental Association, the Committee on Graduate Training of the American Society of Oral Surgeons and the American Board of Oral Surgery have been carefully considered in planning the structure and scope of training.

Requirements for the Master of Science degree may be completed during a three-year course of integrated didactic and clinical study, including research and the preparation of an acceptable thesis.

The University Medical Center is characterized by outstanding and diversified clinical science departments which stimulate and support scholarly research and superior clinical practice. The faculties of the University Hospitals, the Iowa City Veterans Administration Hospital, and the colleges of Dentistry and Medicine provide an appropriate environment for graduate training in oral surgery.

Internship

The internship period covers the first year of hospital training, providing an orientation to hospital procedures, integration of basic and clinical sciences, acquisition of the principles of surgery and familiarization with the various aspects of health services.

Competence in clinical oral surgery requires knowledge of the basic medical sciences related to the specialty. Therefore, in addition to hospital and clinical training, the intern takes advanced coursework in such subjects as applied pharmacology, surgical anatomy, pathology, physiology, and microbiology, and reviews such closely-related disciplines as endocrinology, anesthesia, physical diagnosis and laboratory procedures.

The intern becomes familiar with the principles of surgery and develops surgical skills by performing the essential procedures in outpatient clinics at the University and VA Hospitals and the College of Dentistry. Assistance in the operating room introduces him to major oral surgical procedures.

Courses for Graduates

87/88 Hospital Procedures I (6.0)
Hospital rules and regulations, patient and department records, general information relative to hospital patients
87/88 Basic Behavior Review (4.0)
Includes head and neck anatomy with comparison to dentistry, pathology, etc., special features by dental and medical staff
87/88 Principles of Oral Surgery (3.0)
Basic surgical principles in detail, to include infection control and techniques, maxillofacial surgery, etc.
87/88 Clinical Oral Surgery (4.0)
Chronic disease on maxillofacial problems
87/88 Pathology (4.0)
Practical and applied
87/88 Surgery for Children (3.0)
Children's dentistry
87/88 Tumor and Neoplasms (4.0)
Surgical pathology
87/88 Surgical Autonomy (4.0)
Study of oral and maxillofacial techniques found in major oral surgery procedures, special emphasis on anesthetic problems and surgical emergency; may include animal surgery
87/88 Pediatric Dentistry (4.0)
Preparation of the oral cavity for tooth and all other oral cavity procedures
87/88 Traumatology (4.0)
Preparation of the oral cavity for tooth and all other oral cavity procedures
87/88 Research and Thesis (4.0)
Preparation of the oral cavity for tooth and all other oral cavity procedures
87/88 Oral Surgery (2.0)
Basic principles of tissue handling and surgical technique

Residency

The assumption of full-time responsibility and the opportunity for clinical and operating-room experience are the important aspects of residency training.

The first-year resident gains clinical training in anesthesia through a four-month rotation in the Department of Anesthesiology. Previous advanced training in physical diagnosis, physiology, pharmacology and pathology now assume greater clinical significance. Increased responsibility in the operating room as surgeon and first assistant further develops surgical judgment and skills.

The development and implementation of a research project under staff supervision greatly enhances the value of the residency.

The senior resident assumes responsibility for major oral surgical cases during rotations in the University and VA hospitals. Each senior is assigned on a rotational basis as a clinical and didactic coordinator and assumes responsibility with the staff for clinic operation and Departmental activities.

Upon completion of the internship and residency, the student will have completed the educational requirements for examination by the American Board of Oral Surgery.

Staff: Professor Hale; McLerran, associate professors Higa, Kent, Thacker, assistant professor Wolterm, instructors Lorson, Wood
Orthopedic Surgery

Department Head: Carroll B. Larson
Degrees offered: M.B., Ph.D.

The Department offers two types of postgraduate residency programs—a four-year integrated clinical program in which the resident participates simultaneously in inpatient care, outpatient care, and a five-year program for residents interested in academic careers.

The Clinical Program

During the various rotations, the resident gains experience in trauma, children's orthopedics, adult orthopedics, neurology, rehabilitation, prosthetics and orthotics, rheumatology and basic sciences related to orthopedics.

During the first year, residents are required to take specialized courses in anatomy, bone histology, biochemistry, physiology and pathology.

A weekly seminar covers biomechanics, kinesiology and selected clinical subjects.

Residents attend the Northwestern University courses on lower extremity and juvenile amputee and prosthetics.

The Academic Program

This program begins at the end of the internship year. After completion of the clinical work outlined above, the resident devotes two years to research. The research may be in any field in which the resident is interested, provided it is basic science research in one of the orthopedic laboratories or a basic science department.

The research may culminate in a master's or doctor's degree.

Departmental Laboratories

The orthopedic laboratories deal with problems in these major areas:

Biochemistry—The biochemistry of mucopolysaccharides and collagen, both normal and those altered in polyphal dysplasia and scoliosis.

Biochemistry—in conjunction with the College of Engineering, biomechanical problems of the upper extremity and biomechanics of the hip and the foot.

Cell Biology and Pathology—ultrastructural studies on normal bone, cartilage, tendons and muscles, and those altered by experiment and disease.

Tissue Transplant and Radiopaque tissue—skin, bone and cartilage transplantation and the immunological aspects of these problems.

Facilities

The Department is housed in Children's Hospital, and has an active service in the nearby Iowa City Veterans Administration Hospital.

Facilities include 120 beds, an outpatient clinic, a specialty library, a specialty radiology unit, a brace shop and physical therapy facilities.

The outpatient clinic sees approximately 85 patients a day. Speciality clinics deal with such problems as accidents, sports injuries, congenital dislocated hips, neuromuscular disease, metabolic diseases, amputations, hips, knees, hands, splints and trauma.

Approximately 1,300 major operations are performed each year under auspices of the Department.

The Department provides consulting service to the Hospital School for Handicapped Children, State Services for Crippled Children and two state schools for the visually handicapped.

Staff: professor Bonfiglio, Piat, Larson, Fonsetti, Cooper, professor emeriti Stearns, Paul, assistant professor Pedrini; assistant professor Scottman, Stauffer, instructor Swayze

Courses

76-3 Principles of Orthopedics

2 a.h.

For basic medical students during year

76-14 Oral Conference for Senior Medical Students

4 a.h.

Approximately for up to one to two months, to prepare seniors for their seniors; seniors should register at the beginning of the term; seniors interested in postgraduate course are required to register at the beginning of the term.

76-18 Fundamentals of Orthopedics

nr.

For all health service students only; prior approval of instructor required; lectures, demonstrations and case presentations of orthopedic disorder from standpoint of biology, clinical signs and symptoms, treatment and pathology.

76-20 Advanced Principles of Orthopedics

2 a.h.

Dedicated lectures and demonstrations concerned problems of orthopedic care.

76-15 Postgraduate Courses in Orthopedic Surgery

nr.

Observation of all phases of clinical orthopedic clinics; ward care, examinations, operation, and consultation. For undergraduates of at least first-year medical students; for seniors of three, for four, or 13 months, without director of Postgraduate Medical Studies.

76-21 Pathological Laboratory

nr.

Weekly conference in path and disease in cases operated upon in preceding week; responsibility for report, to be assigned to each case; student's supervision.

76-22 Pathology Conference

2 or 3 a.h.

For the second year, for senior medical students, problem cases presented for discussion, both operative and nonoperative.

76-16 Bone-Pathology Seminar

nr.

Weekly seminar for study of bone lesions from surgical and forensic standpoint; with participation of members of the Pathology, Radiology, Orthopedics and Surgery departments.

76-15 Plastic Surgery

nr.

For senior medical students; by arrangement with staff, facilities and supervision available for laboratory participation in bone surgery, full participation in care of patients under the supervision of staff.

76-16 Laboratory Experience

nr.

For senior medical students; by arrangement with staff, facilities and supervision available for laboratory participation in bone surgery, care of patients under the supervision of staff.

76-16 Anatomy of the Extremities and Base

nr.

Weekly laboratory course with material available for detailed description and for economic study of surgical approaches.
Otolaryngology and Maxillofacial Surgery

Department Head: Brian F. McCabe
Degree offered: M.S.

The Department provides one of the oldest and largest otolaryngology and maxillofacial surgery training programs in the world. Currently there is a full-time faculty of 20, including several members from the anatomy, audiology, dentistry and speech pathology professions.

The Department's main objective is to provide a high-level instructional program in otolaryngology and maxillofacial surgery for medical students and residents. To maintain a broad and in-depth teaching program, a large patient load is borne by the Department's faculty and staff in these clinical areas: head and neck oncology; maxillofacial trauma; craniofacial defects, such as cleft palate; disorders of the vestibular mechanism; facial plastic surgery; pediatric and geriatric hearing problems; voice problems; narcolepsy; surgery of naseness; and all the areas usually considered otolaryngologic.

In addition to the major otolaryngology and maxillofacial medical-surgical service, there are other four divisions in the Department which make this program comprehensive: facial plastic surgery, craniofacial defects, speech and hearing, and research.

Another major objective of the Department is to foster research programs designed to yield new knowledge in the field and provide models for student and faculty research training. All senior faculty members participate in research and all residents are required, as part of the resident training program, to design, conduct and report on a research project during their program of study. In addition, there are several large-scale research programs within the Department in vestibular neurophysiology, cleft palate, colloidoma in temporal bone disease, anatomy of the temporal bone, EEG audiometry, pathology of the temporal bone and electrophysiology of the inner ear.

The majority of these research programs receive federal support.

Graduate Course in Otolaryngology

The postgraduate training program in otolaryngology is in accordance with the requirements of the American Board of Otolaryngology. The program comprises a four-year course consisting of basic and clinical science.

The basic science group consists of a series of didactic lectures and laboratory studies preparatory to actual clinical work. It is conducted during the first three and one-half months of residency, beginning on September 1 and ending on December 15 of each year.

After passing oral and/or written examination, the student enters the clinical phase of the course, which includes supervised clinical and operative work, clinical conferences, and seminars pertinent to the practice of otolaryngology and its related fields. A limited number of resident physicians may be accepted each year. Applicants must be graduates of a recognized class-A medical school and must have completed an internship of one year and one year of general surgical training in an approved program.

Upon successful completion of the four-year course, which must include an acceptable thesis, candidates are awarded the Master of Science degree. To complete the requirements, the student must earn at least 30 semester hours of credit, one-third of which must come from the basic science group. Elective courses of study to broaden the individual's cultural knowledge may be taken by students capable of additional work.

Staff: Professors McCabe, Aminoff, L. B. Burstein, Linton, Morris, Ollis, Spinnenweber; assistants Anderson, Karmarkar, Smith, VanDamm; assistant professors Abramson, Hacker, Krause, LeVelle, Mendel, Suttor, Voets; research associates Kamin, Ryu, Tharp, Vander Haar, Windreamus, Instructor Talbot, Fellows P. Bernstein, Urich

Courses

68.202 Basic Otolaryngologic Science cr. 3.
Special interest in head and neck, upper gastrointestinal tract, respiratory and ear, including lectures on descriptive anatomy and physiology, surgical anatomy of head and neck, otolaryngology, neurology, pathology, pharmacology, tongue, pharynx, larynx, sphenoid sinus, nasal cavities, pharynx, ear, surgery, radiology, speech pathology and audiology, psychology, otologic method (research and experimental methodology, basic experiments and the audiometer). Laboratory work includes head and neck dissection, histology of ear and temporal bone surgery.

68.201 Research Techniques in Otolaryngology cr. 3.
Laboratory course designed for students with research philosophy, equipment, and procedures; required two terms, on full-time basis required, with work in Departmental research laboratories concerned with audiology, psychoacoustics, vestibular physiology, anatomy and physiology of the ear, micropin surgery and pathobiology of the temporal bone, and introduction to basic research laboratory, research assistants supplemented with assigned readings and projects.

68.210 Clinical Conference in Otolaryngology, Rheumatology and Maxillofacial Surgery cr. 1.
Presentation of diagnostic methods and outline of treatment for assigned patients may be required.

68.211 Clinical Otolaryngology, Rhinology and Maxillofacial Surgery cr. 1.
Introduction to basic rhinology and maxillofacial surgery: examination and treatment of patients in an anatomic study of the nose and sinus. Concentrate on the presence of disease in the nasal cavity and pharynx. Special clinical interest in disease, such as Rhinitis and Sinusitis, oral surgery, and oral pathology.

68.256 Seminar: Otolaryngology and Related Fields cr. 1.
Critical review of current publications and literature in otolaryngology and related fields. May be repeated.

68.255 Research in Otolaryngology cr. 1.
Research seminar. Selected topics in oto-rhino-laryngology, major research interests, preparation of research papers. May be repeated.

68.254 Oral and Maxillofacial Surgery cr. 1.
Clinical orthodontics for patients with maxillofacial deformities; limited to graduate students in dentistry.

68.41 Seminar in Maxillofacial Rehabilitation cr. 1.
Critical review of current publications and literature on types of facial deformities, limited to medical and dental graduate students.

68.456 Maxillofacial Prosthesis cr. 1.
Dental procedure. Clinical prosthesis training for patients requiring intra- or extra-oral prostheses, including facial and body prostheses.
Pathology

Department Head: George D. Pessin
Degree offered: M.S.

The Department offers a wide range of formal courses and training programs variously designed for medical, dental, and graduate students, offering leading to certification in anatomic and clinical pathology by the American Board of Pathology.

Medical and Dental

Instruction for the M.D. and D.D.S. degrees is provided through courses in general and systemic pathology. Coursework in both areas is designed to fulfill tightly-structured educational objectives, and utilize a variety of learning experiences: lectures, self-instructional tapes, slides, programmed texts, autopsies, laboratory tours, clinico-pathological conferences and small group discussions of selected case material.

The courses in general pathology introduce the student to the general response of the body to various types of injury, including inflammation, neoplasia, immune responses, etc. During the courses in systemic pathology, the student learns to apply these general principles to a study of the specific disease entities as the responses occur in the various body systems. Integrated with these courses is a systematic introduction to the principles and applications of laboratory medicine to the understanding and diagnosis of disease processes.

A variety of programs is available for students who wish to pursue in depth special topics in pathology during other periods of their medical or dental training. Special courses in both anatomic and clinical pathology are offered to electives to senior medical students. In addition, a limited number of externships and clerkships are available to predoctoral students.

Postdoctoral

The program is approved for two straight internships in pathology at the 18-month level, covering a training span of up to five years. The programs are designed to utilize the patient populations of both University Hospitals and Clinics, and the Iowa City Veterans Administration Hospital.

There is systematic rotation through the various laboratory services, including surgical pathology, autopsy pathology, medical and clinical chemistry, medical microbiology, hematology and blood bank. Adequate opportunity is afforded for concentrated study in such specialties as neuropathology, dermatopathology and gastrointestinal pathology.

To provide these special experiences, the faculty includes members who have special interests in bone and cartilage, skin, lung, hematopoietic tissues, heart and blood vessels, and other systems. They are available for consultation in teaching and research, and the presence of the department in the Anatomical Pathology Building makes the interaction of all members in the department possible.

Medical Technology

The Department of Pathology is responsible for the Medical Technology Program leading to the Bachelor of Science degree and certification by the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists. (See "Medical Technology" under "College of Liberal Arts").

Facilities

The undergraduate programs are supported by a recently-remodeled student laboratory, as well as conference rooms for small group discussions.

The Department houses a newly-remodeled modern histopathology laboratory equipped for efficient processing of tissue specimens; a special stain laboratory; a special technologist histotechnologist laboratory; an autopsies and autopsy report and gross anatomic examination laboratory; and a Departmental library.

Modern automated equipment is in operation in medical chemistry and hematology, and computerization programs are being developed. A service laboratory and a training laboratory are available in medical microbiology. Research facilities consist of individual faculty laboratories and three electron microscope laboratories.

Expansion plans call for doubling the available space and consolidating laboratory operations. This will include construction of new clinical laboratories and teaching facilities.

Staff: professors Fisher (Oral Pathology), Kopek, McCormick, Pessin, Rodman, Routh (Biochemistry), Stander, Warner, associates professors Givler, Kent, Korns, Ruse, Schonett, associates professors Barrett, Nicholod, M. L. O'Connor, Pihy, Schacklett, Simmons; clinical professor Cross (Henry Hospital, Iowa City); associate professor Cooper (VA Hospital, Des Moines); clinical assistant professor Ikard (Broadlawns Hospital, Des Moines); Medical Technology Program coordinator Gludicke, J. E. O'Connor, Fitt, Schwabhauser, Winkel.

Courses

All courses are open to all students.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>6200</td>
<td>Introduction to Medical Technology</td>
<td>1.0</td>
</tr>
<tr>
<td>6290</td>
<td>Laboratory rotation through various diagnostic laboratories</td>
<td>2.0</td>
</tr>
<tr>
<td>6399</td>
<td>Laboratory rotation through various diagnostic laboratories</td>
<td>1.0</td>
</tr>
</tbody>
</table>

The laboratory courses provide opportunities for exposure to a variety of patient situations, and experience in autopsies and in the performance of laboratory procedures on patient specimens, and organization of service laboratories learned in the Principles of Pathology course.

The courses are designed to provide the student with a basic understanding of the fundamentals of medical technology, and the ability to communicate in the laboratory on the scientific basis of disease conditions. The laboratory courses are designed to provide the student with a comprehensive understanding of the principles and practices of medical technology, and the ability to communicate in the laboratory on the scientific basis of disease conditions.
Courses

70758 Clinical Clerkship in Pediatrics 6 credits
- Principles of health promotion and treatment of acute and chronic illnesses in children; lectures, demonstrations, participation in patient care, daily rounds, chart work, emphasis on diagnosis and treatment, nutrition, behavior problems, and important diagnostic skills of children; third year medical students.

70703 Health Supervision of Children 1 credit
- Special project for the taking of a well-baby examination with other courses for fourth-year students.

70704 Child-Health Clinic 2 credits
- Anticipation in Child-Health Clinic one-half day, five days weekly for four weeks, for fourth-year students.

70705 Neonatal Pediatrics 2 credits
- Professional neonatal care, including hospital care of normal newborns and premature infants and observation in delivery room and recovery nursery, emergency procedures, normal and abnormal formula feeding, patient education regarding infant

Pediatrics

Department Chairman: Daniel L. Draper

The Department has affiliated activities with the Division of Maternal and Child Health, Iowa State Department of Health, State Services for Crippled Children, Hospital School for Handicapped Children and Klaus Memorial Children’s Hospital (Iowa Methodist, Des Moines). Thus, the Department has extensive opportunities for general and specialized training in the broader aspects of care of child care as well as in disease. Lectures and demonstrations presenting fundamental bases for examination and care of infants and children are given during the sophomore course in physical diagnosis. This includes history, physical signs, nutrition, appraisal of growth and development, and symptomatology of the newborn, toddler and adolescent.

Inpatient service provides an opportunity for training in the complex problems of disease and critical illness. There are daily rounds and ward work involving general pediatrics and all subspecialties. The more challenging and interesting patients are presented to the staff for diagnosis, treatment and discussion. Outpatient experience stresses principles and practices required for the maintenance of health in children—immunizations, physical care, nutrition, mental hygiene and utilization of public health facilities.

Staff professors: Ben, Desmy, Pifer, Fonro, Gauthy, Hardy (Psychology), J. MacKee, Read, Rambolt, Rowley (Psychology), Solomon, Zeilinger, clinical professor; Hill, associate professor; T. A. Anderson, Baker, Brown, Hensy, Jonezanne, Johnson, Kriple, Lietz, Silber, Stengel (Biochemistry), Stehren, Taylor, assistant professor; Betts (Speech and Psychology); Enoble, Friedman (Psychology); Ramey, Taylor (Neurology), Youssouf, assistant clinical professor D. W. Anderson (Psychology), Winters, assistant Chandrumulli, Dee (Psychology), Haye (Psychology), instructor Cruikshank
research can usually be completed with four years' graduate work beyond the bachelor's degree. The Ph.D. is awarded upon acceptance of a dissertation and satisfactory performance at the final oral examination.

Staff: professors Becker, Brody, Long, Mitchell, Spratt, Tidby, Williamson, Wilson; professor emeritus Gross; associate professors Steele, Van Orden; assistant professors Baron, Blauweg, Flacher, Roberts

Courses
7110 Medical Pharmacology 6 a.h. Lecture-laboratory; pharma-codynamic action and therapeutic use of drugs; action on motor nerves not included; five semester, sophomore year
7111 Pharmacology for Dental Students 6 a.h. Lecture-conference-laboratory; pharmacologic actions and therapeutic use of drugs considered, emphasis on tissue of special interest in dentistry; senior semester, junior year
7110 Introductory to Pharmacology 2 a.h. Lecture-laboratory; general principles; opens to students in pharmacy and qualified graduate students; prerequisite biology and organic chemistry; sophomore semester
71155 Pharmacology and Toxicology 3 a.h. Coordination of 71105, lecture-conference-laboratory; emphasis on action of special interest to pharmacology; open to students in pharmacy; junior semester
71105 Drugs, Their Nature, Action and Use 3 a.h. Lecture-discussion; principles of drug action and drug toxicity; specific classes of drugs considered; include anesthetics, anti-convulsants, sedatives, stimulants, hallucinogens, narcotics and others; open to all students; course material general to students not having strong background in science; no prerequisite; first semester, junior year
71901 General Pharmacology 4 a.h. Same as 71105; prerequisite introductory course in physiology and bacteriology; junior semester, junior year
71903 Pharmacology Research 1 a.h. Consent Department head for permission to register
71905 Cardiovascular Pharmacology 2 a.h. Discussion of the pathologic and pharmacologic aspects of cardiovascular disease and mechanisms of action of cardiovascular drugs; prerequisite consent of instructor; open to all; junior semester, junior year
71908 Biochemical Pharmacology 2 a.h. Lecture-discussion of drugs for the absorption, distribution, excretion, metabolism, receptor interaction and enzyme induction; prerequisite 71105; junior semester, junior year
71907 Toxicology 1 a.h. Lecture-laboratory; administration and effects of poisons; not open to all; prerequisite consent of instructor; senior semester, junior year
71906 Statistic and Bacteriology 2 a.h. Principles and applications of statistical analysis and interpretation of biological data; basic course requires student's own, analysis of variance, least squares, Philip's exact probability, linear regression. Lecture-discussion, special topics. Lecture-discussion, special topics, design and experimental design; prerequisite: consent of instructor; may be taken by five-year graduate students with proper background
71910 Special Topics in Pharmacology 1 a.h. Consent Department head for permission to register
71911 Toxicology 1 a.h. For pharmacology majors and other interested students; selected topics in pharmacology and physiology; experimental work on causes and effects of drugs and adverse effects, mechanisms of action, orally administered, hypodermic injection; safety evaluation; lecture-discussion, special topics, experimental work. Lecture-discussion, special topics, experimental work; prerequisite 7110; second semester, junior year
719036 Neurology and Transplantation 2 a.h. Reasons for action of drugs affecting renal transport systems; prerequisite physiology; junior semester, junior year, prerequisite consent of instructor, five semester, junior year
71918 Clinical Toxicology 1 a.h. Acute poisoning and management, general topics in toxicology; prerequisite: 710 Medical Pharmacology or equivalent; first semester, junior year
71935 Clinical Pharmacology and Therapeutics Lecture Szabo 2 a.h. Lectures by Szabo on a novel approach to pharmacologic principles, special emphasis on pharmacologic approach to treatment of diseases in man; for third and fourth-year medical students, pharmacy students, other premedical students; see 78460 Internal Medicine; second semester

Physical Therapy

See "College of Liberal Arts"

Physiology and Biophysics

Department Head: C. Adlin, M. Wegner Degrees offered: M.S., Ph.D.

This program is intended primarily to prepare the student for a career of research and teaching, usually at the college, graduate and professional school levels. Graduate training in physiology and biophysics usually progresses to the Ph.D. degree. Those who successfully complete the program often postdoctoral research fellowships in their area of interest for one or two years before applying for positions of their choice.

Prerequisites for graduate study include each year of biology, physics, chemistry, organic chemistry, and physical chemistry. The undergraduate major is not necessarily prescribed, and the graduate student group commonly includes persons with baccalaureate degrees in biology, chemistry, physics, mathematics and engineering.

The Ph.D. program begins with the early completion of deficiencies in prerequisite courses and the acquisition of further knowledge and capabilities useful to the particular program goals. The selection of courses is determined by the individual's evolving interests and by consultation with a faculty advisor. Teaching experience is gained through supervised participation in course offerings of the Department.

Comprehensive examinations are taken usually by the end of the second year of graduate study. One or two years later, when the candidate has attained competence in independent scholarship—primarily through research under the immediate supervision of an adviser—the final examination takes place. This consists of the defense of a thesis. No candidate is recommended for the degree Doctor of Philosophy until, with the approval of the adviser, the dissertation has been prepared for formal publication and the manuscript has been accepted for publication in an appropriate scientific journal.

Applicants whose career goals would not best be served by the Ph.D. may, with the assistance of the Department, develop a program leading to the M.S. degree. Acceptance as an M.S. candidate is contingent on faculty acceptance of the program of study. Fellowship support is available for doctoral students.

Facilities

The Department is housed on the top two floors of the Basic Sciences Building, a new facility for research and teaching. In addition, a new unit for research in neurophysiology is operating.
at the Ovide Campb at six miles west of the main health-
science campus.

Faculty
Department faculty members are active in many different
areas of research in physiology and biophysics. Many have received
world-wide recognition for achievements in their respective
fields.

Staff
professor Danek, Folk, Halmi, Moglen, Lien, Schor-
taille, Shipston, Wunder; associate professors Davis, Forker, Hill-
man, Jmg, Searle, Thompson, Tipton; assistant professor Baker.
Farber, Larkhovitch, Nichols, Phillips; instructor: Cooke, Cross, In-
gram

Courses
71215 Introduction to Human Physiology 4.0 h.
Basic concepts of human physiology: enzymology, 37.3. Chemistry 6.0-1.
and E and for: examination, and seven laboratories each week.
71222 Physiology of Exercise 3 or 4 h.
Basic concepts of exercise and fitness, adaptation to endurance ex-
nercise, mechanisms underlying functional changes, biochemistry
and chemical regulation of activities of the body, basic knowledge
local lecture each week; second semester, alternate years, offered
1972-73.
71237 Neurobiology and Behavior 6 h.
In search of an interdisciplinary study of organization and function of
nervous system; same as 50.101, 60.102, 71.207. This course is
required for graduation in psychology, prerequisite consent of
instructor.
71318 Embryology for Medical Students 1 h.
Same as 50.108 and 60.118; for graduate students, core course in embryology;
given first half of second semester; eight weeks.
71411 Analytical Study of Physiology 2 h.
Designed for students of physics and engineering sciences to provide a background
basis in application to their training in biological problems (include basic
concepts of physiology; emphasis on concepts depend on physical theories;
physiologists shall take two units of another course, three units of
physical and engineering coursework and introduction to differential equations; first semester.
71423 Analytical Study of Physiology 2 h.
Continuation of 71411; same as 50.101, 60.102, 71.207. This course is
required for graduation in psychology, prerequisite consent of
instructor.
71516 Intermediate Physiology 2 h.
Lectures on basic concepts of physiology and physical therapy mod-
dules, including the role of the central nervous system in maintaining
homeostasis and the role of the peripheral nervous system in maintaining
homeostasis. This course is required for graduation in psychology, prerequisite
consent of instructor.
71522 Membrane Physiology 2 h.
Lectures and laboratory dealing with principles of physiology and dependence
of organ systems and cell types; required of medical students; open to graduate
and honors undergraduate students having prerequisites of year of biology or
mathematics of intermediate level of physics, two years of chemistry and either one semester of bio-
chemistry or consent of instructor; second semester.
71929 Research in Physiology and Biophysics 2 h.
For graduate students who are not master's or doctoral candidates of Department
of Physiology and Biophysics, prerequisite consent of head of the Department.
71931 Introduction to Biophysics 4 h.
Physiological basis of biological phenomena; use of techniques and
exploration of biophysical principles and their application in
biochemistry. This course is required of exercise in biological physics, lectures, laboratory; second semester, alternate years, offered 1972-73.
71933 Advanced Physiology of Exercise 4 h.
Explores the mechanics of exercise on cardiovascular and respiration
systems, lecture, laboratory, alternate years, alternate years, offered 1972-73; pre-
requisites: 71212 or 71237. Offered in alternate years.
71935 Seminar in Physiology 1 h.
Same as 71305; discussion of selected topics; open to graduate, pre-
requisites: 71212, 71237. Meets one or two times per semester, consent of instructor; fall semester.

72311 General Physiology 4 h.
Lectures, lectures and seminars, application of physical and chemical princi-
planes to the development of human physiology. Required of candidates
for bachelor's degrees in biological science and premedical sciences, prerequisite consent of
instructor; fall semester.
72315 Medical Physiology 4 h.
Lectures and laboratory work in human physiology. Required of candidates
for bachelor's degrees in biological science and premedical sciences, prerequisite consent of
instructor; fall semester.
72316 Endocrinology for Medical Students 1 h.
Open to 50.105 and 60.115 or 40.106, for graduate students, core course in medicine;
given first half of second semester; eight weeks.
72319 Advanced Systematic Physiology 4 h.
Course 72321 and 72322 involve detailed laboratory study of func-
tion of biological systems; each semester, particular areas such as respiration, renal
physiology, metabolism, control and neuroregulation designed for review;
prerequisite Biochemistry 79.9100 or 79.9115. 72312 and consent of instructor; fall semester.
72325 Advanced Systematic Physiology 4 h.
Course 72332 and 72333 involve detailed laboratory study of func-
tion of biological systems; each semester, particular areas such as respiration, renal
physiology, metabolism, control and neuroregulation designed for review;
prerequisite Biochemistry 79.9100 or 79.9115. 72312 and consent of instructor; fall semester.
72329 Advanced Cardiovascular Physiology 2 or 3 h.
Lectures, reports and laboratory work: physiological adaptive mechanisms of the heart
and the myocardial circulation considered in depth. Corequisites required for all students
and the respiratory system; lecture, corequisites offered 1972-73. 72312 and consent of instructor; first semester, alternate years, offered 1972-73.
72335 Advanced Systematic Physiology 2 or 3 h.
Course 72332 and 72333 involve detailed laboratory study of func-
tion of biological systems; each semester, particular areas such as respiration, renal
physiology, metabolism, control and neuroregulation designed for review;
prerequisite Biochemistry 79.9100 or 79.9115. 72312 and consent of instructor; fall semester, alternate years, offered 1972-73.
72339 Advanced Neurophysiology: Excitation and Contraction 2 h.
Part of two-year sequence: open to graduate and postgraduate students; exam-
in biological chemistry, development and transmission of the excitation and con-
traction, excitation and transmission of the excitation and con-
traction, corequisites offered 1972-73. 72321 and consent of instructor; fall semester, alternate years, offered 1972-73.
72345 Advanced Neurophysiology: Sensory Physiology 2 h.
Part of two-year sequence: open to graduate and postgraduate students; exam-
in biological chemistry, development and transmission of the excitation and con-
traction, corequisites offered 1972-73. 72321 and consent of instructor; fall semester, alternate years, offered 1972-73.
72346 Advanced Neurophysiology: CNS, Control of Locomotion
and Posture 2 h.
Part of two-year sequence: open to graduate and postgraduate students; object-
ive, development and transmission of the excitation and con-
traction, corequisites offered 1972-73. 72321 and consent of instructor; fall semester, alternate years, offered 1972-73.
72347 Research Physiology 2 h.
Offered in alternate years.

72348 Research Physiology 2 h.
Offered in alternate years.
72350 Comprehensive Examination of Assigned Topics 2 h.
Prerequisite: 72349 or 72351 or 72352 or 72353 or 72354. Corequisites: 72321 and consent of instructor; fall semester, alternate years, offered 1972-73.
72351 Comprehensive Examination of Assigned Topics 2 h.
Prerequisite: 72349 or 72351 or 72352 or 72353 or 72354. Corequisites: 72321 and consent of instructor; fall semester, alternate years, offered 1972-73.
72355 Special Topics 2 h.
Open to graduate students. Consent to be obtained from instructor; fall semester.
72356 Special Topics 2 h.
Open to graduate students. Consent to be obtained from instructor; fall semester.
Preventive Medicine and Environmental Health

Department Head: E. P. Institute

Preventive medicine may relate to the individual patient when knowledge and techniques from medical, social and behavioral sciences are applied to prevent disease or its progress, or it may encompass the whole community by applying the knowledge and skills of medical and allied sciences in an organized community effort to maintain and improve the health of groups of individuals. Environmental health is the study and control of the physical, biological and social factors of the environment and the manner in which they influence the health of the individual or groups of individuals.

The teaching of preventive medicine and environmental health at Iowa began in 1985, when a course in sanitary science and public health was introduced. The present Department was established in 1921.

Since its inception the Department has continued to offer courses in sanitary science and other areas of public health, including epidemiology and communicable disease control, institutional and food sanitation, industrial hygiene, biostatistics and health administration. Many graduates of the Department have gone on to national and international achievement in public health work.

In 1955 the Department sponsored the development of the Institute of Agricultural Medicine, the first in the western hemisphere dedicated to the study of the occupational health problems of the agricultural worker. Since then the Institute has achieved national and international recognition for its study of the health problems associated with the diseases of animals transported to man, agricultural accidents and the effects of pesticides on human health. The varied programs of the Institute provide practical training for students of the health professions as well as for medical students at the graduate and postgraduate levels.

The Department excels in its biostatistics program, where undergraduate and graduate instruction is provided by a nationally-recognized faculty. Departmental programs are enhanced through affiliations with the State Hygienic Laboratory, the University of Iowa Health Science Center, Health Service Training and the Department of Civil Engineering.

The Department has traditionally offered degrees at the master's level with emphasis in preventive medicine, environmental and occupational health. The Department is presently (1971-73) undergoing a complete revision of its curriculum and program offerings to provide instruction in the newer concepts of the community and social aspects of health. A new undergraduate major in environmental science is being developed.


Courses

03101 Health Science I

03106 Health Science II

03107 Environmental Health Fundamentals of social, cultural and environmental exposures; concepts of health; physical, biological and social factors of environmental health; introduction to prevention of disease; health care delivery; special attention to public health; two semester hours.

03108 Health Science III

03109 Environmental Health Management: Management of environmental exposures; an introduction to the principles of management; management and control of health care; management of environment; two semester hours.

03110 Public Health Aspects of Food and Housing

03111 Environmental Health: Environmental and occupatinal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03112 Industrial Hygiene: Principles and methods of occupatinal hygiene; methods of controlling exposure to environmental hazards; management and control of health care; management of environment; two semester hours.

03113 Medical Poteniology

03114 Environmental Health: Environmental and occupatinal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03115 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03116 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03117 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03118 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03119 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03120 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03121 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03122 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03123 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03124 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.

03125 Environmental Health: Environmental and occupatonal health; methods of controlling exposures to environmental hazards; management and control of health care; management of environment; two semester hours.
Courses

74061 Introduction to Radiology 1 S.H.
Basic concepts in radiologic diagnosis of chest, abdominal and bone diseases; nuclear medicine techniques; roles and techniques of radiation therapy; an introduction to mammography. Contact hours: two per week; offered September through July.

74062 Clinical Radiology 2 S.H.
Physical examination and case presentation through examination and interpretation of radiographs, mammograms, chest, abdominal, and musculoskeletal radiographs; two student per case study; preliminary introduction to mammography. Contact hours: two per week; offered September through July.

74063 Pediatric Radiology 5 S.H.
Introduction to radiologic examinations of pediatric patients; joint conferences with pediatricians and pediatric surgeons; one student per conference; preoperative introduction to Radiology; subscription time: two weeks; offered September through July.

74064 Angiography 5 S.H.
Clinical indications, technique and interpretation of abdominal and peripheral angiographic procedures; one student; preoperative introduction to Radiology; subscription time: two weeks; offered September through July.

74065 Neuroradiology 2 S.H.
Clinical indications, techniques and interpretation of cranial and spinal angiographic procedures; one student; preoperative introduction to Radiology; subscription time: two weeks; offered September through July.

74066 Nutrition Therapy 2 S.H.
Radiation therapy in malignancy treatment; nutrition therapy: indications, techniques; objective; two students; subscription time: two weeks; offered September through July.

74067 Nuclear Medicine 5 S.H.
Clinical application of nuclear medicine, scanning theory and techniques, instrumentation of the organ systems and interpretation of scans images; two students; preoperative introduction to Radiology; subscription time: two weeks; offered September through July.

Surgery

Chairman: Shirley E. Ziffren
Vice-Chairman: Lawrence Dembezen
Degree offered: M.B.

The Undergraduate Program

Programs are available only to medical students and to qualified individual students in associated health sciences.

The undergraduate program in surgery develops awareness of surgical therapy's place in the management of disease. Epidemiology is placed upon basic emergency techniques; trauma assessment; oncology; burns; infectious disease and tumor therapy; gynecologic and surgical technique; endocrine disease; particularly the breast; transplantation; thoracic-cardiovascular conditions; and neurosurgery.

A majority of the courses involve patient-oriented discussions and practical exercises interspersed with operating room experience. However, there are lectures and conferences on specific topics. Special programs in selected topics of surgical research, independent study and clinical experiences outside the University Hospitals complex are available to individual senior medical students by special arrangement with the faculty.

Admission requirements are those of the College of Medicine, except in the case of specific topics designated for students of the associated health sciences.

Graduate Programs

The graduate program leading to a master's degree in surgery combines coursework in allied scientific fields with a year of intensive research in surgical problems either in the clinic or the laboratories. The program is designed primarily for surgical residents who plan a career in academic surgery; it is available only to medical students and to qualified individual students in associated health sciences.

The content of the master's program, both with respect to required coursework and laboratory investigation leading to the thesis, is determined by the resident involved and his or her faculty advisor, in consultation with the Department head. Special programs in basic science and clinical research are available to interested residents, but they carry no academic credit unless they are related to a master's degree program.

Required: GRE Aptitude Test
Undergraduate major in the field of graduate study
One year devoted full time (or equivalent) to research
Thesis—Formal, publishable, defended in oral exam

Facilities

The Department's Belur Unit provides a unique opportunity to investigate problems involved in the preservation of organs harvested for transplantation. The Departmental biochemistry laboratory provides the equipment, space and technical expertise necessary to support a wide spectrum of basic science metabolic research projects. The Departmental Burns Unit, the only one of its kind in the state, provides adequate patient material for both clinical and basic science research.

The Faculty

Special faculty strengths are centered in the fields of pathophysiology and problems of severe burns, the surgical control of morbid obesity, inflammatory bowel disease, the pathophysiology of biliary tract disease and pediatric surgery. The thoracic-cardiovascular and neurosurgical surgeons have particular expertise in the clinical management of the spectrum of diseases in their specialties.

Both the undergraduate and graduate programs in surgery provide opportunity for a unique combination of patient-care oriented experience and basic surgical research designed to give the interested student a deep awareness of the place of surgery among the physician's skills.


Courses

7501 Basic Emergency Techniques 1 S.H.
Six-hour basic course in emergency medical techniques: emphasis on prehospital emergency services. Contact hours: two weeks; offered September through July.

51111 Introduction to Clinical Medicine 2 S.H.
Preclinical curriculum for junior students; emphasis on the discipline and application of the basic sciences. Contact hours: two weeks; offered September through July.

75017 Neurology-Neurosurgery Conference 1 S.H.
Four-hour course in clinical surgery; required of junior medical students.

5150 Principles of Surgery 3 S.H.
Courses

78:154 Clinical-Urology Junior Medical-Student Clerkship 2 s.h.
Provides intensive two-week course of study on urology wards; junior medical students responsible for patient care under supervision of residents, undertaking initial evaluation and management in pre- and postoperative care of patients; students expected to attend clerkship conferences and weekly urology ward rounds; students expected to attend twice during year. 

78:158 Urology: 3-D Way Interpretation 1 s.h.
Mona daily throughout year to review radiographs; provides wide experience in urographic radiology; culminates in weekly urologic-radiology conference, which students expected to attend; conferences guided by Radiology and Urology staff.

78:158 Urology Grand Rounds 1 s.h.
Weekly conference of Urology Department; increasing synthetic clinical cases of disease discussed in detail, with presentations to department in absentia from certain institutions; management of the disease is discussed.

78:157 Urology Seminar 1 s.h.
Weekly review of selected material by senior staff in plastic surgery; refresher for resident and student participants; case history review and radiographic interpretation provide sufficient additional reference to attend; research review and the presentation of papers of senior staff and resident personnel reviewed.

78:108 Advanced Clerkship 4 s.h.
Students become integral member of urology staff, spends full time in Department for four weeks, assigned to surgery department; under direction of junior and senior staff, responsible for obtaining history, performing physical examination, conducting diagnostic evaluation and following therapeutic manipulations of assigned patients; participates in clinical conferences; and newly trained and instrumental examinations; method for review of therapy, lesions learned in managing case and examination-based on student's experience concluded by senior urology staff at conclusion of clerkship.

78:108 Seminar in Urology 1 s.h.
Responsibility for presenting seminars during year, year, and those who are expected to make a medical presentation in clinical examination, which is tape-recorded and the required for participation in case discussion. All examinations are concluded at end of each 13-week period.

78:699 Special Studies 1-4 s.h.
Individual problem or clinical project, conducted by class member and faculty representative of urology staff, at the discretion of department; no problem can be accepted without permission of department head, upon completion of project, thesis prepared and presented for examination.

78:111 Urology 4 s.h.
Full time in departments of Urology and Radiology, where indications, complications and techniques of urological procedures are presented and discussed; it is open for attendance by departmental personnel.

78:118 Urology: 3-D Way Interpretation 1 s.h.
Provides intensive two-week course of study on urology wards; junior medical students responsible for patient care under supervision of residents, undertaking initial evaluation and management in pre- and postoperative care of patients; students expected to attend clerkship conferences and weekly urology ward rounds; students expected to attend twice during year.

78:118 Urology Grand Rounds 1 s.h.
Weekly conference of Urology Department; increasing synthetic clinical cases of disease discussed in detail, with presentations to department in absentia from certain institutions; management of the disease is discussed.

78:117 Urology Seminar 1 s.h.
Weekly review of selected material by senior staff in plastic surgery; refresher for resident and student participants; case history review and radiographic interpretation provide sufficient additional reference to attend; research review and the presentation of papers of senior staff and resident personnel reviewed.

78:117 Urology Seminar 1 s.h.
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Administrative Staff

Dean: Evelyn R. Garris
Assistant Dean, Graduate Programs: Elke Ramnussen
Assistant Dean, Undergraduate Program: Shirlee Freier
Comptroller, Administrative Project: Adrian Bahnman
Director, Continuing Education: Pearl Zambetti

Degrees offered: B.S., B.S.N.

With the colleges of Medicine, Dentistry and Pharmacy, the College of Nursing is an integral part of the University Health Center, sharing in and contributing to teaching, research and patient-care resources which have earned international recognition. This provides an unusually fine setting for college preparation for nursing, because the educational and clinical resources which are needed to educate nurses are available on or near the campus. This also makes it possible for the faculty and students to participate fully in University life and to contribute their time, interest and abilities to the many general and special activities of a major and modern university.

The baccalaureate program for licensure as a registered nurse is fully approved by the state licensing agency, the Iowa Board of Nursing. In addition, both the baccalaureate and the graduate programs are accredited by the Department of Baccalaureate and Higher Degree Programs of the National League of Nursing, which is the professional accrediting agency for college and university programs of nursing education.

Undergraduate Program

The purpose of the undergraduate program is to prepare professional nurses with competencies relevant to contemporary and emergency health care systems and to provide a basis for graduate study.

Graduates of this program are employed in a variety of health agencies and settings, such as hospitals, clinics, extended care centers, nursing homes, public health agencies, industries, government agencies and the armed services.

The baccalaureate program comprises coursework in four areas: communication skills, the social, biological and physical sciences basic to nursing; the student's choice of electives; and professional nursing. Graduation normally requires four academic years and 124 semester hours of credit.

Preparatory coursework for the study of nursing includes chemistry, anatomy, physiology, human growth and development, microbiology, and nutrition, in addition to the College of Liberal Arts' core sequences in rhetoric, the historical-cultural area and literature.

Junior- and senior-year courses include medical-surgical, medical and child health, psychiatric, public health and senior nursing, as well as literature, sociology and some electives. Studies of nursing theory are coordinated with opportunities for related supervised nursing practice in the University Health Center, the Iowa City Veterans Administration Hospital, other local hospitals and nursing homes, and selected public health agencies.

There are three ways to enter the College of Nursing's undergraduate curriculum:

• In the fall semester after completing 30 hours of a required sequence of courses;
• In the eight-week summer session after completing a two-year prescription of general education and science courses;
• By transferring from another college with advanced standing; this avenue is also available to the registered nurse who has completed prescribed general education and science courses.

The Cooperative Plan

In cooperation with The University of Iowa College of Nursing, 11 institutions of higher education have developed a planned curriculum offering which will satisfy the two-year sequence of courses required for entry into the College of Nursing. The College offers an academic counseling service to all students enrolled in this plan.

The cooperating institutions are: Iowa State University, Ames; the University of Northern Iowa, Cedar Falls; Iowa Central Community College, Fort Dodge; North Iowa Community College, Mason City; Marshalltown Community College, Marshalltown; Muscatine Community College, Muscatine; Upper Iowa College, Fayette; Briar Cliff College, Sioux City; Morningside College, Sioux City; Simpson College, Indianola; Luther College, Decorah.

Expenses

Students pay the general University fees throughout the program. The initial cost of a student's uniform, which includes three uniforms and two caps is approximately $60.00. This amount is payable at the end of the freshman year. The student also will need to purchase white shoes, bandage scissors and a watch with a sweep second hand. Senior students are required to provide their own means of transportation for Family and Community Health Nursing.

Financial Aids

In addition to the assistance available to University students generally, there are special sources of assistance to nursing students including federal loans made available through the Nurse Training Act of 1971.

Student Organizations

College of Nursing students have their own Association of Nursing Students and are also eligible for membership in the State and National Association of Nursing Students.
Undergraduate Requirements

To graduate, the student must complete the 126-semester-hour required program; must achieve at least a 2.0 grade-point average in general education as well as in nursing coursework; and must complete the last 30, or 45 of the last 60, semester hours at The University of Iowa.

Academic Standards

To be considered for admission to the College of Nursing, the applicant should have a cumulative grade-point average of at least 2.3 (A = 4) for all college coursework taken.

Selection Factors

 Fulfillment of minimum admission requirements does not guarantee admission to the College of Nursing. From applicants who meet minimum requirements, the College's admission committee selects those who, in their judgment, are best qualified. The committee may require personal interviews.

Faculty Advisors

Faculty advisors from the College of Nursing are available to help prospective nursing students plan their programs, and each student in the College works with a faculty advisor.

Application Deadlines

Applicants with one year of college work are admitted to the College of Nursing as sophomores, in the fall semester only and must apply between July 1 and April 15 of the year before their anticipated enrollment. Applicants with two years of college work who are prepared to enter the College for the summer semester must apply by November 15 of the sophomore year. Registered nurses are admitted in both the fall and spring semesters; they must apply by April 15 for the fall semester, or by November 15 for the spring semester.

Master of Arts

Accredited by the National League for Nursing, this program offers majors in medical-surgical nursing, nursing of children, psychiatric nursing and nursing service administration. It provides preparation for positions in nursing as clinical specialists, teachers, supervisors, or administrators.

Admission

Graduate students are nursing register in the Graduate College, and degrees are conferred by that College. The general requirements of the Graduate College relating to admission apply with the following special requirements:

- A bachelor of science degree in a nursing program which includes public health nursing theory and practice (applicants not meeting this condition will meet individuals designated course requirements);

- Evidence of the fulfillment of the legal requirements for the practice of nursing (licensure in Iowa is not required);

- A grade-point average of 2.7 in the baccalaureate program, or demonstrated ability in graduate courses as stipulated by the Graduate College (conditional admission to the nursing major granted to applicants with grade-point average of at least 2.5; and, for purpose of taking non-nursing courses, to applicants with grade-point average of not less than 2.3).

Program Requirements

Registration for elective requirements is possible in any term, but initial enrollment in advanced nursing courses which are offered sequentially is limited to the fall semester. Curricula in the clinical majors are designed to be completed in three semesters and those in nursing service administration in two semesters and a summer session.

All regulations of the Graduate College pertaining to academic standing, probation and dismissal are applicable to graduate students in nursing. Transfer credit applicable to the degree is limited to 60 semester hours, and must be approved by the dean and advisor. A thesis is required of students in the medical-surgical nursing major, and may be selected by others. A major paper or project is included in the final course in all clinical majors for nonthesis students. A written general examination is required of all degree candidates.

Financial Aid

The College of Nursing participates in the professional Nurses Training Program as administered by the Division of Nursing, U.S. Public Health Service, and in the National Institutes of Mental Health training program. Grants made to the University under these programs provide a limited number of traineeships for students who are preparing for positions as nurse specialists, teachers in schools of nursing, and supervisors and administrators in nursing services. Awards are made after the student has been accepted for full-time study, but a preliminary application may be filed when the application for admission is submitted. This assistance is restricted to citizens of the United States. Funds may be obtained from the Graduate Program Office, College of Nursing, The University of Iowa.

Degree Requirements

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Medical-Surgical Nursing—30 semester hours</td>
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<tr>
<td>96.332-334</td>
<td>Advanced Medical-Surgical Nursing</td>
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<tr>
<td>92.120</td>
<td>Research Methodology</td>
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<tr>
<td>96.220</td>
<td>Research in Nursing</td>
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<tr>
<td>96.299</td>
<td>Thesis</td>
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<tr>
<td>3 s.h.</td>
<td>Statistics</td>
</tr>
<tr>
<td>Elective from one related area (physiological or behavioral sciences)</td>
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Nursing of Children—12 semester hours

<table>
<thead>
<tr>
<th>Course Title</th>
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<tbody>
<tr>
<td>Advanced Nursing of Children</td>
<td>14 s.h.</td>
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<tr>
<td>96.120</td>
<td>Introduction to Methods of Nursing Research</td>
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<tr>
<td>96.220</td>
<td>Research in Nursing</td>
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<tr>
<td>96.128</td>
<td>Perspectives in Nursing</td>
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<tr>
<td>11 s.h.</td>
<td>Electives from relevant areas</td>
</tr>
<tr>
<td>7 s.h.</td>
<td>Thesis</td>
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<tr>
<td>6 s.h.</td>
<td>(Elementary course in statistics required prior to admission or in fall semester)</td>
</tr>
</tbody>
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Psychiatric Nursing—32 semester hours

96:232-256 Advanced Psychiatric Nursing 18 s.h. 14 s.h.
96:210 Introduction to Methods of Nursing Research 1 s.h. 3 s.h.
96:220 Research in Nursing 3 s.h.
96:128 Perspectives in Nursing 2 s.h. 2 s.h.
96:128 Electives from a related field 7 s.h. 7 s.h.
96:120 Thesis 0 s.h. 6 s.h.

(Electrolyte course in statistics required prior to admission or in first semester)

Nursing Service Administration—32 semester hours

96:260-262 Nursing Service Administration 13 s.h.
96:233-259 Clinical Nursing 6 s.h.
96:120 Introduction to Methods of Nursing Research 3 s.h.
96:220 Research in Nursing 2 s.h.
96:128 Perspectives in Nursing 2 s.h.
96:128 Electives 6 s.h.

(Electrolyte course in statistics required prior to admission or in first semester)

Continuing Education

The College of Nursing offers units of instruction to groups of registered nurse practitioners. The purpose of the continuing education programs is to improve patient care and to facilitate fulfillment of the practitioner's goals for professional growth. These units of instruction are not awarded academic credit.

Staff: Professor Aydelotte, Horr; professor Emeritus; associate professor Erikson, Godel, Cecilia; Jacob; Johnston; Lyford; Overland; Rasmussen; Thomas; Trippe; Shumaker; Solomons; Whittier; assistant professor Asinua, Baldwin; Buhman; Balch; Buell; Busse; C reviewing; Daugherty; Elder; Frank; Fred; Gick; Hoke; Kerfoot; Lakin; McClelland; Maher; Molen, Ostman; Price, Ron; Reese, Ruth; Sander, Schef, Schmit; Schoenmacher; Steers, Volck; Zabrecki; instructors Albrecht, Carlson, Denby, Dorr; Greenrock, Hull, McGarrell, Grassler, Montgomery, Murtaugh, Powell, Sabo, Scandrett, Schewe, Sweeney; associate in-register Berge, Body, Gay, Hammes, Habenstein, Jia; Swanson, In- nurse Fuller

Undergraduate Courses

96:254 Foundations of Nursing 3 s.h.
96:222 Principles of Nursing 3 s.h.
96:222 Psychiatric Foundations of Nursing 3 s.h.
96:234 Psychiatric Foundations of Nursing 3 s.h.
96:235 Psychiatric Foundations of Nursing 3 s.h.
96:236 Psychiatric Foundations of Nursing 3 s.h.
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96:236 Psychiatric Foundations of Nursing 3 s.h.
96:236 Psychiatric Foundations of Nursing 3 s.h.
96:329 Nursing Research
2 a.h.
Analysis and critical appraisal of nursing theories and nursing research; summarization of research findings; completion of research proposal; presentation. 96:391, permission.

96:333 Advanced Medical-Surgical Nursing I
4 a.h.
Contemporary trends in medical and surgical nursing. Focus on the identification of needs and the formulation of nursing diagnoses. Various topics in medical-surgical nursing. Topics include: nutrition, pain management, critical care, and medical-surgical conditions. 96:333, permission.

96:334 Advanced Nursing of Children I
4 a.h.
Growth and development of the child; principles of child care; health promotion and protective guidance; supervision of children in the home setting; preparation for clinical experiences. 96:334, permission.

96:343 Advanced Nursing of Children II
4 a.h.
Children’s response to illness and hospitalization, care of ill-child in variety of settings; serving responsibilities in facilitating optimum health care for children; supervision. 96:343.

96:344 Advanced Nursing of Children III
4 a.h.
Individualized nursing care in selected clinical or functional areas; investigative studies and research papers; supervision. 96:344.

96:353 Advanced Psychiatric Nursing I
3 a.h.
Principles of psychiatric diagnosis and the application of therapeutic techniques to the care of individuals and families experiencing mental health problems. 96:353, permission.

96:354 Advanced Psychiatric Nursing II
3 a.h.
Principles of group dynamics and group therapy, consultation and supervision, application of therapeutic techniques in the care of individuals and families experiencing mental health problems. 96:354, permission.

96:355 Advanced Psychiatric Nursing III
3 a.h.
Principles of psychiatric nursing. Theories of personality development and principles of techniques in psychiatric nursing. 96:355, permission.

96:356 Advanced Psychiatric Nursing IV
3 a.h.
Supervised psychiatric experiences in providing psychiatric nursing intervention for individuals who have psychiatric-mental health problems and in providing emotional support to families of these patients. 96:356, permission.

96:357 Clinical Practice in Psychiatric Nursing I
3 a.h.
Supervised psychiatric experiences in providing psychiatric nursing intervention for individuals, couples and groups. Supervised consultation in psychiatric nursing. 96:357, permission.

96:358 Clinical Practice in Psychiatric Nursing II
3 a.h.
Supervised psychiatric experiences in providing psychiatric nursing intervention for individuals, couples and groups. Supervised consultation in psychiatric nursing. 96:358, permission.

96:359 Advanced Psychiatric Nursing III
6 a.h.
Advanced clinical practice and research in psychiatric nursing. Preparation for advanced practice in psychiatric nursing. 96:359, permission.

96:360 Clinical Practice in Psychiatric Nursing IV
3 a.h.
Clinical nursing processes, concepts and practices; contemporary health care trends influencing clinical nursing; clinical case analysis with integrated clinical experience. 96:360, permission.

96:361 Clinical Nursing II
3 a.h.
Continuation of 96:358, permission. 96:361.

96:362 Nursing-Service Administration I
3 a.h.

96:363 Nursing-Service Administration II
5 a.h.

96:364 Nursing-Service Administration III
6 a.h.

96:365 Supervision in Nursing
3 a.h.
Supervision in providing nursing care in health agencies. 96:365, permission.
Pharmacy is a physical science dealing with the preparation and dispensing of medicinal products. The pharmacist is also trained to identify, analyze, select, combine and standardize these medicines and serve his or her community as a prime source of information on health topics.

Although he or she performs a variety of tasks in and for the community pharmacy, the pharmacist is basically a specialist in the science of drugs. He or she must understand their composition, chemical and physical properties, manufacture and uses, and activity in the normal individual as well as in the ill patient, and he or she must be familiar with tests for the strength, purity and efficacy of drug products. The pharmacist is prepared to compound and dispense prescriptions written by health practitioners. Prescriptions rely on the pharmacist for information about various drugs, their availability, activity, toxicology, contraindications, etc.

Nearly everyone is familiar with the community pharmacist and the pharmacy in which he or she practices. The size and type of practice may vary—community pharmacies may be large or small, operated by individuals or by corporations. The pharmacists who staff these pharmacies make up the majority of practitioners. Over 100,000 men and women practice in community pharmacies.

Another smaller group of pharmacists is employed in hospital pharmacy work. The government also employs pharmacists in the Public Health Service and the armed forces. An area which has a growing need for pharmacists is industry. This includes pharmaceutical manufacturing, where pharmacists are found in various areas of research, development, manufacturing, control, marketing and advertising. In addition to these pharmacists, numerous others are pharmaceutical salespeople. Pharmacy training is especially valuable to these men and women who are responsible for acquainting physicians, dentists, and others with the advantages of other pharmaceuticals with drug therapy.

In the United States more people are receiving total health care than ever before. This expansion of health care will continue. Young men and women in pharmacy will face new challenges, expanded responsibilities and an ever-increasing growth in practice. A growing demand for pharmacists will be related to many factors. These include a longer life span; a greater demand for drugs, especially among the older age groups; a broader range of specific drugs for more diseases; greater interest in preventive medicine; higher standards of medical care; growth of health insurance and medical-care prepayment plans, federal health plans and federal support of health colleges; a burgeoning population; and greater demand for more physicians and dentists, hospitals, nursing homes and extended care facilities. These factors combine to point out the short-range prospects as well as long-range opportunities for pharmacists.

The College of Pharmacy has an enrollment of approximately 350 undergraduate majors. Approximately 60 graduate students are pursuing master's and doctor's degrees in the College.

With the college of Medicine, Nursing and Dentistry, the College of Pharmacy is an integral part of the University Health Center. The college of Liberal Arts, Business Administration, Law and Medicine contribute to the education of pharmacy students by providing instruction in the physical sciences, basic medical sciences, business, law and humanities.

The Bachelor of Science Program
In the College of Pharmacy students in the Bachelor of Science program receive professional training and education in a variety of fields, such as physical pharmacy, professional practice, industrial pharmacy, biopharmaceutics (drug absorption), inorganic and organic medicinal chemistry, pharmacograpy (chemistry and actions of drugs, derived from plants and other natural sources), administrative pharmacy (pharmacy operations) and institutional pharmacy (clinical pharmacy and hospital pharmacy).

Basically, the Bachelor of Science program in pharmacy comprises one year of prepharmacy studies, taken in the College of Liberal Arts at Iowa or in any accredited community or liberal arts college, and four years of pharmacy studies.

It is possible to transfer into the College of Pharmacy after two years of college-level work at an accredited institution. A student entering the College after two years of preprofessional study can complete the professional program in three years if the preprofessional studies include, in addition to the basic pre-professional requirements, at least eight semester hours in organic chemistry, from five to eight semester hours in biology or zoology; three or four semester hours in economics, three semester hours in accounting and three to four semester hours in quantitative analysis.

The professional curriculum includes a minimum of 18 semester hours of electives. Through his or her choice of electives, the student may focus on such special areas as hospital pharmacy, industrial pharmacy or pregraduate study.

Graduation from the undergraduate program in pharmacy requires at least a 2.0 (C) cumulative grade-point average. Any student whose cumulative average falls below 2.0 is placed on academic probation; a student on academic probation is limited
to 12 semester hours of coursework. A student on academic probation for the third time is subject to review by the College's scholarship and admissions committee.

**Graduate Programs**
Master of Science and Doctor of Philosophy programs are available in administrative pharmacy, pharmacometrics, medicinal chemistry, pharmacognosy, and industrial pharmacy. A Master of Science degree is available in hospital pharmacy. A special brochure of these programs may be obtained from the dean of the College of Pharmacy.

**Facilities**
The College of Pharmacy Building is centrally located on the University's main campus, in close proximity to the College of Medicine, University Hospitals, the Basic Sciences Building, a Health Sciences Library scheduled for 1973 completion and other units of the Health Center.

Completed in 1963, the Pharmacy Building is a five-story structure especially designed to provide the most advanced facilities for a comprehensive program of pharmacy education. In addition to classrooms, an auditorium and the pharmacy library, the building houses well-equipped separate laboratories and a greenhouse for instruction at the undergraduate and graduate levels in the various areas of specialization.

The College has an industrial pharmacy laboratory which serves as a teaching unit as well as a service division of the College. Here undergraduate and graduate students learn methods of large-scale pharmaceutical product development.

The Hospital Pharmacy in the University Hospitals is a teaching unit of the College of Pharmacy. From it, all medicines and related securities are supplied to the General, Children's and Psychiatric hospitals. Pharmacy students are given laboratory and classroom experience in the clinical pharmacy program, under supervision of clinical instructors and hospital pharmacist staff members, in all areas of the University Hospitals, Veterans Administration Hospital and the Oakdale installation. Here the students work with other health professionals and have the opportunity of directing drug therapy in hospitalized patients, under the supervision of clinical instructors in pharmacy and medicine.

**Admission**
For general University admission requirements and procedures, see the "Admission" or "Graduate College" sections of the Catalog.

**Undergraduates**
The college work outlined below meets the minimum academic requirements for admission to the College of Pharmacy:

- **Rhetoric:** eight semester hours; applicants from approved colleges may satisfy this requirement by presenting six hours of credit in English composition and rhetoric and two in speech, or by presenting eight hours of credit earned in a one-year rhetoric course.
- **Inorganic chemistry and qualitative analysis:** eight semester hours.
- **College algebra and trigonometry:** six to eight semester hours.
- **Physics:** eight semester hours; although physics is recommended, a suitable biology or zoology course can be taken instead; physics will then be taken in the first professional year.

Economics and accounting are suggested as additional courses to be included in preprofessional study. Students who present minor deficiencies in meeting the above requirements may be admitted to the College of Pharmacy upon recommendation of the director of admissions and the College of Pharmacy.

To be considered for admission to the College of Pharmacy, the applicant must have earned at least a 2.0 (A = 4) cumulative grade-point average on all college course work attempted.

**Transfer Students**
Students who transfer into the College of Pharmacy after two years in a community or liberal arts college can complete the pharmacy program in three years if they have satisfactorily completed courses in organic chemistry, biology or zoology, economics, accounting and quantitative analysis. Students who plan to remain in a community college for two years before transferring to the College of Pharmacy should consult the dean of the College of Pharmacy concerning course requirements.

**Transfer with Advanced Standing**
Students transferring from other colleges of pharmacy accredited by the American Council on Pharmaceutical Education receive credit toward the Bachelor of Science degree in pharmacy for satisfactorily completed coursework required in this curriculum. However, at least one academic year of residence in The University of Iowa College of Pharmacy is required for the degree (minimum 30 semester hours).

Students transferring from non-pharmacy colleges receive credit for work required in the Bachelor of Science curriculum in pharmacy, but are still subject to the licensure requirement of at least three years in an accredited college of pharmacy. A minimum grade of "C" is required for work applied by transfer toward the pharmacy degree.

**Expenses and Financial Aid**
For information about expenses, see "Admissions and Housing." For information about financial aid available to University students generally and to College of Pharmacy students only, see "Scholarships and Loans."

**The Professional Curriculum**

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<tr>
<th>First Year</th>
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<tbody>
<tr>
<td>First Semester</td>
</tr>
<tr>
<td>46.13 Pharmacy Calculations</td>
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<tr>
<td>6.121 Organic Chemistry I</td>
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<td>37.3 Principles of Animal Biology</td>
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<td>4.11 Quantitative Analysis</td>
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<tr>
<td>46:26</td>
<td>Pharmacy: Institutional Practice</td>
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<td>46:28</td>
<td>Pharmacy: Solutions</td>
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<td>6A:2</td>
<td>Accounting</td>
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<td>46:131</td>
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<td>46:31</td>
<td>Pharmacy: Polyphasic Systems</td>
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<td>72:151</td>
<td>Intermediate Mammalian Physiology</td>
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<td>Pharmacology</td>
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<td>Pharmacy: Administrative</td>
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<td>46:113</td>
<td>Clinical Pharmacy: Laboratory</td>
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<td>Pharmacology and Toxicology</td>
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<td>Pharmacy: Administrative</td>
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<td>Pharmacy: Senior Seminar</td>
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<td>46:112</td>
<td>Clinical Pharmacy: Laboratory</td>
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<td>91:150</td>
<td>Law in a Technological Society</td>
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product on market; coordination between research and management emphasized; prerequisite: consent of instructor.

46/222 Pharmaceutical Administration: Pharmacoeconomic and Marketing 4 s.h.
Economic and marketing environment of pharmaceutical industry analyzed; cartels and oligopoly, pricing, promotion, advertising, market share strategies and development, methods of pricing and cost analysis. Emphasis on development of new drugs and introduction of new products to the market.

46/221 Pharmaceutical Administration Seminar 1 s.h.
Seminar on marketing and sales of new products in the pharmaceutical field, including problems of pricing, advertising, sales promotions.

46/235 Pharmaceutical Administration: Research 3 s.h.
Study of drug research, methods of conduct of experiments for research, general principles and techniques of research, design of experiments, statistical methods, data analysis.

46/244 Pharmaceutical Administration: Health Economics 3 s.h.
Principles of health economics in relation to its impact on the pharmaceutical industry and the consumer.

Graduate Undergraduate Pharmacy

48/109 Industrial Pharmacy 3 s.h.
Lectures; principles and processes of pharmaceutical manufacturing—regulations governing it; pharmaceutical production equipment; laboratory procedure in a pilot-plant scale; open to undergraduates for elective credit; prerequisite: 46/33.

46/106 Industrial Pharmacy: Survey 3 s.h.
Organization, changes and staff operations in production of pharmaceuticals; prerequisite: 46/33.

46/225 Industrial Pharmacy 2 to 4 s.h.
Principles and processes of pharmaceutical manufacturing; selection of raw materials; quality control; sterilization; packaging; shipment and storage of finished products; principles and techniques of research; design of experiments; statistical methods; data analysis.

46/238 Industrial Pharmacy: Product Development 2 to 4 s.h.
Application of pharmacological and physiological principles to formulation and design of dosage forms for parenteral, respiratory, oral and various other routes of administration; one laboratory per week.

46/235 Industrial Pharmacy: Research 2 to 4 s.h.
Principles and processes of pharmaceutical manufacturing; selection of raw materials; quality control; sterilization; packaging; shipment and storage of finished products; principles and techniques of research; design of experiments; statistical methods; data analysis.

Undergraduate Clinical-Hospital Pharmacy

46/116 Pharmacy: Institutional Practice 2 s.h.
Practica in institutional setting (small hospital, extended care facility and nursing home) primarily from viewpoint of community pharmacist, hospital pharmacist and nursing home pharmacist. Lecture-discussion of practice, institutional organizations, laws and regulations, federal and state health programs, drug distribution and control, pharmacy practice in various institutions, comity, drug information services and educational programs.

46/110 Clinical Pharmacy: Case Study 2 s.h.
Introduction to pharmaceutical aspects of patient care; patient-care process, reference—clinic, pharmacy, client. Study of clinical pharmacy in relation to institutional pharmacy and retail pharmacy; principles of computer and pharmacology 46/132, Pharmacology 46/152.

46/111 Clinical Pharmacy: Laboratory 2 to 4 s.h.
Application of basic sciences in pharmacy practice through clinical conferences and supervised practice in institutional pharmacy and retail pharmacy; laboratory, conference by arrangement; third and fourth years taught by clinical affiliate.

College of Pharmacy

46/167 Hospital Pharmacy 3 s.h.
A study of American health-care systems; financing, planning, accreditation, organization and management, with particular attention to pharmacy organization, staffing and operating hospital pharmacy, particularly emphasis on economics of professional, interest income and common law; prerequisite: consent of instructor.

46/168 Hospital Pharmacy Survey 2 s.h.
Continuation of 46/167, emphasis on pharmacy relationships, pharmacy committee, pharmacy special interest groups, hospital pharmaceutical services, drug utilization review, drug information services, planning and design; budgeting and reimbursement; prerequisite: consent of instructor.

46/173 Hospital Pharmacy: Special Topics 2 s.h.
One lecture hour; emphasis on information relevant to practice of hospital pharmacy.

46/204 Hospital Pharmacy: Therapeutics 3 s.h.
Two lecture and one laboratory hour: theory and applications in preparation, packaging and testing of parenteral dosage forms.

46/243 Hospital Pharmacy: Research 2 s.h.
Principles and techniques of research; design of experiments; statistical methods; data analysis.

46/245 Hospital Pharmacy: Seminar 1 s.h.
Topics of current interest in the specialty of hospital pharmacy; may be repeated for credit.

46/247 Hospital Pharmacy: Administrative Problems 3 s.h.
Application of basic organizational and administrative theory to practical problems in hospital pharmacy, with emphasis on management, human resources, communication, management, budgeting and forecasting, systems and physical plant design; prerequisite: 46/167, 465/81 or equivalent.

Required Courses from Other Departments

41/111 Anatomical Sciences 4 s.h.
41/121 Organ Chemistry I 3 s.h.
41/122 Organ Chemistry II 3 s.h.
41/141 Intermediate Chemistry Laboratory I 1 s.h.
41/151 Principles of Economics 3 s.h.
29/1 Calculus I 5 s.h.
29/2 Calculus II 5 s.h.
37/1 Principles of Animal Biology 4 s.h.
81/157 General Microbiology 3 s.h.
11/103 Pharmacology 3 s.h.
11/105 Pharmacology and Toxicology 3 s.h.
11/163 Pharmacology of Therapeutics 3 s.h.
11/181 Pharmacology of Therapeutics 4 s.h.
98/161 Biochemistry 4 s.h.
The University recognizes that creative activity is an indispensable function if its teaching is to have the relevance, freshness and effectiveness expected of a distinguished institution of higher learning.

The University holds that the term "research" applies to creativity in all fields. Imaginative originality, whether in the fine arts or in the sciences, is of a common character and significance in the overall intellectual life of the institution.

The Office of the Vice-President for Educational Development and Research maintains an overview of the many individual research commitments of the institution and initiates continuing studies of the nature, extent, requirements and results of the University's research effort. This office has an interlocking relationship with the Graduate College, because of the all-University character of the College and the close connection between the graduate programs and research and creative activity.

The University Research Council assists the Vice-President for Educational Development and Research in a regular advisory capacity. The Council consists of nine senior faculty members with widely recognized personal involvements in basic research or creative activity. Members include two each from the physical, biological and social sciences and the humanities, and one from the faculty at large. The Council gives regular consideration to such matters as the establishment of general policies with respect to the University's research and creative efforts, the review of policies and procedures concerned with securing and allocating funds for support of research and creative activity, and additional matters related to the general research and creative functions of the University and the health of basic scholarship on the campus.

Programs
With the advice of the University Research Council and other appropriately involved officers and committees of the University, the Office of the Vice-President for Educational Development and Research currently supports the following programs:

Faculty Research Assignments
Under the rules of the State Board of Regents, a faculty member may be assigned to devote full time to a specific research or creative project for a semester. Appointments may be for either the first or second semester.

Old Gold Summer Faculty Research Fellowships
These fellowships provide an opportunity for faculty members to devote full time to research or creative work during the summer months. The program is designed to give support to work that will result in additions to knowledge or in substantial progress in creative activity. Awards are given for the initiation of a project, the continuance of its progress or its completion.

Junior Faculty Health-Related Research Grants
These grants are made to support the initial research efforts of junior faculty (i.e., below the rank of associate professor), other than those in the colleges of Medicine and Dentistry, who wish to do health-related research. Funds for these grants come from an institutional award made annually to the University by NIH.

Computer Project Grants
These grants are awarded several times a year to support innovative and extraordinary uses of the computer. Any member of the faculty, staff or student body is eligible to apply.

Incidental Grants
Limited funds are also available in the Office of the Vice-President for Educational Development and Research for small grants to faculty members to cover the costs of materials, supplies, equipment and clerical and related assistance for specific research projects for faculty travel related to specific research projects or for the purpose of acquiring skills, knowledge or techniques which will enhance research at the University, for the purchase of specialized equipment for use in specific research projects, and for honoraria and expenses of visiting lecturers.

Services
The Office of the Vice-President for Educational Development and Research also provides support for several University-wide services required by the research and creative activity of the faculty. They include:

University Computer Center
The role of the Computer Center is to provide large-scale, general-purpose computing facilities to all faculty members and students of the University for instruction and research purposes. The Center has a system capable of an extremely wide variety of applications. The computer is used in remote batch processing in connection with a regional computer activity partially funded by the National Science Foundation, involving several colleges in Iowa and Illinois. Conversational programming by way of typewriter terminals is also available. Although the Center is a distinct entity from the Computer Science Department, there is an interchange of students, faculty and ideas between the two staffs. The Center provides educational and consultative services, compatible with its resources, to help users prepare projects for computer analysis.
University Scanning Electron Microscope Laboratory
This laboratory was established in September 1971 to provide facilities and technical assistance to research programs involving the use of a scanning electron microscope (SEM). Located in the Zoology Building, the laboratory is equipped with a Cambridge Stereoscan 54 having a resolution of 130 Å and a useful magnification range of 20 to 50,000 diameters; a vacuum evaporator for specimen coating; and a critical point drying apparatus for biological tissue preparation. These facilities are available to all interested graduate students and faculty in the University.

Office of Research Services and Administration
This office maintains a resource library of information on public and private agencies which provide funds for research and study. Included are references to post- and post-doctoral fellowship awards, as well as application forms when available. After a potential funding agency is located, staff is available to assist in the preparation of budget and cover material and to give editorial assistance to achieve effective organization and technical correctness of an application. The staff also assists in processing an application through the University and in locating the appropriate contact in the prospective donor's office. Once an award is made, monitoring and advisory services are provided for matters other than expenditure accounting.

Office of International Education and Services
This office assists students and faculty wishing to explore research and education opportunities in overseas locations. See "Other Service Units."

Related Units
Although not directly connected with the Office of the Vice-President for Research, these units have a special role in the conduct of research at the University.

Agricultural Law Center
See "College of Law"

Center for the Advanced Study of Communication
See "Journalism" in "College of Liberal Arts"

Center for East Asian Studies
See "East Asian Languages and Literatures" in "College of Liberal Arts"

Center for Labor and Management
See "College of Business Administration"

Center for Research in Interpersonal Behavior
See "Sociology" in "College of Liberal Arts"

Child Development Clinic
The Child Development Clinic is an out-patient facility and is a division of the Department of Pediatrics in the University Hospitals. The primary role of the Clinic is as a diagnostic clinic for developmental problems in children. The Clinic will provide a comprehensive study on any child under 17 years who has problems suggestive of mental retardation, problems associated with poor school performance or psychological problems associated with medical conditions.

Clinical Research Center
The Clinical Research Center is a 17-bed unit in University Hospitals. Its functions are to provide the setting for patient-oriented research of disease processes and to permit studies of normal human physiology, biochemistry and pharmacology. The Center is supported completely by the National Institutes of Health, on a semi-permanent basis, by annual grants-in-aid.

Comparative Legislative Research Center
The Comparative Legislative Research Center conducts programs of research on legislative behavior with special emphasis on the role of legislatures in political development. It provides research training for graduate students and foreign research associates and facilitates collaborative research projects jointly undertaken by faculty at The University of Iowa and by foreign scholars.

The Institute of Agricultural Medicine
The Institute of Agricultural Medicine, housed in the Agricultural Medicine Research Facility on the Gouldie Campus, is a part of the Department of Preventive Medicine and Environmental Health, College of Medicine. Research, teaching and extension activities are centered on the safety and health problems of those who live in rural Iowa by occupation or choice. The Iowa Community Pesticide Study and Accident Prevention Laboratory are portions of the Institute.

Institute of Hydraulic Research
See "College of Engineering"

Institute of Public Affairs
The mission of the Institute is to improve state and local government and administration in Iowa. To fulfill this mission, the research and publication activities of the Institute seek to promote citizen understanding of and appreciation for their governments, help public officials better understand their roles and responsibilities, assist governments in their personnel development activities, and help public officials and citizens in their efforts to implement change. (See "Extension and University Services")

Institute of Urban and Regional Research
Primary objectives of the Institute are to broaden knowledge in
the area of urban and regional studies, to enrich the teaching programs in participating departments and to initiate and carry out interdisciplinary research projects. Through the acquisition of grants and contracts and other on-campus activities, the Institute pursues these goals and provides an interface between faculty and students and their related discipline orientations in both basic and applied urban and regional research activities.

Iowa Center for Education in Politics
Supported by gifts from foundations and others and headquartered in the Division of Extension and University Services, the Iowa Center for Education in Politics coordinates activities at all colleges and universities in Iowa. To encourage students to become active in political affairs, the Center also sponsors programs to help teachers improve their teaching about politics at the high school level. These programs are planned in cooperation with leaders of the legally-recognized political parties of the state and college teachers and administrators.

Iowa Center for Research in School Administration
The Iowa Center for Research in School Administration serves local school districts on a membership basis. Services to schools include data gathering and reporting, research reports and special reports. Contract work encompasses computer scheduling, mark and attendance reporting, equipment accounting, school surveys and other projects defined by school districts. Developmental activity in educational management systems is coordinated at the Center. The staff includes graduate students and specialists with University professors as supervisors.

Iowa Center for Toxicology and Biochemical Pharmacology
The Iowa Center for Toxicology and Biochemical Pharmacology is an integral part of the Department of Pharmacology and is devoted to research in toxicology and biochemical pharmacology. Broadly, these include research on the disposition of drugs and poisons, their metabolic fate, the biological adaptation and regulation associated with their use, studies on their toxicologic and toxic effects and their mechanism of action at the molecular level. Doctoral degrees in pharmacology are offered.

Iowa Lakeside Laboratory
See "Extension and University Services"

Iowa Urban Community Research Center
The Iowa Urban Community Research Center was established in 1958 as a permanent interdisciplinary research and training agency. Its research has been disseminated in scholarly journals and in a reprint series and monograph series. The Center's community surveys are on tape in its data bank and are readily available for research use by graduate students and faculty. The staff is currently engaged in a study of the economic absorption and cultural integration of minorities in an industrial community.

The Laboratory for Political Research
The Laboratory for Political Research is a research and training facility for the Department of Political Science. It provides technical assistance to faculty members engaged in research. This assistance includes both the data collection and analysis phases of research. It is involved in graduate education, directly training students to utilize the computer in their own research. It also provides empirical data that can be used in graduate courses and seminars. For undergraduate education the Laboratory works with professors in developing curriculum materials which utilize empirical data and the computer for instructional purposes.

Neuroscience Center
The Neuroscience Center is supported by the National Institute of Health under a program-project grant. The Center sponsors research projects of importance to the fields of ophthalmology and urology and is administered by these departments. The intimate relationship of the eye and its innervation with the central nervous system provides the basis for collaborative studies. Special emphasis is given to speech disorders resulting from brain disease and to defects in cerebellar and visual sensation secondary to disorders of the nervous system. Projects which provide histologic and chemical correlates of disorders of the nervous system are also sponsored.

Radiation Research Laboratory (Radiation Biology)
Effects of x-ray and ionizing radiation and of other elements in biological and medical investigations are the concern of this laboratory. Cancer cells, as well as normal ones, are studied, regarding kinetics and radiosensitivity, M.S. and Ph.D. programs are helpful for those preparing for a career in radiobiology. The Laboratory's introductory course deals with radiation physics, radiation effects and uses of radioscopes. It is open to advanced undergraduate students who may plan to enter medicine, nuclear medical technology or similar programs.

The Social Science Data Archive
The Social Science Data Archive is a library of empirical data that can be re-analyzed by both faculty and students in their research and training. Approximately 250 studies are now included in the Archive, covering most of the social science disciplines. In addition the Archive supports a large number of computer programs that can be used for data analysis. Those wishing assistance in utilizing the data of the Archive or computer programs supported by the Archive can call on the personnel of the Archive.

Transportation Safety Research Center
The Transportation Safety Research Center was organized in 1968 to provide a focal point for research in transportation safety matters. Its primary mission is to stimulate and conduct this research through utilization of the vast resources of the University. Examples of activities, other than research, are the development and conducting of a traffic engineering education program, and the organization and conducting of the Governor's Highway Safety Conference. TSCR serves as a catalyst for transportation safety activities.
The Extension Division was established by special appropriation of the General Assembly of Iowa to "render a large service to the Commonwealth and to the people of Iowa by carrying out to every part of the State the knowledge, the ideals and the spirit of the several departments and colleges of the University and by bringing the University generally into direct contact with the citizen." The Division shares and cooperates with many other parts of the University in this larger service to the people of Iowa. Moreover, it performs several other functions, some of which are campuswide and others of which are both campuswide and statewide. The Division’s organization and services include the following:

**Bureau of Instructional Services**

Correspondence Courses
Correspondence courses are available to students who want to earn credit toward a degree at The University of Iowa or at some other college or university and to those who wish to enroll for the satisfaction of special requirements for professional advancement, for preparation for special occupations or for self-improvement.

Resident students at The University of Iowa must obtain the permission of the dean of their college to enroll in a correspondence course. Students who do not want credit toward a degree at The University of Iowa are permitted to register for any correspondence course in which they have an interest and sufficient preparation to enable them to do the work of the course. Approval by an official adviser of the college in which the student is enrolled is recommended for each such registration if degree credit is to be allowed.

An enrollment fee of $4.00 is assessed each new student. The course fee is $17.00 per semester hour for all enrollments. Fees are payable at the time of registration.

Departments offering courses by correspondence study include Accounting, Anthropology, Business Administration, Chemistry, Classics, Classics (Latin), Drawing, Economics, Education, English, Geography, History, Home Economics, Journalism, Library Science, Mathematics, Music, Physical Education, Political Science, Psychology, Religion, Romance Languages (French, Spanish), Social Work, Sociology and Speech Pathology.

**Armed Forces Institute Courses**

The University of Iowa, in cooperation with the Department of Defense, through the United States Armed Forces Institute, offers many correspondence courses at reduced rates to men and women in the armed services. The plan provides that the student pay only an enrollment fee and the cost of text materials.

**Veterans Administration Courses**

Veterans may enroll for correspondence courses under Public Law 550. The Veterans Administration provides for the payment of course fees, without any allowance for subsistence or books and supplies.

**Education for Veterans**

The Veterans Readjustment Benefit Act of 1966 includes provision for educational benefits under the Educational Assistance for Veterans and Inservice Personnel.

**Extension Classes**

A limited number of extension classes is offered off campus in Liberal Arts, Business Administration, Education and Engineering. Classes are scheduled at the request of public school officials, or where professional groups and industry indicate a specific need for educational services. Courses offered in Business Administration and Engineering are scheduled on a contractual basis, whereas courses in Liberal Arts and Education, although scheduled on request, require a minimum of 20 enrollees to be officially started.

**European Studies Program**

Coursework for credit is offered to interested students abroad.

**The Saturday Class Program**

This Program serves part-time students on the Iowa City campus, with credit and noncredit courses offerings open to undergraduate, graduate or unclassified students at a tuition rate of $30.00 per semester hour. Courses are offered from all schools and departments of the University. Through this office, a program of continuing education, University Studies "n Women, is currently being developed.

**Adult Education Advisory Service**

This Service within the College of Education provides consultative and guidance service on the problems of adult education programs with respect to organization, technique, subject matter and other aspects of continuing education in the community.

**Audiovisual Center**

The mission of the Audiovisual Center is to assist in the improvement of the teaching-learning process through the effective use of educational media. Services and facilities available to University faculty, staff and students include:

**Media Development**

A staff of media consultants is available to assist faculty members
and students in the solution of their instructional problems related to the planning and design of learning systems, facilities and media. Short-term assignment to the Audiovisual Center of faculty or graduate assistant staff is encouraged. All Audiovisu- al Center staff are available for advice on specific media needs and problems.

Media Library

Major collections of 16mm motion pictures and magnetic tape recordings, as well as limited collections of slides, filmstrips, disc recordings and overhead transparencies, are available through the Media Library. Catalogs of materials are published periodically. Systematic additions to these collections are made according to requests and funds available. No charge is made for films used in classroom and other curriculum-related activities. A rental fee is charged for off-campus use of these films. Tapes are obtained at a nominal charge for materials and duplication.

Campus Service

Audiovisual equipment available for use includes film, slides, filmstrip, overhead projector; audio tape; record players; portable video tape recorders; portable public address systems; and display devices (exhibits, easels, boards). For classroom and other curriculum-related activities equipment is provided at no charge. There is a nominal charge for off-campus equipment and projectionist service.

Media Production

A staff of production technicians and artists is complemented by the facilities and equipment used to produce materials which include graphs, charts, maps, slides, filmstrips, chalk and overhead transparencies, black and white and color photographs, negatives, microfilm, slides, portrait drawings. Two darkrooms, one wet (silver processing) and one dry (positive printing) are available. A camera can be purchased on long-term lease. In addition, motion picture, camera, theater, and radio sound equipment are available. Equipment is available for loan. Reasonable and competitive charges are made for production materials and services.

Satellite Centers

Satellite centers are established as needs arise through coopera- tive arrangements between the Audiovisual Center, depart- ments, schools, colleges and other service agencies. Currently there is the Medical Audiovisual Center, Dental Audiovisual Center, the Educational Media Laboratory and the Music Audiovisual Center.

Radio Broadcasting Services

WSSU and KESU-FM serve the interests and needs of the people of eastern Iowa with a broadcasting service which extends the resources and activities of the University. The broadcast schedule consists of educational, cultural and informative pro- gramming not available elsewhere. As an affiliate of National Public Radio, WSSU contributes program materials to a national network of more than 100 non-commercial radio stations.

Center for Conferences and Institutes

The Center serves as the principal agency of the University for developing, coordinating, conducting and supporting continuing educational programs on campus for nonresident adult groups.

High School Debating and Public Speaking

In cooperation with the Department of Speech and Dramatic Art, the Division sponsors two examination debates, extempo- raneous speaking, original oratory, dramatic interpretation, oral interpretation, news commentary on radio, expository speaking on television and student senate activities among high schools of the state; assists colleges in the collection and distribution of materials from national agencies; and conducts debates and con- tests.

Drama Conferences

In cooperation with the Department of Speech and Dramatic Art, the Division conducts an annual drama conference in the fall for high school students and teachers. Community drama conferences, workshops and consulting activities are conducted throughout the state.

Bureau of Educational Research

Standardized tests and scale developed through research by staff members and graduate students at The University of Iowa are published and distributed on a nonprofit basis to schools, public agencies and industrial firms in the State of Iowa and throughout the nation. In addition, many other widely-used, commercially-produced standardized tests and scales with estab- lished national reputations are carried in stock for distribution, in most cases at the publisher's list price. Buyers order test needs from one source to save time and transportation costs. Orders received for items regularly carried in stock are usually shipped within 24 hours. Items not carried in stock are furnished as a special service at a carrying charge above the publishers' price.

Service to Adult Education Groups

The Division seeks to aid state and local associations, organiza- tions and clubs in the planning, preparation and conduct of their programs and services.

Department of Publications

The Department is responsible for the production of all printed material prepared for the University. The Publications staff pro- vides assistance to departments and campus organizations in planning, editing and designing copy. Printing Service is the production agency of the Department, with a printing plant and five Copy Centers located strategically about the campus for quick, inexpensive reproduction service. Campus Stores is an on-campus distribution agency which sells manuals, lab note- books and other special instructional materials.

The University of Iowa Press

The University of Iowa Press is the agency of the University established to publish the significant results of scholarly re-
search. The imprint is controlled by the University Editorial Board, composed of faculty members appointed by the vice-president for research and dean of the Graduate College, who serves as an ex officio member of the Board. The director of publications for the University also serves ex officio on the Board and directs the operation of the Press.

Iowa Lakeside Laboratory

The Division has general administrative supervision of the Iowa Lakeside Laboratory, a summer laboratory for the biological sciences on Lake Okoboji. A cooperative program in teaching and research is carried on under the auspices of Iowa State University, University of Northern Iowa and The University of Iowa. Two terms of five weeks each are held during June, July and August. Facilities for year-around research are available.

MacBride Field Campus

The University holds a lease from the U.S. Army Corps of Engineers on two tracts of land in the Coralville Reservoir north of Iowa City. The two tracts total approximately 610 acres. One tract is reserved for biological research, the other for University-wide activities. Developments in the area to date include provision of an access road, water supply, electric power, maintenance storage facilities, a boathouse and sailing facilities, field archery course, facilities for handicapped persons and picnic area.

Institute of Public Affairs

This agency serves as a research and training link between the University and public officials and units of government on the local and state levels in Iowa. Through the Institute, related areas of the University and their research facilities are brought in contact with the problems faced by public officials in the state. The Institute maintains a full-time research and training staff. A close cooperative relationship exists between the Institute, the League of Iowa Municipalities and similar organizations of public officials.

Publications of the Institute include handbooks for various groups of governmental officials, as well as the results of research studies and surveys concerning specific governmental problems. Short courses and in-service training programs for government officers are held on the University campus and other locations.

Bureau of Police Science

The Bureau offers a series of law enforcement courses through correspondence study. In addition, the Bureau offers a variety of services to law enforcement agencies, including entrance and promotional examinations, general administrative or specialized surveys, and specialized training programs. It also carries out research programs in areas of public safety. Upon request by law enforcement agencies, the Bureau conducts personnel examinations, administrative surveys and record surveys.

Iowa Center for Education in Politics

The Division serves as the headquarters of the Iowa Center for Education in Politics. (See "Research Activities.")

Iowa Community Services

The Division serves as administrative and fiscal agent for Iowa Community Services, a cooperative state-federal program to expand the continuing education services of colleges and universities toward solving community problems. A state advisory council assists in identifying community problems, recommends appropriate activities which will assist in solving those problems and approves proposed programs submitted by colleges and universities in Iowa. The program was authorized by the U.S. Congress in Title I of the Higher Education Act of 1965.

Office of Community College Affairs

The Office of Community College Affairs is closely aligned with the Division of Higher Education and the College of Education. The Office's purpose is to promote articulation between Iowa's area community colleges and vocational technical institutes and The University of Iowa. In those activities involving discipline articulation, the Office extends its activities to the private two- and four-year colleges in the state. Regional and national activities of approval, accreditation and consultation often extend this jurisdiction beyond state lines.
Health Affairs
In addition to the colleges of Dentistry, Medicine, Nursing and Pharmacy, numerous University programs and agencies offer health services to students, the community and the state.

The Bureau of Dental Health Education
The Bureau of Dental Health Education is sponsored jointly by The University of Iowa and the Iowa State Department of Health. The Department of Health provides the personnel, salaries and office supplies. The University provides the office space and equipment.

The Bureau's primary purpose is to promote a program of dental health education in the public and parochial schools of the state. The present program of the Bureau, known as the Iowa Plan for Dental Health Education, embodies three objectives: dental health education, the prevention of dental disease and the correction of dental defects. As a means of accomplishing the educational objectives, authoritative material is developed and provided to the classroom teacher. The preventive aspect of the program is emphasized through home participation in a routine program of oral hygiene and correct dietary habits. The corrective phase is stressed through the use of dental referral cards. Referral cards encourage systematic and regular examinations in a dental office where the completion of the necessary work is recommended.

Direct Health Services
Located on the University campus and carefully integrated in its program are five major health units of the University of Iowa which render direct health services to the people of the state. Each is supported by appropriation from public funds, and each devotes its major effort to the provision of service. However, in the extent that the provision of the service may also aid in the preparation of special teaching, these service organizations are integrated in the University program. They are administered under the general University organization.

University Hospitals—Medical and surgical treatment of patients referred by physicians
Psychopathic Hospitals—Care, treatment and maintenance of committed and voluntary patients
State Hygienic Laboratories—State bacteriological laboratory service to city, county and state governments, physicians and others

University Hospital School—Evaluation, management, special education and research pertaining to physically handicapped and mentally retarded children; (see University Hospital School)
Oakdale Hospital—Treatment of tuberculosis and rehabilitation of patients with other chronic diseases

Iowa Mental Health Authority
Federally funded under the Public Health Service Act (P.L. 79-487), the Authority is under the fiscal supervision of the Board of Regents, but has its own policy board, the Mental Hygiene Committee, established under Iowa Code. Located at Psychopathic Hospital, the Iowa Mental Health Authority is the central administration for Iowa's 24 community mental health centers, which provide local services for 78 percent of the Iowa population. The centers are private nonprofit corporations.

The Authority provides consultation on federal construction grants and staffing grants. It maintains an audiovisual and pamphlet service which provides free educational materials throughout the state. Consultation, staff development, recruitment, standards and research are provided to Iowa's mental health centers. The Authority consults with communities about developing local services and performs liaison and planning activities with other local, state and federal programs in the mental health delivery system.

University Hospital School
The University Hospital School includes a residential service program for physically handicapped children and a day-school program for mentally retarded children. Its unique function under a University administration provides numerous training opportunities for University students, and broadened possibilities for investigative endeavors. Two sections operate as one administrative unit within this program.

The Children's Rehabilitation Section provides treatment and education for children whose physical handicaps make it impractical for them to attend their local school. The objective of this care in the University Hospital School is to rehabilitate each child sufficiently through special treatment and education so that eventually he may return to his home community for continued education and treatment. Residential care is provided. Age range extends to 21 years. Approximately 60 children receive inpatient services at a given time.

A comprehensive program of special management for the child is available in the fields of medical, dental and nursing care; communication skills; various therapies; special education; physical education; industrial arts; homemaking; music; and child development. In addition to thorough initial evaluation and periodic rechecks of handicapped children are provided on an outpatient basis prior to admission to this section. Through this activity it is intended that parents may be given pertinent instructions regarding the care of their child at home. An attempt is made to give attention to all of child's problems, as far as possible.

The Pine School Section has as its main functions educational research, teacher training and community service. Classroom
Instruction is provided by means of special education for selected preschool and elementary school children who are mentally retarded and living in the Iowa City area. The children's schedules include physical education, music, homemaking, industrial arts and organized recreational activities. Attendance in the Pine School Section is on a day basis only. These children live at home and are transported daily to and from the University Hospital School.

Additionally, three other programs are housed in this University Hospital School complex: the Office of Services for Crippled Children, the Child Development Clinic of the Department of Pediatrics, serving as an outpatient diagnostic and guidance service in the field of mental retardation; and the Children's Research Unit, undertaking investigative work relative to the child who has suffered neurological damage and mental retardation, either singly or combined.

Training opportunities for prospective workers, particularly for graduate students, are afforded in most aspects of these aforementioned programs. Part-time positions and graduate assistantships are available to students from various colleges in the University. Supervised experience is offered in the fields of special education, child welfare, speech pathology, occupational therapy, physical therapy, physical education, social work, music, nutrition, nursing, medicine, homemaking and some other areas.

State Services for Crippled Children
Crippled Children's Services are supported by federal appropriations through the United States Department of Health, Education and Welfare and matched by state appropriations through the University Hospitals and the University general fund. The purpose of these services is to provide facilities for diagnosis, treatment for selected cases and assistance in planning for home and local care for crippled children. Services are available to children under 21 years.

Diagnostic field clinics are conducted annually in communities throughout the state and on the University's Outpatient Campus. Medical examiners at the field clinics are staff members in the departments of Pediatrics, Orthopedic Surgery, Otolaryngology and Internal Medicine. Diagnostic services are also provided in the area of speech pathology, audiology and clinical psychology.

Special care programs are operated for children who have rheumatic fever, cystic fibrosis, phlebitis granulomatus or muscular dystrophy. These are research and care programs for mentally retarded and multiply handicapped children, and premature and other high-risk infants.

Field workers in public health nursing, physical therapy and medical social work provide follow-up care for crippled children who have been examined at diagnostic field clinics or in departments at the University Hospitals.

This agency subsidizes a graduate training program in audiology and speech pathology within the University, and other special training programs for University staff members.

Reading Clinic
The Reading Clinic, a teacher-training unit within the College of Education, provides a diagnostic and corrective service for school children having reading difficulties.

Council on Speech Pathology and Audiology
The Council coordinates clinical services in speech pathology and audiology offered in the Department of Speech Pathology and Audiology, Department of Otolaryngology and Maxillofacial Surgery, University Hospital School, State Services for Crippled Children and the Veterans Administration Hospital.

Other Service Units

Museum of Natural History
To meet the needs of the general public and the various departments of the University, the Museum provides a repository and the proper care for specimens which come to the University either by gift or through the efforts of its own collectors. It designs and executes new exhibits of educational value and offers instruction in the conceptual and technical phases of exhibit preparation and the general operational procedures of small science museums.

Habitat exhibits of North American mammals include the American bison, the antelope, the mountain lion, the American moose and the beaver.

A large and well-known bird habitat exhibit is the Laysan Island Cyclorham. This is a complete representation of a bird island of the Hawaiian group. Other habitat exhibits include The Bering Sea, the Louisiana Swamp, the Full Migration and Cranes on South Dakota Prairie. The crane exhibit includes both the sandhill crane and the rare whooping crane, as they appear on the prairie during migration.

The major invertebrates phyla are represented in several exhibits and include such familiar groups as the arthropods, mollusks, echinoderms and coelenterates.

Ethological exhibits in the Museum present materials from many parts of the world. Indian and Eskimo materials, including beadwork and carved ivory received in the late nineteenth century, are exhibited.

Several displays relate to the geology of Iowa and include typical fossil specimens.

Office of International Education and Services
Combining the responsibilities of several widely-dispersed offices, the new (1971) Office of International Education and Services (OIES) is the focal point for all University international activities, resources and interests.

The OIES helps foreign students and professionals with immigration, employment and academic questions. It also acts as host to short-term foreign visitors sponsored by such groups as the State Department and AID.

The International Center is an integral part of the OIES cultural and educational program for students, faculty, staff and community individuals and groups.

The OIES advises American students of opportunities to work, travel and study abroad. Faculty members can seek OIES advice and assistance with grants and fellowships involving foreign or international perspectives. The OIES is the campus Fulbright adviser for both graduate and faculty awards, as well as
for the International Research and Exchanges Board (IРЕX).
The OIES takes an active interest in promoting cooperation
between the various aspects of international studies—foreign
language and area programs, comparative studies, foreign lan-
guage departments and technical assistance projects.

The Office of Public Information and University
Relations, University News Service
The Office of Public Information and University Relations and
its affiliated University News Service seek to foster understand-
ing, within the University community and generally, of the
University's aims and activities.

The Office of Public Information and University Relations
publishes Spectator, Faculty Newsletter, Staff Newsletter and the
University Operations Manual; provides campus tours and other
services for University guests; prepares displays and exhibits;
provides copy and photos for a number of publications; assists
groups seeking University speakers; and provides public service
programs for Iowa radio and television stations.

University News Service supplies University news and infor-
mation to mass media, gathers and prepares informative material
for special and general University periodicals, helps prepare special
University publications, answers requests for information and
helps writers, photographers, and broadcast crews who visit the
campus.

Public Information and News Service personnel also help plan
and promote campus events.

Two News Service staff members work exclusively with the
various University health science departments and agencies to aid
public understanding of University activities in medicine and
allied fields. The Sports Information Service responds to media
needs for information about the University's intercollegiate ath-
etic programs.

University News Service also conducts a public information
internship program to provide working experience for graduate
students anticipating careers in specialized writing or in public
relations for higher education. Other student workers or observers
in the various OPI offices from time to time, in cooperation with
the School of Journalism's practices program.

U of I Alumni Association
The principal agency through which Iowa students continue
their identity with the University after they leave campus is the
University of Iowa Alumni Association. Organized in 1867, the
Association's current membership includes graduates and
former students throughout the world.

The Association's continuing objectives are to identify alumni
with the University, to strengthen public recognition of the Uni-
versity as an institution vital to the stability and welfare of the
state and the nation; and, through organized alumni effort, to
serve the University in strengthening its programs in teaching,
research and public service. The Association publishes the Iowa
Alumni Review, a bimonthly magazine for Association members.

The University of Iowa Foundation
The University of Iowa Foundation is organized to help the
University obtain the greatest possible benefit from private giv-
ing. A private nonprofit corporation, the Foundation raises
funds to help the University in reaching its educational objec-
tives through three major programs: annual giving, capital cam-
aigns and planned or deferred giving.

Organized in 1956, the Foundation has been empowered to solicit
and receive gifts and bequests; to accept trusts subject to the
conditions imposed thereon; and to hold, administer, man-
age, use or distribute gifts, bequests and trusts, all for the benefit
of The University of Iowa. As a private corporation, its invest-
ment policies are less restrictive than the public policies which
govern the University itself. The Foundation is constantly at
work to provide more funds for scholarships, fellowships, stu-
dent loans, library acquisitions and faculty research grants.

Annual Giving
Each year alumni and friends of the University make many
thousands of gifts through the Foundation for a great variety
of purposes. Their combined effort upon the strength of the
University is very great, and the superiority of a number of the
University's programs is largely owing to the annual financial
support of its alumni and friends.

Capital Campaigns
The Foundation also conducts campaigns to raise capital funds
for special needs on campus. Two of such campaigns in recent
years supported the construction of the Health Sciences Library
and the Museum of Art. Funds for such projects come from
many sources and are the results of efforts of many people con-
cerned with the University's welfare.

Planned and Deferred Giving
Individual financial situations vary a great deal, and finding
financially sound giving formulas for individuals is another serv-
ices of the Foundation. Such efforts include both publications
and consultation. The Foundation also acts as trustee of many trusts
for the ultimate benefit of the University.

Office of Facilities Planning and Utilization
The office serves in direction and coordination of the planning
and use of University buildings and other physical facilities. The
service provides analysis of current and projected needs neces-
sary to formulate University schedules and new building pro-
grams. The office is responsible for the assignment of classrooms
and other academic facilities on the campus. The office operates
under the Vice-Provost for University Administration.

University Personnel Service
The University Personnel Service is responsible for meeting
the employment needs of individuals and departments for the entire
University complex. The office functions in the areas of recruit-
ment, interviewing, screening, testing, placement and salary and
fringe benefit administration for full-time and part-time, perma-
nent and temporary, nonteaching and nonstudent employees of
the University. The University Personnel Office is responsible
for the administration of the Board of Regents Merit System and
the Unemployment Compensation Act. It also participates in
certain aspects of the academic personnel program and in payroll
reporting and in the collecting personal record data for both fac-
ulty and staff employees.
All financial assistance available to University of Iowa students from general University sources is administered by the Office of Student Financial Aid. Assistance is provided through scholarships, grants, loans and part-time job placements.

A student seeking assistance must first complete University admission procedures, including the American College Test, and submit a parent's financial statement through ACT Financial Aid Services, Box 1000, Iowa City 52240, or College Scholarship Services, Box 881, Evanston, Illinois 60204. When it receives a copy of the parent's statement, the Office of Student Financial Aid will supply forms and instructions for applying for aid at Iowa.

Only one application is necessary each year for all forms of assistance administered by the Office of Student Financial Aid.

Application deadlines are February 1 for entering freshmen, April 1 for upperclassmen and transfer students.

Eligibility for Scholarships
To qualify for scholarship assistance, an entering freshman must have graduated in the upper 10 percent of his or her high school class or have achieved a 28 or above composite ACT score; an upperclassman must have a 2.75 cumulative grade-point average; and a transfer student must have at least a 3.0 transfer grade-point average.

Fresnan Honors Awards
Entering freshmen eligible for invitation to participate in the University of Iowa Honors Program are recognized as Freshman Honors Scholars and receive the University's $100 Freshman Honors Award. A student meeting these requirements will receive the award, whether or not he or she elects to participate in the Honors Program.

Educational Opportunity Grants
Available to a limited number of undergraduates unable to attend college or university without such assistance, EOG grants range from $200 to $1,000 a year but cannot exceed one-half of the recipient's total assistance. There are no specific academic requirements for an EOG grant, but the applicant must have shown academic or creative promise.

National Defense Education Act (NDEA) Loan Fund
This is the University's largest source for long-term education loans. Undergraduate students may borrow up to $1,000 a year and $5,000 overall; graduate students may borrow up to $3,500 a year and $10,000 overall. Applicants must be citizens or permanent residents of the United States. Freshmen have preferences. An upperclassman must be in good academic standing and be making normal progress toward a degree. No interest is charged while the borrower is at least a half-time student. Loans are repayable at three percent interest beginning nine months after the borrower concludes his course of study. Ten percent of the loan obligation is canceled each of the first five years the borrower is employed full-time teaching.

Health Professions Scholarship and Loan Program
Students are eligible to apply for a Health Professions Scholarship and/or Loan at a school which participates in the program if the student is a citizen or national of the U.S. and is enrolled or accepted for enrollment as a full-time student pursuing a course of study leading to degrees of doctor of medicine, dentistry, osteopathy, optometry, podiatry, veterinary medicine or a degree in pharmacy and/or nursing and is in need of such financial assistance to pursue the course of study. Repayment of the loan portion is arranged with the school at the time of graduation or at the time the student ceases to be a full-time student.

Law Enforcement Education Program
This program consists of a federally-funded program of loans and grants. Loans can be up to $1,800 per year, and grants can be for a maximum of $300 per semester or $600 per quarter to be used for actual cost of tuition and books. To be eligible for the loan program, a participating school must have more than 15 hours of courses directly related to law enforcement. All participating schools are eligible for grants. The program is available to pre-service and in-service law enforcement personnel. A recipient can be either a full-time or part-time student. Cancellation provisions are available with the loan program.

Guaranteed Loans
Borrowers negotiate directly with banks or other private lending agencies. About half the banks in Iowa participate in the program; lending institutions in most other states participate in this or similar programs. The maximum loan is for $1,500 a year. Repayment begins when the borrower concludes his or her course of study.

University Loan Funds
Short-term loans up to $500 are available for school-year expenses. To qualify, the applicant must have at least a 2.0 high school and transfer grade-point average and a 1.8 University average.

Part-Time Jobs
Most University students who take part-time jobs secure them through the Office of Student Financial Aid. The most numer-
Scholarships and Loans

Mckinley Fisk Clements Scholarship
P. M. Stewart Engineering Scholarship
Engineering Honors Scholarship—Enlisting freshmen and transfer students;
Honors College Scholarship—Enlisting freshmen and transfer students;
Huntington Family Educational Foundation Trustee Scholarship—Students in college;
Huntington Family Educational Foundation Trustee Scholarship—Students in college;
Lloyd C. Everts Scholarship
Lombard Scholarship—Civil Engineering
C. P. McElligott Scholarship
McNamar Mining and Manufacturing Company Scholarship
McCormick Scholarship—Chemical and mechanical engineering
Herman W. Nelson Memorial Scholarship
Paul Steller Scholarships—$100 to $300
Student Aid Scholarships—See All-University
Western Electric Funds Scholarship in Engineering—Tuition, fees, books

Graduate
Approximately one-half of the University's graduate students receive some form of University-administered financial assistance. Eligibility requirements and application procedures are set forth in "Section VII. Graduate Appointments" in "Rules and Regulations of the Graduate College."

The following are the primary sources of assistance:

Teaching and research assistantships—Available in most departments; stipends range between $3,000 and $3,750 for half-time assistant; assistants are also eligible for tuition scholarships; nonresident assistantships are one-quarter time or more and fees are reduced to in-state rates.

University teaching/research fellowships—For doctoral students and first-year graduate students entering doctoral programs; typical stipends are $4,000 a year on a year-long basis, for as many as four years; recipients have teaching and research assignments, but may carry full course loads at the same time; one year out of four and all summers, recipients have full time to pursue studies, research or writing

Scholarships—Up to full tuition and fees
Graduate fellowships—$5,000 for the academic year
NDEA Title IV Fellowships—For prospective college teachers pursuing the doctorate; provides stipends of $2,400 to $2,800, which includes summer study, plus $500 for each dependent and full tuition
HSP fellowships—For students interested in social, biological or physical science; provides stipends of $2,400 to $2,800, which includes summer study, plus $500 for each dependent and full tuition
EPDA Part F fellowships, college teacher program—Designed to prepare college or community college instructors; provides a 12-month stipend of $2,400 for the first year and $2,600 for the second year, plus full tuition and $500 annually for each qualified dependent

The provisions described above are subject to change.

University and National Defense Education Act loans are available through the University's Office of Student Financial Aid.

Many departments offer additional support through traineeships, part-time employment in research or part-time teaching appointments. The Office of the Vice-President for Educational Development and Research maintains a library of information on public and private agencies which provide funds for research and graduate study. A considerable amount of material has been collected concerning awards for overseas study.

A number of industrial corporations and philanthropic organizations annually provide graduate fellowships in certain departments of the University. Information may be obtained from the departments. The University also participates in fellowship and traineeship programs of the National Science Foundation, National Institutes of Health, Atomic Energy Commission and National Aeronautics and Space Administration, and in the National Defense Education Act Fellowship Program and the Education Professions Development Act. Information may be obtained from the Graduate College or departmental office.

Law

Cornell Scholarship
Michael Cerroni Financial Aid Fund
Edgar C. Cory Memorial Scholarship—Preference to Iowa residents
Deestman Scholarship
Dillion Scholarship
Harold J. Gellinger Scholarship and Loan Fund
Graduate Scholarship
Clara E. Hamilton Scholarship—Outstanding second-year, outstanding third-year students; $1,000 each
Hawarden Scholarship
Iowa Law School Foundation Scholarships
Iowa Trial Lawyers Academy Scholarship
Laidlaw Scholarship
Harry M. Hoge Memorial Scholarship Fund
Presidential Scholarships—Applicants to the Dean of the Law School
William H. Redman Scholarship Fund
Joseph F. Sassenfeld Scholarship—In memory of natives; preference to Iowa residents graduated from Central or another Iowa college
Lodovico and Walter L. Stewart Fund
Joe B. Yee Fund—Available for Marvin Lester King Scholarships

Liberal Arts

Core Scholarships—See All-University
Margaret Faron Hoffman Memorial Scholarship—Home economics seniors, resident tables
Old Gold Honor Societies—Honor Program participants apply to Honors Program director
Georges Lawers and Jews Education Fund Scholarship—Freshmen and sophomores planning to major in Chinese language and civilization; $500 Partners Scholarship
Presidential Scholarship—Act majors, preference from Warren County, Iowa; $1,250
Robertson and Mosher Scholarship—Male students from Midland, preference to Iowa, interested in studying actuarial science; $500
student Aid Scholarships—See All-University
Wyndham Scholarships

Journalism

James W. Blackburn Scholarship—High school senior planning to enroll in the School of Journalism, $1,000; paid $150 sophomore year, $500 junior year, $650 senior year
Hans B. Bork Scholarship—Freshman journalism major; $1,000; paid $500 second semester of junior year, $500 each semester of senior year
Davenport Times-Des Moines Scholarship—$300, paid $150 junior year, $150 sen-
ior year
Tim and Marty Brown Journalism Scholarship—$500 or more
John F. H. Stacy Journalism in Journalism and Advertising—Junior or senior
George H. Peterson Scholarship—High school junior planning to major in journalism; $350, paid $150 junior year, $200 senior year
Quill and Scroll Foundation Scholarship—High school seniors planning to major in journalism; $350, paid $200 freshman year, $250 sophomore year


Scholarships and Loans

Runaway Advertising Journal—To give outstanding student in advertising an opportunity for agency experience between junior and senior years. $100
School of Journalism Master Scholarship—Freshmen, sophomore, junior, senior.
Seniorship Scholarship—For a freshman minority student who is also eligible for Special Minority Scholarship. $1,000. High school senior planning to enroll in the School of Journalism. Open to freshmen, seniors, $250 minimum.
American Association of University Women—Junior scholarship, $1,000. Non-urban student, high school junior, senior.
WNYT News Radio—Radio-television journalist student; recipient spends summer observing and participating in WNYT stations’ operations; $1,500

Medicine
Appointment to the College faculty committee on men and the aged. Richard G. Johnson Memorial Scholarship—Fund residential tuition.
Jane E. Everts Scholarship—$1,000. High school senior planning to enroll in the School of Medicine. Open to juniors, seniors, $500 minimum.
Area Retreat-Scholarship—For women—woman student from Buffalo or vicinity in the third year to study.
Equal opportunity to WNYT
Jane Hallett Scholarship—For graduate students in the College of Medicine.

Nursing
Psychiatric Mental Health Nurse: $1,500 plus tuition, fees, junior, senior, four-year baccalaureate program, registered nurses in senior, junior, senior, in preparation for graduate study in psychiatric mental health nursing.

Reserve Officers Training Corps—$1,000. High school senior planning to enroll in college in the fall. Open to freshmen.

WNYT News Radio—Radio-television journalist student; recipient spends summer observing and participating in WNYT stations’ operations; $1,500

Pharmacy
American Foundation for Pharmaceutical Education—Students in last three years of study, maximum $5,000. $200
Carroll Scholarship—$250. University of Buffalo. $250
Carmelita Reading Scholarship—Freshman: minimum 2.5 average, $250
Gertrude Schenck Scholarship—All University.
Jane E. Everts Scholarship—Fund residential tuition. Open to seniors, $500 minimum.
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Gertrude Schenck Scholarship—All University.
Jane E. Everts Scholarship—Fund residential tuition. Open to seniors, $500 minimum.
Jane E. Everts Scholarship—Fund residential tuition. Open to seniors, $500 minimum.

Nursing
Psychiatric Mental Health Nurse: $1,500 plus tuition, fees, junior, senior, four-year baccalaureate program, registered nurses in senior, junior, senior, in preparation for graduate study in psychiatric mental health nursing.

Reserve Officers Training Corps—$1,000. High school senior planning to enroll in college in the fall. Open to freshmen.

WNYT News Radio—Radio-television journalist student; recipient spends summer observing and participating in WNYT stations’ operations; $1,500

Pharmacy
American Foundation for Pharmaceutical Education—Students in last three years of study, maximum $5,000. $200
Carroll Scholarship—$250. University of Buffalo. $250
Carmelita Reading Scholarship—Freshman: minimum 2.5 average, $250
Gertrude Schenck Scholarship—All University.
Jane E. Everts Scholarship—Fund residential tuition. Open to seniors, $500 minimum.
Jane E. Everts Scholarship—Fund residential tuition. Open to seniors, $500 minimum.
Broses Memorial Student Loan Fund
Gillmor Rogers Scholarship Loan Fund of the Association of American Women
Dentistry—Three-hundred student, $1,000 maximum.
Irwin Dental Association Student Loan Fund—Freshmen
Eating Loan Fund for Special Students
Old Gold Development Loan Fund
Start Loan Fund
American Directory Trade Association—Scholastic International College of Dentists (I.C.D.A.) national Student Loan Fund
Charles W. Crane Loan Fund

Dental Hygiene
Alpha Kappa Gamma Loan Fund—Seniors, second-semester junior
Irwin Dental Association Women’s Auxiliary Loan Fund
Widow Puff Memorial Loan Fund—Preference to graduates seniors
Charles H. Broome Memorial Loan Fund
Irwin Dental Hygienists’ Association Loan Fund

Engineering
College of Engineering Loan Fund—Short-term
Iowa City Engineering Club Loan Fund
Ford Foundation Loan—Program produces immediate loans to future engineering students: apply to Dean, College of Engineering
Russell Hobson Iowa Memorial Loan Fund—$25.00 Billiary emergency loans
Phillip F. Meurer Student Loan Fund—See Graduate

Law
American Bar Association Loans—Second- and third-year students; up to $1,500 a year, repayable after graduation.
Irwin Law School Loans—Long-term, repayable at three percent interest, beginning one year after graduation.
Irwin Law School Foundation Loans—Short-term
Law Consolidated Loan Fund—Second- and third-year students, short-term

Liberal Arts
Thomas Cole Loan Fund—Graduating students
Bissell Loan Fund—Students who have completed at least one year

Medical
(apply to the Dean of the College)
Biers Law Fund
Iowa Medical Student Loan Fund
Graduates of the College of Medicine Loan Fund—Senior year
Iowa Medical Tuition Loan Plan—Residents who agree to practice general medicine in Iowa for at least five years after completion of medical training; state funds, prorated to at least three years
Eating Loan Fund for Medical Students
College of Medicine Loan Fund
George M. Midville Loan Fund
Frank Rutters Memorial Loan Fund
Student Medical Foundation of the Medical Society of Iowa Student Loan—At the sophomore, junior and senior classifications and at the freshman level in the case of urgent necessity
Shawano Trust Fund—Junior residents
Hobson Foundation Loan Fund

Medical
Hornig Student Loan Program—Full-time matriculating students; federal funds, interest-free during student’s full-time registration; repayable at three percent interest, beginning one year after recipient terminates full-time registration; forgivable at the rate of 10 percent per year of full-time employment as a professional nurse in public or nonprofit private institutions, up to 50 percent of balance owed at beginning of such employment
Eating Loan Fund for Nursing Students
U of I Parent’s Association Student Loan Fund—Junior, seniors, $200 maximum
S. Lenor Thompson Loan Fund
1961 Nursing Class Loan Fund

Reserve Officers Training Corps
Lt. Col. Robert W. Burton Memorial Loan Fund—Advanced Army ROTC students

Low Memorial Student Loan Fund
Phillip Eganke Loan Fund—Physical education for men, women
Grace Daniels Reid Loan Fund—Osteopathic science students
S. C. Williams Loan Fund—Sophomore or above

Medicine
(apply to the Dean of the College)
Biers Law Fund
Iowa Medical Student Loan Fund
Graduates of the College of Medicine Loan Fund—Senior year
Iowa Medical Tuition Loan Plan—Residents who agree to practice general medicine in Iowa for at least five years after completion of medical training; state funds, prorated to at least three years
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Grace Daniels Reid Loan Fund—Osteopathic science students
S. C. Williams Loan Fund—Sophomore or above
Alumni and friends of the University have provided a number of awards, prizes and honors in recognition of students' special achievements. Detailed information on criteria and procedures for the selection of recipients may be obtained from the administration office. Generally, recognition is in the form of certificates, plaques, medals, desk sets or similar items; cash awards of $50.00 or more are indicated in the following list:

**General**
- Alpha Chi Sigma Award—Made with highest scholastic standing for first two semesters of graduate work in chemistry, chemical engineering or biochemistry.
- Bollinger Award—$300.00; for either graduate or undergraduate study in engineering.
- Bond Society Prize—For membership of bond society.
- Sigma Award—Junior with highest scholastic average among students elected to Phi Beta Sigma as freshmen.
- Sigma Award—Outstanding potential in radio broadcasting at University of Missouri.
- Junior Award—$50.00; active Mortar Board member.
- Natural Science Award—$50.00; government bond; junior woman most nearly exemplifying qualities and characteristics of Mrs. Virginia M. Rounsaville to the University community.
- Rounsaville Award—Junior; academic excellence, critical independence, character, breadth and completeness of interests for ultimate and spiritual good.
- Rounsaville Award—$50.00; leadership, integrity and devotion to University of Missouri.
- Sigma Award—Junior; leadership, academic achievement, participation in student activities.

**Athletic**
- Athletic Board Award—Graduating senior with outstanding contribution to athletics and scholarship.
- Athletics Scholarship Award—Junior man and senior woman in each intercollegiate sport; high academic average during junior and senior years; member of varsity football, volleyball, track and field, bowling, tennis or basketball. Each student receives $200.00.
- Junior Award—$100.00; leadership in varsity; academic excellence, character, breadth and completeness of interests for ultimate and spiritual good.
- Student Awards—$25.00; leadership in varsity; academic excellence, character, breadth and completeness of interests for ultimate and spiritual good.

**College of Business Administration**
- Beta Alpha Psi Prize—Undergraduate with highest scholastic standing.
- Beta Gamma Sigma Award—Highest ranking junior member.
- Beta Alpha Psi—Graduating senior major in accounting.
- Society of Certified Public Accountants Outstanding Accounting Senior Award.
- Phi Gamma Mu—Voting senior woman in college.

**College of Dentistry**
- Outstanding student in oral pathology.
- Outstanding student in periodontology.
- Outstanding student in prosthodontics.
- Outstanding student in oral surgery.
- Outstanding student in orthodontics.
- Outstanding student in endodontics.
- Outstanding student in oral radiology.
- Outstanding student in oral surgery.
- Outstanding student in orthodontics.
- Outstanding student in endodontics.
- Outstanding student in oral radiology.
- Outstanding student in oral surgery.

**College of Engineering**
- Outstanding student in electrical engineering.
- Outstanding student in mechanical engineering.
- Outstanding student in civil engineering.
- Outstanding student in biomedical engineering.
- Outstanding student in computer science.
- Outstanding student in chemical engineering.
- Outstanding student in aerospace engineering.
- Outstanding student in materials science.
- Outstanding student in environmental engineering.
- Outstanding student in nuclear engineering.
- Outstanding student in biomedical engineering.
- Outstanding student in chemical engineering.
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Forensics
Forensics Association—Outstanding achievement by undergraduate par-

Participants in intercollegiate speaking activities

Letters Honorable Mention—Forensics, Divisional speech contest

Award—3rd, 4th, 5th, or 6th in major speaking in

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Military
Army ROTC

Army ROTC—Achievement Award—Second-, third-, and fourth-year cadets top 10 percent of class in first and second years of study.

Air Force ROTC

Air Force ROTC—Achievement Award—Awarded to the sophomore or junior cadet making the most outstanding contribution to the advancement of air and space science.

Army ROTC—Achievement Award—Second-, third-, and fourth-year cadets top 10 percent of class in first and second years of study.

National Student Government—Second-year cadets in the top 25 percent of his academic class.

Alpha Lambda Delta—National honor society, all academic levels.

Alpha Chi Omega—American honor society, all academic levels.

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Military

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Military

Awards, Honors and Prizes
Board of Regents Statements

Human Rights

The University is guided by the precept that in no aspect of its programs there shall be differences in the treatment of persons because of race, creed, color, sex or national origin, and that equal opportunity and access to facilities shall be available to all. This principle governs the admission, housing and education of students. It is reflected in policies governing programs of extracurricular life and activities and in the employment of faculty and staff. The University works cooperatively with the Iowa City community in furthering this principle. The University's Committee on Human Rights works within the Board of Regents policy, as follows:

Preamble
(a) The Constitution of the United States and of the State of Iowa and all for political liberty and equality and afford the equal protection of the laws to all persons within its jurisdiction. To this end, certain principles relating to the protection of persons and societies from certain identified practices bearing the vision of the founding fathers and thereby the primary purposes of democratic governance.

(b) The General Assembly of the State of Iowa enacted the Iowa Civil Rights Act of 1965. The same issues of this law is the assurance that the rights to equal treatment of the people of Iowa shall not be abridged.

(c) In recognition of Iowa's national policy and the obligations imposed on all units of state government by the Fourteenth Amendment to the United States Constitution, the Board of Regents desires the following to be its policy:

Statement of Policy—The Board of Regents has a special obligation to have its operations serve as a model for business, industry, labor and education. Neither the Board of Regents nor any official who is responsible to the Board of Regents shall, therefore, in policy or in practice, discriminate on the basis of race, color, religion, national origin, sex or ancestry.

Appointment, assignment and advancement of executive personnel—The Board of Regents and all officers who are responsible to the Board of Regents shall appoint, manage and advance employment solely on the basis of merit and fitness. Each individual under the Board of Regents shall provide to those employees and students a policy of non-discrimination in employment, such policy shall be reviewed and the frequency of review specified in such policy shall be at least every two years.

Executive officers shall also be regularly to review and to report to the Board of Regents and the policy of non-discrimination in employment is an essential part of the Board of Regents' responsibility to the public on the basis of race, color, religion, national origin, sex or ancestry. It is the intent of this section to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to require the Board of Regents to 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1. Regulations Common to the Three Institutions

A. Admission of Freshman Students

A student entering freshmen must meet the requirements in this section in order to study regular or special curricular requirements. The student must submit an application for admission and, under the instruction of the registrar, provide the following documents:

1. Proof of graduation from high school.
2. An official transcript from all schools attended.
3. Financial statements, including proof of adequate financial resources.
4. Application fee.

B. Admission of Undergraduate Students by Transfer from Other Colleges

1. Students from accredited colleges and universities—Transcripts of record are given full value if coming from colleges or universities accredited by the North Central Association of Colleges and Secondary Schools. The student must submit an application for admission and, under the instruction of the registrar, provide the following documents:

1. Proof of graduation from high school.
2. An official transcript from all schools attended.
3. Financial statements, including proof of adequate financial resources.
4. Application fee.

C. Admission of Freshman Students

A student entering freshmen must meet the requirements in this section in order to study regular or special curricular requirements. The student must submit an application for admission and, under the instruction of the registrar, provide the following documents:

1. Proof of graduation from high school.
2. An official transcript from all schools attended.
3. Financial statements, including proof of adequate financial resources.
4. Application fee.

D. In general, transfer students will be considered for admission with the approval of the Academic Council. The student must submit an application for admission and, under the instruction of the registrar, provide the following documents:

1. Proof of graduation from high school.
2. An official transcript from all schools attended.
3. Financial statements, including proof of adequate financial resources.
4. Application fee.

E. In general, transfer students will be considered for admission with the approval of the Academic Council. The student must submit an application for admission and, under the instruction of the registrar, provide the following documents:

1. Proof of graduation from high school.
2. An official transcript from all schools attended.
3. Financial statements, including proof of adequate financial resources.
4. Application fee.

F. Applications for admission by transfer students must meet the standards of the institution of transfer.
A. University of Iowa

All applicants for admission to any college of The University of Iowa must submit a formal application for admission with the required official transcripts and other supporting materials, as required, to the Director of Admissions. Students may not be registered until they have been officially admitted by the Dean of Admissions.

1. College of Business Administration

Applications for admission to the College of Business Administration should be submitted to the Director of Admissions.

2. D. Admissions

Applications are accepted as early as possible, since this will give the admissions committee more time to review each application. Closing date for applications will be established by the University's Office of Admissions.

3. M. Minimum Requirements

Applicants from states where the minimum grade-point average required will be reviewed by the admissions committee of the College, and may be granted conditional or probationary admission.

4. Transfer Credits

Applications from students who have transferred from other institutions will be reviewed by the admissions committee of the College, and their previous credits will be considered for transfer.

B. College of Education

Applications for admission to the College of Education must be submitted to the Director of Admissions. The University of Iowa Office of Admissions will assist in the preparation of the application.

1. Admissions

Applications are accepted as early as possible, since this will give the admissions committee more time to review each application. Closing date for applications will be established in advance of the opening date of the fall semester.

2. Transfer Credits

Applicants for admission to the College of Education are encouraged to complete a program of study at another institution prior to entering the College. Applicants should consider the transfer of credits to the University of Iowa. Closing date for submitting applications will be established in advance of the opening date of the fall semester.

C. College of Fine Arts

Applications for admission to the College of Fine Arts must be submitted to the Director of Admissions. The University of Iowa Office of Admissions will assist in the preparation of the application.

1. Admissions

Application deadlines are established by the University of Iowa Office of Admissions.

2. Transfer Credits

Applicants for admission to the College of Fine Arts are encouraged to complete a program of study at another institution prior to entering the College. Applicants should consider the transfer of credits to the University of Iowa. Closing date for submitting applications will be established in advance of the opening date of the fall semester.
7. College of Nursing
Applicants for admission to the undergraduate program in nursing must present a minimum of 20 semester hours completed in an accredited liberal arts college, including satisfaction of the following minimum requirements:
- A minimum of 20 semester hours of credit in English composition and two semester hours of English in speech.
- Chemistry—All applicants must complete two semester hours of chemistry at the secondary school level, or present a satisfactory score on the mathematics battery of the American College Test, or complete similar courses in college with satisfactory grades.
- Mathematics—Applicants must complete 30 semester hours of mathematics at the secondary school level, or a score of 500 or higher on the SAT for the mathematics section or an ACT score of 19 or higher for the mathematics section.
- Applicants must have completed four semester hours of college-level biology and four semester hours of college-level chemistry. Applicants from the College of Liberal Arts at The University of Iowa should also complete four semester-hour courses in organic and biochemistry. Applicants who transfer from other accredited colleges may, if necessary, complete the organic and biochemistry requirement after admission to the College of Nursing.

All applicants are required to complete the American College Test. Applicants who are graduates of associate degree or diploma programs of nursing must have successfully passed the examination for registered nurse licensure before admission to nursing courses.

To be considered for admission, an applicant should have obtained a cumulative grade-point average of at least 2.0 on all college work undertaken. The grade-point average is based upon the ranking system of The University of Iowa, in which a grade of "A" is equivalent to 4.0. Other ranking systems will be evaluated by the Office of Admissions.

Pertinent to the American College Test minimum requirements, the admissions committee of the College of Nursing will accept those applicants who, in their judgment, appear to be best qualified. The Nursing admissions committee may require personal interviews of applicants.

Address all inquiries regarding admissions to the Dean of Admissions, The University of Iowa, Iowa City, Iowa. Applicants who have completed previous preparation in nursing may apply for transfer admission to the College of Nursing. Procedures for transfer admission are the same as for regular applicants, except that they may be admitted either the fall or spring semester. The closing date for nursing applications shall be January 15 for the fall semester and November 15 for the spring semester.

8. College of Pharmacy

General Basis for Admission

Pertinent to the specific requirements for admission does not lessen admission to the College of Pharmacy. From the applicants meeting the specific requirements, the admissions committee will select those applicants who, in their judgment, appear to be best qualified. Applicants for admission to Pharmacy should have graduated from an approved high school or have an equivalent amount of training.

The college work as outlined below will meet the minimum academic requirements for admission to the College of Pharmacy. The minimum includes 28-32 semester hours of college-level work, exclusive of credit in military and air science and physical education. The semester hour requirement must include six semester hours of college-level credit in English composition and two semester hours of college-level credit in mathematics. The required minimum is 100 semester hours of college-level work, exclusive of credit in physical education, military, and air science, and physical education, as well as credit in courses that may be considered as an introduction to the study of Pharmacy.

College work of 30 semester hours must be completed within the College of Liberal Arts at The University of Iowa. Students from other institutions may meet this requirement by presenting four semester hours of credit in English composition and two semester hours of credit in mathematics. Heterogeneity of academic courses is desirable. College work of at least 12 semester hours of credit in one of the following groups is also required:

- Physical and Mathematical Sciences—eight semester hours.
- Physical and Analytical Chemistry—eight semester hours.
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University Hospitals
Director: John Cohen, B.A., M.A.
Psychiatric Hospital
Director: George Windust, A.B., M.D.
State Bacteriological Laboratory
Director: William J. Hauser, B.A., M.A., Ph.D.
Consulting Director: Frankie Henry Top, A.B., M.D., M.P.H.
Oddfellows Hospital
Director: John C. MacQueen, B.S., M.D.
University Hospital School
Director: Raymond Ralph Rendall, A.B., M.D.
Student Health
Director: Robert A. Wilson, M.D.
State Services for Crippled Children
Director: Margaret C. MacQueen, B.S., M.D.
Research Administration
Vice President for Educational Development and Research: Dean C. Egan
Office of Research Services and Administration
Director: Margaret E. Hopkins, B.A., M.A.
Office of Agency Services
Director: John D. McGee, B.S., Ph.D.
Office of Project Development
Director: John D. McGee, B.A., M.A., Ph.D.
Student Services
Vice President: Philip G. Fiedler, B.S.E.E., M.S., Ph.D.
Admissions and Records
Dean: Walter C. Carr, B.S.E.E., M.A.
Director of Admissions: Robert D. Laposy, B.S., M.A.
Registrar: John F. Homrath, B.A., M.A.
Cultural Affairs, Performing Arts, and Auditoria
Coordinator: James H. Weinstein, B.S.
Ballroom Auditorium
Director: James H. Weinstein, B.A.
Iowa Memorial Union
Manager: Irving M. Burke, B.S.A.
Dean of Students
Dean: Martin L. Rieh, B.A., M.A.

Student Development Center
Director: Walter J. Fisher, B.S., M.Ed., M.D.
Career Counseling and Placement
Director:2erese Hamilton, B.A., M.A.
University Counseling Service
Coordinator: Robert Steedman, B.A., M.S., Ph.D.
Student Financial Aid
Director: John E. Moon, B.A., M.A.
University Examination and Evaluation Service
Director: Douglas E. Wehner, B.S., M.A., Ph.D.

Business and Finance
Purchasing: Elvis T. Judd, B.S.C.
Business Office
Clerical and Secretarial: Donald R. Bode, B.S.C.
Business Manager and Treasurer: Joseph M. Monahan, B.A.
Director of Purchasing: Abraham Bode, B.A.
University Personnel Service
Director: Fred C. Demere, B.A.
Dormitories and Housing Services
Director: Theodore M. Kohler, B.S.C.
University Architect
George L. Turner, B.S., R.A.
Physical plant
Director: Davis A. Nikolai, B.S.E.E.

General University
Alumni Records
Director: Edward D. Meyer, B.A., M.A.
Facilities Planning and Utilization
Director: Richard E. Oates, B.S.C.
Public Information and University Relations
Director: Mary B. Steiner, B.S., M.A.
Intercollegiate Athletics
Director: Chandler W. Elliott, A.B.
University of Iowa Foundation
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